MIME Sub-type Registrations for unified messaging

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Overview

This document describes the registration of the MIME sub-types multipart/voice-message and multipart/fax for use with the Voice Profile for Internet Mail (VPIM) for Unified Messaging. It also introduces the primary content type concept. A further description of usage can be found in the VPIM v3 specification.

The VPIM WG home page is: http://www.ema.org/vpim

Vaudreuil, Parsons & Cohen Expires 8/26/99
1. Introduction

This document describes the registration of the MIME sub-types multipart/voice-message and multipart/fax-message for use with the Voice Profile for Internet Mail (VPIM) for Unified Messaging. It also introduces the primary content type concept. A further description of usage can be found in the VPIM v3 specification [VPIM3]. This document revises earlier sub-type registrations in RFC 2423 [V-MSG] for [VPIM2] and RFC 1911 [VPIM1].

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [REQ].

2. VPIM v3 Scope

The VPIM v3 specification defines a profile of the Internet Mail protocols for use between unified or universal platforms. These platforms are intended to be full Internet Mail platforms with the ability to handle voice and fax media as well. Historically, voice, fax and email have existed on separate systems. Recently, email profiles have been created for both voice [VPIM2] and fax [IFAX] but these are restrictive to only that media and special-purpose computer systems they were intended for. VPIM v3 lifts these restrictions, but to facilitate efficient unified messaging benefits a primary content type semantic must be provided by multipart/voice-message and multipart/fax-message.

3. Primary Message Type

In the early days of Internet Messaging, there was only one media type — text, and a message simply contained one text body. When the user viewed the text, the message was unequivocally "read".

Today, systems can send and receive messages containing many different media (as different content types within a multipart/mixed). For example, a message may contain text with voice, fax and spreadsheet attachments. It may appear that all the media are given equal importance, but in fact, the text is given precedence. A typical email client may display the text in a preview pane. And when the message is "opened", the text will be displayed in the main window and the attachments will be iconified. Once the text has been displayed (within the preview pane, or upon opening the message), the client determines that the message has been "read", even though none of the attachments have been "seen".
This behaviour is particularly problematic if the sender has requested that a disposition notification (MDN) be issued when the message is viewed. The sender cannot know if any or all of the attachments have been viewed. The mechanism is not helpful if the sender is particularly interested in the disposition of a particular attachment - a fax attachment, for example.

A solution to this problem is to introduce the concept of a primary message type. A multipart message has associated primary content type semantics. The primary content type of a multipart/voice-message is voice, the primary content type of a multipart/fax-message is fax, and so on.

A client supporting the primary message type concept will not declare a message as "read" until the body part containing the primary media has been "seen". Only when this attachment has been "seen" will a client issue a requested MDN.

It may be apparent that most mail clients currently consider the primary content type of a multipart/mixed message to be text/*.

New mail clients may interpret the multipart/* content type and display the message appropriately. For example, upon selecting a multipart/fax-message, the client may display the fax attachment in a preview pane.

4. Unified Messaging

Though many systems can send and receive messages containing many different media (as different content types within a multipart/mixed), all the media are given an equal importance. That is, a message with a voice, fax and spreadsheet attachment may be sent from a system to recipients on many different systems (with different capabilities). If the message was sent to a voice messaging system, and the primary content of the message was the voice â the fax and spreadsheet were merely FYI â the message would not be delivered because the other contents could not be rendered.

However, if the message was identified as being primarily a voice message, the receiving voice-only system could detect that and deliver the voice but discard the informational attachments.

Support of primary content type will differentiate true "unified messaging systems" from the "media-agnostic" messaging systems widely deployed today.
A "media-agnostic" messaging system is capable of rendering many body types—text, audio, fax, spreadsheets, etc., but text always takes precedence.

A true "unified messaging system" will recognize the message type (text, voice, fax, etc.) and may indicate this to the user by displaying a differentiating icon. When a message is selected, appropriate action is taken for the type of message. For example, the fax content is immediately displayed, the audio player is launched and the voice is immediately played, and so on.

The unified messaging system will change the status of a message from unread to read once the primary content has been rendered for the user. For example, this means that a voice message is "read" once the voice has been played, even if text annotation or an attached fax has not been seen.

5. Disposition Notification

The message notification mechanism is described in [MDN]. The MDN is generated by the client (when requested in the message) upon disposition of the message. Examples of dispositions include: displayed, deleted, forwarded, or otherwise "processed". The MDN mechanism does not provide semantics enabling the sender of the message to determine with certainty which body parts were actually accessed by the recipient. The MDN mechanism does not allow the user to tag a specific body part for inclusion in the disposition report. As we have seen, most likely the user will be notified when the user has seen the text, even though a fax attachment may be the most important content.

A client supporting primary message type will also provide the missing MDN semantics. Clearly, the client should only generate the disposition report when the primary message content has been seen, etc. For example, an MDN report when the voice content of a multipart/voice-message has been played, or when the fax content of a multipart/fax-message has been displayed or printed.

6. Discard Rules

Existing email servers support messages containing any arbitrary content type. The email clients may or may not be capable of processing message attachments. The sender of the message will be unaware that an attachment could not be rendered unless explicitly informed by the recipient.
The VPIM v2 specification, on the other hand, requires different semantics. Recognizing that legacy voicemail systems do not support text, the specification does not allow text within a multipart/voice-message. However, the specification allows inclusion of an image/tiff attachment. If the recipient system does not support fax, the entire message must be rejected.

These semantics are insufficient because they do not recognize that a message has a primary content. A more appropriate behaviour can now be defined:

If the receiver does not support the primary message type, reject the entire message and generate an appropriate non-delivery report (DSN). For example, if a VPIM v3 system receives a message containing audio content encoded with an unsupported codec, the entire message must be rejected.

If the receiver supports the primary message type, the message must be accepted. If the sender requested positive acknowledgment, the receiver must generate a positive delivery report.

If the receiver accepts a message but does not support the media type of some attachments, the attachments may be deleted. However, if attachments are deleted, the recipient should be appropriately notified. For example, consider an Internet Fax device receiving a message with an audio/* body. The server could add notification to the cover page that there was an audio attachment that could not be played. If the sender has requested positive acknowledgment, the delivery report must contain an appropriate return code indicating some content was not delivered. If positive acknowledgement was not requested, a negative acknowledgement report must be returned containing an appropriate return code indicating that some content was not delivered.

7. Primary Media Content Types

As described earlier, the use of primary content types will allow unified messaging systems to view the message as intended (e.g., as a voice message using a plug-in). This could give the user the voice message (or fax message) interface which would likely be slightly different than the generic view.

Described below are two content types intended as a wrapper to indicate the semantic of primary content type. When used they MUST be the top level content of that message.
7.1 multipart/voice-message

The MIME sub-type multipart/voice-message is re-defined to hold an audio content and any number of other content type as described in [VPIM3]. Essentially, the sub-type provides a simple wrapper that easily identifies the entire content as being the components of a single voice message. The sub-type is similar in semantics and syntax to multipart/mixed, as defined in [MIME2]. The difference introduced in this revision is that the primary content of this multipart is voice (audio/*). As such, it may be safely interpreted as a multipart/mixed by systems that do not understand the sub-type (only the identification as being a voice message would be lost).

If a receiving system downgrades an incoming message (i.e., drops non-voice contents for delivery), an appropriate non-delivery message MUST be sent to the originator indicating that contents were deleted to deliver the primary voice content. A notification SHOULD also be sent to the recipient indicating that contents were deleted to deliver the primary voice message.

In addition to the MIME required boundary parameter, a version parameter is also REQUIRED for this sub-type. This is to distinguish this refinement of the sub-type from the previous definition in [VPIM1] and [V-MSG]. The value of the version parameter is "3.0" if the content conforms to the requirements of [VPIM3]. The default version value (when the parameter is missing) is 1, indicating the content conforms to the requirements of [VPIM1].

Note: [VPIM2] describes the restriction that only specific media types applicable to voice messaging (audio/*, image*/, message/rfc822 and application/directory), are valid Ânext-levelÂ contents of this sub-type (when version=2.0).

3.2 multipart/fax-message

The MIME sub-type multipart/fax is defined to hold a fax image as described in [IFAX] and any number of other content types. Essentially, the sub-type provides a simple wrapper that easily identifies the entire content as being the components of a single fax message. The sub-type is similar in semantics and syntax to multipart/mixed, as defined in [MIME2]. The difference is that the primary content of this multipart is fax (image/tiff). As such, it may be safely interpreted as a multipart/mixed by systems that do not understand the sub-type (only the identification as being a fax message would be lost).
If a receiving system downgrades an incoming message (i.e., drops non-
fax contents for delivery), a appropriate non-delivery message MUST be 
sent to the originator indicating that contents were deleted to 
deliver the primary fax content. A notification SHOULD also be sent to 
the recipient indicating that contents were deleted to deliver the 
primary fax message.

4. IANA Registration

4.1 multipart/voice-message

To: ietf-types@iana.org
Subject: Registration of MIME media type 
multipart/voice-message

MIME media type name: multipart
MIME subtype name: voice-message

Required parameters: boundary, version

The use of boundary is defined in [MIME2]

The version parameter contains the value "3.0" if the enclosed 
content conforms to [VPIM3]. The version parameter contains 
the value "2.0" if the enclosed content conforms to [VPIM2]. 
The absence of this parameter indicates conformance to the 
previous version defined in RFC 1911 [VPIM1].

Optional parameters: none

Encoding considerations: 7bit, 8bit or Binary

Security considerations:

This definition identifies the content as being a voice 
message. In some environments (though likely not the 
majority), the loss of the anonymity of the content may be a 
security issue.

Interoperability considerations:

Systems developed to conform with [VPIM1] and [VPIM2] may not 
conform to this registration. Specifically, there may be 
unrenderable content types received, in this case the 
recipient system should NDN the message. Also the VPIM v1 
positional identification will likely be lost.
Published specification:
   This document
   [VPIM2]
   [VPIM3]

Applications which use this media type:
   Primarily unified messaging

Additional information:
   Magic number(s): ?
   File extension(s): .VPM
   Macintosh File Type Code(s): VPIM

Person & email address to contact for further information:
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   GregV@Lucent.Com

Intended usage: COMMON

Author/Change controller:
   Glenn W. Parsons & Gregory M. Vaudreuil

4.2 multipart/fax-message

   To: ietf-types@iana.org
   Subject: Registration of MIME media type multipart/fax-message

   MIME media type name: multipart
   MIME subtype name: fax-message
   Required parameters: boundary, version

   The use of boundary is defined in [MIME2]

   The version parameter that contains the value "1.0" if
   enclosed content conforms to [IFAX].

   Optional parameters: none

   Encoding considerations: 7bit, 8bit or Binary

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Security considerations:

This definition identifies the content as being a fax message. In some environments (though likely not the majority), the loss of the anonymity of the content may be a security issue.

Interoperability considerations:

Systems developed strictly to conform with [IFAX] may not be able to receive multipart/fax-message (though this should be treat as multipart/mixed). In this case, interoperability would fail.

Published specification:

This document
[IFAX]
[VPIM3]

Applications which use this media type:

Primarily fax capable unified messaging systems.

Additional information:

Magic number(s): ?
File extension(s): .FAX
Macintosh File Type Code(s): FAX

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Intended usage: COMMON

Author/Change controller:

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6. References


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