



ECC Report 193

Emergency Calls in VoIP Environment:
Compilation of Recent Studies

Approved 21 November 2012

1 EXECUTIVE SUMMARY

This new ECC Report deals with Emergency Calls in VoIP Environment, and it compiles both earlier finalised Reports and new work item. These work items have been now brought together for the benefit of the reader; now all related documents can be found as one Report.

The earlier ECC Reports

- ECC Report 74, "Access to Emergency Calls Based On Voice Over IP" (Vilnius, October 2005); and
- ECC Report 143, "Practical Improvements in Handling 112 Emergency Calls: Caller Location Information (Lisbon, April 2010)

have been embedded to this document as such, i.e. without amendments.

The recent and new work item

- Survey on 112 Emergency Caller Location in VoIP Based Networks in Europe (Stockholm, November 2012)

brings new information on the topic based on questionnaire amongst European Countries.

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	2
2	ECC REPORT 74.....	4
3	ECC REPORT 143.....	6
4	SURVEY ON 112 EMERGENCY CALLER LOCATION IN VOIP BASED NETWORKS IN EUROPE	7

2 ECC REPORT 74

ECC Report 74, "Access to Emergency Calls Based On Voice Over IP" (Vilnius, October 2005)



ECC REP 074 -
Access to Emergency

Executive Summary

VoIP is a new technology for voice communication with far reaching impact on today's private and public telephony networks and services. Based on the fundamental changed service building options there are very different VoIP realisations already in place in the world out there ranging from pure internet based end to end applications without centralised control to centralised emulation of PSTN POTS service.

This TRIS report describes the main technical problems arising in the context of emergency access from VoIP terminals. Although it focuses on technical aspects it also examines how the new technology might affect regulations and points to regulatory areas where changes should be considered for the near to mid-term future.

There is a broad on-going discussion all over the world on the regulatory treatment of VoIP, with one of the key questions being if at least certain VoIP scenarios fall within POTS regulation comprising (national specific) obligations for access to emergency services.

Disregarding the final outcome of this discussion and formal legal regulations there is widespread acceptance that from the customers' point of view it would be most appropriate if voice enabled IP devices with national or global connectivity would also provide access to emergency services.

The main obstacle to reach this goal is the missing location information of the calling VoIP user. Whereas at present in telephone network solutions all necessary emergency routing elements are network based, in the IP based solution the terminal has a significantly more important role and may have to provide location information in the general case. This could be done either by local means (e.g. GPS receiver) or information obtained from the local access network. For the latter case it has to be emphasized that in the public internet access typically is completely decoupled from VoIP service provision and obligations on access networks (ISPs) that help global third party VoIP providers might be only achieved in a controversial process if there is no extra funding and ISP will have to bear these costs though they may not be able to benefit from the investments if they do not provide a VoIP service themselves.

Generally two stages might be differentiated:

- In the first stage there is no impact on infrastructure and basic processes at emergency centres, i.e. only changes outside the emergency centre responsibilities are considered.
- In the second stage there is an all IP infrastructure including IP connectivity of emergency response centers.

In absence of unavoidable national PSTN peculiarities the latter scenario is in the focus of international standardisation activities at IETF, nevertheless it is clear that in reality a long overlapping period of stage one in parallel with stage two will have to be considered at the national level. During this time period national Emergency Service Routing Proxies (ESRP) could help VoIP Service Providers without national gateways and access to the national emergency systems to provide access to emergency services.

One important medium to long term option is that emergency calls could end up as a stand-alone services that no longer are integrated in general VoIP services and maybe registered by the users independently from other VoIP service registrations.

IETF WG ECRIT is currently working on standards to provide direct access to Emergency Response Centres from the device without the need of a VoIP Service provider.

To summarize it turns out that, compared with current regulations, future regulations on emergency access might have to widen their scope compared with current emergency regulation on telephone networks and services and might include also the terminals and public IP / internet access networks and internet service providers.

It must be stressed that this report is dealing only with the communications access to emergency services. In practice the emergency services themselves will need to adapt to be more readily accessible and to receive and handle new forms of communication (eg SMS, MMS photos and video), and these changes are equally important.

3 ECC REPORT 143

ECC Report 143, "Practical Improvements in Handling 112 Emergency Calls: Caller Location Information (Lisbon, April 2010)



ECC REP 143 -
Practical Improvemen

Executive Summary

Each year in the European Union several millions of citizens dial the emergency call number to access emergency services. Due to increasing penetration of mobile telephony in the society, the share of emergency calls emanating from mobile networks is rapidly outgrowing emergency calls for fixed networks; this causes that an emergency situation mobile callers are increasingly not able to indicate the precise location for an optimum response. Similarly, VoIP services are substituting voice calls over traditional networks, customers increasingly use VoIP for emergency calls and expecting the same reliability and completeness of the emergency calls service.

Location information is normally represented by data indicating the geographic position of the terminal equipment of a user. These data vary in range, indicating in a general way where the user is or very precise, pinpointing the user's whereabouts to within a few meters. Some location data are effectively a subset of signalling data as they are necessary for setting up a telephone connection.

In the framework of Enhanced emergency call services, the availability of location information must serve three main goals:

- Route the calls to the right emergency call centre;
- Locate the caller and/or the incident site.
- Dispatch the most appropriate emergency response team(s);

The Report identify the most relevant regulatory principles applicable to caller location requirements in the context of emergency calls and analyses the location information standards produced by ETSI as a Standard Development Organization for fixed, mobile and IP communications networks.

In the end, the Report also includes the best European practices on the basis of the latest implementation report concerning treatment by each Member State of the caller location information for 112 activities.

4 SURVEY ON 112 EMERGENCY CALLER LOCATION IN VOIP BASED NETWORKS IN EUROPE

Survey on 112 Emergency Caller Location in VoIP Based Networks in Europe (Stockholm, November 2012)



WG NaN Survey -
112 Emergency Caller

Executive Summary

Related to the countries, which provide a response to the questionnaire, the provision of access to emergency call for 112 is mandatory for all PATS providers and in 11 countries for all VoIP operators providing access to E.164 numbers.

In most countries there are more than 10 PSAPs with regional responsibilities, thus routing to the regional responsible PSAP is necessary and even legally required. In the majority of countries all service provider are obliged to route the emergency call correctly, which means to the PSAP responsible for the area, where the emergency caller is located.

In most countries the provision of caller location information is based on data like the registered subscriber address and in case of VoIP services with potential nomadic use this is the only information available. The emergency call can only be flagged as potentially incorrectly routed, which it is done in some few countries.

In only a few countries there is a dedicated emergency network, which helps for correct routing and may simplify the efforts of the VoIP service provider.

Disclaimer:

The answers presented were submitted in the time frame from August 2010 to June 2011 and might be not valid any more when this report is published, due to the application of the new Directive 2009/136/EC and its consequent transpose to national laws.