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Goals for Voice Profile for Internet Mail, Version 3
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1. Abstract

This document describes the goals of Voice Profile for Internet Mail (VPIM), Version 3 and establishes a baseline of desired functionality against which proposed MIME profiles for Internet voice messaging can be judged. The primary goal for this version is to support interoperability with desktop clients. Other goals for this version of VPIM include backward compatibility, expanded interoperability with unified messaging systems, and conformance to Internet standards. This document does not include goals that were met fully by VPIM version 2 [[VPIM2](#)].

Different levels of desirability are indicated throughout the document.

2. Conventions used in this document

Within this document, different levels of desirability for a MIME profile for Internet voice messaging are indicated by different priorities, indicated in {braces}:

{1} There is general agreement that this is a critical characteristic of any definition of VPIM version 3.

{2} Most believe that this is an important characteristic of VPIM

version 3.

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{3} There is general belief that this is a useful feature of VPIM version 3, but that other factors might override; a definition that does not provide this element is acceptable.

In addition, the following terms have specific meaning in this document:

"service"	An operational service offered by a service provider
"application"	A use of systems to perform a particular function
"terminal"	The endpoint of a communication application
"goal"	An objective of the standardization process

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](#) [[REQ](#)].

3. Introduction

Until recently, voice mail and call answering services were implemented as stand-alone proprietary systems. Today, standards such as the Voice Profile for Internet Mail (VPIM) enable interoperability between such systems over the Internet. VPIM version 1 [[VPIM1](#)] was experimental and was a first attempt at a Voice Profile for Internet Mail, but is now classified as Historical. VPIM Version 2 [[VPIM2](#)] is an improvement on VPIM version 1 that was originally intended to provide interoperability between voice messaging systems only. It describes a messaging profile that standardizes the exchange of voice mail over an IP messaging network using ESMTP [[ESMTP](#)] and MIME [[MIME1](#)]. With the trend toward integration of voice mail and email through unified messaging (UM), it is now necessary to define a new version of VPIM that supports the needs of desktop applications and unified messaging systems (including Internet Facsimile [[EXFAX](#)]). Because the number of desktop boxes is growing rapidly and will soon approach the number of desktop telephones, it is essential to consider the requirements of desktop email client applications (including, but not limited to, MIME-compliant email clients).

This document defines the goals for VPIM version 3 [VPIM3 and IVM]. This standard will support the interchange of voice messages between voice mail systems, unified messaging systems, email servers, and desktop client applications. The desktop client applications is of particular and important interest to VPIM version 3. This document will also expand the offerings of service providers by facilitating access to voice mail from a web client.

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4. Goals for Voice Profile for Internet Mail version 3

VPIM must define the MIME profile and discard rules which will be used for the interchange of voice mail messages over the Internet, and must {1} meet the following goals.

4.1 Interoperability

Enhanced interoperability is the primary goal of VPIM version 3. The profile must {1} enable interoperability between voice mail systems, unified messaging systems, Internet email servers, and desktop client applications. Such interoperability will require {1} support for the new media-agnostic systems, which combine multiple media types into a single message, as well as support for legacy voice mail and email systems. It will require {1} features to accommodate varying capabilities of the voice mail, unified messaging and email systems. Furthermore, VPIM version 3 must {1} be compatible with Internet Fax (extended mode) proposed standards and VPIM messages that are fax messages for both sending and receiving.

To have "interoperability" means that a VPIM version 3 compliant sender attempting to send to a recipient will not fail because of incompatibility. It is essential {1} that VPIM version 3 support interoperability between most of the systems listed below, and desirable {3} to support all of them:

- Desktop email client applications
- VPIM version 2 and version 3 voice Mail systems
- VPIM version 3 unified messaging systems
- Traditional email servers

VPIM version 3 must also {1} include new functionality to facilitate access to voice mail messages from desktop applications.

Overall interoperability requires interoperability for all of the VPIM elements: critical body parts must {1} be preserved, essential information must be provided in a form that is accessible by the users {1}, status codes must {1} be understood, and operations that are standard for each system should {2} be supported.

4.1.1 Interoperability with Desktop Email Applications

Desktop email applications are typically text based. The ability to listen to, reply to, forward, and generate voice mail messages from a traditional desktop environment is a relatively new development.

To accommodate current use and future developments in this area,
VPIM version 3 must {1} provide features to support access to voice

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mail messages from the desktop and other email-reading devices. It would also be desirable {3} for it to support web access to voice mail from the desktop.

VPIM version 3 should not {2} require desktop email applications to possess a large amount of processing power, and a base level implementation must {1} interoperate, even if it does not offer complex processing. There was a strong desire {2} to select a mandatory codec. The mandatory codec would be one that is already widely available on desktops. There was a strong consensus on MSGSM [MSGSM] being the mandatory codec for the interoperability that would therefore be provided. For VPIM version 2 interoperability, {3} there should also be support for the VPIM v2 mandatory codec [ADPCM and G726].

Any codecs included in the VPIM version 3 specification should {2} meet the following criteria:

- Availability on desktops: Codecs should {2} be available on most platforms (Windows, UNIX, Mac)
- Source code availability
- Decoding complexity: All codecs must {1} be low complexity to decode
- Encoding complexity: Some of the codecs must {1} be low complexity to encode.
- Bit rate: VPIM version 3 must {1} specify a codec with low bit rate for devices (i.e., wireless) that do not have much space/bandwidth.
- Voice Over IP support: VPIM version 3 should {2} specify at least one codec that supports Voice over IP implementations.

Most desktop email applications and web clients are not capable of playing raw audio. To support "out-of-the box" playing of voice mail content, VPIM v3 must {1} support wav encapsulation of audio. To enable future support of other formats, VPIM version 3 should {2} provide identification of the codec used without requiring interpretation of an audio format. VPIM v3 may {3} allow audio encodings and formats that are not identified in the VPIM version 3 specification to support environments in which the sender is aware of the optimal encoding and format for the recipient.

Performance and bandwidth issues make it desirable {3} to support streaming of VPIM version 3 audio to the desktop. VPIM version 3 may {3} explicitly support formats other than raw audio and wav to facilitate streaming.

Because most email readers are text/html based and because many devices are not capable of recording audio content, VPIM v3 must {1} allow inclusion of text body parts in a voice message. VPIM version

3 should {2} not explicitly prohibit other media types, as long as critical content is identified and minimal discard rules are specified.

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To support devices that are not capable of playing audio, VPIM 3 should {2} define an optional way to describe the content of the message and indicating how the audio content can be accessed.

It is also a desktop requirement {1} to support attachments of any media type.

4.1.2 Interoperability with VPIM v2 and v3 Voice Messaging Systems

Voice messaging systems are generally implemented as special-purpose machines that interface to a telephone switch and provide call answering and voice messaging services. VPIM version 2 was designed to support interoperability between such systems and remains the best messaging profile for this purpose.

To support interoperability between VPIM voice messaging systems and other compliant systems, VPIM version 3 should {3} have a simple minimum set of required features that will guarantee interoperability, as well as provision for additional functionality that may be supported by more capable systems. Support for this additional functionality requires {3} a mechanism for identifying essential content and status codes indicating that a message could not be delivered due to capability differences. It should {3} also include a minimum set of discard rules to enable back-down from VPIM V3 to V2.

Interoperability with VPIM version 2 voice messaging systems is desirable, but not required. Interoperability should {3} be able to depend on the receiving system supporting the VPIM version 2 32KADPCM codec [ADPCM and G726] , and should not {3} depend on the receiving system supporting any additional VPIM version 3 codecs or audio formats.

To ensure interoperability between VPIM version 2 and version 3 systems, it may {3} be desirable to revise the VPIM version 2 specification to include new status codes and discard rules.

4.1.3 Interoperability with VPIM v3 Unified Messaging Systems

Unified messaging solutions typically leverage common store, directory, and transport layers to provide greater interoperability and accessibility to a variety of media content. They support creation of and access to voicemail, email, and fax messages from a single user interface.

Most unified messaging systems preserve the notion of a primary

media type with multiple message components that convey essential

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information. Because unified messaging clients have varying capabilities, these components may have a different media type than the message. It is also common for unified messaging systems to permit forwarding and replying to messages of one type as an attachment to a message of another type.

To accommodate the common functionality of unified messaging systems, VPIM version 3 must {1} support the inclusion of body parts of a type other than the primary content type. It must {1} also support the embedding of VPIM messages as attachments to messages of another type (such as multipart/mixed), as well as the embedding of messages of another type as attachments to VPIM messages. Interoperability with fax and fax messages is a must {1}.

To provide interoperability with systems that cannot handle a particular content type, VPIM version 3 must {1} provide a mechanism for identifying essential or primary body parts and may {3} define media specific status codes and strings to handle non-delivery of these body parts.

4.1.4 Interoperability with Traditional Email Servers

Traditional email servers are those that support only textual media as inline content. VPIM version 3 must {1} interoperate consistently with the current Internet mail environment. If VPIM version 3 messages arrive in users' mailboxes, it is required {1} that the standard interoperate successfully with common user practices for mail messages: storing them in databases, retransmission, forwarding, creation of mail digests, and replying to messages using non-audio equipment.

4.3 Conformance to Existing Standards

It is the goal of VPIM version 3 to conform as closely as possible to existing standards while meeting the other goals defined in this document.

- Restrictions: The profile should {2} impose as few restrictions as possible to existing Internet mail standards. In particular, it must {1} support all elements of [RFC 822](#) [RFC822] except those that prevent the profile from meeting other VPIM version 3 goals.

- Additions: The profile should {2} make as few additions as possible to existing internet mail standards. It should also {2} adhere to existing desktop conventions in desktop-related areas such as file extensions. If it is necessary to define new MIME types or sub-types, the VPIM version 3 work group should {2} propose terms

that are already standard or in common use in the desktop environment.

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4.4 Backward compatibility

It is a goal of this profile to assure backwards compatibility with VPIM version 2. Where this is not possible, it may be {2} necessary to clarify version 2. VPIM version 2 has already gone through some clarifications to aid in interoperability with version 3. VPIM version 3 should {2} provide and define a minimal set of rules and status codes [[CODES](#)] for handling non-delivery of VPIM v3 messages.

4.5 Robustness

VPIM v3 must {1} be usable in an environment in which there exist legacy gateways that do not understand MIME. Core features and critical data must {1} not be lost when messages pass through AMIS gateways [AMIS-A and AMIS-D]. VPIM version 3 should {2} allow interoperability with recipient devices and gateways which have limited buffering capabilities and cannot buffer all header information.

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