

# [MS-ASNOTE]: ActiveSync Notes Class Protocol Specification

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## Revision Summary

Date	Revision History	Revision Class	Comments
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07/15/2009	1.0	Major	Revised and edited for technical content.

# Table of Contents

<b>1 Introduction .....</b>	<b>5</b>
1.1 Glossary.....	5
1.2 References.....	5
1.2.1 Normative References .....	5
1.2.2 Informative References .....	5
1.3 Protocol Overview .....	6
1.4 Relationship to Other Protocols.....	6
1.5 Prerequisites/Preconditions.....	6
1.6 Applicability Statement.....	6
1.7 Versioning and Localization .....	6
1.8 Vendor-Extensible Fields .....	6
1.9 Standards Assignments .....	6
<b>2 Messages .....</b>	<b>7</b>
2.1 Transport.....	7
2.2 Message Syntax.....	7
2.2.1 Complex Types.....	7
2.2.1.1 Body.....	8
2.2.1.2 Categories.....	8
2.2.2 Elements.....	8
2.2.2.1 Subject.....	8
2.2.2.2 MessageClass.....	8
2.2.2.3 LastModifiedDate.....	9
2.2.2.4 Categories.Category.....	9
<b>3 Protocol Details.....</b>	<b>10</b>
3.1 Client Details.....	10
3.1.1 Abstract Data Model.....	10
3.1.2 Timers .....	10
3.1.3 Initialization .....	10
3.1.4 Higher-Layer Triggered Events .....	10
3.1.4.1 Synchronizing Notes Data with a Server .....	10
3.1.4.2 Searching a Server for Notes.....	10
3.1.4.3 Requesting Details for One or More Notes.....	10
3.1.5 Message Processing Events and Sequencing Rules .....	10
3.1.5.1 ItemOperations Command Request .....	10
3.1.5.1.1 Body Type.....	11
3.1.5.1.2 MessageClass Element .....	11
3.1.5.2 Search Command Request.....	11
3.1.5.3 Sync Command Request.....	11
3.1.5.3.1 LastModifiedDate Element .....	11
3.1.6 Timer Events.....	11
3.1.7 Other Local Events .....	11
3.2 Server Details .....	12
3.2.1 Abstract Data Model.....	12
3.2.2 Timers .....	12
3.2.3 Initialization .....	12
3.2.4 Higher-Layer Triggered Events .....	12
3.2.4.1 Synchronizing Notes Data with a Server .....	12
3.2.4.2 Searching a Server for Notes.....	12

3.2.4.3	Requesting Details for One or More Notes .....	12
3.2.5	Message Processing Events and Sequencing Rules .....	12
3.2.5.1	ItemOperations Command Response .....	12
3.2.5.2	Search Command Response .....	13
3.2.5.3	Sync Command Response .....	13
3.2.5.3.1	LastModifiedDate Element .....	13
<b>4</b>	<b>Protocol Examples .....</b>	<b>14</b>
<b>5</b>	<b>Security .....</b>	<b>16</b>
5.1	Security Considerations for Implementers .....	16
5.2	Index of Security Parameters .....	16
<b>6</b>	<b>Appendix A: Product Behavior .....</b>	<b>17</b>
<b>7</b>	<b>Change Tracking .....</b>	<b>18</b>
<b>8</b>	<b>Index .....</b>	<b>19</b>

# 1 Introduction

This document specifies the Notes **class** protocol, which facilitates a mobile device synchronizing user notes with a server that supports the ActiveSync Protocol.

## 1.1 Glossary

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

**class**  
**collection**  
**HTML**  
**Inter-Personal Mail (IPM)**  
**plain text**  
**property**  
**Rich Text Format(RTF)**  
**synchronization**  
**WAP Binary XML (WBXML)**  
**XML**  
**XML schema**

The following terms are specific to this document:

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

## 1.2 References

### 1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](mailto: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-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-OXGLOS] Microsoft Corporation, "[Exchange Server Protocols Master Glossary](#)", June 2008.

[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**

The Notes class protocol specifies the **XML** representation of notes used for client and server communication, as specified in [\[MS-ASCMD\]](#).

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

The Notes class protocol specifies the XML representation of notes that are used by commands specified in [\[MS-ASCMD\]](#). The protocol governing the transmission of these commands between the client and the server is specified in [\[MS-ASCMD\]](#).

All simple data types in this document conform to the data type definitions specified in [\[MS-ASDTYPE\]](#).

### **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 Notes class consists of a series of XML elements that are embedded inside of a command or a **collection** sent in accordance with [\[MS-ASCMD\]](#). The XML block containing the class elements is transmitted in either the request body of a request, or the response body of a response. The parent element of the Notes class elements depends upon the ActiveSync protocol command used to retrieve the class data. Commands and parent elements for the Notes class **XML schema** are specified in section [3.1.5](#).

The types and elements of the Notes class are defined in two namespaces: Notes, whose complex types and elements are specified in this document, and AirSyncBase, whose types and elements are specified in [\[MS-ASAIRS\]](#).

### 2.2 Message Syntax

The markup MUST be well-formed XML, as specified in [\[XML\]](#).

The XML markup that constitutes the request body or the response body is transmitted between the client and the server using **WAP Binary XML (WBXML)**. For more information, see [\[MS-ASWBXML\]](#).

The XML schema definition for the Notes class in ActiveSync is as follows. The following represents the full set of data that can be returned by the **Sync** command.

```
<?xml version="1.0" ?><xs:schema xmlns:tns="Notes:" attributeFormDefault="unqualified"
elementFormDefault="qualified"
targetNamespace="Notes:" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:A="AirSyncBase:">

  <xs:element name="Subject" type="xs:string" />
  <xs:element name="Body" type="A:Body" />
  <xs:element name="MessageClass" type="xs:string" />
  <xs:element name="LastModifiedDate" type="xs:dateTime" />
  <xs:element name="Categories">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Category" type="xs:string" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

#### 2.2.1 Complex Types

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

Complex Type	Description
<a href="#">Body</a>	The text of the note.
<a href="#">Categories</a>	The collection of categories applied to this note.

### 2.2.1.1 Body

The <Body> type is an optional element that specifies the text of the note.

The **Type** element of the <Body> type MUST be set to one of the following values.

Value	Description
1	<b>Plain text</b>
2	<b>HTML</b>
3	<b>Rich Text Format (RTF)</b>

For more details about the **Body** type, see [\[MS-ASAIRS\]](#).

### 2.2.1.2 Categories

The <Categories> type is an optional **container** ([\[MS-ASDTYPE\]](#) section 2.8) type that specifies a collection of categories for this note.

The <Categories> type can only have the following child element:

- <Categories.Category> (section [2.2.2.4](#)): Zero or more instances of this element are allowed.

## 2.2.2 Elements

The following table summarizes 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.

Notes class elements MUST NOT have child elements in either the command request or response.

Element	Description
<a href="#">Subject</a>	The subject of the note.
<a href="#">MessageClass</a>	The form of the message.
<a href="#">LastModifiedDate</a>	The day and time that this note was last changed by the user.
<a href="#">Categories.Category</a>	One of the user-assigned labels applied to this note.

### 2.2.2.1 Subject

The <Subject> element is a required element that specifies the subject of the note.

### 2.2.2.2 MessageClass

The <MessageClass> element is a required element that specifies the **Inter-Personal Mail (IPM)** type of the note.

The value of the <MessageClass> element MUST be either "IPM.StickyNote" or "IPM.StickyNote.\*", where "\*" represents an arbitrary string chosen by the client or server.

### **2.2.2.3 LastModifiedDate**

The <LastModifiedDate> element is a required element that specifies when the note was last modified.

### **2.2.2.4 Categories.Category**

The <Categories.Category> element is an optional element that specifies a user-select label that has been applied to this note.

## 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.

**Notes class:** A structured XML text block that adheres to the XML schema definition specified in section 2.2. It is included by the server as part of a full XML response to the client commands specified in section 3.1.5. Notes class data is included in command requests sent to the server when notes need to be retrieved, searched, 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 Notes Data with a Server

A client initiates **synchronization** of Notes class data with the server by sending a **Sync** command request.

##### 3.1.4.2 Searching a Server for Notes

A client searches for Notes class data by sending a **Search** command request to the server.

##### 3.1.4.3 Requesting Details for One or More Notes

Notes class data for one or more individual notes is requested by the client using the **ItemOperations** command, which is a wrapper for the **Fetch** command. An **ItemOperations** command can contain multiple **Fetch** commands.

#### 3.1.5 Message Processing Events and Sequencing Rules

##### 3.1.5.1 ItemOperations Command Request

A client uses the **ItemOperations** command to retrieve specific Notes items from the server.

Any of the complex types and elements for the Notes class can be included in an **ItemOperations** command request.

Notes class complex types and elements are transmitted as children of the **Schema** type ([\[MS-ASCMD\]](#) section 2.2.1.8.2.12).

For more details about the **ItemOperations** command, see [\[MS-ASCMD\]](#) section 2.2.1.8.

#### **3.1.5.1.1 Body Type**

If a client cannot display the data type specified by the <Type> element of the **Body** type, then the client can ignore the **Body** type.

#### **3.1.5.1.2 MessageClass Element**

Clients are not permitted to change the value of the <MessageClass> element on an existing note.

#### **3.1.5.2 Search Command Request**

A client uses the **Search** command to retrieve Notes class items that match the criteria specified by the client.

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

For more details about the **Search** command, see [\[MS-ASCMD\]](#) section 2.2.1.14.

#### **3.1.5.3 Sync Command Request**

A client uses the **c** command to synchronize its Notes class items for a specified user with the notes currently stored by the server.

Any of the complex types for the Notes class can be included in a **Sync** command request.

Notes class complex types are transmitted as children of the **ApplicationData** type ([\[MS-ASCMD\]](#) section 2.2.1.19.1.11).

When an existing note is updated with a **CHANGE** command in a **Sync**, the command will contain all required elements of the note.

For more details about the **Sync** command, see [\[MS-ASCMD\]](#) section 2.2.1.19.

##### **3.1.5.3.1 LastModifiedDate Element**

The <LastModifiedDate> element can be excluded from a client request. If it is included in a client request, then the server will ignore it.

#### **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.

**Notes class:** A structured XML text block that adheres to the XML schema defined in section [2.2](#). It is returned by the server as part of a full XML response to the client commands specified in section [3.2.5](#).

The server can return zero or more Notes class blocks in its response, depending on how many notes match the criteria specified by the client command request.

The server **MUST** return a Notes class XML block for every note that matches the criteria specified by the client command request.

**Command response:** A WBXML formatted message that adheres to the command schemas specified in [\[MS-ASCMD\]](#).

### 3.2.2 Timers

None

### 3.2.3 Initialization

None.

### 3.2.4 Higher-Layer Triggered Events

#### 3.2.4.1 Synchronizing Notes Data with a Server

A client initiates synchronization of Notes class data with the server by sending a **Sync** command request.

#### 3.2.4.2 Searching a Server for Notes

A client searches for Notes class data by sending a **Search** command request to the server.

#### 3.2.4.3 Requesting Details for One or More Notes

Notes class data for one or more individual notes is requested by the client using the **ItemOperations** command, which is a wrapper for the **Fetch** command. An **ItemOperations** command can contain multiple **Fetch** commands.

### 3.2.5 Message Processing Events and Sequencing Rules

#### 3.2.5.1 ItemOperations Command Response

A client uses the **c** command to retrieve specific Notes items from the server.

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

Notes class complex types are returned as children of the **properties** type ([\[MS-ASCMD\]](#) section 2.2.1.8.3.8).

For more details about the **ItemOperations** command, see [\[MS-ASCMD\]](#) section 2.2.1.8.

### 3.2.5.2 Search Command Response

A client uses the **Search** command to retrieve Notes class items that match the criteria specified by the client.

Any of the complex types for the Notes class can be included in a **ItemOperations** command response.

Notes class complex types are returned as children of the **Properties** type ([\[MS-ASCMD\]](#) section 2.2.1.14.2.2).

For more details about the **Search** command, see [\[MS-ASCMD\]](#) section 2.2.2.14.

### 3.2.5.3 Sync Command Response

A client uses the **Sync** command to synchronize its Notes class items for a specified user with the notes currently stored by the server.

Any of the complex types for the Notes class can be included in a **Sync** command response. If a <Supported> element was included in the command request, then the complex types returned is restricted to the complex types included in the command request's <Supported> element.

Notes class complex types are returned as children of the **ApplicationData** type ([\[MS-ASCMD\]](#) section 2.2.1.19.1.11).

When an existing note is updated with a CHANGE command in a **Sync**, the command will contain all required elements of the note. If any element that was previously set is missing, then the server will delete that property from the note. The only exception is the **Body** type, whose absence in a CHANGE request is not to be interpreted as an implicit delete.

**Sync** is specified in [\[MS-ASCMD\]](#) section 2.2.1.19.

#### 3.2.5.3.1 LastModifiedDate Element

The <LastModifiedDate> element is not required in the client request, but is required in a server response.

If a client request includes a <LastModifiedDate> element, then the server ignores it and return the actual time that the note was last modified.

## 4 Protocol Examples

The following example shows a Sync request and response where the client is creating one note, updating a second, and deleting a third.

XML request:

```
<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:A1="POOMCONTACTS:" xmlns:A2="POOMMAIL:" xmlns:A3="AirNotify:" xmlns:A4="POOMCAL:"
xmlns:A5="Move:" xmlns:A6="GetItemEstimate:" xmlns:A7="FolderHierarchy:"
xmlns:A8="MeetingResponse:" xmlns:A9="POOMTASKS:" xmlns:A10="ResolveRecipients:"
xmlns:A11="ValidateCert:" xmlns:A12="POOMCONTACTS2:" xmlns:A13="Ping:" xmlns:A14="Provision:"
xmlns:A15="Search:" xmlns:A16="Gal:" xmlns:A17="AirSyncBase:" xmlns:A18="Settings:"
xmlns:A19="DocumentLibrary:" xmlns:A20="ItemOperations:" xmlns:A21="ComposeMail:"
xmlns:A22="POOMMAIL2:" xmlns:A23="Notes:" xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>398434774</SyncKey>
      <CollectionId>8</CollectionId>
      <DeletesAsMoves>1</DeletesAsMoves>
      <GetChanges>1</GetChanges>
      <WindowSize>512</WindowSize>
      <Options>
        <A17:BodyPreference>
          <A17:Type>2</A17:Type>
          <A17:TruncationSize>5120</A17:TruncationSize>
          <A17:AllOrNone>1</A17:AllOrNone>
        </A17:BodyPreference>
      </Options>
      <Commands>
        <Add>
          <ClientId>c212ac10-0465-4983-a898-076e152552ef</ClientId>
          <ApplicationData>
            <A17:Body>
              <A17:Type>2</A17:Type>
              <A17:Data>A new note I just created.</A17:Data>
            </A17:Body>
            <A23:Categories>
              <A23:Category>Business</A23:Category>
            </A23:Categories>
            <A23:Subject>New note</A23:Subject>
            <A23:MessageClass>IPM.StickyNote</A23:MessageClass>
          </ApplicationData>
        </Add>
        <Delete>
          <ServerId>8:1</ServerId>
        </Delete>
        <Change>
          <ServerId>bb18e2a7-3e65-41a1-b0b2-9815539f98ad</ServerId>
          <ApplicationData>
            <A17:Body>
              <A17:Type>2</A17:Type>
              <A17:Data>&lt;strong&gt;This is my second note.&lt;/strong&gt;</A17:Data>
            </A17:Body>
            <A23:Categories>
              <A23:Category>Business</A23:Category>
            </A23:Categories>
            <A23:Subject>Second Note</A23:Subject>
            <A23:MessageClass>IPM.StickyNote</A23:MessageClass>
          </ApplicationData>
        </Change>
      </Commands>
    </Collection>
  </Collections>
</Sync>
```

```

    </ApplicationData>
  </Change>
</Commands>
</Collection>
</Collections>
</Sync>

```

## XML response:

```

<?xml version="1.0" encoding="utf-8"?>
<Sync xmlns:A1="POOMCONTACTS:" xmlns:A2="POOMMAIL:" xmlns:A3="AirNotify:" xmlns:A4="POOMCAL:"
xmlns:A5="Move:" xmlns:A6="GetItemEstimate:" xmlns:A7="FolderHierarchy:"
xmlns:A8="MeetingResponse:" xmlns:A9="POOMTASKS:" xmlns:A10="ResolveRecipients:"
xmlns:A11="ValidateCert:" xmlns:A12="POOMCONTACTS2:" xmlns:A13="Ping:" xmlns:A14="Provision:"
xmlns:A15="Search:" xmlns:A16="Gal:" xmlns:A17="AirSyncBase:" xmlns:A18="Settings:"
xmlns:A19="DocumentLibrary:" xmlns:A20="ItemOperations:" xmlns:A21="ComposeMail:"
xmlns:A22="POOMMAIL2:" xmlns:A23="Notes:" xmlns="AirSync:">
  <Collections>
    <Collection>
      <SyncKey>1960353427</SyncKey>
      <CollectionId>8</CollectionId>
      <Status>1</Status>
      <Responses>
        <Add>
          <ClientId>c212ac10-0465-4983-a898-076e152552ef</ClientId>
          <ServerId>8:3</ServerId>
          <Status>1</Status>
        </Add>
        <Change>
          <ServerId>bb18e2a7-3e65-41a1-b0b2-9815539f98ad</ServerId>
          <Status>8</Status>
        </Change>
      </Responses>
    </Collection>
  </Collections>
</Sync>

```

## **5 Security**

### **5.1 Security Considerations for Implementers**

None.

### **5.2 Index of Security Parameters**

None.

## 6 Appendix A: Product Behavior

The information in this specification is applicable to the following product versions:

- 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 the product does not follow the prescription.

## 7 Change Tracking

This section will report content and/or editorial changes, beginning with the next release.

## 8 Index

### C

[Change tracking](#)

### E

[Examples - overview](#)

### G

[Glossary](#)

### I

[Introduction](#)

### M

Messages  
[overview](#)

### N

[Normative references](#)

### O

[Overview \(synopsis\)](#)

### P

[Preconditions](#)  
[Prerequisites](#)  
[Product behavior](#)

### R

References  
[normative](#)  
[Relationship to other protocols](#)

### S

Security  
[overview](#)

### T

[Tracking changes](#)