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SIGNALLING REQUIREMENTS AND PROTOCOLS
FOR IMT-2000

Emergency services for IMT-2000 networks – Requirements for harmonization and convergence

ITU-T Q-series Recommendations – Supplement 47

ITU-T Q-SERIES RECOMMENDATIONS

SWITCHING AND SIGNALLING

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Supplement 47 to ITU-T Q-series Recommendations

Emergency services for IMT-2000 networks –
Requirements for harmonization and convergence

Summary

This Supplement is an "information" document and is intended to outline the requirements and provisions for Emergency Services for IMT-2000 systems. This is a compilation from sources outside the ITU (e.g., administrations, Standards Development Organizations, and the Third Generation Partnership Projects (3GPP and 3GPP2)). The scope includes any relevant discussion concerning the provisioning of Emergency Services specifically addressing the IMT-2000 systems during Harmonization and Convergence periods.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this publication, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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1 Scope

ITU-T Rec. Q.1701 provides the framework for IMT-2000 networks and defines the IMT-2000 Family of Systems concept. This Recommendation identified the following Emergency call capabilities to be supported on IMT-2000 systems:

•   Identification of emergency call;

•   Emergency call handling;

•   Emergency caller location.

This Supplement to the Q-series of Recommendations identifies and discusses the requirements and provisioning of Emergency Services in IMT-2000 systems. For the purposes of this Supplement, Emergency Services include supporting national emergency calls and the International Emergency Preference Scheme (IEPS), as found in ITU-T Rec. E.106.

2 References

Excerpts from the following ITU-T Recommendations were used in this Supplement. The references below contain provisions which, through reference in this text, constitute provisions of this Supplement. At the time of publication, the editions indicated were valid. All Recommendations and the bibliographic references are subject to revision; users of this Supplement are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below and throughout the Supplement. A list of the currently valid ITU-T Recommendations is regularly published.

[1]   ITU-T Recommendation Q.1701 (1999), *Framework for IMT-2000 networks*.

[2]   ITU-T Recommendation E.106 (2003), *International Emergency Preference Scheme (IEPS) for disaster relief operations*.

[3]   ETSI SR 002 180 (2003), *Requirements for communication of citizens with authorities/organizations in case of distress (emergency call handling)*.

[4]   3GPP TR 22.950 (2003), *Priority service feasibility study* (Release 6).

[5]   3GPP TS 22.101 (2003), *Service aspects; Service principles* (Release 6).

[6]   ITU-T Recommendation Q.767 (1991), *Application of the ISDN User Part of CCITT signalling system No. 7 for international ISDN interconnections* plus Amendment 1 (1991): *Support for the International Emergency Preference Scheme*.

[7]   ITU-T Recommendations Q.1902.X series (2001), *Bearer Independent Call Control protocol (Capability Set 2),* plus Amendments.

[8]   ITU-T Recommendations Q.761-Q.764 (1999), *Signalling System No. 7 – ISDN User Part,* plus Amendments.

[9]   ITU-T Recommendations Q.2761-Q.2764 (1999), *Broadband ISDN User Part,* plus Amendments.

[10]   ITU-T Recommendation Q.1950 (2002), *Bearer independent call control protocol*.

[11]   TIA/ATIS, J-STD-034 (1997), *Wireless Enhanced Emergency Services*.

[12]   TIA/ATIS, J-STD-036-A, (2002), *Enhanced Wireless 9-1-1 Phase 2*, and Addendum 1 (2003).

[13]   Supplement 1 to ITU-T E.300-series Recommendations (1988), *List of possible supplementary telephone services which may be offered to subscribers*.

3   Definitions

This Supplement defines the following terms:

3.1   emergency call: A call requesting emergency services. A caller is given a fast and easy means of giving information about an emergency situation to the appropriate emergency organization (e.g. fire department, police, ambulance). Emergency calls will be routed to the emergency services in accordance with national regulations.

3.2   IEPS call: Allows an authorized user to have access to the International Telephone Service while the service is restricted due to damage, congestion and/or other faults. The International Emergency Preference Scheme (IEPS) is needed when there is a crisis situation, which causes abnormal telecommunication requirements for governmental, military, civil authorities and other specially authorized users of public telecommunication networks.

4   Abbreviations and acronyms

This Supplement uses the following abbreviations:

3G	3rd Generation Wireless Systems
3GPP	3rd Generation Partnership Project
3GPP2	3rd Generation Partnership Project 2
BICC	Bearer Independent Call Control
B-ISDN	Broadband ISDN
CS-2, CS-3	Capability Set 2, Capability Set 3
ETSI	European Telecommunications Standards Institute
GSM	Global System for Mobile communications
IEPS	International Emergency Preference Scheme
IMT-2000	International Mobile Telecommunications-2000
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
SDO	Standards Development Organization

5   Introduction

IMT-2000 Family Members are third generation (3G) mobile systems that will provide access, by means of one or more radio links, to a wide range of telecommunication services supported by the fixed telecommunication networks, and to other services that are specific to mobile users.

This Supplement provides a high-level overview of Emergency Service Requirements for IMT-2000 systems, with particular attention to the period of harmonization and convergence.

6   Emergency calls

Emergency calls provide a means to contact authorities/organizations in all types of emergencies. It is a national matter to provide this important and fundamental capability to its citizens. However, with the global nature of IMT-2000 systems, there exists a need to identify and discuss the generic requirements to ensure these are met during the period of harmonization and convergence.

National regulatory authorities define the requirements for emergency calls (including location information). Future (harmonized/converged) IMT-2000 systems should contain the requisite technical capability to meet national requirements.

6.1   General emergency call requirements for IMT-2000 systems

It should always be possible for any terminal connected to a network to make an emergency call. A user must also be able to make an emergency call from a terminal that has been barred (e.g., because of non-payment of bills), that is protected by a password, and that does not have a User Identity Module (UIM), if it is not installed, or if it is not activated. Lastly, a user must be able to make an emergency call regardless of which operator is providing network coverage, as long as the user's terminal is technically compatible with the network operator's facilities in that area. Emergency calls should be identified as such (i.e., by means of identifying "emergency flag") by the network.

Emergency calls should be possible regardless of any terminal equipment feature that might conceivably prevent the emergency call from being initiated. Emergency calls should also be possible in case of mains power failure.

Any emergency call, as well as IEPS calls by authorized users (see clause 7), should have precedence over regular phone calls in case of network overload.

Emergency calls must be routed to the appropriate emergency centre, in accordance with national regulations. This also applies if the call transits a different network between originating and terminating networks or if networks belong to different operators. If possible, there should be a clear and unambiguous mapping between the caller's location and the emergency centre responsible for the appropriate area. All precautions should be taken to avoid losing or misrouting any emergency call.

Emergency calls should be protected against possible attempts to obstruct or otherwise impede the provision, operation and performance of the emergency call service. Deployment of the end-to-end integrity and traceability of the origin of the call and the identity of the caller should be considered.

6.2   Specific harmonization and convergence emergency call requirements

Each network must be able to recognize emergency calls. The originating network must generate the emergency call-related information (i.e., the originating telephone number, if available, and location of the calling party, as available) and make this information available to the emergency centre. The generation and transmission of this information shall not unduly delay the transmission of the emergency call. So far as possible/practical, each IMT-2000 system shall present as accurate as technically feasible location information to the emergency call handling answering point, in a common format.

With the global roaming capability, users should be able to make an emergency call using the appropriate invocation sequence, even if that invocation is different from their home network's method.

7 International Emergency Preference Scheme (IEPS)

ITU-T Rec. E.106 describes an International Emergency Preference Scheme (IEPS) that allows authorized users to have access to the International Telephone Service while the service is restricted due to damage, congestion and/or other faults. IEPS provides these authorized users a significant increase in their ability to initiate and complete their communications (voice and data) via the PSTN, ISDN, and PLMN.

IEPS calls are identified and marked at the network entrance and this marking should be associated with the call to completion. The essential network features are priority dial tone, priority call set-up, including priority queuing schemes, and exemption from restrictive network management controls.

7.1 Overview of IEPS requirements in IMT-2000

Administrations will determine their requirements for their own national preference schemes. However, despite the independency of international and national preference schemes, they should be compatible.

IEPS calls should be protected against possible attempts to obstruct or otherwise impede the provision, operation and performance of the IEPS service. Deployment of end-to-end integrity and an authentication mechanism for IP-based communications should be considered. Providing confidentiality for IEPS call traffic should also be considered.

7.2 Specific harmonization and convergence IEPS requirements

The ITU-T Recommendations supporting ISUP-2000 (ITU-T Recs Q.761-Q.764), B-ISDN, (ITU-T Recs Q.2761-Q.2764), and BICC (ITU-T Recs Q.1902.1-Q.1902.4, and Q.1950) have been amended to support IEPS. ITU-T Rec. Q.767 was also amended to provide support for IEPS. IMT-2000 systems interfacing with the International Telephone System should, at a minimum, carry the IEPS marker (a specific calling party category) transparently.

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