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Extreme Networks

IP Telephony Requirements for  
Emergency Telecommunication Service  
<[draft-carlberg-ets-telephony-01.txt](#)>

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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



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

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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 existence 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) Hybrid infrastructures that include and support connectivity to the PSTN MAY support application layer accounting within IP telephony applications. These applications MUST NOT preclude the ability to do 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

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.

Alternate path routing at the application layer may be useful in choosing one of possibly several egress points to the PSTN from the Internet.

## **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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