

[MS-OXWAVLS]: Availability Web Service Protocol Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
04/04/2008	0.1	Major	Initial Availability.
04/25/2008	0.2	Minor	Revised and updated property names and other technical content.
06/27/2008	1.0	Major	Initial Release.
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1 Introduction

The Availability Web Service protocol specifies how a client can get the **Free/busy**, Tentative, and **Out of Office (OOO)** status of a set of users, rooms, and resources within a specified time window. For information about meetings and scheduling meetings, see [\[MS-OXOCAL\]](#).

This protocol also specifies how a client can get suggestions for alternate meeting times.

1.1 Glossary

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

free/busy
Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)
mailbox
Out of Office (OOO)
public folder
Web Services Description Language (WSDL)
WSDL message
Secure Sockets Layer (SSL)
Server object
SOAP body

The following terms are specific to this document:

meeting suggestion: A possible alternate meeting time for the attendees of the meeting.

Merged Free/Busy: A string representation of the attendee's free/busy information for the duration specified.

proxy request: A request that is forwarded by a service to another service so that the requested data can then be processed. The original service acts as a proxy for the service that handles the request.

working hours: Times of the day that are valid for meetings to be considered for an attendee.

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

1.2 References

1.2.1 Normative References

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

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

[MS-OXOCAL] Microsoft Corporation, "[Appointment and Meeting Object Protocol Specification](#)", June 2008.

- [MS-OXOPFFB] Microsoft Corporation, "[Public Folder-Based Free/Busy Protocol Specification](#)", June 2008.
- [MS-OXPROPS] Microsoft Corporation, "[Exchange Server Protocols Master Property List](#)", June 2008.
- [MS-OXWSADISC] Microsoft Corporation, "[AutoDiscover Publishing and Lookup SOAP-Based Web Service Protocol Specification](#)", July 2009.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.ietf.org/rfc/rfc2119.txt>.
- [RFC2616] Fielding, R., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999, <http://www.ietf.org/rfc/rfc2616.txt>.
- [SOAP1.1] Box, D., 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>.
- [XML10] World Wide Web Consortium, "Extensible Markup Language (XML) 1.0 (Third Edition)", February 2004, <http://www.w3.org/TR/2004/REC-xml-20040204/>.
- [XMLNS] World Wide Web Consortium, "Namespaces in XML 1.0 (Second Edition)", August 2006, <http://www.w3.org/TR/REC-xml-names/>.
- [XMLSCHEMA1] Thompson, H.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>.
- [XMLSCHEMA2] Biron, P.V., Ed., and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>.

1.2.2 Informative References

None.

1.3 Protocol Overview

The Availability service enables retrieval of up-to-date Free/busy information and **meeting suggestions** for a set of **mailboxes**. Typically, this set of mailboxes represents a meeting's attendees and resources. Clients use the SOAP protocol [\[SOAP1.1\]](#) to contact the Availability service to make a **GetUserAvailability** request.

This specification describes the request and response for the **GetUserAvailability** operation, as shown in Figure 1.

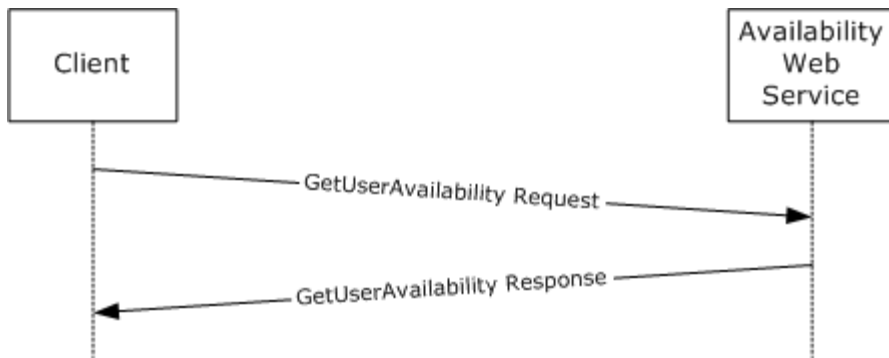


Figure 1: Availability SOAP Message between client and server

1.4 Relationship to Other Protocols

Clients can contact the Availability service by using SOAP over **HTTP** and SOAP over **HTTPS**, as specified in [\[RFC2616\]](#), as show in the following figures.

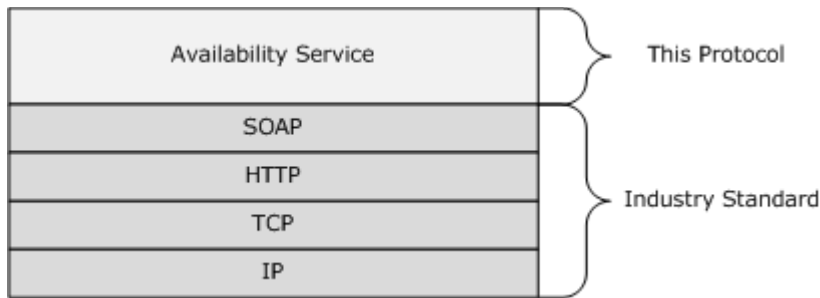


Figure 1: SOAP over HTTP

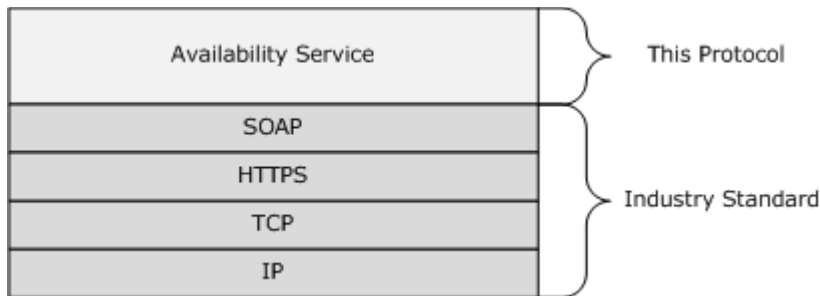


Figure 2: SOAP over HTTPS

1.5 Prerequisites/Preconditions

The URL of the Availability Web Service protocol can be retrieved by using the AutoDiscover Publishing and Lookup SOAP-Based Web Service protocol [\[MS-OXWSADISC\].<1>](#)

1.6 Applicability Statement

None.

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports:** This protocol uses SOAP 1.1.
- **Protocol Versions:** This protocol specifies only one **WSDL** portType version.
- **Security and Authentication Methods:** This protocol relies on the Web server that is hosting it to perform authentication.
- **Localization:** This protocol includes text strings in various messages. Localization considerations for such strings are specified in sections [2.2](#) and [3.1.4](#).
- **Capability Negotiation:** None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

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

2.1.1 X-ClientStatistics Header

The X-ClientStatistics header can be sent by the client to the server to report Free/Busy request statistics to the server. The X-ClientStatistics header contains the following fields:

Field name	Data format	Meaning
MessageID	GUID	Unique identifier for a free/busy data request.
RequestTime	ISO8601 date format	UTC time when the request was sent.
ResponseTime	milliseconds	The round-trip response time for the request.
ResponseSize	KB	The size of the data received.
HTTPResponseCode	HTTP response code	The HTTP response returned by the server.
ErrorCode	Error code	When the HTTP response is 200 (HTTP STATUS OK), additional errors can be reported for individual users.
Overflow	Number of additional errors that occurred.	The number of additional errors that occurred, but the details of which are not included in the report.

Multiple reports included in the same X-ClientStatistics header MUST be separated by semicolons.

2.2 Message Syntax

The Availability Web Service request header MUST contain a **MessageID** header, as specified in [\[SOAP1.1\].<3>](#)

The following sections specify the syntax that is specific to the Availability Web Service protocol.

2.2.1 Namespaces

See [\[XMLNS\]](#) for the namespaces specification.

Prefix	Namespace URI	Reference
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
tns	http://schemas.microsoft.com/exchange/services/2006/messages	[MS-OXWAVLS]
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1]
targetNamespace	http://schemas.microsoft.com/exchange/services/2006/messages	[MS-OXWAVLS]
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
t	http://schemas.microsoft.com/exchange/services/2006/types	[MS-OXWAVLS]

Prefix	Namespace URI	Reference
m	http://schemas.microsoft.com/exchange/services/2006/messages	[MS-OXWAVLS]

2.2.2 Simple Types

2.2.2.1 t:FreeBusyViewType

The **FreeBusyViewType** enumeration specifies the type of requested Free/busy information that is returned in a response when it occurs as an instance in the context of a **RequestedView** element. This enumeration specifies the type of Free/busy information that is actually returned in a response when it occurs as an instance in the context of a **FreeBusyView** element.

```
<xs:simpleType name="FreeBusyViewType">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None" />
        <xs:enumeration value="MergedOnly" />
        <xs:enumeration value="FreeBusy" />
        <xs:enumeration value="FreeBusyMerged" />
        <xs:enumeration value="Detailed" />
        <xs:enumeration value="DetailedMerged" />
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

Value	Description
None	This value is not valid for requests. This value is valid for responses.
MergedOnly	Specifies that Merged Free/Busy is requested or returned.
FreeBusy	Represents the status information: Free, Busy, Tentative, and OOF. This also includes the start/end times of the appointments. This view is richer than the public folder Free/busy view (as specified in [MS-OXOPFFB]) because individual meeting start and end times are provided instead of an aggregated Free/busy stream.
FreeBusyMerged	Represents all the properties in Free/busy with a stream of Merged Free/Busy information.
Detailed	Represents the status information: Free, Busy, Tentative, and OOF; the start/end times of the appointments; and various properties of the appointment such as subject, location, and importance. This requested view will return the maximum amount of information for which the requesting user is privileged. If Merged Free/Busy information only is available, MergedOnly will be returned. Otherwise, FreeBusy or Detailed will be returned.
DetailedMerged	Represents all the properties in Detailed with a stream of Merged Free/Busy information. If Merged Free/Busy information only is available, MergedOnly will be returned. Otherwise, FreeBusyMerged or DetailedMerged will be returned.

Merged Free/Busy is a string representation of the Calendar folder for the requested duration. The **MergedFreeBusyInterval** that is specified in the request is used to break up the requested

duration into separate blocks, the size for which is equal to the Merged Free/Busy interval. The blocks contain a number that represents the Free/busy status of the calendar.

Number	Free/busy status
0	Free
1	Tentative
2	Busy
3	OOF
4	No data (indicates that the requestor does not have permissions to view Free/busy data)

Handling of overlapping appointments – if the block has overlapping appointments, the following precedence order is used (from high to low): OOF, Busy, Tentative, Free [<4>](#).

The Mailbox owner can grant users specific Free/busy view permissions. This can be done by setting the Free/busy permissions on the Calendar folder, as specified in [\[MS-OXOCAL\]<5>](#)

2.2.2.2 t:MeetingAttendeeType

The **MeetingAttendeeType** enumeration provides the **AttendeeType** element values that designate a meeting attendee's role in the **MailboxData** complex type.

```
<xs:simpleType name="MeetingAttendeeType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Organizer"/>
    <xs:enumeration value="Required"/>
    <xs:enumeration value="Optional"/>
    <xs:enumeration value="Room"/>
    <xs:enumeration value="Resource"/>
  </xs:restriction>
</xs:simpleType>
```

Value	Description
Organizer	Attendee is the organizer of the meeting.
Required	Required attendee of the meeting.
Optional	Optional attendee of the meeting.
Room	A room resource that is used for the meeting.
Resource	A resource such as a TV or projector that is scheduled for use in the meeting.

2.2.2.3 t:SuggestionQuality

The **SuggestionQuality** type specifies the quality level of the suggestion time.

```
<xs:simpleType name="SuggestionQuality">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Excellent" />
    <xs:enumeration value="Good" />
  </xs:restriction>
</xs:simpleType>
```

```

    <xs:enumeration value="Fair" />
    <xs:enumeration value="Poor" />
  </xs:restriction>
</xs:simpleType>

```

Value	Description
Excellent	Request: Caller wants suggestions for times where there are no conflicts. Response: Indicates that 0 percent of the attendees have a conflict for the suggested meeting time.
Good	Request: Caller wants suggestions for times where the percentage of conflicts is equal to or less than the GoodThreshold value. Response: Indicates that the suggested meeting time has a conflict percentage that is equal to or lower than the GoodThreshold value.
Fair	Request: Percentage of conflicts is between GoodThreshold and 50 percent.
Poor	Percentage of conflicts is greater than or equal to 50 percent.

2.2.3 Complex Types

2.2.3.1 ArrayOfAttendeeConflictData

The **ArrayOfAttendeeConflictData** type specifies an array of conflict data for queried attendees while retrieving suggested meeting times.

```

<xs:complexType name="ArrayOfAttendeeConflictData">
  <xs:choice minOccurs="0" maxOccurs="unbounded">
    <xs:element minOccurs="1" maxOccurs="1" name="UnknownAttendeeConflictData"
      nillable="true" type="t:UnknownAttendeeConflictData" />
    <xs:element minOccurs="1" maxOccurs="1" name="IndividualAttendeeConflictData"
      nillable="true" type="t:IndividualAttendeeConflictData" />
    <xs:element minOccurs="1" maxOccurs="1" name="TooBigGroupAttendeeConflictData"
      nillable="true" type="t:TooBigGroupAttendeeConflictData" />
    <xs:element minOccurs="1" maxOccurs="1" name="GroupAttendeeConflictData"
      nillable="true" type="t:GroupAttendeeConflictData" />
  </xs:choice>
</xs:complexType>

```

Element	Type	Definition
UnknownAttendeeConflictData	UnknownAttendeeConflictData	Represents an attendee that is not recognized (not a user, distribution list, or contact). Can be present, but its value can be null. <6>
IndividualAttendeeConflictData	IndividualAttendeeConflictData	Specifies the attendee's free/busy status for a window of time that occurs at the same time as the suggested meeting time. Can be present, but the

Element	Type	Definition
		value can be null.
TooBigGroupAttendeeConflictData	TooBigGroupAttendeeConflictData	Represents an attendee that is a distribution list that was too large to expand. Can be present and the value can be null. Default maximum group size = 100.
GroupAttendeeConflictData	GroupAttendeeConflictData	Contains the conflict information about the number of attendees available, the number of attendees that have conflicts, and the number of attendees that do not have free/busy information in a distribution list. Can be present, but the value can be null.

2.2.3.2 t:ArrayOfCalendarEvent

The **ArrayOfCalendarEvent** type specifies an array of calendar events for the attendee.

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

Element	Type	Definition
CalendarEvent	t:CalendarEvent	Represents a unique calendar item occurrence. Can be present.

2.2.3.3 m:ArrayOfFreeBusyResponse

The **ArrayOfFreeBusyResponse** type contains the requested users' availability information. The order of the individual elements of this array **MUST** match the order of the users in the **GetUserAvailabilityRequest**.

```
<xs:complexType name="ArrayOfFreeBusyResponse">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="FreeBusyResponse" type="m:FreeBusyResponseType" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
FreeBusyResponse	m:FreeBusyResponseType	Contains the free/busy information for a single mailbox user and the response status. Can be present.

2.2.3.4 t:ArrayOfMailboxData

The **MailboxDataArray** type contains a list of mailboxes to query for availability information.

```
<xs:complexType name="ArrayOfMailboxData">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="MailboxData" nillable="true"
type="t:MailboxData" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
MailboxDataArray	t:MailboxData	While the maxOccurs is unbounded, GetUserAvailability restricts the total number of MailboxData elements to 100 entries by default. Can be present.

2.2.3.5 t:ArrayOfSuggestion

The **ArrayOfSuggestion** type specifies an array of meeting suggestions in an Availability response.

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

Element	Type	Definition
Suggestion	t:suggestion	While the maxOccurs is unbounded, GetUserAvailability restricts the total number of Suggestion elements to 100 entries by default. Can be present.

2.2.3.6 t:ArrayOfSuggestionDayResult

The **ArrayOfSuggestionDayResult** type specifies an array of meeting suggestions organized by date.

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

Element	Type	Definition
SuggestionDayResult	t:SuggestionDayResult	Array of SuggestionDayResult . Can be present.

2.2.3.7 t:ArrayOfWorkingPeriod

The **ArrayOfWorkingPeriod** type specifies the working period information for the mailbox user.

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

Element	Type	Definition
WorkingPeriod	t:WorkingPeriod	Contains the workweek days and hours of the mailbox user. Can be present.

2.2.3.8 AttendeeConflictData

The **AttendeeConflictData** type specifies the abstract base type that is used for the **UnknownAttendeeConflictData**, **TooBigGroupAttendeeConflictData**, **IndividualAttendeeConflictData**, and **GroupAttendeeConflictData** types.

```
<xs:complexType name="AttendeeConflictData" abstract="true"/>
```

2.2.3.9 t:CalendarEvent

The **CalendarEvent** type represents an item in the Calendar.

```
<xs:complexType name="CalendarEvent">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="StartTime" type="xs:dateTime" />
    <xs:element minOccurs="1" maxOccurs="1" name="EndTime" type="xs:dateTime" />
    <xs:element minOccurs="1" maxOccurs="1" name="BusyType" type="t:LegacyFreeBusyType" />
    <xs:element minOccurs="0" maxOccurs="1" name="CalendarEventDetails"
type="t:CalendarEventDetails" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
StartTime	xs:dateTime	Represents the start of a Calendar event. MUST be present.
EndTime	xs:dateTime	Represents the end of a Calendar event. MUST be present.
BusyType	t:LegacyFreeBusyType	Represents the free/busy status set for the

Element	Type	Definition
		Calendar event. MUST be present.
CalendarEventDetails	t:CalendarEventDetails	Provides additional information for a Calendar event. Can be present.

The level of detail provided by this type and the **CalendarEvent** depends on the permissions granted to the requestor. This element **MUST** be included when the **FreeBusyViewType** element is set to **FreeBusy**, **FreeBusyMerged**, **Detailed**, or **DetailedMerged**. If no calendar items are present in the requested time window, this element can be empty.

2.2.3.10 t:CalendarEventDetails

The **CalendarEventDetails** type specifies additional information about a Calendar event.

```
<xs:complexType name="CalendarEventDetails">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="ID" type="xs:string" />
    <xs:element minOccurs="0" maxOccurs="1" name="Subject" type="xs:string" />
    <xs:element minOccurs="0" maxOccurs="1" name="Location" type="xs:string" />
    <xs:element minOccurs="1" maxOccurs="1" name="IsMeeting" type="xs:boolean" />
    <xs:element minOccurs="1" maxOccurs="1" name="IsRecurring" type="xs:boolean" />
    <xs:element minOccurs="1" maxOccurs="1" name="IsException" type="xs:boolean" />
    <xs:element minOccurs="1" maxOccurs="1" name="IsReminderSet" type="xs:boolean" />
    <xs:element minOccurs="1" maxOccurs="1" name="IsPrivate" type="xs:boolean" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
ID	xs:string	Represents the entry ID of the Calendar item. Can be present.
Subject	xs:string	Represents the subject of the Calendar item. Can be present.
Location	xs:string	Represents the location field of the Calendar item. Can be present.
IsMeeting	xs:boolean	Indicates whether the Calendar event is a meeting or an appointment. MUST be present and can only occur once.
IsRecurring	xs:boolean	Indicates whether the Calendar event is an instance of a recurring Calendar item or a single Calendar item. MUST be present, and can only occur once.
IsException	xs:boolean	Indicates whether an instance of a recurring Calendar item is changed from the master Calendar. MUST be present, and can only occur once.
IsReminderSet	xs:boolean	Indicates whether a reminder has been set for the Calendar event. MUST be present, and can only occur once.

Element	Type	Definition
IsPrivate	xs:boolean	Indicates whether the Calendar item is private. MUST be present, and can only occur once.

Restrictions:

1. All the child elements are listed in the sequence in which they occur.
2. If the **IsPrivate** element is set to TRUE, the required elements MUST be returned and the optional elements MUST NOT be returned.

The following table maps the information in the CalendarEvent to properties on the Calendar item.

Element	MAPI property	Flags used
ID	PidTagEntryId [MS-OXPROPS]	N/A
Subject	PidTagSubject [MS-OXPROPS]	N/A
Location	PidLidLocation [MS-OXPROPS]	N/A
IsMeeting	PidLidAppointmentStateFlags [MS-OXOCAL]	Flag used is asfMeeting .
IsRecurring	PidLidRecurring [MS-OXOCAL]	N/A
IsException	PidLidIsException [MS-OXOCAL]	N/A
IsReminderSet	PidLidReminderSet [MS-OXOCAL]	N/A
IsPrivate	PidTagSensitivity [MS-OXPROPS]	If the property is set to SENSITIVITY_PRIVATE , IsPrivate returns TRUE.

2.2.3.11 m:FreeBusyResponseType

The **FreeBusyResponseType** type specifies the returned response from the service.

```
<xs:complexType name="FreeBusyResponseType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="ResponseMessage"
      type="m:ResponseMessageType" />
    <xs:element minOccurs="0" maxOccurs="1" name="FreeBusyView" type="t:FreeBusyView" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
ResponseMessage	m:ResponseMessageType	Specifies descriptive information about the response status. Can be present.
FreeBusyView	t:FreeBusyView	Specifies availability information for a specific user. Can be present.

2.2.3.12 t:FreeBusyView

The **FreeBusyView** type specifies the free/busy information that is returned in the response.

```
<xs:complexType name="FreeBusyView">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="FreeBusyViewType"
type="t:FreeBusyViewType" />
    <xs:element minOccurs="0" maxOccurs="1" name="MergedFreeBusy" type="xs:string" />
    <xs:element minOccurs="0" maxOccurs="1" name="CalendarEventArray"
type="t:ArrayOfCalendarEvent" />
    <xs:element minOccurs="0" maxOccurs="1" name="WorkingHours" type="t:WorkingHours" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
FreeBusyViewType	t:FreeBusyViewType	Represents the type of the free/busy information that is returned in the response. MUST be present.
MergedFreeBusy	xs:string	Represents the Merged Free/Busy information. Can be present but MUST be present if one of the following was requested in the RequestView element of the request: <ul style="list-style-type: none"> ▪ MergedOnly ▪ FreeBusyMerged ▪ DetailedMerged
CalendarEventArray	t:ArrayOfCalendarEvent	Contains the array of calendar appointments in the mailbox. Can be present, but MUST be present if the following was requested in the RequestView element of the request: <ul style="list-style-type: none"> ▪ FreeBusy ▪ FreeBusyMerged ▪ Detailed ▪ DetailedMerged
WorkingHours	t:WorkingHours	Represents the time zone settings and working hours for the requested mailbox user. Can be present.

2.2.3.13 t:FreeBusyViewOptions

The **FreeBusyViewOptions** type indicates what data is to be returned in the response.

```
<xs:complexType name="FreeBusyViewOptionsType">
  <xs:sequence>
```

```

    <xs:element minOccurs="1" maxOccurs="1" name="TimeWindow" type="t:Duration" />
    <xs:element minOccurs="0" maxOccurs="1" name="MergedFreeBusyIntervalInMinutes"
type="xs:int" />
    <xs:element minOccurs="0" maxOccurs="1" name="RequestedView" type="t:FreeBusyViewType"
/>
  </xs:sequence>
</xs:complexType>

```

Element	Type	Definition
TimeWindow	t:Duration	Represents the time span for the queried user's availability. MUST occur once. Maximum time period is 42 days.
MergedFreeBusyIntervalInMinutes	xs:int	Represents the time difference between two successive slots in the Merged Free/Busy view. Can be present. Minimum value = 5, Maximum value = 1440 (represents a day). Default is 30.
RequestedView	t:FreeBusyViewType	Defines the type of Calendar information that a client requests. MUST be a string with one of the following values: <ul style="list-style-type: none"> ▪ MergedOnly ▪ FreeBusy ▪ FreeBusyMerged ▪ Detailed ▪ DetailedMerged MUST NOT be a string with a value of None.

2.2.3.14 m:GetUserAvailabilityRequestType

The **GetUserAvailabilityRequestType** type specifies the arguments that are used to obtain user availability information.

```

<xs:complexType name="GetUserAvailabilityRequestType">
  <xs:complexContent mixed="false">
    <xs:extension base="m:BaseRequestType">
      <xs:sequence>
        <xs:element ref="t:TimeZone" />
        <xs:element name="MailboxDataArray" type="t:ArrayOfMailboxData" />
        <xs:element minOccurs="0" maxOccurs="1" ref="t:FreeBusyViewOptions" />
        <xs:element minOccurs="0" maxOccurs="1" ref="t:SuggestionsViewOptions" />
      </xs:sequence>
    </xs:extension>
  </complexContent>
</complexType>

```

```
</xs:complexContent>
</xs:complexType>
```

Element	Type	Definition
TimeZone	t:TimeZone	Contains elements that identify time zone information. This element also contains information about the transition between standard time and daylight saving time. All times that are returned in the GetUserAvailability response will be in this time zone. MUST be present.
MailboxData Array	t:ArrayOfMailboxData	Contains a list of mailboxes to query for availability information. MUST be present.
FreeBusyViewOptions	t:FreeBusyViewOptions	Specifies the type of free/busy information that is returned in the response. Can be present.
SuggestionsViewOptions	t:SuggestionsViewOptions	Contains the options that obtain meeting suggestion information. Can be present.

2.2.3.15 m:GetUserAvailabilityResponse Type

The **GetUserAvailabilityResponseType** type specifies which information is returned in a **GetUserAvailability** operation response.

```
<xs:complexType name="GetUserAvailabilityResponseType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="FreeBusyResponseArray"
      type="m:ArrayOfFreeBusyResponse" />
    <xs:element minOccurs="0" maxOccurs="1" name="SuggestionsResponse"
      type="m:SuggestionsResponseType" />
  </xs:sequence>
</xs:complexType>
<xs:element name="GetUserAvailabilityResponse" type="m:GetUserAvailabilityResponseType" />
```

Element	Type	Definition
FreeBusyResponseArray	m:ArrayOfFreeBusyResponse	Contains the requested user's availability information and the response status. Can be present. MUST be present if the FreeBusyViewOptions is present in the request.
SuggestionsResponse	m:SuggestionsResponseType	Contains the suggested data for requested meeting suggestions. Can be present. MUST be present if the SuggestionsViewOptions is present in the request.

2.2.3.16 t:GroupAttendeeConflictData

The **GroupAttendeeConflictData** type specifies aggregate conflict information about the number of users who are available, the number of users who have conflicts, and the number of users who do not have availability information in a distribution list for a suggested meeting time.

```
<xs:complexType name="GroupAttendeeConflictData">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData">
      <xs:sequence>
        <xs:element minOccurs="1" maxOccurs="1" name="NumberOfMembers" type="xs:int" />
        <xs:element minOccurs="1" maxOccurs="1" name="NumberOfMembersAvailable"
type="xs:int" />
        <xs:element minOccurs="1" maxOccurs="1" name="NumberOfMembersWithConflict"
type="xs:int" />
        <xs:element minOccurs="1" maxOccurs="1" name="NumberOfMembersWithNoData"
type="xs:int" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

Element	Type	Definition
NumberOfMembers	xs:int	Represents the number of attendees in the distribution list. If the number of members in the distribution list exceeds 100, GroupAttendeeConflictData will only return information for the first 100 members. MUST be present.
NumberOfMembersAvailable	xs:int	Represents the number of attendees who are available. Can be present.
NumberOfMembersWithConflict	xs:int	Represents the number of attendees who have conflicts. Can be present.
NumberOfMembersWithNoData	xs:int	Represents the number of attendees for which data could not be retrieved. Can be present.

2.2.3.17 t:IndividualAttendeeConflictData

The **IndividualAttendeeConflictData** type specifies a user's or contact's free/busy status for a time window that occurs at the same time as the suggested meeting time that is identified in the **Suggestion** element.

```
<xs:complexType name="IndividualAttendeeConflictData">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData">
      <xs:sequence>
        <xs:element minOccurs="1" maxOccurs="1" name="BusyType" type="t:LegacyFreeBusyType" />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```

```
</xs:complexType>
```

Element	Type	Definition
BusyType	LegacyFreeBusyType	Represents the free/busy status of an attendee for a suggested meeting time. MUST be present.

2.2.3.18 t:MailboxData

The **MailboxData** type specifies details about an attendee.

```
<xs:complexType name="MailboxData">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Email" type="t:EmailAddress" />
    <xs:element minOccurs="1" maxOccurs="1" name="AttendeeType" type="t:MeetingAttendeeType" />
    <xs:element minOccurs="0" maxOccurs="1" name="ExcludeConflicts" type="xs:boolean" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
Email	t:EmailAddress	Represents an attendee. MUST be present.
AttendeeType	t:MeetingAttendeeType	Represents the type of attendee identified in the Email element. This element is used in requests for meeting suggestions. MUST be present.
ExcludesConflicts	xs:boolean	Specifies whether to return suggested times for Calendar times that conflict among the attendees. This is used to calculate meeting suggestions. Can be present.

2.2.3.19 t:SerializableTimeZone

The **SerializableTimeZone** type contains elements that identify time zone information. This element also contains information about the transition between standard time and daylight saving time. The **TimeZone** element in the **GetUserAvailabilityRequest WSDL message** represents the time zone in which the **DateTime** values in the request are specified. The **DateTime** values that are returned by the Availability service are also in this time zone. The exception is that working hours in an Availability response are returned in the time zone of the attendee.

```
<xs:complexType name="SerializableTimeZone">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Bias" type="xs:int" />
    <xs:element minOccurs="1" maxOccurs="1" name="StandardTime" type="t:SerializableTimeZoneTime" />
    <xs:element minOccurs="1" maxOccurs="1" name="DaylightTime" type="t:SerializableTimeZoneTime" />
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="TimeZone" type="t:SerializableTimeZone" />
```

Element	Type	Definition
Bias	xs:int	Represents the general offset from Coordinated Universal Time (UTC) . This value is in minutes. MUST be present.
StandardTime	t:SerializableTimeZoneTime	Represents an offset from the time relative to UTC that is represented by the Bias element. This element also contains information about the transition to standard time from daylight saving time in regions where daylight saving time is observed. MUST be present.
DaylightTime	t:SerializableTimeZoneTime	Represents an offset from the time relative to UTC that is represented by the Bias element in regions where daylight saving time is observed. This element also contains information about when the transition to daylight saving time from standard time occurs. MUST be present.

2.2.3.20 t:SerializableTimeZoneTime

The **SerializableTimeZoneTime** type specifies the start and end dates of daylight saving time.

```
<xs:complexType name="SerializableTimeZoneTime">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Bias" type="xs:int" />
    <xs:element minOccurs="1" maxOccurs="1" name="Time" type="xs:string" />
    <xs:element minOccurs="1" maxOccurs="1" name="DayOrder" type="xs:short" />
    <xs:element minOccurs="1" maxOccurs="1" name="Month" type="xs:short" />
    <xs:element minOccurs="1" maxOccurs="1" name="DayOfWeek" type="t:DayOfWeekType" />
    <xs:element minOccurs="0" maxOccurs="1" name="Year" type="xs:string" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
Bias	xs:int	Represents the offset from the UTC offset that is identified by the Bias element for standard time and daylight saving time. This value is in minutes. MUST be present, and can only occur once.
Time	xs:string	Represents the transition of the time of day to and from standard time and daylight saving time. MUST be present, and can only occur once. Format: <i>hh:mm:ss</i> <i>hh</i> : hours ranging from 0 to 23. <i>mm</i> : minutes ranging from 0 to 59. <i>ss</i> : seconds ranging from 0 to 59.
DayOrder	xs:short	For relative time zones, this represents the nth occurrence of the

Element	Type	Definition
		<p>day that is specified in the DayOfWeek type that represents the date of transition from and to standard time and daylight saving time.</p> <p>For dynamic time zones, this represents the actual day of the month.</p> <p>MUST be present and can only occur once.</p> <p>Valid values are between 1-5 or 1-31.</p> <p>For time zones that do not have transitions, 0 (zero) SHOULD be used.</p>
Month	xs:short	<p>Represents the transition month of the year to and from standard time and daylight saving time.</p> <p>MUST be present.</p> <p>Valid values for time zones that have transitions: 1-12, where 1 represents January and 12 represents December.</p> <p>For time zones that do not have transitions, 0 (zero) SHOULD be used.</p>
DayOfWeek	t:DayOfWeekType	<p>Represents the day of the week when the transition to and from standard time and daylight saving time occurs.</p> <p>MUST be present, and can only occur once.</p>
Year	xs:string	<p>Defines a time zone that changes, depending on the year.</p> <p>Can be present.</p> <p>Minimum: 1601</p> <p>Maximum: 4500</p>

When the **Year** value is present in the element (for dynamic time zones), the **DayOrder** MUST be between 1 and 31. When the **Year** value is not present (for relative time zones), the **DayOrder** MUST be between 1 and 5, where 1 represents the Sunday of the first week of the month and 5 represents the Sunday of the last week of the month.

2.2.3.21 t:Suggestion

The suggestion type specifies a single meeting suggestion in an Availability response.

```
<xs:complexType name="Suggestion">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="MeetingTime" type="xs:dateTime" />
    <xs:element minOccurs="1" maxOccurs="1" name="IsWorkTime" type="xs:boolean" />
    <xs:element minOccurs="1" maxOccurs="1" name="SuggestionQuality"
type="t:SuggestionQuality" />
    <xs:element minOccurs="0" maxOccurs="1" name="AttendeeConflictDataArray"
type="t:ArrayOfAttendeeConflictData" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
MeetingTime	xs:datetime	<p>Represents a suggested meeting time.</p> <p>MUST be present.</p>

Element	Type	Definition
IsWorkTime	xs:boolean	Represents whether the suggested meeting time occurs during the scheduled working hours of the organizer. MUST be present.
SuggestionQuality	t:SuggestionQuality	Represents the quality of the suggested meeting time. SHOULD be present. <7>
AttendeeConflictDataArray	t:ArrayOfAttendeeConflictData	Contains an array of conflicts between attendees and the suggested meeting time. Can be present.

2.2.3.22 t:SuggestionDayResult

The **SuggestionDayResult** type specifies a single day that contains suggested meeting times in an Availability response.

```
<xs:complexType name="SuggestionDayResult">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="Date" type="xs:dateTime" />
    <xs:element minOccurs="1" maxOccurs="1" name="DayQuality" type="t:SuggestionQuality" />
    <xs:element minOccurs="0" maxOccurs="1" name="SuggestionArray" type="t:ArrayOfSuggestion" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
Date	xs:dateTime	Date that contains the suggested meeting times. MUST be present.
DayQuality	t:SuggestionQuality	Quality of the best suggestion for the day. MUST be present.
SuggestionArray	t:ArrayOfSuggestion	Array of meeting suggestions. Can be present. <8>

2.2.3.23 m:SuggestionsResponseType

The **SuggestionsResponseType** type specifies the response that is returned from the service for meeting suggestions.

```
<xs:complexType name="SuggestionsResponseType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="ResponseMessage" type="m:ResponseMessageType" />
    <xs:element minOccurs="0" maxOccurs="1" name="SuggestionDayResultArray" type="t:ArrayOfSuggestionDayResult" />
  </xs:sequence>
```

```
</xs:complexType>
```

Element	Type	Definition
ResponseMessage	m:ResponseMessageType	Provides descriptive information about the response status. Can be present.
SuggestionDayResultArray	t:ArrayOfSuggestionDayResult	Contains an array of meeting suggestions organized by date. Can be present.

2.2.3.24 t:SuggestionsViewOptionsType

The **SuggestionsViewOptionsType** type specifies the options for obtaining meeting suggestion information.

```
<xs:complexType name="SuggestionsViewOptionsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="GoodThreshold" type="xs:int" />
    <xs:element minOccurs="0" maxOccurs="1" name="MaximumResultsByDay" type="xs:int" />
    <xs:element minOccurs="0" maxOccurs="1" name="MaximumNonWorkHourResultsByDay"
type="xs:int" />
    <xs:element minOccurs="0" maxOccurs="1" name="MeetingDurationInMinutes" type="xs:int"
/>
    <xs:element minOccurs="0" maxOccurs="1" name="MinimumSuggestionQuality"
type="t:SuggestionQuality" />
    <xs:element minOccurs="1" maxOccurs="1" name="DetailedSuggestionsWindow"
type="t:Duration" />
    <xs:element minOccurs="0" maxOccurs="1" name="CurrentMeetingTime" type="xs:dateTime" />
    <xs:element minOccurs="0" maxOccurs="1" name="GlobalObjectId" type="xs:string" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
GoodThreshold	xs:int	GoodThreshold is the threshold that determines whether the suggestion is considered Good or Fair. The suggested meeting time is considered Excellent if there are no conflicts. The suggested meeting time is considered Poor if the percentage of conflicts is greater than 50 percent. The suggested meeting time is considered Good if the percentage of conflicts is less than the GoodThreshold . The

Element	Type	Definition
		<p>suggested meeting time is considered Fair if the percentage of conflicts is greater than the GoodThreshold, but less than 50 percent.</p> <p>Can be present.</p> <p>If present, the value MUST be an integer ≥ 1 and ≤ 49.</p> <p>The default is 25.</p>
MaximumResultsByDay	xs:int	<p>Specifies the number of suggested meeting times per day that are returned in the response.</p> <p>Can be present. If present, MUST be an int ≥ 1 and ≤ 48</p> <p>Default is 10.</p>
MaximumNonWorkHourResultsByDay	xs:int	<p>Specifies the number of suggested results for meeting times outside the regular working hours of the organizer per day.</p> <p>Can be present; if present, MUST be an int ≥ 0 and ≤ 48.</p> <p>Default is 0 (zero).</p>
MeetingDurationInMinutes	xs:int	<p>Specifies the length in minutes of the meeting to be suggested.</p> <p>Can be present. If present, MUST be an int ≥ 1 and ≤ 1440.</p> <p>Default is 30.</p>
MinimumSuggestionQuality	t:SuggestionQuality	<p>Specifies the minimum quality of meeting suggestions that should be returned in the response.</p> <p>Can be present.</p> <p>Default is SuggestionQuality.Fair.</p>
DetailedSuggestionsWindow	t:Duration	<p>Specifies the time span that is queried for detailed information about suggested meeting times.</p>

Element	Type	Definition
		MUST be present. StartTime and EndTime fields have dates only and no time information present in the DateTime .
CurrentMeetingTime	xs:dateTime	Represents the start time of a meeting that you want to update with the suggested meeting time results. Can be present.
GlobalObjectId	xs:string	Represents the global object ID (PidLidGlobalObjectId) [MS-OXOCAL] of the Calendar item that should be ignored while calculating suggestions. Can be present.

2.2.3.25 t:TooBigGroupAttendeeConflictData

The **TooBigGroupAttendeeConflictData** type specifies an attendee that was resolved as a distribution list, but the distribution list was too large to expand.

```
<xs:complexType name="TooBigGroupAttendeeConflictData">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData" />
  </xs:complexContent>
</xs:complexType>
```

This extends the **AttendeeConflictData** type.

2.2.3.26 t:UnknownAttendeeConflictData

The **UnknownAttendeeConflictData** type specifies that an attendee cannot be found in the directory, or that the attendee is not a user, distribution list, or contact to be used in a suggested meeting time response.

```
<xs:complexType name="UnknownAttendeeConflictData">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData" />
  </xs:complexContent>
</xs:complexType>
```

This type extends the **AttendeeConflictData** type.

2.2.3.27 t:WorkingHours

The **WorkingHours** type specifies the time zone settings and working hours for the requested mailbox user.

```
<xs:complexType name="WorkingHours">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="TimeZone" type="t:SerializableTimeZone"
  />
    <xs:element minOccurs="1" maxOccurs="1" name="WorkingPeriodArray"
type="t:ArrayOfWorkingPeriod" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
TimeZone	t:SerializableTimeZone	Contains information that identifies the time zone information. MUST be present.
WorkingPeriodArray	t:ArrayOfWorkingPeriod	Contains working period information for the mailbox user. MUST be present.

2.2.3.28 t:WorkingPeriod

The **WorkingPeriod** type contains the work week days and hours of the mailbox user.

```
<xs:complexType name="WorkingPeriod">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="DayOfWeek" type="t:DaysOfWeekType" />
    <xs:element minOccurs="1" maxOccurs="1" name="StartTimeInMinutes" type="xs:int" />
    <xs:element minOccurs="1" maxOccurs="1" name="EndTimeInMinutes" type="xs:int" />
  </xs:sequence>
</xs:complexType>
```

Element	Type	Definition
DayOfWeek	t:DaysOfWeekType	Contains the list of working days that are scheduled for the mailbox user. MUST be present.
StartTimeInMinutes	xs:int	Represents the start of the working day for a mailbox user. Minutes are counted starting from 12 A.M. MUST be present.
EndTimeInMinutes	xs:int	Represents the end of the working day for a mailbox user. Minutes are counted starting from 12 A.M. MUST be present.

2.2.4 Elements

2.2.4.1 t:FreeBusyViewOptions

The **FreeBusyViewOptions** element specifies the type of free/busy information that is returned in the response.

```
<xs:element name="FreeBusyViewOptions" type="t:FreeBusyViewOptionsType" />
```

2.2.4.2 t:GetUserAvailabilityRequest

The **GetUserAvailabilityRequest** element specifies the root element in a **GetUserAvailability** request.

```
<xs:element name="GetUserAvailabilityRequest" type="m:GetUserAvailabilityRequestType" />
```

2.2.4.3 t:GetUserAvailabilityResponse

The **GetUserAvailabilityResponse** element specifies the root element in a **GetUserAvailability** response.

```
<xs:element name="GetUserAvailabilityResponse" type="m:GetUserAvailabilityResponseType" />
```

2.2.4.4 t:SuggestionsViewOptions

The **SuggestionsViewOptions** element contains the options for obtaining meeting suggestion information.

```
<xs:element name="SuggestionsViewOptions" type="t:SuggestionsViewOptionsType" />
```

2.2.4.5 t:TimeZone

The **TimeZone** element specifies time zone-related information.

```
<xs:element name="TimeZone" type="t:SerializableTimeZone" />
```

2.2.5 Attributes

None.

2.2.6 Groups

None.

2.2.7 Attribute Groups

None.

2.2.8 Messages

The Availability service messages are specified in section [3.1.4.1.7](#).

3 Protocol Details

This protocol specifies a way of getting Calendar data for a set of mailboxes (can be users, rooms, or resources) from a server.

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 Server Details

3.1.1 Abstract Data Model

The Availability service is a stateless protocol.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing Rules

This protocol includes only one operation, **GetUserAvailability**, which is stateless and does not have sequencing rules.

Operation	Description
GetUserAvailability	The GetUserAvailability operation provides up-to-date availability information for a set of users.

3.1.4.1 GetUserAvailability

The **GetUserAvailability** operation provides current user availability information at a specified level of detail.

```
<wsdl:portType name="ExchangeServicePortType">
  <wsdl:operation name="GetUserAvailability">
    <wsdl:input message="tns:GetUserAvailabilitySoapIn" />
    <wsdl:output message="tns:GetUserAvailabilitySoapOut" />
  </wsdl:operation>
</wsdl:portType>
<wsdl:message name="GetUserAvailabilitySoapIn">
  <wsdl:part name="GetUserAvailabilityRequest" />
</wsdl:message>
<wsdl:message name="GetUserAvailabilitySoapOut">
  <wsdl:part name="GetUserAvailabilityResult" element="GetUserAvailabilityResponse" />
  <wsdl:part name="ServerVersion" element="ServerVersionInfo"/>
</wsdl:message>
```

The **GetUserAvailability** operation requires an input WSDL message called **GetUserAvailabilitySoapIn**. It will return an output WSDL message called **GetUserAvailabilitySoapOut**.

3.1.4.1.1 Simple Types

All simple types from section [2.2.2](#) are specific to this operation.

3.1.4.1.2 Complex Types

All complex types from section [2.2.3](#) are specific to this operation.

3.1.4.1.3 Elements

All elements from section [2.2.4](#) are specific to this operation.

3.1.4.1.4 Attributes

None.

3.1.4.1.5 Groups

None.

3.1.4.1.6 Attribute Groups

None.

3.1.4.1.7 Messages

3.1.4.1.7.1 GetUserAvailabilitySoapIn

The **GetUserAvailabilitySoapIn** WSDL message has one parameter, *GetUserAvailabilityRequest*.

Parameter	Element/Type	Description
<i>GetUserAvailabilityRequest</i>	GetUserAvailabilityRequest <9>	This part contains the information required to query for availability.

3.1.4.1.7.2 GetUserAvailabilitySoapOut

The following table lists the parameters for the **GetUserAvailabilitySoapOut** WSDL message.

Parameter	Element/Type	Description
<i>GetUserAvailabilityResult</i>	GetUserAvailabilityResponse	Response that contains the requested availability information.
<i>ServerVersion</i>	ServerVersionInfo	Used for diagnostic purposes.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

3.2 Client 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.

3.2.1 Abstract Data Model

The Availability service is a stateless protocol.

3.2.2 Timers

None.

3.2.3 Initialization

None.

3.2.4 Message Processing Events and Sequencing Rules

None.

3.2.5 Timer Events

None.

3.2.6 Other Local Events

None.

4 Protocol Examples

4.1 GetUserAvailability Request

The following example shows how to get detailed availability information for two users in the Pacific Time zone. One user has been given free/busy permissions, and the other user's mailbox is on a computer that does not use the Availability service to provide free/busy information.

Working hours for both users are Monday – Friday, 0800 to 1700.

```
POST /ews/exchange.asmx HTTP/1.1
X-Nego-Capability: Negotiate, Kerberos, NTLM
X-ClientStatistics: MessageId=[unique message identifier],RequestTime=2009-12-
08T00:09:00Z,ResponseTime=179,ResponseSize=13,HttpResponseCode=200
Depth: 0
Content-Type: text/xml; charset=utf-8
User-Agent: [user agent string]
Host: [DNS name]
Content-Length: 1608
Connection: Keep-Alive
Cache-Control: no-cache
Pragma: no-cache
Authorization: Negotiate [Certificate thumbprint]
Depth: 0
Content-Type: text/xml; charset=utf-8

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <wsa:MessageID xmlns:wsa="http://www.w3.org/2005/08/addressing/">
      [unique message identifier]
    </wsa:MessageID>
  </soap:Header>
  <soap:Body>
    <GetUserAvailabilityRequest
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
      <TimeZone xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
        <Bias>480</Bias>
        <StandardTime>
          <Bias>0</Bias>
          <Time>02:00:00</Time>
          <DayOrder>5</DayOrder>
          <Month>10</Month>
          <DayOfWeek>Sunday</DayOfWeek>
        </StandardTime>
        <DaylightTime>
          <Bias>-60</Bias>
          <Time>02:00:00</Time>
          <DayOrder>1</DayOrder>
          <Month>4</Month>
          <DayOfWeek>Sunday</DayOfWeek>
        </DaylightTime>
      </TimeZone>
      <MailboxDataArray>
        <MailboxData xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
          <Email>
```

```

        <Name></Name>
        <Address>user1@example.com</Address>
        <RoutingType>SMTP</RoutingType>
    </Email>
    <AttendeeType>Required</AttendeeType>
    <ExcludeConflicts>>false</ExcludeConflicts>
</MailboxData>
<MailboxData xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
    <Email>
        <Name></Name>
        <Address>user2@example.com</Address>
        <RoutingType>SMTP</RoutingType>
    </Email>
    <AttendeeType>Required</AttendeeType>
    <ExcludeConflicts>>false</ExcludeConflicts>
</MailboxData>
</MailboxDataArray>
<FreeBusyViewOptions xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
    <TimeWindow>
        <StartTime>2008-01-20T00:00:00</StartTime>
        <EndTime>2008-01-21T00:00:00</EndTime>
    </TimeWindow>
    <MergedFreeBusyIntervalInMinutes>30</MergedFreeBusyIntervalInMinutes>
    <RequestedView>Detailed</RequestedView>
</FreeBusyViewOptions>
</GetUserAvailabilityRequest>
</soap:Body>
</soap:Envelope>

```

4.2 GetUserAvailability Response

The following is an example of a successful response from the Availability Web service.

```

<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <soap:Header>
        <t:ServerVersionInfo MajorVersion="8" MinorVersion="1" MajorBuildNumber="240"
MinorBuildNumber="5" xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types" />
    </soap:Header>
    <soap:Body>
        <GetUserAvailabilityResponse
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
            <FreeBusyResponseArray>
                <FreeBusyResponse>
                    <ResponseMessage ResponseClass="Success">
                        <ResponseCode>NoError</ResponseCode>
                    </ResponseMessage>
                    <FreeBusyView>
                        <FreeBusyViewType
xmlns="http://schemas.microsoft.com/exchange/services/2006/types">FreeBusy</FreeBusyViewType>
                        <CalendarEventArray
xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
                            <CalendarEvent>
                                <StartTime>2008-01-21T11:30:00</StartTime>
                                <EndTime>2008-01-21T14:00:00</EndTime>
                                <BusyType>Tentative</BusyType>
                            </CalendarEvent>
                        </CalendarEventArray>
                    </FreeBusyView>
                </FreeBusyResponse>
            </FreeBusyResponseArray>
        </GetUserAvailabilityResponse>
    </soap:Body>
</soap:Envelope>

```

```

    </CalendarEvent>
  <CalendarEvent>
    <StartTime>2008-01-21T13:00:00</StartTime>
    <EndTime>2008-01-21T14:00:00</EndTime>
    <BusyType>Tentative</BusyType>
  </CalendarEvent>
</CalendarEventArray>
<WorkingHours xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
  <TimeZone>
    <Bias>480</Bias>
    <StandardTime>
      <Bias>0</Bias>
      <Time>02:00:00</Time>
      <DayOrder>1</DayOrder>
      <Month>11</Month>
      <DayOfWeek>Sunday</DayOfWeek>
    </StandardTime>
    <DaylightTime>
      <Bias>-60</Bias>
      <Time>02:00:00</Time>
      <DayOrder>2</DayOrder>
      <Month>3</Month>
      <DayOfWeek>Sunday</DayOfWeek>
    </DaylightTime>
  </TimeZone>
  <WorkingPeriodArray>
    <WorkingPeriod>
      <DayOfWeek>Monday Tuesday Wednesday Thursday Friday</DayOfWeek>
      <StartTimeInMinutes>480</StartTimeInMinutes>
      <EndTimeInMinutes>1020</EndTimeInMinutes>
    </WorkingPeriod>
  </WorkingPeriodArray>
</WorkingHours>
</FreeBusyView>
</FreeBusyResponse>
<FreeBusyResponse>
  <ResponseMessage ResponseClass="Success">
    <ResponseCode>NoError</ResponseCode>
  </ResponseMessage>
  <FreeBusyView>
    <FreeBusyViewType
xmlns="http://schemas.microsoft.com/exchange/services/2006/types">Detailed</FreeBusyViewType>
  <CalendarEventArray
xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
    <CalendarEvent>
      <StartTime>2008-01-21T08:00:00</StartTime>
      <EndTime>2008-01-21T09:00:00</EndTime>
      <BusyType>Tentative</BusyType>
      <CalendarEventDetails>
<ID>00000000CEB2AC9CFA28D311AECE008C707F197070019398D273324D3118A2B0008C7E9A569000000A24590
000603ECC64E5A9D843AFA932BEBCE2DE3D0002B8745C820000</ID>
      <Subject>Meeting1</Subject>
      <Location>Location1</Location>
      <IsMeeting>true</IsMeeting>
      <IsRecurring>false</IsRecurring>
      <IsException>false</IsException>
      <IsReminderSet>false</IsReminderSet>
      <IsPrivate>false</IsPrivate>
    </CalendarEvent>
  </CalendarEventArray>
</FreeBusyView>
</FreeBusyResponse>

```

```

    </CalendarEventDetails>
  </CalendarEvent>
<CalendarEvent>
  <StartTime>2008-01-21T13:00:00</StartTime>
  <EndTime>2008-01-21T14:00:00</EndTime>
  <BusyType>Busy</BusyType>
  <CalendarEventDetails>
<ID>00000000CEB2AC9CFA28D311AECE0008C707F197070019398D273324D3118A2B0008C7E9A569000000A24590
000EF70892B18E20546A69506A5B037FFF60034E85A28180000</ID>
  <Subject>Meeting2</Subject>
  <Location>Location2</Location>
  <IsMeeting>>true</IsMeeting>
  <IsRecurring>>false</IsRecurring>
  <IsException>>false</IsException>
  <IsReminderSet>>false</IsReminderSet>
  <IsPrivate>>false</IsPrivate>
  </CalendarEventDetails>
</CalendarEvent>
<CalendarEvent>
  <StartTime>2008-01-21T14:30:00</StartTime>
  <EndTime>2008-01-21T15:00:00</EndTime>
  <BusyType>Busy</BusyType>
  <CalendarEventDetails>
<ID>00000000CEB2AC9CFA28D311AECE0008C707F197070019398D273324D3118A2B0008C7E9A569000000A24590
0005B0217B934765A46963D785DF0840DDC00B35D7DF3C80000</ID>
  <Subject>Meeting3</Subject>
  <Location>my office</Location>
  <IsMeeting>>true</IsMeeting>
  <IsRecurring>>true</IsRecurring>
  <IsException>>false</IsException>
  <IsReminderSet>true</IsReminderSet>
  <IsPrivate>>false</IsPrivate>
  </CalendarEventDetails>
</CalendarEvent>
</CalendarEventArray>
<WorkingHours xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
  <TimeZone>
    <Bias>480</Bias>
    <StandardTime>
      <Bias>0</Bias>
      <Time>02:00:00</Time>
      <DayOrder>1</DayOrder>
      <Month>11</Month>
      <DayOfWeek>Sunday</DayOfWeek>
    </StandardTime>
    <DaylightTime>
      <Bias>-60</Bias>
      <Time>02:00:00</Time>
      <DayOrder>2</DayOrder>
      <Month>3</Month>
      <DayOfWeek>Sunday</DayOfWeek>
    </DaylightTime>
  </TimeZone>
  <WorkingPeriodArray>
    <WorkingPeriod>
      <DayOfWeek>Monday Tuesday Wednesday Thursday Friday</DayOfWeek>
      <StartTimeInMinutes>480</StartTimeInMinutes>
    </WorkingPeriod>
  </WorkingPeriodArray>

```

```

        <EndTimeInMinutes>1020</EndTimeInMinutes>
      </WorkingPeriod>
    </WorkingPeriodArray>
  </WorkingHours>
</FreeBusyView>
</FreeBusyResponse>
</FreeBusyResponseArray>
</GetUserAvailabilityResponse>
</soap:Body>
</soap:Envelope>

```

4.3 Unsuccessful Response

4.3.1 SOAP Exception

The following is an example of a SOAP exception that is thrown when the **MailboxData** array is empty.

```

<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Header>
    <t:ServerVersionInfo MajorVersion="8" MinorVersion="1" MajorBuildNumber="240"
MinorBuildNumber="5" xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types" />
  </soap:Header>
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:Client</faultcode>

      <faultstring>Microsoft.Exchange.InfoWorker.Common.Availability.IdentityArrayEmptyException:
The MailboxData array is empty. --- The MailboxData array is empty.</faultstring>
      <faultactor>https://server/ews/exchange.asmx</faultactor>
      <detail>
        <ErrorCode
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">5001</ErrorCode>
        </detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>

```

4.3.2 GetUserAvailability Error response

The following is an example where a mailbox in the **MailboxData** array cannot be found in the directory service.

```

<?xml version="1.0" encoding="utf-8" ?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchemainstance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Header>
    <t:ServerVersionInfo MajorVersion="8" MinorVersion="1" MajorBuildNumber="240"
MinorBuildNumber="5" xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types" />
  </soap:Header>
  <soap:Body>

```



```

    <GetUserAvailabilityResponse
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
  <FreeBusyResponseArray>
    <FreeBusyResponse>
      <ResponseMessage ResponseClass="Error">
        <MessageText>
          Unable to resolve email address <>SMTP:nouser@example.com to an Active
Directory object.
        </MessageText>
        <ResponseCode>ErrorMailRecipientNotFound</ResponseCode>
        <DescriptiveLinkKey>0</DescriptiveLinkKey>
        <MessageXml>
          <ExceptionType
xmlns="http://schemas.microsoft.com/exchange/services/2006/errors">Microsoft.Exchange.InfoWo r
ker.Common.Availability.MailRecipientNotFoundException</ExceptionType>
          <ExceptionCode
xmlns="http://schemas.microsoft.com/exchange/services/2006/errors">5009</ExceptionCode>
        </MessageXml>
      </ResponseMessage>
    </FreeBusyResponse>
  </FreeBusyResponseArray>
  <FreeBusyView>
    <FreeBusyViewType
xmlns="http://schemas.microsoft.com/exchange/services/2006/types">None</FreeBusyViewType>
  </FreeBusyView>
</FreeBusyResponse>
</FreeBusyResponseArray>
</GetUserAvailabilityResponse>
</soap:Body>
</soap:Envelope>

```

5 Security

5.1 Security Considerations for Implementers

The Availability service does not use additional security mechanisms.

5.2 Index of Security Parameters

None.

6 Appendix A: Full WSDL

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

Section	File name	Description
WSDL	MS-OXWAVLS.wsdl	Contains the WSDL for the implementation of this protocol.
Types Schema	MS-OXWAVLS-types.xsd	Contains the XML schema type definitions that are used in this protocol.
Messages Schema	MS-OXWAVLS-messages.xsd	Contains the XML schema message definitions that are used in this protocol.

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

6.1 WSDL

This section contains the contents of the MS-OXWAVLS.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"
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 id="messages" elementFormDefault="qualified" version="Exchange2010"
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">
      <xs:include schemaLocation="MS-OXWAVLS-messages.xsd"/>
    </xs:schema>
  </wsdl:types>
  <wsdl:message name="GetUserAvailabilitySoapIn">
    <wsdl:part name="GetUserAvailabilityRequest"
element="tns:GetUserAvailabilityRequest"/>
  </wsdl:message>
  <wsdl:message name="GetUserAvailabilitySoapOut">
    <wsdl:part name="GetUserAvailabilityResult"
element="tns:GetUserAvailabilityResponse"/>
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
  </wsdl:message>
  <wsdl:portType name="ExchangeServicePortType">
    <wsdl:operation name="GetUserAvailability">
      <wsdl:input message="tns:GetUserAvailabilitySoapIn"/>
      <wsdl:output message="tns:GetUserAvailabilitySoapOut"/>
    </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>
  </wsdl:binding>
</wsdl:definitions>
```

```

<soap:binding transport="http://schemas.xmlsoap.org/soap/http" style="document"/>
<wsdl:operation name="GetUserAvailability">
  <soap:operation soapAction="http://schemas.microsoft.com/exchange/
    services/2006/messages/GetUserAvailability"/>
  <wsdl:input>
    <soap:body parts="GetUserAvailabilityRequest" use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap:body parts="GetUserAvailabilityResult" use="literal"/>
    <soap:header message="tns:GetUserAvailabilitySoapOut"
      part="ServerVersion" use="literal"/>
  </wsdl:output>
</wsdl:operation>
</wsdl:binding>
</wsdl:definitions>

```

6.2 Types Schema

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

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

Defining specification	File name
[MS-OXWSCDATA] , section 6.2	MS-OXWSCDATA-types.xsd

```

<?xml version="1.0" encoding="utf-8"?>
<xs:schema 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/types"
  elementFormDefault="qualified"
  version="Exchange2010" id="types">
  <xs:import namespace="http://www.w3.org/XML/1998/namespace" />
  <xs:include schemaLocation="MS-OXWSCDATA-types.xsd" />
  <xs:simpleType name="MeetingAttendeeType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Organizer"/>
      <xs:enumeration value="Required"/>
      <xs:enumeration value="Optional"/>
      <xs:enumeration value="Room"/>
      <xs:enumeration value="Resource"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="CalendarEventDetails">
    <xs:sequence>
      <xs:element name="ID" type="xs:string" minOccurs="0"/>
      <xs:element name="Subject" type="xs:string" minOccurs="0"/>
      <xs:element name="Location" type="xs:string" minOccurs="0"/>
      <xs:element name="IsMeeting" type="xs:boolean"/>
      <xs:element name="IsRecurring" type="xs:boolean"/>
      <xs:element name="IsException" type="xs:boolean"/>
      <xs:element name="IsReminderSet" type="xs:boolean"/>
      <xs:element name="IsPrivate" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>

```

```

</xs:complexType>
<xs:complexType name="CalendarEvent">
  <xs:sequence>
    <xs:element name="StartTime" type="xs:dateTime"/>
    <xs:element name="EndTime" type="xs:dateTime"/>
    <xs:element name="BusyType" type="t:LegacyFreeBusyType"/>
    <xs:element name="CalendarEventDetails" type="t:CalendarEventDetails"
minOccurs="0"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ArrayOfCalendarEvent">
  <xs:sequence>
    <xs:element name="CalendarEvent" type="t:CalendarEvent" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Mailbox" type="t:EmailAddress"/>
<xs:simpleType name="FreeBusyViewType">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None"/>
        <xs:enumeration value="MergedOnly"/>
        <xs:enumeration value="FreeBusy"/>
        <xs:enumeration value="FreeBusyMerged"/>
        <xs:enumeration value="Detailed"/>
        <xs:enumeration value="DetailedMerged"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
<xs:complexType name="FreeBusyViewOptionsType">
  <xs:sequence>
    <xs:element name="TimeWindow" type="t:Duration"/>
    <xs:element name="MergedFreeBusyIntervalInMinutes" type="xs:int" minOccurs="0"/>
    <xs:element name="RequestedView" type="t:FreeBusyViewType" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="FreeBusyViewOptions" type="t:FreeBusyViewOptionsType"/>
<xs:complexType name="WorkingPeriod">
  <xs:sequence>
    <xs:element name="DayOfWeek" type="t:DaysOfWeekType"/>
    <xs:element name="StartTimeInMinutes" type="xs:int"/>
    <xs:element name="EndTimeInMinutes" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ArrayOfWorkingPeriod">
  <xs:sequence>
    <xs:element name="WorkingPeriod" type="t:WorkingPeriod" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="SerializableTimeZoneTime">
  <xs:sequence>
    <xs:element name="Bias" type="xs:int"/>
    <xs:element name="Time" type="xs:string"/>
    <xs:element name="DayOrder" type="xs:short"/>
    <xs:element name="Month" type="xs:short"/>
    <xs:element name="DayOfWeek" type="t:DaysOfWeekType"/>

```

```

        <xs:element name="Year" type="xs:string" minOccurs="0"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="SerializableTimeZone">
    <xs:sequence>
        <xs:element name="Bias" type="xs:int"/>
        <xs:element name="StandardTime" type="t:SerializableTimeZoneTime"/>
        <xs:element name="DaylightTime" type="t:SerializableTimeZoneTime"/>
    </xs:sequence>
</xs:complexType>
<xs:element name="TimeZone" type="t:SerializableTimeZone"/>
<xs:complexType name="WorkingHours">
    <xs:sequence>
        <xs:element name="TimeZone" type="t:SerializableTimeZone"/>
        <xs:element name="WorkingPeriodArray" type="t:ArrayOfWorkingPeriod"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="FreeBusyView">
    <xs:sequence>
        <xs:element name="FreeBusyViewType" type="t:FreeBusyViewType"/>
        <xs:element name="MergedFreeBusy" type="xs:string" minOccurs="0"/>
        <xs:element name="CalendarEventArray" type="t:ArrayOfCalendarEvent"
minOccurs="0"/>
        <xs:element name="WorkingHours" type="t:WorkingHours" minOccurs="0"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="MailboxData">
    <xs:sequence>
        <xs:element name="Email" type="t:EmailAddress"/>
        <xs:element name="AttendeeType" type="t:MeetingAttendeeType"/>
        <xs:element name="ExcludeConflicts" type="xs:boolean" minOccurs="0"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="ArrayOfMailboxData">
    <xs:sequence>
        <xs:element name="MailboxData" type="t:MailboxData" nillable="true" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:simpleType name="SuggestionQuality">
    <xs:restriction base="xs:string">
        <xs:enumeration value="Excellent"/>
        <xs:enumeration value="Good"/>
        <xs:enumeration value="Fair"/>
        <xs:enumeration value="Poor"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="SuggestionsViewOptionsType">
    <xs:sequence>
        <xs:element name="GoodThreshold" type="xs:int" minOccurs="0"/>
        <xs:element name="MaximumResultsByDay" type="xs:int" minOccurs="0"/>
        <xs:element name="MaximumNonWorkHourResultsByDay" type="xs:int" minOccurs="0"/>
        <xs:element name="MeetingDurationInMinutes" type="xs:int" minOccurs="0"/>
        <xs:element name="MinimumSuggestionQuality" type="t:SuggestionQuality"
minOccurs="0"/>
        <xs:element name="DetailedSuggestionsWindow" type="t:Duration"/>
        <xs:element name="CurrentMeetingTime" type="xs:dateTime" minOccurs="0"/>
        <xs:element name="GlobalObjectId" type="xs:string" minOccurs="0"/>
    </xs:sequence>

```

```

</xs:complexType>
<xs:element name="SuggestionsViewOptions" type="t:SuggestionsViewOptionsType"/>
<xs:complexType name="ArrayOfAttendeeConflictData">
  <xs:choice minOccurs="0" maxOccurs="unbounded">
    <xs:element name="UnknownAttendeeConflictData"
type="t:UnknownAttendeeConflictData" nillable="true"/>
    <xs:element name="IndividualAttendeeConflictData"
type="t:IndividualAttendeeConflictData" nillable="true"/>
    <xs:element name="TooBigGroupAttendeeConflictData"
type="t:TooBigGroupAttendeeConflictData" nillable="true"/>
    <xs:element name="GroupAttendeeConflictData"
type="t:GroupAttendeeConflictData" nillable="true"/>
  </xs:choice>
</xs:complexType>
<xs:complexType name="AttendeeConflictData" abstract="true"/>
<xs:complexType name="UnknownAttendeeConflictData" mixed="false">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData"/>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="TooBigGroupAttendeeConflictData" mixed="false">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData"/>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="IndividualAttendeeConflictData" mixed="false">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData">
      <xs:sequence>
        <xs:element name="BusyType" type="t:LegacyFreeBusyType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="GroupAttendeeConflictData" mixed="false">
  <xs:complexContent mixed="false">
    <xs:extension base="t:AttendeeConflictData">
      <xs:sequence>
        <xs:element name="NumberOfMembers" type="xs:int"/>
        <xs:element name="NumberOfMembersAvailable" type="xs:int"/>
        <xs:element name="NumberOfMembersWithConflict" type="xs:int"/>
        <xs:element name="NumberOfMembersWithNoData" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="Suggestion">
  <xs:sequence>
    <xs:element name="MeetingTime" type="xs:dateTime"/>
    <xs:element name="IsWorkTime" type="xs:boolean"/>
    <xs:element name="SuggestionQuality" type="t:SuggestionQuality"/>
    <xs:element name="AttendeeConflictDataArray" type="t:ArrayOfAttendeeConflictData"
minOccurs="0"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ArrayOfSuggestion">
  <xs:sequence>
    <xs:element name="Suggestion" type="t:Suggestion" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>

```

```

    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="SuggestionDayResult">
    <xs:sequence>
      <xs:element name="Date" type="xs:dateTime"/>
      <xs:element name="DayQuality" type="t:SuggestionQuality"/>
      <xs:element name="SuggestionArray" type="t:ArrayOfSuggestion" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="ArrayOfSuggestionDayResult">
    <xs:sequence>
      <xs:element name="SuggestionDayResult"
        type="t:SuggestionDayResult" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:simpleType name="ExternalAudience">
    <xs:restriction base="xs:string">
      <xs:enumeration value="None"/>
      <xs:enumeration value="Known"/>
      <xs:enumeration value="All"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>

```

6.3 Messages Schema

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

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

Defining specification	File name
[MS-OXWSCDATA] , section 6.2	MS-OXWSCDATA-messages.xsd

```

<xs:schema xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
  xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
  xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
  elementFormDefault="qualified" version="Exchange2010" id="messages">
  <xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
  <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
    schemaLocation="MS-OXWOLF-types.xsd"/>
  <xs:complexType name="GetUserOofSettingsRequest" mixed="false">
    <xs:complexContent mixed="false">
      <xs:extension base="m:BaseRequestType">
        <xs:sequence>
          <xs:element ref="t:Mailbox"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="GetUserOofSettingsRequest" type="tns:GetUserOofSettingsRequest"/>
  <xs:complexType name="GetUserOofSettingsResponse">

```



```

    <xs:sequence>
      <xs:element name="ResponseMessage" type="m:ResponseMessageType"/>
      <xs:element ref="t:OofSettings" minOccurs="0"/>
      <xs:element name="AllowExternalOof" type="t:ExternalAudience" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="GetUserOofSettingsResponse" type="tns:GetUserOofSettingsResponse"/>
  <xs:complexType name="SetUserOofSettingsRequest" mixed="false">
    <xs:complexContent mixed="false">
      <xs:extension base="m:BaseRequestType">
        <xs:sequence>
          <xs:element ref="t:Mailbox"/>
          <xs:element ref="t:UserOofSettings"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="SetUserOofSettingsRequest" type="tns:SetUserOofSettingsRequest"/>
  <xs:complexType name="SetUserOofSettingsResponse">
    <xs:sequence>
      <xs:element name="ResponseMessage" type="m:ResponseMessageType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="SetUserOofSettingsResponse" type="tns:SetUserOofSettingsResponse"/>
</xs:schema>

```

7 Appendix B: Product Behavior

The information in this specification is applicable to the following product versions. References to product versions include released service packs.

- Microsoft Office Outlook 2007
- Microsoft Exchange Server 2007
- Microsoft Outlook 2010
- Microsoft Exchange Server 2010

Exceptions, if any, are noted below. If a service pack number appears with the product version, behavior changed in that service pack. The new behavior also applies to subsequent service packs of the product unless otherwise specified.

Unless otherwise specified, any statement of optional behavior in this specification 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 product does not follow the prescription.

[<1> Section 1.5:](#) Outlook 2007 and Outlook 2010 use Windows Integrated Authentication to request free/busy information from Exchange 2007 and Exchange 2010.

[<2> Section 2.1.1:](#) The X-ClientStatistics header is not sent by versions of Outlook earlier than Outlook 2010. The X-ClientStatistics header is ignored by Exchange server versions earlier than Exchange 2010.

[<3> Section 2.2:](#) The **MessageID** header is not included in requests that are sent by Outlook 2007 or earlier versions. The **MessageID** header is ignored by Exchange 2007 and earlier versions.

[<4> Section 2.2.2.1:](#) Free/busy example:

[XML]

```
<FreeBusyViewOptions xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
  <TimeWindow>
    <StartTime>2008-01-30T00:00:00</StartTime>
    <EndTime>2008-01-31T00:00:00</EndTime>
  </TimeWindow>
  <MergedFreeBusyIntervalInMinutes>60</MergedFreeBusyIntervalInMinutes>
  <RequestedView>FreeBusy</RequestedView>
</FreeBusyViewOptions>
```

And the **CalendarEventArray** in the response is

[XML]

```
<CalendarEventArray xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
  <CalendarEvent>
    <StartTime>2008-01-30T12:00:00</StartTime>
    <EndTime>2008-01-30T14:00:00</EndTime>
    <BusyType>OOF</BusyType>
  </CalendarEvent>
```

```

<CalendarEvent>
  <StartTime>2008-01-30T13:30:00</StartTime>
  <EndTime>2008-01-30T14:30:00</EndTime>
  <BusyType>Busy</BusyType>
</CalendarEvent></CalendarEventArray>

```

The corresponding **MergedFreeBusy** string will be the following: 000000000000332000000000

Between 1:30 and 2:00 P.M., the Mailbox has two overlapping appointments, one marked OOF and the other marked Busy. The Merged Free/Busy string for that slot must be marked OOF. The No data value (4) is not returned in the Merged Free/Busy string.

[<5> Section 2.2.2.1:](#) The Availability service supports this by doing an access check with the requestor's credentials against the permissions that have been set on the Mailbox owner's Calendar folder. The following shows how the access level that is returned from this check is treated.

RequestedView (from the GetUserAvailability Request)	Allowed view based on Access level		
	Detailed	FreeBusy	No Access
None	-	-	-
MergedOnly	Merged	Merged	Error (InvalidAccessLevelException)
FreeBusy	FreeBusy	FreeBusy	Error (InvalidAccessLevelException)
FreeBusyMerged	FreeBusyMerged	FreeBusyMerged	Error (InvalidAccessLevelException)
Detailed	Detailed	FreeBusy	Error (InvalidAccessLevelException)
DetailedMerged	DetailedMerged	FreeBusyMerged	Error (InvalidAccessLevelException)

[<6> Section 2.2.3.1:](#) When a meeting request contains an invalid e-mail address, the server does not include an UnknownAttendeeConflictData element.

[<7> Section 2.2.3.21:](#) Exchange 2007 does not return the <<SuggestionQuality>> element in a <<Suggestion>> element when the value of the <<SuggestionQuality>> element is "Poor".

[<8> Section 2.2.3.22:](#) Exchange 2007 does not return the <<SuggestionArray>> element in a <<SuggestionDayResult>> element when the value of the <<DayQuality>> element is "Poor".

[<9> Section 3.1.4.1.7.1:](#) When a user creates a meeting request, adds attendees, and switches to the scheduling assistant to view the attendees' free/busy status, Outlook 2007 and Outlook 2010 issue a request to the Availability service.

8 Change Tracking

This section identifies changes made to [MS-OXWAVLS] protocol documentation between November 2009 and February 2010 releases. Changes are classed as major, minor, or editorial.

Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements or functionality.
- An extensive rewrite, addition, or deletion of major portions of content.
- A protocol is deprecated.
- The removal of a document from the documentation set.
- Changes made for template compliance.

Minor changes do not affect protocol interoperability or implementation. Examples are updates to fix technical accuracy or ambiguity at the sentence, paragraph, or table level.

Editorial changes apply to grammatical, formatting, and style issues.

No changes means that the document is identical to its last release.

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

- New content added.
- Content update.
- Content removed.
- New product behavior note added.
- Product behavior note updated.
- Product behavior note removed.
- New protocol syntax added.
- Protocol syntax updated.
- Protocol syntax removed.
- New content added due to protocol revision.
- Content updated due to protocol revision.
- Content removed due to protocol revision.
- New protocol syntax added due to protocol revision.
- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.
- New content added for template compliance.
- Content updated for template compliance.

- Content removed for template compliance.
- Obsolete document removed.

Editorial changes always have the revision type "Editorially updated."

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

Protocol syntax refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.

Protocol revision refers to changes made to a protocol that affect the bits that are sent over the wire.

Changes are listed in the following table. If you need further information, please contact protocol@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Revision Type
1.4 Relationship to Other Protocols	54022 Added SOAP over HTTP figure.	Y	New content added.
2.1.1 X-ClientStatistics Header	53313 Added section describing new X-header.	Y	New content added.
2.2 Message Syntax	53313 Added information about the MessageID SOAP header requirement.	Y	New content added.
4.1 GetUserAvailability Request	53313 Added HTTP header and SOAP message ID header to example.	Y	Content update.
6 Appendix A: Full WSDL	54019 Moved WSDL to a separate section and added xsd files.	Y	Content removed.
6.1 WSDL	54019 Added new section.	N	New content added.
6.2 Types Schema	54019 Added new section.	Y	New content added.
6.3 Messages Schema	54019 Added new section.	Y	New content added.

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