



# **Voice Messaging Conformance:**

*A Testing Process for VPIM Products*  
*Version 1.3 - July 2000*

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Voice Messaging Committee of the Electronic Messaging Association

## **Abstract**

This conformance document was prepared for the Electronic Messaging Association's Voice Messaging Committee VPIM Work Group to facilitate testing to ensure interoperability between products using the VPIMv2 specification for voice messaging

interworking.

## REVISION HISTORY

Issue No	Release Date	Reason for Issue
0.1	September 1995	Initial list of tests for work group project approval
0.2	February 1996	Added details of each test for review
0.3	March 1997	Added document structure and initial conformance procedures
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0.32	April 1997	Additional revisions to add descriptive text to all sections of document
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0.5	September 1997	Distinguish between compatible & conformant, fine tune the 'Assurance Process'
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1.1	February 1999	Revised dated sections and clarified conformance
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## 1. Introduction

This conformance document was prepared for the Electronic Messaging Association's Voice Messaging Committee VPIM Work Group to facilitate testing to ensure interoperability between products using the VPIM v2 Specification - RFC 2421 for voice messaging interworking.

### 1.1 Why test at all?

It has proven essential during the preparation before both the EMA and VMA VPIM demos to perform interoperability testing between the VPIM enabled systems. The testing has proven that vendors may interpret the specifications differently. For example, a mandatory feature may not be implemented, an optional feature may cause havoc on another system, or a feature may just be implemented wrong. Testing is the best way to ensure that all the bugs are out of the systems and everyone can interoperate.

A further value is that it is important to reassure our customers that VPIM products interoperate. An important issue that this document addresses is how to organize a commitment to doing this at a minimum cost.

### 1.2 Why not conformance testing?

There is a concern that without conformance testing (i.e., controlled testing against all the features in the VPIM specification) there will be chaos...

Unfortunately, there is a high cost to perform conformance testing, per se. As a result, Internet standards do not typically require conformance testing. Still 'conformance requirements' are spelled out in many specifications (like VPIM) to allow vendors to understand what is required for them to be conformant. In practice, vendors test their self-proclaimed conformant implementations with other vendors. This interoperability gives vendors confidence that their claims of conformance are accurate.

To promote interoperability testing, many VPIM vendors and customers, would like to see a test plan that ensures all the vendors (current and future) will in fact interoperate with production level equipment. While all vendors have demonstrated real equipment, a demo (typically of only one feature) is not a real interoperability test. Many customers that have a variety of platforms are asking vendors to ensure that their Lucent/Octel, Nortel, etc. systems will in fact send and receive messages over the Internet without a hitch. Past vendor experience says this is very unlikely unless we all agree to have some sort of inter-vendor testing that demonstrates everyone's products working together.

The bottom line, however, is to make sure that the customer gets the result they want -- interworking voice messaging systems 'out-of-the-box'.

### 1.3 Scope of this document

There are many approaches to solve this conformance/interoperability testing issue ranging from cheap to expensive:

- 1) chaos -- no testing
- 2) casual customer testing
- 3) casual and unorganized vendor testing
- 4) structured vendor testing
- 5) structured independent lab testing

A major concern of the VPIM Work Group is to avoid expensive independent conformance lab testing. Further, the preference is also to avoid lengthy test suites of all possible boundary conditions (i.e., what if...). As a result, the approach in this document takes a compromise approach between conformance and interoperability testing and could be listed in the above list as 3.5.

The purpose, then, of this document is to propose a testing structure that adequately reassures our customers that VPIM v2 products do interoperate. This document will be revised to reflect any improvements or clarifications that are needed as a result of experience with the testing process.

**Note:** The process described in this document is intended only to facilitate and record a vendor's claim of conformance. This process does not lead to, nor should be construed as a guarantee or certification of *VPIM v2 Conformance*.

This document is structured in the following way:

The **VPIM** section gives a brief overview of the specification and describes what products are appropriate for testing. Some definitions for this document are also noted.

The **Demo Testing** section gives a background description of the testing that preceded the EMA 97 demo. This is provided only to document the interoperability testing process that was used to prepare for the demo. This process can be used between vendors on a casual basis.

The **Compatibility** section describes the process to allow the declaration that a VPIM product is compatible with the VPIM specification. The declaration of compatibility requires declaring all the features that a VPIM product supports.

The **Interoperability Testing** section describes the process for vendors to test between their VPIM products. A vendor can test their own systems or between their system and that of another vendors.

The **EMA Secretariat** section describes the role of the EMA in the facilitation of the testing described in this document. It also introduces the role of the VPIM Marketing work group and the fees required to be involved in the promotion of VPIM.

The **Test Suite** section details 30 tests that can be used to test interoperability between VPIM systems.

The **Declaration Forms** section provides sample forms for the documenting of testing.

## 1.4 Companion Documents

There are several documents that should be read in conjunction with this document in order to fully appreciate VPIM and the requirements of conformance and interoperability testing.

The first is obviously the VPIM v2 specification itself:

Vaudreuil, G., and G. Parsons, "Voice Profile for Internet Mail - version 2", RFC 2421, September 1998.

Section 11 of the specification contains a detailed list of all the related Internet Mail specifications referenced by VPIM v2. Many of these should be reviewed in addition to the core specification.

## 2. VPIM

VPIM can be introduced with the Abstract of RFC 2421:

*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. Traditionally, messages sent to a non-local machine are transported using analog networking protocols based on DTMF signaling and analog voice playback. As the demand for networking increases, there is a need for a standard high-quality digital protocol to connect these machines. The following document is a profile of the Internet standard MIME and ESMTP protocols for use as a digital voice messaging networking protocol. The profile is referred to as VPIM (Voice Profile for Internet Mail) in this document.*

*This profile is based on earlier work in the Audio Message Interchange Specification (AMIS) group that defined a voice messaging protocol based on X.400 technology. This profile is intended to satisfy the user requirements statement from that earlier work with the industry standard ESMTP/MIME mail protocol infrastructures already used within corporate intranets. This second version of VPIM is based on implementation experience and obsoletes RFC 1911 which describes version 1 of the profile.*

### 2.1 VPIM v2 Conformance

VPIM is a messaging application which must be supported in several environments and be supported on differing devices. These environments include traditional voice processing systems, desktop voice messaging systems, store and forward relays, and protocol translation gateways.

In order to accommodate all environments, the VPIM v2 specification defines two areas of conformance: transport and content.

Transport conformant systems will pass VPIM messages in a store and forward manner with assured delivery notifications and without the loss of information. It is expected that most store and forward Internet mail based messaging systems will be VPIM transport compliant.

Content conformant systems will generate and interpret VPIM messages. Conformance in the generation of VPIM messages indicates that the restrictions of this profile are honored. Only contents specified in this profile or extensions agreed to by bilateral agreement may be sent. Conformance in the interpretation of VPIM messages indicates that all VPIM content types and constructs can be received, that all mandatory VPIM content types can be decoded and presented to the recipient in an appropriate manner, and that any unrenderable contents result in the appropriate notification.

The process in this documented is only intended to a record a vendor's claim of conformance for a certain product. This results from both claiming to comply with all the

conformance requirements of the VPIM v2 Specification and claiming to have successfully interoperated with other vendors. This process does not lead to, nor should be construed as a guarantee of VPIM ‘conformance’ or ‘compliance’.

## 2.2 VPIM Products

**VPIM end systems** are expected to be both transport and content conformant. They should generate conforming content, reliably send it to the next hop system, receive a message, decode the message and present it to the user. Voice messaging systems and protocol conversion gateways are considered end systems.

**Relay systems** are expected to be transport compliant in order to receive and send conforming messages. However, they must also create VPIM conforming delivery status notifications in the event of delivery problems.

**Desktop Email clients** that support VPIM and are expected to be content conformant. Desktop email clients use various protocols and API's for exchanging messages with the local message store and message transport system. While these clients may benefit from VPIM transport capabilities, specific client-server requirements are currently out-of-scope.

### 2.2.1 Products and Versions

Typically, as products improve vendors release new versions with new features but the same basic functionality. Occasionally, the vendor introduces a new product that may be based on a previous product. The determination of a product and its versions, in the terms of VPIM testing, is left to the vendor.

For the purpose of claims of VPIM conformance, it is left to the vendors’ discretion to determine if a new version of a product has changed sufficiently to require a new suite of testing to submit the declarations described in this document.

Similarly, a vendor may decide that its core VPIM protocol is the same in all its products and choose only to test one and claim all the rest conformant. While this can be dangerous, the onus is on the vendor to make this determination (it is strongly recommended that this practice not be used).

## 2.3 Definitions

For the purposes of this document in defining a testing procedure for VPIM, the following definitions apply:

**Registrar** - The body that acts as the recipient of the Declarations from the vendor and processes the request to be declared conformant. The Registrar is designated by the EMA VPIM Work Group, which may also provide technical assistance and guidance to the registrar.

**Document Repository**- The location where this document, other reference documents, all Declarations, and summaries of vendor testing are kept.

**Vendor** - Any messaging vendor with a product that supports VPIM (and is interested in testing).

**Product** - Any messaging product (client or server) that has implemented (or is compatible with) the VPIM v2 specification.

**Version** - A designation by a vendor of different functionality or performance in a product and indicated by assigning each product release a different version.

**Assurance Process** - The activity that results in a statement giving confidence that a product likely conforms to the VPIM v2 specification.

**Declaration of Compatibility** - A vendor's written assurance that a product satisfies the conformance requirements of the VPIM v2 specification.

**Compatible** - A product is recognized as compatible with VPIM after a vendor has submitted a Declaration of Compatibility to the Registrar.

**Conformant** - A product is conformant if it satisfies the conformance requirements of the VPIM v2 specification. Note that this process does not guarantee or certify products as being conformant.

**Declaration of Interoperability** - A vendor's written assurance that a VPIM v2 product has been successfully tested with other VPIM products according to the testing requirements of this document.

**Interoperable** - A product is recognized as interoperable after a vendor has submitted a Declaration of Interoperability that is confirmed to meet the requirements.

### 3. Demo Testing

The information in this section is provided as background information since it documents a series of tests that have already happened. This testing was conducted by participating vendors, in the spring of 1997 leading up to the EMA '97 demo. The testing was structured in that the process described below was defined. The primary goal of this testing was to ensure that each vendor could perform their specific role in the EMA '97 demo. As a result this process is by no means a complete conformance or interoperability test suite. However, some vendors may wish to follow this process for casual testing.

The results of these tests can be found in the Document Repository.

#### 3.1 Audio & Fax File Exchange

Before the actual testing between systems it is beneficial to exchange audio and fax files. This ensures that the encoding of the files in the G.726 and TIFF-F formats was performed correctly. Vendors verify that they can play or view other vendors files. This enables the identification of problems with the encoding before messages are sent. The exchange of these files can be done via FTP to the EMA FTP server (or any other server).

This consisted of the following tests:

- a) ADPCM voice decoding
- b) TIFF-F fax decoding

#### 3.2 MIME File Exchange

Similar to the audio and fax file exchange, the exchange of MIME files ensures that messages are parsable by the voice messaging system into its distinct parts. Vendors verify that they can parse out all the pieces into the format native to their system. This enables the identification of incorrect MIME formats (e.g. missing CRLF) without live testing. This is advantageous because it is often difficult to obtain and keep up live Internet email connections between different vendors because of firewall issues. The exchange of these files can be done via FTP to the EMA FTP server (or any other server).

This consisted of the following tests:

- a) RFC-822 header parsing
- b) MIME base64 decoding
- c) MIME message parsing - voice only
- d) MIME message parsing - voice & fax
- e) MIME message parsing - full featured \*
- f) MIME message parsing -VPIM+text/other

- \* Full Featured: like the first example in the VPIM specification, i.e. VPIM voice message with vCard & spoken name (possibly fax) using all content headers, sent to multiple addresses with importance & priority set

### 3.3 SMTP Casual testing

This involves actual live messaging between vendors systems. This is the final test that ensures that voice messaging systems can send messages to one another. Several parameters are important to know before testing, i.e., the mailboxes (the LHS of the address) and the host names and/or IP addresses (the RHS of the address). The testing is actually broken down into several pieces that should be tested:

- a) SMTP HELO
- b) SMTP EHLO
- c) SMTP message send with empty body
- d) SMTP message send with VPIM body
- e) SMTP message send with long VPIM body \*
- f) Receive NDN after sending to non-existent mailbox

\* Long body: 10 minutes voice and/or 10 page fax

### 3.4 Scenario testing

This testing became the main focus as it ensured the vendor's highlighted feature, within their product, could perform as expected during the EMA'97 demo. As the demo got closer, many of the previous tests were ignored in order to focus on the highlighted feature. Several 'dry runs' were conducted during which the scenario would be played out from start to finish over the Internet. The technical staff would discuss issues on a conference call after each dry run.

The demo at EMA '97 was scripted so that a vendor would demonstrate only one of the following features:

- a) Create a voice message and send to distribution list
- b) Create a voice message using LDAP for addressing and send
- c) Play & Reply via TUI
- d) Play & forward with a fax via GUI
- e) Read fax
- f) Send message off-site to another non-VPIM system

## 4. Compatibility

This process is intended to be used to allow a vendor to claim that a product is compatible with the VPIM v2 specification. That is, the vendor gives assurance that to the best of its knowledge, a product meets the conformance requirements of the VPIM v2 Specification. Compatibility is registered with the Registrar who maintains a list of all registered VPIM compatible products. A vendor can, however, release a VPIM product without following this process -- this product may work perfectly with all other VPIM products. This product, however, cannot be recognized as being compatible with VPIM v2 by the registrar.

Note that the compatibility declaration process described in this section requires no testing. Product testing with sample files or with itself is encouraged, but not required.

### 4.1 Assurance Process

The process by which a vendor can work to test a product and eventually claim to be VPIM Conformant is described in the subsequent sections and consists of the following simple structure:

- 1) Test reading sample VPIM messages
- 2) Declare all supported and unsupported VPIM features
- 3) Submission of Declaration of Compatibility.

Note that there is no special place where all the equipment is brought for testing (e.g., bake-off). Most resources required for testing a particular product must be supplied by each vendor. Some automated reference or testing systems may be made available by some vendors to facilitate VPIM v2 testing. While the use of these systems may be beneficial for the vendor and the results may also be provided as information, they are not required by this process. The onus is on the vendor to obtain access to these (or other) reference system(s) for testing.

This process is only a record of a vendor's claim of conformance. This process does not lead to, nor should be construed as a guarantee of VPIM conformance.

#### 4.1.1 Testing with VPIM Examples

This stage involves a vendors testing its own systems (perhaps during the early stages of design or implementation) by trying to parse and play or view sample messages. These following messages will be made available in the repository (not all are currently available):

- a) G.726 32 kbit/s ADPCM voice file
- b) TIFF-F fax

- c) MIME VPIM message - main voice only
- d) MIME VPIM message - voice with vCard spoken name
- e) MIME VPIM message - voice & fax with vCard spoken name
- f) MIME VPIM message - full featured \*
- g) MIME VPIM DSN message
- h) MIME VPIM MDN message
- i) MIME message - VPIM content plus text content
- j) MIME message - VPIM content plus other content

\* Full Featured: like the first example in the VPIM specification, i.e. VPIM voice message with vCard & spoken name (possibly fax) using all content headers, sent to multiple addresses with importance & priority set

Vendors may download and test at their convenience without assistance from the Registrar. The results of these tests may be useful for the vendor, but they will not be recorded by the registrar.

#### 4.1.2 Declaring VPIM Feature Support

The features of VPIM v2 are summarized in “Appendix A - VPIM v2 Conformance”, of the specification, they are also included in this document (see 9.1) in a format appropriate for the Declaration of Compatibility.

The supported column may contain one of three values:

- **Y** or **X** - the feature is supported
- **N** or blank - the feature is not supported
- **C#** or **#** - the feature is supported only if the condition(s) described in the note are met

A numbered list of Conditional Notes may be provided at the bottom of the table to explain the product's implementation of a particular feature. Additional Notes (not related to a feature) may also be supplied and should be identified as 'Additional Notes'.

To clarify Feature Support, a 'Y' or 'X' means support, so the more 'Y's or 'X's the better.

- A 'MUST' feature must have a 'Y' or 'X' (or 'C#' or '#') to indicate that it is supported,
- A 'MUST NOT' feature must have a 'Y' or 'X' (or 'C#' or '#') to indicate that feature is not implemented
- A 'SHOULD' feature would have a 'Y' or 'X' (or 'C#' or '#') to indicate it is supported (i.e. that feature is in the product)
- A 'SHOULD NOT' feature would have a 'Y' or 'X' (or 'C#' or '#') indicating that the feature is not implemented (i.e. that feature is not in the product)
- A 'MAY' feature would have a 'Y' or 'X' (or 'C#' or '#') to indicate it is supported (i.e. that feature is in the product)

However, if the product does not implement or support a particular feature exactly as explained in the VPIM specification, then the feature is not supported. A feature that is only partially supported must not be listed as supported (i.e., 'Y' or 'X'), instead the condition must be described in an associated note (and noted in the table as 'C#' or '#').

An example may be seen in the table below:

FEATURE	SECTION	A R E A	M U S T	S H O U L D	M A Y	S H O U L D N O T	M U S T N O T	C o n f o r m a n c e
Message Content Types: Inclusion in outbound messages Multipart/Voice-message	4.3.1	C	x					Y

**4.1.3 Submitting the Declaration of Compatibility**

A vendor with a VPIM product that is interested in making a claim of conformance may submit a Declaration of Compatibility (see Declaration of 4.2). The Declaration is submitted to the registrar and the information made available in the repository. Once the Registrar confirms that all required sections have been submitted, the Registrar (with consultation from the VPIM Work Group) evaluates the declaration to assign a conformance level. The Registrar may recognize the product as claiming to be one or all of the following:

- a) VPIM Content Conformant
- b) VPIM Transport Conformant

If the product can be recognized as claiming to be conformant in all areas, then it is simply referred to as claiming to be VPIM Conformant. This is not a recognition of a product being conformant, it is a recording of a vendor’s claim that a product is conformant.

Note that the Declaration of Compatibility may be submitted in parts, however it is not complete until all parts are received. The Registrar may publish submitted (but not yet approved) partial declarations on the repository.

A Declaration addendum (i.e., revision of product/version listed) may be submitted to update existing declarations with new versions of a vendor’s product that were deemed by the vendor to be unnecessary of testing because of similarity to a previous version.

**4.2 Declaration of Compatibility**

The objective of the declaration is to give the vendor’s assurance that the product is conformant with the VPIM v2 specification. In addition, it provides details of the

conformance including who is responsible in the vendor company. Section 9 contains samples of the forms that comprise the Declaration of Compatibility.

This Declaration of Compatibility consists of the following parts:

- a) Compatibility Statement
- b) VPIM Feature Support

#### **4.2.1 Compatibility Statement**

As a minimum the compatibility statement shall contain the following:

- a) the name and address of the vendor issuing the declaration
- b) the identification of the product, including version
- c) the date and place of issue of the declaration
- d) the signature, name and function of the authorized person(s) acting on behalf of the vendor

Additional information that is deemed relevant may also be supplied (e.g. testing staff, etc.)

#### **4.2.2 VPIM Feature Support**

As a minimum, the VPIM Feature Support table shall contain the following:

- a) all of the features and their respective sections listed in Annex A of the VPIM v2 specification (or from the sample table in section 9.3 of this document)
- b) an indication if the feature is mandatory or optional
- c) a 'Y' or 'X', 'N', '#', or 'C#' to indicate if a particular feature is implemented with the required behaviour (see 4.1.2)
- d) All mandatory features (i.e. MUSTs and MUST NOTs) must have a 'Y' or 'X' (or 'C#' or '#')

Additional information that is deemed relevant may also be supplied (e.g. testing setup, etc.)

### **4.3 Compatibility Judgement**

The Registrar will not evaluate the Declaration of Compatibility to determine if the vendor's claims are accurate. However, the Registrar will ensure that all parts are submitted and appropriate sections completed. Here are the criteria:

- a) All parts of Declaration submitted
- b) All parts completed to minimum level

## 5. Interoperability Testing

This process is intended to be used to allow a vendor to claim interoperability between two products based on the VPIM v2 specification. Interoperability is registered with the Registrar who maintains a list of all registered VPIM interoperating products. A vendor can, however, release a VPIM product without following this testing process -- this product may work perfectly with all other VPIM products. This product, however, cannot be recognized as being VPIM v2 interoperable by the registrar.

Note that the interoperability declaration process described in this section requires three tests -- with the product itself, and with at least two (2) other products.

### 5.1 Assurance Process

The process by which a vendor can work to test a product and eventually claim to be VPIM Conformant is described in the subsequent sections and consists of the following simple structure:

- 1) Vendor uses VPIM test suite to test product.
- 2) Bilateral testing between different VPIM products based on test suite.
- 3) Submission of Declaration of Interoperability.

Note that there is no special place where all the equipment is brought for testing. All resources required for testing a particular product must be supplied by each vendor. However, the VPIM Work Group may occasionally sponsor a VPIM interoperability bake-off.

This process is only a facilitation and record of a vendor's interoperability. This process does not lead to, nor should be construed as a guarantee of VPIM conformance.

#### 5.1.1 Vendor Testing

This stage involves the testing of a particular product **against itself** based on the test suite provided in this document in Section 7. The test suite lists about 30 tests to be performed between two separate systems. It is recommended that all tests be performed, even though several are optional.

This testing is not supervised or assisted by a third party as the vendor is assumed to have the technical ability and integrity to accurately conduct its tests. The results of these tests may be useful for the vendor to ensure the VPIM system functions appropriately and also to prepare for testing with other vendors. A vendor may wish to 'fix' their product upon the failure of a particular test. As a result, any test may be repeated at the vendor's discretion until successful. Note that the final results of these tests (once the vendor determines no further repeat tests are required) form part of the Declaration of Interoperability and **are recorded** by the registrar.

### 5.1.2 Bilateral Testing

This stage involves the testing of a particular product **against another product** (typically, and strongly recommended to be from a different vendor) based on the test suite provided in this document in Section 7. The test suite lists about 30 tests to be performed bilaterally between two separate systems. It is recommended that all tests be performed, even though several are optional.

This testing is not supervised or assisted by a third party as the vendors are assumed to have the technical ability and integrity to accurately conduct tests by themselves. A vendor may wish to 'fix' their product upon the failure of a particular test. As a result, any test may be repeated until successful within the schedule determined by the vendors responsible for the products being tested. The final results of these tests (once the vendor determines no further repeat tests are required) form part of the Declaration of Interoperability and **are recorded** by the registrar.

Note that bilateral tests (based on the test suite) may be conducted as many times as a vendor chooses. The results of these tests may be submitted all together or individually to the Registrar. However, the first submission of the Declaration of Interoperability requires two bilateral test results with different vendors that have completed the Declaration of Compatibility.

Typically the tests can be completed in a few days if the testers are dedicated to the testing effort and if there are no problems (like working across time zones or firewalls). If the testing is done casually (e.g., send and receive a couple messages a day plus examining the messages while doing other things), it will likely take 2-3 weeks to complete testing.

Vendors are required to make reasonable resources available to allow other vendors to perform interoperability testing with them in the future. This assurance must be made in order for the Declaration of Interoperability to be accepted. If a VPIM Compatible and Interoperable vendor refuses (or procrastinates) bilateral testing, then the Registrar may remove that vendor's VPIM Compatible/Interoperable designation and information from the repository.

### 5.1.3 Submitting the Declaration of Interoperability

Once a vendor has completed a VPIM product and completed the required interoperability testing it may submit a Declaration of Interoperability. The Declaration is submitted to the registrar and the information made available in the repository. Once the Registrar confirms that all required sections have been submitted, the Registrar (with consultation from the VPIM Work Group) evaluates the declaration for approval. The Registrar may recognize the product as being one or all of the following:

- a) VPIM Content Interoperable
- b) VPIM Transport Interoperable

If the product can be recognized as interoperable in all areas, then it is simply referred to as VPIM Interoperable. The registrar may also determine that based on the supplied information (e.g., tested with only one other product) that the product cannot be recognized as interoperable at this time.

Note that the Declaration of Interoperability may be submitted in parts, however it cannot be evaluated until all parts are received. The Registrar may publish submitted (but not yet approved) partial declarations on the repository.

## 5.2 Declaration of Interoperability

The objective of the declaration is to give the assurance that the product is interoperable with other products that claim conformance with the VPIM v2 specification. Note that a vendor must have a Declaration of Compatibility already approved before a Declaration of Interoperability can be approved. Section 9 contains samples of the forms that comprise the Declaration of Interoperability.

This Declaration of Interoperability, consists of the following parts:

- a) Interoperability Statement
- b) Vendor Test Suite Results
- c) Bilateral Test Suite Results (at least two)

### 5.2.1 Interoperability Statement

As a minimum the conformity statement shall contain the following:

- a) the name and address of the vendor issuing the declaration
- b) the identification of the product including version
- c) description of the test environment and list of user agents used
- d) the date and place of issue of the declaration
- e) the signature, name, function and contact information of the authorized person(s) acting on behalf of the vendor
- f) assurance that future testing requests will be facilitated

Additional information that is deemed relevant should also be supplied (e.g. testing staff, etc.). Note that several vendors may jointly submit a Declaration of Interoperability, however, each must complete a separate Interoperability Statement.

### 5.2.2 Vendor Test Suite Results

As a minimum the vendor test suite results shall contain the following:

- a) all of the tests listed in the test suite of section 7
- b) an indication if the test is mandatory or optional
- c) an indication if the test was successful

### **5.2.3 Bilateral Test Suite Results**

As a minimum the each of the bilateral test suite results shall contain the following:

- a) all of the tests listed in the test suite of section 7
- b) an indication if the test is mandatory or optional
- c) an indication if the test was successful

Note that at least two products must be tested against the submitting vendor's product to qualify for the Declaration of Interoperability.

## **5.3 Interoperability Judgement**

The Registrar will not evaluate the Declaration of Interoperability to determine if the products truly passed all the tests recorded. However, the Registrar will require that the appropriate documentation is completed appropriately. Here are the criteria:

- a) Product has an approved Declaration of Compatibility
- b) All parts of Declaration of Interoperability submitted by all vendors
- c) Vendor gives assurance to facilitate future testing & participation in email list

### **5.3.1 Non-Interoperability Resolution**

During interoperability testing between vendors, it is the responsibility of the vendors to resolve any issues of non-interoperability between the products under test. However, it often may be useful to explain the issue to the wider VPIM interested audience to solicit assistance in solving the issue. For example, the issue may be easily solved in a way that was not thought of, or it may be a problem common to all vendors.

The mechanism for assistance in resolution of these issues is to simply send email messages to the VPIM email distribution list at <VPIM-L@ema.org>. Again, the onus is on all VPIM vendors with an interest in interoperability to monitor this distribution list and provide assistance if possible. If the issue cannot be resolved on the email list, then the VPIM work group will convene a conference call (or table the item at a scheduled meeting) to discuss and resolve the issue.

In some cases, a particular issue may be cause to modify this document or add a clarification to the VPIM v2 specification to reflect the resolution. The VPIM work group will make this determination and update this document as

appropriate. The latest versions of all VPIM documents and any clarifying updates are located in the document repository.

## 6. EMA Secretariat

The EMA is currently providing secretariat support to the VPIM Work Group. The EMA support staff and facilities will be used to support the VPIM Conformance process as described below.

### 6.1 Responsibility of the Registrar

Ideally, the registrar is an EMA staff person assigned to the VPIM work group. Besides being the work group's EMA coordinator, this person is responsible for VPIM marketing support and is subsidized by VPIM Marketing funds.

Often, the VPIM Work Group may act as the Registrar. However, since this is a day-to-day task that requires commitment, the work group may delegate this activity to a member.

The responsibilities of the registrar are at least the following:

- point of contact for Declaration (and VPIM) questions, issues, concerns, etc.
- supply VPIM specification, conformance, etc. documents to requesting members
- provide support to vendors on the Declaration process
- provide and record unique numbers for all Declarations
- receive Declarations from vendors
- maintain a paper file of legal (i.e., signed) Declarations
- maintain a web page listing conformant and interoperable VPIM products
- maintain an online repository (web or FTP) for the posting of Declaration details
- process (i.e., approve or reject) the Declaration within 1 week
- knowledgeable enough with VPIM to approve Declarations with minimal support from VPIM Work Group (Work Group chair or designate may be contacted to assist in reviewing Declarations for approval).

#### 6.1.1 Contacting the Registrar

As the actual person in charge of this task may change, the contact information for the EMA's VPIM Registrar (as is required by this document) is available on the EMA web page.

### 6.2 Document Repository

This section details the location of the various documents and files required to declare or determine conformance, compatibility and interoperability with VPIM v2. Most of this information is available on the VPIM web site at:

<http://www.vpim.org>

## 6.2.1 Documents

### 6.2.1.1 VPIM Conformance

Additional copies of the document you are reading may be obtained from:

- a) EMA Book Store
- b) EMA VPIM Web Site  
<http://www.vpim.org/conformance/conformance.html>

### 6.2.1.2 VPIM Specifications

The core VPIM v2 specification, RFC2421, as well as the VPIM references and other referenced documents can be obtained from:

- a) EMA VPIM Web Site      <http://www.vpim.org/specs.html>
- b) IETF FTP Site            <http://www.ietf.org/rfc/rfc2421.txt>

## 6.2.2 Testing

### 6.2.2.1 Sample Files

Example VPIM messages are located on the EMA VPIM Web Site at  
<http://www.vpim.org/conformance/conformance.html>

### 6.2.2.2 Issue Resolution on Distribution List

For any issues with the testing process, the VPIM specification or problems encountered between vendors, send a message to the VPIM email distribution list at:  
<VPIM-L@ema.org>

In the message be sure to include a complete description of the issue and complete contact information.

To subscribe to this distribution list (and automatically receive all messages), send a message to: <support@ema.org> with 'subscribe VPIM-L' as the subject.

## 6.2.3 Declarations

A complete set of product's Declaration of Compatibility and Declaration of Interoperability with the VPIM specification are available from the Registrar. These may also be obtained from:

- a) EMA VPIM Web Site  
<http://www.vpim.org/conformance/conformance.html>

## **6.3 Fees**

Some fees may apply to VPIM testing participation as noted below. Contact the VPIM secretariat for current specifics.

### **6.3.1 VPIM Technical Participation**

All technical participation in the VPIM work group (both in person and on the mailing list) requires no membership fees in either the EMA or the VPIM marketing efforts. However, since most meetings are held in EMA arranged facilities, membership in the EMA is encouraged.

### **6.3.2 VPIM Marketing Participation**

There are currently several levels of marketing support for the VPIM effort. These are detailed in other documents available in the repository or from the VPIM secretariat.

### **6.3.3 Submission of Declarations**

If a vendor is not a member of the VPIM marketing committee (membership fee required), then a processing fee of US\$1000 is required to accompany the declaration.

Contact the Registrar for the current details.

## 7. Preparation

Considerable preparation should have taken place prior to initiating interoperability testing. These are itemized below.

### 7.1 VPIM Compliance

The Vendor should have completed their own internal testing of their product and assured themselves that they meet VPIM content and transport compliance. The vendor should have already completed identifying which VPIM features are supported. A Declaration of Compatibility should be registered with the EMA and available on the VPIM web site.

Each test partner should access the other partner's Declaration to gain an understanding of the other party's capabilities. This will assist preparing a joint test plan.

### 7.2 Tester Readiness

By the time internal testing is completed, your test engineers should be fully familiar with messaging and VPIM. New staff joining the test team should be acquainted with VPIM and Internet Mail. They should read, and have access to the following RFCs as a minimum:

- RFC 2421- VPIM
- RFC 821- SMTP
- RFC 822- Internet Mail
- RFC 2045- MIME part 1
- RFC 2046- MIME media types
- RFC 1891- RFC 1894, RFC 1869- ESMTP
- RFC 2298- MDN
- RFC 2426- vCard
- draft-ietf-drums-`<feature>`(multiple documents in progress describing current messaging usage)

### 7.3 Diagnostic Tools and Logs

During product development, tools are normally developed for tracing and diagnosing problems. As a minimum, you need:

- Ability to retain sent and received MIME files for evaluation
- Maintain an SMTP log of all or selected sessions
- Access to logs generated by firewalls/mail relays
- Ability to trace delivery to local recipients

Other useful tools might include

- Ability to generate and listen to G.726 attachments
- Ability to alter information before sending. For example, to request a PDN when this option is not supported by the UI at this time

## 7.4 Setup Mailboxes on Test System

If you will be testing concurrently with multiple test partners, it is a good idea to agree on a numbering convention that can be used for all. For example,

198886007- Company A

198886008- Company B

etc

The numbers must be long enough so that the sending and receiving sides can map the addresses correctly. The PSTN numbering scheme has proven to be acceptable.

If both partners support alphanumeric addresses, this can be explored in addition to numeric addresses.

## 7.5 Firewalls, Mail Relays and DNS

The test systems may be directly connected to the Internet, or may be connected through a firewall. Prior to testing, the parties should ensure that their test systems and test mailboxes are accessible through their firewall. The parties may not wish to have their systems on-line for extensive time periods. Hence the parties need to establish at which times the firewall will be "turned on" and messages can be exchanged.

The parties must exchange address information. Typically, the parties need to exchange Fully Qualified Domain Name (FQDN), and IP Address. The DNS may be configured with MX records for directing mail to the server. Such configuration information must be exchanged so the environment is fully understood by both parties.

The parties may want to test with an intermediate mail relay. The mail relay may perform redirection and address masquerading. These scenarios must be considered during the testing process. The firewall itself may be running an application level (SMTP) proxy.

The parties may want to test downgrading from ESMTP to SMTP at some time during testing.

Bilateral Test Plan- Once the partners understand the other's capabilities, a test plan can be established outlining the test cases that will be executed, and in which order. A suggested sequence of testing "sessions" is included later in this document.

## 7.6 Preliminary Sanity Tests

Prior to executing the formal test plan, the parties might want to run some preliminary sanity testing, such as the following:

- Try manually accessing each other's system by telnetting to the specified FQDN (typically port 25).
- Manually create and exchange G726 files. Play the received files to verify the codecs are clean.

Send each other a simple message and verify it is received and plays correctly.

## 8. Test Suite

This test suite is intended for use by voice messaging systems that support the Voice Profile for Internet Mail (VPIM) version 2 – RFC 2421. The tests in this test suite are to be used to test VPIM products to facilitate submission of a VPIM v2 Declaration of Interoperability as described in Section 5.

It should be noted that these tests were designed for testing with traditional voice mail end systems that use a telephone user interface. Use of other user agents may or may not require modification of the process described by each test. In addition, the tests assume that the systems under test are connected directly (without any relay or proxy intermediaries that may add additional configuration issues). Some network tests are covered in an optional test suite, but for completeness the required and optional suites can be completed over a network of relays and proxies. Finally, most of the tests focus on VPIM content compliance, though a certain amount of transport compliance is assumed for some of them (e.g., those testing NDNs).

Summarized below are the required and optional test suites between two systems under test (the ‘sender’ or ‘local’ system and the ‘recipient’ or ‘remote’ system). Note that in testing two products, each test in the suite must be completed twice (each product must act as both the sender and the recipient). The details of each test voice message are explained in the subsequent sections. It has been shown that it is advantageous to group testing into several sessions, or "rounds" (see Sect. 8.2)<sup>1</sup>. This enabled us to partition testing into units starting with the basic functions (send and receive), and progressing to more advanced functionality (reply, forward, DSN) and optional features (MDN, fax, etc.). The partitioning provides a natural set of milestones that are useful for scheduling and reporting. Additional test messages (varying on the intent of a particular test or testing another feature) may be sent at the tester's discretion based upon the capabilities of the voice messaging system and the User Agent. Additional tests may be documented to accompany the test results.

Details of the configuration and setup of each system under test (including type of User Agent used, and network connection between the two systems) must be documented as ‘Configuration Notes’ to accompany the test results.

### REQUIRED TEST SUITE:

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8.1.11	TEST 11 MULTIPART/VOICE-MESSAGE AND TEXT	39
8.1.12	TEST 12 HANDLING OF OTHER VOICE ENCODINGS	39

<sup>1</sup> Cohen, Marty S., "Voice Messaging Interoperability: Testing Guidelines for VPIM v2 Products – version 1.1", February 1999.

**OPTIONAL TEST SUITE**

8.1.13	TEST 13 REPLY TO ALL MESSAGE	40
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8.1.32	TEST 32 PRIVATE RECIPIENT	50
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**OPTIONAL NETWORK TEST SUITE**

8.1.34	TEST 34 SEND MESSAGE VIA RELAY	51
8.1.35	TEST 35 NON-DELIVERY REPORT FOR FAILED CONNECTION	51
8.1.36	TEST 36 RECOVERY	52

**8.1 Description of Tests****8.1.1 TEST 1                      Single To: recipient**

PURPOSE:                      Send message with Single To: recipient

SCENARIO:                      Sender → message → recipient (remote via VPIM)

DESCRIPTION:                      Create and send a message with a single To: addressee on the remote system. Verify that the message reached the recipient account, and examine/listen to the message.

The sending side will:

1. Manually review the outbound MIME file.
2. Manually review the SMTP log file



|→ Tester 4

**DESCRIPTION:** Create and send a message with multiple addresses. At least one address must be local (Tester 2) and at least one must be remote via VPIM (Tester 3). Verify that the message reaches all accounts and examine the message. It is recommended that at least one message be sent to multiple remote recipients.

**SUCCESS CRITERIA:** To pass this test the send must function correctly, the message must be received by all addresses, and the message received must have the correct From: addressee, To: addressees and voice attachment. The addresses must be correct in address form and values. Verify presentation to the user, either telset or desktop. Also verify that RCPT\_TO commands were issued correctly, and only for the remote users.

### 8.1.3 TEST 3

#### Reply message

**PURPOSE:** Verify the receipt of a reply message.

**SCENARIO:** Tester 1 → message → Tester 2 → reply → Tester 1

**DESCRIPTION:** Create and send message in reply to message from Tester 1. Tester 1 and Tester 2 addresses are on different systems. Note this test could be a followup to the message received in Test 1.

**SUCCESS CRITERIA:** Verify the message was received and contains a representative portion of the original message subject (if present) and notation that the message is a reply to another message. The original content may or may not be included. Verify that the recipient of the reply message can handle an embedded RFC822 or audio content.

**NOTE:** Parties should agree what options are to be included in this test:

- Reply to FROM: address
- Reply to FROM: in lieu of SENDER: if present
- Reply to “reply-to” address (use not recommended in spec)
- Reply with original message attached as RFC822
- Reply with original message with attached audio
- Reply without original message

### 8.1.4 TEST 4

#### Subject contents

**PURPOSE:** Verify the handling of a text subject field.

**SCENARIO:** Sender → message → recipient

**DESCRIPTION:** Create and send a message to a remote recipient with a text subject line that is either blank, contains the default 'VPIM Message' or something else. The parties may wish to test behaviour to a very long subject string, or the absence of the "Subject:" header. Note this test may be performed on the message sent in Test 1.

**SUCCESS CRITERIA:** Verify receipt, integrity and intelligibility of the voice message and record the text subject handling on the recipient system.

### **8.1.5 TEST 5 Message Importance**

**PURPOSE:** Verify proper handling of important messages.

**SCENARIO:** Sender → message → recipient

**DESCRIPTION:** Create and send a message to a valid remote recipient. Set the importance header on the message to high.

**SUCCESS CRITERIA:** Verify receipt of message by the recipient. If the recipient's system supports importance/message prioritization, ensure that the message was treated properly.

**NOTE:** The sender may not support all combinations. For example, "low" importance may not be implemented. The sending side (especially originated from a desktop interface) may support additional values.

### **8.1.6 TEST 6 Sensitivity set to Private**

**PURPOSE:** Verify proper handling of sensitive messages.

**SCENARIO:**  
a) Sender → message → recipient → non-delivery report → sender  
b) Sender → message → recipient

**DESCRIPTION:** Create and send a message from a valid remote recipient whose system does support sensitive messages. Set the sensitivity header on the message to private. In this case the recipient is the vendor's system under test.

**SUCCESS CRITERIA:** Verify success in one of the scenarios:  
a) Recipient does NOT support sensitive messages

Verify receipt of non-delivery report by the sender and that the messages is NOT delivered. Verify the report contains:

- original message identifier

- indicator that invalid recipient name is not deliverable
- appropriate error code.

b) Recipient does support sensitive messages

Verify delivery of message with appropriate sensitivity indication. Also verify that private messages cannot be forwarded (see TEST 10).

NOTE: The sending side (especially originated from a desktop interface) may support additional sensitivity values.

It is well noted that a desktop client may be able to "Cut and Paste" private attachments, though this is not desirable.

### 8.1.7 TEST 7

#### Forwarding without voice additions

PURPOSE: Verify the ability to forward messages without voice additions.

SCENARIO: Tester 1 → message → Tester 2 (remote via VPIM) → forward → Tester 1

DESCRIPTION: Forward a message received from Tester 1 back to Tester 1 without voice additions. Tester 1 and Tester 2 addresses are on different systems. Note: This test SHOULD test multiple vendor hops (i.e. at least 2 hops)

SUCCESS CRITERIA: Verify the message was received and contains the original message body content and heading. It should also indicate that it is a forwarded message. Note this test could be a follow-up to the message received in Test 1.

NOTE: It is preferred that the sending side sends the message as an embedded RFC822, but may send as an audio content type only instead. The receiving side should accept this as well, and present the annotation and attachment appropriately.

The parties may wish to forward a message between systems multiple times to evaluate the extent of audio degradation due to transcoding. Also, at some time during testing, multi-lateral testing with a third party system may also be desirable for evaluating audio degradation.

### 8.1.8 TEST 8

#### Large voice segment

PURPOSE: Verify ability to handle messages with large voice segments.

SCENARIO: Sender → message → recipient

DESCRIPTION:	Create and send a message to a remote recipient with a large 32KADPCM voice attachment (it is the vendor's choice as to the maximum length that should be tested, as an example the AMIS-D specifies a maximum 8 minute length). The maximum length used must be recorded.
SUCCESS CRITERIA:	Verify receipt of message with complete voice segment and ability to play to user.
NOTE:	<p>The test parties must agree on a mutually suitable message length. This should be documented and verified. Note that the maximum may be constrained by intermediary mail relays.</p> <p>The parties can decide to send either one large voice message, or several smaller ones.</p>

### 8.1.9 TEST 9

#### Non-delivery report for invalid address

PURPOSE:	Verify the ability to generate and receive DSN formatted non-delivery reports
SCENARIO:	Sender → message → recipient MTA → non-delivery report → sender
DESCRIPTION:	Create and send a message to an invalid recipient (remote via VPIM). Base attributes (i.e., fully qualified domain name) should have valid values.
SUCCESS CRITERIA:	Verify receipt of DSN formatted non-delivery report. Verify the report contains: <ul style="list-style-type: none"><li>• original message identifier</li><li>• voice, fax or text indicator (record which) that invalid recipient name is not deliverable</li><li>• appropriate error code (typically 5.1.1).</li><li>• null return path.</li></ul>
NOTE:	Several situations may be tested, for example: <ul style="list-style-type: none"><li>○ The sending side may be sending to an invalid or unavailable site. A local non-delivery report must be returned to the originator. This is system specific, not necessarily involving a DSN. System may actually invalidate the address while the user is composing the message. (TEST 35).</li><li>○ The receiving SMTP may try to validate the RCPT_TO command and then reject the invalid address. A local non-delivery report must be returned to the originator. This is system specific, not necessarily involving a DSN.</li><li>○ The final receiving SMTP may accept the message for subsequent delivery to the user's mailbox. Delivery will then fail later (mailbox</li></ul>

not found), and a DSN must then be generated and returned to the originator.

- An intermediate SMTP may relay the message to the final recipient system. If the final recipient rejects the RCPT\_TO address, the intermediate mail relay must generate a DSN, which will be processed by the originator.

The expected behaviours must be recognized by the testing parties prior to testing.

If the receiving SMTP is validating RCPT\_TO commands, then:

- Receiving side validates they correctly reject a bad address (mailbox not found). Testing other invalid addresses would also be advantageous if the sending side can accommodate this (for example, by sending a bad FQDN on the RHS of the address). Validate the return code generated by SMTP
- Originating side validates that the address was rejected and that a non-delivery message is returned to the user
- Other test cases must be used to validate generation and handling of DSNs.

If the receiving system is generating DSNs, then:

- Verify format of the multipart/report.
- Verify all DSN fields, including the error code, message id, etc.
- Verify the human-readable part is appropriate (text or voice).
- Verify the DSN is parsed correctly and presented appropriately to the user.

Sending system must be able to handle cases 2 and 3, and verify appropriate NDN returned. For DSN, ensure it is generated correctly by system originating the DSN. Ensure that DSN is received correctly and information presented appropriately to the originator. Similar information must be presented for case 2.

### 8.1.10 TEST 10

#### Forwarding a Private message

**PURPOSE:**

Verify proper handling of sensitive messages.

**SCENARIO:**

Sender → message → recipient → forward → fail

**DESCRIPTION:**

Create and send a message to a valid remote recipient. Set the sensitivity on the message to private. Attempt to forward the message.

**SUCCESS CRITERIA:**

Verify that the recipient receives a private message (appropriately indicated) and that the recipient is unable to forward the message.

**NOTE:**

This test was intended for telset clients. Some desktop clients may be able to forward a private message, though this is not desirable.

This test can be combined with Test 6.

### 8.1.11 TEST 11

#### Multipart/Voice-Message and text

**PURPOSE:**

Verify ability to handle text attachments.

**SCENARIO:**

- a) Sender → message → recipient
- b) Sender → message → recipient → NDN → sender

**DESCRIPTION:**

Create and send a message to a valid recipient. In addition to the main multipart/voice-message body, attach a text/plain ASCII text attachment (wrap both in a multipart/mixed). Ensure the integrity of the voice and text message at the recipient's end (only if recipient supports text).

**SUCCESS CRITERIA:**

- Verify which behaviour occurred:
- a) Recipient supports text rendering  
Proper delivery of message and with the presence of the main voice body and the text body. Presentation of the text will vary. Verify text is NOT sent within the multipart/voice-message. It must be a separate text body within an encapsulating multipart/mixed.
  - b) Recipient system does NOT support text rendering  
Receipt of NDN by sender indicating that text is unsupported (code 5.6.1) by the recipient OR verify that the text is DROPPED and the multipart/voice-message is presented.

### 8.1.12 TEST 12

#### Handling of other voice encodings

**PURPOSE:**

Verify proper handling of messages sent with non-standard voice encodings.

**SCENARIO:**

- a) Sender → message → recipient → NDN → sender
- b) Sender → message → recipient

**DESCRIPTION:**

Create and send a message to a valid remote domain that only supports the standard 32KADPCM encoding. Attach a voice body that is encoded using a different algorithm (e.g. audio/basic). note that this test may be repeated for multiple encodings if desired.

**SUCCESS CRITERIA:**

- Verify which behaviour occurs:
- a) Recipient does not support other voice encodings.  
Sender receives a non-delivery report. Verify the report contains:
    - original message identifier
    - indicator that the voice encoding is not supported by the remote system



NOTE: It is preferred that the sending side sends the message as an embedded RFC822, but may send as an audio content type only instead. The receiving side should accept this as well, and present the annotation and attachment appropriately.

### **8.1.15 TEST 15 Forwarding a forwarded message**

PURPOSE: Verify the ability to forward, forwarded messages.

SCENARIO: Tester 1 → message → Tester 2 → forward +add → Tester 1→ forward + add → Tester 2

DESCRIPTION: Forward a message received from Tester 1 back to Tester 1 after adding a voice annotation. Then Tester 1 adds another voice annotation and forwards to Tester 2. Tester 1 and Tester 2 addresses are on different systems. Note this test can be a follow-up to any other test dealing with forward messages.

SUCCESS CRITERIA: Verify the message was received and contains the all the voice contents as well as the original message body content and heading (this may be 'flattened'). It should also indicate that it is a forwarded message.

NOTE: Preferably, the original message and annotated message are sent as nested RFC822 messages. The receiver must present the nested audio parts in the correct order, presenting the (optional) annotation first.

The attachments may be sent as a linear set of audio parts. These must be processed by the recipient and presented in the correct order.

When a forwarded message containing annotation is forwarded with annotation, the final message has three voice bodies:

- Final Annotation
- First Annotation
- Original Message

If the forwarded message did not contain annotation, there are only two voice bodies

- Final Annotation
- No Voice
- Original Message

### **8.1.16 TEST 16 Large numeric address format handling**

PURPOSE: Verify the ability of remote systems to handle large numeric mailbox formats.

SCENARIO:	Sender → message → recipient (remote via VPIM)
DESCRIPTION:	This test ascertains the bounds of the systems under test. Create a message with a From address that contains a numeric mailbox that is as long as possible and a To: recipient on a remote (VPIM) system (also with a numeric mailbox that is as long as possible on that system). Note, this test can be conducted on the same message sent in Test 2.
SUCCESS CRITERIA:	Verify the message is delivered to the remote domain and that all address formats are present and are properly handled by remote system.
NOTE:	Some possible scenarios to consider include <ul style="list-style-type: none"><li>• Send message with maximum length valid TO: addresses and verify messages are received</li><li>• Send message with maximum length valid TO: addresses and longer (invalid) TO: addresses and verify receiver behaviour</li><li>• Send message from maximum length (sending side) FROM: address and verify message is received</li><li>• If sending side supports longer (or same) mailbox lengths than the receiver, send message from a maximum length (receiving side) FROM: address and verify message is received</li><li>• If sending side supports longer mailboxes, send message from maximum length (sending side) FROM: address and verify behaviour</li><li>• Verify handling of long FQDNs</li></ul>

### 8.1.17 TEST 17

### Handling of alpha-numeric addresses

PURPOSE:	Verify ability to handle messages with alpha-numeric addresses.
SCENARIO:	Sender → message + → recipient on numeric only system   → recipient
DESCRIPTION:	Create and send a message with at least two To: SMTP recipients. One of the recipients should be on a domain that can only deal with numeric addresses while the other can support alpha-numeric. Send a message to the numeric-only recipient with both numeric and alphanumeric addresses in both the FROM: and TO: headers (local or remote). Then quantify and verify the expected recipient behaviour for the alphanumeric addresses.
SUCCESS CRITERIA:	Verify all addressees receive the message. Verify that each recipient's copy has the correct From: addressee, To: addressees, and voice attachment. The addresses must be correct in SMTP form and values but may be presented differently.  For example, the recipient may: <ul style="list-style-type: none"><li>• SMTP rejects an alphanumeric MAIL_FROM address</li></ul>

- Reject the message and generate a DSN if the FROM: is alphanumeric
- SMTP rejects alphanumeric RCPT\_TO addresses
- Deliver to valid recipients and generate a DSN for each invalid alphanumeric TO: address (for the local system).
- Map alphanumeric TO: or FROM: addresses into special mailbox
- Discard TO: or FROM: addresses if unmappable?

NOTE: If both testing partners support alphanumeric addresses, testing should include liberal use of both numeric and alphanumeric addresses. This test can be combined with other test cases.

### **8.1.18 TEST 18 Handling of text names**

PURPOSE: Verify ability to handle the presentation of text names of sender.

SCENARIO: Sender → message → recipient

DESCRIPTION: Create and send a single message to a valid remote recipient. Ensure that the sender's From address (and vCard, if present) contains a properly formatted text name.

SUCCESS CRITERIA: Verify receipt of message by recipient. Verify presentation of text name (actual methods will vary - these may be noted). Also verify that the names of other recipients are also presented properly. Verify accepting message with text names missing.

### **8.1.19 TEST 19 Generation of a positive delivery report**

PURPOSE: Verify the ability to generate positive delivery reports.

SCENARIO: Sender → message → recipient → delivery report → sender

DESCRIPTION: Create and send a message to a valid To: recipient (remote via VPIM) requesting notification of message delivery. A positive delivery report is requested by issuing the NOTIFY=SUCCESS SMTP command.

SUCCESS CRITERIA: If supported by both parties, verify that the request for a PDN was sent, and that the PDN is generated when the message is deposited into the mailbox. Verify the message was delivered and the report is positive (presentation to the user may vary). Verify the DSN delivery report contains:

- \* original message identifier
- \* original recipient address
- \* time of delivery

NOTE: If only the sender supports PDNs, verify that the request for a PDN was sent. Also verify the behaviour of the receiver. The partners may also wish to test other NOTIFY parameters at this time, such as:

- NOTIFY=NEVER
- NOTIFY=SUCCESS (this testcase)
- NOTIFY=FAILURE (the default)
- NOTIFY=DELAY

Note that the last three values may be used in combination.

**8.1.20 TEST 20****Positive delivery report, multiple recipients**

PURPOSE: Verify the ability to generate positive delivery notice (PDN) for multiple recipients.

SCENARIO: Tester 1 → message + → Tester 2 → PDN \

```

|                                     → Tester 1
| → Tester 3 → PDN /

```

DESCRIPTION: Create and send message to at least two valid recipients (at least one must be on a remote system) requesting notification of delivery.

SUCCESS CRITERIA: Verify the message was received by all recipients and delivery reports are positive. Verify the delivery reports contain:

- appropriate notification code
- original message identifier
- original recipient address
- time of delivery.

NOTE: Parties may run Test 19 again with multiple recipients.

**8.1.21 TEST 21****Non-delivery report for Full Mailbox**

PURPOSE: Verify the ability to generate and receive DSN formatted non-delivery reports

SCENARIO: Sender → message → recipient → non-delivery report → sender

DESCRIPTION: Create and send a message to a recipient (remote via SMTP). The recipient on the remote system must be pre-configured with a full mailbox or full file system.

SUCCESS CRITERIA: Verify receipt of DSN formatted non-delivery report. Verify the report contains:



- Verify the MDN is generated when the message is read/printed/deleted or otherwise “disposed”
- Verify the MDN results are returned to the user with correct disposition
- Verify content of the delivery report. The sender should receive a read receipt which:
  - references the original Message ID
  - indicates the recipient has received the message.

If only the sending party supports MDN, then

- Verify a request for MDN can be sent
- Verify the MDN request is ignored by the receiver and the message is delivered

#### 8.1.24 TEST 24

#### Read Receipt request with multiple recipients

PURPOSE:	Verify read receipt request with multiple recipients.
SCENARIO:	Tester 1 → message + → Tester 2 → receipt → Tester 1   → Tester 3 → receipt → Tester 1
DESCRIPTION:	Create and send a message to at least one To: and at least one Cc: remote VPIM recipient requesting the confirmation of read receipt for all messages.
SUCCESS CRITERIA:	Verify the message was received by all and receipts were generated. The sender should receive a read receipt from each recipient which: <ul style="list-style-type: none"> <li>• references the original MessageID</li> <li>• indicates that the recipient has received the message.</li> </ul>
NOTE:	Can repeat test 23 with multiple recipients.

#### 8.1.25 TEST 25

#### Voice Message with Sender's Spoken Name

PURPOSE:	Verify ability to handle sender's spoken name.
SCENARIO:	Sender → message → recipient
DESCRIPTION:	Create and send a message to a valid recipient. In addition to the main voice body, attach the sender's spoken name voice body. Ensure the integrity of the message at the recipient's end.
SUCCESS CRITERIA:	Verify proper delivery of message and ensure the presence of the spoken subject and main voice body. Presentation of the additional voice will vary.

*Content-Disposition: inline; voice= Originator-Spoken-Name;*

If not supported by the recipient, verify that these voice bodies are handled as attachments.

NOTE: The sender may optionally send a Recipient-Spoken-Name. This test assumes that a vCard is not included in the message.

### **8.1.26 TEST 26 Voice Message with spoken subject**

PURPOSE: Verify ability to handle spoken subject.

SCENARIO: Sender → message → recipient

DESCRIPTION: Create and send a message to a valid recipient. In addition to the main voice body, attach a spoken subject voice body. Ensure the integrity of the message at the recipient's end.

SUCCESS CRITERIA: Verify proper delivery of message and ensure the presence of the spoken subject and the main voice body. Presentation of the additional voice will vary.

If spoken subject not supported by recipient, then:

- Verify the spoken subject body part is treated as a voice attachment (may want to try this with attached RFC822 as well)
- Verify the MIME header field is correct:

*Content-Disposition: inline; voice=spoken-subject;*

### **8.1.27 TEST 27 Voice Message with fax**

PURPOSE: Verify ability to handle fax attachments.

SCENARIO: Sender → message (fax) → recipient  
Sender → message (voice + fax) → recipient

DESCRIPTION: The sending party should send two messages to a valid recipient. The first is a fax only message, while the second is a voice message with a TIFF-F fax attachment. Ensure the integrity of the voice and fax message at the recipient's end.

SUCCESS CRITERIA: For the fax only scenario, ensure that the fax content is contained within the multipart/voice-message. For the voice message with a fax attachment, both the voice and fax content are contained within the multipart/voice-message

Verify which behaviour occurs:

- a) Recipient does not support fax.  
Sender receives a non-delivery report, either:
- i) DSN
  - ii) MDN

Verify the report contains:

- original message identifier
- indicator that fax is not supported by the remote system
- appropriate error code (typically DSN 5.6.1).

Verify that no part of the message (i.e. voice) is delivered to the intended recipient.

- b) Recipient supports fax.  
Verify proper delivery of message and ensure the presence of the main voice body and the fax body. Presentation of the fax will vary. System may reject fax if it contains extended TIFF features.

NOTE: Both parties must agree upon the subset of TIFF-F that is mutually supported. This should be documented and verified.

### 8.1.28 TEST 28

#### Message from Non-Mail-User

- PURPOSE: Verify proper receipt handling of messages sent from the reserved non-mail-user address. This is only necessary on systems that support this address.
- SCENARIO: non-mail-user → message → recipient → reply ?
- DESCRIPTION: Create and send a message from 'non-mail-user' at a valid remote domain. Attempt to send a reply to this non-existent user.
- SUCCESS CRITERIA: Verify receipt of the original message by the recipient. Verify (and note) the ability to reply -- the reply may either be disabled for this address OR it may send a reply to the originating system (which may then issue a DSN). Also, verify that you cannot reply to a DSN (the return-path should be null, "<>").

### 8.1.29 TEST 29

#### vCard Support

- PURPOSE: Verify proper receipt handling of messages containing vCards. Note that it is optional to send a vCard, but the recipient must handle it appropriately if included.
- SCENARIO: sender → message (with vCard) → recipient





**SUCCESS CRITERIA:** The message should be received by all intended recipients. Verify that the distribution list is expanded correctly. Verify that duplicate address (i.e., those contained in the distribution list that are also explicitly addressed outside the list) are removed.

**NOTE:** The sending side may include all the expanded addresses in the TO: list so that a reply-all will reach all recipients. The sending side may include only the list "alias" to facilitate a reply-all to the list. The sending side may include "remote" addresses and the list "alias" in the TO: list, thereby providing for successful reply-all. The specific behaviour should be documented and then verified.

### **8.1.34 TEST 34 Send Message via relay**

**PURPOSE:** Verify ability to relay VPIM voice messages through generic email relays/gateway/proxies.

**SCENARIO:** Sender → message → relay domain → recipient

**DESCRIPTION:** Create and attach a message to a recipient relaying via a gateway/proxy system that is separate from the voice messaging system. Note that this test may be repeated for numerous different configurations. As well, these different network configurations may be used to repeat the entire test suite to ensure network interoperability.

**SUCCESS CRITERIA:** Verify the integrity of the message at the recipient's end, especially address and headers. Note the specific relay environment used.

**NOTE:** Keep in mind:

- The mail relay may use aliasing to redirect mail
- The mail relay may implement masquerading (address rewrite) to "hide" the actual FQDN of the originating system
- The parties may want to test their MX record support for finding the FQDN of the target mail relay.

### **8.1.35 TEST 35 Non-delivery report for failed connection**

**PURPOSE:** Verify the ability to generate non-delivery report for a failed message

**SCENARIO:** Sender → message → recipient → non-delivery report → sender

**DESCRIPTION:** Create and send a message to a recipient (remote via VPIM). The session must be allowed to proceed partially between the two systems and then must be manually interrupted (e.g. pull out the TCP/IP cable) until the connection fails. This test may be performed in a variety of other situations to test all possible failure conditions.

SUCCESS CRITERIA: Verify receipt of DSN non-delivery report. Verify the report contains:

- original message identifier
- voice, fax or text indicator (record which) that invalid recipient name is not deliverable
- appropriate error code (typically 4.4.X).
- null return path.

### 8.1.36 TEST 36 Recovery

PURPOSE: Verify ability to recover after system failure.

SCENARIO: Sender → message → recipient

DESCRIPTION: Create and send a single message using valid remote recipient address. During message transfer, the system, process, or circuit should be disabled in such a manner as to interrupt the message transfer midstream (e.g., pull power or network connection for at least 10 minutes). Note that this test can use the message of Test 1.

SUCCESS CRITERIA: Message should be successfully transferred after repair of interrupt. It should be processed with the original session ID and not leave any incomplete sessions on either system.

NOTE: Although recovery is important, it is not explicitly mandated by VPIM v2.

## 8.2 Preferred Testing Order

As mentioned, previous test experience has indicated that it is more efficient to group certain tests together into "Rounds", and perform these tests in a particular order. Though not required, it is suggested that this organization be used by the testing parties.

### 8.2.1 Round 1: Send and Receive

TEST 1 Single To: recipient  
TEST 4 Subject contents  
TEST 18 Handling of text names (optional)  
TEST 25 Voice Message with spoken name (optional)

*\*These four tests can be combined*

TEST 5 Message Importance  
TEST 6 Sensitivity set to Private

*\*These two tests can be combined to test various combinations of message indicators*

### 8.2.2 Round 2: Addressing and NDN's

TEST 2 Mixed local and VPIM To: recipients  
TEST 30 Send to TO: And CC: Address  
TEST 31 Send to BCC: Address

TEST 32	Private Recipient
TEST 33	Verify Distribution List Expansions
TEST 9	Non-delivery report for invalid address
TEST 22	Non-delivery report, multiple recipients (optional)
TEST 21	Non-delivery report for Full Mailbox (optional)
TEST 35	Non-delivery report for failed connection (optional)

ESMTP support is required to pass DSN commands or generate DSN reports. Mail relays and firewalls with SMTP proxy software may not support ESMTP. In these environments, you can expect to receive free-form NDN messages. Presentation of these messages depends on your implementation. For example, these NDNs may be displayed on the desktop, or they can be delivered as a fax message, or played using text-to-speech.

*\*Verify that the end-to-end network is ESMTP compliant before testing DSNs.*

If Test 9 and Test 22 successfully tested your DSN support, Test 21 can be executed to verify that the expected return code is used in the DSN and presented to the originator. If Test 9 and Test 22 did not generate DSNs, the tests should be repeated using one or more full mailboxes, which should force generation of DSNs.

If time permits, the parties may wish to verify that they support the optional NOTIFY (FULL) and NOTIFY (HEADERS) options.

### **8.2.3 Round 3: Testing Reply and Forward**

TEST 3	Reply message
TEST 13	Reply to all message (optional)
TEST 7	Forwarding without voice additions
TEST 10	Forwarding a Private message <i>*Test 10 can be combined with Test 6</i>
TEST 14	Forwarding with voice additions (optional)
TEST 15	Forwarding a forwarded message (optional)

### **8.2.4 Round 4: LIMIT and Other Non-Delivery Tests**

TEST 8	Large voice segment
TEST 12	Handling of other voice encodings
TEST 16	Large numeric address format handling (optional)
TEST 17	Handling of alpha-numeric addresses (optional)
TEST 11	Multipart/Voice-Message and text

### **8.2.5 Round 5: Fax Implementations**

TEST 27	Voice Message with fax (optional)
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### **8.2.6 Round 6: PDN and MDN**

TEST 19	Generation of a positive delivery report (optional)
TEST 20	Positive delivery report, multiple recipients (optional)

- TEST 23    Receipt request (optional)
- TEST 24    Receipt request with multiple recipients (optional)

### **8.2.7 Round 7: Other Test Cases**

- TEST 34    Send Message via relay (optional)
- TEST 36    Recovery (optional)
- TEST 28    Message from Non-Mail-User (optional)
- TEST 26    Voice Message with spoken subject (optional)
- TEST 29    vCard Support (optional)

## 9. Declaration Forms

This section contains sample forms that are to be completed and included in a vendor's Declaration of Compatibility. The exact forms below need not be used, but the same information must be included.

### 9.1 Compatibility Statement

#### Declaration of compatibility in accordance with VPIM v2

No. (1) .....

Supplier: (2).....  
.....  
.....

Address: .....  
.....  
.....

Product: (3).....  
.....  
.....

The product described above is claimed to be in conformity with:

Document No.	Title	Edition/Date of issue
(4).....	.....	.....
.....	.....	.....

Conformance Level: (5).....

Additional Information:  
(6).....  
.....  
.....

The submitting vendor agrees to make sufficient time available to conduct VPIM interoperability testing on this product with other vendor's products upon request.

.....  
(Place and date of issue)

(7).....  
(Name, function)      (Signature)

(8).....  
(Contact information)

### 9.1.1 Guidance to complete the form of declaration

(Numbers in parentheses refer to section 9.1)

- (1) Every declaration should be identified for easy reference. Contact the Registrar to have a unique number assigned before submission of the declaration (e.g., 99-C-001).
- (2) The issuing supplier should be unequivocally specified. For larger companies, it may be necessary to specify operation groups or departments.
- (3) The "product" should be unequivocally described so that the declaration may be related to the product in question.  
  
("Product": it is sufficient to give the name, type, model, version number, etc.).
- (4) The documents should be listed with their document identification, title and date of issue. Other documents may be listed, but for the purposes of VPIM v2 Conformance at least these two must be listed:  
  - RFC 2421, Greg Vaudreuil & Glenn Parsons, Voice Profile For Internet Mail (VPIM) - version 2, September 1998.
  - EMA VMC, Voice Messaging Conformance: A Testing Process for VPIM Products, version 1.1, February 1999.
- (5) "Conformance Level" claimed as described in 4.1.3: VPIM Content Conformant, VPIM Transport Conformant, or VPIM Conformant.
- (6) The sub-heading text should appear only if additional information is given. Such information is typically required for approval of the declaration, for example:
  - the name and address of the test laboratory or certification body (if involved in the testing),
  - any other information deemed important for the conformance declaration.

- (7) The number of signatures included will be the minimum determined by the legal form of the supplier’s organization.
- (8) Contact information must be included for at least one of the “signatures”. Typically, the most important contact to list is the person responsible for interoperability testing of the product. The contact information must include a phone number and email address.

**9.2 Interoperability Statement**

**Declaration of interoperability in accordance with VPIM v2**

No. (1) .....  
Declaration of Compatibility No. (1) .....

Supplier: (2).....  
.....  
.....

Address: .....  
.....  
.....

Product: (3).....  
.....  
.....

The product described above is interoperable with:

Supplier	Product (3)	Date / No.
(4).....	.....	.....
.....	.....	.....
.....	.....	.....

Additional Information:

(5).....  
.....  
.....

.....  
 (Place and date of issue)

(6).....  
 (Name, function)      (Signature)

(7).....  
 (Contact information)

### 9.2.1 Guidance to complete the form of declaration

(Numbers in parentheses refer to section 9.2)

- (1) Every declaration should be identified for easy reference. Contact the Registrar to have a unique number assigned before submission of the declaration (e.g., 99-I-001). Declarations of Interoperability must refer to a previously submitted Declaration of Compatibility for the same product -- this declaration must be referenced.
- (2) The issuing supplier should be unequivocally specified. For larger companies, it may be necessary to specify operation groups or departments.  
  
Suppliers whose products that were tested with the issuing suppliers should also be unequivocally specified with their products.
- (3) The "product" should be unequivocally described so that the declaration may be related to the product in question.  
  
("Product": it is sufficient to give the name, type, model, version number, etc.).
- (4) Each of the products tested with the issuing supplier's product should be listed including the supplier, product name, date of testing and this vendor's Declaration number.
- (5) The sub-heading text should appear only if additional information is given. Such information is typically required for approval of the Declaration of Interoperability, for example:
  - the name and address of the test laboratory or certification body (if involved in the testing),
  - description of test environment used during testing (e.g., via firewall, dial-up ISP),
  - description of user agents used besides the traditional telephone user interface,
  - reference to attached or forthcoming interoperability test reports (one required for each of the bilateral tests) , and
  - any other information deemed important for the conformance declaration.
- (6) The number of signatures included will be the minimum determined by the legal form of the supplier's organization.

- (7) Contact information must be included for at least one of the “signatures”. Typically, the most important contact to list is the person responsible for interoperability testing of the product. The contact information must include a phone number and email address.

### **9.3 VPIM Feature Support Table**

This section is simply Appendix A from the VPIM v2 specification with the addition of a Conformance column (for declaration of Y or X, N, C# or #). The Appendix is reproduced for convenience and is informational. If there are any discrepancies, the normative table is contained in VPIM v2, RFC 2421.

FEATURE	SECTION	A R E A	M U S T	S H O U L D	M A Y	S H O U L D N O T	M U S T N O T	C o n f o r m a n c e
Message Addressing Formats:								
Use DNS host names	4.1	C	x					
Use only numbers in mailbox Ids	4.1.1	C		x				
Use alpha-numeric mailbox Ids	4.1.1	C			x			
Support of postmaster@domain	4.1.2	C	x					
Support of non-mail-user@domain	4.1.2	C		x				
Support of distribution lists	4.1.3	C		x				
Message Header Fields:								
Encoding outbound messages								
From	4.2.1	C	x					
Addition of text name	4.2.1	C		x				
To	4.2.2	C	x					
cc	4.2.3	C		x				
Date	4.2.4	C	x					
Sender	4.2.5	C				x		
Return-Path	4.2.6	C				x		
Message-id	4.2.7	C	x					
Reply-To	4.2.8	C				x		
Received	4.2.9	C	x					
MIME Version: 1.0 (Voice 2.0)	4.2.10	C		x				
Content-Type	4.2.11	C	x					
Content-Transfer-Encoding	4.2.12	C	x					
Sensitivity	4.2.13	C				x		
Importance	4.2.14	C				x		
Subject	4.2.15	C		x				
Disposition-notification-to	4.2.16	C				x		
Disposition-notification-options	4.2.17	C				x		
Other Headers	4.2	C				x		

FEATURE	SECTION	A R E A	M U S T	S H O U L D	M A Y	S H O U L D N O T	M U S T N O T	C o n f o r m a n c e
Detection & Decoding inbound messages								
From	4.2.1	C	x					
Present text personal name	4.2.1	C			x			
To	4.2.2	C	x					
cc	4.2.3	C			x			
Date	4.2.4	C	x					
Conversion of Date to local time	4.2.4	C		x				
Sender	4.2.5	C			x			
Return-Path	4.2.6	C			x			
Message ID	4.2.7	C	x					
Reply-To	4.2.8	C		x				
Received	4.2.9	C			x			
MIME Version: 1.0 (Voice 2.0)	4.2.10	C		x				
Content Type	4.2.11	C	x					
Content-Transfer-Encoding	4.2.12	C	x					
Sensitivity	4.2.13	C	x					
Importance	4.2.14	C			x			
Subject	4.2.15	C			x			
Disposition-notification-to	4.2.16	C			x			
Disposition-notification-options	4.2.17	C			x			
Other Headers	4.2	C	x					
Message Content Encoding:								
Encoding outbound audio/fax contents								
7BITMIME	4.3	C						x
8BITMIME	4.3	C						x
Quoted Printable	4.3	C						x
Base64	4.3	C	x					
Binary	4.3	C		x				

FEATURE	SECTION	A R E A	M U S T	S H O U L D	M A Y	S H O U L D N O T	M U S T N O T	C o n f o r m a n c e
Detection & decoding inbound messages								
7BITMIME	4.3	C	x					
8BITMIME	4.3	C	x					
Quoted Printable	4.3	C	x					
Base64	4.3	C	x					
Binary	4.3	C	x					
Message Content Types:								
Inclusion in outbound messages								
Multipart/Voice-message	4.3.1	C	x					
Message/RFC822	4.3.2	C			x			
Text/Directory	4.3.3	C		x				
include TEL, EMAIL	4.3.3	C	x					
include N, ROLE, SOUND, REV	4.3.3	C		x				
only one per level	4.3.3	C	x					
Audio/32KADPCM	4.3.4	C	x					
Content-Description	4.3.4.1	C			x			
Content-Disposition	4.3.4.2	C	x					
Content-Duration	4.3.4.3	C			x			
Content-Language	4.3.4.4	C			x			
Image/TIFF; application=faxbw	4.3.5	C			x			
Audio/* or Image/* (other encodings)	4.3.6	C			x			
Multipart/Mixed	4.4.1	C			x			
Text/plain	4.4.2	C				x		
Multipart/Report	4.4.3	C	x					
human-readable part is voice	4.4.3	C		x				
human-readable part is text	4.4.3	C			x			
Message/delivery-status	4.4.4	C	x					
Message/disposition-notification	4.4.5	C		x				
Other contents	4.4	C				x		
Detection & decoding in inbound messages								
Multipart/Voice-Message	4.3.1	C	x					
Message/RFC822	4.3.2	C	x					
Text/Directory	4.3.3	C		x				
recognize TEL, EMAIL, VERSION	4.3.3	C	x					
recognize N, ROLE, SOUND, REV	4.3.3	C		x				

FEATURE	SECTION	A R E A	M U S T	S H O U L D	M A Y	S H O U L D N O T	M U S T N O T	C o n f o r m a n c e
Audio/32KADPCM	4.3.4	C	x					
Content-Description	4.3.4.1	C			x			
Content-Disposition	4.3.4.2	C		x				
Content-Duration	4.3.4.3	C			x			
Content-Language	4.3.4.4	C			x			
Image/TIFF; application=faxbw	4.3.5	C		x				
send NDN if unable to render	4.3.5	C	x					
Audio/* or Image/* (other encodings)	4.3.6	C			x			
Multipart/Mixed	4.4.1	C	x					
Text/plain	4.4.2	C	x					
send NDN if unable to render	4.4.2	C	x					
Multipart/Report	4.4.3	C	x					
human-readable part is voice	4.4.3	C		x				
human-readable part is text	4.4.3	C	x					
Message/delivery-status	4.4.4	C	x					
Message/disposition-notification	4.4.5	C		x				
Other contents	4.4	C				x		
send NDN if unable to render	4.4	C		x				
Forwarded Messages								
use Message/RFC822 construct	4.5	C		x				
simulate headers if none available	4.5	C		x				
Reply Messages								
send to Reply-to, else From address	4.6	C	x					
do not send to non-mailer-user	4.6	C	x					
Notifications								
use multipart/report format	4.7	C	x					
always send error on non-delivery	4.7	C		x				

FEATURE	SECTION	A R E A	M U S T	S H O U L D	M A Y	S H O U L D N O T	M U S T N O T	C o n f o r m a n c e
Message Transport Protocol:								
ESMTP Commands								
HELO	5.1.1	T	x					
MAIL FROM	5.1.2	T	x					
support null address	5.1.2	T	x					
RCPT TO	5.1.3	T	x					
DATA	5.1.4	T	x					
TURN	5.1.5	T					x	
QUIT	5.1.6	T	x					
RSET	5.1.7	T	x					
VERFY	5.1.8	T			x			
EHLO	5.1.9	T	x					
BDAT	5.1.10	T		x				
ESMTP Keywords & Parameters								
PIPELINING	5.2.1	T		x				
SIZE	5.2.2	T	x					
CHUNKING	5.2.3	T		x				
BINARYMIME	5.2.4, 5.3.1	T		x				
DSN	5.2.5	T	x					
ENHANCEDSTATUSCODES	5.2.6	T		x				
RET	5.3.2	T		x				
ENVID	5.3.3	T			x			
NOTIFY	5.4.1	T	x					
ORCPT	5.4.2	T			x			
ESMTP-SMTP Downgrading								
send delivery report upon downgrade	5.5	T	x					
Directory Address Resolution								
provide facility to resolve addresses	6	C		x				
use vCards populate local directory	6	C		x				
use headers populate local directory	6	C				x		
Management Protocols:								
Network management	8.1	T			x			

**Conditional Notes:**

**Additional Notes:**

#### **9.4 VPIM v2 Test Suite Results**

The table in this section (see next page) may be used summarize the results of the interoperability tests conducted using the Test Suites of section 8:

**Interoperability Test of Product X**  
with Product Y

<b>Number</b>	<b>Test name</b>	<b>Mandatory or Optional</b>	<b>Sender</b> (X→Y) Pass, Fail, No Test	<b>Recipient</b> (Y→X) Pass, Fail, No Test	<b>Note</b>
1		M			
2		M			
3		M			
4		M			
5		M			
6		M			
7		M			
8		M			
9		M			
10		M			
11		M			
12		M			
13		O			
14		O			
15		O			
16		O			
17		O			
18		O			
19		O			
20		O			
21		O			
22		O			
23		O			
24		O			
25		O			
26		O			
27		O			
28		O			
29		O			
30		O			
31		O			
32		O			
33		O			
34		O			
35		O			
36		O			

Configuration Notes: