Minimal PSTN address format in Internet Mail

Status of this Memo

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IESG NOTE

   This memo describes a simple method of encoding PSTN addresses in the
   local-part of Internet email addresses, along with an extension
   mechanism to allow encoding of additional standard attributes needed
   for email gateways to PSTN-based services.

   As with all Internet mail addresses, the left-hand-side (local- part)
   of an address generated according to this specification, is not to be
   interpreted except by the MTA that is named on the right-hand-side
   (domain).

1. Introduction

   Since the very first e-mail to PSTN services gateway appeared, a
   number of different methods to specify a PSTN address as an e-mail
   address have been used by implementors. Two major objectives for this
   were

      - enable an e-mail user to access these services from his/her
        e-mail interface;

      - enable some kind of "PSTN over e-mail service" transport, to
        reduce the costs of PSTN long distance transmissions, and use the
        existing e-mail infrastructure.

This memo describes the MINIMAL addressing method to encode PSTN
addresses into e-mail addresses and the standard extension mechanism
to allow definition of further standard elements. The opposite
problem, i.e. to allow a traditional numeric-only PSTN device user to
access the e-mail transport service, is not discussed here.

All implementations supporting this PSTN over e-mail service MUST
support as a minimum the specification described in this document.
The generic complex case of converting the whole PSTN addressing into
e-mail is out of scope in this minimal specification: there is some
work in progress in the field, where also a number of standard
optional extensions are being defined.

In this document the formal definitions are described using ABNF
syntax, as defined into [7]. We will also use some of the "CORE
DEFINITIONS" defined in "APPENDIX A - CORE" of that document. The
exact meaning of the capitalised words

    "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD",
    "SHOULD NOT", "RECOMMENDED", "MAY", "OPTIONAL"

is defined in reference [6].

2. Minimal PSTN address

The minimal specification of a PSTN address in e-mail address is as
follows:

    pstn-address = pstn-mbox [qualif-type1]

    pstn-mbox = service-selector "=" global-phone

    service-selector = 1*(DIGIT / ALPHA / "-")
                       ; note that SP (space) is not allowed in
                       ; service-selector.
                       ; service-selector MUST be handled as a case
                       ; INSENSITIVE string by implementations.

Specifications adopting the "pstn-address" definition MUST define a
unique case insensitive "service-selector" element to identify the
specific messaging service involved.

These specifications MUST also define which minimal "qualif-type1"
extensions, if any, MUST be supported for the specified service.

Implementations confirming to these minimal requirements
specification are allowed to ingnore any other non-minimal extensions
address element which can be present in the "pstn-address". However,

   conforming implementations MUST preserve all "qualif-type1" address
   elements they receive.

   The generic "qualif-type1" element is defined as:

      qualif-type1 = "/" keyword "=" string

      keyword = 1*(DIGIT / ALPHA / "-")
                ; note that SP (space) is not allowed in keyword

      string = PCHAR
                ; note that printable characters are %x20-7E

   As such, all "pstn-address" extensions elements MUST be defined in
   the "qualif-type1" form.

2.1 Minimal "global-phone" definition

   We now define the minimal supported syntax for global-phone:

      global-phone = "+" 1*(DIGIT , written-sep)

      written-sep = ("-" / ".")

   The use of other dialling schemas for PSTN numbers (like private
   numbering plans or local dialling conventions) is also allowed.
   However, this does not preclude nor remove the minimal compulsory
   requirement to support the "global-phone" syntax as defined above.

   Any non "global-phone" dialling schema MUST NOT use the leading "+"
   between the "=" sign and the dialling string. The "+" sign is
   strictly reserved for the standard "global-phone" syntax.

   Note:
     The specification of these different dialling schemas is out of
     scope for this minimal specification.

   User specification of PSTN e-mail addresses will be facilitated if
   they can insert these separators between dial elements like digits
   etc. For this reason we allow them in the syntax the written-sep
   element.

   Implementors' note:
     Use of the written-sep elements is allowed, but not recommended.
     Any occurences of written-sep elements in a pstn-mbox MUST be
     ignored by all conformant implementations. User Agents SHOULD
     remove written-sep elements before submitting messages to the
     Message Transport System.

2.2 Some examples of a minimal "pstn-address"

     VOICE=+3940226338

     FAX=+12027653000/T33S=6377

     SMS=+33-1-88335215

3. The e-mail address of the I-pstn device: mta-I-pstn

   An "I-pstn device" has an e-mail address, or to be more exact, a name
   which enables a mail system to identify it on the e-mail global
   system.

   In Internet mail, this is the Right Hand Side (RHS) part of the
   address, i.e. the part on the right of the "@" sign. We will call
   this "mta-I-pstn"

     mta-I-pstn = domain

   For "domain" strings used in SMTP transmissions, the string MUST
   conform to the requirements of that standard's <domain>
   specifications [1], [3]. For "domain" strings used in message
   content headers, the string MUST conform to the requirements of the
   relevant standards [2], [3].

   Note: in both cases, the standards permit use of "domain names" or
         "domain literals" in addresses.

4. The pstn-email

   The complete structure used to transfer a minimal PSTN address over
   the Internet e-mail transport system is called "pstn-email". This
   object is a an e-mail address which conforms to RFC822 [2] and
   RFC1123 [3] "addr-spec" syntax, with some extra structure which
   allows the PSTN number to be identified.

     pstn-email = ["/"] pstn-address ["/"] "@" mta-I-pstn

   Implementors' note:
     The optional "/" characters can result from other mail transport
     services gateways, where it is also an optional element.
     Implementations MUST accept the optional slashes but SHOULD NOT
     generate them. Gateways are allowed to strip them off when
     converting to Internet mail addressing.

It is essential to remind that "pstn-address" element MUST strictly
follow the "quoting rules" spcified in the relevant standards [2],
[3].

4.1 Multiple subaddresses

In case a particular service requires multiple subaddresses (in any
form defined by the specific standard specification for that
service), and these subaddresses need to be given on the same "pstn-
mbox", multiple "pstn-email" elements will be used.

Implementors' note:
  The UA could accept multiple subaddress elements for the same
  global-phone, but it must generate multiple "pstn-mbox" elements
  when passing the message to the MTA.

4.2 Some examples of "pstn-email"

    VOICE=+3940226338@worldvoice.com

    FAX=+1.202.7653000/T33S=6377@faxserv.org

    /SMS=+33-1-88335215/@telecom.com

5. Conclusions

This proposal creates a minimal standard encoding for PSTN addresses
within the global e-mail transport system and defines the standard
extension mechanism to be used to introduce specific new elements.

The proposal requires no changes to existing e-mail software. Each
specific PSTN service using this proposal MUST define its own
"service-selector" specification and MUST define the eventual other
"qualif-type1" elements to be supported for its minimal addressing
specification. An example is in reference [13].

6. Security Considerations

This document specifies a means by which PSTN addresses can be
encoded into e-mail addresses. As routing of e-mail messages is
determined by Domain Name System (DNS) information, a successful
attack on this service could force the mail path via some particular
gateway or message transfer agent where mail security can be affected
by compromised software.

There are several means by which an attacker might be able to deliver
incorrect mail routing information to a client. These include: (a)
compromise of a DNS server, (b) generating a counterfeit response to

a client's DNS query, (c) returning incorrect "additional
information" in response to an unrelated query. Clients SHOULD ensure
that mail routing is based only on authoritative answers. Once DNS
Security mechanisms [5] become more widely deployed, clients SHOULD
employ those mechanisms to verify the authenticity and integrity of
mail routing records.

7. Author's Address

Claudio Allocchio
Sincrotrone Trieste
SS 14 Km 163.5 Basovizza
I 34012 Trieste
Italy

RFC822: Claudio.Allocchio@elettra.trieste.it
X.400: C=it;A=garr;P=Trieste;O=Elettra;
        S=Allocchio;G=Claudio;
Phone: +39 40 3758523
Fax: +39 40 3758565

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        between X.400 and RFC 822/MIME", RFC 2156, January 1998.

9. Full Copyright Statement

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