INTERNATIONAL STANDARD

# ISO/IEC 10177

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# Information technology — Telecommunications and information exchange between systems — Provision of the connection-mode Network internal layer service by intermediate systems using ISO/IEC 8208, the X.25 Packet Layer Protocol

*Technologies de l'information — Télécommunications et échange d'information entre systèmes — Fourniture du service de la couche interne de réseau en mode connexion par des systèmes intermédiaires utilisant l'ISO/CEI 8208, protocole X.25 de couche paquet*

Reference number
ISO/IEC 10177:1993(E)

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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 10177 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Sub-Committee SC 6, *Telecommunications and information exchange between systems*.

Annexes A and B form an integral part of this International Standard. Annex C is for information only.

## Introduction

This International Standard is one of the set of standards associated with the Network layer of ISO 7498's Reference Model for Open Systems Interconnection (OSI), aimed collectively at provision and support of the OSI Network service defined in ISO 8348. It has been developed within the general framework provided by ISO 8648, Internal Organization of the Network Layer, and in accordance with the more detailed model of intermediate-system functions defined in ISO/IEC 10028.

ISO/IEC 10028 defines the relaying functions of a Network-layer intermediate system, in terms of the Network internal layer service (NILS): the NILS models the information flow within the Network layer in support of instances of Network-layer communication, at a level of abstraction that is independent of particular protocols and subnetwork technologies. This International Standard specifies the mapping between the NILS and the X.25 packet layer protocol (specified in ISO/IEC 8208) for those cases where a real interworking unit — modelled by an abstract intermediate system — operates the X.25 packet layer protocol at its point of attachment to a real subnetwork, in support of the OSI connection-mode Network service.

The use of the X.25 packet layer protocol specified in this International Standard for interworking units is compatible with that specified in ISO 8878:1987 for real end systems; indeed, in certain scenarios, the same packet exchanges between an interworking unit and an end system are described by ISO 8878 when viewed from the end system, and by this International Standard when viewed from the interworking unit.

This International Standard applies to each environment in which ISO/IEC 8208 is used in support of the connection-mode Network service, including among others:

- a Packet Switched Public Data Network
- a Packet Switched Private Data Network
- a Local Area Network
- use of switched access to a packet switched (public or private) data network, eg, by ISDN, CSDN or PSTN
- other subnetworks where the DTE/DTE mode of the X.25 Packet Layer Protocol is used in support of the connection-mode Network service.

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## 1 Scope

This International Standard specifies the method by which a Network-layer interworking unit (IWU) uses the X.25 packet layer protocol specified in ISO/IEC 8208 to support the OSI connection-mode Network service. The specification is expressed in terms of a mapping between the Network internal layer service defined in ISO/IEC 10028 and the Virtual Call (VC) and Permanent Virtual Circuit (PVC) services of the X.25 packet layer protocol.

An IWU to which this International Standard applies interconnects, for any individual Network connection, two real subnetworks, at least one of which is accessed using the X.25 packet layer protocol. When both subnetworks are accessed using the X.25 packet layer protocol, the specification applies independently to the IWU's operation on each subnetwork.

In addition, this International Standard uses ISO/IEC 10028's definition of the relaying functions of an intermediate system to extend its application beyond a single subnetwork point of attachment, to specify the requirements to be met by an IWU as a whole in supporting the OSI connection-mode Network service.

This International Standard covers operation of the X.25 packet layer protocol that is compatible with the 1984 and later versions of CCITT Recommendation X.25, and that is compatible with the 1980 version of X.25 when the Permanent Virtual Circuit service is used; compatibility with the 1980 version of X.25 for Virtual Calls is outside the scope of this International Standard.

To enable use of the PVC service, this International Standard defines a set of subnetwork dependent convergence protocol (SNDCP) procedures. These allow a given PVC to to support one Network connection at a time, but to support different Network connections, with the same or different values for address and quality of service parameters, etc, at different times. The procedures also allow for the possibility of using a PVC in support of other protocols, but not simultaneously with these procedures (apart from transient collision cases, which do not fail unnecessarily).

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented. Such a statement is called a Protocol Implementation Conformance Statement (PICS), as defined in ISO/IEC 9646-1. This International Standard provides the PICS proforma in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-2.

This International Standard does not specify any requirements relating to the exchange of routing information or layer-management information between an IWU and other systems.

## 2 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 listed below.

Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7498:1984, *Information processing systems – Open Systems Interconnection – Basic Reference Model*

ISO/IEC 8208:1990, *Information technology – Data communications – X.25 Packet Layer Protocol for Data Terminal Equipment*

ISO/IEC 8208:1990/Amd.3:1991, *Information technology – Data communications – X.25 Packet Layer Protocol for Data Terminal Equipment, Amendment 3: Conformance requirements*

ISO 8648:1988, *Information processing systems – Open Systems Interconnection – Internal organization of the Network Layer*

ISO/IEC 9646-1:1991, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts*

ISO/IEC 9646-2:1991, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 2: Abstract test suite specification*

ISO/IEC 10028:1993, *Information technology – Telecommunications and information exchange between systems – Definition of the relaying functions of a Network layer intermediate system*

CCITT Recommendation X.213 (1992) | ISO/IEC 8348:1993, *Information technology – Network service definition for Open Systems Interconnection*