

# INTERNATIONAL STANDARD

# ISO/IEC 10030

Second edition  
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## **Information technology — Telecommunications and information exchange between systems — End System Routing Information Exchange Protocol for use in conjunction with ISO/IEC 8878**

*Technologies de l'information — Télécommunications et échange  
d'information entre systèmes — Protocole d'échange d'information pour  
le routage d'un système d'extrémité à utiliser conjointement avec  
l'ISO/CEI 8878*



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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 10030 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 10030:1990), which has been technically revised. It is a consolidation of Amendments 2 and 3 as well as Technical Corrigenda 1 and 2.

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 a number of standards concerned with Network Layer Routing Protocols. An overall framework for routing is described in ISO/IEC TR 9575. This International Standard specifically relates to that part of the framework which deals with Single Subnetwork Routing.

This International Standard is related to ISO/IEC 8878 which specifies the use of X.25 to provide the ISO connection-mode Network Service. This Protocol provides solutions for the following practical problems:

- a) How do End Systems discover the reachability of Intermediate Systems that can route NPDUs to destinations on subnetworks other than the one(s) to which the End System is directly connected?
- b) How do End Systems discover the reachability of other End Systems on the same subnetwork (when direct examination of the destination NSAP address does not provide information about the destination subnetwork address)?
- c) How does a Subnetwork Address Resolution Entity discover the reachability of End Systems on the subnetwork to which it is directly connected?
- d) How does an end System, which has not been pre-configured with its own Network Address, request the temporary assignment of a Network Entity Title (NET) and thus, derive the necessary Network Address(es), from a SNARE located on a common subnetwork?
- e) How do Intermediate systems discover the reachability of End Systems on the same subnetwork (when direct examination of the NSAP destination address does not provide information about the destination subnetwork address)?

The Protocol assumes that:

- a) Routing to a specified subnetwork point of attachment (SNPA) address on the same subnetwork is carried out satisfactorily by the subnetwork itself.
- b) The subnetwork is not, however, capable of routing on a global basis using the NSAP address alone to achieve communication with a requested destination.
- c) End Systems and Intermediate Systems using this protocol require to know at least one SNPA address that can be used to access a SNARE.

The protocol is designed to:

- a) minimize the amount of a priori state information needed by End Systems before they can begin to communicate with other End Systems;

- b) minimize the amount of memory needed to store routing information in End Systems; and
- c) minimize the computational complexity of End Systems routing algorithms.

This Protocol performs similar functions to the ones specified in ISO 9542. However, the characteristics of environments operating ISO/IEC 8208 (X.25/PLP) and the actual functionality of ISO/IEC 8208 (X.25/PLP) in itself invalidate the operation of ISO 9542 as follows:

- a) In general non-broadcast environments, the Configuration subset of ISO 9542 is inadequate.
- b) In broadcast environments operating ISO/IEC 8208 (X.25/PLP), the Redirection subset of ISO 9542 is invalidated.

Therefore, this Protocol is developed to perform all the aforementioned functions in harmony with the operation of ISO/IEC 8208 (X.25/PLP).

# Information technology — Telecommunications and information exchange between systems — End System Routing Information Exchange Protocol for use in conjunction with ISO/IEC 8878

## 1 Scope

This International Standard defines a protocol for the exchange of routing information between an End System and a Subnetwork Address Resolution Entity, and between an Intermediate System and a Subnetwork Address Resolution Entity.

This International Standard is applicable to:

- a) End Systems which operate according to the main body of ISO/IEC 8878 to provide and support the OSI Connection-mode Network Service using ISO/IEC 8208.
- b) Subnetwork Address Resolution Entities which operate ISO/IEC 8208.

NOTE — The Subnetwork Address Resolution Entity defined in this International Standard may be associated with relay functions as defined in ISO/IEC 10028 and ISO/IEC 10177.

- c) Intermediate systems which operate ISO/IEC 8208.

End Systems which provide and support the OSI CONS using the fast select 1980 procedures or the alternative 1980 procedures in annex A of ISO/IEC 8878 are outside the scope of this International Standard.

This International Standard does not specify any protocol elements nor algorithms for facilitating routing and relaying among SNAREs. Such functions are intentionally outside the scope of this International Standard.

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 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 9646-7.

## 2 Normative references

The following standards contain provisions which, through reference in the 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 7498-1 : 1994, *Information technology — Open Systems Interconnection — Basic Reference Model — Part 1: The Basic 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/IEC 8348 : 1993, *Information technology — Open Systems Interconnection — Network Service Definition*.

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

ISO 8802-2 : 1989, *Information processing systems — Local area networks — Part 2: Logical link control.*

ISO/IEC 8878 : 1992, *Information technology — Telecommunications and information exchange between systems — Use of X.25 to provide the OSI Connection-mode Network Service.*

ISO/IEC 8880-1 : 1990, *Information technology — Telecommunications and information exchange between systems — Protocol combinations to provide and support the OSI Network Service — Part 1: General principles.*

ISO/IEC 8880-2 : 1992, *Information technology — Telecommunications and information exchange between systems — Protocol combinations to provide and support the OSI Network Service — Part 2: Provision and support of the connection-mode Network Service.*

ISO/IEC 8881 : 1989, *Information processing systems — Data communications — Use of the X.25 packet level protocol in local area networks.*

ISO/IEC 8886 : 1992, *Information technology — Telecommunications and information exchange between systems — Data link service definition for Open Systems Interconnection.*

ISO 9542 : 1988, *Information processing systems — Telecommunications and information exchange between systems — End system to Intermediate system routing exchange protocol for use in conjunction with the Protocol for providing the connectionless-mode network service (ISO 8473).*

ISO/IEC TR 9575 : 1990, *Information technology — Telecommunications and information exchange between systems — OSI Routing Framework.*

ISO/IEC TR 9577 : 1993, *Information technology — Telecommunications and information exchange between systems — Protocol identification in the network layer.*

ISO/IEC 9646-1 : 1994, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 1: General concepts.*

ISO/IEC 9646-7 : \_\_\_\_\_<sup>1</sup>, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 7: Implementation conformance statements.*

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

ISO/IEC 10039 : 1991, *Information technology — Open Systems Interconnection — Local area networks — Medium Access Control (MAC) service definition.*

ISO/IEC 10177 : 1993, *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.*

ISO/IEC TR 10178 : 1992, *Information technology — Telecommunications and information exchange between systems — The structure and coding of Logical Link Control addresses in Local Area Networks.*

1. To be published.