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                                         Extreme Networks

                 IP Telephony Requirements for
                Emergency Telecommunication Service
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Abstract

   This document presents a list of requirements in support of
Emergency
   Telecommunications Service (ETS) within the context of IP telephony.
   It is an extension to the general requirements presented in [3].
   Solutions to these requirements are not presented in this document.

1. Introduction

   Effective telecommunications capabilities can be imperative to
   facilitate immediate recovery operations for serious disaster
events,
   such as, hurricanes, floods, earthquakes, and terrorist attacks.
   Disasters can happen any time, any place, unexpectedly. Quick
   response for recovery operations requires immediate access to any
   public telecommunications capabilities at hand. These capabilities
   include: conventional telephone, cellular phones, and Internet
   access via online terminals, IP telephones, and wireless PDAs. The

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   commercial telecommunications infrastructure is rapidly evolving to
   Internet-based technology. Therefore, the Internet community needs
to
   consider how it can best support emergency management and recovery
   operations.

1.1 Problem

   Standards have been developed by other standards bodies concerning
   emergency communications. As discussed in [2] and [3], some of
these
   standards, such as T1.631 [4], define specific indicators or labels
   for emergency communications in SS7 networks. Certain requirements
   must be defined in order to achieve peering services across hybrid
   networks (networks that communicate between IP and other types of
   networks such as that realized by the Public Switched Telephone
   Network).

2. Scope

   [2] has defined a set of general system requirements to support
   Emergency Telecommunications Service (ETS). This document defines
an
   additional set of system requirements to achieve support for ETS
   within the specific context of IP telephony (note that this document
   views IP telephony within the context of an end-to-end application
   layer service). Solutions to requirements are not defined. The
   document does not specify protocol enhancements or specifications.

2.1 Out of Scope

   An item that is not in scope of this document is mandating
acceptance
   and support of the requirements presented in this document. The
IETF
   does not mandate requirements or capabilities to independent
networks
   that comprise the Internet. As an example, Internet Service
   Providers (ISP) may choose not to operate any telephony-related
   gateways or services. The IETF cannot and does not mandate that an
   ISP deploy either telephony-related gateways or telephony-related
   services. There is an expectation that business contracts, for
   example Service Level Agreements (SLA), will be used to satisfy
those
   following requirements that apply to service providers. Absence of
   an SLA implies best effort service is provided.

   It is assumed that some ISPs will choose to offer ETS services and
   that other carriers will choose not to offer ETS services. These
   requirements do not apply to ISPs that have chosen not to offer ETS

services.

3. **IP Telephony Requirements**

The requirements in this section relate only to Telephony Signalling

   as used in Internet-based telephony services. They are an extension
   to the general requirements specified in [2]. The following
   requirements explicitly do not relate to IP-layer mechanisms, such
as
   Differentiated Services or Integrated Services.

     1) Telephony signalling applications used with Internet-based
     telephony MUST be able to carry labels.

     2) The ability to carry labels MUST be extensible to support
     various types and numbers of labels. A single binary value will
     not be sufficient given the various labeling standards in
existance
     today.

     3) Telephony signalling labels SHOULD have a mapping with the
     various emergency related labels/markings used in other telephony
     based networks, such as the PSTN. This ensures that a telephone
     call placed over a hybrid infrastructure (traditional PSTN over
     some portion(s) of the path, Internet telephony over some other
     portion(s) of the path) can carry the labels end-to-end with
     appropriate translation at PSTN/Internet boundaries. Absence of
     a mapping means that the signaling reverts to a default service
     (presumably one attributed to the general public).

     4) Application layer IP telephony capabilities MUST NOT preclude
     the ability to do application-layer accounting.

4. Issues

   This section presents issues that arise in considering solutions for
   the telephony requirements that have been defined for ETS. This
   section does not specify solutions nor is it to be confused with
   requirements. Subsequent documents that articulate a more specific
   set of requirements for a particular service may make a statement
   about the following issues.

     1) Alternate paths

        Experience with GETS over the PSTN has shown the utility of
        alternate paths to a destination to help facilitate
        emergency-related communications. From the perspective of the
        Internet, this utility may be difficult to achieve and have a
        more limited benefit. Unlike the PSTN, which creates a fixed
        path during call setup phase, the Internet uses dynamic routing
        for IP packets. This dynamic routing capability automatically
        causes IP packets to travel the best current path. The Internet
        network infrastructure does not have the concept of a "call" or
        the concept of "call setup", though IP telephony applications

        might have application-layer awareness of calls or the call
        setup concept.

5. Security

   Only authorised users or operators SHOULD be able to create non-
   ordinary labels. Labels SHOULD have mechanisms to provide strong
   end-to-end integrity during their transmission through the telephony
   systems. Finally, in cases where labels are expected to be acted
   upon by operators, these operators SHOULD have the capability of
   authenticating the label on a received message or transmission in
   order to prevent theft of service and reduce risk of denial of
   service (e.g. by unauthorised users consuming any limited
resources).

   Security is also discussed in the general requirements of [2], which
   applies to section 3 above.

6. References

   1 Bradner, S., "The Internet Standards Process -- Revision 3", BCP
      9, RFC 2026, October 1996.

   2 Carlberg, K., Atkinson, R., "General System Requirements for
      Emergency Telecommunications Service", Internet Draft,
      Work In Progress, September, 2002

   3 Folts, H., et. al., "User Requirements for Emergency
      Telecommunications Service", Internet Draft, Work In
      Progress, September 2002

   4 ANSI, "Signaling System No. 7(SS7): High Probability of
      Completion (HPC) Network Capability, ANSI T1.631, 1993.

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