

INTERNATIONAL STANDARD

ISO/IEC 11572

Third edition
2000-03-15

Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Circuit mode bearer services — Inter-exchange signalling procedures and protocol

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseau privé à intégration de
services — Services porteurs en mode circuit — Procédures et
protocole de signalisation d'interéchange*

Reference number
ISO/IEC 11572:2000(E)



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 2000

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 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents	Page
Foreword	vii
Introduction	viii
1 Scope	1
2 Conformance	1
3 Normative references	1
4 Terms and definitions	1
5 List of acronyms	3
6 General principles	3
6.1 Protocol model	4
6.2 Services provided to Call Control	4
6.3 Services required of the Signalling Carriage Mechanism	5
7 Protocol Control states	5
7.1 States for circuit-mode Call Control	5
7.1.1 Null State (0)	5
7.1.2 Call Initiated (1)	5
7.1.3 Overlap Sending (2)	5
7.1.4 Outgoing Call Proceeding (3)	5
7.1.5 Call Delivered (4)	5
7.1.6 Call Present (6)	5
7.1.7 Call Received (7)	5
7.1.8 Connect Request (8)	5
7.1.9 Incoming Call Proceeding (9)	6
7.1.10 Active (10)	6
7.1.11 Disconnect Request (11)	6
7.1.12 Disconnect Indication (12)	6
7.1.13 Release Request (19)	6
7.1.14 Overlap Receiving (25)	6
7.2 States for layer management	6
7.2.1 Null State (Rest 0)	6
7.2.2 Restart Request (Rest 1)	6
7.2.3 Restart (Rest 2)	6
8 Call Control	6
8.1 States for Transit PINX Call Control	7
8.1.1 TCC_Idle (0)	7
8.1.2 TCC_Await Digits (1)	7
8.1.3 TCC_Await Additional Digits (2)	7
8.1.4 TCC_Overlap (3)	7
8.1.5 TCC_Incoming Call Proceeding (4)	7
8.1.6 TCC_Transit Call Proceeding (5)	7
8.1.7 TCC_Call Alerting (6)	7
8.1.8 TCC_Call Active (7)	7
8.1.9 TCC_Await Incoming Release (8)	7
8.1.10 TCC_Await Outgoing Release (9)	7
8.1.11 TCC_Await Two-Way Release (10)	7
8.1.12 TCC_Await Incoming Disconnect (11)	7

8.1.13	TCC_Await Outgoing Disconnect (12)	7
8.1.14	TCC_Await Two-Way Disconnect (13)	8
9	General procedures	8
9.1	Use of the services of Signalling Carriage Mechanism	8
9.1.1	Establishment of a Signalling Carriage Mechanism connection	8
9.1.2	Transfer of data	8
9.1.3	Signalling Carriage Mechanism reset	8
9.1.4	Signalling Carriage Mechanism failure	8
9.2	Handling of protocol error conditions	8
9.2.1	Protocol discriminator error	8
9.2.2	Message too short	8
9.2.3	Call reference error	8
9.2.4	Message type or message sequence errors	9
9.2.5	General information element errors	9
9.2.6	Mandatory information element errors	10
9.2.7	Non-mandatory information element errors	10
9.2.8	Signalling Carriage Mechanism reset	11
9.2.9	Signalling Carriage Mechanism failure	11
9.3	Status and status enquiry protocol procedures	12
9.3.1	Status enquiry procedure	12
9.3.2	Receiving a STATUS message	12
10	Circuit-switched Call Control procedures	14
10.1	Call establishment	14
10.1.1	Call request	14
10.1.2	Information channel selection	15
10.1.3	Overlap sending	15
10.1.4	Call proceeding	16
10.1.5	Call confirmation indication	17
10.1.6	Call connected	17
10.1.7	Use of the PROGRESS message	17
10.1.8	Failure of call establishment	18
10.2	Call clearing	18
10.2.1	Terminology	18
10.2.2	Exception conditions	18
10.2.3	Clearing	19
10.2.4	Clear collision	19
10.3	Call collisions	19
10.4	Transit PINX Call Control requirements	19
10.4.1	Receipt of address information	20
10.4.2	State TCC_Await_Digits	20
10.4.3	State TCC_Await_Additional_Digits	21
10.4.4	State TCC_Overlap	22
10.4.5	Channel through connection procedures	22
10.4.6	State TCC_Incoming_Call_Proceeding	23
10.4.7	State TCC_Transit_Call_Proceeding	23
10.4.8	State TCC_Call_Alerting	24
10.4.9	State TCC_Call_Active	24
10.4.10	Call clearing at a Transit PINX	24
10.4.11	Handling of Basic Call information elements at a Transit PINX	25

10.5	Originating PINX Call Control requirements	26
10.5.1	Transmission of the SETUP message	26
10.5.2	Agreement of the information channel	27
10.5.3	Receipt of Progress indicators	27
10.5.4	Receipt of ALERTING message	27
10.5.5	Receipt of CONNECT message	27
10.5.6	Call clearing initiated by the Originating PINX	27
10.5.7	Receipt of an indication of call clearing	27
10.6	Terminating PINX Call Control requirements	28
10.6.1	Receipt of the SETUP message	28
10.6.2	Transmission of ALERTING message	28
10.6.3	Transmission of Progress indicators	28
10.6.4	Transmission of CONNECT message	28
10.6.5	Call clearing initiated by the Terminating PINX	29
10.6.6	Receipt of an indication of call clearing	29
10.7	Incoming Gateway PINX Call Control requirements	29
10.7.1	Transmission of the SETUP message	29
10.7.2	Interworking indications in the SETUP Message	30
10.7.3	Agreement of the information channel	30
10.7.4	Receipt of Progress indicators	30
10.7.5	Receipt of ALERTING message	30
10.7.6	Receipt of CONNECT message	30
10.7.7	Call clearing initiated by the Incoming Gateway PINX	31
10.7.8	Receipt of an indication of call clearing	31
10.8	Outgoing Gateway PINX Call Control requirements	31
10.8.1	Receipt of the SETUP message	31
10.8.2	Connection of the information channel	32
10.8.3	Transmission of interworking indications	32
10.8.4	Transmission of ALERTING message	32
10.8.5	Transmission of CONNECT message	32
10.8.6	Call clearing initiated by the Outgoing Gateway PINX	33
10.8.7	Receipt of an indication of call clearing	33
11	Procedures for layer management	33
11.1	Restart procedures	33
11.1.1	Sending RESTART	33
11.1.2	Receipt of RESTART	34
11.1.3	Restart collision	34
12	Protocol timers	35
13	Functional definition of messages	36
13.1	Messages for general procedures	37
13.1.1	STATUS	37
13.1.2	STATUS ENQUIRY	37
13.2	Messages for Circuit Mode Call Control	38
13.2.1	ALERTING	38
13.2.2	CALL PROCEEDING	38
13.2.3	CONNECT	38
13.2.4	CONNECT ACKNOWLEDGE	39
13.2.5	DISCONNECT	39
13.2.6	INFORMATION	39
13.2.7	PROGRESS	39
13.2.8	RELEASE	40
13.2.9	RELEASE COMPLETE	40

13.2.10	SETUP	40
13.2.11	SETUP ACKNOWLEDGE	41
13.3	Messages for layer management	41
13.3.1	RESTART	41
13.3.2	RESTART ACKNOWLEDGE	41
14	General message format and coding of information elements	41
14.1	Overview	42
14.2	Protocol discriminator	42
14.3	Call reference	43
14.4	Message type	44
14.5	Other information elements for Basic Call control (codeset 0)	44
14.5.1	Coding rules	44
14.5.2	Extension of codesets	46
14.5.3	Locking shift procedure	47
14.5.4	Non-locking shift procedure	47
14.5.5	Bearer capability	48
14.5.6	Call state	50
14.5.7	Called party number	51
14.5.8	Called party subaddress	52
14.5.9	Calling party number	53
14.5.10	Calling party subaddress	53
14.5.11	Cause	54
14.5.12	Channel identification	57
14.5.13	Connected number	60
14.5.14	Connected subaddress	60
14.5.15	High layer compatibility (layers 4-7)	61
14.5.16	Low layer compatibility (layers 1-3)	61
14.5.17	Progress indicator	61
14.5.18	Restart indicator	62
14.5.19	Sending complete	63
14.6	Information elements of codeset 5	63
Annex A	(normative) Protocol Implementation Conformance Statement (PICS) for ISO/IEC 11572	64
Annex B	(informative) Use of the cause information element	75
Annex C	(informative) Examples of message sequences	78
Annex D	(informative) Manufacturer specific information	82
Annex E	(informative) SDL diagram for the procedures over a symmetrical link between two peer PINX's	83
Annex F	(informative) SDL diagram for the procedures on either side of a Transit-PINX	104
Annex G	(informative) Bibliography	120
Annex ZA	(normative) Segmentation and reassembly procedures	121
Annex ZB	(normative) Additional progress descriptions	131
Annex ZC	(normative) Party category functionality	135

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 11572 was prepared by ECMA (as ECMA-143) 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 11572:1997), which has been technically revised.

Annexes A, ZA, ZB and ZC form a normative part of this International Standard. Annexes B to G are for information only.

Introduction

This International Standard is one of a series of standards defining services and signalling protocols applicable to Private Integrated Services Networks (PISNs). The series uses ISDN concepts as developed by ITU-T and conforms to the framework of International Standards for Open Systems Interconnection as defined by ISO/IEC.

This International Standard defines the signalling protocol for use at the Q-reference point in support of bearer circuit-switched services. The protocol defined in this International Standard forms part of the PSS1 protocol (informally known as QSIG).

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 JTC1, 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 — Private Integrated Services Network — Circuit mode bearer services — Inter-exchange signalling procedures and protocol

1 Scope

This International Standard defines the signalling procedures and protocol for the purpose of circuit-switched Call Control at the Q-reference point between Private Integrated Network Exchanges (PINXs) connected together within a Private Integrated Services Network (PISN).

The Q reference point is defined in ISO/IEC 11579-1.

This International Standard is based upon that described in ITU-T Recommendation Q.931, including the provisions for symmetrical operation described in annex D of that recommendation.

Service specifications are produced in three stages and according to the method specified in ETS 300 387. This International Standard contains the stage 3 specification for the Q reference point and satisfies the requirements identified by the stage 1 and stage 2 specifications in ECMA-142, ECMA-148 and ISO/IEC 11584.

This International Standard is applicable to PINXs which interconnect to form a PISN.

Annex ZC is an integral part of this International Standard.

2 Conformance

In order to conform to this International Standard, a PINX shall satisfy the requirements identified in the Protocol Implementation Conformance Statement (PICS) 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 8886:1996, *Information technology — Open Systems Interconnection — Data link service definition*.

ISO/IEC 11571:1998, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Addressing*.

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)*.

ETS 300 387:1994, *Private Telecommunication Network (PTN); Method for the specification of basic and supplementary services*.

ITU-T Rec. E.164:1991, *Numbering plan for the ISDN era*.

CCITT Rec. I.330:1988, *ISDN numbering and addressing principles (Blue Book)*.

ITU-T Rec. Q.931:1993, *ISDN user-network interface layer 3 specification for basic call control*.

CCITT Rec. T.50:1988, *International Alphabet No. 5 (Blue Book)*.