TECHNICAL REPORT

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Information technology — Telecommunications and information exchange between systems — Network/Transport Protocol interworking specification

Technologies de l'information — Téléinformatique — Spécification d'interprétation pour les protocoles transport/réseau

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Contents

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;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC/TR 10172, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

Annex A forms an integral part of this Technical Report. Annex B is for information only.

Introduction

There exist today two different types of data communications network layer protocols under the auspices of ISO Open Systems Interconnection (OSI), yet systems operating either of these protocol types cannot interconnect. The Connection-mode Network Protocol (CONP) ISO 8208/(X.25) operated in accordance with ISO 8878 cannot interwork with the Connectionless-mode Network Protocol (CLNP) ISO 8473. In order to achieve interworking of these two disparate protocols there is need for a mediating device to perform relaying and/or conversion of PDUs from one network protocol type to another, this device is termed an Interworking Functional Unit (IFU). In solving this problem of CO/CL interworking two broad objectives must be considered:

a) the IFU must not impose any changes on existing end-systems or recognized standards, its operation must be transparent to end-systems; and

b) it must provide interconnection to the widest user community within its scope of operation.

This Technical Report identifies a CO/CL interworking solution which is based on three modes of operation: a network layer relay mode (NLR), a passive transport layer relay (PTLR) mode, and an active transport layer relay (ATLR) mode. Some of these modes of operation lie within the OSI architecture, others lie outside the scope of the OSI architecture. For this reason an International Standard is inappropriate and this form of publication has been chosen.

It is the express intention of the ISO/IEC Subcommittee responsible for this Technical Report (ISO/IEC JTC1/SC6) that the form of publication shall be, and shall remain, a Technical Report. It is the clear intention of SC6 that the content of this Technical Report is not appropriate for conversion into an International Standard.

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1 Scope

This Technical Report

a) Specifies the circumstances in which Interworking Functional Units may be used to provide the OSI Connection-mode Transport Service end-to-end between two end systems, where

- one of the end systems is accessed using the connection-mode transport protocol as defined in ISO 8073/Add.2[1] in combination with the protocol defined in ISO 8473;
- the other end system is accessed using the connection-mode transport protocol as defined in ISO 8073 in combination with the procedures defined in ISO 8208/ISO 8878[2].

b) Specifies various sets of procedures for the operation of such Interworking Functional Units.

c) Specifies how IFUs which operate more than one of these sets of procedures may choose which set to use in a given instance, taking into account the possibility that some end systems may operate both types of Network Service.

d) Specifies the requirements for IFUs to operate in series and/or in parallel.

NOTE - Only the Network Layer Relay (NLR) mode of operation is within the scope of OSI. The Active Transport Layer Relay (ATLR) and Passive Transport Layer Relay (PTLR) modes of operation are not considered to be OSI operations because ISO 7498 does not define relaying to be a Transport Layer function.

The field of application also covers the case where the two end systems operate the same Network Layer protocol but are interconnected via IFUs employing ATLR or PTLR operation.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this Technical Report. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Technical Report 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 iInternational Standards.

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

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[1] For purposes of conciseness and distinction, when ISO 8073/Add.2 is used throughout this Technical Report it shall be taken to mean ISO 8073 as modified by ISO 8073/Add.2, i.e. "use of Transport Class Four Operation over Connectionless Network Service".

[2] For purposes of conciseness ISO 8208/ISO 8878 shall be taken to mean ISO 8208 operated in accordance with ISO 8878.

ISO 7498-3:1986, *Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 3: Naming and Addressing.*

ISO 8072:1986, *Information processing systems - Open Systems Interconnection - Transport Service Definition.*

ISO 8073:1988, *Information processing systems - Open Systems Interconnection - Connection oriented transport protocol specification.*

ISO 8073/Add.1:1988, *Information processing systems - Open Systems Interconnection - Connection oriented transport protocol specification - Addendum 1: Network connection management subprotocol.*

ISO 8073/Add.2:1989, *Information processing systems - Open Systems Interconnection - Connection oriented transport protocol specification - Addendum 2: Class four operation over connectionless network service.*

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

ISO 8348/Add.2:1988, *Information processing systems - Data communications - Network service definition - Addendum 2: Network Layer addressing.*

ISO 8473:1988, *Information processing systems - Data communications - Protocol for providing the connectionless-mode network service.*

ISO 8648:1988, *Information processing systems - Open Systems Interconnection - Internal Organization of the Network layer.*

ISO 8878:1987, *Information processing systems - Data communications - Use of X.25 to provide the OSI connection-mode network service.*

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

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

ISO/IEC 9574:1989, *Information technology - Telecommunications and information exchange between systems - Provision of the OSI connection-mode network service by packet mode terminal equipment connected to an Integrated Services Digital Network (ISDN).*

ISO/IEC TR 9577:1990, *Information technology -Telecommunications and information exchange between systems - Protocol Identification in the network layer.*

ISO/IEC 10028:-[3], *Information processing systems - Data Communications - Definition of the relaying functions of a Network Layer intermediate system.*

ISO/IEC TR 10029:1989, *Information technology - Telecommunications and information exchange between systems - Operation of an X.25 interworking unit.*

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[3] To be published.

ISO/IEC 10177:-[4], *Information technology - Telecommunications and Information Exchange between Systems - Intermediate system support of the OSI connection-mode Network Service using ISO 8208 in accordance with ISO /IEC10028.*

[4] To be published.