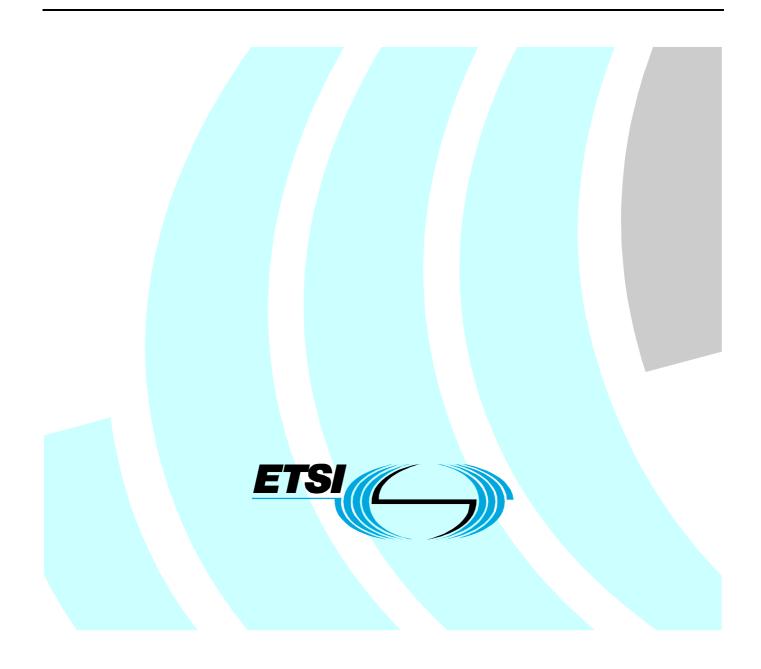# ETSI TS 102 424 V1.1.1 (2005-09)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Requirements of the NGN network to support Emergency Communication from Citizen to Authority

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00   Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

1   Scope

The present document contains the requirements of a NGN to support emergency communications (EMTEL) from the citizen to the authority. The requirements are independent of the NGN subsystem and transport layer unless specifically referred to.

2   References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1]   Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive).

NOTE: See Article 19.

[2]   Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).

[3]   Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications).

[4]   ETSI SR 002 180: "Requirements for communication of citizens with authorities/organizations in case of distress (emergency call handling)".

[5]   ETSI TS 124 008: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 (3GPP TS 24.008)".

3   Definitions and abbreviations

3.1   Definitions

For the purposes of the present document, the following terms and definitions apply:

emergency session: session setup from the user to the authority for a 112 type call/session

ISIM module: software version of the IMS SIM hardware in 3GPP

NGN Terminal: device allowing a user access to NGN services

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3GPP	3rd Generation Partnership Project
CLI	Calling Line Identity
CN	Circuit switched Network
ECC	Emergency Control Centre
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISIM	IMS Services Identity Module
MMI	Man Machine Interface
NGN	Next Generation Network
PSAP	Public Safety Answering Point
PSTN	Public Switch Telephone Network
SDP	Session Description Protocol
SIP	Session Initiated Protocol
URI	Uniform Resource Identifier

4 Emergency Sessions Requirements

4.1 General Requirements

It shall be possible to establish a session for an emergency speech call. These Emergency calls shall be routed to the emergency services in accordance with the national regulations of where the caller is located which may require that these calls receive a higher level of priority than a normal communication. An emergency call may be allowed to be establish without the need to "dial" a dedicated number to avoid a mis-connection in the nomadic case, e.g. the use of entities such as menu, by use of a "red button" may be deployed. Emergency Calls may be supported without a dedicated authentication device or procedure being present for this session.

> NOTE: It will be left to the national authorities to decide whether the network should accept emergency calls without the dedicated authentication device or procedure being present for this session.

It may be possible to initiate emergency calls to different emergency call centres, depending on the type of emergency. When using the unique European emergency number 112 the call will be handled first by the PSAP and then forwarded to the appropriate ECC.

The following are examples of 112 emergency calls:

- Police.

- Ambulance.

- Fire Brigade.

- Marine Guard.

- Mountain Rescue.

- Common emergency answering point.

The Man Machine Interface (MMI) on specific NGN Terminal may be specified by the regulatory authority in which the customer's service contract is agreed. This interface is then stored on this NGN Terminal and this shall be deployed whenever an emergency call/session is attempted.

It maybe possible to tie any emergency call number, specified in the preferred emergency call MMI(s) above, to any single emergency call type or to any combination of emergency types. The association between emergency numbers and emergency call type maybe able to be programmed on the NGN Terminal as specified nationally by the regulatory authority where the customer's service contract is agreed.

Considering the "Directive 2002/21/EC on a common regulatory framework for electronic communications and services (the "Framework Directive"), and in particular Article 19". European Law [1] requires that 112 Emergency Voice services are available across the European Union, It is noted that in some countries (e.g. Germany) this code does not translate to the Police, where as in other counties (e.g. Italy) this is always delivered to the Police who include other Emergency services. In other countries 112 is delivered to a PSAP that offer a number of services.

EXAMPLE:

19	Police (Albania).
100	Police and Fire Brigade (Greek cities).
100	Ambulance and Fire Brigade (Belgium).
110	Police (Germany).
112	Police and Ambulance (Italy).
112	General emergency call, all categories (Sweden).
115	Fire Brigade (Italy).
144	Ambulance (Austria).
911	Emergency Voice Access (North America).
999	Emergency Voice Service (UK/Eire).

The serving network may download additional emergency numbers to the NGN Terminal in order to ensure that local emergency numbers are known to the NGN Terminal. The NGN Terminal shall regard these emergency numbers as valid in that country only and shall discard them when a new country is entered.

4.1.1   Identification of emergency numbers

To handle nomadicity, the NGN Terminal shall be able to place calls on a locally supported Emergency number, it should be able store Emergency numbers, and in the case of a SIP Terminal, to store Emergency SIP URIs. When an Emergency call or session is required, the correct Number/URI is presented to the network on the basis of national knowledge and information made available at the Access to the network. In Europe, this shall be 112, and optionally a national possibly service specific number.

Additional the NGN Terminal may store emergency numbers that may have been downloaded by the serving network.

4.1.2   Location information derivation and handling

The location information shall [2] be derived from the known information available in the network, where possible.

Upon initiating the emergency session the available location information from the network and/or terminal shall be sent to the PSAP with the set-up of the session.

The location information is an indication of such information as geodatic, network attachment, and/or postal address.

If all location information is not available at the time of the set-up of the emergency session then what is available is sent and the network may use other positioning means to obtain other location information.

This location information shall be identified as its to the origin, such that all the NGN Terminal derived location information is indicated to the emergency authority. The NGN Terminal provided Location Information is indicated such that the origin of the information can be verified.

The location information is sent to appropriate emergency authority upon a request from this authority. The storage of this location information by the network beyond the end of the call/session, and all required functions for this, is a national matter.

The location information shall be treated as private information [3] and as such it is subject to the privacy regulation of data as specified by the regulatory authority where the session is initiated. This may include any authorization and security procedures and obligations of the customer, NGN Terminal and emergency authority.

4.1.3 Domains priority and selection for NGN Terminal attempts to emergency call

A PSTN/ISDN emulation subsystem and IMS subsystem capable NGN Terminal attempting an emergency call shall give priority to the PSTN/ISDN emulation subsystem domain.

In case where the call attempt in the PSTN/ISDN emulation subsystem domain fails, the NGN Terminal should automatically make a second attempt in the IMS subsystem domain, where the NGN Terminal is facilitated and attached to both domains.

In the case where the NGN Terminal cannot support the IMS subsystem capabilities but is able to support the PSTN/ISDN emulation subsystem and the emergency call attempt in this domain fails the call is rejected and an indication to try again given to the caller.

4.2 Requirements for an PSTN/ISDN Emulation Subsystem and Simulation services in the IMS providing Emergency calls

A PSTN/ISDN emulation subsystem and simulation services in the IMS shall support the emergency communication service as defined in SR 002 180 [4].

This clause mandates Emergency Voice services as described in [1].

The PSAP/ECC is assumed to be either in the PSTN/ISDN network or at least inter-worked to by a Media and boarder gateways and as such is subject to the same requirements as above.

4.3 Requirements for an IMS Subsystem Emergency Sessions

This clause deals with Evolutionary services where Emergency sessions are established from a SIP Enabled terminal to a SIP enabled Emergency Control Centre, via a SIP enabled PSAP. Where the SIP enabled PSAP is viewed as a SIP Application Server in the IMS; the PSAP may select the appropriate ECC on the bases on the service requested in the Session Request (e.g. the SDP payload in the SIP INVITE). Where the PSAP is an enhanced termination Similar-forwarding capabilities may be provided before any optimally routed streaming media is established.

The solution for emergency sessions in the IMS subsystem shall fulfil the following capability requirements:

1) It should be independent from the underlying IP connectivity network in respect to the detection and routing of emergency sessions.

2) All emergency contact identifiers, (e.g. emergency numbers, SIP emergency URIs) and any special indications for emergency sessions within the SIP signalling must be supported specifically IETF proposals on addressing should be taken into consideration.

3) When the network resources are under load conditions then emergency sessions should have a priority to network resources, over "ordinary" sessions by the network.

4) Set-up of IMS emergency sessions shall be possible for users with a barred public user identity.

5) The primary solution shall be that the NGN Terminal will detect an initiation of an emergency session (e.g. by evaluating the SIP-URI or the dialled number) by itself and then indicates the emergency session to the network.

   However the NGN shall also support the scenario where the NGN Terminal cannot detect an initiation of an emergency session. Upon the reception of the session initiation request, the NGN, upon detecting that this is an emergency request will reject the session initiation request with an indication that this is for an emergency session. When the NGN Terminal receives the session rejection with the indication that the session initiation was for an emergency service, then the NGN Terminal would initiate the emergency session to the network.

6) The NGN must be able to support the scenario where the authorization of the NGN Terminal to the network is accomplished with the aid of an ISIM module. In this case the NGN shall be able to set-up an emergency session if this identification module is not present.

7) An Emergency Service shall not be a subscription service. This service will therefore be supported in a visited network and for emergency session setup can be provided without interaction with a "Home" network for the nomadic case. When call-back from the emergency control center to the user is required then the interaction with the Home network in the nomadic case is required.

8) For the nomadicity scenario where an emergency session request is routed via the home network, the home network shall be able to detect that the session is for emergency service (whether indicated or not) and respond to the NGN Terminal indicating that the NGN Terminal should initiate an emergency session in the visited network.

   Alternatively the visited network may be able to detect that the session request is for an emergency session (whether indicated or not)and route to session to the appropriate PSAP/ECC.

9) The Location of the caller to the session establishment shall be supported according to clause 4.1.2 in accordance with the EU Directives [2] and [3].

10) PSAPs/Emergency control centres may be connected to the PSTN/ISDN emulation domain, the IMS domain or any other IP packet network. All these networks have to support the requirements specified here for emergency call handling.

11) PSAPs/Emergency control centres shall be able to call back the user, if a CLI or other identities is provided.

   In the case where users have no roaming agreement in the visited network or users have "barring of incoming calls when roaming outside home network" this may not be possible.

12) When local emergency numbers have to be supported in a country, the visited network shall be able to download emergency numbers to the NGN Terminal using procedures as described in TS 124 008 [5], in order to ensure that local emergency numbers are known to the NGN Terminal.

4.4 Emergency Calls in the PS CN Domain

Without the IMS CN subsystem, emergency calls are not supported in the PS CN domain.

4.5 Emergency Calls when Attached via an I-WLAN

Any attempt to make an emergency call shall be handled as defined for a PS CN domain network in clause 4.4.

History

Document history		
V1.1.1	September 2005	Publication