
**Information technology —
Telecommunications and information
exchange between systems — Private
Integrated Services Network —
Architecture and scenarios for Private
Integrated Services Networking**

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseau privé à intégration de services —
Architecture et scénarios pour réseau privé à intégration de services*

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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.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
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Attention is drawn to the possibility that some of the elements of this Technical Report 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 TR 14475, which is a Technical Report of type 3, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

This second edition cancels and replaces the first edition (ISO/IEC TR 14475:1996), which has been technically revised.

Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Architecture and scenarios for Private Integrated Services Networking

1 Scope

A Private Integrated Service Network (PISN) is a network comprising either one PINX or more than one PINX interconnected by Inter-PINX connections. This Technical Report is concerned with inter-PINX connections (IPC) that are provided by Intervening Networks (IVN), and the way in which these are handled by PINXs to provide a platform for inter-PINX communication. Different types of IVNs can be used to provide IPCs, in accordance with the scenarios indicated in ISO/IEC 11579-1. These are Overlay Scenarios in that they enable the services of the PISN to operate transparently across an IVN.

Connected PINXs need to co-ordinate their use of IVNs, and appropriate standardisation is needed to allow networks to be created employing PINXs and IVNs from multiple vendors. The following points need to be considered:

- In general but depending on the type of IVN, procedures and signalling protocols between the PINXs are needed for the establishment, maintenance and release of IPCs. Appropriate standardisation of these procedures and signalling protocols is necessary.
- At the Q reference point (a conceptual point within a PINX) channels and PISN call control signalling (QSIG) are defined independently of the type of IVN. However, at the C reference point (where the PINX is connected to the IVN), the representation of the channels and of signalling is dependent on the type of IVN, and on how the PINXs use the IPCs. Appropriate standardisation of these aspects at the C reference point is necessary.
- In general the relationship between a channel at the Q reference point and its representation at the C reference point is not static, and procedures and signalling between the PINXs are needed for the co-ordination of these relationships. Appropriate standardisation of these procedures and signalling is necessary.
- Appropriate mechanisms need to be standardised for conveying inter-PINX signalling through the IVN. These will depend on the characteristics of the IPC used.

The aim of this Technical Report is to identify:

1. In addition to PISN call control signalling (QSIG), what needs to be standardised, in order to be able to inter-connect PINXs;
2. General techniques, procedures, protocols etc., that apply to of all (or at least very many) types of IVNs.

2 References

ISO/IEC 7776:1995, *Information technology — Telecommunications and information exchange between systems — High-level data link control procedures — Description of the X.25 LAPB-compatible DTE data link procedures*

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 11582:1995, *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*

ITU-T Rec. I.140 (1993), *Attribute technique for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN*

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*

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

ITU-T Rec. I.411 (1993), *ISDN user-network interfaces — Reference configurations*

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

ITU-T Rec. X.31 (1995), *Support of packet mode terminal equipment by an ISDN*