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Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Functional requirements for static circuit-mode inter-PINX connections

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseau privé à intégration de services — Exigences fonctionnelles pour les connexions inter-PINX en mode circuit statique

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. 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.

International Standard ISO/IEC 14474 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems.*

Annex A forms an integral part of this International Standard.

Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Functional requirements for static circuit-mode inter-PINX connections

1. Scope

This International Standard is a part of the functional requirements for the Private Integrated Services Network (PISN) and defines the functions and procedures that are required by Private Integrated Services Network exchanges (PINXs) and the intervening network (IVN) in order to establish Inter-PINX Connections (IPC). The IPC is used for the transfer of signalling and user information between PINXs.

The Private Signalling System No.1 (PSS1) as defined in ISO/IEC 11572 and 11574 defines the signalling procedures and protocol for call control between PINXs at the Q reference point. These procedures are independent of the types of IVNs, called scenarios used to interconnect the PINXs. ISO/IEC TR14475 describes the use of various types of IVNs which provide the interconnections of PINXs.

In order to connect a PINX to another PINX, mapping functions are required to adapt the specific interfaces at the C reference point to the application at the Q reference point. As such, mapping functions provide for physical adaptation to the interface at the C reference point. Mapping functions also provide for the mapping of user channels and signalling information at the Q reference point to the appropriate channels or time-slots at the C reference point. The C and Q reference points are defined in ISO/IEC 11579-1.

The types of interfaces at the C reference point covered by this International Standard are:

[1]   1544 kbit/s unstructured digital leased line

[2]   1544 kbit/s structured digital leased line

[3]   2048 kbit/s unstructured digital leased line

[4]   2048 kbit/s structured digital leased line

[5]   64 kbit/s unrestricted digital leased line

[6]   1544 kbit/s ISDN Primary Rate user-network layer 1 interface

[7]   2048 kbit/s ISDN Primary Rate user-network layer 1 interface

[8]   ISDN Basic Rate user-network layer 1 interface

At the Q reference point the mappings provide a 64 kbit/s service for user channels and a packet mode service for the signalling channel. The applied mapping is a static mapping, i.e. there is a fixed relationship between user and signalling channels at the Q reference point and the timeslots of the interface at the C reference point. Any changes are subject to administrative actions.

This International Standard specifies PINX mapping functions between the Q reference point and the C reference point for IVNs which provide either dedicated or semi-permanent, non-user activation, circuit-mode IPCs. The dedicated IPC is the connection permanently established, usually for the duration of a contractual period. The semi-permanent IPC is the connection whose resources are reserved for specified times during a contractual period. The semi-permanent IPC is established by management control with or without user activations. In this International Standard, the semi-permanent IPC established by management control with user activation is outside the scope.

The IVN can be a dedicated physical link, dedicated transmission system or a cross connect system, or semi-permanent connection system. IVNs which include inverse mulitlexer techniques (e.g. channel aggregation in accordance with ISO/IEC 13871) are covered by this International Standard so far as they support one of the interfaces listed above.

This International Standard also specifies mapping information. At both sides of the PINX, mapping information is required to administer the scenarios.

This International Standard is applicable to PINXs which can be interconnected to form a Private Integrated Services Network (PISN) and which support signalling protocols at the Q reference point.

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 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.

[1] ISO/IEC 11579-1:1994, *Information technology — Telecommunications and information exchange between systems — Private integrated services network — Part1: Reference configuration for PISN Exchanges (PINX)*.

[2] ISO/IEC TR 14475:1996, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Architecture and Scenarios for Private Integrated Services Networking*.

[3] ISO/IEC 11572:1997, *Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Circuit mode bearer services — Inter-exchange signalling procedures and protocol*.

[4] 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*.

[5] ITU-T Rec.G.703 (1991), *Physical/electrical characteristics of hierarchical digital interface*.

[6] ITU-T Rec.G.704 (1995), *Synchronous frame structures used at primary and secondary hierarchical levels*.

[7] ITU-T Rec.G.706 (1991), *Frame alignment and cyclic redundancy check (CRC) procedures relating to basic frame structures defined in Recommendation G.704*.

[8] ITU-T Rec.I.431 (1993), *Primary rate user-network interface — Layer 1 specification*.

[9] ITU-T Rec.I.430 (1995), *Basic rate user-network interface — Layer 1 specification*.

[10] ITU-T Rec.I.412 (1988), *ISDN user-network interfaces — Interface structures and access capabilities*.

[11] ITU-T Rec.I.140 (1993), *Attribute Technique for the characterization of Telecommunication Services supported by an ISDN and Network Capabilities of an ISDN*.

[12] ITU-T Rec.I.210 (1993), *Principles of Telecommunication Services Supported by and ISDN and the Means to describe them*.

[13] ITU-T Rec.Q.921 (1993), *ISDN User-Network Interface — Layer 2 specification*.

[14] ISO/IEC 2382-36:—[1)], *Information technology — Vocabulary — Part 36: Private Integrated Services Network*.

[15] ISO/IEC 13871:1995, *Information technology — Telecommunications and information exchange between systems — Private telecommunications networks — Digital channel aggregation*.

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1) To be published.

4. Definitions

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

4.1 External definitions

-	PISN (Private Integrated Services Network)	[14]
-	PINX (Private Integrated Services Network Exchange)	[14]
-	IVN (Intervening Network)	[14]
-	SW (Switching Functional grouping)	[1]
-	MP (Mapping Functional grouping)	[1]
-	Q Reference Point	[1]
-	C Reference Point	[1]
-	IPC (Inter-PINX Connection)	[14]
-	IPL (Inter-PINX Link)	[14]

4.2 Specific Definitions

4.2.1 Channel

A means of bi-directional transmission of user or signalling information between two points.

4.2.1.1 Dq channel

A channel used to convey signalling information including call control information between the Q reference points of two peer PINXs.

4.2.1.2 Uq channel

A channel used to convey user information between the Q reference points of two PINXs.

4.2.2 Signalling Functions

4.2.2.1 QSIG (Signalling information flow at the Q reference point)

The generic term describing the signalling information flows (i.e. not a specific signalling protocol), within a Dq channel.

4.2.2.2 CSIG (Signalling information flow at the C reference point)

The generic term describing access signalling information flows (i.e. not a specific signalling protocol), between a PINX and an IVN, at the C reference point.

4.3 Symbols and Abbreviations

- B   Timeslot providing of 64 kbit/s bearer capability
- C   C Reference Point
- Dq   Dq channel
- IPC   Inter-PINX Connection
- IVN   Intervening Network
- MP   Mapping Functional grouping
- PINX   Private Integrated Services Network Exchange
- Q   Q Reference Point
- QAB   Indicates a Q reference point that is associated with the interconnection between PINX A and B
- QAC   Indicates a Q reference point that is associated with the interconnection between PINX A and C.
- SW   Switching Functional grouping
- Uq   Uq channel