TECHNICAL REPORT

ISO/IEC TR 16167

First edition
2010-08-01

Information technology — Telecommunications and information exchange between systems — Next Generation Corporate Networks (NGCN) — Emergency calls

Technologies de l'information — Téléinformatique — Réseaux d'entreprise de prochaine génération (NGCN) — Appels d'urgence

Reference number
ISO/IEC TR 16167:2010(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TR 16167 was prepared by Ecma International (as ECMA TR/101) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

Introduction

This Technical Report is one of a series of Ecma publications that explore IP-based enterprise communication involving Corporate telecommunication Networks (CNs) (also known as enterprise networks) and in particular Next Generation Corporate Networks (NGCN). The series particularly focuses on inter-domain communication, including communication between parts of the same enterprise, between enterprises and between enterprises and carriers. This particular Technical Report discusses issues related to emergency calls from an enterprise user to a public or enterprise emergency response centre. It builds upon concepts introduced in ISO/IEC TR 12860.

Various regional and national bodies address emergency communications, mainly with an emphasis on public telecommunications. In particular, in the United States work is carried out by the National Emergency Number Association (NENA). In Europe, ETSI EMTEL (Special Committee on Emergency Communications) plays a coordinating role, liaising with external bodies (e.g., in the European Commission, CEPT, CEN and CENELEC) as well as overseeing work done by other ETSI Technical Bodies (e.g., TISPAN). This Technical Report focuses on emergency calls as they impact enterprise networks, and therefore is intended to complement the work of those other bodies.

This Technical Report is based upon the practical experience of Ecma member companies and the results of their active and continuous participation in the work of ISO/IEC JTC1, ITU-T, ETSI, IETF and other international and national standardization bodies. It represents a pragmatic and widely based consensus. In particular, Ecma acknowledges valuable input from experts in ETSI TISPAN.

Information technology — Telecommunications and information exchange between systems — Next Generation Corporate Networks (NGCN) — Emergency calls

1 Scope

This Technical Report is one of a series of publications that provides an overview of IP-based enterprise communication involving Corporate telecommunication Networks (CNs) (also known as enterprise networks) and in particular Next Generation Corporate Networks (NGCN). The series particularly focuses on session level communication based on the Session Initiation Protocol (SIP) [6], with an emphasis on inter-domain communication. This includes communication between parts of the same enterprise (on dedicated infrastructures and/or hosted), between enterprises and between enterprises and public networks. Particular consideration is given to Next Generation Networks (NGN) as public networks and as providers of hosted enterprise capabilities. Key technical issues are investigated, current standardisation work and gaps in this area are identified, and a number of requirements are stated. Among other uses, this series of publications can act as a reference for other standardisation bodies working in this field.

This particular Technical Report discusses issues related to emergency calls from an enterprise user to a public or enterprise emergency response centre (ERC) using SIP within the NGCN. It uses terminology and concepts developed in ISO/IEC TR 12860 [1]. It identifies a number of requirements impacting NGN standardisation and concerning deployment of enterprise networks.

The scope of this Technical Report is limited to calls from an enterprise user to an authority, where the authority is represented by a public or a private ERC. This includes the special case where a private ERC acts as an enterprise user in making an emergency call to a public ERC. Authority to authority calls, authority to enterprise user calls and enterprise user to enterprise user calls within the context of an emergency are out of scope.

This Technical Report focuses on emergency calls within a SIP-based NGCN using geographic location information to indicate the whereabouts of the caller. Emergency calls can originate from devices connected to the NGCN via various access technologies, e.g., SIP over fixed or wireless LAN (Local Area Network), TDM (Time Division Multiplex) networks, DECT (Digital Enhanced Cordless Telephone) networks, PMR (Private Mobile Radio) networks, PLMN (Public Land Mobile Network) etc.. ERCs are assumed to be reachable either directly using SIP or via a gateway to some legacy technology (e.g., TDM). Furthermore, ERCs are assumed to be reachable either directly from the NGCN or via a public network accessed from the NGCN using SIP. In the latter case, the NGCN might identify the ERC and instruct the public network to route to the ERC, or alternatively the NGCN might leave the public network to identify the ERC, based on the location of the caller. In all cases the NGCN is assumed to deliver the location of the caller to the ERC, gateway or public network in order to provide appropriate information to the call taker at the ERC.

The handling of incoming emergency calls at an ERC, even when the ERC is provided within an NGCN, is outside the scope of this Technical Report. This includes the case where a public ERC is provided within an NGCN and hence the NGCN can receive emergency calls from public networks. This also includes the case where a private ERC is provided within an NGCN and can receive emergency calls from other enterprise networks.

Different territories have different regulations impacting emergency calls, together with national or regional standards in support of these regulations. This Technical Report takes a general approach, which should be largely applicable to any territory. However, detailed differences might apply in some territories, e.g., country- or region-specific dial strings such as 911 and 112 used to identify emergency calls to a public ERC.

The scope of this Technical Report is limited to emergency communications with a real-time element, including but not limited to voice, video, real-time text and instant messaging. The focus, however, is on voice, which in the majority of situations is likely to be the most effective medium for emergency calls. However, it is

recognised that some users with special needs will require other modes of communication (e.g., real-time text, fax), as discussed in Annex B of [30]. The focus is also on calls in which the caller is a human user. There may also be applications where automatic sensors can make similar emergency calls (subject to regulation), but the special needs of such applications are not considered.

2 References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[1] ISO/IEC TR 12860, Information technology — Telecommunications and information exchange between systems — Next Generation Corporate Networks (NGCN) — General

[2] ISO/IEC TR 16166, Information technology — Telecommunications and information exchange between systems — Next Generation Corporate Networks (NGCN) — Security of session-based communications

[3] ISO/IEC 18051, Information technology — Telecommunications and information exchange between systems — Services for Computer Supported Telecommunications Applications (CSTA) Phase III

[4] ANSI/TIA-1057, Link Layer Discovery Protocol - Media Endpoint Discovery

[5] IEEE 802.1ab, Station and Media Access Control Connectivity Discovery

[6] IETF RFC 3261, SIP: Session Initiation Protocol

[7] IETF RFC 3265, Session Initiation Protocol (SIP) - Specific Event Notification

[8] IETF RFC 3825, Dynamic Host Configuration Protocol Option for Coordinate-based Location Configuration Information

[9] IETF RFC 3856, A Presence Event Package for the Session Initiation Protocol (SIP)

[10] IETF RFC 3859, Common Profile for Presence (CPP)

[11] IETF RFC 3863, Presence Information Data Format (PIDF)

[12] IETF RFC 4119, A Presence-based GEOPRIV Location Object Format

[13] IETF RFC 4412, Communications Resource Priority for the Session Initiation Protocol (SIP)

[14] IETF RFC 4776, Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information

[15] IETF RFC 5012, Requirements for Emergency Context Resolution with Internet Technologies

[16] IETF RFC 5031, A Uniform Resource Name (URN) for Emergency and Other Well-Known Services

[17] IETF RFC 5139, Revised Civic Location Format for Presence Information Data Format Location Object (PIDF-LO)

[18] IETF RFC 5222, LoST: A Location-to-Service Translation Protocol

[19] IETF RFC 5223, Discovering Location-to-Service Translation (LoST) Servers Using the Dynamic Host Configuration Protocol (DHCP)

[20] IETF RFC 5491, GEOPRIV Presence Information Data Format Location Object (PIDF-LO) Usage Clarification, Considerations, and Recommendations

[21] IETF RFC 5627, Obtaining and Using Globally Routable User Agent URIs (GRUU) in the Session Initiation Protocol (SIP)

[22] IETF draft-ietf-ecrit-framework-10, Framework for Emergency Calling using Internet Multimedia

NOTE At the time of publication of this Technical Report, the IETF had not completed the approval process for this draft and had not allocated an RFC number. If the draft (or a later version) is no longer available, readers should look for the RFC with the same title.

[23] IETF draft-ietf-ecrit-phonebcp-14, Best Current Practice for Communications Services in support of Emergency Calling

NOTE At the time of publication of this Technical Report, the IETF had not completed the approval process for this draft and had not allocated an RFC number. If the draft (or a later version) is no longer available, readers should look for the RFC with the same title.

[24] IETF draft-ietf-geopriv-http-location-delivery-16, HTTP Enabled Location Delivery (HELD)

NOTE At the time of publication of this Technical Report, the IETF had approved this draft as a standards track RFC but had not published the RFC and had not allocated an RFC number. If the draft is no longer available, readers should look for the RFC with the same title.

[25] IETF draft-ietf-geopriv-lis-discovery-15, Discovering the Local Location Information Server (LIS)

NOTE At the time of publication of this Technical Report, the IETF had not completed the approval process for this draft and had not allocated an RFC number. If the draft (or a later version) is no longer available, readers should look for the RFC with the same title.

[26] IETF draft-ietf-sipcore-location-conveyance-02, Location Conveyance for the Session Initiation Protocol

NOTE At the time of publication of this Technical Report, the IETF had not completed the approval process for this draft and had not allocated an RFC number. If the draft (or a later version) is no longer available, readers should look for the RFC with the same title.

[27] NENA 08-001, National Emergency Number Association (NENA) Architecture for Enhanced 9-1-1 Services (i2)

[28] 3GPP TS 22.101, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Service Aspects; Service Principles

[29] 3GPP TS 23.167, 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; IP Multimedia Subsystem (IMS) emergency sessions

[30] ETSI TR 102 180, Basis of requirements for communication of individuals with authorities/organizations in case of distress (Emergency call handling)

[31] ETSI TS 102 424, Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Requirements of the NGN network to support Emergency Communication from Citizen to Authority

[32] ETSI TS 102 650, Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Analysis of Location Information Standards produced by various SDOs

[33] ETSI TS 102 660, Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Signalling Requirements and Signalling Architecture for supporting the various location information protocols for Emergency Service on a NGN

[34] ITU-T Recommendation Y.2205, Next Generation Networks - Emergency Telecommunications - Technical considerations