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**DATA NETWORKS AND OPEN SYSTEM
COMMUNICATIONS**

**OPEN SYSTEMS INTERCONNECTION –
SERVICE DEFINITIONS**

**INFORMATION TECHNOLOGY –
OPEN SYSTEMS INTERCONNECTION –
TRANSPORT SERVICE DEFINITION**

ITU-T Recommendation X.214

(Previously “CCITT Recommendation”)

FOREWORD

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In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC. The text of ITU-T Recommendation X.214 was approved on 21st of November 1995. The identical text is also published as ISO/IEC International Standard 8072.

NOTE

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DATA NETWORKS AND OPEN SYSTEM COMMUNICATIONS

(February 1994)

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Summary

This Recommendation | International Standard defines the service provided by the transport layer to the session layer at the boundary between the transport and session layers of the OSI reference model, which includes:

- a) the primitive actions and events of the service;
- b) the parameter data associated with each primitive action and event; and
- c) the relationship between, and the valid sequence of, these actions and events.

Introduction

This Recommendation | International Standard is one of a set of Recommendations | International Standards produced to facilitate the interconnection of computer systems. It is related to other Recommendations | International Standards in the set as defined by the Reference Model of Open Systems Interconnection (OSI). The OSI Reference Model (see ITU-T Rec. X.200 | ISO/IEC 7498-1) subdivides the area of standardization for interconnection into a series of layers of specification, each of manageable size.

This Recommendation | International Standard defines the Service provided by the Transport Layer to the Session Layer at the boundary between the Transport and Session Layers of the Reference Model. It provides for the designers of Session Protocols a definition of the Transport Service existing to support the Session Protocol and for designers of Transport Protocols a definition of the services to be made available through the action of the Transport Protocol over the underlying service. This relationship is illustrated in Figure Intro.1.

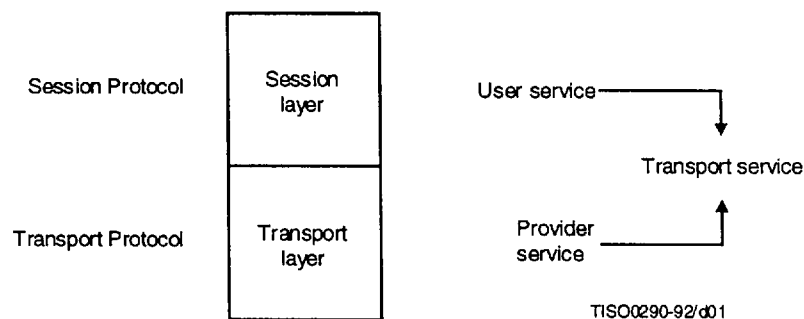


Figure Intro. 1 – Relationship of the Transport Service to OSI Transport and Session Protocols

Throughout the set of OSI Recommendations | International Standards, the term “Service” refers to the abstract capability provided by one layer of the OSI Reference Model to the layer above it. Thus, the Transport Service defined in this Recommendation | International Standard is a conceptual architectural Service, independent of administrative divisions.

NOTE – It is important to distinguish the specialized use of the term “Service” within the set of OSI Recommendations | International Standards from its use elsewhere to describe the provision of a service by an organization (such as the provision of a service, as defined in other Recommendations, by an Administration).

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

**INFORMATION TECHNOLOGY –
OPEN SYSTEMS INTERCONNECTION – TRANSPORT SERVICE DEFINITION****SECTION 1 – GENERAL****1 Scope**

This Recommendation | International Standard defines in an abstract way the externally visible service provided by the OSI Transport Layer in terms of:

- a) the primitive actions and events of the service;
- b) the parameter data associated with each primitive action and event;
- c) the relationship between, and the valid sequences of, these actions and events.

The service defined in this Recommendation | International Standard is that which is provided by all OSI Transport Protocols (in conjunction with the Network Service) and which may be used by any OSI Session Protocol.

This Recommendation | International Standard does not specify individual implementations or products, nor does it constrain the implementation of entities and interfaces within a system. Conformance of equipment to this Recommendation | International Standard is achieved by conformance to the protocols specified to fulfil the Transport Service defined in 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 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.210 (1993) | ISO/IEC 10731:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: Conventions for the definition of OSI services*.



ISO/IEC 8072 : 1996 (E)

3 Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply.

3.1 Reference Model definitions

This Service Definition is based on the concepts developed in the OSI Reference Model (see ITU-T Rec. X.200 | ISO/IEC 7498-1), and makes use of the following terms defined in it:

- a) expedited transport-service-data-unit;
- b) transport-connection;
- c) transport-connection endpoint;
- d) Transport Layer;
- e) Transport Service;
- f) transport-service-access-point;
- g) transport-service-access-point address;
- h) transport-service-data-unit;
- i) Network Layer;
- j) Network Service;
- k) network-connection;
- l) interface flow control.

3.2 Service (Definition) conventions

This Service Definition also makes use of the following terms defined in ITU-T Rec. X.210 | ISO/IEC 10731, as they apply to the Transport Layer:

- a) service-user;
- b) service-provider;
- c) primitive;
- d) request;
- e) indication;
- f) response;
- g) confirm.

3.3 Transport Service Definitions

For the purpose of this Service Definition, the following definitions also apply.

3.3.1 transport connection: An association established by a Transport Layer between two TS users for the transfer of data, which provides explicit identification of a set of transport data transmissions and agreement concerning the services to be provided for the set.

NOTE – This definition clarifies that given in ITU-T Rec. X.200 | ISO 7498-1.

3.3.2 calling TS user: A Transport Service user that initiates a transport connection establishment request.

3.3.3 called TS user: A Transport Service user with whom a calling TS user wishes to establish a transport connection.

NOTE – Calling TS users and called TS users are defined with respect to a single connection. A Transport Service user can be both a calling and a called TS user simultaneously.

3.3.4 transport connection-mode data transmission: The transfer of a TSDU from a source TSAP to a destination TSAP within the context of a TC that has previously been established.

3.3.5 transport connectionless-mode data transmission: The transmission of a TSDU from a source TSAP to one or more destination TSAPs outside the context of a TC and without any requirement to maintain any logical relationship among multiple TSDUs.

3.3.6 sending TS user: A Transport Service user that acts as a source of data during the data transfer phase of a transport-connection, or during a particular instance of transport connectionless-mode data transmission.

3.3.7 receiving TS user: A Transport Service user that acts as a sink of data during the data transfer phase of a transport-connection, or during a particular instance of transport connectionless-mode data transmission.

NOTE – A Transport Service user can be both a sending and a receiving TS user simultaneously.

3.3.8 group transport address: An address that identifies a particular group of TSAPs. A group Transport address may only be used to identify destination addresses.

4 Abbreviations

For the purposes of this Recommendation | International Standard, the following abbreviations apply:

TS	Transport Service
TC	Transport-connection
TSAP	Transport-service-access-point
TSDU	Transport-service-data-unit
QOS	Quality of Service

5 Conventions

5.1 General conventions

This Service Definition uses the descriptive conventions given in ITU-T Rec. X.210 | ISO/IEC 10731.

5.2 Parameters

The available parameters for each group of primitives are set out in tables in clauses 12 to 14 and 19. Each “X” in the tables indicates that the primitive labelling the column in which it falls may carry the parameter labelling the row in which it falls.

Some entries are further qualified by items in brackets. These may be:

- a) *Indications that the parameter is optional in some way:*
 - (U) indicates that the inclusion of the parameter is a choice made by the user.
- b) *A parameter specific constraints:*
 - (=) indicating that the value supplied in an indication or confirm primitive is always identical to that supplied in the previous request or response primitive issued at the peer service access point.

6 Overview and general characteristics

The Transport Service provides transparent transfer of data between TS users. It relieves these TS users from any concern about the detailed way in which supporting communications media are utilized to achieve this transfer.

The Transport Service provides for the following:

- a) *Quality of Service selection:*

The Transport Layer is required to optimize the use of available communications resources to provide the Quality of Service required by communicating TS users at minimum cost. Quality of Service is specified through the selection of values for Quality of Service parameters representing characteristics such as throughput, transit delay, residual error rate and failure probability.



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