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Calling Line Identification for Voice Mail Messages

Status of this Memo

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Abstract

This document describes a method for identifying the originating calling party in the headers of a stored voice mail message. Two new header fields are defined for this purpose: Caller_ID and Called_Name. Caller_id is used to store sufficient information for the recipient to callback, or reply to, the sender of the message. Caller-name provides the name of the person sending the message.

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1. Introduction

There is currently a need for a mechanism to identify the originating party of a voice mail message, outside of the "FROM" header information. The telephone number and name of the caller are typically available from the telephone network, but there is no obvious header field to store this in an Internet Mail message.

This information is intended for use when the VPIM message format is used for storing "Call Answer" voice messages in an Internet Mail message store, i.e., the calling party leaves a voice message for the recipient, who was unable to answer the call. The implication is that there is no RFC 2822 address known for the originator.

[VPIMV2R2] suggests the originating number be included as an Internet address, using the first method shown below. There are several other ways to store this information, but they all involve some manipulation of the "From" field. For example:

1. From: "416 555 1234" <non-mail-user@host>
2. From: "John Doe" <4165551234@host>
3. From: unknown:;

Since any of these is a forced translation, it would be useful to store the calling party's name and number as presented by the telephone system to the called party without manipulation. This would allow the calling party's information to be displayed to the recipient (similar to it appearing on the telephone) and also allow future determination of an Internet address for the originator (if one exists). Note that there is no requirement to store meta-data (e.g., type of number, presentation restricted), as this information is not presented to the called party and is generally not available to voice mail systems. The intent is to store the available information to an analog (non-ISDN) phone (e.g., per [T1.401] in North America).

[RFC2076] currently lists "phone" as an Internet message header which would hold the originating party's telephone number, but it is listed as "non-standard", i.e., usage of this header is not generally recommended. It also has no defined format, making the information unparsable. There is no similar entry for the originator's name.

It is proposed that two new message header fields be included to hold this information, namely the Calling Line Identification ("Caller-ID") and Caller Name ("Caller-Name").

2. Conventions Used in this Document

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 BCP 14, [RFC2119].

3. Calling Line Identification Field

The Calling Line Identification header ("Caller-ID") holds sufficient information for the recipient's voice mail system to call back, or reply to, the sender of the message. The number that is contained in this header is supplied by the telephone system. The exact format of the data received depends on the type of call, that is -- internal or external call.

Note that for both options, the number field MUST contain only the digits of the number and MUST be representable using the American Standard Code for Information Interchange [ASCII] character set; it does not include any separating character (e.g., "-").

It is expected that default, likely to be the most common case, will not have any numbering plan semantic associated with the number. However, in the case that it is known, an optional "NumberingPlan" parameter MAY be used to indicate the semantic.

3.1. Internal Call

For an internal call (e.g., between two extensions within the same company), it is sufficient to relay only the extension of the calling party, based on the company dialing plan.

However, the support of longer numbers may be supported by the enterprise phone system.

3.2. External Call

For an international call, the calling party's number must be the full international number as described in [E.164], i.e., Country Code (CC), National Destination Code (NDC), and Subscriber Number (SN). Other information, such as prefixes or symbols (e.g., "+"), MUST NOT be included. [E.164] allows for numbers of up to 15 digits.

For a call within North America, it is also suggested that 15 digits per [T1.625] be supported. However, some service providers may only support 10 digits as described in [T1.401] and [GR-31-CORE]. Though it is desirable that an international number not be truncated to 10 digits if it contains more, it is recognized that limitations of various systems will cause this to happen.

Implementors of this specification should be aware that some phone systems are known to truncate international numbers, even though this behavior is undesirable.

Note that the other defined fields available to non-analog systems (e.g., subaddress, redirecting number), as well as the meta-data, are not intended to be stored in this header.

3.3. Numbering Plan

In this baseline case (i.e., analog lines), no numbering plan information is known or implied. However, in the case that a numbering plan is known, an optional "NumberingPlan" parameter MAY be used to indicate the semantic. Only three semantics are defined: "unknown", "local", and "e164". "unknown" is the default if no numbering plan semantic is known (and the default if the parameter is absent). "local" has meaning only within the domain of the voice mail system that stored the message (i.e., the voice mail system knows that the number belongs to a local numbering plan). "e164" indicates that the number is as described in [E.164]. "x-" may be used to indicate enterprise or service specific dialing plans.

3.4. Date Header

The date and time may be included by the telephone system with the calling party's telephone number per [T1.401]. This MAY be used, as there is an existing "Date" Internet header to hold this information. It is a local implementation decision whether this time or the local system time will be recorded in the "Date" header.

4. Caller Name Field

The name of the person sending the message is also important. Information about whether the call is internal or external may be included if it is available. This information may not be available on international calls.

Further, the exact format for this field is typically a service provider option per [T1.641]. It is possible for the caller's name to be sent in one of several character sets depending on the service provider signaling transport (e.g., ISDN-UP, SCCP, TCAP). These include:

1) International Reference Alphabet (IRA), formerly know as International Alphabet No.5 or IA5 [T.50]
2) Latin Alphabet No. 1 [8859-1]
3) American National Standard Code for Information Interchange [ASCII]
4) Character Sets for the International Teletex Service [T.61]

Of these, the IRA and T.61 character sets contain a number of options that help specify national and application oriented versions. If there is no agreement between parties to use these options, then the 7-bit character set in which the graphical characters of IRA, T.61, and ASCII are coded exactly the same, will be assumed. Further, the 7-bit graphical characters of [8859-1] are the same as in [ASCII].

Note that for delivery to customer equipment in North America, the calling name MUST be presented in ASCII per [T1.401].

As a result, for the caller name header defined in this document, characters are represented with ASCII characters. However, if a name is received that cannot be represented in 7-bit ASCII, it MAY be stored using its native character set as defined in [RFC2047].

In telephone networks, the length of the name field MUST NOT exceed 50 characters, as defined in [T1.641]. However, service providers may choose to further limit this to 15 characters for delivery to customer equipment, e.g., [T1.401] and [GR-1188-CORE].

5. Formal Syntax

Both Calling Line Identification and Caller Name follow the syntax specification using the augmented Backus-Naur Form (BNF) as described in [RFC2234]. While the semantics of these headers are defined in sections 4 and 5, the syntax uses the 'unstructured' token defined in [RFC2822]:

```
unstructured = *([FWS] utext) [FWS]
```

5.1. Calling Line Identification Syntax

```
"Caller-ID" ":" 1*DIGIT [ "," "NumberingPlan="
( "unknown" / "local" / "e164" / ietf-token / x-token ) ] CRLF

  ietf-token := <An extension token defined by a
                 standards-track RFC and registered
                 with IANA.>

  x-token := <The two characters "X-" or "x-" followed, with
              no intervening white space, by any token>
```

5.2. Caller Name Syntax

```
"Caller-Name" ":" unstructured CRLF
```

5.3. Examples

```
To: +19725551212@vm1.example.com
Caller-ID: 6137684087
Caller-Name: Derrick Dunne

To: 6137637582@example.com
Caller-ID: 6139416900
Caller-Name: Jean Chretien
```

6. Other Considerations

6.1. Compatibility with Other Internet Phone Numbers

The intent of these headers are to record telephone number that is sent by the analog phone system with an incoming call without alteration or interpretation. If sufficient semantic is known or can be inferred, this may be included in the NumberingPlan field. This may allow it to be later translated into an addressable phone number. Addressable or dialable phone numbers (which this document does not define) are defined in other documents, such as GSTN address [RFC3191] or telephone URL [RFC2806].

6.2. Usage

There are a few scenarios of how this mechanism may fail that must be considered. The first is mentioned in section 3.2 - the truncation of an international number to 10 digits. This could result in a misinterpretation of the resulting number. For instance, an international number (e.g., from Ireland) of the form "353 91 73 3307" could be truncated to "53 91 73 3307" if received in North America, and interpreted as "539 917 3307" - a seemingly "North American" style number. Thus, the recipient is left with incorrect information to reply to the message, possibly with an annoyed callee at the North American number.

The second scenario is the possibility of sending an internal extension to an external recipient when a Call Answer message is forwarded. This poses two problems, the recipient is given the wrong phone number, and the company's dialing plan could be exposed.

The final concern deals with exercising character options that are available in coding the Calling Name field. An international system may send a message with coding options that are not available on the receiving system, thus giving the recipient an incorrect Caller Name.

7. Security Considerations

Note that unlisted and restricted numbers are not a concern as these header fields are defined to contain what the called party would see (e.g., 'Private Name'), as opposed to the complete details exchanged between service providers.

However, it must also be noted that this mechanism allows the explicit indication of phone numbers in the headers of an email message (used to store voice messages). While the rationale for this is reviewed in section 1, the recipient of this message may not be aware that this information is contained in the headers unless the user's client presents the information. Its use is intended to be informative as it is when it appears on a telephone screen.

8. IANA Considerations

This document defines an IANA-administered registration space for Caller-ID numbering plans in section 5.1. Each registry entry consists of an identifying token and a short textual description of the entry. There are three initial entries in this registry:

unknown - The number's semantics are unknown. This value is the default in the absence of this parameter.

local - The number only has meaning within the domain of the sending system identified by the RFC 2822 From field of the message.

e164 - The number's semantics are described in [E.164].

The only way to add additional entries (ietf-token in section 5.1) to this registry is with a standards-track RFC.

9. References

9.1. Normative References

[VPIMV2R2] Vaudreuil, G. and G. Parsons, "Voice Profile for Internet Mail - version 2 (VPIMv2)", RFC 3801, June 2004.

[RFC2047] Moore, K., "MIME (Multipurpose Internet Mail Extensions) Part Three: Message Header Extensions for Non-ASCII Text ", RFC 2047, November 1996.

[RFC2822] Resnick, P., "Internet Message Format", RFC 2822, April 2001.

[RFC2234] Crocker, D. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", RFC 2234, November 1997.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

9.2. Informative References

[RFC2076] Palme, J., "Common Internet Message Headers", RFC 2076, February 1997.

[E.164] ITU-T Recommendation E.164 (1997), "The international public telecommunication numbering plan"

[T.50] ITU-T Recommendation T.50 (1992), "International Reference Alphabet (IRA)"

[T.61] CCITT Recommendation T.61 (1988) (Withdrawn), "Character Repertoire and Coded Character Sets for the International Teletex Service"

[8859-1] ISO/IEC International Standard 8859-1 (1998), Information Technology _ 8-bit single-byte coded graphic character sets _ Part 1: Latin Alphabet No. 1

[ASCII] American National Standards Institute (ANSI), Coded Character Set - 7-Bit American National Standard Code for Information Interchange, ANSI X3.4, 1986.

[T1.401] American National Standards Institute (ANSI), Telecommunications _ Network-to-Customer Installation Interfaces _ Analog Voicegrade Switched Access Lines with Calling Number Delivery, Calling Name Delivery, or Visual Message-Waiting Indicator Features, ANSI T1.6401.03-1998

[T1.625] American National Standards Institute (ANSI), Telecommunications - Integrated Services Digital Network (ISDN) _ Calling Line identification Presentation and Restriction Supplementary Services, ANSI T1.625-1993

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[GR-1188-CORE] Telcordia Technologies, "CLASS Feature: Calling Name Delivery Generic Requirements", GR-1188-CORE, Issue 2, December 2000

[GR-31-CORE] Telcordia Technologies, "CLASS Feature: Calling Number Delivery", GR-31-CORE, Issue 1, June 2000

[RFC3191] Allocchio, C., "Minimal GSTN address format in Internet Mail", RFC 3191, October 2001.

[RFC2806] Vaha-Sipila, A., "URLs for Telephone Calls", RFC 2806, April 2000.

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