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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

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseau privé à intégration de services — Spécifications, modèle fonctionnel et flux d'informations — Mobilité de l'usager privé (PUM) — Caractéristiques additionnelles de réseau de traitement d'appel

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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.

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 17877 was prepared by ECMA (as ECMA-283) 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 International Standard is one of a series of standards defining services and signalling procedures 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 Private User Mobility Incoming Call (PUMI) and the Private User Mobility Outgoing Call (PUMO) additional network features.

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.

There is currently no equivalent service specified by ITU-T or ETSI for public ISDN.

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

1 Scope

This International Standard specifies the Additional Network Features (ANF) Private User Mobility Incoming Call (PUMI) and Private User Mobility Outgoing Call (PUMO), which are applicable to various basic services supported by Private Integrated Services Networks (PISN). Basic services are specified in ISO/IEC 11574.

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

ANF-PUMO is an additional network feature that permits the PISN to process call requests from a PUM user at the home location, if required.

Additional network feature specifications are produced in three stages, according to the method described in ETS 300 387. This International Standard contains the stage 1 and stage 2 specifications of ANF-PUMI and ANF-PUMO. The stage 1 specification (clauses 6 and 7) specifies the general feature principles and capabilities. The stage 2 specification (clauses 8 and 9) identifies the Functional Entities involved in the additional network features and the information flows between them.

2 Conformance

In order to conform to this International Standard, a stage 3 standard shall specify signalling protocols and equipment behaviour that are capable of being used in a PISN which supports the additional network features specified in this International Standard. This means that, to claim conformance, a stage 3 standard is required to be adequate for the support of those aspects of clauses 6 and 7 (stage 1) and clauses 8 and 9 (stage 2) which are relevant to the interface or equipment to which the stage 3 standard applies.

3 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO/IEC 11574:1994, *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 13872:1995, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Call diversion supplementary services.*

ISO/IEC 15428:1999, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Specification, functional model and information flows — Wireless Terminal Location Registration supplementary service and Wireless Terminal Information Exchange additional network feature.*

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.*

CCITT 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.112:1993, *Vocabulary of terms for ISDNs.*

ITU-T Rec. I.210:1993, *Principles of telecommunication services supported by an ISDN and the means to describe them.*

ITU-T Rec. Z.100:1993, *Specification and description language.*

4 Definitions

For the purposes of this International Standard the following definitions apply.

4.1 External definitions

This International Standard uses the following terms defined in other documents:

— Basic service (ITU-T Rec. I.210)

— Call (Basic call) (ISO/IEC 11574)

— PISN Number (ISO/IEC 11571)

— Private Integrated Services Network (PISN) (ISO/IEC 11579-1)

— Private Integrated Services Network Exchange (PINX) (ISO/IEC 11579-1)

— Service (ITU-T Rec. I.112)

— Signalling (ITU-T Rec. I.112)

— Supplementary Service (ITU-T Rec. I.210)

— User (ISO/IEC 11574)

This International Standard refers to the following basic call Functional Entities (FE) defined in ISO/IEC 11574:

— Call Control (CC)

— Call Control Agent (CCA)

This International Standard refers to the following basic call inter-FE relationships defined in ISO/IEC 11574:

— r1

— r2

— r3

This International Standard refers to the following basic call information flows defined in ISO/IEC 11574:

— SETUP request/indication

— SETUP response/confirm

— RELEASE request/indication

This International Standard refers to the following service elements defined for basic call control in ISO/IEC 11574:

— Call History

— Connection Type

— Destination Number

— Destination Subaddress

— Originating Number

— Originating Subaddress

4.2 Additional network feature (ANF) : A capability provided by a PISN, not generally directly to a User, over and above that of the Basic call.

4.3 Alternative identifier : An identifier, other than the PISN number, which identifies the PUM user uniquely.

4.4 Destination number : The PISN number of the original called user.

4.5 Home Data Base (HDB) : The database in which the data on the current location and associated parameters of a Wireless terminal or a mobile user are stored.

4.6 Home PINX : The PINX that has direct access to the HDB entry for a particular PUM user.

4.7 Hosting address : The complete PISN number of the entity within the network to which incoming calls for the PUM user are directed by the Home PINX (i.e., the address where a PUM user is currently registered).

4.8 Incoming PUM call : A call where the called user is a PUM user.

4.9 Originating number : The PISN number of the user initiating a call.

4.10 Outgoing PUM call : A call originated by a PUM user.

4.11 Private User Mobility (PUM) : The capability of a PISN user to register at any PISN terminal, and so receive the PISN services at the hosting terminal.

4.12 PUM registration : The operation performed by a PUM user to inform the PISN of the PISN address that should be used for locating the user.

4.13 PUM user : A PISN user whose calls are processed by either or both of the PUMI and PUMO additional network features.

4.14 PUM user identity : A PUM number or alternative identifier used to uniquely identify the PUM user.

4.15 Visitor Data Base (VDB) : The database in which location information concerning a wireless terminal or a mobile user is stored, as long as the Wireless terminal or the mobile user are localized in the corresponding visitor area.

4.16 Visitor PINX : The PINX that has direct access to the VDB currently associated with a particular PUM user.

5 List of acronyms

ANF	Additional Network Feature
AOC	Advice Of Charge
CC	Call Control (Functional Entity)
CCA	Call Control Agent (Functional Entity)
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CD	Call Deflection
CFB	Call Forwarding Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CI	Call Intrusion
CICL	Call Intrusion Capability Level
CINT	Call INTerception
CLIP	Calling Line Identification Presentation
CLIR	Calling/Connected Line Identification Restriction
CMN	CoMmoN Information
CNIP	Calling Name Identification Presentation
CNIR	Calling/Connected Name Identification Restriction

CO	Call Offer
COLP	Connected Line Identification Presentation
CONP	Connected Name Identification Presentation
CPI	Call Priority Interruption
CPICL	Call Priority Interruption Capability Level
CPIP	Call Priority Interruption Protection
CPIPL	Call Priority Interruption Protection Level
CT	Call Transfer
DND	Do Not Disturb
DNDO	Do Not Disturb Override
FE	Functional Entity
FEA	Functional Entity Action
HDB	Home Data Base
ISDN	Integrated Services Digital Network
MWI	Message Waiting Indication
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
PR	Path Replacement
PUM	Private User Mobility
PUMI	PUM Incoming Call Handling
PUMO	PUM Outgoing Call Handling
RE	REcall
SDL	Specification and Description Language
SS	Supplementary Service
TC	Transit Counter
TE	Terminal Equipment
VDB	Visitor Data Base
WT	Wireless Terminal
WTAU	Wireless Terminal AUthentication
WTLR	Wireless Terminal Location Registration
WTM	Wireless Terminal Mobility
WTMI	Wireless Terminal Mobility Incoming call
WTMO	Wireless Terminal Mobility Outgoing call

6 ANF-PUMI stage 1 specification

6.1 Description

6.1.1 General description

PUM Incoming Call (PUMI) enables calls to be directed to a PUM user within the PISN. As there is no predetermined access for the connection of a PUM user to the PISN, the directing of such calls requires that information regarding the location of the user is available.

6.1.2 Qualifications on applicability to telecommunication services

ANF-PUMI is applicable to all basic services defined in ISO/IEC 11574.

6.2 Procedure

6.2.1 Provision/withdrawal

ANF-PUMI shall be PISN instigated.

6.2.2 Normal procedures

6.2.2.1 Activation/deactivation/registration/interrogation

ANF-PUMI shall be permanently activated.

Registration and interrogation are not applicable to this ANF.

6.2.2.2 Invocation and operation

For each PUM user, information shall be maintained relating to the location of the PUM user within the PISN.

ANF-PUMI shall be invoked for an incoming call when analysis of the destination number indicates that the called user is a PUM user. Once invoked, ANF-PUMI shall route the call to the PUM user using the destination number to determine the current address of the PUM user within the PISN.

Further processing of the call shall follow normal basic call procedures.

6.2.3 Exceptional procedures

6.2.3.1 Activation/deactivation/registration/interrogation

Not applicable.

6.2.3.2 Invocation and operation

If the PISN is unable to complete an incoming call to a PUM user, an indication that the call was unsuccessful shall be sent to the calling user. Normal basic call failure procedures shall be used.

6.3 Interaction with other supplementary services and ANFs

Interactions with other supplementary services and ANFs for which PISN standards were available at the time of publication of this International Standard are specified below.

6.3.1 Number identification services (SS-CLIP, SS-COLP, SS-CLIR)

No interaction.

NOTE 1 - Regardless of any other arrangements for alternative identification of a PUM user within the PISN, the only meaningful number to be used by SS-COLP is the PUM user's PISN number.

6.3.2 Calling Name Identification Presentation (SS-CNIP)

No Interaction.

6.3.3 Connected Name Identification Presentation (SS-CONP)

No interaction.

6.3.4 Calling/Connected Name Identification Restriction (SS-CNIR)

No interaction

6.3.5 Call Completion to Busy Subscriber (SS-CCBS)

No interaction.

6.3.6 Call Completion on No Reply (SS-CCNR)

No interaction.

6.3.7 Call Transfer (SS-CT)

No interaction.

6.3.8 Call Forwarding Unconditional (SS-CFU)

NOTE 2 - Calls to a PUM user should not be affected by any Call Forward activated for the hosting PISN number.

If the PUM user subscribes to SS-CFU and SS-CFU is active, the invocation of SS-CFU shall take precedence over the directing of calls to the PUM user.