
**Information technology —
Telecommunications and information
exchange between systems — Private
Integrated Services Network —
Inter-exchange signalling protocol — PINX
clock synchronization**

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseau privé à intégration de services —
Protocole de signalisation d'interéchange — Synchronisation d'horloge
PINX*



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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. 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 15507 was prepared by ECMA (as ECMA-245) 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.

Annex A forms an integral part of this International Standard. Annexes B and C 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. The series uses the ISDN concepts as developed by ITU-T and is also within the framework of standards for open systems interconnection as defined by ISO.

This International Standard specifies the signalling protocol for the support of PINX clock synchronization.

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 — PINX clock synchronization

1 Scope

This International Standard specifies the signalling protocol for the support of clock synchronization (SYNC-SIG) between Private Integrated Services Network Exchanges (PINXs) connected together within a Private Integrated Services Network (PISN).

This protocol supports the synchronization of a PISN using the different sources of clocks available to each PINX. The protocol is based on the method of synchronization described in annex F of the International Standard ISO/IEC 11573.

This International Standard is applicable to PINXs which can be interconnected 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 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 11573:1994,	<i>Information technology — Telecommunications and information exchange between systems — Synchronization methods and technical requirements for Private Integrated Services Networks.</i>
ISO/IEC 11579-1:1994,	<i>Information technology — Telecommunications and information exchange between systems — Private Integrated Services Network — Part 1: Reference configuration for PISN Exchanges (PINX).</i>
ISO/IEC 11582:1995,	<i>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.</i>
ITU-T Rec. I.112:1993,	<i>Vocabulary of terms for ISDNs.</i>
ITU-T Rec. Z.100:1993,	<i>Specification and description language.</i>

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:

- | | |
|---|--------------------|
| - Application Protocol Data Unit | (ISO/IEC 11582) |
| - End PINX | (ISO/IEC 11582) |
| - Interpretation APDU | (ISO/IEC 11582) |
| - Private Integrated Services Network (PISN) | (ISO/IEC 11579-1) |
| - Private Integrated Services Network Exchange (PINX) | (ISO/IEC 11579-1) |
| - Signalling | (ITU-T Rec. I.112) |
| - Originating PINX | (ISO/IEC 11582) |
| - Terminating PINX | (ISO/IEC 11582) |

4.2 Other definitions

- 4.2.1 Adjacent PINX : One of two PINXs that are directly connected by means of an inter-PINX link.
- 4.2.2 Requesting PINX : PINX that initiates a confirmed or unconfirmed transaction.
- 4.2.3 Destination PINX : PINX which is the target of a confirmed or unconfirmed transaction.
- 4.2.4 Synchronization Entity : Entity which is in charge of the synchronization in a PINX.

Note - The functions of the Synchronization Entity are described in ISO/IEC 11573.

5 List of acronyms

APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation One
ISDN	Integrated Services Digital Network
NFE	Network Facility Extension
PICS	Protocol Implementation Conformance Statement
PINX	Private Integrated Network Exchange
PISN	Private Integrated Service Network
SDL	Specification and Description Language

6 Signalling protocol for the support of the protocol

6.1 Description

When two or more PINXs are connected to each other, it is required by ISO/IEC 11573 that these PINXs shall work for transmission with the same clock value: in that case PINXs are "synchronized". Without such synchronization, information can be lost from one PINX to another.

ISO/IEC 11573 describes the "clock synchronization" in detail and defines a method to use for a network synchronization. The signalling protocol for this method is defined in this International Standard. The protocol involves the exchange of APDUs between adjacent PINXs using the call-independent signalling connection (connection-oriented) transport mechanism specified in ISO/IEC 11582.

6.2 Operational requirements

Generic procedures for the call-independent control (connection-oriented), as specified in ISO/IEC 11582 for an Originating PINX and Terminating PINX, shall apply.

A Synchronization Entity which can be called by a predetermined called party number shall exist in each PINX.