

INTERNATIONAL
STANDARD

ISO/IEC
21410

First edition
2001-08-15

**Information technology —
Telecommunications and information
exchange between systems — Corporate
telecommunication networks — Signalling
interworking between QSIG and H.323 —
Call transfer supplementary services**

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseaux de télécommunications
corporatifs — Signalisation de travail entre QSIG et H.323 — Services
supplémentaires de transfert d'appel*



Reference number
ISO/IEC 21410:2001(E)

© ISO/IEC 2001

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO/IEC 2001

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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.ch
Web www.iso.ch

Printed in Switzerland

Contents

Foreword	v
Introduction	vi
1 Scope	1
2 Conformance	2
3 Normative references	2
4 Definitions	2
4.1 External definitions	2
4.2 Other definitions	3
4.2.1 Entity A	3
4.2.2 Entity A*	3
4.2.3 Entity B	3
4.2.4 Entity B*	3
4.2.5 Entity B'	3
4.2.6 Entity C	3
4.2.7 Entity C*	3
4.2.8 Entity C'	3
4.2.9 Gateway	3
4.2.10 Leg AB	3
4.2.11 Leg AB*	3
4.2.12 Leg AC	3
4.2.13 Leg BC	3
4.2.14 Leg BC*	3
4.2.15 Leg B	3
4.2.16 Leg B*	3
4.2.17 Leg C	3
4.2.18 Scenario AB1	3
4.2.19 Scenario AB*1	3
4.2.20 Scenario AB2	3
4.2.21 Scenario AB*2	3
4.2.22 Scenario AC1	3
4.2.23 Scenario AC2	3
4.2.24 Scenario BC1	3
4.2.25 Scenario BC*1	3
4.2.26 Scenario BC2	3
4.2.27 Scenario BC*2	3
4.2.28 Scenario B1	3
4.2.29 Scenario B*1	4
4.2.30 Scenario B2	4
4.2.31 Scenario B*2	4
4.2.32 Scenario C1	4
4.2.33 Scenario C2	4
5 Acronyms	4
6 Service architecture	4
6.1 Service architecture for invocation and operation	4
6.1.1 QSIG service architecture	4

6.1.2	H.450.2 service architecture	7
6.1.3	Scenarios for interworking	10
6.1.4	Determination of the location of entities when interworking	11
6.2	Service architecture for activation, deactivation and interrogation	17
6.2.1	QSIG service architecture	17
6.2.2	H.450.2 service architecture	17
6.2.3	Scenarios for interworking	17
7	Protocol interworking – General requirements	17
8	Protocol interworking – Messages and APDUs	17
8.1	Scenario AB1	17
8.2	Scenario AB2	18
8.3	Scenario AC1	18
8.4	Scenario AC2	19
8.5	Scenario BC1	20
8.6	Scenario BC2	21
8.7	Scenario B1	22
8.8	Scenario B2	23
8.9	Scenario C1	24
8.10	Scenario C2	25
8.11	Scenario AB*1	25
8.12	Scenario AB*2	26
8.13	Scenario BC*1	27
8.14	Scenario BC*2	28
8.15	Scenario B*1	29
8.16	Scenario B*2	30
9	Protocol interworking – Content of APDUs	30
9.1	APDU content mapping from QSIG to H.323	30
9.1.1	QSIG ssctInitiate invoke APDU mapping to H.323 callTransferInitiate invoke APDU	30
9.1.2	QSIG ssctSetup invoke APDU mapping to H.323 callTransferSetup invoke APDU	31
9.2	APDU content mapping from H.323 to QSIG	31
9.2.1	H.323 callTransferInitiate invoke APDU mapping to QSIG ssctInitiate invoke APDU	31
9.2.2	H.323 callTransferSetup invoke APDU mapping to QSIG ssctSetup invoke APDU	31
Annexes		
A	- Implementation Conformance Statement (ICS) proforma	32
B	- Example message sequence diagrams	46

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. 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 International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 21410 was prepared by ECMA (as ECMA-308) 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.

Annex A forms a normative part of this International Standard. Annex B is for information only.

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). 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.

This International Standard defines the signalling protocol interworking for call transfer supplementary services between a Private Integrated Services Network (PISN) and a packet-based private telecommunications network based on the Internet Protocol (IP). It is further assumed that the protocol for the PISN part is that defined for the Q reference point (QSIG) and that the protocols for the IP-based network are based on ITU-T Recommendation H.323.

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, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

Information technology - Telecommunications and information exchange between systems - Corporate telecommunication networks - Signalling interworking between QSIG and H.323 - Call transfer supplementary services

1 Scope

This International Standard specifies signalling interworking between “QSIG” and “H.323” in support of the call transfer supplementary services within a Corporate telecommunication Network (CN).

“QSIG” is a signalling protocol that operates at the Q reference point between Private Integrated Services eXchanges (PINX) within a Private Integrated Services Network (PISN). The Q reference point is defined in ISO/IEC 11579-1. A PISN provides circuit-switched basic services and supplementary services to its users. QSIG is specified in other Standards, in particular ISO/IEC 11572 (call control in support of basic services), ISO/IEC 11582 (generic functional protocol for the support of supplementary services) and a number of standards specifying individual supplementary services. ISO/IEC 13869 specifies the QSIG protocol in support of call transfer by consultation and ISO/IEC 19460 specifies the QSIG protocol in support of single step call transfer.

“H.323” is a set of signalling protocols for the support of voice or multimedia communication within a packet network, in particular a packet network that uses the Internet Protocol (IP) as its network layer protocol (IP network). H.323 signalling protocols operate between endpoints in an IP network, either indirectly via one or more gatekeepers, or directly. An endpoint can be a terminal or a gateway to another network. H.323 is an “umbrella” recommendation referring to various ITU-T recommendations, in particular Recommendations H.225.0 and H.245 (basic communication capabilities) and Recommendation H.450.1 (generic functional protocol for the support of supplementary services). Recommendation H.450.2 specifies the H.323 protocol in support of call transfer.

NOTE - H.450.2 applies only to the 1998 version of H.323 (also known as H.323 version 2) and to later versions.

Call transfer by consultation, as supported by ISO/IEC 13869, is a supplementary service that enables a user (user A) to transform two of that user's calls (at least one of which must be answered) into a new call between the two other users in the two calls (users B and C).

Single step call transfer, as supported by ISO/IEC 19460, is a supplementary service that enables a user (user A) to transform an existing call between user A and user B into a new call between user B and user C without user A needing to establish a call with user C prior to transfer.

Call transfer, as supported by H.450.2, is a supplementary service that enables the served user (user A) to transform an existing call with a second user (user B) into a new call between user B and a third user (user C) selected by user A. User A may or may not have a call established with user C prior to call transfer. If a call is already established between user A and user C, this is known as transfer by consultation and is equivalent to call transfer as supported by ISO/IEC 13869. If a call is not already established between user A and user C, this is known as single step call transfer and is equivalent to call transfer as supported by ISO/IEC 19460.

Interworking between QSIG and H.323 permits a call originating at a user of a PISN to terminate at a user of an IP network, or a call originating at a user of an IP network to terminate at a user of a PISN. This International Standard provides the following additional capabilities:

- a PISN user with two calls established, at least one of which being to or from a user in an IP network, to be able to transform those two calls into a new call between the other two users involved;
- a PISN user with a call established to or from a user in an IP network to be able to transform that call into a new call between the IP network user and a third user selected by the PISN user, that third user being either in the IP network or in the PISN;
- a PISN user with a call established to a second PISN user to be able to transfer that call into a new call between the second user and a third user selected by the first user, that third user being in an IP network;
- an IP network user with two calls established, at least one of which being to or from a user in a PISN, to be able to transform those two calls into a new call between the other two users involved;
- an IP network user with a call established to or from a user in a PISN to be able to transform that call into a new call between the PISN user and a third user selected by the IP network user, that third user being either in the IP network or in the PISN; and

- an IP network user with a call established to a second user in the IP network to be able to transfer that call into a new call between the second user and a third user selected by the first user, that third user being in a PISN.

This International Standard is applicable to any interworking unit that can act as a gateway between a PISN employing QSIG and an IP network employing H.323.

2 Conformance

In order to conform to this International Standard, a gateway shall satisfy the requirements identified in the Implementation Conformance Statement (ICS) proforma in annex A.

3 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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 11579-1:1994, *Information technology - Telecommunications and information exchange between systems - Private integrated services network - Part 1: Reference configuration for PISN Exchanges (PINX)*

ISO/IEC 11582:1995, *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*

ISO/IEC 13869:1995, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call transfer supplementary service*

ISO/IEC 19460:2001, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Single Step Call Transfer Supplementary Service*

ISO/IEC 21409:2001, *Information technology - Telecommunications and information exchange between systems - Corporate telecommunication networks - Signalling interworking between QSIG and H.323 - Generic functional protocol for the support of supplementary services*

ITU-T Rec. H.225.0:1998 (or later edition), *Call signalling protocols and media stream packetization for packet-based multimedia communication systems*

ITU-T Rec. H.245:1998 (or later edition), *Control protocol for multimedia communication*

ITU-T Rec. H.323:1998 (or later edition), *Packet-based multimedia communications systems*

ITU-T Rec. H.450.1:1998, *Generic functional protocol for the support of supplementary services in H.323*

ITU-T Rec. H.450.2:1998, *Call transfer supplementary service for H.323*