INTERNATIONAL STANDARD

ISO/IEC 8878

Second edition
1992-12-15

Information technology — Telecommunications and information exchange between systems — Use of X.25 to provide the OSI Connection-mode Network Service

Technologies de l'information — Télécommunications et échange d'informations entre systèmes — Utilisation du protocole X.25 pour fournir le service de réseau OSI en mode connexion

Reference number
ISO/IEC 8878:1992(E)

CONTENTS

Page

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 8878 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

This second edition cancels and replaces the first edition (ISO 8878:1987), which has been technically revised. It consolidates Technical Corrigenda 1, 2 and 3, Addenda 1 and 2 and Amendment 1 as well as Technical Corrigendum 1 to Addendum 2.

NOTE — ISO/IEC DIS 8878-2 as well as defect reports 8878-012, 013, 014 and 015 have also been included in this second edition.

Annexes A, B, C and D form an integral part of this International Standard. Annexes E, F, G, H and I are for information only.

Introduction

This International Standard defines methods for providing the OSI Connection-Mode Network Service (CONS) through the use of the virtual circuit services of the X.25 Packet Layer Protocol (X.25 PLP). The method presented in the main body of this International Standard specifies a mapping between elements of the 1984 or later versions of the X.25/PLP (referred to as X.25/PLP-1984) using X.25 Virtual Call (VC) services and elements of the OSI CONS. Features associated with versions of X.25 later than 1984 are identified as to which version they relate. This International Standard is similar to CCITT Recommendation X.223; however, the two are currently published as separate documents.

Clause 13 contains the requirements for systems claiming conformance to this International Standard.

Other methods using other virtual circuit services and/or other versions of X.25 are also defined. In particular, a second method for VCs, which is presented in Annex A, defines a Subnetwork Dependent Convergence Protocol (SNDCP) that shall be used to provide the OSI CONS over subnetworks or with equipment using the 1980 or earlier versions of the X.25/PLP (referred to as X.25/PLP-1980). This SNDCP should only be used if the elements of the X.25/PLP-1984, as defined in 5.1 herein, are not available to support the OSI CONS. Annex B contains a classification of systems according to whether they implement the procedures defined in the main body of this International Standard, the procedures defined in Annex A, or both. In addition, it describes the possibilities and the rules for interworking between the classes of equipment identified.

Annexes A and B are integral parts of this International Standard. They are intended to provide a migration strategy towards the use of the 1984 version of X.25 in both subnetworks and DTEs. Because of the evolution of technology, the status of Annexes A and B will be reviewed in the future.

Annex C defines another method for providing the OSI CONS, in this case in conjunction with the PVC service of X.25.

Annex D provides the Protocol Implementation Conformance Statement (PICS) Proforma for this International Standard.

Annexes C and D are integral parts of this International Standard.

Annex E provides additional considerations on the relationship between the X.25 protocol procedures and the CONS primitives.

Annex F illustrates the use of X.25 Network Protocol Address Information (NPAI), i.e., the Address Field and the Address Extension Facilities.

Annex G illustrates the use of the X.25 transit delay facilities.

Annex H illustrates the use of the X.25 Priority Facility.

Annex I lists the differences between CCITT Rec. X.223 and ISO/IEC 8878.

Annexes E through I are not integral parts of this International Standard.

The relationship between the X.25/PLP-1984 and the OSI CONS is shown in Figure 1. This relationship is described only in terms of the Network Layer entities that provide the CONS. No discussion is given here to describe the actions of a Network Layer entity that only provides a relay function for a given network connection.

The OSI Network Service is defined in terms of

a) the primitive actions and events of the Service;

b) the parameters associated with each primitive action and event, and the form which they take;

c) the interrelationship between, and the valid sequences of, these actions and events.

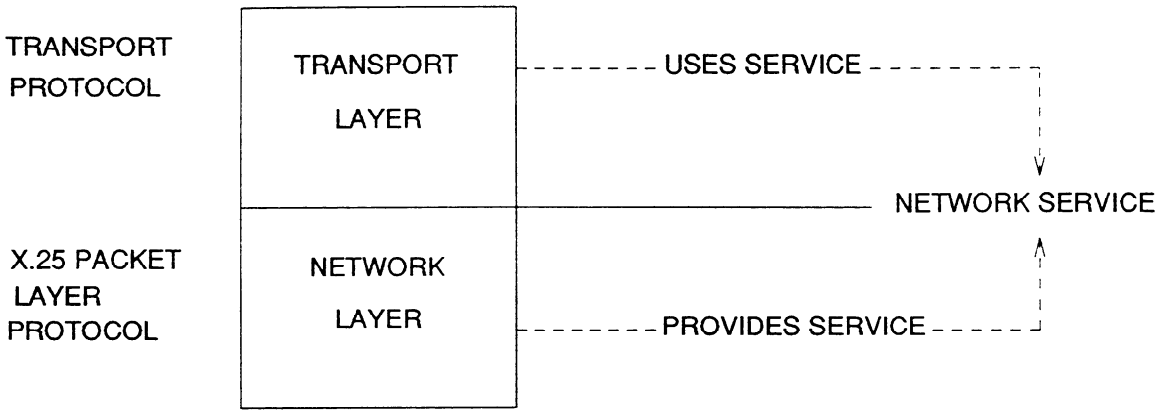


Figure 1 — Relationship of the X.25 Packet Layer Protocol to the OSI Connection-Mode Network Service

The OSI Network Service does not specify individual implementations or products nor does it constrain the implementation of entities and interfaces within a computer system.

The X.25/PLP-1984 is defined in terms of

a) procedures for Virtual Calls and Permanent Virtual Circuits;

b) formats of packets associated with these procedures;

c) procedures and formats for optional user facilities and CCITT-Specified DTE facilities.

The use of the word "Network" to name the "Network" Layer of the OSI Reference Model should be distinguished from the use of the word "network" to denote a communications network as conventionally understood. To facilitate this distinction, the term "subnetwork" is used for a collection of physical equipment, commonly called a "network" (reference CCITT Rec. X.200 | ISO 7498). Subnetworks may be either public or private networks. In the case of public networks, their properties may be determined by separate CCITT Recommendations such as CCITT Rec. X.21 for a circuit-switched network or CCITT Rec. X.25 for a packet-switched network.

Throughout the set of OSI-related 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 Network Service 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-related 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 CCITT Recommendations, by an Administration).

Information technology — Telecommunications and information exchange between systems — Use of X.25 to provide the OSI Connection-mode Network Service

1. Scope

The OSI Connection-mode Network Service (CONS) is defined in terms of a set of primitive actions and events and associated parameters. For a protocol to support this service, there must be a mapping between the abstract primitives and parameters of the CONS and the real elements of the protocol. For the X.25 Packet Layer Protocol (PLP), the main body of this International Standard provides such a mapping for the X.25/PLP-1984 using Virtual Calls.

This International Standard also provides a mapping of the CONS primitives and parameters to the X.25/PLP-1980 plus an SNDCP (Annex A). These mappings apply to the X.25 VC service. In addition, the method of selecting the appropriate mapping, if any, for different combinations of end systems and Network Layer relay systems implementing one or more of the mappings is defined (Annex B).

For the PVC service for both the X.25/PLP-1984 and the X.25/PLP-1980, a mapping of CONS primitives and parameters to the X.25/PLP is given in Annex C.

This International Standard specifies two sets of procedures from which three classes of implementation are described. The requirements of these procedures are applicable both to end system operation and to half the operation of a Network Layer relay. Where relay operation is concerned, the two halves of the relay may be the same or different classes of implementation.

This International Standard specifies the requirements to be met by a **System-1984** implementation. Implementations in this class are designed to operate directly and efficiently with other System-1984 implementations, including cases of operation across an X.25(1984) subnetwork.

This International Standard also specifies the procedures to be operated by a **System-1980** implementation. Implementations in this class are designed to operate directly with other System-1980 implementations, including cases of operation across any form of X.25 subnetwork, but will operate less efficiently than System-1984 implementations.

This International Standard also specifies the requirements to be met by a **Compatible** implementation. Implementations in this class are designed to operate directly with all other implementation classes, including cases of operation across any type of X.25 subnetwork. They make efficient use of X.25(1984) when placed in this environment.

The X.25/PLP is usually regarded as operating between an end system (i.e., a "Data Terminal Equipment" in X.25 terminology) and a packet-switched public data subnetwork. However, the X.25/PLP can also be used in other

environments to provide the OSI CONS. Examples of such other uses include

a) an end system connected to an X.25 packet-switched private data subnetwork;

b) an end system connected to a local area network;

c) direct connection or circuit-switched connection (including connection across a circuit-switched data subnetwork) of two end systems without an intervening packet-switched public data subnetwork;

d) an end system connected to an Integrated Services Digital Network.

2. Normative references

The following CCITT Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this 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 International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The CCITT Secretariat maintains a list of currently valid CCITT Recommendations.

2.1 Identical Recommendations | International Standards

— CCITT Recommendation X.213 (1992) | ISO/IEC 8348:1992, *Information Technology — Network Service Definition for Open Systems Interconnection.*

2.2 Paired Recommendations | International Standards equivalent in technical content

— CCITT Recommendation X.25 (1988), *Interface Between Data Terminal Equipment (DTE) and Data Circuit Terminating Equipment (DCE) for terminals operating in the packet-mode and connected to Public Data Networks by dedicated circuit.*

NOTE — This Recommendation is referred solely with respect to its Packet Layer Protocol description. However, this Recommendation fully specifies the behaviour of the DCE while specifying only a minimum set of requirements for the DTE. Additional guidance for the design of DTEs is available in ISO/IEC 8208.

ISO/IEC 8208:1990, *Information technology — Data communications — X.25 Packet Layer Protocol for Data Terminal Equipment.*

— CCITT Recommendation X.200 (1988), *Reference model of Open Systems Interconnection for CCITT applications.*

ISO 7498:1984, *Information processing systems — Open Systems Interconnection — Basic Reference Model.*

— CCITT Recommendation X.210 (1988), *Open Systems Interconnection layer service definition conventions.*

ISO/TR 8509:1987, *Information processing systems — Open Systems Interconnection — Service conventions.*

2.3 Additional references

— CCITT Recommendation X.96 (1988), *Call progress signals in Public Data Networks.*

3. Definitions

For the purpose of this International Standard, the following definitions apply.

3.1 Reference Model definitions

The following terms, developed and defined in the OSI Reference Model (CCITT Rec. X.200 | ISO 7498), are used:

a) Network connection
b) Network Layer
c) Network Service
d) Network Service Access Point
e) Network Service Access Point address
f) Subnetwork

3.2 Service Conventions definitions

The following terms, as they apply to the Network Layer and as defined in the OSI Service Conventions (CCITT Rec. X.210 | ISO/TR 8509), are used:

a) Network Service user
b) Network Service provider
c) primitive
d) request
e) indication
f) response
g) confirm

3.3 Network Service definitions

The following terms, as defined in the Network Service (CCITT Rec. X.213 | ISO/IEC 8348), are used:

a) Calling Network Service user
b) Called Network Service user
c) Subnetwork Point of Attachment address
d) Network Protocol Address Information
e) Initial Domain Part
f) Authority and Format Identifier
g) Initial Domain Identifier
h) Domain Specific Part

3.4 X.25 definitions

The following terms, as developed in the X.25 Packet Layer Protocol (CCITT Rec. X.25 | ISO/IEC 8208), are used:

a) virtual circuit
b) Virtual Call
c) logical channel
d) Packet Layer
e) Data Terminal Equipment
f) Data Circuit-terminating Equipment
g) DXE (either a DTE or a DCE)

3.5 X.96 definitions

The following terms, as defined in CCITT Rec. X.96, are used:

a) Category C call progress signal
b) Category D call progress signal

4. Abbreviations

4.1 Network Service abbreviations

AFI	Authority and Format Identifier
CONS	Connection-Mode Network Service
DSP	Domain Specific Part
IDI	Initial Domain Identifier
IDP	Initial Domain Part
N	Network
NC	Network-connection
NL	Network Layer
NPAI	Network Protocol Address Information
NS	Network Service
NSAP	Network Service Access Point

OSI	Open Systems Interconnection
QOS	Quality of Service
SNPA	Subnetwork Point of Attachment

4.2 X.25 abbreviations

AEF	Address Extension Facility
AF	Address Field
B-MTCN	Basic Minimum Throughput Class Negotiation (Facility)
B-TCN	Basic Throughput Class Negotiation (Facility)
D-bit	Delivery Confirmation bit
DCE	Data Circuit-terminating Equipment
DTE	Data Terminal Equipment
EDN	Expedited Data Negotiation (Facility)
EETDN	End-to-End Transit Delay Negotiation (Facility)
FPF	Facility Parameter Field
GFI	General Format Identifier
LC	Logical Channel
M-bit	More Data bit
MBS	M-bit Sequence
PLP	Packet Layer Protocol
P(R)	Packet receive sequence number
P(S)	Packet send sequence number
PVC	Permanent Virtual Circuit
Q-bit	Qualifier bit
TDSAI	Transit Delay Selection And Indication (Facility)
VC	Virtual Call

5. Overview

The Network Service (NS) provides for the transparent transfer of data between NS users. It makes invisible to these NS users the way in which supporting communications resources are utilized to achieve this transfer.

5.1 Elements of the X.25/PLP-1984 used to support the OSI CONS

The X.25/PLP-1984, as defined by CCITT Rec. X.25 | ISO/IEC 8208, provides a specific realization for the transparent transfer of data between NS users of the CONS. The elements of this protocol to be considered are

a) the virtual-circuit types;

b) the packet types and fields to be mapped to the primitives and parameters of the OSI CONS;

c) the optional user facilities and CCITT-Specified DTE facilities.

Of the two types of virtual circuits defined in CCITT Rec. X.25 | ISO/IEC 8208, the use of Virtual Calls (VCs) is mapped to the network connection (NC) establishment and release phases of the OSI CONS in clauses 6 and 7 and to the data transfer phase in clauses 8-11. (The corresponding mapping for PVCs is given in Annex C.)

Table 1 lists the X.25/PLP-1984 packets and associated fields that shall be used when supporting the OSI CONS.

In addition, the following optional user facilities and CCITT-Specified DTE facilities shall be used and/or agreed to:

a) optional user facilities:

   1) Fast Select (facility used; when operating in a DTE-to-DTE environment without an intervening packet-switched network, the use of the Fast Select Facility shall also be agreed to by the two DTEs);

   2) Fast Select Acceptance (facility agreed to if operating in a packet-switched network environment);

   3) Basic Throughput Class Negotiation (facility agreed to and used);

   4) Transit Delay Selection And Indication (facility used).

b) CCITT-Specified DTE facilities:

Table 1 — Packets and fields of the X.25/PLP-1984 used to support the OSI CONS

Packet Types[1]	Fields[2]
CALL REQUEST INCOMING CALL CALL ACCEPTED CALL CONNECTED	General Format Identifier[3], Address Field, Facility Field, Call and Called User Data Field[4]
CLEAR REQUEST CLEAR INDICATION	Clearing Cause Field, Diagnostic Code Field, Address Field, Facility Field, Clear User Data Field[4]
DATA	D-bit, M-bit, P(S)[5], P(R)[5], User Data Field[4]
INTERRUPT	Interrupt User Data Field[4]
RECEIVE READY[6] RECEIVE NOT READY[6] REJECT[6] (if agreed to)	P(R)[5]
RESET REQUEST RESET INDICATION	Resetting Cause Field, Diagnostic Code Field
RESTART INDICATION	Restarting Cause Field, Diagnostic Code Field

Notes to Table 1:

1 — The packets shown in the table are used in support of the primitives of the OSI CONS. Other packets not shown in the table (i.e., CLEAR CONFIRMATION, INTERRUPT CONFIRMATION, RESET CONFIRMATION, and RESTART CONFIRMATION packets) are essential to the use of the packets shown. Yet other packets (i.e., RESTART REQUEST, DIAGNOSTIC, REGISTRATION REQUEST, and REGISTRATION CONFIRMATION packets) have no relationship to the provision of the OSI CONS.

2 — The information in the fields shown in the table have a direct relationship to the parameters associated with the primitives of the OSI CONS. Other fields not shown in the table (e.g., the Logical Channel Identifier, the Packet Type Identifier, the Q-bit, the Address Length Fields, and the Facility Length Field) are essential to the use of the appropriate packets.

3 — Bit 7 of octet 1 of the General Format Identifier (GFI) in these packets is used to negotiate the overall availability of the Delivery Confirmation bit (D-bit) in support of the Receipt Confirmation Service. As such, this bit has no specific field-name as defined in the X.25/PLP-1984.

4 — All user data fields are octet aligned.

5 — The P(S) and P(R) fields are essential to the operation of the X.25/PLP-1984 in providing the Receipt Confirmation Service.

6 — The action implied by these packets has no relationship to the primitives of the OSI CONS. However, the P(R) field is essential to the operation of the X.25/PLP-1984 in providing the Receipt Confirmation Service.

1) Called Address Extension (facility used);

2) Calling Address Extension (facility used);

3) End-to-End Transit Delay Negotiation (facility used);

4) Expedited Data Negotiation (facility used);

5) Basic Minimum Throughput Class Negotiation (facility used);

6) Priority (facility used with 1988 or later versions of the X.25/PLP).

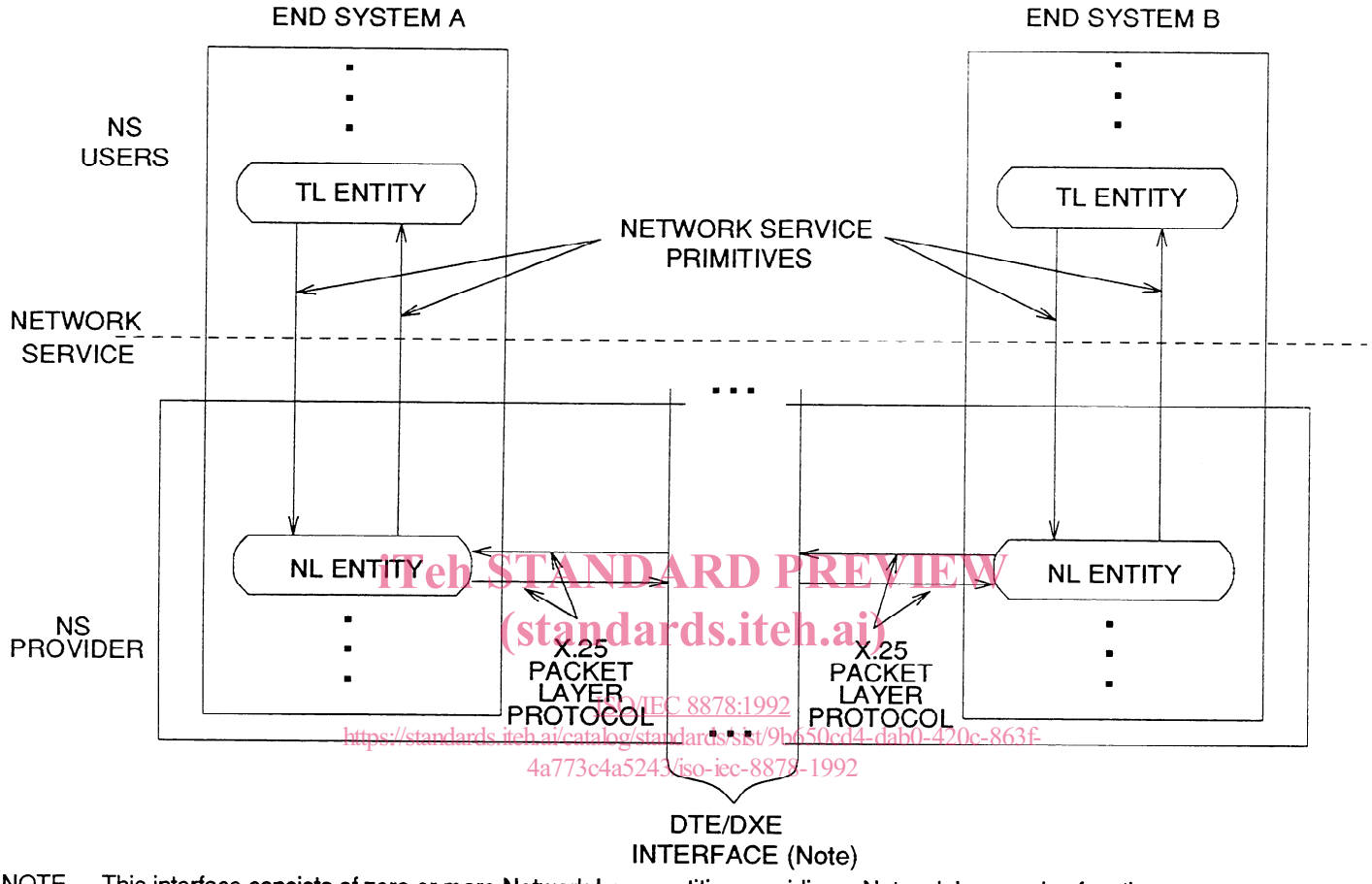
5.2 General operation of the X.25/PLP-1984 for supporting the OSI CONS

The X.25/PLP-1984 can be used to provide the OSI CONS in an end system connected to a public or private X.25 packet-switched subnetwork. It can also be used in environments where the end system is connected to a Local Area Network or where end systems are connected by a dedicated path or by a circuit-switched connection.

As shown in Figure 2, the NS provider (more particularly, the Network Layer (NL) entity in an end system) must provide a translation between

a) the primitives and parameters of the OSI CONS;

b) the packets and associated fields of the X.25/PLP-1984.



NOTE — This interface consists of zero or more Network Layer entities providing a Network Layer relay function.

Figure 2 — Operation of OSI Connection-Mode Network Service and X.25 Packet Layer Protocol (1984)

Request and response primitives are translated into packets to be transmitted across the DTE/DXE interface by the NL entity. Received packets, where appropriate, are translated by the NL entity into indication and confirm primitives.

Annex E provides additional considerations on the relationship between the X.25 protocol procedures and the CONS primitives.

NOTE — The Network Service Definition specifies valid sequences of primitives at an NC endpoint and valid parameter responses at the called NC endpoint to Receipt Confirmation negotiation, Expedited Data negotiation, and Quality of Service (QOS) parameter negotiation. The necessity for the NL entity to monitor compliance and the actions to be taken on non-compliance are a local matter, and not subject to standardization.

There is also a relationship between some local mechanism used to identify a particular NC and a Logical Channel (LC) number used to identify a particular virtual circuit. This relationship is a local matter and is not discussed here.

6. Network connection establishment phase

6.1 Primitive/Parameter and packet/field relationships

Table 2 shows the relationships between the primitives/parameters used during the NC establishment phase and the packets/fields associated with the call setup procedures.

Table 2 — CONS:X.25/PLP-1984 mapping for the NC establishment phase

CONS	X.25/PLP-1984
PRIMITIVES:	**PACKETS:**
N-CONNECT request	CALL REQUEST
N-CONNECT indication	INCOMING CALL
N-CONNECT response	CALL ACCEPTED
N-CONNECT confirm	CALL CONNECTED
PARAMETERS:	**FIELDS (INCLUDING FACILITIES):**
Called Address	Called DTE Address Field Called Address Extension Facility
Calling Address	Calling DTE Address Field Calling Address Extension Facility
Responding Address	Called DTE Address Field Called Address Extension Facility
Receipt Confirmation Selection	General Format Identifier[1)]
Expedited Data Selection	Expedited Data Negotiation Facility
QOS-Parameter Set	Basic Throughput Class Negotiation Facility[2)] Basic Minimum Throughput Class Negotiation Facility Transit Delay Selection And Indication Facility End-to-End Transit Delay Negotiation Facility Priority Facility
NS-User-Data	Call and Called User Data Field Fast Select Facility[3)]

Notes to Table 2:

1 — Bit 7 of octet 1 of the GFI in call setup packets is used to negotiate the overall availability of the D-bit in support of the Receipt Confirmation Service. As such, this bit has no specific field-name as defined in the X.25/PLP-1984.

2 — For proper operation, this optional user facility shall also be agreed to for use on the interface.

3 — For proper operation, the Fast Select Acceptance Facility shall also be agreed to on the interface when accessing a packet-switched network.

6.2 Procedures

6.2.1 Primitive/Packet mapping

When an NL entity receives an N-CONNECT request or an N-CONNECT response primitive from an NS user, it transmits a CALL REQUEST or a CALL ACCEPTED packet, respectively, across the DTE/DXE interface.

When an NL entity receives an INCOMING CALL or a CALL CONNECTED packet, it signals an N-CONNECT indication or an N-CONNECT confirm primitive, respectively, to the NS user.

6.2.2 Network addresses

Local operation determines the contents of the Network Protocol Address Information (NPAI) and whether Network Addresses, where explicitly supplied, are mapped to and from the Address Field (AF) or the Address Extension Facilities (AEF) of X.25/PLP-1984 call setup packets. Annex F describes guidelines for the methods by which the required AF contents may be derived from the Network Address. The permitted techniques for the placement of Network Addresses in either the AF or AEF are given in this clause. The encoding techniques to be employed are those specified in CCITT Rec. X.25 | ISO/IEC 8208 for the AF and AEF. The content of these fields shall be in the preferred binary encoding defined in CCITT Rec. X.213 | ISO/IEC 8348. Examples of encoding Network Addresses in the NPAI of the X.25/PLP-1984 are also given in Annex F.

6.2.2.1 Encoding of Network addresses

6.2.2.1.1 Use of the Address Field (AF)

Under certain conditions, the Network Address, as defined in CCITT Rec. X.213 | ISO/IEC 8348, may be conveyed entirely in the AF. These conditions are

a) the Network Address consists solely of the Initial Domain Part (IDP) (i.e., the Domain Specific Part (DSP) is null);

b) the Authority and Format Identifier (AFI) can be deduced from the contents of the AF (e.g., with knowledge of the subnetwork to which the DTE is attached);

c) the Initial Domain Identifier (IDI) is the same as the Subnetwork Point of Attachment (SNPA) Address.

When all of the above conditions are satisfied, the AF may be used to convey the semantics of the entire Network Address (the AFI is implied and the contents of the AF are equivalent to the IDI). In these cases, the AEF may also be used (see 6.2.2.1.2).

NOTE — The use of the preferred binary encoding results in binary-coded decimal digits in the AF, as required by CCITT Rec. X.25 | ISO/IEC 8208.

6.2.2.1.2 Use of the AEF

If any of the conditions in 6.2.2.1.1 are not satisfied, the AEF shall be used. The Network Address, complete with AFI, is placed in the AEF (bits 8 and 7 of the first octet of the Facility Parameter Field (FPF) of the AEF are both set to zero). In this case, the contents of the AF are not defined by this International Standard. Guidelines for their derivation are given in Annex F.

6.2.2.2 Decoding of Network addresses

If, after decoding the Network address as specified in the subclauses below, the Network address does not exist, then the NL entity clears the call by transmitting a CLEAR REQUEST packet across the DTE/DXE interface with a clearing cause code of "DTE Originated." It is recommended that the diagnostic code value be set to 232 (or 224), "Connection Rejection — NSAP Unreachable (Permanent Condition)." The NL entity shall not signal any primitive to the NS User.

6.2.2.2.1 Absent AEF case

If the AEF is not present, then local knowledge is required by the receiving NL entity to determine whether a Network Address is to be deduced from the content of the AF. If this local knowledge indicates that a Network Address is present, its abstract syntax is as follows:

a) the AFI is deduced from knowledge of the subnetwork from which the packet was received;

b) the IDI is the same as the contents of the AF;

c) the DSP is absent.

If insufficient local knowledge exists to derive a Network Address from a received AF-only Called Address in an INCOMING CALL packet, then the call is rejected by transmission of a CLEAR REQUEST packet across the DTE/DXE interface with a clearing cause code of "DTE Originated." The diagnostic code value is recommended to be set to 232 "Connection Rejection — NSAP Unreachable (Permanent Condition)".

6.2.2.2.2 AEF case

If the AEF is present and bits 8 and 7 of the leading octet of the FPF are both set to zero, then the Network Address is contained entirely within the AEF. The abstract syntax is as follows:

a) the AFI is contained within the first two digits of the AEF;

b) the IDI is the remainder of the IDP after any leading and trailing padding digits are discarded;

c) the DSP, if present, constitutes the remainder of the AEF content after any trailing padding digits are discarded.

If a Network Address cannot be derived from the Called AEF in an INCOMING CALL packet, then the call is rejected by transmission of a CLEAR REQUEST packet across the DTE/DXE interface with a clearing cause code of "DTE Originated." It is recommended that the diagnostic code value be set to 232 (or 224) "Connection Rejection — NSAP Unreachable (Permanent Condition)."

6.2.3 Receipt Confirmation selection

Bit 7 of octet 1 in the GFI of X.25/PLP-1984 call setup packets is mapped to/from the Receipt Confirmation Selection parameter of N-CONNECT primitives.

If the Receipt Confirmation Selection parameter of the N-CONNECT request primitive indicates "use of Receipt Confirmation," then the NL entity, if it can support the D-bit procedure as defined in 8.2.3 and 9.2.1, sets bit 7 of the GFI to 1 to indicate use of receipt confirmation during the data transfer phase. If "no use of Receipt Confirmation" is indicated or the NL entity cannot support the D-bit procedure, then bit 7 is set to 0.

When an NL entity receives an INCOMING CALL packet with bit 7 of the GFI set to 1 but it cannot support the D-bit procedure, it indicates "no use of Receipt Confirmation" in the Receipt Confirmation Selection parameter of the N-CONNECT indication primitive signaled to the Called NS user. Otherwise, if bit 7 of the GFI is set to 1 (respectively, 0), then the NL entity indicates "use (respectively, no use) of Receipt Confirmation" in the Receipt Confirmation Selection parameter of the N-CONNECT indication primitive signaled to the Called NS user.

When an NL entity receives an N-CONNECT response primitive with the Receipt Confirmation Selection parameter indicating "use (respectively, no use) of Receipt Confirmation," it sets bit 7 of the GFI in the CALL ACCEPTED packet to 1 (respectively, 0).

When an NL entity receives a CALL CONNECTED packet with bit 7 of the GFI set to 1 (respectively, 0), it indicates "use (respectively, no use) of Receipt Confirmation" in the Receipt Confirmation Selection parameter of the N-CONNECT confirm primitive signaled to the Calling NS user.

6.2.4 Expedited Data selection

The Expedited Data Negotiation (EDN) Facility of the X.25/PLP-1984 is mapped to/from the Expedited Data Selection parameter of N-CONNECT primitives.

If the Expedited Data Selection parameter of the N-CONNECT request primitive indicates "use of Expedited Data," then the NL entity, if it can support the Interrupt procedure using 32-octet INTERRUPT packets, encodes the EDN Facility in the CALL REQUEST packet to indicate use of expedited data during the data transfer phase. If "no use of Expedited Data" is indicated or the NL entity cannot support 32-octet INTERRUPT packets, then the EDN Facility shall be either encoded to indicate no use of expedited data or omitted.

When an NL entity receives an INCOMING CALL packet with no EDN Facility or with the EDN Facility indicating use of expedited data but it cannot support 32-octet INTERRUPT packets, it indicates "no use of Expedited Data" in the Expedited Data Selection parameter of the N-CONNECT indication primitive signaled to the Called NS user. Otherwise, if the EDN Facility indicates use (respectively, no use) of expedited data, then the NL entity indicates "use (respectively, no use) of Expedited Data" in the Expedited Data Selection parameter of the N-CONNECT indication primitive signaled to the Called NS user.

When an NL entity receives an N-CONNECT response primitive with the Expedited Data Selection parameter indicating "use of Expedited Data," it encodes the EDN Facility in the CALL ACCEPTED packet to indicate use of expedited data. If the Expedited Data Selection parameter indicates "no use of Expedited Data," then the EDN Facility shall be either encoded to indicate no use of expedited data or omitted.

When an NL entity receives a CALL CONNECTED packet with the EDN Facility indicating use (respectively, no use) of expedited data, it indicates "use (respectively, no use) of Expedited Data" in the Expedited Data Selection