INTERNATIONAL STANDARD

ISO/IEC 22535

Third edition
2009-04-15

Information technology — Telecommunications and information exchange between systems — Corporate telecommunication networks — Tunnelling of QSIG over SIP

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseaux de télécommunications d'entreprise — Tunnellisation de QSIG sur SIP

Reference number
ISO/IEC 22535:2009(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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 22535 was prepared by Ecma International (as ECMA-355) 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.

This third edition cancels and replaces the second edition (ISO/IEC 22535:2006), which has been technically revised.

Introduction

This International Standard is one of a series of Standards defining the interworking of services and signalling protocols deployed in corporate telecommunication networks (CNs) (also known as enterprise networks). The series uses telecommunication concepts as developed by ITU-T and conforms to the framework of International Standards on Open Systems Interconnection as defined by ISO/IEC.

"QSIG" is a signalling protocol that operates between Private Integrated services Network eXchanges (PINX) within a Private Integrated Services Network (PISN). A PISN provides circuit-switched basic services and supplementary services to its users. QSIG is specified in Standards, in particular ISO/IEC 11572, ISO/IEC 11582 and a number of Standards specifying individual supplementary services.

NOTE The name QSIG was derived from the fact that it is used for signalling at the Q reference point. The Q reference point is a point of demarcation between two PINXs (ISO/IEC 11572).

SIP is an application layer protocol for establishing, terminating and modifying multimedia sessions. It is typically carried over IP (RFC 791), (RFC 2460). Telephone calls are considered as a type of multimedia session where just audio is exchanged. SIP is defined in RFC 3261.

Often a CN comprises both PISNs employing QSIG and IP networks employing SIP. A call or call independent signalling can originate at a user connected to a PISN and terminate at a user connected to an IP network or vice versa. In either case, a gateway provides interworking between QSIG and SIP at the boundary between the PISN and the IP network. Basic call interworking at a gateway is specified in ISO/IEC 17343. Another case is where a call or call independent signalling originates at a user connected to a PISN, traverses an IP network using SIP, and terminates at a user connected to another (or another part of the same) PISN. This document addresses this last case in a way that preserves all QSIG capabilities across the IP network. It achieves this by tunnelling QSIG messages within SIP requests and responses in the context of a SIP dialog.

This International Standard specifies tunnelling of QSIG over the Session Initiation Protocol (SIP). This enables calls between "islands" of circuit switched networks that use QSIG signalling to be interconnected by an IP network that uses SIP signalling without loss of QSIG functionality. This International Standard facilitates the introduction of enhanced SIP and SDP functionality that was specified after publication of the early editions of this International Standard. These enhancements include payload encryption and mechanisms to negotiate SDP capabilities.

The changes in this International Standard comprise a mandatory payload renegotiation with reversed direction of the offer/answer exchange compared with early editions. In order to achieve backward compatibility with early editions an indicator for the changed signalling procedures is introduced. This indicator is used to dynamically detect if fallback to signalling procedures compliant to early editions is necessary.

This International Standard 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 JTC 1, ITU-T, IETF, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

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1 Scope

This International Standard specifies tunnelling of "QSIG" over the Session Initiation Protocol (SIP) within a corporate telecommunication network (CN).

The tunnelling of QSIG through a public IP network employing SIP is outside the scope of this International Standard. However, the functionality specified in this International Standard is in principle applicable to such a scenario when deployed in conjunction with other relevant functionality (e.g. address translation, security functions, etc.).

This International Standard is applicable to any interworking unit that can act as a gateway between a PISN employing QSIG and a corporate IP network employing SIP, with QSIG tunnelled within SIP requests and responses.

2 Normative 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.

ISO/IEC 11572:2000, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Circuit mode bearer services — Inter-exchange signalling procedures and protocol*

ISO/IEC 11582:2002, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Generic functional protocol for the support of supplementary services — Inter-exchange signalling procedures and protocol*

RFC 2119, *Key words for use in RFCs to Indicate Requirement Levels*, BCP 14, S. Bradner, March 1997

RFC 2976, *The SIP INFO Method*, S. Donovan, October 2000

RFC 3204, *MIME media types for ISUP and QSIG Objects*, E. Zimmerer et al., December 2001

RFC 3261, *SIP: Session Initiation Protocol*, J. Rosenberg et al., June 2002

RFC 3264, *An Offer/Answer Model with the Session Description Protocol (SDP)*, J. Rosenberg, H. Schulzrinne, June 2002

RFC 3840, *Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)*, J. Rosenberg, H. Schulzrinne, P. Kyzivat, August 2004