

WITHDRAWN

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**Australian Standard®**

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**Information processing systems—**

**Open Systems Interconnection  
Basic Reference Model**

**Supplement 1: Connectionless-  
mode transmission**

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**STANDARDS AUSTRALIA** 

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## PREFACE

This Supplement was prepared by Standards Australia's Committee on Information Processing Systems. It is identical with and has been reproduced from Addendum 1 to International Standard ISO 7498—1984.

This Supplement adds to the concepts and principles defined in ISO 7498 (AS 2777). It is anticipated that this document will be incorporated into the main Standard when this is next revised.

The Standard is one of a series of Open Systems Interconnection (OSI) Standards which are currently under development. Since OSI Standards are developmental, there may be some minor difficulties encountered in their implementation. For this reason, Standards Australia will be providing a limited interpretation service to coordinate and disseminate information concerning difficulties which are identified in using this Standard.

For the purpose of this Australian Standard, the text of the ISO Standard given herein should be modified by replacing the words 'International Standard' and 'Addendum' with the words 'Australian Standard' and 'Supplement' respectively wherever they appear.

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# Information processing systems—Open Systems Interconnection—Basic reference model

## Supplement 1: Connectionless-mode transmission

### 0 Introduction

#### 0.1 About this addendum

**0.1.1** ISO 7498 describes the Reference Model of Open Systems Interconnection. It is the intention of ISO 7498 that the Reference Model should establish a framework for coordinating the development of existing and future standards for the interconnection of systems. The assumption that a connection is a fundamental prerequisite for communication in the OSI environment permeates the Reference Model and is one of the most useful and important unifying concepts of the architecture which it describes. However, since ISO 7498 was produced it has been realized that this deeply-rooted connection orientation unnecessarily limits the power and scope of the Reference Model, since it excludes important classes of applications and important classes of communication network technology which have a fundamentally connectionless nature.

**0.1.2** The architectural objectives of the Reference Model do not depend on the exclusive use of connections for all OSI communications. It is the intention of this addendum to introduce terms and define their use within the Reference Model so that the two alternatives (connection-mode transmission and connectionless-mode transmission) can be treated as complementary concepts which can be applied appropriately in the different circumstances for which each is suited.

#### 0.2 What is connectionless-mode transmission in the Reference Model ?

##### 0.2.1 General

**0.2.1.1** The concept of connectionless-mode transmission in one form or another has always played an important role in the specification of services and protocols for data communication.

The terms "message mode", "datagram", "transaction mode" and "connection-free" have been used in the literature to describe variations on the same basic theme: the transmission of a unit of data in a single self-contained operation without establishing, maintaining, and releasing a connection.

**0.2.1.2** Since connectionless-mode transmission and connection-mode transmission are complementary concepts, they are best understood in juxtaposition, particularly since connectionless-mode transmission is defined most easily in relationship to the concept of a connection.

## **0.2.2 Connection-mode transmission in the Reference Model**

**0.2.2.1** In the formal terminology of the Reference Model, a connection is an association established for the transfer of data between two or more peer-entities. This association is established between the peer-entities themselves and between each entity and the next lower layer. The ability to establish and release a connection and to transfer data over it is provided to the entities in a given layer by the next lower layer as a connection-mode service. The use of a connection-mode service by peer-entities proceeds through three distinct phases:

- a) connection establishment;
- b) data transfer; and
- c) connection release.

**0.2.2.2** In addition to the clearly distinguishable lifetime exhibited by these phases a connection has the following fundamental characteristics:

- a) it involves establishing and maintaining a three or more party agreement concerning the transmission of data between the peer-entities concerned and the layer providing the service;
- b) it allows the negotiation between all the parties concerned of the parameters and options that will govern the transmission of data;
- c) it provides connection identification by means of which the overheads involved in address resolution and transmission can be avoided on data transfers;
- d) it provides a context within which successive units of data transmitted between the peer-entities are logically related, and makes it possible to maintain sequence and provide flow control for those transmissions.

**0.2.2.3** The characteristics of connection-mode transmission are particularly attractive in applications which call for relatively long-lived, stream-oriented interactions between entities in stable configurations. Examples are provided by direct terminal use of a remote computer, file transfer, and long-term attachment of remote job entry stations. In these cases the entities involved initially discuss their requirements and agree to the terms of their interaction, reserving whatever resources they may need, transfer a series of related units of data to accomplish their mutual objective, and explicitly end their interaction, releasing the previously reserved resources.

The properties of connection-mode transmission are also relevant in a wide range of other applications.

## **0.2.3 Connectionless-mode transmission in the Reference Model**

**0.2.3.1** Again in the formal terminology of the Reference Model, connectionless-mode transmission is the transmission of a single unit of data from a source service-access-point to one or more destination service-access-points without establishing a connection. A connectionless-mode service allows an entity to initiate such a transmission by the performance of a single service access.

**0.2.3.2** In contrast to a connection, an instance of the use of a connectionless-mode service does not have a clearly distinguishable lifetime. In addition it has the following fundamental characteristics:

- a) it requires only a pre-arranged association between the peer-entities involved which determines the characteristics of the data to be transmitted, and no dynamic agreement is involved in an instance of the use of the service;
- b) all the information required to deliver a unit of data, destination address, quality of service selection, options, etc., is presented to the layer providing the connectionless-mode service, together with the unit of data to be transmitted, in a single service access. The layer providing the connectionless-mode service is not required to relate this access to any other access.

**0.2.3.3** As a result of these fundamental characteristics it may also be true that

- a) each unit of data transmitted is routed independently by the layer providing the connectionless-mode service;
- b) copies of a unit of data can be transmitted to a number of destination addresses.

**0.2.3.4** These characteristics of connectionless-mode transmission do not preclude making available to the service user information on the nature and quality of service which may apply for a single invocation of the service or which may be observed over successive invocations of the service between pairs of service-access-points or among a set of service access points.

## **0.3 Structure of this addendum**

This addendum has a structure which is similar to that of ISO 7498 in order to facilitate the eventual integration of the text of this addendum into a revision of ISO 7498. There are two major clauses:

**Clause 5:** this clause deals with general architectural principles and the sub-clauses correspond to sub-clauses in clause 5 of ISO 7498 under which different aspects of connectionless-mode transmission need definition.

**Clause 7:** this clause deals with details which are specific to the layers of the Reference Model of Open Systems Interconnection.