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Voice Profile for Internet Mail - version 3

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Overview

This document profiles Internet mail for unified messaging. It is a complement to VPIM Version 2 documented in [RFC 2021](#). A list of changes from that document are noted in [Appendix F](#). As well, [Appendix A](#) summarizes the protocol profiles of this version of VPIM.

Please send comments on this document to the author, Greg Vaudreuil <gregv@lucent.com>.

Working Group Summary

This is a working draft within being considered within the electronic messaging association. It is intended that this document be presented to the IETF for standardization.

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1. Abstract

General electronic mail (email) provides a facility for exchanging messages of seemingly arbitrary content. In common email usage, text is the primary media with one or more attachments.

A class of special-purpose computers has evolved to provide voice messaging services. These machines generally interface to a telephone switch and provide call answering and voice messaging services. Message exchange between these voice-mail only systems can best be achieved using VPIM Version 2.

Fax messaging is another special purpose messaging system which interface to a telephone switch and provide the ability to send and receive images over the PSTN. When sending these messages over the Internet rather than the PSTN, the simple mode fax profile defined in RFC ABCD should be used.

Other electronic messaging systems include paging, and short message service. It is expected that other messaging systems developed for specific environments will continue to be developed.

This profile defines a new version of the VPIM specification for the interchange of voice messages between a voice messaging system as defined in [VPIM] and a unified messaging system. In this sense, a unified messaging system is capable of sending and receiving each of several different message types. Typical unified messaging systems today consolidate fax messages, voice messages, and email messages into a single system and permit the forwarding a received message of one type as an attachment to a message of another type.

Further, this profile will define the interactions between a media agnostic (multi-media) messaging system with unified messaging and voice messaging systems. A media agnostic system may combine several media into a single message. Such a message may not have primary a media but rely upon several components together to convey the essential information.

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2. Key changes in Version 3

Several new capabilities are added to VPIM to form the Version 3 specification.

1) Three new voice encodings are profiled. While version 2 choose G726 ADPCM as a compromise, experience has shown a need for a wider variety of encodings. These encodings range from the larger but less computationally intensive Mu-Law to the high compression G.723.1 encoding used by Voice over IP telephony. All VPIM Version 3 systems must be capable of receiving audio encoded in any of these formats. Sending systems may choose to send audio in any of the encodings.

2) Support of the Microsoft WAV encapsulation has been added to provide an option to systems which need to send in a format useful for installed-base desktop email systems. All VPIM Version 3 systems must be capable of receiving audio encoded raw or in a WAV wrapper. Sending systems may choose to use send raw audio data or encapsulate it in the WAV file format.

3) Support the attachment of messages of any type to messages of any other type. This is the common result of forwarding a message with cover comments from a terminal type with a primary media other than that of the original message.

4) Support the inclusion of other non-primary media in a voice message. In particular, permit the inclusion of textual information as well as the attachment of arbitrary files in the voice message type.

5) Create clear discard rules such that messages with message, media, or attachments not recognized by the sender can be delivered if the primary media of the message can be deposited in the recipients mailbox. Messages where the primary media cannot be preserved must be returned to the sender with an informative notification message.

6) Define a special case of text such that messages received by a non-VPIM terminal will display by default advisory text describing the nature of the messages and providing instructions on how to download a suitable helper application.

7) When it is known that the receiving system supports the same voice encoding as the sending system (by per-user, or per-system configuration), provide an option to send the audio data in the common audio format, even if not otherwise permitted.

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3. Scope

MIME is the Internet multipurpose, multimedia messaging standard. This document explicitly recognizes its capabilities and provides a mechanism for the exchange of various messaging technologies, primarily voice and facsimile.

This document specifies a restricted profile of the Internet multimedia messaging protocols for use between voice processing server platforms and unified messaging platforms. This profile is intended to specify the minimum common set of features to allow interworking between compliant systems.

3.1 Voice and Unified Messaging System Interactions

The following are typical interactions between voice messaging and unified messaging systems that must be addressed by this specification.

- 1) Text messages are not normally received and often cannot be easily displayed or viewed on voice mail machines. They can sometimes be processed via text-to-speech or text-to-fax features.
- 2) Unified messaging systems accept addresses in several formats relative to the type of message. In particular, Internet addressing uses the domain name system while fax and voice messaging use the telephone numbering system. Addressing must be adapted or re-formatted such that a messages from one domain preserves the ability to reply to all recipients.
- 3) Voice messaging systems are not capable of rendering all message types and are not capable of rendering all media types. A combination of capabilities exchange and clear downgrade rules are necessary to provide a seamless interaction between more capable and less capable systems.
- 4) Error reports must be machine-parseable so that helpful responses can be presented to users in a manner appropriate to the terminal where they receive the message at.

3.2 Design Goals

It is a goal of this profile to make as few restrictions and additions to the existing Internet mail protocols as possible while satisfying the requirements for interoperability between voice mail system, unified messaging systems, and general Internet email. It is also a goal to make the necessary extensions as backward compatible with VPIM Version 2 as possible. Where this is not possible, it may be desirable to clarify or revise Version 2 to make it so.

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This profile is intended to be robust enough to be used in an environment, such as the global Internet with installed-base gateways which do not understand MIME, though typical use is expected to be within corporate intranets. Full functionality, such as reliable error messages and binary transport, will require careful selection of gateways (e.g., via MX records) to be used as VPIM forwarding agents. Nothing in this document precludes use of general purpose MIME email packages to read and compose VPIM messages. While no special configuration is required to receive VPIM compliant messages, some may be required to originate compliant structures.

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4. Protocol Restrictions

<To be added>

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](#)].

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5. Voice Message Interchange Format

The voice message interchange format is a profile of the Internet Mail Protocol Suite. Any Internet Mail message containing the format defined in this section is referred to as a VPIM Version 3 Message in this document. As a result, this document assumes an understanding of the Internet Mail specifications. Specifically, VPIM references components from the message format standard for Internet messages [[RFC822](#)], the Multipurpose Internet Message Extensions [MIME], the X.400 gateway specification [[X.400](#)], delivery status and message disposition notifications [[REPORT](#)][DSN][[DRPT](#)][STATUS][[MDN](#)], and the electronic business card [[MIMEDIR](#)][VCARD].

5.1 Message Addressing Formats

[RFC822] addresses are based on the domain name system. This naming system has two components: the local part, used for username or mailbox identification; and the host part, used for global machine identification.

5.1.1 Server-to-Server VPIM Addresses

VPIM Version 3 places no restrictions on the "from:" of the Internet address. VPIM Version 3 (and v2) systems must be capable of receiving an arbitrary email address and generating a reply to that address. No inferences about the structure of the local part (left hand side) should be necessary.

Recipients email addresses must be created in a form compatible with the recipients system and consistent with the address entry capabilities of a telephone user interface.

5.1.2 Special Addresses

Special addresses are provided for compatibility with the conventions of Internet mail. These addresses do not use numeric local addresses, both to conform to current Internet practice and to avoid conflict with existing numeric addressing plans. Two special addresses are RESERVED for use as follows:

postmaster@domain

By convention, a special mailbox named "postmaster" MUST exist on all systems. This address is used for diagnostics and should be checked regularly by the system manager. This mailbox is particularly likely to receive text messages, which is not normal on a voice processing platform. The specific handling of these messages is an individual implementation choice.

non-mail-user@domain

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If a reply to a message is not possible, such as a telephone answering message or a fax message, then the special address "non-mail-user" must be used as the originator's address. Any text name such as "Telephone Answering", or the telephone number if it is available, is permitted. This special address is used as a token to indicate an unreachable originator. For compatibility with the installed base of mail user agents, implementations that generate this special address MUST send a negative delivery status notification (DSN) for reply messages sent to the undeliverable address. The status code for such NDN's is 5.1.1 "Mailbox does not exist".

Examples:

```
From: Telephone Answering <non-mail-user@mycompany.com>
From: 9727332722 <non-mail-user@mycompany.com>
```

5.1.3 Distribution Lists

There are many ways to handle distribution list (DL) expansions and none are 'standard'. Simple alias is a behavior closest to what most voice mail systems do today and what is to be used with VPIM messages. That is:

- Reply to the originator - (Address in the [RFC822](#) "Reply-to:" or "From:" field)
- Errors to the submitter - (Address in the "MAIL FROM:" field of the ESMTP exchange and the Return-Path: [RFC 822](#) field)

Some proprietary voice messaging protocols include only the recipient of the particular copy in the envelope and include no "header fields" except date and per-message features. Most voice messaging systems do not provide for "Header Information" in their messaging queues and only include delivery information. As a result, recipient information MAY be in either the To or CC header fields. If all recipients cannot be presented (e.g. unknown DL expansion) then the recipient header fields MUST be omitted to indicate that an accurate list of recipients (e.g. for use with a reply-all capability) is not known.

Note: Discuss use of the group notation of [\[RFC822\]](#) as a placeholder for unknown recipients.

5.2 Message Header Fields

Internet messages contain a header information block. This header block contains information required to identify the sender, the list of recipients, the message send time, and other information intended for user presentation. Except for specialized gateway and mailing list cases, header fields do not indicate delivery options for the

transport of messages.

Distribution list processors are noted for modifying or adding to the header fields of messages that pass through them. VPIM systems MUST be able to accept and ignore header fields that are not defined here.

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The following header lines are permitted for use with VPIM voice messages:

5.2.1 From

The originator's fully-qualified domain address (a mailbox address followed by the fully-qualified domain name). The user listed in this field "SHOULD" be presented in the voice message envelope as the originator of the message.

SEND RULES

Systems compliant with this profile SHOULD provide the text personal name of the voice message originator in a quoted phrase, if the name is available. Text names of corporate or positional mailboxes MAY be provided as a simple string. From [[RFC822](#)]

Example:

From: "Joe S. User" <12145551212@mycompany.com>

From: Technical Support <611@serviceprovider.com>

From: Non-mail-user@myserver.mycompany.com

Voice mail machines may not be able to support separate attributes for the "From:" and "Reply-To:" header fields and the vCard email attribute, VPIM-conforming systems SHOULD set these values to the same address. Use of addresses different than those present in the "From:" header field address may result in unanticipated reply behavior.

RECEPTION RULES

The "From:" address SHOULD be used for replies (see 5.7.1). However, if the "From:" address contains <non-mail-user@domain>, the user SHOULD NOT be offered the option to reply, nor should notifications be sent to this address.

5.2.2 To

The "To:" field contains the recipient's fully-qualified domain address. There MAY be one or more "To:" fields in any message.

Examples:

To: +12145551213@mycompany.com

To: Undisclosed Recipient;;

SEND RULES

Systems SHOULD provide a list of recipients only if all recipients are provided.

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Systems such as gateways from protocols which do not indicate the complete list of recipients **SHOULD** provide a "To:" line. Because these systems cannot accurately enumerate all recipients in the "To:" headers, no recipients should be enumerated. The group notation of [RFC822](#) MAY be used in this case.

(see 5.1.3).

RECEPTION RULES

Systems compliant to this profile MAY discard the addresses in the "To:" fields if they are unable to store the information. This would, of course, make a reply-to-all capability impossible. If present, the addresses in the "To:" field MAY be used for a reply message to all recipients.

[5.2.3](#) Cc

The "Cc:" field contains additional recipients' fully-qualified domain addresses. Many voice mail systems maintain only sufficient envelope information for message delivery and are not capable of storing or providing a complete list of recipients.

SEND RULES

Conforming implementations **SHOULD** send "Cc:" lists if all recipients that should be disclosed can be disclosed. The list of disclosed recipients does not include those sent via a blind copy. If not, systems **SHOULD** omit the "Cc:" fields or use the group notation from [RFC822](#) to indicate that the full list of recipients is unknown or otherwise unavailable.

Example:

Cc: +12145551213@mycompany.com

RECEIVE RULES

Systems compliant to this profile MAY discard the addresses in the "Cc:" fields of incoming messages as necessary. If a list of "Cc:" addresses is present, these addresses MAY be used for a reply message to all recipients.

[5.2.4](#) Date

The "Date:" field contains the date, time, and time zone in which the message was sent by the originator.

SEND RULES

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The time zone SHOULD be represented in a four-digit time zone offset, such as -0500 for North American Eastern Standard Time. This MAY be supplemented by a time zone name in parentheses, e.g., "-0900 (PDT)". Compliant implementations SHOULD be able to convert [[RFC822](#)] date and time stamps into local time.

If the VPIM sender is relaying a message from a system which does not provide a time stamp, the time of arrival at the gateway system SHOULD be used as the date.

Example:

Date: Wed, 28 Jul 96 10:08:49 -0800 (PST)

RECEIVE RULES

The sending system MUST report the time the message was sent. From [[RFC822](#)]

[5.2.5](#) Sender

SEND RULES

The "Sender:" field contains the actual address of the originator if the message is sent by an agent on behalf of the author indicated in the "From:" field. This header field MAY be sent by VPIM-conforming systems. I

RECEPTION RULES

If the address in the "Sender:" field cannot be preserved in the recipient's message queues or in the next-hop protocol from a gateway, the field MAY be silently discarded.

[5.2.6](#) Return-Path

The "Return-path:" field is added by the final delivering SMTP server. If present, it contains the address from the MAIL FROM parameter of the ESMTP exchange (see 6.1.2). Any error messages resulting from the delivery failure MUST be sent to this address. Note that if the "Return-path:" is null ("<"), e.g. no path, loop prevention or confidential, delivery status and message disposition notifications MUST NOT be sent.

RECEPTION RULES

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The "Return-path:" field contains special purpose trace information useful in some implementations where final delivery occurs after the acceptance of the message by SMTP. A system which provides final delivery and cannot store the return-path is dangerously broken. If the receiving system is incapable of storing the return path to be used for subsequent delivery errors, the receiving system must otherwise ensure that further delivery errors don't happen. Systems that do not support the return path MUST ensure that at the time the message is acknowledged, the message is delivered to the recipient's ultimate mailbox. Non-Delivery notifications should not be sent after that final delivery.

Systems should go to heroic extremes to protect the return path in a store-and-forward multiprotocol gateway.

5.2.7 Message-id

The "Message-Id:" field contains a unique per-message identifier. A unique message-id MUST be generated for each message sent from a VPIM-compliant implementation.

Example:

Message-Id: <12345678@mycompany.com>

The message Id is not required to be stored on the receiving system. This identifier MAY be used for tracking, auditing, and returning receipt notification reports. From [[RFC822](#)]

5.2.8 Reply-To

If present, the "Reply-to:" header provides a preferred address to which reply messages should be sent (see 5.7.1). Typically, voice mail systems can only support one originator of a message so it is likely that this field will be ignored by the receiving system. Further, the exact semantic meaning of this header is subject to substantial debate and is considered unclear at this time. From [[RFC822](#)]

SEND RULES

A compliant system SHOULD NOT send a Reply-To header.

RECEPTION RULES

If a "reply-to:" field is present, a reply-to sender message MAY be sent to the address specified (that is, in lieu of the address in the "From:" field). If only one address of the originator is supported in the message store or in the next-hop protocol from a multi-protocol

gateway, the address in the "From:" field MUST be used and the "Reply-To:" field MAY be silently discarded.

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5.2.9 Received

The "Received:" field contains trace information added to the beginning of a [RFC 822](#) message by MTAs. This is the only field permitted to be added by an MTA. Information in this header is useful for debugging when using an US-ASCII message reader or a header-parsing tool. From [[RFC822](#)]

SEND RULES

A VPIM-compliant system MUST add a "Received:" fields when acting as a gateway.

RECEPTION RULES

A VPIM-compliant system SHOULD NOT remove any "Received:" fields when relaying messages to other MTAs or gateways. These header fields MAY be ignored or deleted when the message is received at the final destination.

5.2.10 MIME Version

The "MIME-Version:" field indicates that the message conforms to [MIME]. Systems compliant with this specification SHOULD include a comment with the words "(Voice 3.0)". [[VPIM1](#)] defines an earlier version of this profile and uses the token (Voice 1.0). RFC [[VPIM2](#)] defines an earlier version of this profile and uses the token (Voice 2.0)

Example:

MIME-Version: 1.0 (Voice Version 3)

This identifier is intended for information only and SHOULD NOT be used to semantically identify the message as being a VPIM message. Instead, the presence of the content defined in [[V-MSG](#)] SHOULD be used if identification is necessary.

5.2.11 Sensitivity

The "Sensitivity:" field, if present, indicates the requested privacy level. The case-insensitive values "Personal", "Private", and "Normal" are specified. If no privacy is requested, this field is omitted.

SEND RULES

A VPIM-compliant implementations MAY include this header to indicate the sensitivity of a message. If the message is of "Normal"

sensitivity, this field MAY be omitted. From: [[X.400](#)]

RECEPTION RULES

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If a "Sensitivity:" field with a value of "Personal" or "Private" is present in the message, a compliant system SHOULD prohibit the recipient from forwarding this message to any other user. A compliant system, however, SHOULD allow the responder to reply to a sensitive message, but SHOULD NOT include the original message content. The sensitivity of the reply message MAY be set by the responder.

**** The following requirement from VPIM needs to be evaluated in light of general Internet email client behaviors *****

If the receiving system does not support privacy and the sensitivity is one of "Personal" or "Private", a negative delivery status notification MUST sent to the originator with the appropriate status code (X.Y.Z) indicating that privacy could not be assured. The message contents SHOULD be returned to the sender to allow for a voice context with the notification. A non-delivery notification to a private message SHOULD NOT be tagged private since it will be sent to the originator. From: [[X.400](#)]

(Is is worth differentiating between private and personal for the purposes of sending the NDN?)

[5.2.12](#) Importance

Indicates the requested importance to be given by the receiving system. The case-insensitive values "low", "normal" and "high" are specified. If no special importance is requested, this header may be omitted and the value of the absent header assumed to be "normal". From: [[X.400](#)]

SEND RULES

Compliant implementations MAY include this header to indicate the importance of a message

RECEPTION RULES

If the receiving system does not support importance, the attribute may be silently dropped. If the attribute is supported, it can be used for various user interface purposes including the ordering messages within a mailbox or triggering notification devices such as pagers.

[5.2.13](#) Subject

The subject field is often provided by email systems but is not widely supported on Voice Mail platforms. From [[RFC822](#)]

SEND RULES

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For compatibility with text based mailbox interfaces, a text subject field SHOULD be generated by a compliant implementation. It is recommended that voice-messaging systems that do not support any text user interfaces (e.g. access only by a telephone) insert a generic subject header of "Voice Message" for the benefit of GUI enabled recipients.

RECEPTION RULES

It is anticipated that many voice-only systems will be incapable of storing the subject line. The subject MAY be discarded if present by a receiving system.

5.2.14 Disposition-Notification-To

This header MAY be present to indicate that the sender is requesting a receipt notification from the receiving user agent. This message disposition notification (MDN) is typically sent by the user agent after the user has listened to the message and consented to an MDN being sent

Example:

Disposition-notification-to: +12145551213@mycompany.com

SEND RULES

VPIM-compliant implementations MAY include this header to request a disposition indication such as a listen confirmation.

RECEPTION RULES

The presence of a "Disposition-notification-to:" header in a message is merely a request for an MDN described in 5.6.3. The recipients' system is always free to silently ignore such a request so this header does not burden any system that does not support it. From [[MDN](#)].

5.2.15 Disposition-Notification-Options

This header MAY be present to define future extensions parameters for an MDN requested by the presence of the header in the previous section.

SEND RULES

No "Disposition-notification-options:" are defined that are useful for voice messaging. Sending systems MUST NOT request disposition notification options by sending a disposition-notification-options header.

RECEPTION RULES

Currently no parameters are defined by this document or by [\[MDN\]](#).
However for forward compatibility with future extensions,, this header

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MUST be processed if present, if MDNs are supported. If it contains a extension parameter that is required for proper MDN generation (noted with "=required"), then an MDN MUST NOT be sent if the parameter is not understood. See [\[MDN\]](#) for complete details.

Example:

```
Disposition-notification-options:
    whizzbang=required,foo
```

[5.3](#) MIME Content Descriptions

[5.3.1](#) Content-Description:

This field MAY be present to facilitate the text identification of these body parts in simple email readers. Any values may be used, though it may be useful to use values similar to those for Content-Disposition.

Example:

```
Content-Description: Big Telco Voice Message
```

[5.3.2](#) Content-Disposition:

This field MUST be present to allow the parsable identification of these body parts. This is especially useful if, as is typical, more than one Audio/* body occurs within a single level (e.g. multipart/voice-message). Since a VPIM voice message is intended to be automatically played upon display of the message, in the order in which the audio contents occur, the audio contents must always be of type inline. However, it is still useful to include a filename value, so this should be present if this information is available. From [\[DISP\]](#)

In order to distinguish between the various types of audio contents in a VPIM voice message a new disposition parameter "voice" is defined with the parameter values below to be used as appropriate (see Error! Reference source not found.):

```
Voice-Message - the primary voice message,
Voice-Message-Notification - a spoken delivery notification
                        or spoken disposition notification,
Originator-Spoken-Name - the spoken name of the originator,
Recipient-Spoken-Name - the spoken name of the recipient if
                        available to the originator and present if there is ONLY one
                        recipient,
Spoken-Subject- the spoken subject of the message, typically
                spoken by the originator
```

Note that there SHOULD only be one instance of each of these types of audio contents per message level. Additional instances of a given type (i.e., parameter value) may occur within an attached forwarded voice message.

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Implementations that do not understand the "voice" parameter (or the Content-Disposition header) can safely ignore it, and will present the audio bodyparts in order (but will not be able to distinguish between them).

5.3.3 Content-Duration:

This field MAY be present to allow the specification of the length of the audio bodypart in seconds. The use of this field on reception is a local implementation issue. From [[DUR](#)]

Example:

Content-Duration: 33

5.3.4 Content-Language:

This field MAY be present to allow the specification of the spoken language of the audio bodypart. The encoding is defined in [[LANG](#)]. The use of this field on reception is a local implementation issue.

Example for UK English:

Content-Language: en-UK

5.4 Voice Message Content Types

MIME, introduced in [[MIME1](#)], is a general-purpose message body format that is extensible to carry a wide range of body parts. It provides for encoding binary data so that it can be transported over the 7-bit text-oriented SMTP protocol. This transport encoding (denoted by the Content-Transfer-Encoding header field) is in addition to the audio encoding required to generate a binary object.

MIME defines two transport encoding mechanisms to transform binary data into a 7 bit representation, one designed for text-like data ("Quoted-Printable"), and one for arbitrary binary data ("Base64"). While Base64 is dramatically more efficient for audio data, either will work. Where binary transport is available, no transport encoding is needed, and the data can be labeled as "Binary".

An implementation in compliance with this profile SHOULD send audio and/or facsimile data in binary form when binary message transport is available. When binary transport is not available, implementations MUST encode the audio and/or facsimile data as Base64. The detection and decoding of "Quoted-Printable", "7bit", and "8bit" MUST be supported in order to meet MIME requirements and to preserve interoperability with the fullest range of possible devices. However, if a content is received in a transfer encoding that cannot be

rendered to the user, an appropriate negative delivery status notification MUST be sent.

The content types described in this section are identified for use within the multipart/voice-message; version = Version 3 content. This content, which is the fundamental part of a VPIM Version 3 message, is referred to as a VPIM voice message in this document.

Contents in the multipart/voice message which are not primary may be discarded as necessary to accomplish delivery. A system which needs to drop content to achieve delivery MUST provide notification to the recipient indicating that content was dropped is required.

5.4.1 Multipart/Voice-Message

This MIME multipart structure provides a mechanism for packaging a voice message into one container that is tagged as VPIM Version 3 compliant. The semantic of multipart/Voice-Message (defined in [V-MSG]) is identical to multipart/mixed and may be interpreted as that by systems that do not recognize this content-type.

The Multipart/Voice-Message content-type MUST only contain the profiled media and content types specified in this section (i.e. audio/*, image/*, message/rfc822 and text/directory). The most common will be: spoken name, spoken subject, the message itself, attached fax and directory info. Forwarded messages are created by simply using the message/rfc822 construct.

Conformant implementations MUST send voice messages with the multipart/voice-message as the top level (i.e. in the Content-Type header). Conformant implementations MUST recognize the Multipart/Voice-Message content (whether it is a top level content or below a multipart/mixed) and be able to separate the contents (e.g. spoken name or spoken subject).

5.4.2 Message/RFC822

MIME requires support of the Message/RFC822 message encapsulation body part. This body part is used within a multipart/voice-message to forward complete messages (see 5.7) or to reply with original content (see 5.7.1). From [[MIME2](#)]

RECEPTION RULES

May flatten structure if necessary. If flattening, must discard other vCards of forwarded parts such that only the outermost vCard is retained.

5.4.3 Text/Directory

This section needs to be adjusted to meet the needs of the helper-application based clients. The vCard must contain all information necessary to construct a valid reply-to-sender message. This should be possible by tightening the rules a bit.

This content allows for the inclusion of a Versit vCard [[VCARD](#)] electronic business card within a VPIM message. The format is suitable as an interchange format between applications or systems, and is defined independent of the method used to transport it. It provides a useful mechanism to transport information about the originator that can be used by the receiving VPIM system or other local applications

Each vCard MUST be contained within a Text/Directory content type [[MIMEDIR](#)] within a VPIM message. [[MIMEDIR](#)] requires that the character set MUST be defined as a parameter value (typically us-ascii for VPIM) and that the profile SHOULD be defined (the value MUST be vCard within VPIM messages).

Each VPIM message SHOULD be created with a Text/Directory (vCard profile) content type that MUST contain the preferred email address, telephone number, and text name of the message originator as well as the vCard version. The vCard SHOULD contain the spoken name and role of the originator, as well as the revision date. Any other vCard attribute MAY also be present. The intent is that the vCard be used as the source of information to contact the originator (e.g., reply, call). The vCard profile [[VCARD](#)] MUST specify at least the following attributes:

- TEL - Public switched telephone number in international (E.164) format (various types, typically VOICE)
- EMAIL - email address (various types, typically INTERNET; the type VPIM is optionally used to denote an address that supports VPIM messages. This address will be used for reply-to-sender functionality when the [RFC822](#) header fields are not accessible to the voice mail helper application.
- Version - Indicates the version of the vCard profile. Version 3.0 [[VCARD](#)] MUST be used.

The following attributes SHOULD be specified:

- N - Family Name, Given Name, Additional Names, Honorific Prefixes, and Suffixes. Because it is expected that recipients using a telephone user interface will use the information in the vCard to identify the originator, and the GUI will see the information presented in the FROM line, all present components in the text name of the FROM header field MUST match the values provided by the Vcard.
- SOUND - spoken name sound data (various types, typically 32KADPCM)

REV - Revision of vCard in ISO 8601 date format

The following attributes MAY be specified:

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The vCard MAY use other attributes as defined in [[VCARD](#)] or extensions attributes not yet defined (e.g. recipient media capabilities).

If present, the spoken name attribute must be included inline in the vCard. This is a change from VPIM V2 to facilitate easier processing by desktop clients that launch vCard viewers via helper application launched with only the contents of a single mime body part.

Each multipart/voice-message content MUST only contain one vCard -- more than one is an error condition. A VPIM message may contain forwarded messages. VCards that are part of the forwarded messages are permitted. However, these vCards MUST be associated with the originator(s) of the forwarded message(s) and the originator of the forwarding message. As a result, all forwarded vCards will be contained in message/rfc822 contents -- only the vCard of forwarding originator will be at the top-level.

Example:

```
Content-Type: text/directory; charset=us-ascii; profile=vCard
Content-Transfer-Encoding: 7bit
```

```
BEGIN:VCARD
N:Parsons;Glenn
ORG:Northern Telecom
TEL;TYPE=VOICE;MSG;WORK:+1-613-763-7582
EMAIL;TYPE=INTERNET;glenn.parsons@nortel.ca
EMAIL;TYPE=INTERNET;VPIM:6137637582@vm.nortel.ca
SOUND;TYPE=32KADPCM;ENCODING=B;
    Base-64 encoded spoken name data
REV:19960831T103310Z
Version: 3.0
END:VCARD
```

5.4.4 Required Audio Formats

SEND RULES

VPIM Version 3 implementations MAY send audio in any of the profiled voice encodings. Implementations MAY send the audio in either native MIME packaging or encapsulated within the Microsoft WAV packaging.

RECEIVE RULES

VPIM Version 3 implementations MUST be capable of receiving each of the below profiled voice encodings. Implementations MUST accept audio in either the native MIME packaging or encapsulated within the

Microsoft WAV packaging.

If an implementation can only store or forward one voice segment, then multiple voice segments in a single message (if present) SHOULD be

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concatenated, and SHOULD NOT be discarded. It is RECOMMENDED that the segments be concatenated in the same order as they were received.

5.4.4.1 Audio/Basic

An implementation compliant to this profile MAY send and MUST receive Audio/BASIC [MIME?]. This encoding is the most widely supported voice encoding in computer telephony and on the WEB. It requires the minimum computation to create and is available on virtually all sound-equipped computers. It is also the least compressed of the formats with a data rate of 64 kbits/second. It is therefore an ideal encoding for lightweight, well-connected message sending clients.

5.4.4.2 Audio/32KADPCM

An implementation compliant to this profile MAY send and MUST receive Audio/32KADPCM [ADPCM]. This encoding is the required default for VPIM V2 systems. This encoding is a moderately compressed encoding with a data rate of 32 kbits/second using moderate processing resources. Because the encoding has been in widespread use for over 20 years, there is believed to be no outstanding intellectual property claims.

5.4.4.3 Audio/MS-GSM

An implementation compliant to this profile MAY send and MUST receive Audio/MS-GSM [MSGSM]. This is a widely supported voice encoding in the installed base of Microsoft Windows(TM) desktops. It provides substantial compression at 13 kbits/second with substantial processing.

5.4.4.4 Audio/G723.1

**** Recent discussions suggest this encoding should be dropped. These discussions indicate the IPR issues are substantial and the benefits over GSM are not sufficient to justify must receive status ****

An implementation compliant to this profile MAY send and MUST receive Audio/G.723.1. This is a state-of-the-art voice encoding with high compression at 6.8 kbits/second. This low bitrate provides better-than-real-time download to clients connected over contemporary dial-up Internet connections. This encoding requires substantial computing resources to encode. The compression is encumbered by substantial intellectual property claims that need to be considered.

5.4.4.5 Audio/wav

The Audio/wav is not an audio encoding per-se. It is a packaging of

an audio encoding into a Microsoft desktop-friendly wrapper. This wrapping offers the benefit of being widely understood by helper applications resident within a Microsoft Windows environment. When the WAV packaging is used in conjunction with the mu-Law or GSM

encoding, messages received by a non-VPIM aware client may be minimally rendered.

While interpreting a WAV package offers little cost, the generation of a WAV file may be difficult in many architectures. The WAV format is difficult to create in a streaming environment because an accurate length must be known and recorded at the beginning of the data stream. For these reasons, VPIM Version 3 implementations **MUST** accept the WAV packaging and **MAY** send the following codecs in the WAV packaging.

To promote maximum interoperability with desktop email clients and audio helper applications, conforming systems **MUST** send only a single audio segment per WAV file. To enable attachment-oriented desktop clients to launch an audio helper application, conforming systems must include a content-disposition header with a filename containing a ".wav" suffix.

For convenience, the WAV codec numbers for the four required codecs are listed below.

Codec	WAV Number	MIME Registration
G.726	0x0064 (100)	Audio/32kadpcm
G.711	0x0007 (7)	Audio/Basic
GSM 6.10	0x0031 (49)	Audio/MS-GSM
G723.1	0x0042 (66)	Audio/G723-1

5.4.4.6 Audio/X-wav

Applications wishing to send messages encoded in the WAV file format **SHOULD** use the audio/wav. Conforming implementations should not send Audio/X-wav

RECEPTION RULES

For backward compatibility with the installed base of wav file sending systems, receiving implementation **MUST** treat the audio/X-wav content the same as Audio/wav.

5.4.5 Proprietary Voice Formats

Use of any other encoding except the required codecs reduces interoperability in the absence of explicit knowledge about the capabilities of the recipient. A compliant implementation **MAY** use any

other encoding provided a unique identifier is registered with the IANA prior to use (see [[MIME4](#)]). The voice encodings should be registered as sub-types of Audio.

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Proprietary voice encoding formats or other standard formats MAY be sent under this profile provided the sender has a reasonable expectation that the recipient will accept the encoding. In practice, this requires explicit per-destination configuration information maintained either in a directory, personal address book, or gateway configuration tables.

RECEIVE RULES

Under the VPIM Version 3 profile, audio contents are considered the primary information carrying contents of the message. Systems which receive audio/* content types which they are unable to decode MUST return the message to the originator with an NDN indicating media not supported.

5.5 Other MIME Content Types

**** Clear up discard rules ****

Only the above specified contents are required to be supported within a multipart/voice message by a receiving system. Other contents may be included within the multipart/voice-message if the sender has a reasonable expectation the recipient can receive the message.

An implementation compliant with this profile MAY send additional contents in a VPIM message. If an implementation receives a VPIM message that contains content types not specified in this profile, their handling is a local implementation issue (e.g. the unknown contents MAY be discarded if they cannot be presented to the recipient). Conversely, if an implementation receives a non-VPIM message (i.e., without a multipart/voice-message content type) with any of the contents defined in 5.4 & 5.5, it SHOULD deliver those contents, but the full message handling is a local issue (e.g. the unknown contents or the entire message MAY be discarded). Implementations MUST issue negative delivery status notifications to the originator when any form of non-delivery to the recipient occurs.

The multipart contents defined below MAY be sent within a multipart/voice message (with other noted contents below them as required.) When multiple contents are present, they SHOULD be presented to the user in the order that they appear in the message. Several examples are given in [Appendix B](#).

5.5.1 Image/Tiff

A common image encoding for facsimile, known as TIFF-F, is a derivative of the Tag Image File Format (TIFF) and is described in several documents. For the purposes of VPIM, the F Profile of TIFF for Facsimile (TIFF-F) is defined in [[TIFF-F](#)] and the image/tiff MIME

content type is defined in [[TIFFREG](#)]. While there are several formats of TIFF, only TIFF-F is profiled for use within a VPIM voice message. Further, since the TIFF-F file format is used in a store-and-forward mode with VPIM, the image MUST be encoded so that there is only one image strip per facsimile page.

SEND RULES

All VPIM implementations that support facsimile SHOULD generate TIFF-F compatible facsimile contents in the image/tiff; application=faxbw sub-type encoding by default. An implementation MAY send this fax content in VPIM voice messages and MUST be able to recognize and display it in received messages. If a fax message is received that cannot be rendered to the user (e.g. the receiving VPIM system does not support fax), then the system MUST return the message with a negative delivery status notification with a media not supported status code.

While any valid MIME body header MAY be used (e.g., Content-Disposition to indicate the filename), none are specified to have special semantics for VPIM and MAY be ignored. Note that the content type parameter application=faxbw MUST be included in outbound messages. However, inbound messages with or without this parameter MUST be rendered to the user (if the rendering software encounters an error in the file format, some form of negative delivery status notification MUST be sent to the originator).

RECEIVE RULES

As with any non-voice attachment, a receiving system may accept a voice message and discard the fax content. The recipient SHOULD be notified of the dropped content. The sender of a message MAY be notified of a partial message delivery by issuing a suitable MDN. (details needed)

5.5.2 Multipart/Mixed

SEND RULES

Multipart/voice message provides the facilities for enclosing several body parts in a single message. The semantics of using complex hierarchy within a voice message is undefined and the use of such a structure is discouraged.

RECEIVE RULES

Compliant systems MUST accept multipart/mixed body parts within a multipart/voice messages. Systems may collapse the contents of the multipart/mixed structure into the multipart/voice message itself. From [[MIME2](#)]

5.5.3 Text/Plain

MIME requires support of the basic Text/Plain content type. This content type has limited applicability within the voice messaging

environment. However, because VPIM is a MIME profile, MIME requirements should be met.

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Compliant VPIM implementations MAY send the Text/Plain content-type. It should be understood that the textual information is not considered a primary media within multipart/voice-message and may be discarded by a receiving system.

RECEIVE RULES

Within a multipart/voice message, the text/plain content type MAY be dropped from the message with a suitable advisory presented to the recipient. The originator MAY be notified of a partial message delivery by a suitable MDN.

Outside a Multipart/Voice message, compliant implementations MUST accept Text/Plain messages, however, specific handling is left as an implementation decision. From [[MIME2](#)]

There are several mechanisms that can be used to support text (once accepted) on voice messaging systems including text-to-speech and text-to-fax conversions. If no rendering of the text is possible (i.e., it is not possible for the recipient to determine if the text is a critical part of the message), the entire message MUST be returned to the sender with a negative delivery status notification and a media-unsupported status code.

[5.5.4](#) Text/Informational

SEND RULES

The text/informational content type MAY be included as the first section of a multipart/voice-message to explain the structure of a VPIM Version 3 message, and optionally to instruct the recipient where to download a suitable helper application or plug-in.

RECEPTION RULES

The display/playing of text/informational content type should be suppressed for systems supporting VPIM Version 3 messages. The text is intended for MIME-capable, but non-VPIM capable email clients as an advisory.

[5.6](#) Return and Notification Messages

VPIM delivery status notification messages (5.6.2) MUST be sent to the originator of the message when any form of non-delivery of the subject message or its components occurs. These error messages must be sent to the return path (5.2.6) if present, otherwise, the From (5.2.1) address may be used.

VPIM Receipt Notification messages (5.6.3) should be sent to the

sender specified in the Disposition-Notification-To header field (5.2.14). The MDN should be sent after the message has been presented to the recipient or if the message has somehow been disposed of without being presented to the recipient (e.g. if it were deleted before playing it).

VPIM Notification messages may be positive or negative, and can indicate delivery at the server or receipt by the client. However, the notification **MUST** be contained in a multipart/report container (5.5.4) and **SHOULD** contain a spoken error message.

5.6.1 Multipart/Report

The Multipart/Report is used for enclosing human-readable and machine parsable notification (e.g. Message/delivery-status) body parts and any returned message content. The multipart/report content-type is used to deliver both delivery status reports indicating transport success or failure and message disposition notifications to indicate post-delivery events such as receipt notification. Compliant implementations **MUST** use the Multipart/Report construct. Compliant implementations **MUST** recognize and decode the Multipart/Report content type and its components in order to present the report to the user. From [[REPORT](#)]

Multipart/Report messages from VPIM implementations **MAY** include the human-readable description of the error as a spoken audio/* content (this speech **MAY** be made available to the notification recipient). As well, VPIM implementations **MUST** be able to handle (and **MAY** generate) Multipart/Report messages that encode the human-readable description of the error as text. Note that per [[DSN](#)] the human-readable part **MUST** always be present.

5.6.2 Message/Delivery-status

This MIME body part is used for sending machine-parsable delivery status notifications. Compliant implementations **MUST** use the Message/delivery-status construct when returning messages or sending warnings. Compliant implementations **MUST** recognize and decode the Message/delivery-status content type and present the reason for failure to the sender of the message. From [[DSN](#)]

5.6.3 Message/Disposition-notification

This MIME body part is used for sending machine-parsable read-receipt message disposition notifications. Conforming implementations **SHOULD** use the Message/Disposition-notification construct when sending post-delivery message status notifications. These MDNs, however, **MUST** only be sent in response to the presence of the Disposition-notification-to header in 5.2.14. Conforming implementations should recognize and decode the Message/Disposition-notification content type and present the notification to the user. From [[MDN](#)]

5.7 Forwarded Messages

VPIM version 2 explicitly supports the forwarding of voice and fax

content with voice or fax annotation. However, only the two constructs described below are acceptable in a VPIM message. Since only the first (i.e. message/rfc822) can be recognized as a forwarded message (or even multiple forwarded messages), it is RECOMMENDED that this construct be used whenever possible.

Forwarded VPIM messages SHOULD be sent as a multipart/voice-message with the entire original message enclosed in a message/rfc822 content type and the annotation as a separate Audio/* or image/* body part. If the [RFC822](#) header fields are not available for the forwarded content, simulated header fields with available information SHOULD be constructed to indicate the original sending timestamp, and the original sender as indicated in the "From" line. However, note that at least one of "From", "Subject", or "Date" MUST be present. As well, the message/rfc822 content MUST include at least the "MIME-Version", and "Content-Type" header fields. From [[MIME2](#)]

In the event that forwarding information is lost through concatenation of the original message and the forwarding annotation, such as must be done in a gateway between VPIM and the AMIS voice messaging protocol, the entire audio content MAY be sent as a single Audio/* segment without including any forwarding semantics.

[5.7.1](#) Message/RFC822

MIME requires support of the Message/RFC822 message encapsulation body part. This body part is used within a multipart/voice-message to forward complete messages (see 5.7) or to reply with original content (see 5.7.1). From [[MIME2](#)]

RECEPTION RULES

May flatten structure if necessary to fit within the message structure of the recipients voice mailbox.

[5.8](#) Reply Messages

Replies to VPIM messages (and Internet mail messages) are addressed to the address noted in the reply-to header (see 5.2.8) if it is present, else the From address (see 5.2.1) is used. The vCard EMAIL attribute, if present, SHOULD be the same as the reply-to address and may be the same as the From address. It is expected that within legacy email implementations, the voice message viewer application may need to create a reply message without the benefit of the [RFC822](#) headers. In such a case, the vCard MAY be used to generate a reply to the sender.

RECEPTION RULES

Support of multiple originator header fields is often not possible on voice messaging systems, so it may be necessary to choose only one when gatewaying a VPIM message to another voice message system. However, implementers should note that this may make it impossible to send error messages and replies to their proper destinations.

In some cases, a reply message is not possible, such as with a message

created by telephone answering (i.e. classic voice mail). In this case, the From field MUST contain the special address non-mail-user@domain (see 5.1.2). A null ESMTP MAIL FROM address SHOULD also be used in this case (see 6.1.2). A receiving VPIM system SHOULD NOT offer the user the option to reply to this kind of message.

5.9 Notification Messages

VPIM delivery status notification messages (5.6.2) **MUST** be sent to the originator of the message when any form of non-delivery of the subject message or its components occurs. These error messages must be sent to the return path (5.2.6) if present, otherwise, the From (5.2.1) address may be used.

VPIM Receipt Notification messages (5.6.3) should be sent to the sender specified in the Disposition-Notification-To header field (5.2.14), only after the message has been presented to the recipient or if the message has somehow been disposed of without being presented to the recipient (e.g. if it were deleted before playing it).

VPIM Notification messages may be positive or negative, and can indicate delivery at the server or receipt by the client. However, the notification **MUST** be contained in a multipart/report container (5.5.4) and **SHOULD** contain a spoken error message.

If a VPIM system receives a message with contents that are not understood (see 5.4 & 5.5), its handling is a local matter. A delivery status notification **SHOULD** be generated if the message could not be delivered because of unknown contents (e.g., on traditional voice processing systems). In some cases, the message may be delivered (with a positive DSN sent) to a mailbox before the determination of rendering can be made.

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6. Message Transport Protocol

Messages are transported between voice mail machines using the Internet Extended Simple Mail Transfer Protocol (ESMTP). All information required for proper delivery of the message is included in the ESMTP dialog. This information, including the sender and recipient addresses, is commonly referred to as the message "envelope". This information is equivalent to the message control block in many analog voice messaging protocols.

ESMTP is a general-purpose messaging protocol, designed both to send mail and to allow terminal console messaging. Simple Mail Transport Protocol (SMTP) was originally created for the exchange of US-ASCII 7-bit text messages. Binary and 8-bit text messages have traditionally been transported by encoding the messages into a 7-bit text-like form. [\[ESMTP\]](#) formalized an extension mechanism for SMTP, and subsequent RFCs have defined 8-bit text networking, command streaming, binary networking, and extensions to permit the declaration of message size for the efficient transmission of large messages such as multi-minute voice mail.

The following sections list ESMTP commands, keywords, and parameters that are required and those that are optional for conformance to this profile.

6.1 ESMTP Commands

6.1.1 HELO

Base SMTP greeting and identification of sender. This command is not to be sent by compliant systems unless the more-capable EHLO command is not accepted. It is included for compatibility with general SMTP implementations. Compliant servers **MUST** implement the HELO command for backward compatibility but clients **SHOULD NOT** send it unless EHLO is not supported. From [\[SMTP\]](#)

6.1.2 MAIL FROM (REQUIRED)

Originating mailbox. This address contains the mailbox to which errors should be sent. VPIM implementations **SHOULD** use the same address in the MAIL FROM command as is used in the From header field. This address is not necessarily the same as the message Sender listed in the message header fields if the message was received from a gateway or sent to an Internet-style mailing list. From [\[SMTP\]](#), [\[ESMTP\]](#)

The MAIL FROM address **SHOULD** be stored in the local message store for the purposes of generating a delivery status notification to the originator. The address indicated in the MAIL FROM command **SHOULD** be passed as a local system parameter or placed in a Return-Path: line

inserted at the beginning of a VPIM message. From [[HOSTREQ](#)]

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Since delivery status notifications MUST be sent to the MAIL FROM address, the use of the null address ("<>") is often used to prevent looping of messages. This null address MAY be used to note that a particular message has no return path (e.g. a telephone answer message). From [[SMTP](#)]

[6.1.3](#) RCPT TO

Recipient's mailbox. The parameter to this command contains only the address to which the message should be delivered for this transaction. It is the set of addresses in one or more RCPT TO commands that are used for mail routing. From [[SMTP](#), [ESMTP](#)]

Note: In the event that multiple transport connections to multiple destination machines are required for the same message, the set of addresses in a given transport connection may not match the list of recipients in the message header fields.

[6.1.4](#) DATA

Initiates the transfer of message data. Support for this command is required. Compliant implementations MUST implement the SMTP DATA command for backwards compatibility. From [[SMTP](#)]

[6.1.5](#) TURN

Requests a change-of-roles, that is, the client that opened the connection offers to assume the role of server for any mail the remote machine may wish to send. Because SMTP is not an authenticated protocol, the TURN command presents an opportunity to improperly fetch mail queued for another destination. Compliant implementations SHOULD NOT implement the TURN command. From [[SMTP](#)]

[6.1.6](#) QUIT

Requests that the connection be closed. If accepted, the remote machine will reset and close the connection. Compliant implementations MUST implement the QUIT command. From [[SMTP](#)]

[6.1.7](#) RSET

Resets the connection to its initial state. Compliant implementations MUST implement the RSET command. From [[SMTP](#)]

[6.1.8](#) VRFY

Requests verification that this node can reach the listed recipient. While this functionality is also included in the RCPT TO command, VRFY allows the query without beginning a mail transfer transaction. This

command is useful for debugging and tracing problems. Compliant implementations MAY implement the VRFY command. From [[SMTP](#)]

(Note that the implementation of VRFY may simplify the guessing of a recipient's mailbox or automated sweeps for valid mailbox addresses, resulting in a possible reduction in privacy. Various implementation techniques may be used to reduce the threat, such as limiting the number of queries per session.) From [[SMTP](#)]

[6.1.9](#) EHLO

The enhanced mail greeting that enables a server to announce support for extended messaging options. The extended messaging modes are discussed in subsequent sections of this document. Compliant implementations MUST implement the ESMTP command and return the capabilities indicated later in this memo. From [[ESMTP](#)]

[6.1.10](#) BDAT

The BDAT command provides a higher efficiency alternative to the earlier DATA command, especially for voice. The BDAT command provides for native binary transport of messages. Compliant implementations SHOULD support binary transport using the BDAT command. [[BINARY](#)]

[6.2](#) ESMTP Keywords

The following ESMTP keywords indicate extended features useful for voice messaging.

[6.2.1](#) PIPELINING

The "PIPELINING" keyword indicates ability of the receiving server to accept new commands before issuing a response to the previous command. Pipelining commands dramatically improves performance by reducing the number of round-trip packet exchanges and makes it possible to validate all recipient addresses in one operation. Compliant implementations SHOULD support the command pipelining indicated by this keyword. From [[PIPE](#)]

[6.2.2](#) SIZE

The "SIZE" keyword provides a mechanism by which the SMTP server can indicate the maximum size message supported. Compliant servers MUST provide size extension to indicate the maximum size message that can be accepted. Clients SHOULD NOT send messages larger than the size indicated by the server. Clients SHOULD advertise SIZE= when sending messages to servers that indicate support for the SIZE extension. From [[SIZE](#)]

[6.2.3](#) CHUNKING

The "CHUNKING" keyword indicates that the receiver will support the

high-performance binary transport mode. Note that CHUNKING can be used with any message format and does not imply support for binary encoded messages. Compliant implementations MAY support binary transport indicated by this capability. From [[BINARY](#)]

6.2.4 BINARYMIME

The "BINARYMIME" keyword indicates that the SMTP server can accept binary encoded MIME messages. Compliant implementations MAY support binary transport indicated by this capability. Note that support for this feature requires support of CHUNKING. From [[BINARY](#)]

6.2.5 DSN

The "DSN" keyword indicates that the SMTP server will accept explicit delivery status notification requests. Compliant implementations MUST support the delivery notification extensions in [[DRPT](#)].

6.2.6 ENHANCEDSTATUSCODES

The "ENHANCEDSTATUSCODES" keyword indicates that an SMTP server augments its responses with the enhanced mail system status codes [[CODES](#)]. These codes can then be used to provide more informative explanations of error conditions, especially in the context of the delivery status notification format defined in [[DSN](#)]. Compliant implementations SHOULD support this capability. From [[STATUS](#)]

6.3 ESMTP Parameters - MAIL FROM

6.3.1 BINARYMIME

The current message is a binary encoded MIME messages. Compliant implementations SHOULD support binary transport indicated by this parameter. From [[BINARY](#)]

6.3.2 RET

The RET parameter indicates whether the content of the message should be returned. Compliant systems SHOULD honor a request for returned content. From [[DRPT](#)]

6.3.3 ENVID

The ENVID keyword of the SMTP MAIL command is used to specify an "envelope identifier" to be transmitted along with the message and included in any DSNs issued for any of the recipients named in this SMTP transaction. The purpose of the envelope identifier is to allow the sender of a message to identify the transaction for which the DSN was issued. Compliant implementations MAY use this parameter. From [[DRPT](#)]

Should use the original email address of the sender in this field. This is less an envelope ID and more of a billing ID.

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6.4 ESMTP Parameters - RCPT TO

6.4.1 NOTIFY

The NOTIFY parameter indicates the conditions under which a delivery report should be sent. Compliant implementations MUST honor this request. From [\[DRPT\]](#)

6.4.2 ORCPT

The ORCPT keyword of the RCPT command is used to specify an "original" recipient address that corresponds to the actual recipient to which the message is to be delivered. If the ORCPT esmtp-keyword is used, it MUST have an associated esmtp-value, which consists of the original recipient address, encoded according to the rules below. Compliant implementations MAY use this parameter. From [\[DRPT\]](#)

6.5 ESMTP - SMTP Downgrading

The ESMTP extensions suggested or required for conformance to VPIM fall into two categories. The first category includes features which increase the efficiency of the transport system such as SIZE, BINARYMIME, and PIPELINING. In the event of a downgrade to a less functional transport system, these features can be dropped with no functional change to the sender or recipient.

The second category of features is transport extensions in support of new functions. DSN and EnhancedStatusCodes provide essential improvements in the handling of delivery status notifications to bring email to the level of reliability expected of Voice Mail. To ensure a consistent level of service across an intranet or the global Internet, it is essential that VPIM compliant ESMTP support the ESMTP DSN extension at all hops between a VPIM originating system and the recipient system. In the situation where a 'downgrade' is unavoidable a relay hop may be forced (by the next hop) to forward a VPIM message without the ESMTP request for positive delivery status notification. It is RECOMMENDED that the downgrading system should continue to attempt to deliver the message, but MUST send an appropriate delivery notification to the originator, e.g. the message left an ESMTP host and was sent (unreliably) via SMTP.

7. Conformance Requirements

<To be completed>

8. Security Considerations

8.1 General Directive

This document is a profile of existing Internet mail protocols. To maintain interoperability with Internet mail, any security to be provided should be part of the Internet security infrastructure, rather than a new mechanism or some other mechanism outside of the Internet infrastructure.

8.2 Threats and Problems

Both Internet mail and voice messaging have their own set of threats and countermeasures. As such, this specification does not create any security issues not already existing in the profiled Internet mail and voice mail protocols themselves. This section attends only to the set of additional threats that ensue from integrating the two services.

8.2.1 Spoofed sender

The actual sender of the voice message might not be the same as that specified in the Sender or From header fields of the message content header fields or the MAIL FROM address from the SMTP envelope. In a tightly constrained environment, sufficient physical and software controls may be able to ensure prevention of this problem. In addition, the recognition of the sender's voice may provide confidence of the sender's identity irrespective of that specified in Sender or From. It should be recognized that SMTP implementations do not provide inherent authentication of the senders of messages, nor are sites under obligation to provide such authentication.

8.2.2 Unsolicited voice mail

Assigning an Internet mail address to a voice mailbox opens the possibility of receiving unsolicited messages (either text or voice mail). Traditionally voice mail systems operated in closed environments and were not susceptible to unknown senders. Voice mail users have a higher expectation of mailbox privacy and may consider such messages as a security breach. Many Internet mail systems are choosing to block all messages from unknown sources in an attempt to curb this problem.

8.2.3 Message disclosure

Users of voice messaging systems have an expectation of a level of message privacy that is higher than the level provided by Internet mail without security enhancements. This expectation of privacy by users SHOULD be preserved as much as possible.

8.3 Security Techniques

Sufficient physical and software control may be acceptable in constrained environments. Further, the profile specified in this document does not in any way preclude the use of any Internet object or channel security protocol to encrypt, authenticate, or non-repudiate the messages.

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The EMA hosts the VPIM web page at <http://www.ema.org/vpim>.

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12. [Appendix A](#) - VPIM Requirements Summary

<to be created>

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13. Appendix B - Example Voice Messages

The following is a full-featured VPIM V3 message designed by the sending system to be as broadly compatible with desktop email clients as possible. This message includes a message attributes of urgent, private, and read-receipt request.

VPIM Message:

```
To: +19725551212@mycompany.com
To: +16135551234@mycompany.com
From: "Parsons, Glenn" <+12145551234@mycompany.com>
Date: Mon, 26 Aug 93 10:20:20 -0700 (CDT)
MIME-Version: 1.0 (Voice 3.0)
Content-type: Multipart/Voice-Message; Version=3.0;
  Boundary="MessageBoundary"
Content-Transfer-Encoding: 7bit
Message-ID: 123456789@VM2.mycompany.com
Disposition-Notification-To: <+12145551234@mycompany.com>
Sensitivity: Private
Importance: High

--MessageBoundary
Content-type: Audio/WAV; codec=49
Content-Transfer-Encoding: Base64
Content-Disposition: inline; voice=Voice-Message
Content-Language: en-US
Content-ID: part1@VM2-4321

gls1fdslsertiflkTfpkgTportrpKtpfgTpoiTpdadasssdasddasdasd
(This is a sample of the base-64 Spoken Message data)
fgdhgddlkpgokpeowrit09==

--MessageBoundary
Content-type: text/directory; charset=us-ascii; profile=vCard
Content-Transfer-Encoding: 7bit

BEGIN:VCARD
N:Parsons;Glenn;;Mr.;
EMAIL;TYPE=INTERNET:+12145551234@mycompany.com
TEL:+1-214-555-1234
SOUND;TYPE=32KADPCM;ENCODING=B;
  kdsfkaskflkkasdf
  - Base-64 spoken name content -
  sdfsd fsdfsdfsfsfsdf=
REV:19951031T222710Z
VERSION: 3.0
END:VCARD
```

--MessageBoundary--

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The following is a simple VPIM V3 message including a PowerPoint attachment destined to another voice messaging server on a local high-bandwidth Intranet. The example uses the mu-law voice encoding since there is little need to expend the CPU to encode the message in a smaller form.

VPIM Message:

To: +19725551212@mycompany.com
To: +16135551234@mycompany.com
From: "Parsons, Glenn" <+12145551234@mycompany.com>
Date: Mon, 26 Aug 93 10:20:20 -0700 (CDT)
MIME-Version: 1.0 (Voice 3.0)
Content-type: Multipart/Voice-Message; Version=3.0;
Boundary="MessageBoundary"
Content-Transfer-Encoding: 7bit
Message-ID: 123456789@VM2.mycompany.com

--MessageBoundary
Content-type: Audio/BASIC
Content-Transfer-Encoding: Base64
Content-Disposition: inline; voice=Voice-Message
Content-Language: en-US
Content-ID: part1@VM2-4321

glslfdsIsertiflkTfpkgTportrpkTpfgTpoiTpdadasssdasddasdasd
(This is a sample of the base-64 Spoken Message data)
fgdhgddlkgpokpeowrit09==

--MessageBoundary
Content-type: Application/Octet-Stream; filename=howdy.ppt
Content-Transfer-Encoding: Base=64

glslfdsIsertiflkTfpkgTportrpkTpfgTpoiTpdadasssdasddasdasd
(This is a sample of the base-64 encoded PowerPoint Presentation)
fgdhgddlkgpokpeowrit09==

--MessageBoundary
Content-type: text/directory; charset=us-ascii; profile=vCard
Content-Transfer-Encoding: 7bit

BEGIN:VCARD
N:Parsons;Glenn;;Mr.;
EMAIL;TYPE=INTERNET:+12145551234@mycompany.com
TEL:+1-217-555-1234
SOUND;TYPE=32KADPCM;ENCODING=B;
kdsfkaskflkkasdf
- Base-64 spoken name content -
sdfsdfsdfsdfsfsfsdf=

REV:19951031T222710Z
VERSION: 3.0
END:VCARD

--MessageBoundary--

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If the receiving voice mail machine cannot store a PowerPoint presentation, it may discard the attachment and provide notification to the recipient that there was an attachment that could not be delivered.

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14. [Appendix C](#) - Example Error Voice Processing Error Codes

The following common voice processing errors and their corresponding status codes are given as examples. Text after the error codes are intended only for reference to describe the error code.

Implementations should provide implementation specific informative comments after the error code rather than the text below.

Error condition	RFC 1893 Error codes
-----	-----
Analog delivery failed because remote system is busy	4.4.0 Persistent connection error - other
Analog delivery failed because remote system is ring-no-answer	4.4.1 Persistent protocol error - no answer from host
Remote system did not answer AMIS-Analog handshake ("D" in response to "C" at connect time)	5.5.5 Permanent protocol error - wrong version
Mailbox does not exist	5.1.1 Permanent mailbox error - does not exist
Mailbox full or over quota	4.2.2 Persistent mailbox error - full
Disk full	4.3.1 Persistent system error - full
Command out of sequence	5.5.1 Permanent protocol error - invalid command
Frame Error	5.5.2 Permanent protocol error - syntax error
Mailbox does not support FAX	5.6.1 Permanent media error - not supported
Mailbox does not support TEXT	5.6.1 Permanent media error - not supported
Sender is not authorized	5.7.1 Permanent security error - sender not authorized
Message marked private, but system is not private capable	5.3.3 Permanent system error - not feature capable

Destination does not support 5.5.0 Permanent protocol error
Version 3, not delivered

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15. [Appendix D](#) - Example Voice Processing Disposition Types

The following common voice processing disposition conditions and their corresponding MDN Disposition (which contains the disposition mode, type and modifier, if applicable) are given as examples. Implementers should refer to [\[MDN\]](#) for a full description of the format of message disposition notifications.

Notification event	MDN Disposition mode, type & modifier
-----	-----
Message played by recipient, receipt automatically returned	manual-action/MDN-sent-automatically; displayed
Message deleted from mailbox by user without listening	manual-action/MDN-sent-automatically; deleted
Message cleared when mailbox deleted by admin	manual-action/MDN-sent-automatically; deleted/mailbox-terminated
Message automatically deleted when older than administrator set threshold	automatic-action/ MDN-sent-automatically; deleted/ expired
Message processed, however audio encoding unknown - unable to play to user	manual-action/MDN-sent-automatically; processed/error Error: unknown audio encoding

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16. [Appendix F](#) - Change History: [RFC 2421](#) (VPIM V2) to this Document

The updated profile in this document is based on the Lucent experience planning implementations for the diverse portfolio of voice messaging and unified messaging products. This version of the profile is significantly different from the previous described in [[VPIM2](#)]. The changes are categorized as general, content, transport and compliance. They are detailed below:

1. General

- a refined multipart/voice-message definition
- Addition of three new must-receive audio encodings. These are GSM, G.723.1, and mu-law.
- Changed the Voice version to Version 3
- Various editorial updates to improve readability. Separated send rules from reception rules.
- Clarified the behavior upon reception of unrecognized content types expected with the interworking between voice and unified messaging systems.

2. Content

- Changed handling of received lines by a gateway to SHOULD NOT delete in a gateway. In gateways to systems such as AMIS, it is not possible to preserve this information. It is intended that such systems be able to claim conformance.
- Changed the encoding of spoken name in vCards from "by-reference" to "inline".

3. Transport

-

4. Compliance

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