
**Information technology —
Telecommunications and information
exchange between systems — Private
Integrated Services Network —
Inter-exchange signalling protocol —
Private User Mobility (PUM) — Call
handling additional network features**

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseau privé à intégration de
services — Protocole de signalisation d'interéchange — Mobilité de
l'utilisateur privé (PUM) — Caractéristiques additionnelles de réseau
de traitement d'appel*

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 2003

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.org
Web www.iso.org

Published in Switzerland

Contents

Foreword	vi
Introduction	vii
1 Scope	1
2 Conformance	1
3 Normative references	1
4 Terms and definitions	3
4.1 External definitions	3
4.2 Alternative identifier	3
4.3 Home data base (HDB)	4
4.4 Rerouteing PINX	4
4.5 PUMI-detect PINX	4
4.6 Terminal equipment (TE)	4
4.7 Visitor data base (VDB)	4
5 List of acronyms	4
6 Signalling protocol for the support of ANF-PUMI	5
6.1 ANF-PUMI description	5
6.2 ANF-PUMI operational requirements	5
6.2.1 Requirements on the Rerouteing PINX	5
6.2.2 Requirements on the PUMI-detect PINX	5
6.2.3 Requirements on the Home PINX	5
6.2.4 Requirements on the Visitor PINX	5
6.2.5 Requirements on a Transit PINX	5
6.3 ANF-PUMI coding requirements	6
6.3.1 Operations	6
6.3.2 Information elements	8
6.3.3 Messages	9
6.4 ANF-PUMI state definitions	9
6.4.1 States at the Rerouteing PINX	9
6.4.2 States at the PUMI-detect PINX	9
6.4.3 States at the Home PINX	9
6.4.4 States at the Visitor PINX	9
6.5 ANF-PUMI signalling procedures for invocation and operation	9
6.5.1 Actions at the Rerouteing PINX	9
6.5.2 Actions at the PUMI-detect PINX	10
6.5.3 Actions at the Home PINX	11
6.5.4 Actions at the Visitor PINX	12
6.5.5 Actions at a Transit PINX	12
6.5.6 Actions at an Originating PINX	12
6.6 ANF-PUMI impact of interworking with public ISDNs	12
6.7 ANF-PUMI impact of interworking with non-ISDNs	12
6.8 Protocol interactions between ANF-PUMI and other supplementary services and ANFs	12
6.8.1 Interaction with Calling Name Identification Presentation (SS-CNIP)	13
6.8.2 Interaction with Connected Name Identification Presentation (SS-CONP)	13

6.8.3	Interaction with Call Completion to Busy Subscriber (SS-CCBS)	13
6.8.4	Interaction with Call Completion on No Reply (SS-CCNR)	13
6.8.5	Interaction with Call Transfer (SS-CT)	13
6.8.6	Interaction with Call Forwarding Unconditional (SS-CFU)	13
6.8.7	Interaction with Call Forwarding Busy (SS-CFB)	13
6.8.8	Interaction with Call Forwarding No Reply (SS-CFNR)	13
6.8.9	Interaction with Call Deflection (SS-CD)	13
6.8.10	Interaction with Path Replacement (ANF-PR)	13
6.8.11	Interaction with Call Offer (SS-CO)	13
6.8.12	Interaction with Call Intrusion (SS-CI)	13
6.8.13	Interaction with Do Not Disturb (SS-DND)	14
6.8.14	Interaction with Do Not Disturb Override (SS-DNDO)	14
6.8.15	Interaction with Advice Of Charge (SS-AOC)	14
6.8.16	Interaction with Recall (SS-RE)	14
6.8.17	Interaction with Call Interception (ANF-CINT)	14
6.8.18	Interaction with Transit Counter (ANF-TC)	14
6.8.19	Interaction with Route Restriction Class (ANF-RRC)	14
6.8.20	Interaction with Message Waiting Indication (SS-MWI)	15
6.8.21	Interaction with Wireless Terminal Location Registration (SS-WTLR)	15
6.8.22	Interaction with Wireless Terminal Incoming Call (ANF-WTMI)	15
6.8.23	Interaction with Wireless Terminal Outgoing Call (ANF-WTMO)	16
6.8.24	Interaction with Wireless Terminal Authentication of the Terminal (SS-WTAT)	16
6.8.25	Interaction with Wireless Terminal Authentication of the Network (SS-WTAN)	16
6.8.26	Interaction with Private User Mobility Registration (ANF-PUMR)	16
6.8.27	Interaction with Private User Mobility Outgoing Call (ANF-PUMO)	16
6.8.28	Interactions with Common Information (ANF-CMN)	16
6.8.29	Interaction with Call Priority Interruption (Protection) (SS-CPI(P))	16
6.9	ANF-PUMI parameter values (timers)	16
6.9.1	Timer T1	16
6.9.2	Timer T2	16
7	Signalling protocol for the support of ANF-PUMO	16
7.1	ANF-PUMO description	16
7.2	ANF-PUMO operational requirements	17
7.2.1	Requirements on the Originating PINX	17
7.2.2	Requirements on the Home PINX	17
7.2.3	Requirements on a Transit PINX	17
7.3	ANF-PUMO coding requirements	17
7.3.1	Operations	17
7.3.2	Information elements	17
7.3.3	Messages	17
7.4	ANF-PUMO State definitions	17
7.4.1	States at the Originating PINX	17
7.4.2	States at the Home PINX	17
7.5	ANF-PUMO signalling procedures	18
7.5.1	Actions at the Originating PINX	18
7.5.2	Actions at the Home PINX	18
7.5.3	Actions at the Transit PINX	19
7.6	ANF-PUMO impact of interworking with public ISDNs	19
7.7	ANF-PUMO impact of interworking with non-ISDNs	19
7.8	Protocol interactions between ANF-PUMO and other supplementary services and ANFs	19

7.8.1	Interaction with Calling Name Identification Presentation (SS-CNIP)	19
7.8.2	Interaction with Connected Name Identification Presentation (SS-CONP)	19
7.8.3	Interaction with Call Completion to Busy Subscriber (SS-CCBS)	19
7.8.4	Interaction with Call Completion on No Reply (SS-CCNR)	19
7.8.5	Interaction with Call Transfer (SS-WT)	19
7.8.6	Interaction with Call Diversion (SS-CFU, SS-CFB, SS-CFNR, SS-CD)	19
7.8.7	Interaction with Path Replacement (ANF-PR)	19
7.8.8	Interaction with Call Offer (SS-CO)	19
7.8.9	Interaction with Call Intrusion (SS-CI)	20
7.8.10	Interaction with Do Not Disturb (SS-DND)	20
7.8.11	Interaction with Do Not Disturb Override (SS-DNDO)	20
7.8.12	Interaction with Advice of Charge (SS-AOC)	20
7.8.13	Interaction with Recall (SS-RE)	20
7.8.14	Interaction with Call Interception (ANF-CINT)	20
7.8.15	Interaction with Transit Counter (ANF-TC)	20
7.8.16	Interaction with Route Restriction Class (ANF-RRC)	20
7.8.17	Interaction with Message Waiting Indication (SS-MWI)	20
7.8.18	Interaction with Wireless Terminal Location Registration (SS-WTLR)	20
7.8.19	Interaction with Wireless Terminal Incoming Call (ANF-WTMI)	20
7.8.20	Interaction with Wireless Terminal Outgoing Call (ANF-WTMO)	20
7.8.21	Interaction with Wireless Terminal Authentication of the Terminal (SS-WTAT)	20
7.8.22	Interaction with Wireless Terminal Authentication of the Network (SS-WTAN)	20
7.8.23	Interaction with Private User Mobility Registration (ANF-PUMR)	20
7.8.24	Interaction with Private User Mobility Incoming Call (ANF-PUMI)	20
7.8.25	Interaction with Common Information (ANF-CMN)	20
7.8.26	Interaction with Call Priority Interruption (Protection) (SS-CPI(P))	21
7.9	Parameter values (timers)	21
7.9.1	Timers at the Originating PINX	21
7.9.2	Timers at the Home PINX	21
Annexes		
A	Protocol Implementation Conformance Statement (PICS) proforma	22
B	Imported ASN.1 definitions	33
C	Examples of Message Sequences	34
D	Specification and Description Language (SDL) representation of procedures	39
E	Additional feature identifier in module Common-Information-Operations	47
F	ASN.1 definitions according to ITU-T Recs. X.208 / X.209	48

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 17878 was prepared by ECMA (as ECMA-284) 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 second edition cancels and replaces the first edition (ISO/IEC 17878:2000), which has been technically revised.

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 specifies the signalling protocol for use at the Q reference point for Private User Mobility call handling additional network features ANF-PUMI and ANF-PUMO.

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 — Private Integrated Services Network — Inter-exchange signalling protocol — Private User Mobility (PUM) — Call handling additional network features

1 Scope

This International Standard specifies the signalling protocol for the support of the Private User Mobility call handling additional network features (ANF-PUMI and ANF-PUMO) at the Q reference point between Private Integrated services Network eXchanges (PINX) connected together within a Private Integrated Services Network (PISN).

ANF-PUMI is a feature that directs incoming calls to a PUM user within the PISN regardless of the PUM user's geographical location within the PISN, provided that the PUM user's location is known.

ANF-PUMO permits the PISN to process call requests from a PUM user at the home location, if required.

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

Service specifications are produced in three stages and according to the method specified in ITU-T Rec. I.130. 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 ISO/IEC 17877.

The signalling protocol for ANF-PUMI and ANF-PUMO operates on top of the signalling protocol for basic circuit switched call control, as specified in ISO/IEC 11572, and uses certain aspects of the generic procedures for the control of supplementary services specified in ISO/IEC 11582.

This International Standard also specifies additional signalling protocol requirements for the support of interactions at the Q reference point between ANF-PUMI / ANF-PUMO and other supplementary services and ANFs.

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

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 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 11571:1998, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Networks - Addressing*

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 11574:2000, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Circuit-mode 64 kbit/s bearer services - Service description, functional capabilities and information flows*

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 11582:2002, *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*

- ISO/IEC 13241:1997, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Route Restriction Class additional network feature*
- ISO/IEC 13868:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Name identification supplementary services*
- ISO/IEC 13873:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Diversion supplementary services*
- ISO/IEC 13874:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Path Replacement additional network feature*
- ISO/IEC 14843:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Offer supplementary service*
- ISO/IEC 14844:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Do Not Disturb and Do Not Disturb Override supplementary services*
- ISO/IEC 14846:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Intrusion supplementary service*
- ISO/IEC 15050:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Advice Of Charge supplementary services*
- ISO/IEC 15054:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Interception additional network feature*
- ISO/IEC 15056:1997, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Transit counter additional network feature*
- ISO/IEC 15431:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Wireless terminal call handling additional network features*
- ISO/IEC 15506:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Message Waiting Indication supplementary service*
- ISO/IEC 15772:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Common Information additional network feature*
- ISO/IEC 15992:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call Priority Interruption and Call Priority Interruption Protection supplementary services*
- ISO/IEC 17875:2000, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Private User Mobility (PUM) - Registration supplementary service*
- ISO/IEC 17876:2003, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Private User Mobility (PUM) - Registration supplementary service*
- ISO/IEC 17877:2000, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Private User Mobility (PUM) - Call handling additional network features*
- ETS 300 415:1996, *Private Integrated Services Network (PISN); Terms and definitions*
- ITU-T Rec. I.112:1993, *Vocabulary of terms for ISDNs*
- ITU-T Rec. I.130:1988, *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN (Blue Book)*
- ITU-T Rec. I.210:1993, *Principles of telecommunication services supported by an ISDN and the means to describe them*
- ITU-T Rec. Q.850:1993, *Use of cause and location in the digital subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN user part*

[This is a preview - click here to buy the full publication](#)

ITU-T Rec. Q.950:2000, *Supplementary services protocols, structure and general principles*

ITU-T Rec. Z.100:1999, *Specification and description language (SDL)*