

[MS-OXBBODY]: Best Body Retrieval Protocol Specification

Intellectual Property Rights Notice for Protocol Documentation

- **Copyrights.** This protocol documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you may make copies of it in order to develop implementations of the protocols, and may distribute portions of it in your implementations of the protocols or your documentation as necessary to properly document the implementation. You may also distribute in your implementation, with or without modification, any schema, IDL's, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the protocol documentation.
- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.
- **Patents.** Microsoft has patents that may cover your implementations of the protocols. Neither this notice nor Microsoft's delivery of the documentation grants any licenses under those or any other Microsoft patents. However, the protocols may be covered by Microsoft's Open Specification Promise (available here: <http://www.microsoft.com/interop/osp>). If you would prefer a written license, or if the protocols are not covered by the OSP, patent licenses are available by contacting protocol@microsoft.com.
- **Trademarks.** The names of companies and products contained in this documentation may be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights.

Reservation of Rights. All other rights are reserved, and this notice does not grant any rights other than specifically described above, whether by implication, estoppel, or otherwise.

Tools. This protocol documentation is intended for use in conjunction with publicly available standard specifications and network programming art, and assumes that the reader either is familiar with the aforementioned material or has immediate access to it. A protocol specification does not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments you are free to take advantage of them.

Revision Summary			
Author	Date	Version	Comments
Microsoft Corporation	April 4, 2008	0.1	Initial Availability.
Microsoft Corporation	April 25, 2008	0.2	Revised and updated property names and other technical content.
Microsoft Corporation	June 27, 2008	1.0	Initial Release.

Microsoft Corporation	August 6, 2008	1.01	Revised and edited technical content.
Microsoft Corporation	September 3, 2008	1.02	Revised and edited technical content.
Microsoft Corporation	October 1, 2008	1.03	Revised and edited technical content.
Microsoft Corporation	December 3, 2008	1.04	Updated IP notice.
Microsoft Corporation	March 4, 2009	1.05	Revised and edited technical content.

Table of Contents

1	<i>Introduction</i>	4
1.1	Glossary	4
1.2	References	4
1.2.1	Normative References	4
1.2.2	Informative References	5
1.3	Structure Overview	5
1.4	Relationship to Protocols and Other Structures	6
1.5	Applicability Statement.....	6
1.6	Versioning and Localization.....	6
1.7	Vendor-Extensible Fields	7
2	<i>Structures</i>	7
2.1	Best Body Algorithm	7
2.2	Plain Text or HTML Converted to RTF	9
2.3	Special Considerations for S/MIME Secure Messages.....	10
2.4	Special Considerations for Rights-Managed Secure Messages.....	10
3	<i>Structure Examples</i>	10
4	<i>Security Considerations</i>	11
5	<i>Appendix A: Office/Exchange Behavior</i>	11
	<i>Index</i>	13

1 Introduction

This document specifies the mechanism for determining the best format of storing **message bodies**.

In order to support clients that handle only one body format, servers *MAY* make any of the three body formats available on demand through alternate body **properties**. This document specifies how to determine which of the three body formats is the primary or "best" body format.

Exactly how **message** text is converted from one format to another, and to what extent formatting is preserved in the conversion, is implementation-dependent.

1.1 Glossary

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

- Hypertext Markup Language (HTML)**
- message**
- message body**
- Message object**
- plain text**
- property**
- recipient**
- Rich Text Format (RTF)**

The following data types are defined in [MS-OXCADATA]:

- PtypString**
- PtypBinary**
- PtypBoolean**

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

[MS-OXCADATA] Microsoft Corporation, "Data Structures Protocol Specification", June 2008.

[MS-OXCROPS] Microsoft Corporation, "Remote Operations (ROP) List and Encoding Protocol Specification", June 2008.

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

[MS-OXORMMS] Microsoft Corporation, "Rights-Managed E-Mail Object Protocol Specification", June 2008.

[MS-OXOSMIME] Microsoft Corporation, "S/MIME E-Mail Object Protocol Specification", June 2008.

[MS-OXPROPS] Microsoft Corporation, "Exchange Server Protocols Master Property List Specification", June 2008.

[MS-OXRTFEX] Microsoft Corporation, "Rich Text Format (RTF) Extensions Specification", 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>.

1.2.2 Informative References

None.

1.3 *Structure Overview*

Servers support three different formats for a **message body**:

- **Plain text** - The most accepted form of messaging format. Most e-mail **message** readers can display text messages in plain text format. However, plain text messages cannot display colors, different fonts, or emphasis such as bold or italic text.
- **Rich Text Format (RTF)** - RTF displays colors, fonts, and formatting.
- **HTML** - The message is sent as an HTML page, complete with tags to change the appearance of the text. The **recipient's** e-mail client program then formats and displays the HTML.

A client requests a specific message body format from a server by issuing a **RopGetPropertiesSpecific** or **RopOpenStream** request for the corresponding **property**. For more information, see [MS-OXCPROPS]. The following table lists the properties that correspond to each body format, plus one important related property.

Body format	Property identifier	Property type	Description
Plain	PidTagBody	PtypString	Message body text in plain text format.
RTF	PidTagRtfCompressed	PtypBinary	Message body text in RTF format.
HTML	PidTagHtml	PtypBinary	Message body text in HTML format.
Varies	PidTagRtfInSync	PtypBoolean	Indicates whether PidTagBody and PidTagRtfCompressed contain the same text (ignoring formatting).

Because a server can provide the message body in any of these three formats, an algorithm to determine which is the "original", "primary", or "best" body is needed for clients that are capable of handling multiple body formats. For more details about that algorithm, see section 2.

1.4 Relationship to Protocols and Other Structures

This specification relies on [MS-OXCROPS], [MS-OXPROPS], and [MS-OXCADATA] for the specification of **RopGetPropertiesSpecific** request, **property** values, and status codes.

1.5 Applicability Statement

The algorithm in section 2.1 applies to **Message objects** of all types except the following:

- The value of **PidTagMessageClass** is exactly "IPM.Note.SMIME" (section 2.3). (**Note:** If the value of **PidTagMessageClass** is "IPM.Note.SMIME.MultipartSigned", then the algorithm in section 2.1 is applicable.)
- The value of **PidTagMessageClass** is "IPM.Note" and the value of **PidNameContentClass** is "rpmmsg.message" (section 2.4).

1.6 Versioning and Localization

None.

1.7 Vendor-Extensible Fields

None.

2 Structures

2.1 Best Body Algorithm

Step 1. Issue a **RopGetPropertiesSpecific** request for four properties: **PidTagBody**, **PidTagRtfCompressed**, **PidTagHtml**, and **PidTagRtfInSync**.

If the status code returned by **RopGetPropertiesSpecific** indicates a failure, then the body type is undefined and the algorithm exits.

If all four property values were retrieved, then the **RopGetPropertiesSpecific** operation returns a **StandardPropertyRow**, as specified in [MS-OXCDATA]. If any of the four property values were not retrieved, then the **RopGetPropertiesSpecific** operation returns a **FlaggedPropertyRow**, as specified in [MS-OXCDATA].

Step 2. Create four variables: **PlainStatus**, **RtfStatus**, **HtmlStatus**, and **RtfInSync**. Examine the returned property values and assign values to the corresponding variables as follows. In each case, if there is an error code, then it **MUST** be either **NotFound** or **NotEnoughMemory**.

- **PlainStatus** - If **RopGetPropertiesSpecific** returned a **StandardPropertyRow**, or the **PidTagBody** value is **PtypString**, then assign **NoError** to **PlainStatus**; else copy the error code from the **FlaggedPropertyValue** to **PlainStatus**.
- **RtfStatus** - If **RopGetPropertiesSpecific** returned a **StandardPropertyRow**, or the **PidTagRtfCompressed** value is **PtypBinary**, then assign **NoError** to **RtfStatus**; else copy the error code from the **FlaggedPropertyValue** to **RtfStatus**.
- **HtmlStatus** - If **RopGetPropertiesSpecific** returned a **StandardPropertyRow**, or the **PidTagHtml** value is **PtypBinary**, then assign **NoError** to **HtmlStatus**; else copy the error code from the **FlaggedPropertyValue** to **HtmlStatus**.
- **RtfInSync** - If **RopGetPropertiesSpecific** returned a **StandardPropertyRow**, or the **PidTagRtfInSync** value is **PtypBoolean**, then copy the **PtypBoolean** value to **RtfInSync**; else assign **FALSE** to **RtfInSync**.

Step 3. Determine the body format based on values of the four variables created in step 2. The following table can be implemented as an "if-then-else" chain, in exactly the order specified.

	PlainStatus	RtfStatus	HtmlStatus	RtfInSync	Body format
1	NotFound	NotFound	NotFound	Any	Undefined
2	NotEnoughMem	NotFound	NotFound	Any	Plain text

	PlainStatus	RtfStatus	HtmlStatus	RtfInSync	Body format
	ory				
3	NotEnoughMemory	NotEnoughMemory	NotFound	Any	RTF
4	NotEnoughMemory	NotEnoughMemory	NotEnoughMemory	True	RTF
5	NotEnoughMemory	NotEnoughMemory	NotEnoughMemory	False	HTML
6	Any	NoError or NotEnoughMemory	NoError or NotEnoughMemory	True	RTF
7	Any	NoError or NotEnoughMemory	NoError or NotEnoughMemory	False	HTML
8	NoError or NotEnoughMemory	NoError or NotEnoughMemory	Any	True	RTF
9	NoError or NotEnoughMemory	NoError or NotEnoughMemory	Any	False	Plain
10	If no other case fits				Plain

This table can be implemented in the following pseudocode. Each row of the table is one clause of an "if-else-if" chain. Within a row, each column is ANDed together to form the condition of an "if" clause. If there is a case that is not defined, then the BodyFormat is Plain.

	Code to implement
1	<pre>if ((PlainStatus = NotFound) and (RtfStatus = NotFound) and (HtmlStatus = NotFound)) then BodyFormat = Undefined</pre>
2	<pre>else if ((PlainStatus = NotEnoughMemory) and (RtfStatus = NotFound) and (HtmlStatus = NotFound)) then</pre>

	Code to implement
	BodyFormat = Plain
3	else if ((PlainStatus = NotEnoughMemory) and (RtfStatus = NotEnoughMemory) and (HtmlStatus = NotFound)) then BodyFormat = Rtf
4	else if ((PlainStatus = NotEnoughMemory) and (RtfStatus = NotEnoughMemory) and (HtmlStatus = NotEnoughMemory) and (RtfInSync = True)) then BodyFormat = Rtf
5	else if ((PlainStatus = NotEnoughMemory) and (RtfStatus = NotEnoughMemory) and (HtmlStatus = NotEnoughMemory) and (RtfInSync = False)) then BodyFormat = Html
6	else if ((RtfStatus = NoError or RtfStatus = NotEnoughMemory) and (HtmlStatus = NoError or HtmlStatus = NotEnoughMemory) and (RtfInSync = True)) then BodyFormat = Rtf
7	else if ((RtfStatus = NoError or RtfStatus = NotEnoughMemory) and (HtmlStatus = NoError or HtmlStatus = NotEnoughMemory) and (RtfInSync = False)) then BodyFormat = Html
8	else if ((PlainStatus = NoError or PlainStatus = NotEnoughMemory) and (RtfStatus = NoError or RtfStatus = NotEnoughMemory) and (RtfInSync = True)) then BodyFormat = Rtf
9	else if ((PlainStatus = NoError or PlainStatus = NotEnoughMemory) and (RtfStatus = NoError or RtfStatus = NotEnoughMemory) and (RtfInSync = False)) then BodyFormat = Plain
10	else BodyFormat = Plain

2.2 Plain Text or HTML Converted to RTF

When the result of the algorithm in section 2.1 is **RTF**, it is possible to determine whether the RTF was generated from original **plain text** or **HTML**, as specified in [MS-OXRTFEX].

2.3 Special Considerations for S/MIME Secure Messages

The algorithm of section 2.1 yields an accurate result for a clear-signed S/MIME **message** (the value of **PidTagMessageClass** is "IPM.Note.SMIME.MultipartSigned"). Its result is undefined for other types of S/MIME messages (the value of **PidTagMessageClass** is "IPM.Note.SMIME"). For a detailed specification of these message types, see [MS-OXOSMIME]

2.4 Special Considerations for Rights-Managed Secure Messages

Rights-managed secure **messages** are messages where the value of **PidTagMessageClass** is "IPM.Note" and the value of **PidNameContentClass** is "rmsg.message", as specified in [MS-OXORMMS].

For rights-managed secure messages, the **message body properties** specified in this document do not contain the actual message body; instead, they contain boilerplate text intended for **recipients** whose clients do not support rights-managed secure messages. The actual message body resides in an attachment and is not accessible as a **property** of the **Message object**. To obtain the actual message body, a client **MUST** decrypt and parse the attachment, as specified in [MS-OXORMMS].

While the algorithm in section 2.1 yields a result for rights-managed secure messages, that result applies to the boilerplate text and not to the actual message body.

3 Structure Examples

In the following example, a simple **HTML message** is sent to a server.

```
From: <user1@example.com>
To: <user2@example.com>
Subject: test HTML message
Date: Tue, 24 Jan 2006 01:58:57 -0800
MIME-Version: 1.0
Content-Type: text/html
Content-Transfer-Encoding: 7bit
Content-Class: urn:content-classes:message
Importance: normal
```

```
<HTML><BODY>Test message, <b>please</b> delete.</BODY></HTML>
```

The four **property** values of interest appear as follows.

Property	Value
PidTagBody	error, NotEnoughMemory

Property	Value
PidTagHtml	<HTML><HEAD><meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1"></HEAD><BODY>Test message, please delete.</BODY></HTML>
PidTagRtfCompressed	error, NotEnoughMemory
PidTagRtfInSync	FALSE

The algorithm of section 2.1 creates the four variables shown in the following table:

Property	Value
PlainStatus	NotEnoughMemory
RtfStatus	NotEnoughMemory
HtmlStatus	NoError
RtfInSync	FALSE

The algorithm in section 2.1 uses the four newly created variables and matches clause 7.

7	<pre> else if ((RtfStatus = NoError or RtfStatus = NotEnoughMemory) and (HtmlStatus = NoError or HtmlStatus = NotEnoughMemory) and (RtfInSync = False)) then BodyFormat = Html </pre>
---	---

And the result returned is HTML body format.

4 Security Considerations

For more information, refer to sections 2.3 and 2.4.

5 Appendix A: Office/Exchange Behavior

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

- Office 2003 with Service Pack 3 applied
- Exchange 2003 with Service Pack 2 applied
- Office 2007 with Service Pack 1 applied
- Exchange 2007 with Service Pack 1 applied

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.

Index

- Applicability statement, 6
- Fields, vendor-extensible, 7
- Informative references, 5
- Introduction, 4
- Normative references, 4
- Office/Exchange behavior, 11
- Overview, 5
- References, 4
 - Informative references, 5
 - Normative references, 4
- Relationship to protocols and other structures, 6
- Security considerations, 11
- Structure examples, 10
- Structures, 7
- Vendor-extensible fields, 7
- Versioning and localization, 6