Critical Content of Internet Mail

1. Abstract

This document describes a mechanism for identifying the critical content body parts of a multi-part Internet mail message.
2. Conventions used in this document

This document refers generically to the sender of a message in the masculine (he/him/his) and the recipient of the message in the feminine (she/her/hers). This convention is purely for convenience and makes no assumption about the gender of a message sender or recipient.

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 RFC-2119 [2].

FORMATTING NOTE: Notes, such as this one, provide additional non-essential information that the reader may skip without missing anything essential. The primary purpose of these non-essential notes is to convey information about the rationale of this document, or to place this document in the proper historical or evolutionary context. Readers whose sole purpose is to construct a conformant implementation may skip such information. However, it may be of use to those who wish to understand why we made certain design choices.

3. Introduction

This document describes the Critical Content identification for multi-part Internet mail.

The need for a critical content identification mechanism comes about because of the internetworking of Internet mail systems with legacy messaging systems that do not fulfil all of the semantics of Internet mail. Such legacy systems have a limited ability to render
all parts of a given message. This document will use the case of an
Internet mail system exchanging electronic messages with a legacy
voice messaging system for illustrative purposes.

Electronic mail has historically been text-centric. Extensions such
as MIME [3] enable the desktop to send and receive multi-part,
multimedia messages. Popular multimedia data types include binary
word processing documents, binary business presentation graphics,
voice, and video.

Voice mail has historically been audio-centric. Many voice
messaging systems only render voice. Extensions such as fax enable
the voice mail system to send and receive fax images as well as
create multi-part voice and fax messages. A few voice mail systems
can render text using text-to-speech or text-to-fax technology.
Although theoretically possible, none can today render video.

An important aspect of the interchange between voice messaging
services and desktop e-mail client applications is that the
rendering capability of the voice messaging platform is often much
less than the rendering capability of a desktop e-mail client. In
the e-mail case, the sender has the expectation that the recipient
receives all components of a multimedia message. This is so even if
the recipient cannot render all body parts. In most cases, the
recipient can either find the appropriate rendering tool or tell the
sender that she cannot read the particular attachment.

This is an important issue. By definition, a MIME-enabled user
agent, conforming to [4] will present or make available all of the
body parts to the recipient. However, a voice mail system may not
be capable of storing non-voice objects. Moreover, the voice mail
system may not be capable of notifying the recipient that there were
undeliverable message parts.

The inability of the receiving system to render a body part is
usually a permanent failure. Retransmission of the message will not
improve the likelihood of a future successful delivery. Contrast
this to the case with normal data delivery. Traditional message
failures, such as a garbled message or disabled link will benefit
from retransmission.

This situation is fundamentally different from normal Internet mail.
In the Internet mail case, either the system delivered the message,
or it didn’t. There is no concept of a system partially delivering
a message.

In addition, the sender would not mind if the system did not deliver
non-critical parts of a message. In fact, the sender’s user agent
may be silently adding body parts to a message unbeknownst to the
sender. For example, take Microsoft Outlook as a user agent.
Outlook often will attach a TNEF section or other body parts. If the
receiving system rejected the message because it could not render TNEF, the sender would be understandably confused and upset.

Thus, there is a need for a method of indicating to a Mail Transfer Agent (MTA) or User Agent (UA) that the sender considers parts of a message to be critical. From the sender’s perspective, he would not consider the message delivered if the system did not deliver the critical parts.

One method of indicating critical content of a message is to define a profile. The profile defines discard rules based on knowledge of the user population for silently deleting body parts. Citing the example above, a voice profile can easily declare that MTAs or UAs can silently delete TNEF data and yet consider the message successfully delivered. This is, in fact, the approach originally proposed for VPIMv3 [5].

Since one aspect of the issue is deciding when to notify the sender that the system cannot deliver part of a message, one could use a partial non-delivery notification mechanism [6] to indicate a problem with delivering a given body part. However, this requires the user request a MDN. Moreover, the sender will receive PNDN failures for objects the sender may not be aware he is sending. An example would be the TNEF part.

Summarizing the needs, we need a mechanism that will let the sender or sender’s UA mark body parts he considers critical to the message that the system must deliver. The mechanism MUST NOT burden the sender with failure notifications for non-critical body parts. The mechanism MUST conform to the general notification status request mechanism for positive or negative notification. When requested, the mechanism MUST indicate to the sender when a receiving system cannot deliver a critical body part.

In short, we need a method of indicating what sort of delivery notification the sender requires on a per-body part basis.

This document describes a Critical Content marking mechanism that satisfies these needs. Following the format for Internet message bodies [3], this document introduces the Content-Notification body part header. Values for this header are NOTIFY, PARTIAL, or IGNORE. The receiving MTA or UA will generate a DSN or PNDN if it receives a request for notification and the (non-)delivery status of the parts marked NOTIFY meet the criteria for notification. Likewise, the receiving UA will generate a MDN or MNDN if it receives a request for notification and the (non-)delivery status of the parts marked NOTIFY meet the criteria for notification.

<<<EDITOR’S NOTE: We don’t have an ID for MNDN yet, but it will look like PNDN. Stay tuned.>>>
4. Content-Notification Entity

The Content-Notification field is a MIME body part header inserted by the sending UA to indicate to the receiving MTA or UA whether to consider this body part when generating a (non-)delivery message. If the value of the field is IGNORE, the receiving MTA or UA MUST NOT generate a notification. If the value of the field is NOTIFY, the receiving MTA or UA MUST generate a notification, based on the normal notification request mechanisms. Normal notification request mechanisms include the SMTP RCPT NOTIFY command [7] and the Disposition-Notification-To header [8].

The terms "entity" and "body part" have the meanings defined in [3].

The next sections examine the actions taken by an MTA or UA given the different values of Content-Notification.

NOTE: This implies that the MTA must examine the entire message on receipt to determine whether it needs to generate a notification. However, the MTA need not examine the message if it knows it can store and forward all media types. Said differently, an Internet e-mail MTA can, by default, handle any arbitrary MIME-encapsulated type. Some voice mail systems, on the other hand, cannot even store binary attachments, such as application/ms-word. The voice mail MTA, in this example, would be scanning for non-renderable body parts anyway.

4.1. NOTIFY

"Content-Notification: NOTIFY" signifies that this body part is critical to the sender. The sender wishes to receive notification reports for this body part.

If the receiving system cannot render or store a body part marked NOTIFY, then the entire message has failed. In this case, the receiving system MUST take the appropriate failure action.

NOTE: We say "appropriate action", because the sender may have suppressed all notifications. In this case, the appropriate action is to simply discard the message.

4.2. PARTIAL

"Content-Notification: PARTIAL" signifies that the sender wishes to receive notification reports for this body part.

If the receiving system cannot render or store a body part marked PARTIAL, the receiving system MUST take the appropriate failure action. It is important to note that if the system is successful in delivering other critical body parts, then the message delivery is...
successful. In this situation, the receiving system MUST return a partial non-delivery notification [6].

4.3. IGNORE

"Content-Notification: IGNORE" signifies that the sender does not care about notification reports for this body part.

If the receiving system cannot render or store a body part marked IGNORE, the receiving system may silently delete the body part. The receiving system MUST NOT return a delivery failure, unless parts marked PARTIAL or NOTIFY have also failed.

4.4. Other Values

The receiving system MUST treat unrecognized values as PARTIAL. This is to provide backward compatibility with future uses of the Content-Notification entity.

<<<ALTERNATIVES:

IGNORE: If I don’t recognize something, ignore it!

NOTIFY: Future values are more likely to involve some sort of notification, rather than non-notification. However, if the notifications are more sophisticated than NOTIFY, senders may be miffed they didn’t get the processing they expected.

Reject the Message: This would be too extreme! Yes, it would weed out non-conformant sending UAs, but this would really piss off users.

So far, we have one vote for IGNORE, as that would be compatible with VPIMv2.
We have one vote for PARTIAL, as that would provide forward-compatibility with future uses of Content-Notification.
We expect this to be a point of discussion on the list.

End of ALTERNATIVES>>>

4.5. Notification Precedence

<<<We’ll fill-in this in the next draft.>>>
not know about the content notification entity. All body parts are critical, because they have the default marking of NOTIFY.

If there is at least one Content-Notification entity in the message, the default value for unspecified body parts is IGNORE. The philosophy is that UAs, especially manually constructed messages, will explicitly mark the critical body parts.

NOTE: We could choose the default value for Content-Notification to be IGNORE. This would make VPIMv2 automatically compliant with this document, as VPIMv2 has provision to silently delete undeliverable parts. However, VPIMv2 systems should not be receiving arbitrary e-mail from the Internet. If they do, they should be compliant with this series of documents. By defaulting to NOTIFY, this draft is compliant with the rest of the Internet infrastructure.

6. Security Considerations

We anticipate no new security issues beyond those already addressed by the notification RFCs.

7. Collected Syntax

The format of the collected syntax is in accordance with the ABNF of [9]. Note that per RFC 2045, none of the strings are case sensitive.

"Content-Notification" "":" notification-type CRLF

notification-type = "NOTIFY" / "PARTIAL" / "IGNORE"

8. References

1 Bradner, S., "The Internet Standards Process -- Revision 3", BCP 9, RFC 2026, October 1996.


4 Freed, N. and Borenstein, N., "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types", RFC 2046, Innosoft and First Virtual, November 1996.

5 Vaudreuil, G. and Parsons, G., "Voice Profile for Internet Mail - version 3", <draft-ema-vpimv3-00.txt>, Work in Progress, expired.


9. Acknowledgments

Coming soon!

10. Author’s Addresses

Eric Burger
Centigram Communications Corporation
Maryland Technology Center
1375 Piccard Dr., MS 150I
Rockville, MD 20850-4311
USA

Phone: +1 301/212-3320
Email: e.burger@ieee.org

Emily Candell
Comverse Network Systems
200 Quannah Pkwy.
Wakefield, MA 01880
USA

Phone: +1 781/213-2324
Email: emily@comversens.com
Full Copyright Statement

The IETF takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on the IETF’s procedures with respect to rights in standards-track and standards-related documentation can be found in BCP-11. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the IETF Secretariat.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which may cover technology that may be required to practice this standard. Please address the information to the IETF Executive Director.

Copyright (C) 2000 The Internet Society. All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.