

# [MS-ASEMAIL]: ActiveSync E-Mail Class Protocol Specification

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# 1 Introduction

This document specifies the XML representation of e-mail data sent or received on mobile devices that communicate by using the ActiveSync protocols.

## 1.1 Glossary

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

- class**
- collection**
- conversation**
- Coordinated Universal Time (UTC)**
- delivery receipt**
- message database (MDB)**
- non-delivery report (NDR)**
- non-read receipt**
- read receipt**
- recipient**
- WAP Binary XML (WBXML)**

The following terms are specific to this document:

**Voice over Internet Protocol (VoIP):** The transmission of voice capabilities over the internet.

**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

[E164] International Telecom Union, "The international public telecommunication numbering plan", February 2005, <http://www.itu.int/rec/T-REC-E.164-200502-1/en>.

[MS-ASAIRS] Microsoft Corporation, "ActiveSync AirSyncBase Namespace Protocol Specification", December 2008.

[MS-ASCMD] Microsoft Corporation, "ActiveSync Command Reference Protocol Specification", December 2008.

[MS-ASDTYPE] Microsoft Corporation, "ActiveSync Data Types Protocol Specification", December 2008.

[MS-ASWBXML] Microsoft Corporation, "ActiveSync WAP Binary XML (WBXML) Protocol Specification", December 2008.

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

[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>.

[XML] Bray, T., et al., "Extensible Markup Language (XML) 1.0 (Fifth Edition)", <http://www.w3.org/TR/REC-xml/>.

### **1.2.2 Informative References**

None.

### **1.3 Protocol Overview**

This document specifies the XML representation of e-mail data sent or received on mobile devices that communicate by using the ActiveSync protocols. E-mail data is included in protocol command requests when e-mail data is being sent from the client to the server, and is included in protocol command responses when e-mail data is retrieved from the server. E-mail data includes header information such as to, from, and subject, as well as body, attachment, flag, and meeting request information.

### **1.4 Relationship to Other Protocols**

This document specifies the XML representation of e-mail message data that is sent and received by the protocol commands, as specified in [MS-ASCMD].

All data types in this document conform to the data type definitions specified in [MS-ASDTYPE].

Estimated data size, body content, and data truncation information about e-mail messages are not part of the E-mail **class** data. Instead, that data is contained in the AirSyncBase namespace, as specified in [MS-ASAIRS].

The code page used to encode E-mail class data is specified in [MS-ASWBXML].

### **1.5 Prerequisites/Preconditions**

None.



## 1.6 *Applicability Statement*

None.

## 1.7 *Versioning and Localization*

None.

## 1.8 *Vendor-Extensible Fields*

None.

## 1.9 *Standards Assignments*

None.

# 2 Messages

## 2.1 *Transport*

The E-mail **class** consists of a series of XML types and elements that are embedded inside of a command request or response. The complex types and elements of the E-mail class are defined in three namespaces: Email, Email2<1>, and AirSyncBase. All of the E-mail class complex types and elements are specified in this document; however, complex types and elements defined in the AirSyncBase namespace are further specified in [MS-ASAIRS].

## 2.2 *Message Syntax*

The markup **MUST** be well-formed XML, as specified in [XML], using the commands specified in [MS-ASCMD].

The XML markup that constitutes the request body or the response body is transmitted between the client and server using WAP Binary XML (WBXML) [MS-ASWBXML].

The XML schema definition for the E-mail **class** is as follows. This schema represents the full set of data returned by the **Sync** command.

```
<?xml version="1.0" ?>
<xs:schema xmlns:tns="EMAIL:" attributeFormDefault="unqualified"
elementFormDefault="qualified"
targetNamespace="EMAIL:" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:A="AirSyncBase:">
  <xs:import namespace="AirSyncBase" />
  <xs:element name="To" type="xs:string" />
  <xs:element name="Cc" type="xs:string" />
  <xs:element name="From" type="xs:string" />
  <xs:element name="Subject" type="xs:string" />
  <xs:element name="ReplyTo" type="xs:string" />

  <xs:element name="DateReceived" type="xs:dateTime" />
```

```

<xs:element name="DisplayTo" type="xs:string" />
<xs:element name="ThreadTopic" type="xs:string" />
<xs:element name="Importance" type="xs:unsignedByte" />
<xs:element name="Read" type="xs:unsignedByte" />
<xs:element name="Attachments" type="A:Attachments" >
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Attachment">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="DisplayName"
type="xs:string" />
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType> </xs:element>
  <xs:element name="Body" type="A:Body" />
  <xs:element name="MessageClass" type="xs:string" />
  <xs:element name="MeetingRequest">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="AllDayEvent"
type="xs:unsignedByte" />
        <xs:element name="StartTime" type="xs:dateTime" />
        <xs:element name="DtStamp" type="xs:dateTime" />
        <xs:element name="EndTime" type="xs:dateTime" />
        <xs:element name="InstanceType"
type="xs:unsignedByte" />
        <xs:element minOccurs="0" name="Location"
type="xs:string" />
        <xs:element name="Organizer" type="xs:string" />
        <xs:element minOccurs="0" name="RecurrenceId"
type="xs:dateTime" />
        <xs:element name="Reminder" type="xs:unsignedShort"
/>
        <xs:element name="ResponseRequested"
type="xs:unsignedByte" />
        <xs:element name="Recurrences">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="Recurrence">
                <xs:complexType>
                  <xs:sequence>
                    <xs:element
name="Type" type="xs:unsignedByte" />
                    <xs:element
name="Interval" type="xs:integer" />
                    <xs:element
name="Until" type="xs:datetime" />
                    <xs:element
name="Occurrences" type="xs:integer" />
                    <xs:element
name="WeekOfMonth" type="xs:integer" />

```

```

name="DayOfMonth" type="xs:integer" />
name="DayOfWeek" type="xs:integer" />
name="MonthOfYear" type="xs:integer" />
</xs:sequence>
</xs:complexType>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="Sensitivity" type="xs:integer" />
<xs:element name="IntDBusyStatus" type="xs:integer" />
/>
<xs:element name="TimeZone" type="xs:string" />
<xs:element name="GlobalObjId" type="xs:string" />
<xs:element name="Categories">
  <xs:complexType>
    <xs:sequence>
      <xs:element maxOccurs="300"
name="Category" type="xs:string" />
      <xs:element
name="DisallowNewTimeProposal" type="xs:unsignedByte" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="InternetCPID" type="xs:string" />
<xs:element name="Flag">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Subject" type="xs:string" />
      <xs:element name="Status" type="xs:integer" />
      <xs:element name="FlagType" type="xs:string" />
      <xs:element name="DateCompleted" type="xs:dateTime" />
      <xs:element name="CompleteTime" type="xs:dateTime" />
      <xs:element name="StartDate" type="xs:dateTime" />
      <xs:element name="DueDate" type="xs:dateTime" />
      <xs:element name="UTCStartDate" type="xs:dateTime" />
      <xs:element name="UTCEndDate" type="xs:dateTime" />
      <xs:element name="ReminderSet"
type="xs:unsignedByte" />
      <xs:element name="ReminderTime" type="xs:dateTime" />
      <xs:element name="OrdinalDate" type="xs:dateTime" />
      <xs:element name="SubOrdinalDate"
type="xs:dateTime" />
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

```

        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="ContentClass" type="xs:string" />
<xs:element name="NativeBodyType" type="A:NativeBodyType"
/></xs:schema>

```

The XML schema definition for the Email2 Class in ActiveSync is as follows.

```

<?xml version="1.0" ?>
<xs:schema xmlns:tns="Email2:" attributeFormDefault="unqualified"
elementFormDefault="qualified" targetNamespace="CONTACTS2:"
xmlns:xs=http://www.w3.org/2001/XMLSchema xmlns:A="AirSyncBase:">
  <xs:import namespace="AirSyncBase" />
  <xs:element name="UmCallerID" type="xs:string" />
  <xs:element name="UmUserNotes" type="xs:string" />
  <xs:element name="UmAttOrder" type="xs:integer" />
  <xs:element name="UmAttDuration" type="xs:integer" />
  <xs:element name="ConversationId" type="xs:string" />
  <xs:element name="ConversationIndex" type="xs:string" />
  <xs:element name="LastVerbExecuted" type="xs:integer" />
  <xs:element name="LastVerbExecutionTime" type="xs:dateTime" />
  <xs:element name="ReceivedAsBcc" type="xs:unsignedByte" />
  <xs:element name="Sender" type="xs:string" />
</xs:schema>

```

## 2.2.1 Complex Types

The following table summarizes the set of common XML schema complex type definitions defined by this specification.

Complex Type	Description
Attachments	The collection of Attachment elements.
Attachments.Attachment	The e-mail attachment.
Body	A description of the body text, along with its data.
MeetingRequest	A meeting request accompanying an e-mail message.
MeetingRequest.Categories	A collection of <b>Category</b> elements belonging to a <b>MeetingRequest</b> .
MeetingRequest.Recurrences	A collection of <b>Recurrence</b> elements.
MeetingRequest.Recurrences.Recurrence	A collection of <b>Recurrence</b> elements that describe when and how often this meeting recurs.
Flag	The flag associated with the item, along with its current status.

### 2.2.1.1 Attachments

The **Attachments** type is an optional **container** ([MS-ASDTYPE] section 2.8) type that contains a collection of **Attachment** elements.

The **Attachments** type is part of the AirSyncBase namespace, and is further specified in [MS-ASAIRS] section 2.2.1.1.

### 2.2.1.2 Attachments.Attachment

The **Attachment** type is a **container** ([MS-ASDTYPE] section 2.8) type that represents an e-mail attachment.

If an **Attachments** type is defined, it MUST contain one or more instances of this type.

The **Attachment** type is part of the AirSyncBase namespace, and is further specified in [MS-ASAIRS] section 2.2.1.2.

### 2.2.1.3 Body

The **Body** type is an optional **container** ([MS-ASDTYPE] section 2.8) type that contains the message text of the e-mail, along with associated message body data.

The **Body** type is part of the AirSyncBase namespace, and is further specified in [MS-ASAIRS] section 2.2.1.3.

### 2.2.1.4 MeetingRequest

The **MeetingRequest** type is an optional **container** ([MS-ASDTYPE] section 2.8) type.

### 2.2.1.5 MeetingRequest.Recurrences

The **MeetingRequest.Recurrences** type is a **container** ([MS-ASDTYPE] section 2.8) type that contains a **collection** of **Recurrence** elements.

The **MeetingRequest.Recurrences** type is an optional child type of the **MeetingRequest** type.

### 2.2.1.6 MeetingRequest.Recurrences.Recurrence

The **MeetingRequest.Recurrences.Recurrence** type is a **container** ([MS-ASDTYPE] section 2.8) type that describes when and how often this meeting request recurs.

If a **MeetingRequest.Recurrences** type is defined, then it MUST contain one or more instances of this type.

### 2.2.1.7 MeetingRequest.Categories

The **MeetingRequest.Categories** type is a **container** ([MS-ASDTYPE] section 2.8) type that contains the user-selected category for this message.

The **MeetingRequest.Categories** type is an optional child type of the **MeetingRequest** type.

### 2.2.1.8 Flag

The **Flag** type is an optional container ([MS-ASDTYPE] section 2.8) type that describes the flag associated with this item, along with its current status.

## 2.2.2 Elements

The following tables summarize the set of common XML schema element definitions defined by this specification. XML schema element definitions that are specific to a particular operation are described with the operation.

E-mail class elements **MUST NOT** have child elements in the command request or response.

<b>Element</b>	<b>Description</b>
<b>To</b>	The list of <b>recipients</b> .
<b>Cc</b>	The list of carbon-copy recipients.
<b>From</b>	The e-mail address of the individual who sent the message.
<b>Subject</b>	The subject of the e-mail message.
<b>ReplyTo</b>	The e-mail address to which replies will be addressed by default.
<b>DateReceived</b>	The date and time that the message was received on the server.
<b>DisplayTo</b>	The names of the primary recipients of the message.
<b>ThreadTopic</b>	The topic used in <b>conversation</b> reading.

<b>Importance</b>	The importance of the message, as determined by the sender.
<b>Read</b>	Specifies whether the message has been read.
<b>Attachments.Attachment.DisplayName</b>	The name of the attachment file as displayed to the user.
<b>Attachments.Attachment.UmAttOrder</b>	The order of electronic voice mail attachments.
<b>Attachments.Attachment.UmAttDuration</b>	The duration of electronic voicemail attachments.
<b>MessageClass</b>	The message <b>class</b> of this e-mail message.
<b>MeetingRequest.AllDayEvent</b>	Indicates whether the calendar item is an all day event.
<b>MeetingRequest.StartTime</b>	The date and time that the <b>MeetingRequest</b> element starts.
<b>MeetingRequest.DtStamp</b>	The date and time that the calendar item was created.
<b>MeetingRequest.EndTime</b>	The date and time that the <b>MeetingRequest</b> element ends.
<b>MeetingRequest.InstanceType</b>	The type of calendar item.
<b>MeetingRequest.Location</b>	The location for the calendar item.
<b>MeetingRequest.Organizer</b>	The e-mail alias of the meeting organizer.

<b>MeetingRequest.RecurrenceId</b>	A specific instance of a recurring calendar item.
<b>MeetingRequest.Reminder</b>	The number of seconds prior to the calendar item's start time that a reminder is displayed.
<b>MeetingRequest.ResponseRequested</b>	Indicates whether the originator of the meeting has requested a response.
<b>MeetingRequest.Recurrences.Recurrence.Type</b>	The recurrence type.
<b>MeetingRequest.Recurrences.Recurrence.Interval</b>	The interval between recurrences.
<b>MeetingRequest.Recurrences.Recurrence.Until</b>	The end time of a series of recurrence items.
<b>MeetingRequest.Recurrences.Recurrence.Occurrences</b>	The number of occurrences before the series ends.
<b>MeetingRequest.Recurrences.Recurrence.WeekOfMonth</b>	The week of the month.
<b>MeetingRequest.Recurrences.Recurrence.DayOfMonth</b>	The day of the month.
<b>MeetingRequest.Recurrences.Recurrence.DayOfWeek</b>	The day of the week.
<b>MeetingRequest.Recurrences.Recurrence.MonthOfYear</b>	The month of the year.
<b>MeetingRequest.Sensitivity</b>	The sensitivity level of the meeting request.
<b>MeetingRequest.IntDBusyStatus</b>	The intended busy status for the meeting request.
<b>MeetingRequest.TimeZone</b>	The time zone where the calendar item occurs.



<b>MeetingRequest.GlobalObjId</b>	The Base64-encoded global object ID for the meeting request.
<b>MeetingRequest.Categories.Category</b>	A named label for the <b>MeetingRequest</b> element.
<b>MeetingRequest.Categories.DisallowNewTimeProposal</b>	Indicates whether recipients can propose a new meeting time.
<b>InternetCPID</b>	The original code page ID from the MIME message.
<b>Flag.Subject</b>	The subject of the flag as it would appear in a task list.
<b>Flag.Status</b>	The current status of the flag.
<b>Flag.FlagType</b>	The value of the <b>Flag To: follow up</b> field.
<b>Flag.DateCompleted</b>	The date on which the flagged item was completed.
<b>Flag.CompleteTime</b>	The time at which the flagged item was marked as finished.
<b>Flag.StartDate</b>	The start date of the flagged item.
<b>Flag.DueDate</b>	The due date of the flagged item.
<b>Flag.UTCStartDate</b>	The <b>Coordinated Universal Time (UTC)</b> value of the local <b>StartDate</b> .
<b>Flag.UTCDueEndDate</b>	The <b>UTC</b> value of the local <b>DueDate</b> .
<b>Flag.ReminderSet</b>	Identifies whether a reminder has been set for this flagged item.

<b>Flag.ReminderTime</b>	The date and time that the reminder is supposed to occur.
<b>Flag.OrdinalDate</b>	The time at which the client set the flag.
<b>Flag.SubOrdinalDate</b>	A string used to sort items.
<b>NativeBodyType</b>	The format in which the item is stored on the server.
<b>ContentClass</b>	The content <b>class</b> of the data.
<b>UmCallerID</b>	The callback telephone number of the person who called or left an electronic voice message.
<b>UmUserNotes</b>	User notes related to an electronic voice message.
<b>ConversationId</b>	A unique identifier for a conversation.
<b>ConversationIndex</b>	A <b>ConversationId</b> and a set of dates and times used by clients to generate a conversation tree view.
<b>LastVerbExecuted</b>	The last action, such as reply or forward, which was taken on the message so that the client can display the appropriate icon.
<b>LastVerbExecutionTime</b>	The time when the <b>LastVerbExecuted</b> was performed on the message.

<b>ReceivedAsBcc</b>	Indicates whether the recipient was blind carbon copied on a message.
<b>Sender</b>	The user that actually sent the message when the message was not sent by the user identified by <b>From</b> .

### 2.2.2.1 To

The **To** element is an optional element that specifies the list of recipients.

The value of this element contains one or more e-mail addresses. If there are multiple e-mail addresses, then they are separated by commas.

The **To** element has a maximum length of 1024 characters.

### 2.2.2.2 Cc

The **Cc** element is an optional element that specifies the list of carbon-copied recipients of this message.

The value of this element contains one or more e-mail addresses. If there are multiple e-mail addresses, then they are separated by commas.

### 2.2.2.3 From

The **From** element is an optional element that specifies the e-mail address of the individual who sent this message.

The value of this element contains one or more e-mail addresses. If there are multiple e-mail addresses, then they are separated by commas.

The **To** element has a maximum length of 1024 characters.

### 2.2.2.4 Subject

The **Subject** element is an optional element that specifies the subject of the e-mail message.

### 2.2.2.5 ReplyTo

The **ReplyTo** element is an optional element that specifies the e-mail address to which replies will be addressed by default.

The value of this element contains one or more e-mail addresses. If there are multiple e-mail addresses, then they are separated by commas.

### 2.2.2.6 DateReceived

The **DateReceived** element is an optional element that specifies the date and time when this message was received by the current recipient. The value of this element is a date/time value, as specified in [MS-ASDTYPE].

### 2.2.2.7 DisplayTo

The **DisplayTo** element is an optional element that specifies the e-mail addresses of the primary recipients of this message.

### 2.2.2.8 ThreadTopic

The **ThreadTopic** element is an optional element that specifies the topic used for **conversation** threading.

### 2.2.2.9 Importance

The **Importance** element is an optional element that specifies the importance of the message, as determined by the sender.

The value of this element **MUST** be one of the following.

Value	Meaning
0	Low importance
1	Normal importance
2	High importance

If this element is omitted, then clients **MUST** assume 1 as the default.

### 2.2.2.10 Read

The **Read** element is an optional element that specifies whether the e-mail message has been viewed by the current recipient.

The value of this element is a **boolean** value, as specified in [MS-ASDTYPE].

### 2.2.2.11 Attachments.Attachment.DisplayName

The **Attachments.Attachment.DisplayName** element is an optional child element of the **Attachment** type that specifies the name of the attachment file as displayed to the user.

The **DisplayName** element is further specified in [MS-ASAIRS] section 2.2.2.5.

### 2.2.2.12 Attachments.Attachment.UmAttOrder

The **UmAttOrder** element<2> identifies the order of electronic voice mail attachments. The most recent voice mail attachment in an e-mail item always has a **UmAttOrder** value of 1. Whenever a new electronic voice message associated with the same e-mail item is received, the new voice attachment is appended to the end of the list and all electronic voice attachments are renumbered. This element **MUST** only be used for electronic voice message attachments. This value is set by the server and is read-only for the client.

This element can only be included on messages with a **MessageClass** prefix of **IPM.Note.Microsoft.Voicemail**, **IPM.Note.RPMSG.Microsoft.Voicemail**, or **IPM.Note.Microsoft.Missed.Voice**.

**UmAttOrder** is in the Email2 namespace.

### 2.2.2.13 Attachments.Attachment.UmAttDuration

The **UmAttDuration** element<3> specifies the duration of the most recent electronic voice mail attachment in seconds. This element **MUST** only be used for electronic voice message attachments. This value is set by the server and is read-only for the client.

This element can only be included on messages with a **MessageClass** prefix of **IPM.Note.Microsoft.Voicemail**, **IPM.Note.RPMSG.Microsoft.Voicemail**, or **IPM.Note.Microsoft.Missed.Voice**. **UmAttDuration** is in the Email2 namespace.

### 2.2.2.14 MessageClass

The **MessageClass** element is an optional element that specifies the message **class** of this e-mail message.

The value of the **MessageClass** element **SHOULD** be one of the following values. Messages with values not contained in the following table will be opened as normal e-mail messages.

Value	Meaning
IPM.Note	Normal e-mail message
IPM.InfoPathForm	An InfoPath form

IPM.Schedule.Meeting	Meeting request
IPM.Notification.Meeting	Meeting notification
IPM.Post	Post
IPM.Octel.Voice	Octel voice message
IPM.Voicenotes	Electronic voice notes
IPM.Sharing	Shared message

In addition, certain administrative messages have message classes that are derived from the message classes in the preceding table. The format is a prefix of **REPORT** and a suffix that indicates the type of report. For those administrative messages, the value of the **MessageClass** element can be one of the following values.

<b>MessageClass</b>	<b>Description</b>
REPORT.IPM.NOTE.NDR	<b>Non-delivery report (NDR)</b> for a standard message.
REPORT.IPM.NOTE.DR	<b>Delivery receipt</b> for a standard message.
REPORT.IPM.NOTE.DELAYED	Delivery receipt for a delayed message.
REPORT.IPM.NOTE.IPNRN	<b>Read receipt</b> <4> for a standard message.
REPORT.IPM.NOTE.IPNNRN	<b>Non-read receipt</b> for a standard message.
REPORT.IPM.SCHEDULE.MEETING.REQUEST.NDR	NDR for a meeting request.
REPORT.IPM.SCHEDULE.MEETING.RESP.POS.NDR	NDR for a positive meeting response (accept).
REPORT.IPM.SCHEDULE.MEETING.RESP.TENT.NDR	NDR for a tentative meeting response.
REPORT.IPM.SCHEDULE.MEETING.CANCELED.NDR	NDR for a cancelled meeting notification.
REPORT.IPM.NOTE.SMIME.NDR	NDR for a Secure MIME (S/MIME) encrypted and opaque-signed message.
REPORT.IPM.NOTE.SMIME.DR	Delivery receipt for an S/MIME encrypted and opaque-signed message.
REPORT.IPM.NOTE.SMIME.IPNRN	Read receipt for an S/MIME encrypted and opaque-signed message.
REPORT.IPM.NOTE.SMIME.IPNNRN	Non-read receipt for an S/MIME encrypted and opaque-signed message.
REPORT.IPM.NOTE.SMIME.MULTIPARTSIGNED.NDR	NDR for an S/MIME clear signed message.
REPORT.IPM.NOTE.SMIME.MULTIPARTSIGNED.DR	Delivery receipt for an S/MIME clear signed message.
REPORT.IPM.NOTE.SMIME.MULTIPARTSIGNED.IPNRN	Read receipt for an S/MIME clear signed message.
REPORT.IPM.NOTE.SMIME.MULTIPARTSIGNED.IPNNRN	Non-read receipt for an S/MIME clear signed message.

### 2.2.2.15 MeetingRequest.AllDayEvent

The **MeetingRequest.AllDayEvent** element is a required child element of the **MeetingRequest** type that specifies whether this meeting request lasts the entire day.

If the value of this element is set to **TRUE**, then the attached meeting request is an all day event.

The value of this element is a **boolean** value, as specified in [MS-ASDTYPE] section 2.3.

### 2.2.2.16 MeetingRequest.StartTime

The **MeetingRequest.StartTime** element is a required child element of the **MeetingRequest** type that specifies when this meeting begins.

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

### 2.2.2.17 MeetingRequest.DtStamp

The **MeetingRequest.DtStamp** element is a required child element of the **MeetingRequest** type that specifies the date and time this calendar item was created.

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

### 2.2.2.18 MeetingRequest.EndTime

The **MeetingRequest.EndTime** element is a required child element of the **MeetingRequest** type that specifies the date and time when the meeting ends.

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

### 2.2.2.19 MeetingRequest.InstanceType

The **MeetingRequest.InstanceType** element is a required child element of the **MeetingRequest** type that specifies whether this is a single or recurring appointment.

The value of this element is an enumeration which **MUST** be one of the following values:

Value	Meaning
0	Single appointment.
1	Master recurring appointment.
2	Single instance of a recurring appointment.
3	Exception to a recurring appointment.

#### **2.2.2.20 MeetingRequest.Location**

The **MeetingRequest.Location** element is an optional child element of the **MeetingRequest** type that specifies where this meeting will be held.

The maximum character length of this element's value is 1,023 characters.

#### **2.2.2.21 MeetingRequest.Organizer**

The **MeetingRequest.Organizer** element is an optional child element of the **MeetingRequest** type that specifies who organized this meeting.

The value of this element is an e-mail address as specified in [MS-ASDTYPE] section 2.5.

#### **2.2.2.22 MeetingRequest.RecurrenceId**

The **MeetingRequest.RecurrenceId** element is an optional child element of the **MeetingRequest** type that specifies the date and time of this recurrence of a recurring meeting.

This element **MUST** be included if this is a recurring meeting or an exception to a recurring meeting.

The value of this element **MUST** be the date and time corresponding to this instance of a recurring item.

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

#### **2.2.2.23 MeetingRequest.Reminder**

The **MeetingRequest.Reminder** element is an optional child element of the **MeetingRequest** type that specifies the number of seconds prior to the calendar item's start time that a reminder will be displayed.

#### **2.2.2.24 MeetingRequest.ResponseRequested**

The **MeetingRequest.ResponseRequested** element is an optional child element of the **MeetingRequest** type that specifies whether the organizer has requested a response to this meeting request.

#### **2.2.2.25 MeetingRequest.Recurrences.Recurrence.Type**

The **MeetingRequest.Recurrences.Recurrence.Type** element is a required child element of the **Recurrence** type that specifies how this meeting recurs.

The value of this element **MUST** be one of the following:



Value	Meaning
0	Rekurs daily.
1	Rekurs weekly.
2	Rekurs monthly on the nth day of the month.
3	Rekurs monthly.
5	Rekurs yearly on the nth day of the nth month each year.
6	Rekurs yearly on the nth day of the week of the nth month each year.

#### 2.2.2.26 MeetingRequest.Recurrences.Recurrence.Interval

The **MeetingRequest.Recurrences.Recurrence.Interval** element is a required child element of the **Recurrence** type that specifies the interval between recurrences.

An **Interval** value of 1 indicates that the meeting occurs every week, month, or year, depending upon the value of **MeetingRequest.Recurrences.Recurrence.Type**. An **Interval** value of 2 indicates that the meeting occurs every other week, month, or year.

For examples showing how to set **MeetingRequest** recurrence intervals, see section 4.2.

#### 2.2.2.27 MeetingRequest.Recurrences.Recurrence.Until

The **MeetingRequest.Recurrences.Recurrence.Until** element is a required child element of the **Recurrence** type that specifies the end date and time of a recurring meeting.

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

#### 2.2.2.28 MeetingRequest.Recurrences.Recurrence.Occurrences

The **MeetingRequest.Recurrences.Recurrence.Occurrences** element is a required child element of the **Recurrence** type that specifies the number of occurrences before the series ends.

#### 2.2.2.29 MeetingRequest.Recurrences.Recurrence.WeekOfMonth

The **MeetingRequest.Recurrences.Recurrence.DayOfMonth** element is an optional child element of the **Recurrence** type that specifies the week of the month in which this meeting recurs.

This element is required when the **MeetingRequest.Recurrences.Recurrence.Type** element is set to 5.

### 2.2.2.30 MeetingRequest.Recurrences.Recurrence.DayOfMonth

The **MeetingRequest.Recurrences.Recurrence.DayOfMonth** element is an optional child element of the **Recurrence** type that specifies the day of the month on which this meeting recurs.

This element is required when the **MeetingRequest.Recurrences.Recurrence.Type** element is set to 3 or 6.

For examples showing how to set **MeetingRequest** recurrence intervals, see section 4.2.

### 2.2.2.31 MeetingRequest.Recurrences.Recurrence.DayOfWeek

The **MeetingRequest.Recurrences.Recurrence.DayOfWeek** element is an optional child element of the **Recurrence** type that specifies the day of the week on which this meeting recurs.

This element is required when the **MeetingRequest.Recurrences.Recurrence.Type** element is set to 1, 2 or 6.

The value of this element **MUST** be the sum of a minimum of one and a maximum of seven independent values from the following table.

Value	Meaning
1	Sunday
2	Monday
4	Tuesday
8	Wednesday
16	Thursday
32	Friday
64	Saturday

These values can be added together to specify that the meeting occurs on more than one day of the week.

For examples showing how to set different **MeetingRequest** recurrence intervals, see section 4.2.

### 2.2.2.32 MeetingRequest.Recurrences.Recurrence.MonthOfYear

The **MeetingRequest.Recurrences.Recurrence.MonthOfYear** element is an optional child element of the **Recurrence** type that specifies the month of the year in which this meeting recurs.

This element is required when the **MeetingRequest.Recurrences.Recurrence.Type** element is set to 6, indicating that the meeting recurs yearly on the nth day of the year.

### 2.2.2.33 MeetingRequest.Sensitivity

The **MeetingRequest.Sensitivity** element is an optional child element of the **MeetingRequest** type that specifies the sensitivity level of the meeting request.

The value of this element MUST be one of the following values.

Value	Meaning
0	Normal
1	Personal
2	Private
3	Confidential

If this element is missing, then a default of 0 MUST be assumed.

### 2.2.2.34 MeetingRequest.IntDBusyStatus

The **MeetingRequest.IntDBusyStatus** element is an optional child element of the **MeetingRequest** type that specifies whether the recipient of this meeting request is busy at the specified time.

The value of this element MUST be one of the following values.

Value	Meaning
0	Busy
1	Free
2	Tentative
3	Out of Office (OOF)

If this element is missing, then a default of 1 MUST be assumed.

### 2.2.2.35 MeetingRequest.TimeZone

The **MeetingRequest.TimeZone** element is a required child element of the **MeetingRequest** type that specifies the time zone where the calendar item is recurring.

The value of this element is a **timezone** value, as specified in [MS-ASDTYPE] section 2.7.

### 2.2.2.36 MeetingRequest.GlobalObjId

The **MeetingRequest.GlobalObjId** element is a required child element of the **MeetingRequest** type that specifies the base64-encoded global object ID for the meeting request.

### 2.2.2.37 MeetingRequest.Categories.Category

The **MeetingRequest.Categories.Category** element is an optional child element of the **Categories** type that specifies the user-selected category for this message.

If a **Categories** element is defined, then it **MUST** contain one or more **Category** elements. The names of the categories are not fixed, and custom category names are allowed.

A maximum of 300 **Category** elements are allowed per **Categories** type.

### 2.2.2.38 MeetingRequest.Categories.DisallowNewTimeProposal

The **DisallowNewTimeProposal** element<5> is an optional element that indicates whether recipients can propose a new meeting time. If the value is not specified, the value defaults to **FALSE**, meaning that new time proposals are allowed.

The value of this element is a **boolean** value, as specified in [MS-ASDTYPE] section 2.3.

### 2.2.2.39 InternetCPID

The **InternetCPID** element is a required element that contains the original code page ID from the MIME message.

### 2.2.2.40 Flag.Subject

The **Flag.Subject** element is an optional child element of the **Flag** type that specifies the subject of the flag.

The client or server **SHOULD** set the value of this element to the subject of the message when an item is flagged.<6>

A maximum of one **Flag.Subject** element is allowed per **Flag**.

### 2.2.2.41 Flag.Status

The **Flag.Status** element is an optional child element of the **Flag** type that specifies the current status of the flag.

The value of this element **MUST** be one of the following.

Value	Meaning
Null	Clear the flag
0	Clear the flag
1	Status is set to complete
2	Status is set to active

The **Sync** command response includes a **Flag.Status** value of 6 ([MS-ASCMD] section 2.2.1.19.2.19) if **Flag.Status** is set to a value other than 0, 1 or 2.

A maximum of one **Flag.Status** element is allowed per **Flag**.

#### 2.2.2.42 **Flag.FlagType**

The **Flag.FlagType** element is an optional child element of the **Flag** type that specifies the flag type.

**Flag.FlagType** is not required if the e-mail message is a meeting request or response.

This value is customizable, and is commonly set to “Flag for follow up” or “for Follow Up”.

A maximum of one **Flag.FlagType** element is allowed per **Flag**.

#### 2.2.2.43 **Flag.DateCompleted**

The **Flag.DateCompleted** element is an optional child element of the **Flag** type that identifies the date on which a flagged item was completed. The **DateCompleted** element is required to mark a flagged item as complete.

If the message includes a value for **Flag.DateCompleted**, then **Flag.CompleteTime** is also required.

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.DateCompleted** element is allowed per **Flag**.

#### 2.2.2.44 **Flag.CompleteTime**

The **Flag.CompleteTime** element is an optional element of the **Flag** type that identifies the time at which a flagged item was marked as finished. The **CompleteTime** element is required to mark a flagged item as complete.

If the message includes a value for **Flag.CompleteTime**, then **Flag.DateCompleted** is also required. The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.CompleteTime** element is allowed per **Flag**.

#### 2.2.2.45 **Flag.StartDate**

The **Flag.StartDate** element is an optional child element of the **Flag** type that specifies when this flagged item was begun.

When a flag is being updated, **Flag.StartDate** MUST NOT occur after **Flag.DueDate**.

To set a flag, **Flag.StartDate**, **Flag.DueDate**, **Flag.UTCStartDate**, and **Flag.UTCDueDate** MUST all be set, or MUST all be NULL. If the four elements are NULL, the following conditions must be met for the flag to be set: **Flag.Status** MUST be set to 2, **DateCompleted** MUST be set, and **Flag.ReminderTime** MUST be set if **Flag.ReminderSet** is TRUE (1).

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.StartDate** element is allowed per **Flag**.

#### 2.2.2.46 **Flag.DueDate**

The **Flag.DueDate** element is an optional child element of the **Flag** type that specifies when this flagged item is due.

When a flag is being updated, **Flag.DueDate** MUST NOT occur before **Flag.StartDate**.

To set a flag, **Flag.StartDate**, **Flag.DueDate**, **Flag.UTCStartDate**, and **Flag.UTCDueDate** MUST all be set, or MUST all be NULL. If the four elements are NULL, the following conditions must be met for the flag to be set: **Flag.Status** MUST be set to 2, **DateCompleted** MUST be set, and **Flag.ReminderTime** MUST be set if **Flag.ReminderSet** is TRUE (1).

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.DueDate** element is allowed per **Flag**.

#### 2.2.2.47 **Flag.UTCStartDate**

The **Flag.UTCStartDate** element is an optional child element of the **Flag** type that contains the **UTC** value of the local **Flag.StartDate**.

When a flag is being updated, **Flag.UTCStartDate** MUST occur before **Flag.UTCDueDate**.

To set a flag, **Flag.StartDate**, **Flag.DueDate**, **Flag.UTCStartDate**, and **Flag.UTCDueDate** MUST all be set, or MUST all be NULL. If the four elements are NULL, the following conditions must be met for the flag to be set: **Flag.Status** MUST be set to 2, **DateCompleted** MUST be set, and **Flag.ReminderTime** MUST be set if **Flag.ReminderSet** is TRUE (1).

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.UTCStartDate** element is allowed per **Flag**.

#### **2.2.2.48 Flag.UTCDueDate**

The **Flag.UTCDueDate** element is an optional child element of the **Flag** type that contains the **UTC** value of local **Flag.DueDate**.

When a flag is being updated, **Flag.UTCDueDate** **MUST NOT** occur before **Flag.UTCStartDate**.

To set a flag, **Flag.StartDate**, **Flag.DueDate**, **Flag.UTCStartDate**, and **Flag.UTCDueDate** **MUST** all be set, or **MUST** all be **NULL**. If the four elements are **NULL**, the following conditions must be met for the flag to be set: **Flag.Status** **MUST** be set to 2, **DateCompleted** **MUST** be set, and **Flag.ReminderTime** **MUST** be set if **Flag.ReminderSet** is **TRUE** (1).

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.UTCDueDate** element is allowed per **Flag**.

#### **2.2.2.49 Flag.ReminderSet**

The **Flag.ReminderSet** element is an optional child element of the **Flag** type that is **TRUE** (1) if a reminder has been set for this task; otherwise it is set to **FALSE** (0). The default value is **FALSE** (0).

A reminder **MUST NOT** be set if **Flag.FlagType** is set to a meeting request.

The value of this element is a **boolean** value, as specified in [MS-ASDTYPE] section 2.3.

A maximum of one **Flag.ReminderSet** element is allowed per **Flag**.

#### **2.2.2.50 Flag.ReminderTime**

The **Flag.ReminderTime** element is an optional child element of the **Flag** type that identifies the date and time that the reminder is supposed to occur.

**Flag.ReminderTime** **MUST** be set if **Flag.ReminderSet** is **TRUE** (1).

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.ReminderTime** element is allowed per **Flag**.

### 2.2.2.51 **Flag.OrdinalDate**

The **Flag.OrdinalDate** element is an optional child element of the **Flag** type that identifies the time at which the client set the flag.<7>

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.OrdinalDate** element is allowed per **Flag**.

### 2.2.2.52 **Flag.SubOrdinalDate**

The **Flag.SubOrdinalDate** element is an optional child element of the **Flag** type that is used for sorting. The value can be any string and can be used for additional sorting if there are duplicate **OrdinalDates**.<8>

The value of this element is a **date/time** value, as specified in [MS-ASDTYPE] section 2.6.

A maximum of one **Flag.SubOrdinalDate** element is allowed per **Flag**.

### 2.2.2.53 **ContentClass**

The **ContentClass** element is an optional element that specifies the content **class** of the data. For e-mail messages, the value of this element **MUST** be set to “urn:content-classes:message”.

### 2.2.2.54 **NativeBodyType**

The **NativeBodyType** element is an optional element that specifies how the e-mail message is stored on the server.

For details about the **NativeBodyType** element, see [MS-ASAIRS] section 2.2.4.11.

### 2.2.2.55 **UmCallerID**

The **UmCallerID** element<9> is an optional element that specifies the callback telephone number of the person who called or left an electronic voice message. This property is sent from the server to the client, and **MUST NOT** be sent from the client to the server. The **UmCallerID** element is not included, or is empty, if the call originated as a private, blocked, or otherwise anonymous call. The **string** is formatted as an E.164 telephone number, as specified in [E164], or a session initiated protocol link to initiate a **Voice over IP (VoIP)** call.

This element can only be included on messages with a **MessageClass** of IPM.Note.Microsoft.Voicemail, IPM.Note.Microsoft.Voicemail.UM, IPM.Note.Microsoft.Voicemail.UM.CA, IPM.Note.RPMSG.Microsoft.Voicemail, IPM.Note.RPMSG.Microsoft.Voicemail.UM, IPM.Note.RPMSG.Microsoft.Voicemail.UM.CA, or IPM.Note.Microsoft.Missed.Voice. Only one **UmCallerID** element is allowed per message. In order to enable future **Voice over**



**Internet Protocol (VoIP)** scenarios, the server SHOULD send this field to clients regardless of the client's current VoIP capabilities.

**UmCallerID** is in the Email2 namespace.

### 2.2.2.56 **UmUserNotes**

The **UmUserNotes** element<10> is an optional property that contains user notes related to an electronic voice message. This property is sent from the server to the client, and **MUST NOT** be sent from the client to the server.

This element can only be included on messages with a **MessageClass** of IPM.Note.Microsoft.Voicemail, IPM.Note.Microsoft.Voicemail.UM, IPM.Note.Microsoft.Voicemail.UM.CA, IPM.Note.RPMSG.Microsoft.Voicemail, IPM.Note.RPMSG.Microsoft.Voicemail.UM, IPM.Note.RPMSG.Microsoft.Voicemail.UM.CA, or IPM.Note.Microsoft.Missed.Voice. Only one **UserNotes** element is allowed for any message. The server can truncate notes larger than 32K, to 32K.

**UmUserNotes** is in the Email2 namespace.

### 2.2.2.57 **ConversationId**

The **ConversationId** element<11> is a required byte-array that specifies a unique identifier for a **conversation**.

The server fails conversation actions when the **ConversationId** is null.

The client **MUST NOT** change the **ConversationId** value.

**ConversationId** is in the Email2 namespace.

### 2.2.2.58 **ConversationIndex**

The **ConversationIndex** element<12> is a required byte-array that contains a **ConversationId** and a set of dates and times. The **ConversationIndex** is used by clients to generate a **conversation** tree view.

The ABNF format of the **ConversationIndex** is as follows:

```
conversationindex = signature "+" 1stmsgtimestamp "+" GUID "+"  
[addtimestamps]
```

```
signature = "0x0E" //<13>
```

```
1stmsgtimestamp = timestamp
```

```
timestamp = date time
```

```

date =          month "/" day "/" year

time =          hour ":" minute ("AM"/"PM")

month =         ([FWS]1*2DIGIT)

day =           ([FWS]1*2DIGIT)

year =          4DIGIT

hour =          2DIGIT

minute =        2DIGIT

GUID =          (16) DIGIT

addtimestamps = *timestamp

```

For example, a server can send a message with the following **ConversationIndex**, 0x0E+12/27/2006 11:51PM + {GUID}. If another user responded to the message, the **ConversationIndex** of the response message would be 0x0E+12/27/2006 11:51PM + {GUID} + 1/5/2007 12:56AM.

To limit bandwidth, the server removes the 1 byte signature (1 byte) and the GUID from the **ConversationIndex** for every message, as that information is already available in the **ConversationId** property. The client **MUST NOT** change the **ConversationId** value.

**ConversationIndex** is in the Email2 namespace.

### 2.2.2.59 LastVerbExecuted

The **LastVerbExecuted** element<14> is an optional element that indicates the last action, such as reply or forward, that was taken on the message so that the client can display the appropriate icon.

The following table lists valid integer values for the element.

Value	Meaning
0	Unknown
1	REPLYTOSENDER
2	REPLYTOALL
3	FORWARD

**LastVerbExecuted** is in the Email2 namespace.

### 2.2.2.60 LastVerbExecutionTime

The **LastVerbExecutionTime** element <15> is an optional **datetime** element that indicates the time when the **LastVerbExecuted** (section 2.2.2.61) was performed on the message.

**LastVerbExecutionTime** is in the Email2 namespace.

### 2.2.2.61 ReceivedAsBcc

The **ReceivedAsBcc** element <16> is an optional **boolean** value that notifies the user that they were blind carbon copied on an e-mail.

Clients **MUST** not change the **ReceivedAsBcc** value. If the client changes the value, the server sets the **Status** element of the **Sync** command response to “6”, as specified in [MS-ASCMD] section 2.2.1.19.2.19.

The **ReceivedAsBcc** value is not sent if the value is FALSE (0).

**ReceivedAsBcc** is in the Email2 namespace.

### 2.2.2.62 Sender

The **Sender** element <17> is an optional value that indicates that the message was not sent from the user identified by the **From** element. If included, the **Sender** element identifies the user that actually sent the message, and the **From** element identifies the user that the message was sent on behalf of, not the user that actually send the message. If the **Sender** element is included, it indicates that the sender of the item had delegate access to the **From** user’s mailbox. The client displays the message as <Sender> on behalf of <From>. The **Sender** element is not sent to the client when **Sender** and **From** have the same value, or when the **Sender** element is NULL.

This element is set by the server and is read-only on the client. If the client attempts to change this value, the server sets the **Status** element of the **Sync** command response to “6”, as specified in [MS-ASCMD] section 2.2.1.19.2.19.

**Sender** is in the Email2 namespace.

## 3 Protocol Details

### 3.1 Client Details

#### 3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not

mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

**E-mail class:** A set of complex types and elements that specifies an e-mail message. E-mail class data is included in command requests sent to the server when e-mail messages need to be retrieved or synchronized. For more details about processing command requests, see section 3.1.5.

**Command request:** A WBXML formatted message that adheres to the command schemas specified in [MS-ASCMD].

### 3.1.2 Timers

None.

### 3.1.3 Initialization

None.

### 3.1.4 Higher-Layer Triggered Events

#### 3.1.4.1 Synchronizing E-mail Between Client and Server

A client initiates synchronization of E-mail **class** data with the server by sending a **Sync** command request, as specified in section 3.1.5.3 and [MS-ASCMD] section 2.2.1.19.1.

#### 3.1.4.2 Searching E-mail

A client searches an **MDB** for E-mail **class** data by sending a **Search** command request to the server, as specified in section 3.1.5.2 and [MS-ASCMD] section 2.2.1.14.1.

#### 3.1.4.3 Retrieving Individual E-mail

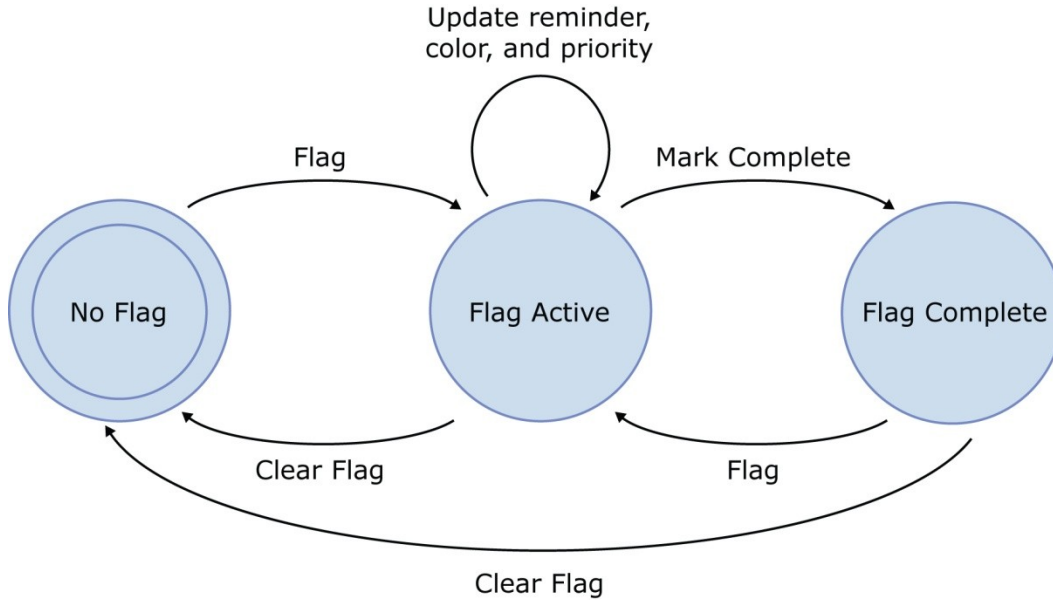
E-mail data for one or more individual e-mail items is requested by the client using an **ItemOperations** command request, which is a wrapper for the **Fetch** command. An **ItemOperations** command can contain multiple **Fetch** commands. The **ItemOperations** command request is specified in section 3.1.5.1 and [MS-ASCMD] section 2.2.1.8.2.

#### 3.1.4.4 Sending Flag Updates to the Server

Basic flagging enables clients to flag e-mail messages, mark flags as complete, or clear flags. Flags are specified in sections 2.2.1.8, and 2.2.2.42 through 2.2.2.54.

The following figure shows the life cycle of a flag.

#### Figure 1: Flag life cycle



Task integration with flagging is optional for the client, and layers cleanly on top of the simple cycle.

For every flag update that is sent from the client, the server can update the flag on the e-mail message using the **Change** element of the **Sync** command. The server uses the logic provided in the following table to determine which flag action (clear, set, mark complete) to invoke when updating flag status based on the value of the **Status** element, as specified in section 2.2.2.43.

Action	Required Properties from Device
Flag an item (basic)	<b>Status = 2</b> <b>FlagType = "Flag for follow up"</b> <b>StartDate and UTCStartDate</b> <b>DueDate and UTCDueDate</b>  or  <b>Status = 2</b> <b>DateCompleted</b>
Flag an item (task flagging)	<b>Status = 2</b> <b>Subject = &lt;user defined&gt;</b> <b>FlagType = "Flag for follow up"</b> <b>StartDate and UTCStartDate</b> <b>DueDate and UTCDueDate</b> <b>ReminderSet</b>

Action	Required Properties from Device
	<b>ReminderTime</b>  or <b>Status = 2</b> <b>DateCompleted</b>
Mark an item complete (basic)	<b>Status = 1</b> <b>CompleteTime</b> <b>DateCompleted</b>
Mark an item complete (task flagging)	<b>Status = 1</b> <b>CompleteTime</b> <b>DateCompleted</b>
Clearing the flag on an item	<b>Status = 0</b> or Flag node empty
Clearing the flag on an item (task flagging)	<b>Status = 0</b> or Flag node empty
Update the flag metadata (basic)	All updated properties
Update flag metadata (task flagging)	All updated properties

The **Sync** command response includes a **Status** value of 6 ([MS-ASCMD] section 2.2.1.19.2.19) if any of the required elements listed in the table are missing from the **Sync** request.

**FlagType** is not required if the item is a meeting request or response message.

A reminder cannot be added to a meeting request flag.

### 3.1.5 Message Processing Events and Sequencing Rules

The following sections define how various elements of the E-mail **class** are used in the context of specific commands. For more details about the commands themselves, see [MS-ASCMD].

#### 3.1.5.1 ItemOperations Command Request

A client sends the **ItemOperations** command request to the server to retrieve specific E-mail **class** items by using the **Fetch** element. An **ItemOperations** request can contain multiple **Fetch** elements.

Any of the complex types and elements in the E-mail **class** can be included in an **ItemOperations** command request.

E-mail **class** complex types and elements **MUST** be transmitted as children of the **Schema** type ([MS-ASCMD] section 2.2.1.8.2.12).

The **ItemOperations** command request is further specified in [MS-ASCMD] section 2.2.1.8.2.

### 3.1.5.2 Search Command Request

A client sends a **Search** command request to the server to retrieve E-mail **class** items that match the criteria specified by the client.

The complex types and elements for the E-mail class **MUST NOT** be included in a **Search** command request.

The **Search** command request is further specified in [MS-ASCMD] section 2.2.1.14.1.

### 3.1.5.3 Sync Command Request

A client sends a **Sync** command request to the server to synchronize its E-mail **class** items for a specific user with the E-mail items currently stored by the server.

Any of the E-mail **class** complex types and elements can be included in a **Sync** command request.

E-mail **class** complex types and elements **MUST** be transmitted as children of the **ApplicationData** type, as specified in [MS-ASCMD] section 2.2.1.19.1.6.

The **Sync** command request is further specified in [MS-ASCMD] section 2.2.1.19.1.

### 3.1.6 Timer Events

None.

### 3.1.7 Other Local Events

None.

## 3.2 *Server Details*

### 3.2.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

**E-mail class:** A set of complex types and elements that specifies an e-mail message and adheres to the schema definition specified in section 2.2. E-mail class data is included in command responses sent to the client when e-mail messages have been retrieved, searched, or synchronized. For more details about processing command responses, see section 3.2.5.

**Command response:** A WBXML formatted message that adheres to the command schemas specified in [MS-ASCMD]. The server can return zero or more E-mail class blocks in its command response, depending on how many e-mail items match the criteria specified in the client command request. The server **MUST** return an E-mail class XML block for every e-mail that matches the criteria specified in the client command request.

### 3.2.2 Timers

None.

### 3.2.3 Initialization

None.

### 3.2.4 Higher-Layer Triggered Events

#### 3.2.4.1 Synchronizing E-mail Between Client and Server

Synchronization of E-mail **class** data is initiated by the client, as specified in section 3.1.4.1. The server responds with a **Sync** command response, as specified in section 3.2.5.3 and [MS-ASCMD] section 2.2.1.19.2.

#### 3.2.4.2 Searching E-mail

Searching E-mail **class** data is initiated by the client, as specified in section 3.1.4.2. The server responds with a **Search** command response, as specified in section 3.1.5.2 and [MS-ASCMD] section 2.2.1.14.2.

#### 3.2.4.3 Retrieving Individual E-mail

Retrieving E-mail data is initiated by the client, as specified in section 3.1.4.3. The server responds with an **ItemOperations** command response, as specified in section 3.1.5.1 and [MS-ASCMD] section 2.2.1.8.3.

#### 3.2.4.4 Change Tracking Semantics for Flagging Properties

The **Flag** elements are tracked as a block. A server change to any **Flag** child element on the item **MUST** result in the whole **Flag** block being sent to the client in the **Change** element of the **Sync** command.

Implicit deletes are assumed when the change is applied based on the properties.

#### 3.2.4.5 Sending Flagged Changes to the Client

A server can partition e-mail changes into one or more of the following buckets:

- Changes to the **Read** flag



- Changes to **Flag** elements
- Changes to other e-mail elements, such as **Subject**
- Changes to non-protocol properties

If the only elements with changes are the **Read** element or any of the **Flag** elements, then the server can send only those updates without sending the full E-mail **class** element again. If any other element of the e-mail message has changed, then the server **MUST** send the entire message to the client.

The following matrix specifies what the server **MUST** send to the client based on which of the previous categories characterize the change.

<b>Read Flag</b>	<b>Flagging Properties</b>	<b>Other ActiveSync Protocol Properties</b>	<b>Non-ActiveSync Protocol Properties</b>	<b>Action</b>
N	N	N	N	Send nothing to client
N	N	N	Y	Send nothing to client
N	N	Y	N	Send full item <b>Change</b> to client
N	N	Y	Y	Send full item <b>Change</b> to client
N	Y	N	N	Send flag block only
N	Y	N	Y	Send flag block only
N	Y	Y	N	Send full item <b>Change</b> to client
N	Y	Y	Y	Send full item <b>Change</b> to client
Y	N	N	N	Send read flag only
Y	N	N	Y	Send read flag only
Y	N	Y	N	Send full item <b>Change</b> to client
Y	N	Y	Y	Send full item <b>Change</b> to client
Y	Y	N	N	Send read flag and flag block

Read Flag	Flagging Properties	Other ActiveSync Protocol Properties	Non-ActiveSync Protocol Properties	Action
Y	Y	N	Y	Send read flag and flag block
Y	Y	Y	N	Send full item <b>Change</b> to client

### 3.2.5 Message Processing Events and Sequencing Rules

The following sections define how various elements of the E-mail **class** are used in the context of specific commands. For more details about the commands themselves, see [MS-ASCMD].

#### 3.2.5.1 ItemOperations Command Response

Any of the complex types and elements in the E-mail **class** can be included in an **ItemOperations** command response. If a **Schema** element was included in the command request, then the complex types returned **MUST** be restricted to the complex types included in the command request's **Schema** element.

E-mail **class** complex types **MUST** be returned as children of the **Properties** type ([MS-ASCMD] section 2.2.1.8.3.8).

The **ItemOperations** command response is further specified in [MS-ASCMD] section 2.2.1.8.3.

#### 3.2.5.2 Search Command Response

Any of the E-mail **class** complex types and elements can be included in a **Search** command response as children of the **Properties** element, as specified in [MS-ASCMD] section 2.2.1.14.2.2.

The **Search** command response is further specified in [MS-ASCMD] section 2.2.1.14.2.

#### 3.2.5.3 Sync Command Response

Any of the E-mail **class** complex types and elements can be included in a **Sync** command response.

E-mail class complex types and elements **MUST** be returned as children of the **ApplicationData** type, as specified in [MS-ASCMD] section 2.2.1.21.1.6.

The **Sync** command response is further specified in [MS-ASCMD] section 2.2.1.19.2.

### 3.2.6 Timer Events

None.

### 3.2.7 Other Local Events

None.

## 4 Protocol Examples

The examples in this section use decoded values of the URI query parameters and the message body for clarity. The URI query parameter is base64-encoded and the body is WBXML-encoded when sent across the wire.

### 4.1 Synchronizing HTML E-Mail

#### 4.1.1 Example Sync Request for Inbox with HTML Mail Support

The following example **Sync** command request will sync all mail in the Inbox, as specified by the **CollectionId** element.

```
POST /Microsoft-Server-ActiveSync?Cmd=Sync&User=deviceuser&DeviceId=v14Device&DeviceType=PocketPC HTTP/1.1
Content-Type: application/vnd.ms-sync.wbxml
MS-ASProtocolVersion: 14.0
User-Agent: ASOM
Host: B-290.test.contoso.com

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>927479200</SyncKey>
      <CollectionId>5</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>512</WindowSize>
    </Collection>
  </Collections>
</Sync>
```

#### 4.1.2 Example Sync Request for Inbox with Body Preferences

The following example **Sync** command request includes the **BodyPreference** option, which specifies that the client wants HTML mail (Type 2) with the bodies truncated to 5,120 bytes (5 KB). Request messages can include multiple **BodyPreference** elements to specify different **TruncationSize** values for each **Type** value. For more information about the **BodyPreference**, **TruncationSize**, or **Type** elements, see [MS-ASAIRS] section 2.2.

MIME Support

```

POST /Microsoft-Server-
ActiveSync?Cmd=Sync&User=deviceuser&DeviceId=v14Device&DeviceType=Pocke
tPC HTTP/1.1
Content-Type: application/vnd.ms-sync.wbxml
MS-ASProtocolVersion: 14.0
User-Agent: ASOM
Host: B-290.test.contoso.com

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:AirSyncBase="AirSyncBase:" xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>1534587728</SyncKey>
      <CollectionId>5</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>512</WindowSize>
      <Options>
        <MIMESupport>0</MIMESupport>
        <AirSyncBase:BodyPreference>
          <AirSyncBase:Type>2</AirSyncBase:Type>
          <AirSyncBase:TruncationSize>5120</AirSyncBase:TruncationSize>
        </AirSyncBase:BodyPreference>
      </Options>
    </Collection>
  </Collections>
</Sync>

```

### 4.1.3 Example Sync Response for E-Mail with One HTML Message

The following example shows the **Sync** command response from the server adding one e-mail item with an HTML body. The body, as well as metadata about its type and estimated size, is included within the **Body** node. In this case, the body has been truncated. To retrieve the complete body, the client sends the **ItemOperations** command to fetch the body content, as described in section 4.1.4.

Note that the response includes the **NativeBodyType** element (as specified in [MS-ASAIRS] section 2.2.2.10), which indicates that the message is stored as HTML on the server.

```

HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml
X-MS-MV: 14.0.255
Date: Thu, 19 Feb 2009 01:43:34 GMT
Content-Length: 399

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:AirSyncBase="AirSyncBase:"
xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>1174511196</SyncKey>
      <CollectionId>5</CollectionId>
      <Status>1</Status>

```

```

    <Commands>
      <Add>
        <ServerId>5:10</ServerId>
        <ApplicationData>
          <Email:To>"Device User"
&lt;deviceuser@example.com&gt;</Email:To>
          <Email:From>"Device User2"
&lt;deviceuser2@example.com&gt;</Email:From>
          <Email:Subject>Fetch this content.</Email:Subject>
          <Email:DateReceived>2009-02-
19T01:43:25.266Z</Email:DateReceived>
          <Email:DisplayTo>Device User</Email:DisplayTo>
          <Email:ThreadTopic>Fetch this content.</Email:ThreadTopic>
          <Email:Importance>1</Email:Importance>
          <Email:Read>0</Email:Read>
          <AirSyncBase:Body>
            <AirSyncBase:Type>2</AirSyncBase:Type>

<AirSyncBase:EstimatedDataSize>384</AirSyncBase:EstimatedDataSize>
            <AirSyncBase:Truncated>1</AirSyncBase:Truncated>
          </AirSyncBase:Body>
          <Email:MessageClass>IPM.Note</Email:MessageClass>
          <Email:InternetCPID>28591</Email:InternetCPID>
          <Email:Flag />
          <Email:ContentClass>urn:content-
classes:message</Email:ContentClass>
          <AirSyncBase:NativeBodyType>2</AirSyncBase:NativeBodyType>

<Email2:ConversationId>€%ÿ&#x18;&#x8;:B~□ â&amp;¬&#x16;ÿ2&#x10;<Email2:
ConversationId>

<Email2:ConversationIndex>v3t&amp;</Email2:ConversationIndex>
          <Email:Categories />
        </ApplicationData>
      </Add>
      <Change>
        <ServerId>5:8</ServerId>
        <ApplicationData>
          <Email:Read>1</Email:Read>
        </ApplicationData>
      </Change>
    </Commands>
  </Collection>
</Collections>
</Sync>

```

#### 4.1.4 Example ItemOperations Request

The following example shows the **ItemOperations** command request to retrieve the truncated e-mail from section 4.1.3.

```

POST /Microsoft-Server-
ActiveSync?Cmd=ItemOperations&User=deviceuser&DeviceId=v14Device&Device
Type=PocketPC HTTP/1.1

```

```

Content-Type: application/vnd.ms-sync.wbxml
MS-ASProtocolVersion: 14.0
User-Agent: ASOM
Host: B-290.test.contoso.com

<?xml version="1.0" encoding="utf-8"?>
<ItemOperations xmlns:AirSync="AirSync:"
xmlns:AirSyncBase="AirSyncBase:" xmlns="ItemOperations:">
  <Fetch>
    <Store>Mailbox</Store>
    <AirSync:CollectionId>5</AirSync:CollectionId>
    <AirSync:ServerId>5:10</AirSync:ServerId>
    <Options>
      <AirSyncBase:BodyPreference>
        <AirSyncBase:Type >2</AirSyncBase:Type>
      </AirSyncBase:BodyPreference>
    </Options>
  </Fetch>
</ItemOperations>

```

#### 4.1.5 Example ItemOperations Response With Fetched Content

The following example shows the **ItemOperations** command response with the content that was truncated from the example in section 4.1.3. This message was sent in response to the request in section 4.1.4.

Note that, in the example code, HTML strings are escaped by using **&lt;** and **&gt;**. However, as these values are passed over the wire, they are passed in their original HTML format, as **<** and **>**.

```

HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml
X-MS-MV: 14.0.255
Date: Thu, 19 Feb 2009 01:44:09 GMT
Content-Length: 753

<?xml version="1.0" encoding="utf-8"?>
<ItemOperations xmlns:AirSync="AirSync:" xmlns:Email="POOMMAIL:"
xmlns:AirSyncBase="AirSyncBase:" xmlns:Email2="POOMMAIL2:"
xmlns="ItemOperations:">
  <Status>1</Status>
  <Response>
    <Fetch>
      <Status>1</Status>
      <AirSync:CollectionId>5</AirSync:CollectionId>
      <AirSync:ServerId>5:10</AirSync:ServerId>
      <AirSync:Class>Email</AirSync:Class>
      <Properties>
        <Email:To>"Device User"
&lt;deviceuser@example.com&gt;</Email:To>
        <Email:From>"Device User2"
&lt;deviceuser2@example.com&gt;</Email:From>

```

```

    <Email:Subject>Fetch this content.</Email:Subject>
    <Email:DateReceived>2009-02-
19T01:43:25.266Z</Email:DateReceived>
    <Email:DisplayTo>Device User</Email:DisplayTo>
    <Email:ThreadTopic>Fetch this content.</Email:ThreadTopic>
    <Email:Importance>1</Email:Importance>
    <Email:Read>0</Email:Read>
    <AirSyncBase:Body>
      <AirSyncBase:Type>2</AirSyncBase:Type>

<AirSyncBase:EstimatedDataSize>376</AirSyncBase:EstimatedDataSize>
  <AirSyncBase:Data>&lt;html dir="ltr"&gt;
&lt;head&gt;
&lt;meta http-equiv="Content-Type" content="text/html; charset=utf-
8"&gt;
&lt;style&gt;&lt;/style&gt;&lt;style id="owaParaStyle"&gt;
&lt;!--
p
  {margin-top:0px;
  margin-bottom:0px}
--&gt;
&lt;/style&gt;
&lt;/head&gt;
&lt;body&gt;
&lt;div style="font-size:13px; color:#000000; direction:ltr; font-
family:Tahoma"&gt;
&lt;div&gt;This is the content that was truncated.&lt;/div&gt;
&lt;/div&gt;
&lt;/body&gt;
&lt;/html&gt;
</AirSyncBase:Data>
  </AirSyncBase:Body>
  <Email:MessageClass>IPM.Note</Email:MessageClass>
  <Email:InternetCPID>28591</Email:InternetCPID>
  <Email:Flag />
  <Email:ContentClass>urn:content-
classes:message</Email:ContentClass>
  <AirSyncBase:NativeBodyType>2</AirSyncBase:NativeBodyType>

<Email2:ConversationId>€%ÿ&#x18;&#x8;:B~□ â&amp;¬&#x16;ÿ2&#x10;<Email2:
ConversationId>
  <Email2:ConversationIndex>»3t&amp;</Email2:ConversationIndex>
  </Properties>
</Fetch>
</Response>
</ItemOperations>

```

#### 4.1.6 Example Sync Response Adding an Electronic Voice Mail Attachment

The following example shows the **Sync** command response adding one e-mail item with an electronic voice mail attachment to the client.

```

HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml

```

X-MS-MV: 14.0.255  
Date: Wed, 04 Feb 2009 23:50:03 GMT  
Content-Length: 378

```
<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns="AirSync:" xmlns:Email="POOMMAIL:"
xmlns:AirSyncBase="AirSyncBase:" xmlns:Email2="POOMMAIL2:">
  <Collections>
    <Collection>
      <SyncKey>1336143213</SyncKey>
      <CollectionId>20</CollectionId>
      <Status>1</Status>
      <Commands>
        <Add>
          <ServerId>20:2</ServerId>
          <ApplicationData>
            <Email:To>"Device User"
            &lt;deviceuser@example.com&gt;</Email:To>
            <Email:From>"7125550123" &lt;7125550123&gt;</Email:From>
            <Email:Subject>Voice Mail from 7125550123 (3
seconds)</Email:Subject>
            <Email:DateReceived>2007-11-
06T23:42:16.829Z</Email:DateReceived>
            <Email:DisplayTo>Device User</Email:DisplayTo>
            <Email:ThreadTopic>Voice Mail from 7125550123 (3
seconds)</Email:ThreadTopic>
            <Email:Importance>1</Email:Importance>
            <Email:Read>1</Email:Read>
            <AirSyncBase:Attachments>
              <AirSyncBase:Attachment>
                <AirSyncBase:DisplayName>7125550123 (3 seconds) Voice
Mail.wma</AirSyncBase:DisplayName>
                <AirSyncBase:FileReference>20%3a2%3a0</AirSyncBase:FileReference>
                <AirSyncBase:Method>1</AirSyncBase:Method>
                <AirSyncBase:EstimatedDataSize>9025</AirSyncBase:EstimatedDataSize>
                <Email2:UmAttOrder>1</Email2:UmAttOrder>
                <Email2:UmAttDuration>3</Email2:UmAttDuration>
              </AirSyncBase:Attachment>
            </AirSyncBase:Attachments>
            <AirSyncBase:Body>
              <AirSyncBase:Type>3</AirSyncBase:Type>
            </AirSyncBase:Body>
            <AirSyncBase:EstimatedDataSize>1512</AirSyncBase:EstimatedDataSize>
            <AirSyncBase:Truncated>1</AirSyncBase:Truncated>
          </AirSyncBase:Body>
        </Add>
      </Commands>
    </Collection>
  </Collections>
  <Email:MessageClass>IPM.Note.Microsoft.Voicemail.UM.CA</Email:MessageCl
ass>
  <Email:InternetCPID>20127</Email:InternetCPID>
  <Email:ContentClass>urn:content-
classes:message</Email:ContentClass>
  <AirSyncBase:NativeBodyType>3</AirSyncBase:NativeBodyType>
```



```

        <Email2:CallerID>7125550123</Email2:CallerID>
        <Email2:UserNotes>7125550123</Email2:UserNotes>
    </ApplicationData>
</Add>
</Commands>
</Collection>
</Collections>
</Sync>

```

### 4.1.7 Example Sync Response Adding a Text Attachment

The following example shows the **Sync** command response adding one e-mail item with a text attachment to the client.

```

HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml
X-MS-MV: 14.0.511
Date: Wed, 04 Mar 2009 22:48:48 GMT
Content-Length: 444

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:AirSyncBase="AirSyncBase:"
xmlns:Email2="POOMMAIL2:" xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>334239291</SyncKey>
      <CollectionId>5</CollectionId>
      <Status>1</Status>
      <Commands>
        <Add>
          <ServerId>5:3</ServerId>
          <ApplicationData>
            <Email:To>>"Device User"
            &lt;deviceuser@example.com&gt;</Email:To>
            <Email:From>"Device User2"
            &lt;deviceuser2@example.com&gt;</Email:From>
            <Email:Subject>With Attachment</Email:Subject>
            <Email:DateReceived>2009-03-
            04T22:48:41.211Z</Email:DateReceived>
            <Email:DisplayTo>Device User</Email:DisplayTo>
            <Email:ThreadTopic>With Attachment</Email:ThreadTopic>
            <Email:Importance>1</Email:Importance>
            <Email:Read>0</Email:Read>
            <AirSyncBase:Attachments>
              <AirSyncBase:Attachment>

<AirSyncBase:DisplayName>Test.txt</AirSyncBase:DisplayName>

<AirSyncBase:FileReference>5%3a3%3a0</AirSyncBase:FileReference>
              <AirSyncBase:Method>1</AirSyncBase:Method>

<AirSyncBase:EstimatedDataSize>84</AirSyncBase:EstimatedDataSize>
            </AirSyncBase:Attachment>
          </AirSyncBase:Attachments>
        </Add>
      </Commands>
    </Collection>
  </Collections>
</Sync>

```

```

        <AirSyncBase:Body>
          <AirSyncBase:Type>1</AirSyncBase:Type>
<AirSyncBase:EstimatedDataSize>33</AirSyncBase:EstimatedDataSize>
  <AirSyncBase:Truncated>1</AirSyncBase:Truncated>
  </AirSyncBase:Body>
  <Email:MessageClass>IPM.Note</Email:MessageClass>
  <Email:InternetCPID>20127</Email:InternetCPID>
  <Email:Flag />
  <Email:ContentClass>urn:content-
classes:message</Email:ContentClass>
  <AirSyncBase:NativeBodyType>1</AirSyncBase:NativeBodyType>
<Email2:ConversationId>¥gÈ bÂOR•Ý#x7;&#x6;ì&#x7;□3</Email2:Conversatio
nId>
<Email2:ConversationIndex>É□&#x1B;Zö</Email2:ConversationIndex>
  <Email:Categories />
  </ApplicationData>
  </Add>
  </Commands>
  </Collection>
  </Collections>
</Sync>

```

#### 4.1.8 Example Sync Request Deleting One E-mail

The following example shows the **Sync** command request sent by the client to remove the e-mail message described in section 4.1.3 from the server.

```

POST /Microsoft-Server-
ActiveSync?Cmd=Sync&User=deviceuser&DeviceId=v14Device&DeviceType=Pocke
tPC HTTP/1.1
Content-Type: application/vnd.ms-sync.wbxml
MS-ASProtocolVersion: 14.0
User-Agent: ASOM
Host: B-290.test.contoso.com

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>1174511196</SyncKey>
      <CollectionId>5</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>512</WindowSize>
      <Commands>
        <Delete>
          <ServerId>5:10</ServerId>
        </Delete>
      </Commands>
    </Collection>
  </Collections>

```

</Sync>

#### 4.1.9 Example Sync Response Adding a Meeting Request

The following example shows the **Sync** command response sent by the server to add a meeting request to the Inbox.

```
HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml
X-MS-MV: 14.0.255
Date: Thu, 19 Feb 2009 08:35:28 GMT
Content-Length: 1538

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:AirSyncBase="AirSyncBase:"
xmlns:Email2="POOMMAIL2:" xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>1419832287</SyncKey>
      <CollectionId>5</CollectionId>
      <Status>1</Status>
      <Commands>
        <Add>
          <ServerId>5:13</ServerId>
          <ApplicationData>
            <Email:To>"Device User"
&lt;deviceuser@example.com&gt;</Email:To>
            <Email:From>"Device User2"
&lt;deviceuser2@example.com&gt;</Email:From>
            <Email:Subject>Example Meeting Request</Email:Subject>
            <Email:DateReceived>2009-02-
19T08:35:17.922Z</Email:DateReceived>
            <Email:DisplayTo>Device User</Email:DisplayTo>
            <Email:ThreadTopic>Example Meeting
Request</Email:ThreadTopic>
            <Email:Importance>1</Email:Importance>
            <Email:Read>0</Email:Read>
            <AirSyncBase:Body>
              <AirSyncBase:Type>3</AirSyncBase:Type>

            <AirSyncBase:EstimatedDataSize>437</AirSyncBase:EstimatedDataSize>
              <AirSyncBase:Truncated>1</AirSyncBase:Truncated>
            </AirSyncBase:Body>

            <Email:MessageClass>IPM.Schedule.Meeting.Request</Email:MessageClass>
            <Email:MeetingRequest>
              <Email:AllDayEvent>0</Email:AllDayEvent>
              <Email:StartTime>2009-02-
20T15:30:00.000Z</Email:StartTime>
              <Email:DtStamp>2009-02-19T08:35:15.786Z</Email:DtStamp>
              <Email:EndTime>2009-02-20T16:30:00.000Z</Email:EndTime>
              <Email:InstanceType>0</Email:InstanceType>
              <Email:Location>Cafe</Email:Location>
```

```

        <Email:Organizer>"Device User2"
    </Email:Organizer>
        <Email:Reminder>900</Email:Reminder>
        <Email:ResponseRequested>1</Email:ResponseRequested>
        <Email:Sensitivity>0</Email:Sensitivity>
        <Email:BusyStatus>2</Email:BusyStatus>

<Email:TimeZone>aAEAACgARwBNAFQALQAwADYAOgAwADAQAgAEMAZQBuaHQAcgBhAGw
AIABUAGkAbQBlACAACABVAFMAIAAmACAAQwAAAAAsAAAAABAIAAAAAAAAAAAAAAACgARwBNAF
QALQAwADYAOgAwADAQAgAEMAZQBuaHQAcgBhAGwAIABUAGkAbQBlACAACABVAFMAIAAmA
CAAQwAAAAAAMAAACAAIAAAAAAAAAAXP//w==</Email:TimeZone>

<Email:GlobalObjId>BAAAAIIA4AB0xbcQGoLgCAAAAADYSxf9bJLJAQAAAAAAAAAAAAEAAA
AJEHL7SUox5GtgQV1TYDY4A=</Email:GlobalObjId>
    </Email:MeetingRequest>
    <Email:InternetCPID>28591</Email:InternetCPID>
    <Email:Flag />
    <Email:ContentClass>urn:content-
classes:calendarmessage</Email:ContentClass>
    <AirSyncBase:NativeBodyType>3</AirSyncBase:NativeBodyType>

<Email2:ConversationId>LðØ±*û@à²&#x1A;&#x15;EñMØ±</Email2:ConversationI
d>

<Email2:ConversationIndex>É' lý&#x1F;</Email2:ConversationIndex>
    <Email:Categories />
    </ApplicationData>
</Add>
</Commands>
</Collection>
</Collections>
</Sync>

```

#### 4.1.10 Example Sync Response Adding a Meeting Request with a Recurrence

The following example shows the **Sync** command response sent by the server to add a meeting request to the Inbox. This meeting occurs every month (**Type** is 3 and **Interval** is 1), in the third week of the month (**WeekOfMonth** is 3), on Tuesday (**DayOfWeek** is 4).

```

HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml
X-MS-MV: 14.0.255
Date: Thu, 19 Feb 2009 08:47:27 GMT
Content-Length: 950

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:AirSyncBase="AirSyncBase:"
xmlns:Email2="POOMMAIL2:" xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>2086787787</SyncKey>
      <CollectionId>5</CollectionId>
      <Status>1</Status>
    </Collection>
  </Collections>
</Sync>

```

```

    <Commands>
      <Add>
        <ServerId>5:14</ServerId>
        <ApplicationData>
          <Email:To>"Device User"
&lt;deviceuser@example.com&gt;</Email:To>
          <Email:From>"Device User2"
&lt;deviceuser2@example.com&gt;</Email:From>
          <Email:Subject>Monthly Meeting</Email:Subject>
          <Email:DateReceived>2009-02-
19T08:47:21.842Z</Email:DateReceived>
          <Email:DisplayTo>Device User</Email:DisplayTo>
          <Email:ThreadTopic>Monthly Meeting</Email:ThreadTopic>
          <Email:Importance>1</Email:Importance>
          <Email:Read>0</Email:Read>
          <AirSyncBase:Body>
            <AirSyncBase:Type>3</AirSyncBase:Type>

<AirSyncBase:EstimatedDataSize>503</AirSyncBase:EstimatedDataSize>
            <AirSyncBase:Truncated>1</AirSyncBase:Truncated>
          </AirSyncBase:Body>

<Email:MessageClass>IPM.Schedule.Meeting.Request</Email:MessageClass>
          <Email:MeetingRequest>
            <Email:AllDayEvent>0</Email:AllDayEvent>
            <Email:StartTime>2009-03-
17T20:00:00.000Z</Email:StartTime>
            <Email:DtStamp>2009-02-19T08:47:19.527Z</Email:DtStamp>
            <Email:EndTime>2009-03-17T21:00:00.000Z</Email:EndTime>
            <Email:InstanceType>1</Email:InstanceType>
            <Email:Location>My Office</Email:Location>
            <Email:Organizer>"Device User2"
&lt;deviceuser2@example.com&gt;</Email:Organizer>
            <Email:Reminder>900</Email:Reminder>
            <Email:ResponseRequested>1</Email:ResponseRequested>
            <Email:Recurrences>
              <Email:Recurrence>
                <Email:Type>3</Email:Type>
                <Email:Interval>1</Email:Interval>
                <Email:Until>20091229T210000Z</Email:Until>
                <Email:WeekOfMonth>3</Email:WeekOfMonth>
                <Email:DayOfWeek>4</Email:DayOfWeek>
              </Email:Recurrence>
            </Email:Recurrences>
            <Email:Sensitivity>0</Email:Sensitivity>
            <Email:BusyStatus>2</Email:BusyStatus>

<Email:TimeZone>aAEAACgARwBNAFQALQAwADYA0gAwADAACKQAgAEMAZQBwAHQAcgBhAGw
AIABUAGkAbQBlACAACKABVAFMAIAAmACAAQwAAAAAAsAAAAABAAIAAAAAAAAAAAAAAACgARwBNAF
QALQAwADYA0gAwADAACKQAgAEMAZQBwAHQAcgBhAGwAIABUAGkAbQBlACAACKABVAFMAIAAmA
CAAQwAAAAAMAAACAIAAAAAAAAAAXP//w==</Email:TimeZone>

<Email:GlobalObjId>BAAAAIIA4AB0xbCQGoLgCAAAAADok5WnbpLJAQAAAAAAAAAAAAEAAA
AP4Ao5IYwQdKiFkDBeGttgY=</Email:GlobalObjId>

```

```

        </Email:MeetingRequest>
        <Email:InternetCPID>28591</Email:InternetCPID>
        <Email:Flag />
        <Email:ContentClass>urn:content-
classes:calendarmessage</Email:ContentClass>
        <AirSyncBase:NativeBodyType>3</AirSyncBase:NativeBodyType>

<Email2:ConversationId>'MÅ' &Kä°V÷ŽÓ&#x16;xû</Email2:ConversationId>
        <Email2:ConversationIndex>É' n-,,</Email2:ConversationIndex>
        <Email:Categories />
        </ApplicationData>
    </Add>
</Commands>
</Collection>
</Collections>
</Sync>

```

#### 4.1.11 Example Success Sync Response

The following example shows the **Sync** command response sent by the server after completing the deletion requested in section 4.1.8.

```

HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml
X-MS-MV: 14.0.255
Date: Thu, 05 Feb 2009 00:10:43 GMT
Content-Length: 33

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>721953595</SyncKey>
      <CollectionId>5</CollectionId>
      <Status>1</Status>
    </Collection>
  </Collections>
</Sync>

```

## 4.2 *Setting MeetingRequest Recurrence Intervals*

The following examples show how to use the recurrence properties to set meetings on different days of the month.

To set a recurrence to occur on the 15<sup>th</sup> day of every month, use the following values:

**MeetingRequest.Recurrences.Recurrence.Type = 2**

**MeetingRequest.Recurrences.Recurrence.Interval = 1**

**MeetingRequest.Recurrences.Recurrence.DayOfMonth = 15**

To set a recurrence to occur on the 31<sup>st</sup> day of every other month, use the following values:

**MeetingRequest.Recurrences.Recurrence.Type = 2**

**MeetingRequest.Recurrences.Recurrence.Interval = 2**

**MeetingRequest.Recurrences.Recurrence.DayOfMonth = 31**

To set a recurrence to occur every weekday for one week, use the following values:

**MeetingRequest.Recurrences.Recurrence.Type = 0**

**MeetingRequest.Recurrences.Recurrence.Interval = 1**

**MeetingRequest.Recurrences.Recurrence.Occurrences = 5**

**MeetingRequest.Recurrences.Recurrence.DayOfWeek = 62**

### 4.3 *Setting Flags on the Client and Server*

This section provides an example request and response message that are related to setting flags on the client and server.

Note the following:

- Implicit deletes: This term means that if a tag is not found in the **Flag** container, then the property is deleted.
- Although there are tokens from the **Tasks** namespace, all elements are saved on the e-mail item only. No task items are created.

#### 4.3.1 **Setting a Flag on the Client**

The following example **Sync** command request sets a flag with a start date, due date, but no reminder.

```
POST /Microsoft-Server-ActiveSync?Cmd=Sync&User=deviceuser&DeviceId=v14Device&DeviceType=PocketPC HTTP/1.1
Content-Type: application/vnd.ms-sync.wbxml
MS-ASProtocolVersion: 14.0
User-Agent: ASOM
Host: B-290.test.contoso.com

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:Tasks="POOMTASKS:"
xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>1520171944</SyncKey>
      <CollectionId>5</CollectionId>
```

```

<DeletesAsMoves>1</DeletesAsMoves>
<GetChanges>1</GetChanges>
<WindowSize>512</WindowSize>
<Commands>
  <Change>
    <ServerId>5:3</ServerId>
    <ApplicationData>
      <Email:Read>1</Email:Read>
      <Email:Flag>
        <Email:Status>2</Email:Status>
        <Email:FlagType>for Follow Up</Email:FlagType>
        <Tasks:StartDate>2009-02-
24T08:00:00.000Z</Tasks:StartDate>
        <Tasks:UtcStartDate>2009-02-
24T08:00:00.000Z</Tasks:UtcStartDate>
        <Tasks:DueDate>2009-02-25T12:00:00.000Z</Tasks:DueDate>
        <Tasks:UtcDueDate>2009-02-
25T12:00:00.000Z</Tasks:UtcDueDate>
        <Tasks:ReminderSet>0</Tasks:ReminderSet>
      </Email:Flag>
    </ApplicationData>
  </Change>
</Commands>
</Collection>
</Collections>
</Sync>

```

### 4.3.2 Setting a Flag on the Server

The following example **Sync** command response sets a flag with a start date, due date, and a reminder.

```

HTTP/1.1 200 OK
Content-Type: application/vnd.ms-sync.wbxml
X-MS-MV: 14.0.255
Date: Thu, 19 Feb 2009 01:20:24 GMT
Content-Length: 245

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:Tasks="POOMTASKS:"
xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>735431712</SyncKey>
      <CollectionId>5</CollectionId>
      <Status>1</Status>
      <Commands>
        <Change>
          <ServerId>5:7</ServerId>
          <ApplicationData>
            <Email:Flag>
              <Tasks:DueDate>2009-02-20T08:00:00.000Z</Tasks:DueDate>
              <Tasks:UtcDueDate>2009-02-
20T08:00:00.000Z</Tasks:UtcDueDate>

```



```

                <Tasks:UtcStartDate>2009-02-
19T08:00:00.000Z</Tasks:UtcStartDate>
                <Tasks:Subject>With Reminder</Tasks:Subject>
                <Email:Status>2</Email:Status>
                <Email:FlagType>Flag for follow up</Email:FlagType>
                <Tasks:StartDate>2009-02-
19T08:00:00.000Z</Tasks:StartDate>
                <Tasks:ReminderSet>1</Tasks:ReminderSet>
                <Tasks:ReminderTime>2009-02-
19T21:00:00.000Z</Tasks:ReminderTime>
                </Email:Flag>
            </ApplicationData>
        </Change>
    </Commands>
</Collection>
</Collections>
</Sync>

```

### 4.3.3 Setting the Complete Flag

The following is an example of how to send the request message to the server when the **Completed** flag for a **FlagType** set to **Flag for follow up** has been selected on the client.

Note that the **DateCompleted** element indicates when the user selected the **Completed** flag in Outlook. The **CompleteTime** element indicates the time that the item was marked as finished.

```

POST /Microsoft-Server-
ActiveSync?Cmd=Sync&User=deviceuser&DeviceId=v14Device&DeviceType=Pocke
tPC HTTP/1.1
Content-Type: application/vnd.ms-sync.wbxml
MS-ASProtocolVersion: 14.0
User-Agent: ASOM
Host: B-290.test.contoso.com

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:Tasks="POOMTASKS:"
xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>509846121</SyncKey>
      <CollectionId>5</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>512</WindowSize>
      <Commands>
        <Change>
          <ServerId>5:5</ServerId>
          <ApplicationData>
            <Email:Read>1</Email:Read>
            <Email:Flag>
              <Email:Status>1</Email:Status>
              <Email:FlagType>Flag for follow up</Email:FlagType>

```

```

        <Email:CompleteTime>2009-02-
19T08:30:00.000Z</Email:CompleteTime>
        <Tasks:StartDate>2009-02-
19T08:00:00.000Z</Tasks:StartDate>
        <Tasks:UtcStartDate>2009-02-
19T08:00:00.000Z</Tasks:UtcStartDate>
        <Tasks:DueDate>2009-02-19T08:00:00.000Z</Tasks:DueDate>
        <Tasks:UtcDueDate>2009-02-
19T08:00:00.000Z</Tasks:UtcDueDate>
        <Tasks:DateCompleted>2009-02-
19T09:30:00.000Z</Tasks:DateCompleted>
        <Tasks:ReminderSet>0</Tasks:ReminderSet>
        <Tasks:ReminderTime>2009-02-
24T20:00:00.000Z</Tasks:ReminderTime>
        <Tasks:Subject>Please follow up</Tasks:Subject>
    </Email:Flag>
</ApplicationData>
</Change>
</Commands>
</Collection>
</Collections>
</Sync>

```

#### 4.3.4 Clearing a Flag on the Client

The following example shows what to include in a request message to clear a flag.

```

POST /Microsoft-Server-
ActiveSync?Cmd=Sync&User=deviceuser&DeviceId=v14Device&DeviceType=Pocke
tPC HTTP/1.1
Content-Type: application/vnd.ms-sync.wbxml
MS-ASProtocolVersion: 14.0
User-Agent: ASOM
Host: B-290.test.contoso.com

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:Email="POOMMAIL:" xmlns:Tasks="POOMTASKS:"
xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>1401532757</SyncKey>
      <CollectionId>5</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>512</WindowSize>
      <Commands>
        <Change>
          <ServerId>5:5</ServerId>
          <ApplicationData>
            <Email:Read>1</Email:Read>
            <Email:Flag>
              <Email:Status>0</Email:Status>
              <Email:FlagType>Flag for follow up</Email:FlagType>

```

```

        <Email:CompleteTime>2009-02-
19T08:30:00.000Z</Email:CompleteTime>
        <Tasks:StartDate>2009-02-
19T08:00:00.000Z</Tasks:StartDate>
        <Tasks:UtcStartDate>2009-02-
19T08:00:00.000Z</Tasks:UtcStartDate>
        <Tasks:DueDate>2009-02-19T08:00:00.000Z</Tasks:DueDate>
        <Tasks:UtcDueDate>2009-02-
19T08:00:00.000Z</Tasks:UtcDueDate>
        <Tasks:DateCompleted>2009-02-
20T09:30:00.000Z</Tasks:DateCompleted>
        <Tasks:ReminderSet>0</Tasks:ReminderSet>
        <Tasks:ReminderTime>2009-02-
24T20:00:00.000Z</Tasks:ReminderTime>
        <Tasks:Subject>Please follow up</Tasks:Subject>
    </Email:Flag>
    </ApplicationData>
  </Change>
</Commands>
</Collection>
</Collections>
</Sync>

```

## 5 Security

### 5.1 Security Considerations for Implementers

None.

### 5.2 Index of Security Parameters

None.

## 6 Appendix A: Office/Exchange Behavior

The information in this specification is applicable to the following versions of Office/Exchange:

- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010

Exceptions, if any, are noted below. Unless otherwise specified, any statement of optional behavior in this specification prescribed using the terms SHOULD or SHOULD NOT implies Office/Exchange behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies Office/Exchange does not follow the prescription.

---

<1> Section 2: Exchange 2007 does not support the Email2 namespace.

- 
- <2> Section 2.2.2.12: Exchange 2007 does not support the **UmAttOrder** element.
  - <3> Section 2.2.2.13: Exchange 2007 does not support the **UmAttDuration** element.
  - <4> Section 2.2.2.14: Exchange 2010 Beta does not support read receipts when client connection services are deployed on an Exchange server that does not also have a mailbox store installed.
  - <5> Section 2.2.2.18: Exchange 2007 does not support the **DisallowNewTimeProposal** element.
  - <6> Section 2.2.2.40: This element contains the subject that appears in the **To-Do Bar** in Outlook 2007. The only time this string differs from the subject of the message is when the user changes the task that appears in the **To-Do Bar**.
  - <7> Section 2.2.2.51: The **Flag.OrdinalDate** element is used for sorting items within the **To-Do Bar** in Microsoft Office Outlook 2007 and Microsoft Outlook 2010.
  - <8> Section 2.2.2.52: The **Flag.SubOrdinalDate** element is used for sorting items within the **To-Do Bar** in Outlook 2007 and Outlook 2010.
  - <9> Section 2.2.2.55: Exchange 2007 does not support the **UmCallerId** element
  - <10> Section 2.2.2.56: Exchange 2007 does not support the **UmUserNotes** element.
  - <11> Section 2.2.2.57: Exchange 2007 does not support the **ConversationId** element.
  - <12> Section 2.2.258: Exchange 2007 does not support the **ConversationIndex** element.
  - <13> Section 2.2.2.55: The 0x0E signature indicates that the message was created using Exchange 2010.
  - <14> Section 2.2.2.59: Exchange 2007 does not support the **LastVerbExecuted** element.
  - <15> Section 2.2.2.60: Exchange 2007 does not support the **LastVerbExecutionTime** element.
  - <16> Section 2.2.2.61: Exchange 2007 does not support the **ReceivedAsBcc** element.
  - <17> Section 2.2.2.62: Exchange 2007 does not support the **Sender** element.

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