# INTERNATIONAL STANDARD

# ISO 8473

First edition
1988-12-15

**ADDENDUM 3**
1989-09-01

# Information processing systems — Data communications — Protocol for providing the connectionless-mode network service

## ADDENDUM 3: Provision of the underlying service assumed by ISO 8473 over subnetworks which provide the OSI data link service

*Systèmes de traitement de l'information — Communications de données — Protocole fournissant le service de réseau en mode sans connexion*

*ADDITIF 3: Fourniture du service sous-jacent assuré par l'ISO 8473 sur des sous-réseaux point à point fournissant le service de liaison de données OSI*

Reference number
ISO 8473 : 1988/Add.3 : 1989 (E)

## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) together form a system for worldwide standardization as a whole. 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 approval before their acceptance as International Standards. They are approved in accordance with procedures requiring at least 75 % approval by the national bodies voting.

International Standard ISO/IEC 8473/Add.3 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

# Introduction

The Protocol for Providing the Connectionless-mode Network Service (ISO 8473) is one of a set of International Standards produced to facilitate the interconnection of open systems. This Addendum 3 to ISO 8473 defines the provision of the underlying service assumed by the protocol described in ISO 8473 over subnetworks which provide the OSI Data Link Service.

The material in this Addendum will be incorporated into the body of ISO 8473 when the next revision of the Standard is produced. This Addendum has a structure which is similar to that of ISO 8473 and previous Addenda in order to facilitate cross reference between the documents and their eventual incorporation into ISO 8473.

# Information processing systems — Data communications — Protocol for providing the connectionless-mode network service

## ADDENDUM 3: Provision of the underlying service assumed by ISO 8473 over subnetworks which provide the OSI data link service

## 1 Scope

This addendum to ISO 8473 defines a set of Subnetwork Dependent Convergence Functions (SNDCFs) that relate the OSI Data Link Service defined in ISO 8886 to the abstract "underlying service" defined in subclause 5.5 of ISO 8473. The SNDCFs defined in this Addendum complement the set of SNDCFs already defined in clause 8, Provision of the Underlying Service.

The scope of this addendum is strictly limited to configurations in which the ISO 8473 protocol is used in conjunction with one or more subnetworks to provide the OSI Connectionless-mode Network Service. When the ISO 8473 protocol is used for this purpose, the appropriate subnetwork-dependent convergence functions defined in this addendum are applied to each subnetwork that participates in the transmission of ISO 8473 protocol data units from a source Network Service Access Point to a destination Network Service Access Point.

The field of application of this addendum is the operation of the ISO 8473 protocol over subnetworks which provide the OSI Data Link Serivce. For certain types of subnetworks, a circuit must be opened between end-points before communication can begin. The procedures for opening and closing circuits are defined in the standards pertaining to the particular subnetwork. The choice of when to open a circuit and to which endpoint the circuit is opened are a local matter. This addendum defines the convergence functions to be used once the circuit exists.

This addendum affects clause 8 only and makes no additions or changes to the following:

1) clause 2;
2) clauses 3, 4 and 5 of Section one;
3) clauses 6, 7 and 9 of Section two;
4) annexes.

## 2 Specific additions and changes to clause 8

In order to provide the underlying service assumed by ISO 8473 over subnetworks which provide the OSI data link service the following change and addition to clause 8 is required.

Subclause 8.2.1, note 4): Replace the text of note 4) with the following:

"In the case of an underlying subnetwork which provides a connection-mode service, the Transit Delay value provided to the CLNP must take into consideration any processing or queueing delay incurred as a result of an attempt to establish a connection."

Add a new subclause 8.4.4:

### 8.4.4 Subnetwork Dependent Convergence Functions used with ISO 8886

This clause defines a mapping of the OSI Data Link Service to the underlying service assumed by ISO 8473. The OSI Data Link Service Definition defines two types of Data Link Services: a connectionless-mode service and a connection-mode service. SNDCFs are defined for subnetworks which provide either of these two modes of service.

#### 8.4.4.1 SNDCF used with the Connectionless-mode Data Link Service

The primitives defined for provision of the underlying service assumed by the CLNP map directly onto the UNITDATA Request and Indication primitives defined for the Connectionless-mode Data Link Service. Subnetwork Dependent Convergence Functions perform a mapping of the Connectionless-mode Data Link Service onto the underlying service assumed by the CLNP. The mapping is as follows. The generation of an SN-UNITDATA request by the CLNP results in the generation of a DL-UNITDATA request (as described in ISO 8886) by the Subnetwork Dependent Convergence Function. A corresponding DL-UNITDATA indication prompts the SNDCF to generate an SN-UNITDATA indication to the CLNP. No explicit Subnetwork Dependent Convergence Protocol Control Information is exchanged between Network entities to provide this mapping of service.

The parameters of the SN-UNITDATA primitives are mapped onto the DL-UNITDATA primitives as follows. The SN-Destination-Address and SN-Source-Address parameters are conveyed in the DL-Destination-Address and DL-Source-Address parameters, respectively. The addresses used in the SN-UNITDATA request and indication primitives are the Data Link Service Access Point addresses described in ISO 8886.

The SN-Quality-of-Service parameter is conveyed. The available QoS is known prior to the issuance of the DL-UNITDATA.Request. There is no discrimination among DLSDUs.

The SN-Userdata parameter is conveyed in the DL-Userdata parameter. The subnetwork must be able to support the service data unit requirements defined in 8.3.

### 8.4.4.2 SNDCF used with the Connection-mode Data Link Service

The primitives defined for provision of the underlying service assumed by the CLNP are mapped onto the primitives defined for the Connection-mode Data Link Service. Subnetwork Dependent Convergence Functions perform a mapping of the Copnnection-mode Data Link Service onto the underlying service assumed by the CLNP. The mapping is as follows.

On receiving an SN-UNITDATA request from the CLNP machine, the SNDCF determines if a Data Link Connection already exists between this source and destination pair to convey the user data. If so, it issues a DL-DATA request containing the SN-Userdata as the DL-Userdata.

If a Data Link Connection does not already exist, a DL-CONNECT request is issued by the local/calling SNDCF with the Source and Destination Data Link Service Access Point Addresses specified in the SN-UNITDATA request and waits for a DL-CONNECT confirm. The SN-Quality-of-Service parameter is conveyed. The available QoS is known prior to the issuance of the DL-CONNECT.Request. There is no requirement to use Expedited Data.

When the remote/called SNDCF receives a DL-CONNECT indication from the Data Link layer, it issues a DL-CONNECT response. Once the corresponding DL-CONNECT confirm is received by the local/calling SNDCF, it may then issue a DL-DATA request(s) conveying user data. When the remote/called SNDCF receives a DL-DATA indication from the Data Link layer, it issues an SN-UNITDATA indication which conveys the corresponding destination and source addresses as well as the SN-Userdata. The SN-Userdata parameter is conveyed in the DL-Userdata parameter. The subnetwork must be able to support the service data unit requirements defined in 8.3.

The mechanism and timing for opening a Data Link Connection prior to the transmission of SN-Userdata are a local matter. The opening of a Data Link Connection may be initiated by:

1) the arrival of an SNSDU to be transmitted over a subnetwork at a time when no Data Link Connection is available;

2) the local queue of requests waiting for an existing Data Link Connection reaching a threshold size at which an additional Data Link Connection must be made available (if possible) to maintain the requested QoS; or

3) the explicit intervention of the network management system.

Collision detection and correction are resolved within the Data Link layer.

When it has been determined that a Data Link Connection must be cleared, the local/calling SNDCF issues a DL-DISCONNECT request primitive, specifying itself (the local DLS User) as the originator of the release, and a reason code as defined in ISO 8886. Once the request primitive has been issued, the local SNDCF considers the Data Link Connection released, and resumes idle state processing. When the remote SNDCF receives the corresponding DL-DISCONNECT indication, the Data Link Connection release phase is complete and the remote SNDCF resumes idle state processing as well.

Data Link Connection release may also be initiated by the DLS provider or by the called DLS user to refuse a connection. The action taken by the local SNDCF in these circumstances is the same as described above. The mechanism and timing for releasing a Data Link Connection following the transmission of SN-Userdata by the SNDCF are also local matters. Examples of circumstances which would cause the SNDCF to release a Data Link Connection are

1) the expiration of a timeout period following the transmission of one or more PDUs;

2) the need to use a specific interface to open an alternate Data Link Connection from the local Network entity to a different remote Network entity;

3) the explicit intervention of the network management system; or

4) a provider-initiated release of a Data Link Connection.

NOTE - It is not a requirement that Data Link Connections be dynamically opened or closed for the correct operation of the SNDCF herein described. the use of permanent Data Link Connections or the maintenance of Data Link Connections in a open state from system initialization is not precluded.

The selection of timeout values is a local matter. Factors to be considered in determining timeout values are the same as those identified in 8.4.3.4.