

Network Working Group
Internet Draft
[draft-ietf-mhtml-spec-00.txt](#)
Category-to-be: Standard
Expires: October 1996

Jacob Palme
Stockholm University/KTH
Alexander Hopmann
ResNova Software, Inc.
April 1996

MIME E-mail Encapsulation of Aggregate HTML Documents (MHTML)

Status of this Memo

This document is an Internet-Draft. Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as ``work in progress.''

To learn the current status of any Internet-Draft, please check the ``[id-abstracts.txt](#)'' listing contained in the Internet-Drafts Shadow Directories on [ftp.is.co.za](#) (Africa), [nic.nordu.net](#) (Europe), [munni.oz.au](#) (Pacific Rim), [ds.internic.net](#) (US East Coast), or [ftp.isi.edu](#) (US West Coast).

This memo provides information for the Internet community. This' memo does not specify an Internet standard of any kind, since this document is mainly a compilation of information taken from other RFC-s. Distribution of this memo is unlimited.

Abstract

Although HTML was designed within the context of MIME, more than the specification of HTML as defined in [RFC 1866](#) is needed for two electronic mail user agents to be able to interoperate using HTML as a document format. These issues include the naming of objects that are normally referred to by URIs, and the means of aggregating objects that go together. This memo describes a set of guidelines that will allow conforming mail user agents to be able to send, deliver and display these HTML objects. In addition it is hoped that these techniques will also apply to the wider category of URI-enabled objects. In order to do this, the memo introduces two new MIME content-headers with the names "Content-Location" and "Content-Base".

Differences from [draft-palme-text-html-02.txt](#) and from [draft-hopmann-html-email-packaging-00.txt](#):

This document is based on two previous ietf drafts, [draft-palme-text-html-02.txt](#) and [draft-hopmann-html-email-packaging-00.txt](#). About one third of this memo is taken from each of these previous Internet drafts, and about one third is new text.

This draft is based on the discussions during the Los Angeles IETF meeting in March 1996. Where decisions were taken at that meeting, the document reflects what was decided. Where decisions were not taken, the draft reflects suggestions from the editor for resolving such issues.

The most important decision taken at that meeting was to choose two methods for linking of HTML documents to body parts as described in sections [8.2](#) and [8.3](#) of this memo.

Who did it: Because of lack of time, Alex Hopmann has not had time to check this draft before its submission to IETF, so Jacob Palme alone is responsible. But many important sections are copied from Hopmann's earlier draft, and hopefully Hopmann will have time to approve the document so that we can both co-author it when finally published.

Table of Contents

- [1. Introduction](#)
- [2. Terminology](#)
- [3. Purpose](#)
- [4. The Content-Location and Content-Base MIME Content Headers](#)
 - 4.1 New MIME content headers
 - 4.2 The Content-Base header
 - 4.3 The Content-Location Header
 - 4.3 Encoding of URIs in e-mail headers
- [5. Use of Relative URL-s in Text/HTML Contents](#)
- [6. Sending HTML documents without linked documents](#)
- [7. Use of the Content-Type: Multipart/related](#)
 - 7.1 How to use the Multipart/related Content-Type
 - 7.2 The includes parameter to multipart/related
- [8. Format of Links to Other Body Parts](#)
 - 8.1 General principle
 - 8.2 Use of the Content-Location header
 - 8.3 Use of the Content-ID header and CID URLs
 - 8.4 Catalogs
- [9 Examples](#)
 - 9.1 Example of a HTML body without included linked objects
 - 9.3 Example with relative URI-s to an embedded GIF picture:
 - 9.4 Example using CID URL and Content-ID header to an embedded GIF picture:
- [10. Content-Disposition header](#)
- [11. Encoding Considerations for HTML bodies](#)
 - 11.1 Character set issues
 - 11.2 Line break characters
- [12. Security Considerations](#)
- [13. Conformance](#)
- [14. Acknowledgments](#)
- [15. References](#)
- [16. Author's Address](#)

Mailing List Information:

Further discussion on this memo should be done through the mailing list
MHTML@SEGATE.SUNET.SE.

To subscribe to this list, send a message to
LISTSERV@SEGATE.SUNET.SE which contains the text
SUB MHTML <your name (not your e-mail address)>

Archives of this list are available by anonymous ftp from

[FTP://SEGATE.SUNET.SE/lists/mhtml/](ftp://SEGATE.SUNET.SE/lists/mhtml/)

The archives are also available by e-mail. Send a message to
LISTSERV@SEGATE.SUNET.SE with the text "INDEX MHTML" to get a list of
the archive files, and then a new message "GET <file name>" to retrieve
the archive files.

Comments on less important details may also be sent to the main editor,
Jacob Palme <jpalme@dsv.su.se>. See also URL:
<http://www.dsv.su.se/~jpalme/ietf/jp-ietf-home.html>>

Palme-Hopmann

Do not implement based on this draft

[Page 3]

1. Introduction

The HTML format is a very common format for documents in the Internet, and there is an obvious need to be able to send documents in this format in e-mail [RFC821=SMTP, [RFC822](#)]. The "text/html; version=2.0" media type is defined in [RFC 1866](#) [[HTML2](#)]. This memo gives additional specifications on how to use the text/html media type as a Content-Type in MIME [RFC 1521=MIME1] e-mail messages. In particular, the document discusses sending of HTML documents with embedded links to images and other data in separate documents which are to be displayed inline to the recipient.

An alternative way for sending HTML documents in e-mail is to only send the URL, and let the recipient look up the document using HTTP. That method is described in [[URLBODY](#)] and is not described in this memo.

2. Terminology

Most of the terms used in this memo are defined in other RFC-s.

Absolute URI	See RFC 1866 [HTML2]
CID	See [MIDCID]
Content-Base	See [RELURL] and section 4.2 below.
Content-ID	See [MIME1].
Content-Location	MIME message or content part header with the URI of the MIME message or content part body, defined in section 4.3 below.
Header	Field in a message or content heading specifying the value of one attribute.
Heading	Part of a message or content before the first CRLF, containing formatted fields with attributes of the message or content.
HTML	See RFC 1866 [HTML2]
HTML Aggregate objects	HTML objects together with some or all objects, to which the HTML object contains hyperlinks
MIC	Message Integrity Codes, codes use to verify that a message has not been illegally modified.
MIME	See RFC 1521 [MIME1], [MIME2]

MUA Messaging User Agent

MUST See [RFC 1123](#) [[HOSTS](#)]

Palme-Hopmann Do not implement based on this draft [Page 4]

Relative URI	See RFC 1866 [HTML2]
Relative URL	See [RELURL]
SHOULD	See RFC 1123 [HOSTS]
URI, absolute and relative	See RFC 1866 [HTML2]
URL	See RFC 1738 [URL]
URL, relative	See [RELURL]

3. Purpose

Although HTML [[RFC 1866](#)=HTML2] is a valid MIME [[RFC1521](#)=MIME1, MIME2] type, [RFC 1866](#) [[HTML2](#)] does not provide enough specification in order for two electronic mail user agents to be able to interoperate using HTML as a document format. This draft describes a set of guidelines that will allow conforming mail user agents to be able to send, deliver and display HTML objects. This standard only covers HTML objects containing URI-s [[RFC 1738](#)=URL], but it is hoped that these techniques can also be used for other object formats containing URI-s.

An HTML aggregate object is a MIME-encoded message that contains an HTML document as well as other data that is required in order to represent that object (inline pictures, style sheets, applets, etc.). HTML aggregate objects can also include additional HTML documents that are linked to the first object, as well as other arbitrary MIME content.

In designing HTML capabilities for electronic mail user agents (UAs), it is important to keep in mind the differing needs of several audiences. Mail sending agents might send aggregate HTML objects as an encoding of normal day-to-day electronic mail. Mail sending agents might also send aggregate HTML objects when a user wishes to mail a particular document from the web to someone else. Finally mail sending agents might send aggregate HTML documents as automatic responders (=mail servers), providing access to WWW resources for non-IP connected clients.

Mail receiving agents also have several differing needs. Some mail receiving agents might be able to receive an aggregate HTML document and display it just as any other text content type would be displayed. Others might have to pass this aggregate HTML document to an HTML browsing program, and provisions need to be made to make this possible.

Finally several other constraints on the problem arise. It is important that it be possible for an HTML document to be signed and for it to be able to be transmitted to a client and displayed with a minimum risk of breaking the message integrity (MIC) check that is part of the

signature.

Palme-Hopmann

Do not implement based on this draft

[Page 5]

4. The Content-Location and Content-Base MIME Content Headers

4.1 New MIME content headers

In order to resolve URI references to other body parts, two new MIME content headers are defined, Content-Location and Content-Base. Both the new headers can occur in any message or content heading, and will then be valid within this heading and for its content.

In practice, at present only those URI-s which are URL-s are used, but it is anticipated that other forms of URI-s will in the future be used.

The syntax for the new headers is, using the syntax definition tools from [\[RFC822\]](#):

```
content-location ::= "Content-Location:" URI-parameter
```

```
content-base ::= "Content-Base:" URI-parameter
```

where URI is at present (April 1996) restricted to the syntax for URL-s as defined in [RFC 1738](#) [\[URL\]](#). This syntax may be widened when the definition of the URI syntax becomes more stable.

4.2 The Content-Base header

The Content-Base gives a base for relative URL-s occurring in other heading fields and in HTML contents which do not have any BASE element in their HTML code. Its value MUST be an absolute URI.

A Content-Base header is valid within the content or message heading where it occurs and in body parts within that message or content part. If several Content-Base headers apply to a content part, the innermost is valid.

Example showing which Content-Base is valid where:

```
Content-Base: "http://www.ietf.cnri.reston.va.us/"
Content-Type: Multipart/related; boundary="boundary-example-1";
              type=Text/HTML; start=foo2*foo3@bar2.net
```

```
--boundary-example-1
```

Part 1:

```
Content-Type: Text/HTML
```

```
Content-ID: foo2*foo3@bar2.net
```

```
Content-Location: "foo1.bar1" ; The Content-Base above applies to
                           ; this relative URL
```

```
--boundary-example-1
```



```
Part 2:
Content-Type: Text/HTML
Content-ID: foo4*foo5@bar2.net
Content-Location: "foo1.bar1" ; The Content-Base below applies to
                        ; this relative URL
Content-Base: "http://www.ietf.cnri.reston.va.us/images/"

--boundary-example-1--
```

[4.3](#) The Content-Location Header

The Content-Location header specifies the URI that corresponds to the object present in whose heading the header is placed. Its value CAN be an absolute or relative URI.

IF a Content-Location header contains a relative URI, then there MUST also be a Content-Base header specifying the base for the relative URI, in the same or in a surrounding heading.

The Content-Location header can be used to indicate that the data sent under this heading is also retrievable, in identical format, through normal use of this URI. Thus, the information sent in the message can be seen as a cached version of the original data. The header can also be used for data which is not available to some or all recipients of the message, for example if the header refers to a document which is only retrievable using this URI in a restricted domain, such as within a company-internal web space. The header MUST, even in this case, after transformation to an absolute URI, just like any other absolute URI, be globally unique.

[4.3](#) Encoding of URIs in e-mail headers

Since MIME header fields have a limited length and URIs can get quite long, these lines may have to be folded. When the lines are folded, only white-space, no additional non-white space characters, may be introduced. Receivers can then just remove all white-space within the URI to get back the original URI.

IETF may in the future separately specify in more detail how URIs are to be encoded in e-mail headers. Such a separate specification will then replace the paragraph above.

[5](#). Use of Relative URL-s in Text/HTML Contents

Relative URL-s inside contents with the Content-Type: Text/HTML SHOULD never be used except in one of the following three cases (in order of priority, if more than one of them are present, the first-listed applies):

- (a) There is a BASE element in the HTML document which resolves the relative URL into a non-relative URL.
- (b) There is a Content-Base header (as defined in [[RELURL](#)]), giving the base to be used.
- (c) There is a Content-Location header in the heading of the Text/HTML body which can then serve as the base in the same way as the URL of a HTML document itself can serve as a base for relative URL-s within the document.

[6.](#) Sending HTML documents without linked documents

If an HTML document is sent without other documents, to which it is linked, it CAN be sent as a Text/HTML body part which need not be included in any Multipart/related body part.

Such a document may either not include any links, or contain links which the recipient resolves via ordinary net look up, or contain links which the recipient cannot resolve.

Inclusion of links which the recipient has to look up through the net SHOULD only be done if all the recipients has the necessary Internet connections.

Note that it is PERMITTED, although usually NOT RECOMMENDED, to send documents with links that the recipient cannot resolve. (Example: Two persons developing a new HTML page may send incomplete versions back and forward.)

[7.](#) Use of the Content-Type: Multipart/related

[7.1](#) How to use the Multipart/related Content-Type

The use of URI references creates some additional issues for aggregate HTML objects. Normal URI references can of course be used, however it is likely that many user agents may not be able to retrieve those objects referred to. This document provides a means for these additional objects to be transmitted with the HTML and for the links between these objects to be properly resolved.

If a message contains one or more Text/HTML body parts and also contains as separate body parts, data, to which hyperlinks (as defined in RFC [1866](#) [[HTML2](#)]) in the Text/HTML body parts refers, then this set of documents SHOULD be sent within a Multipart/Related body part as defined in [[REL](#)].

The root of the Multipart/related SHOULD be of the Content-Type:

Text/HTML, or of the Content-Type Multipart/Alternative which CAN be resolved to Text/HTML.

Palme-Hopmann

Do not implement based on this draft

[Page 8]

If the root is not the first body part within the Multipart/related, its Content-ID MUST be given in a start parameter to the Content-Type: Multipart/Related header.

When presenting the root body part to the user, the additional body parts within the Multipart/related can be used:

- (a) For those recipients who only have e-mail but not full Internet access.
- (b) For those recipients who for other reasons, such as firewalls or the use of company-internal links, cannot retrieve the linked body parts through the net. Note that this means that you can, via e-mail, send HTML which includes URL-s which the recipient cannot resolve via HTTP or other connectivity-requiring URL-s.
- (c) For any recipient to speed up access.

The type parameter of the Content-Type: Multipart/related MUST be the same as the Content-Type of its root.

When a sending MUA sends objects which were retrieved from the WWW, it SHOULD maintain their WWW URLs. It SHOULD not transform these URLs into some other URL form prior to transmitting them. This will allow the receiving MUA to both verify MICs included with the email message, as well as verify the documents against their WWW counterpoints.

It is permitted, but NOT RECOMMENDED, that the Text/HTML body contains links to MIME body parts outside of the Multipart/Related or in other messages. Implementors are reminded that many receiving mailers will not be able to resolve such links.

Within such a Multipart/related, no two different parts may have the same Content-Location value.

7.2 The includes parameter to multipart/related

*** New text:

A new parameter is added to the Multipart/related header, with the name "includes". The value of this parameter can be either "includes=complete" or "includes=incomplete". If this is done, "complete" means that all in-line embedded information is contained within this Multipart/related, while "incomplete" means that some in-line embedded information is not included and may have to be retrieved by other means in order to display the document to the user.

8. Format of Links to Other Body Parts

8.1 General principle

A Text/HTML body part may contain hyperlinks to documents which are included as other body parts in the same message and within the same

Palme-Hopmann

Do not implement based on this draft

[Page 9]

multipart/related content. Often such linked documents are meant to be displayed inline to the reader of the main document. HTML version 2.0 [RFC 1866=HTML2] has only one way of specifying hyperlinks to such inline embedded content, the IMG tag. New tags with this property are however proposed in the ongoing development of HTML (example: applet, frame).

In order to send such messages, there is a need to indicate which other body parts are referred to by the links in the Text/HTML body parts. This is done in the following way: For each distinct URI in the Text/HTML document, which refers to data which is sent in the same MIME message, there SHOULD be a separate body part within the multipart/related part of the message containing this data. Each such body part SHOULD contain a Content-Location header (see [section 8.2](#)) or a Content-ID header (see [section 8.3](#)).

*** Question: Only IETF-defined URI schemes? Why not allow any privately defined scheme also? Since it is not meant to be used for actual retrieval, any kind of URI or URL scheme might be allowed.

[8.2](#) Use of the Content-Location header

When a linked body part has a Content-Location header, the string in this field SHOULD be identical to the URI as used in the Text/HTML body part referring to it.

Note: By identical string is not meant equivalent URI-s after resolution of relative URI-s to absolute URIs, but actually identical URI strings, except for added white-space as specified in 4.3 above.

The URI in the Content-Location header need not refer to a document which is actually available globally for retrieval using this URI (after resolution of relative URI-s). The URI (after resolution of relative URI-s) SHOULD however still be globally unique.

[8.3](#) Use of the Content-ID header and CID URLs

When CID (Content-ID) URL-s as defined in [RFC 1738](#) [[URL](#)] and [RFC 1873](#) [[MIDCID](#)] is used for links between body parts, the Content-Location statement will normally be replaced by a Content-ID header. Thus, the following two headers are identical in meaning:

```
Content-ID: foo@bar.net
Content-Location: CID: foo@bar.net
```

Note: Content-ID-s MUST be globally unique [[MIME1](#)]. It is thus not permitted to make them unique only within this message or within this multipart/related.

[8.4](#) Catalogs

*** Controversial

The Multipart/related MAY contain as its first body part a catalog

Palme-Hopmann

Do not implement based on this draft

[Page 10]

body part, containing a list of the body parts with size and type information for each body part. Such a catalogue can be used by receiving agents to provide better progressive display of the document before it has been fully downloaded. This standard does not specify a format for such catalogues, such format may become specified in other IETF standards. The Content-Type of such catalogues MAY be Application/parts-directory.

A receiving mail agent can ignore body parts of this type, the only loss may be delayed progressive rendering in some cases.

9 Examples

9.1 Example of a HTML body without included linked objects

The first example is the simplest form of an HTML email message. This is not an aggregate HTML object, but simply one by itself. This message contains a hyperlink but does not provide the ability to resolve the hyperlink. To resolve the hyperlink the receiving client would need either IP access to the Internet, or an electronic mail web gateway.

```
From: foo1@bar.net
To: foo2@bar.net
Subject: A simple example
Mime-Version: 1.0
Content-Type: text/html
```

```
<html>
<head></head>
<body>
<h1>Hi there!</h1>
An example of an HTML message.<p>
Try clicking <a href="http://www.resnova.com/">here.</a><p>
</body></html>
```

*** Temporary note: The example below includes a parts directory to allow for progressive display of messages downloaded via slow IMAP or POP connections as defined in 8.4. Whether to provide for this has not yet been decided.

9.2 Example with absolute URI-s to an embedded GIF picture:

This example also includes a parts-directory as specified in [section 8.4](#) above.

```
From: foo1@bar.net
To: foo2@bar.net
Subject: A simple example
Mime-Version: 1.0
```

Content-Type: Multipart/related; boundary="boundary-example-1";
type=Text/HTML; start=foo3*foo1@bar.net

--boundary-example 1

Content-Type: Application/parts-directory

Palme-Hopmann

Do not implement based on this draft

[Page 11]

Part 1:

... the parts directory ...

Part 2:

Content-Location:

"http://www.ietf.cnri.reston.va.us/images/ietflogo.gif"

Content-Type: IMAGE/GIF; name="ietflogo.gif"

--boundary-example 1

Content-Type: Text/HTML

Content-ID: foo3*foo1@bar.net

... text of the HTML document, which might contain a hyperlink
to the other body part, for example through a statement such as:
<IMG SRC="http://www.ietf.cnri.reston.va.us/images/ietflogo.gif"
ALT="IETF logo">

--boundary-example-1

Content-Location:

"http://www.ietf.cnri.reston.va.us/images/ietflogo.gif"

Content-Type: IMAGE/GIF; name="ietflogo.gif"

Content-Transfer-Encoding: BASE64

R0lGODlhGAGgAPEAAP/////ZRaCgoAAAACH+PUNvcHlyawdodCAoQykgMTk5
NSBJRVRGLiBVbmF1dGhvcml6ZWQgZHVwbGljYXRpb24gcHJvaGlhXlZC4A
etc...

--boundary-example-1--

[9.3](#) Example with relative URI-s to an embedded GIF picture:

From: foo1@bar.net

To: foo2@bar.net

Subject: A simple example

Mime-Version: 1.0

Content-Base: "http://www.ietf.cnri.reston.va.us"

Content-Type: Multipart/related; boundary="boundary-example-1";
type=Text/HTML

--boundary-example 1

Content-Type: Text/HTML

... text of the HTML document, which might contain a hyperlink
to the other body part, for example through a statement such as:

--boundary-example-1

Content-Location: "/images/ietflogo.gif"

Content-Type: IMAGE/GIF; name="ietflogo.gif"

Content-Transfer-Encoding: BASE64

R0lG0DlhGAGgAPEAAP/////ZRaCgoAAAACH+PUNvcHlyawdodCAoQykgMTk5
NSBJRVRGLiBVbmF1dGhvcml6ZWQgZHVwbGljYXRpb24gcHJvaGliaXRlZC4A
etc...

Palme-Hopmann

Do not implement based on this draft

[Page 12]

--boundary-example-1--

[9.4](#) Example using CID URL and Content-ID header to an embedded GIF picture:

```
From: foo1@bar.net
To: foo2@bar.net
Subject: A simple example
Mime-Version: 1.0
Content-Type: Multipart/related; boundary="boundary-example-1";
              type=Text/HTML

--boundary-example 1
Content-Type: Text/HTML

... text of the HTML document, which might contain a hyperlink
to the other body part, for example through a statement such as:
<IMG SRC="cid:foo4*foo1@bar.net" ALT="IETF logo">

--boundary-example-1
Content-ID: foo4*foo1@bar.net
Content-Type: IMAGE/GIF; name="ietflogo.gif"
Content-Transfer-Encoding: BASE64

R0lGODlhGAGgAPEAAP/////ZRaCgoAAAACH+PUNvcHlyawdodCAoQykgMTk5
NSBJRVRGLiBVbmF1dGhvcml6ZWQgZHVwbGljYXRpb24gcHJvaGliXRlZC4A
etc...

--boundary-example-1--
```

[10](#). Content-Disposition header

Information in a Content-Disposition header (as defined in [RFC 1806](#) [[CONDISP](#)]) on individual body parts within a multipart/related SHOULD be ignored by a receiving mailer which can handle Multipart/related and Text/html, since corresponding information is defined by tags in the HTML text itself.

Receiving mailers which are not capable of handling the multipart/related header, and which thus by default handles the multipart/related header as if it was multipart/mixed, CAN however make use of information in a Content-Disposition header.

[11](#). Encoding Considerations for HTML bodies

[11.1](#) Character set issues

A mail user agent that wishes to send a content-type of HTML can just do

so, so long as the normal data encoding issues are taken care of as specified in [RFC 1521](#) [[MIME1](#)]. However at a basic level there are some differences between HTML being transferred by HTTP and HTML being transferred through Internet email. When transferred through HTTP, HTML

Palme-Hopmann

Do not implement based on this draft

[Page 13]

by default uses the document character set ISO-8859-1 [[HTML2](#)]. Within electronic mail, the default character set is US-ASCII [[MIME1](#)].

There are two recommended ways to encode 8-bit characters in Text/HTML contents:

- (1) Let the charset of the content part be iso-8859-1 or some other non-US-ASCII character set, and encode the content with the QUOTED-PRINTABLE encoding method.
- (2) Let the charset of the content part be US-ASCII, and encode non-US-ASCII characters in the text using the data character encoding defined in [RFC 1866](#) [[HTML2](#)].

Both these encoding methods are PERMITTED, and they CAN also be mixed in the same document. Recipients MUST be capable of handling both encoding alternatives. However, it is RECOMMENDED that encoding method (2) above is used when sending Text/HTML messages.

If only method (2) is used, the charset parameter SHOULD be "us-ascii".

If method (1), or a mixture of method (1) and method (2) is used, the charset parameter SHOULD be the character set used in the HTML text, for example "iso-8859-1".

[11.2](#) Line break characters

*** Controversial issue:

Line breaks in HTML documents SHOULD be of the CRLF format (not bare LF or bare CR), but receiving systems SHOULD be able to handle receipt of Content-Type Text/html documents which use bare LF or bare CR for line breaks.

[12](#). Security Considerations

Some Security Considerations include the potential to mail someone an object, and claim that it is represented by a particular URI (by giving it a Content-Location: header). There can be no assurance that a WWW request for that same URI would normally result in that same object. It might be unsuitable to cache the data in such a way that the cached data can be used for retrieval of this URL from other messages or message parts than those included in the same message as the Content-Location header. Because of this problem, receiving User Agents SHOULD not cache this data in the same way that data that was retrieved through an HTTP or FTP request might be cached.

One way of implementing messages with linked body parts is to handle the linked body parts in a combined mail and WWW proxy server. The mail

client is only given the start body part, which it turns over to a web browser. This web browser requests the linked parts from the proxy server. If this method is used, and if the combined server is used by more than one user, then methods must be employed to ensure that body

parts of a message to one person is not retrievable by another person. Use of passwords (also known as tickets or magic cookies) is one way of achieving this.

In addition, by allowing people to mail aggregate HTML objects, we are opening the door to other potential security problems that until now were only problems for WWW users. For example, some HTML documents now either themselves contain executable content (JavaScript) or contain links to executable content (The "INSERT" specification, Java). It would be exceedingly dangerous for a receiving User Agent to execute content received through a mail message without careful attention to restrictions on the capabilities of that executable content.

[13. Conformance](#)

An e-mail system which claims conformance to this standard MUST support receipt of Multipart/related (as defined in [section 7](#)) with links between body parts using both the Content-Location (as defined in [section 8.2](#)) and the Content-ID method (as defined in [section 8.3](#)).

An e-mail system which claims conformance to this standard SHOULD be able to send Multipart/related (as defined in [section 7](#)) with at least one URI or URL scheme. Either the Content-Location method or the Content-ID method MUST be supported, but both need not be supported.

Support of the include parameter ([section 7.2](#)) or for body parts catalogs ([section 8.4](#)) is not required for conformance.

[14. Acknowledgments](#)

Harald Tveit Alvestrand, Richard Baker, Dave Crocker, Martin J. Duerst, Roy Fielding, Al Gilman, Paul Hoffman, Mark K. Joseph, Greg Herlihy, Valdis Kletnieks, Daniel LaLiberte, Ed Levinson, Jay Levitt, Albert Lunde, Larry Masinter, Keith Moore, Gavin Nicol, Pete Resnick, Jon Smirl, Einar Stefferud, Jamie Sawinski and several other people have helped us with preparing this memo. I alone take responsibility for any errors which may still be in the memo.

[15. References](#)

*** Temporary note: This list contains some references to Internet drafts. It is anticipated that these Internet drafts will become RFC-s before this memo. The references will then in this memo be changed to refer to the corresponding RFC instead.

Ref.	Author, title
-----	-----
[CONDISP]	R. Troost, S. Dorner: "Communicating Presentation Information in Internet Messages: The Content-Disposition Header", RFC 1806 , June 1995.
[HOSTS]	R. Braden (editor): "Requirements for Internet Hosts -- Application and Support", STD-3, RFC 1123 , October 1989.
[HTML2]	T. Berners-Lee, D. Connolly: "Hypertext Markup Language - 2.0", RFC 1866 , November 1995.
[HTTP]	T. Berners-Lee, R. Fielding, H. Frystyk: "Hypertext Transfer Protocol -- HTTP/1.0", < draft-ietf-http-v10-spec-04.txt >, April 1996.
[MIDCID]	E. Levinson: "Message/External-Body Content-ID Access Type", RFC 1873 , December 1995.
[MIME1]	N. Borenstein & N. Freed: "MIME (Multipurpose Internet Mail Extensions) Part One: Mechanisms for Specifying and Describing the Format of Internet Message Bodies", RFC 1521 , Sept 1993.
[MIME2]	N. Borenstein & N. Freed: "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types". draft-ietf-822ext-mime-imt-02.txt , December 1995.
[NEWS]	M.R. Horton, R. Adams: "Standard for interchange of USENET messages", RFC 1036 , December 1987.
[REL]	Harald Tveit Alvestrand, Edward Levinson: "The MIME Multipart/Related Content-type", < draft-levinson-multipart-related-00.txt >, January 1995.
[RELURL]	R. Fielding: "Relative Uniform Resource Locators", RFC 1808 , June 1995.
[RFC822]	D. Crocker: "Standard for the format of ARPA Internet text messages." STD 11, RFC 822 , August 1982.
[SMTP]	J. Postel: "Simple Mail Transfer Protocol", STD 10, RFC 821 , August 1982.
[URL]	T. Berners-Lee, L. Masinter, M. McCahill: "Uniform Resource Locators (URL)", RFC 1738 , December 1994.
[URLBODY]	N. Freed and Keith Moore: "Definition of the URL MIME

External-Body Access-Type", [draft-ietf-mailext-acc-url-01.txt](#), November 1995.

Palme-Hopmann

Do not implement based on this draft

[Page 16]

16. Author's Address

For contacting the editors, preferably write to Jacob Palme rather than Alex Hopmann.

Jacob Palme
Stockholm University and KTH
Electrum 230
S-164 40 Kista, Sweden

Phone: +46-8-16 16 67
Fax: +46-8-783 08 29
E-mail: jpalme@dsv.su.se

Alex Hopmann
President
ResNova Software, Inc.
5011 Argosy Dr. #13
Huntington Beach, CA 92649

E-mail: alex.hopmann@resnova.com

Working group chairman:

Einar Stefferud <stef@nma.com>

