INTERNATIONAL STANDARD

ISO/IEC 14765

First edition
1997-06-15

Information technology — Framework for protocol identification and encapsulation

Technologies de l'information — Cadre général pour identification et encapsulage de protocole

Reference number
ISO/IEC 14765:1997(E)

Contents

ISO/IEC Copyright Office • Case postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

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 14765 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.260.

Annexes A and B of this International Standard are for information only.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – FRAMEWORK FOR PROTOCOL IDENTIFICATION AND ENCAPSULATION

1 Scope

In a layered approach to protocol architecture, protocols have a relationship to one another such that a protocol at layer (n) uses the services of the layer below it – the (n – 1) services – which, in turn, are provided by a layer (n – 1) protocol. One of the services used by a layer (n) protocol is the *encapsulation* of its (n) Protocol Data Units (PDUs) in a way which is transparent to it. Such encapsulation is realized by the carriage of the (n) PDUs as user data in an (n – 1) Service Data Unit (SDU).

In a limited case, the operation of a particular protocol at layer (n – 1) implies the operation, above layer (n – 1), of a single layer (n) protocol or single set of related (n) / (n + 1)... protocols. However, in a more general case, there may be more than one protocol (or set of related protocols starting) at layer (n) that can operate above layer (n – 1) in a given environment. In such cases, there is a need for explicit *identification* of the protocol (or set of protocols starting) at layer (n).

There also may be a need to manipulate the (n – 1) protocol (i.e. the *encapsulating* protocol) in certain ways specific to the layer (n) protocol (i.e. the *encapsulated* protocol). Such manipulations form the basis of a set of procedures that must be specified for the layer (n) protocol.

The above observations regarding protocol identification and encapsulation are also applicable in cases where an (n) layer is further divided into sublayers.

Cases in which an (n) protocol operates for the purpose of establishing a parallel universe of protocols (regardless of the layered structure of that universe) also give rise to a need for the (n) protocol to be able to identify the protocol(s) in the parallel universe. In these cases, however, there is no encapsulating/encapsulated relationship between the (n) protocol and the parallel universe set of protocols.

The above principles lead to a need to establish a framework for protocol identification and encapsulation. These principles apply to the relationship between two protocols (recognizing that one of them may be a set of related protocols) and can be applied recursively. This Recommendation | International Standard provides a framework for explicit protocol identification and for protocol encapsulation. Implicit protocol identification (see 4.2) is beyond the scope of this Recommendation | International Standard.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and International Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and International Standards 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 Recommendations | International Standards

- ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model.*
- ITU-T Recommendation X.263 (1995) | ISO/IEC TR 9577:1996, *Information technology – Protocol identification in the network layer.*

2.2 Additional references

- ITU-T Recommendation X.37 (1995), *Encapsulation in X.25 packets of various protocols including frame relay.*
- ISO/IEC 13515[1)], *Information technology – Telecommunications and information exchange between systems – Generic Multiprotocol Encapsulation (GME): Application to frame relay and ATM.*

1) Presently at the stage of draft.