TECHNICAL REPORT

ISO/IEC TR 9575

Second edition
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Information technology — Telecommunications and information exchange between systems — OSI Routeing Framework

Technologies de l'information — Communication de données et échange d'information entre systèmes — Cadre général de routage OSI

Reference number
ISO/IEC TR 9575:1995(E)

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 Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.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 9575, 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 9575:1990), which has been technically revised.

Introduction

In the OSI environment (OSIE), the possibility exists for any End System (ES) to communicate with any other ES. The physical path (or paths) over which this communication takes place may

- include multiple Intermediate Systems (IS);
- include multiple subnetwork types; and
- traverse multiple, independent organisations.

Furthermore, one instance of communications may follow a different path from another instance of communications.

Within the Network Layer, the Internal Organisation of the Network Layer (ISO 8648) identifies two functions, Routeing and Relaying, as being central to the ability for End Systems to communicate through an arbitrary concatenation of subnetworks and Intermediate Systems.

Part of the overall function of routeing and relaying is to allow ESs and ISs to find an appropriate path between two or more ESs for a given instance of communications.

Relaying is concerned primarily with the actual transformation and manipulation of Network Protocol Data Units (NPDUs) as they transit Intermediate Systems. Routeing, on the other hand, is primarily concerned with the maintenance and selection of paths through multiple subnetworks and Intermediate Systems which allow NPDUs to flow smoothly between End Systems.

There are four important aspects to routeing, i.e.:

a) the information required by ESs and ISs (5.1.1),

b) the techniques used by ESs and ISs to collect that information (5.1.2),

c) the techniques used by ESs and ISs to distribute that information (5.1.3), and

d) the functions executed by ESs and ISs on that information to determine the paths over which NPDUs flow between pairs of NSAPs (5.1.4).

This Technical Report discusses these aspects of routeing, and describes how various protocols may be employed to effect the OSI routeing functions. It does not discuss relaying, except where relaying functions are closely allied with routeing functions.

This second edition of ISO/IEC TR 9575 adds the option of interconnecting Routeing Domains using multicast subnetworks, interconnecting Administrative Domains using multicast subnetworks, and providing connectivity within Routeing Domains using multicast subnetworks.

Information technology — Telecommunications and information exchange between systems — OSI Routeing Framework

1 Scope

This Technical Report provides a framework in which OSI protocols for routeing may be developed and to expedite the progression of routeing protocols through the standardisation process. At the time of publication, this report reflected the current state of OSI Routeing, and does not preclude future extensions and developments.

2 References

The following International Standards | ITU-T Recommendations 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 | Recommendations 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 | Recommendations listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical International Standards | Recommendations

— ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model.*

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

— ITU-T Recommendation X.233 (1993) | ISO/IEC 8473-1:1994, *Information technology - Protocol for providing the connectionless-mode network service: Protocol specification.*

2.2 Paired International Standards | Recommendations

— ITU-T Recommendation X.223 (1993), *Use of X.25 to Provide the OSI Connection-mode Network Service for ITU-T Applications.*

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

2.3 Additional references

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

— ISO 9542:1988[1], *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 connection-less mode network service.*

— ISO/IEC 10030:1995, *Information technology - Telecommunications and information exchange between systems - End System Routeing Information Exchange Protocol for use in conjunction with ISO/IEC 8878.*

— ISO/IEC 10589:1992, *Information technology - Telecommunications and information exchange between systems - Intermediate system to intermediate system intra-domain-routeing routine information exchange protocol for use in conjunction with the protocol for providing the connectionless-mode Network Service (ISO 8473).*

— ISO/IEC 10747:1994, *Information technology - Telecommunications and information exchange between systems - Protocol for exchange of inter-domain routeing information among intermediate systems to support forwarding of ISO 8473 PDUs.*

— RFC 1629, *Guidelines for OSI NSAP allocation in the Internet.*

[1] Currently under revision.