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AMENDMENT 3
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Information technology — Data communications — X.25 Packet Layer Protocol for Data Terminal Equipment

AMENDMENT 3: Conformance requirements

Technologies de l'information — Communication de données — Protocole X.25 de couche paquet pour terminal de données

AMENDEMENT 3: Prescriptions de conformité

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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.

Amendment 3 to International Standard ISO/IEC 8208 : 1990 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology.*

Introduction

This amendment to ISO/IEC 8208: 1990 consists of four items to be added to ISO/IEC 8208:1990. The two main items are a new clause 21 which states the conformance requirements for implementations of ISO/IEC 8208, and a new annex containing the Protocol Implementation Conformance Statement (PICS) proforma for ISO/IEC 8208:1990. The other two items add related material to clauses 1 and 2 (Scope and Normative references). The remaining clauses 3 to 20, and the present annexes, of ISO/IEC 8208:1990 are unchanged by this amendment.

Information technology — Data communications — X.25 Packet Layer Protocol for Data Terminal Equipment

AMENDMENT 3: Conformance requirements

Instructions for amending ISO/IEC 8208 : 1990 are given in italics and numbered from 1 to 4; clause numbers and titles in this amendment correspond to those in ISO/IEC 8208 : 1990.

1 Scope

1. Add the following paragraph at the end of clause 1, Scope.

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented. Such a statement is called a Protocol Implementation Conformance Statement (PICS), as defined in ISO/IEC 9646-1. This International Standard provides the PICS proforma in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-2.

2 Normative references

2. Add the following references in clause 2, Normative references, after that for ISO/IEC 9574:1989.

ISO/IEC 9646-1:1991, *Information technology — OSI conformance testing methodology and framework — Part 1: General concepts.*

ISO/IEC 9646-2:1991, *Information technology — OSI conformance testing methodology and framework — Part 2: Abstract test suite specification.*

3. Add the following new clause 21.

21 Conformance

21.1 Static conformance

NOTE — Many DTE capabilities are optional. Designers of DTEs should be aware that use by a DTE of certain options to the exclusion of others may adversely affect the DTE's general interconnection capabilities, since complementary options may not be supported by the DXE or remote DTE (for example, the use of only modulo 128 packet sequencing, or use of only Fast Select in call setup).

21.1.1 General requirements

A DTE that claims conformance to this International Standard shall implement:

a) either Permanent Virtual Circuit Service or Virtual Call Service (and may support both);

b) operation in either a DTE/DCE or DTE/DTE environment (and may support both);

c) in the case of operation in a DTE/DTE environment, operation with the role as DTE or DCE either

1) initialized to DTE, or
2) initialized to DCE, or
3) dynamically selected according to the procedures in 4.5

(and may support more than one of these methods of role selection);

d) either modulo 8 packet sequencing or modulo 128 packet sequencing (and may support both);

e) the functions specified in table 37 as Mandatory or as Conditional when the relevant conditions apply, according to the procedures specified in the clauses to which the table items refer;

f) the timers and retransmission counters specified in table 38 as Mandatory, or as Conditional when the relevant conditions apply;

g) the mapping onto the Data Link Layer as specified in clause 3, third items (a) to (c); 3.3 first item (d); clause 10; and 12.1 (Data Link Layer Information Fields, Data Link Service data units)

Such a DTE shall not implement the functions specified in table 37 as Prohibited, when the relevant conditions apply.

Table 37 — DTE capabilities for static conformance

Item no.	DTE capability [Clauses specifying the corresponding procedures]	Service: PVC	VC
1	Restarting the packet layer:		
1a	- as initiator [4, 4.1, 4.3, 4.4]	M	M
1b	- as responder [4, 4.2, 4.3, 4.4]	M	M
2	Support of DIAGNOSTIC packet:		
2a	- receipt [11.1]	M	M
2b	- sending [11.1]	/DCE: X /DTE: O	/DCE: X /DTE:O
3	Virtual Call setup:		[M]
3a	- initiating an outgoing VC, with subsequent acceptance or rejection [5, 5.2.1, 5.2.4, 5.2.5, 5.5.2, 5.5.4] (Note 1)	-	O
	Receiving an incoming VC and responding by:		
3b	- acceptance [5, 5.2.2, 5.2.3, 5.2.5] (Note 1)	-	O
3c	- rejection [5, 5.2.2, 5.2.5, 5.3, 5.5, 5.5.1, 5.5.3, 5.5.4] (Notes 1, 2)	-	O
4	Aborting an outgoing VC attempt, by clearing [5.4, 5.5, 5.5.1, 5.5.3, 5.5.4] (Note 3)	-	O
5	Clearing an established VC (Note 3)		
5a	- as initiator [5.5, 5.5.1, 5.5.3, 5.5.4]	-	O
5b	- as responder [5.5, 5.5.2, 5.5.4]	-	O
6	Response to errors and unsupported packets on an assigned logical channel - expiry of T21 [5.2.1, 5.4] or R22 [8.1] - received packets causing the ERROR procedure in Call Setup and Call Clearing states [table 33] - received CLEAR INDICATION if clearing as responder is not supported (item 5b) - received RESET INDICATION if resetting as responder is not supported (item 8b) by:	-	[M]
6a	- initiating clearing		O
6b	- initiating restarting (Notes 4, 5, 6, 7)		O
6c	- other		X
7	Response to other errors and to receipt of other unsupported packets, or fields of packets, on an assigned logical channel, by:	[M]	[M]
7a	- initiating clearing [6.3, 6.4, 6.6, 6.8.1, 6.8.2,	-	O
7b	- initiating restarting 7.1.3, 7.1.4, 8.2, 11.2.1,	O	O
7c	- initiating resetting 13.4.1, tables 34, 35, 36]	O	O
7d	- other (Notes 5, 6, 7, 8)	X	X
8	Resetting a logical channel:		
8a	- as initiator [8, 8.1, 8.3, 8.4] (Note 9)	O	O
8b	- as responder [8, 8.2, 8.3, 8.4] (Note 10)	O	O

Where:

M	=	Mandatory	X	= Prohibited	O = Optional

[M] = at least one of the items in this group shall be supported
-    = not applicable to the PVC service
/DCE: = specification for operation in a DTE/DCE environment
/DTE: = specification for operation in a DTE/DTE environment

NOTES

1   The reference to 5.2.5 (call collision) applies only if two-way logical channels are supported.

2   Rejection because of errors is covered by item 6.

Table 37 (concluded)

3 Although many implementations that support VCs will be designed to implement call clearing as a matter of course, clearing is classed as optional because implementations are free to initiate a restart at any time; some implementations, therefore, may exercise this freedom in situations where call clearing would otherwise apply.

4 This item does not include unrecognized or unsupported facility codes within a Facilities Field (15.1).

5 Where optional capabilities are specified for these items, the DTE may choose any permitted option on each occasion that an error, etc., occurs, independently of the options chosen on other occasions or for other errors, etc.

6 Packets with LCI = 0 are excluded, since that is not an assigned logical channel (figure 1).

7 The clauses and tables listed are those specifying the occurrence of errors: items 5, 8 and 9 cover the error procedures themselves.

8 Although many implementations will be designed to reset on the errors covered by item 7, resetting is classed as optional in item 7 because implementations are free to initiate a restart, or to initiate clearing of a virtual call, at any time; some implementations, therefore, may exercise this freedom in situations where resetting would otherwise apply.

9 Initiation of resetting is optional: a) because of the considerations in Note 8 with respect to events internal to the packet layer; and b) because initiation of resetting on request from the higher-layer entity is intrinsically optional, in that an implementation could be designed for use specifically by a higher-layer entity that in turn is designed never to request resetting.

10 Although many implementations will be designed to reset a logical channel by responding to a reset, response to resetting is classed as optional because implementations are free to initiate restarting, or to initiate clearing of a virtual call, at any time; some implementations, therefore, may exercise this freedom in situations where resetting would otherwise apply.

Table 38 - Static conformance: required timers and retransmission counters

T20	Restart Request Response Timer	and	R20	Restart Request Retransmission Counter	M
T21	Call Request Response Timer				C.1
T22	Reset Request Response Timer	and	R22	Reset Request Retransmission Counter	C.2
T23	Clear Request Response Timer	and	R23	Clear Request Retransmission Counter	C.3
T24	Window Status Transmission Timer				C.4
T25	Window Rotation Timer	and	R25	Data Packet Retransmission Counter	C.5
T26	Interrupt Response Timer				C.6
T27	Reject Response Timer	and	R27	Reject Retransmission Counter	C.7
T28	Registration Request Response Timer	and	R28	Registration Request Retransmission Counter	C.8

Where: M = Mandatory   C.n = Conditional, as follows:

C.1 = required if the DTE initiates Virtual Calls
C.2 = required if the DTE initiates resetting
C.3 = required if the DTE implements the Virtual Call service and initiates clearing
C.4 = required if the DTE implements the optional procedure for window status transmission, specified in 11.2.2
C.5 = required if the DTE implements either of the optional procedures relating to the receipt of window rotation information, specified in 11.2.1
C.6 = required if the DTE supports sending of Interrupt data
C.7 = required if the DTE supports the optional user facility for Packet Retransmission
C.8 = required if the DTE supports the optional user facility for On-line Facility Registration

21.1.2 Options

A DTE that claims conformance to this International Standard is not required to:

a) send DIAGNOSTIC packets (3.3, second item (d); 11.1);

b) support any optional user facilities (clause 13);

c) support any optional CCITT-specified DTE facilities (clause 14);

d) transmit a specific value of the Q-bit in DATA packets

(6.6);

e) support either the use of the D-bit, or the optional mechanism for negotiating use or non-use of the D-bit (6.3);

f) transmit specific diagnostic code values when originating restarting, clearing or resetting (tables 24 and 25; 12.2.3.1, 12.5.1, 12.6.1);

g) implement transient states r3, p3, p7, d3, j2;

h) transmit RNR packets (7.1.6).

3

j) implement any of the optional procedures relating to non-receipt of window rotation information (11.2.1, 11.2.2);

k) implement either of the non-standard alternative modes of recovery from receipt of out of sequence DATA packets (11.3 (b) and (c));

l) support Interrupt data transfer (6.8);

m) support transfer of user data in call setup and clearing packets (5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.5.1, 5.5.2);

n) support DATA packet transfer (clause 6);

p) support DATA packets with the M-bit set to 1 (6.4, 6.7);

q) transmit updated window rotation information (7.1.3);

r) transmit RR packets (7.1.5)

In items (b), (c), (e), (l), (m), (n) and (p) support refers to transmission and reception, independently.

NOTE — Non-support by a DTE of any of items (l) to (r), and to a lesser extent of item (d), would normally be appropriate only for an unusual and highly application-specific implementation; these items, although strictly optional, are generally expected to be part of the normal functionality of a DTE.

21.2 Protocol Implementation Conformance Statement

The supplier of a protocol implementation which is claimed to conform to this International Standard shall complete a copy of the PICS proforma provided in annex C, including the information necessary to identify fully both the supplier and the implementation.

21.3 Dynamic conformance

A DTE for which conformance to this International Standard is claimed shall exhibit external behaviour consistent with having implemented, for each function that the PICS states to be supported,

a) the corresponding Packet Layer procedures and
b) the encoding of any transmitted packets

as specified in the clauses to which the PICS proforma entry for the function refers, and using the Data Link Layer as specified in 3.3, clause 10, and 12.1.

4. Add a new normative annex C as follows.

Annex C *
(normative)

PICS Proforma

C.1   Introduction

The supplier of a protocol implementation which is claimed to conform to ISO/IEC 8208 : 1990 shall complete the following Protocol Implementation Conformance Statement (PICS) proforma.

A completed PICS proforma is the PICS for the implementation in question. The PICS is a statement of which capabilities and options of the protocol have been implemented. The PICS can have a number of uses, including use:

— by the protocol implementor, as a check-list to reduce the risk of failure to conform to the standard through oversight;

— by the supplier and acquirer – or potential acquirer – of the implementation, stated relative to the common basis for understanding provided by the standard PICS proforma;

— by the user – or potential user – of the implementation, as a basis for initially checking the possibility of interworking with another implementation (note that, while interworking can never be guaranteed, failure to interwork can often be predicted from incompatible PICSs);

— by a protocol tester, as the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

C.2   Abbreviations and special symbols

C.2.1   Status symbols

M   mandatory
O   optional
O.n   optional, but support of at least one of the group of options labelled by the same numeral *n* is required
X   prohibited
pred: conditional-item symbol, including predicate identification: see C.3.4
¬   logical negation, applied to a conditional item's predicate

C.2.2   General abbreviations

LC   logical channel

N/A   not applicable
PICS   Protocol Implementation Conformance Statement
PVC   Permanent Virtual Circuit

C.2.3   Item references

PICS items dealing with related functions are identified by item references sharing the same initial letter or letter-pair (in capitals). There follow two lists of those initials, first in the order in which the items occur in the PICS proforma, and then in alphabetical order.

C.2.3.1   In order of occurrence

V   permanent Virtual circuit or Virtual call service
E   Environment: DTE/DCE or DTE/DTE; X.25 1988, 1984 or 1980
M   Modulo 8 or Modulo 128 packet sequence numbers
RN   Reference Number optional user facility

L   Link layer interactions
P   general Packet formatting
Z   packet layer functions independent of logical channels (packets with LC identifier Zero)
S   call Setup
SP   call Setup Packets
DN   D-bit Negotiation
C   call Clearing
CP   call Clearing Packets
RS   ReSetting of logical channels
W   error procedures (response to Wrong behaviour)
I   Interrupt transfer
DS   Data packet Sending
DR   Data packet Receiving
DC   Delivery Confirmation

Y   cause and diagnostic code values (whY resets, etc., initiated)
O   Observability of transient states
B   X.25 (1980) interworking: Backward compatibility
N   X.25 Network differences from ISO/IEC 8208

FS   Facilities Sent during call setup and clearing
FR   Facilities Received during call setup and clearing
GS   reGistration facilities Sent
GR   reGistration facilities Received

V   parameter Values and ranges
T   Timers
R   Retransmission counts
LC   Logical Channel ranges

A   Additional information
X   eXception information

C.2.3.2   In alphabetical order

A   Additional information
B   X.25 (1980) interworking: Backwards compatibility
C   call Clearing
CP   call Clearing Packets
DC   Delivery Confirmation
DN   D-bit Negotiation
DR   Data packet Receiving
DS   Data packet Sending
E   Environment: DTE/DCE or DTE/DTE; X.25 1988, 1984 or 1980
FR   Facilities Received during call setup and clearing
FS   Facilities Sent during call setup and clearing
GR   reGistration facilities Received
GS   reGistration facilities Sent
I   Interrupt transfer
L   Link layer interactions
LC   Logical Channel ranges
M   Modulo 8 or Modulo 128 packet sequence numbers
N   X.25 Network differences from ISO/IEC 8208
O   Observability of transient states
P   general Packet formatting
R   Retransmission counts
RN   Reference Number optional user facility
RS   ReSetting of logical channels
S   call Setup
SP   call Setup Packets
T   Timers
V   permanent Virtual circuit or Virtual call service
Vn parameter Values and ranges
W   error procedures (response to Wrong behaviour)
X   eXception information
Y   cause and diagnostic code values (whY resets, etc., initiated)
Z   packet layer functions independent of logical channels (packets with LC identifier Zero)

C.3   Instructions for completing the PICS proforma

C.3.1   General structure of the PICS proforma

The first part of the PICS proforma – Identification, C.4 – is to be completed as indicated with the information necessary to identify fully both the supplier and the implementation.

The main part of the PICS proforma is a fixed-format questionnaire divided into six major subclauses; these can be divided into further subclauses each containing a group of individual items. Answers to the questionnaire items are to be provided in the rightmost column, either by simply marking an answer to indicate a restricted choice (usually Yes or No), or by entering a value or a set or range of values. Note that there are some items where two or more choices from a set of possible answers can apply: all relevant choices are to be marked.

Each item is identified by an item reference in the first column; the second column contains the question to be answered; the third column contains the reference or references to the material that specifies the item in the main body of ISO/IEC 8208 : 1990. The remaining columns record the status of the item – whether support is

mandatory, optional, prohibited or conditional – and provide the space for the answers: see also C.3.4 below. (Status is sometimes indicated by other means than a separate Status column: for example, where the same status applies to a whole group of items, as in C.8.1.)

A supplier may also provide, or can be required to provide, further information, categorized as either Additional Information or Exception Information. When present, each kind of further information is to be provided in a further subclause of items labelled Ai or Xi respectively for cross-referencing purposes, where i is any unambiguous identification for the item (e.g., simply a numeral): there are no other restrictions on its format and presentation.

A completed PICS proforma, including any Additional Information and Exception Information, is the Protocol Implementation Conformance Statement for the implementation in question.

NOTE — Where an implementation is capable of being configured in more than one way according, for example, to the items in C.5, a single PICS may be able to describe all such configurations. However, the supplier has the choice of providing more than one PICS, each covering some subset of the implementation's configuration capabilities, in case that makes for easier and clearer presentation of the information.

C.3.2   Additional Information

Items of Additional Information allow a supplier to provide further information intended to assist the interpretation of the PICS. It is not intended or expected that a large quantity will be supplied, and a PICS can be considered complete without any such information. Examples might be an outline of the ways in which a (single) implementation can be set up to operate in a variety of environments and configurations; or a brief rationale – based perhaps upon specific application needs – for the exclusion of features which, although optional, are nonetheless commonly present in implementations of the X.25 packet layer protocol.

References to items of Additional Information may be entered next to any answer in the questionnaire, and may be included in items of Exception Information.

C.3.3   Exception Information

It may occasionally happen that a supplier will wish to answer an item with mandatory or prohibited status (after any conditions have been applied) in a way that conflicts with the indicated requirement. No pre-printed answer will be found in the Support column for this: instead, the supplier shall write the missing answer into the Support column, together with an Xi reference to an item of Exception Information, and shall provide the appropriate rationale in the Exception item itself.

An implementation for which an Exception item is required in this way does not conform to ISO/IEC 8208 : 1990.

NOTE — A possible reason for the situation described above is that a defect in this International Standard has been reported, a correction for which is expected to change the requirement not met by the implementation.

C.3.4   Conditional status

C.3.4.1   Conditional items

The PICS proforma contains a number of conditional items. These are items for which the status – mandatory, optional or prohibited – that applies is dependent upon whether or not certain other items are supported.

In many cases, whether or not the item applies at all is conditional in this way, as well as the status when the item does apply.

Where a group of items is subject to the same condition for applicability, a separate preliminary question about the condition appears at the head of the group, with an instruction to skip to a later point in the questionnaire if the "Not Applicable" answer is selected. Otherwise, individual conditional items are indicated by one or more conditional symbols (on separate lines) in the Status column.

A conditional symbol is of the form "**pred**: S" where **pred** is a predicate as described in C.3.4.2 below, and S is one of the status symbols M, O, O.n or X.

If the value of the predicate in any line of a conditional item is true (see C.3.4.2), the conditional item is applicable, and its status is that indicated by the status symbol following the predicate: the answer column is to be marked in the usual way. If the value of a predicate is false, the Not Applicable (N/A) answer is to be marked in the relevant line. (Each line in a multi-line conditional item should be marked: at most one line will require an answer other than N/A.)

C.3.4.2   Predicates

A predicate is one of the following:

a) an item-reference for an item in the PICS proforma: the value of the predicate is true if the item is marked as supported, and is false otherwise; or

b) a predicate name, for a predicate defined elsewhere in the PICS proforma: see below; or

c) the logical negation symbol "¬" prefixed to an item-reference or predicate name: the value of the predicate is true if the value of the predicate obtained by omitting the "¬" symbol is false, and vice versa.

The definition for a predicate name is a boolean expression constructed by combining simple predicates, as at (a) or (b) above, using the boolean operators AND, OR and NOT, and parentheses, in the usual way. The value of such a predicate is true if the boolean expression evaluates to true when the item-references are interpreted as at (a) above.

Each item whose reference is used in a predicate or predicate definition is indicated by an asterisk in the Item column.

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C.4   Identification

C.4.1   Implementation identification

Supplier	
Contact point for queries about the PICS	
Implementation Name(s) and Version(s)	
Other information necessary for full identification – e.g., name(s) and version(s) of machines and /or operating systems; system names	

NOTES

1   Only the first three items are required for all implementations; other information may be completed as appropriate in meeting the requirement for full identification.

2   The terms Name and Version should be interpreted appropriately to correspond with a supplier's terminology (e.g., Type, Series, Model).

C.4.2   Protocol summary

Identification of protocol specification	ISO/IEC 8208 : 1990 ISO/IEC 8208 : 1990/Amd.1 : 1990			
Identification of amendments and corrigenda to this PICS proforma which have been completed as part of this PICS	ISO/IEC 8208 : 1990/			
	Amd.	:	Corr.	:
	Amd.	:	Corr.	:
	Amd.	:	Corr.	:
	Amd.	:	Corr.	:
Have any Exception items been required (see C.3.3)? (The answer Yes means that the implementation does not conform to ISO/IEC 8208 : 1990)	No ☐		Yes ☐	

Date of Statement	

C.5   General DTE Characteristics

Item	Protocol Feature	References	Status	Support		
	Service supported:					
* Vs	– Virtual Call		O.1	Yes ☐	No ☐	
* Vp	– Permanent Virtual Circuit		O.1	Yes ☐	No ☐	
	What environments are supported?	3, 3.2				
Ec/8	– DTE/DCE (1988)		O.2	Yes ☐	No ☐	
Ec/4	– DTE/DCE (1984)		O.2	Yes ☐	No ☐	
* Ec/0	– DTE/DCE (1980)		O.2	Yes ☐	No ☐	
Et/t	– DTE/DTE in fixed role as DTE		O.2	Yes ☐	No ☐	
Et/c	– DTE/DTE in fixed role as DCE		Vs: O.2	N/A ☐ Yes ☐	No ☐	
Et/d	– DTE/DTE with dynamic role selection	4.5	Vs: O.2	N/A ☐ Yes ☐	No ☐	
	What packet sequence numbering is supported?					
* M8	– Modulo 8	13.2, 12.1.1, table 3	O.3	Yes ☐	No ☐	
* M128	– Modulo 128 (extended)	13.2, 12.1.1, table 3	O.3	Yes ☐	No ☐	
	Is the Reference Number optional user facility supported, for the alternative Logical Channel Identifier assignment mechanism:	13.28, 13.28.1, 13.28.2, 13.28.3, 13.28.3, 13.28.4, figure 36,				
RNa	– without reversion to use of logical channel ranges?	13.28.2.1	Et: O	N/A ☐ Yes ☐	No ☐	
			¬Et: X	N/A ☐ No ☐		
RNb	– with possible reversion of operating mode to use logical channel ranges?	13.28.2.1	Et: O	N/A ☐ Yes ☐	No ☐	
			¬Et: X	N/A ☐ No ☐		

Predicate definitions and usage:

Et   =   Et/t OR Et/c OR Et/d   is used in items RNa, RNb, Z2s, Z4r, DS6, DS7b

Ec   =   Ec/8 OR Ec/4 OR Ec/0   is used in items Y2b, Y4b, Y6b, GS3id, GS3ig, GS4ic

RN   =   RNa OR RNb   is used in items CP2e (predicate C1rn), CP4e (predicate C2rnci), FS14, FR14

Vs is used in items Et/c, Et/d, O2, Q3, LC8; and in C.6.4, C.6.6, C.7.1, C.7.2, C.8.1, C.9.1.1, C.9.1.2, C.9.2.1, C.9.2.2, C.10.1
Vp is used in item LC7; and in C.6.6, C.10.2
Ec/0 is used in C.7.2
M8 and M128 are used in items V2s, V2r, V10s, V10r, V15s, V15r

C.6   Procedures, packet types and packet formats

C.6.1   Link layer interactions

Item	Protocol Feature	References	Status	Support	
	Is restarting of the packet layer initiated:				
L1a	— on completion of link layer initialization?	3.10	M	Yes ☐	
L1b	— on recovery from failure of the link layer?	10	M	Yes ☐	
* L2	Can packets consisting of a non-integral number of octets be received from the link layer?			Yes ☐	No ☐

Predicate usage: L2 is used in item P1

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C.6.2 General Packet formatting

Item	Protocol Feature	References	Status	Support		
P1	If Yes to L2, are such packets treated as erroneous?	11.3, 12.1, tables 31 – 36	L2: M	N/A ☐	Yes ☐	
P2	Do all transmitted packets consist of an integral number of octets?		M		Yes ☐	
	Do all transmitted packets contain the following fields, as specified in the referenced clauses and tables:	12.1				
P3a	— General Format Identifier?	12.1.1, table 3	M		Yes ☐	
P3b	— Logical Channel Identifier?	12.1.2	M		Yes ☐	
P3c	— Packet Type Identifier?	12.1.3, table 4	M		Yes ☐	
P4	Are all received packets that do not contain valid GFI, LCI and PTI fields treated as erroneous?	12.1.1, table 3, 12.1.3, 12.1.2, table 4, tables 31 – 36	M		Yes ☐	

C.6.3 Packet layer functions independent of logical channels

Item	Protocol Feature	References	Status	Support		
	Are the following packet layer functions supported?					
	Restarting the packet layer:	4, 4.3, 4.4, table 32				
Z1i	— as initiator:	4.1,	M		Yes ☐	
	send RESTART REQUEST	12.6.1,				
	receive RESTART CONFIRMATION / INDICATION	12.6.2, 12.6.1				
Z1r	— as responder:	4.2,	M		Yes ☐	
	receive RESTART INDICATION	12.6.1,				
	send RESTART CONFIRMATION	12.6.2				
Z2r	Receiving DIAGNOSTIC packet	11.1, 12.7	M		Yes ☐	
Z2s	Sending DIAGNOSTIC packet	12.7, table 24	Et: O	N/A ☐	Yes ☐	No ☐
			¬Et: X	N/A ☐		No ☐
Z3	DISCARD, or ERROR restart, on erroneous received packets not assignable to a logical channel and not covered by item Z2s	11.1, tables 31 – 32	M		Yes ☐	
*Z4i	Initiating On-line Facility Registration:	13.1, 13.1.1.1, 13.1.1.3, 13.1.1.4,	O		Yes ☐	No ☐
	send REGISTRATION REQUEST	12.9.1,				
	receive REGISTRATION CONFIRMATION	12.9.2, table 8				
*Z4r	Response to On-line Facility Registration:	13.1, 13.1.1.2, 13.1.1.4,	Et: O	N/A ☐	Yes ☐	No ☐
	receive REGISTRATION REQUEST	12.9.1,				
	send REGISTRATION CONFIRMATION	12.9.2, table 8				

Predicate usage:

Z4i is used in items T28, R28; and in C.9.1, C.9.1.1, C.9.2.1

Z4r is used in C.9.1, C.9.1.2, C.9.2.2

C.6.4   Call setup and clearing

If the Virtual Call service, item Vs, is not supported, mark N/A and continue at C.6.5:   N/A ☐

C.6.4.1   Call Setup

Item	Protocol Feature	References	Status	Support	
	Are outgoing Virtual Calls supported:	5.2.1, 5.2.5, table 33,			
S1a	— Fast Select, no restriction on response?	5.2.4, 13.16	O	Yes ☐	No ☐
S1b	— Fast Select with restricted response?	13.16	O	Yes ☐	No ☐
S1c	— non-Fast-Select?	5.2.4	O	Yes ☐	No ☐
SP1b	send CALL REQUEST, basic format	12.2.1.1	S1c: M	N/A ☐ Yes ☐	
			S1ab: O.4	N/A ☐ Yes ☐	No ☐
SP1e	send CALL REQUEST, extended format	12.2.1.1, 12.2.1.2	S1ab: O.4	N/A ☐ Yes ☐	No ☐
SP2b	receive CALL CONNECTED, basic format	12.2.2.1	S1c: M	N/A ☐ Yes ☐	
SP2e	receive CALL CONNECTED, extended format	12.2.2.1, 12.2.2.2	S1a: M	N/A ☐ Yes ☐	
	Are incoming Virtual Calls supported:	5.2.2, 5.2.5, table 33,			
S2a	— Fast Select with acceptance possible?	5.2.3, 13.17	O	Yes ☐	No ☐
S2b	— Fast Select, always cleared?	13.17	O	Yes ☐	No ☐
S2c	— non-Fast-Select with acceptance possible?	5.2.3	O	Yes ☐	No ☐
S2d	— non-Fast-Select, always cleared?	5.2.3	O	Yes ☐	No ☐
SP3b	receive INCOMING CALL, basic format	12.2.1.1	S2: M	N/A ☐ Yes ☐	
SP3e	receive INCOMING CALL, extended format	12.2.1.1, 12.2.1.2	S2ab: M	N/A ☐ Yes ☐	
SP4b	send CALL ACCEPTED, basic format	12.2.2.1	S2c: M	N/A ☐ Yes ☐	
			S2axc: O.5	N/A ☐ Yes ☐	No ☐
SP4e	send CALL ACCEPTED, extended format	12.2.2.1, 12.2.2.2	S2axc: O.5	N/A ☐ Yes ☐	No ☐
			S2anc: O	N/A ☐ Yes ☐	No ☐
	Is D-bit negotiation supported:				
DN1	— for outgoing Virtual Calls?	6.3	S1ac: O	N/A ☐ Yes ☐	No ☐
DN2	— for incoming Virtual Calls?	6.3	S2ac: O	N/A ☐ Yes ☐	No ☐

Predicate definitions and usage (use within this subclause is not explicitly noted):

```
S1       =  S1a OR S1b OR S1c              is used in items C2a, T21; and in C.8.1.1
S1ab     =  (S1a OR S1b) AND NOT S1
S1ac     =  S1a OR S1c                     is used in C.8.2.2
S2       =  S2a OR S2b OR S2c OR S2d        is used in C.8.2.1
S2ac     =  S2a OR S2c                      is used in C.8.1.2
S2ab     =  S1a OR S2b
S2axc    =  S2a AND NOT S2c
S2anc    =  S2a AND S2c
S2bd     =  S2b OR S2d                      is used in item C2b
S2acxbd  =  (S2a OR S2c) AND NOT (S2b OR S2d)    is used in item C2b
```

C.6.4.2 Call clearing

Item	Protocol Feature	References	Status	Support		
	Is call clearing supported, as:	5.5.4, table 33,				
* C1	— response to indication of clearing?	5.5.2	O		Yes ☐	No ☐
C2a	— aborting an outgoing Virtual Call attempt?	5.4, 5.5.1, 5.5.3	S1: O	N/A ☐	Yes ☐	No ☐
C2b	— rejecting an incoming Virtual Call?	5.3, 5.5.1, 5.5.3	S2bd: M	N/A ☐	Yes ☐	
			S2acxbd: O	N/A ☐	Yes ☐	No ☐
C2c	— originating clearing of an established Virtual Call?	5.5.1, 5.5.3	O		Yes ☐	No ☐
CP1b	receive CLEAR INDICATION, basic format	12.2.3.1	Cany: M	N/A ☐	Yes ☐	
CP1e	receive CLEAR INDICATION, extended format	12.2.3.1, 12.2.3.2	Cany: M	N/A ☐	Yes ☐	
CP2b	send CLEAR CONFIRMATION, basic format	12.2.4.1	C1: M	N/A ☐	Yes ☐	
CP2e	send CLEAR CONFIRMATION, extended format	12.2.4.1, 12.2.4.2	C1rn: M	N/A ☐	Yes ☐	
CP3b	send CLEAR REQUEST, basic format	12.2.3.1	C2a: M	N/A ☐	Yes ☐	
			C2bcxa: O.6	N/A ☐	Yes ☐	No ☐
CP3e	send CLEAR REQUEST, extended format	12.2.3.1, 12.2.3.2	C2bcxa: O.6	N/A ☐	Yes ☐	No ☐
			C2axbc: X	N/A ☐		No ☐
CP4b	receive CLEAR CONFIRMATION, basic format	12.2.4.1	C2: M	N/A ☐	Yes ☐	
CP4e	receive CLEAR CONFIRMATION, extended format	12.2.4.1, 12.2.4.2	C2rnci: M	N/A ☐	Yes ☐	

Predicate definitions and usage (use within this subclause is not explicitly noted):

```
C1rn    =   C1 AND RN
C2      =   C2a OR C2b OR C2c                          is used in items T23, R23; and in C.7.1, C.8.1.3, C.8.2.4
C2any   =   C1 OR C2a OR C2b OR C2c
C2bc    =   C2b OR C2c
C2bcxa  =   (C2b OR C2c) AND NOT C2a
C2axbc  =   C2a AND NOT (C2b OR C2c)
C2rnci  =   C2 AND (RN OR FR8f)
```

C1 is used in C.7.1, C.8.2.3

C.6.5 Resetting of logical channels

Item	Protocol Feature	References	Status	Support	
	Is resetting supported:	8, 8.3, 8.4, table 34,			
* RSi	— as initiator?	8.1,	O	Yes ☐	No ☐
	send RESET REQUEST	12.5.1,			
	receive RESET CONFIRMATION / INDICATION	12.5.2			
* RSr	— as responder?	8.2,	O	Yes ☐	No ☐
	receive RESET INDICATION	12.5.1,			
	send RESET CONFIRMATION	12.5.2			

Predicate usage:

RSi is used in items T22, R22; and in C.7.1

RSr is used in item O4; and in C.7.1

C.6.6 Error procedures

Item	Protocol Feature (Notes 1, 2)	References (Note 3)	Status	Support
	If the Virtual Call service, item Vs, is not supported, mark N/A and continue at (W2p) below.			N/A ☐
	Is ERROR-C procedure:	5.2.1, 5.4, 8.1, table 33		
W1a	— clear the Virtual Call?		O.7	Yes ☐ No ☐
W1b	— restart the packet layer?		O.7	Yes ☐ No ☐
W1c	— other?		X	No ☐
	Is ERROR-R procedure for Virtual Calls:	6.3, 6.4, 6.6, 6.8.1, 6.8.2, 7.1.3, 7.1.4, 8.2, 11.2.1, 13.4.1, tables 34 – 36		
W2sa	— reset the logical channel?		O.8	Yes ☐ No ☐
W2sb	— clear the Virtual Call?		O.8	Yes ☐ No ☐
W2sc	— restart the packet layer?		O.8	Yes ☐ No ☐
W2sd	— other?		X	No ☐
(W2p)	If Permanent Virtual Circuit service, item Vp, is not supported, mark N/A and continue at C.6.7.			N/A ☐
	Is ERROR-R procedure for Permanent Virtual Circuits:	6.3, 6.4, 6.6, 6.8.1, 6.8.2, 7.1.3, 7.1.4, 8.2, 11.2.1, 13.4.1, tables 34 – 36		
W2pa	— reset the logical channel?		O.9	Yes ☐ No ☐
W2pb	— restart the packet layer?		O.9	Yes ☐ No ☐
W2pc	— other?		X	No ☐

NOTES

1   ERROR-C procedure is specified as clearing the Virtual Call in question, but restarting of the packet layer is a permissible alternative (see 4.1 and Note 1 to table 25).

2   ERROR-R procedure is specified as resetting the logical channel in question, but clearing is a permissible alternative for a Virtual Call (5.5, table 25 Note 1), and so also is restarting of the packet layer for a Virtual Call or Permanent Virtual Circuit (4.1, table 25 Note 1).

3   References are to the subclauses and tables specifying invocation of the error procedures, not to the specifications of the procedures themselves (for which see C.6.4.2, C.6.5, C.6.3).

C.6.7 Interrupt transfer

Item	Protocol Feature	References	Status	Support
* Is	Is sending interrupts supported? send INTERRUPT REQUEST receive INTERRUPT CONFIRMATION	6.8, 6.8.1, 6.8.3, table 35, 12.3.2, 12.3.3	O	Yes ☐ No ☐
* Ir	Is receiving interrupts supported? receive INTERRUPT INDICATION send INTERRUPT CONFIRMATION	6.8, 6.8.2, 6.8.3, table 35, 12.3.2, 12.3.3	O	Yes ☐ No ☐

Predicate usage: Is is used in item T26   Ir is used in item O5

C.6.8 Normal data transfer and flow control

C.6.8.1 Sending data

Item	Protocol Feature	References	Status	Support		
DS1	Is sending of DATA packets supported?	6, 6.1, 6.2, 7.1.1, 7.1.2, 7.1.3, 12.3.1	O		Yes ☐	No ☐
	If DS1 is not supported, mark N/A and continue at C.6.8.2. Otherwise, are the following supported?			N/A ☐		
DS2	— Send-window rotation on receiving updated P(R) values	7.1, 7.1.2, 7.1.3	O		Yes ☐	No ☐
DS3	— Response to flow control by received RNR and RR packets	7.1.5, 7.1.6, 12.4.1, 12.4.2	M		Yes ☐	
DS4a	— Sending M = 0 in DATA packets	6.4, 6.5, 6.7	M		Yes ☐	
DS4b	— Sending M = 1 in DATA packets	6.4, 6.5, 6.7	O		Yes ☐	No ☐
DS5a	— Sending Q = 0 in DATA packets	6.6	O.10		Yes ☐	No ☐
DS5b	— Sending Q = 1 in DATA packets	6.6	O.10		Yes ☐	No ☐
DS6	— Responding to packet retransmission requests (received REJECT packets)	13.4.2, 12.8	Et: O	N/A ☐	No ☐	Yes ☐
	— Window Rotation Timer procedure:					
DS7a	— ERROR-R action on expiry	11.2.1 (a)	O		No ☐	Yes ☐
DS7b	— packet retransmission on expiry	11.2.1 (b)	Et: O ¬Et: X	N/A ☐ N/A ☐	No ☐ No ☐	Yes ☐
DS8	— Discard of over-length flow control packets (instead of ERROR-R)	table 36 Note 2	O		No ☐	Yes ☐

C.6.8.2 Receiving data

Item	Protocol Feature	References	Status	Support	
DR1	Receiving DATA packets	6, 6.1, 6.2, 7.1.1, 7.1.2, 7.1.3, 12.3.1	O	Yes ☐	No ☐
	If DR1 is not supported, mark N/A and continue at C.6.8.3. Otherwise, are the following supported?			N/A ☐	
DR2	— Receive-window rotation by sending updated P(R) values	7.1.2, 7.1.3	O	Yes ☐	No ☐
DR3	— Flow control by sending RNR and RR packets	7.1.5, 7.1.6, 12.4.1, 12.4.2	O	Yes ☐	No ☐
DR4a	— Receiving M = 0 in DATA packets	6.4, 6.5, 6.7	M	Yes ☐	
DR4b	— Receiving M = 1 in DATA packets	6.4, 6.5, 6.7	O	Yes ☐	No ☐
DR5a	— Receiving Q = 0 in DATA packets	6.6	O.11	Yes ☐	No ☐
DR5b	— Receiving Q = 1 in DATA packets	6.6	O.11	Yes ☐	No ☐
* DR6	— Requesting packet retransmission by sending REJECT packets	13.4.1, 12.8	O	Yes ☐	No ☐
	— Recovery from receipt of DATA packets containing invalid P(S), by:				
DR7a	— ERROR-R action	11.3 (a)	O.12	Yes ☐	No ☐
DR7b	— requesting packet retransmission	11.3 (b)	O.12	No ☐	Yes ☐
DR7c	— ignoring the packet and waiting for a correct retransmitted packet	11.3 (c)	O.12	No ☐	Yes ☐
	— Recovery from receipt of DATA packets with invalid User Data field, by:				
DR8a	— ERROR-R action	11.3 (a)	O.13	Yes ☐	No ☐
DR8b	— requesting packet retransmission	11.3 (b)	O.13	No ☐	Yes ☐
DR8c	— ignoring the packet and waiting for a correct retransmitted packet	11.3 (c)	O.13	No ☐	Yes ☐
DR9	— Window Status Transmission Timer procedure	11.2.2	O	Yes ☐	No ☐

Predicate usage: DR6 is used in items T27, R27.

C.6.8.3 Delivery confirmation

Item	Protocol Feature	References	Status	Support	
DC	Is Delivery Confirmation supported?	6.3, 6.5, 6.7, 7.1.4	O	Yes ☐	No ☐

C.7 Miscellaneous features and options

C.7.1 Values of Cause and Diagnostic Code fields

Item	Protocol Feature	References	Status	Support		
	In RESTART REQUEST packets sent:	12.6.1.1, 12.6.1.2, tables 24 – 25				
	— Cause = 0, standard diagnostic codes,					
Y1a	— specific codes		O.14	Yes ☐		No ☐
Y1b	— generic codes (including zero)		O.14	Yes ☐		No ☐
Y1c	— code zero, always		O.14	Yes ☐		No ☐
Y1d	— Cause = 128, private diagnostic codes		O.14	Yes ☐		No ☐
Y1e	— other		X			No ☐
	In RESTART INDICATION packets received:	12.6.1.1, table 7, 12.6.1.2				
Y2a	— Cause = 0 or 128, any diagnostic code value		M	Yes ☐		
Y2b	— Cause not 0 or 128, any diagnostic code value		Ec: M	N/A ☐	Yes ☐	
			¬Ec: O	N/A ☐	Yes ☐	No ☐
	If the Virtual Call service, item Vs, is not supported, mark N/A and continue at (Y5) below.			N/A ☐		
	If initiation of clearing, predicate C2, is not supported, mark N/A and continue at (Y4) below			N/A ☐		
	In CLEAR REQUEST packets sent:	12.2.3.1.1, 12.2.3.1.2, tables 24 – 25				
	— Cause = 0, standard diagnostic codes,					
Y3a	— specific codes		O.15	Yes ☐		No ☐
Y3b	— generic codes (including zero)		O.15	Yes ☐		No ☐
Y3c	— code zero, always		O.15	Yes ☐		No ☐
Y3d	— Cause = 128, private diagnostic codes		O.15	Yes ☐		No ☐
Y3e	— other		X			No ☐
(Y4)	If response to clearing, item C1, is not supported, mark N/A and continue at (Y5) below.			N/A ☐		
	In CLEAR INDICATION packets received:	12.2.3.1.1, table 5, 12.2.3.1.2				
Y4a	— Cause = 0 or 128, any diagnostic code value		M	Yes ☐		
Y4b	— Cause not 0 or 128, any diagnostic code value		Ec: M	N/A ☐	Yes ☐	
			¬Ec: O	N/A ☐	Yes ☐	No ☐
(Y5)	If initiation of resetting, item RSi, is not supported, mark N/A and continue at (Y6) below.			N/A ☐		
	In RESET REQUEST packets sent:	12.5.1.1, 12.5.1.2, tables 24 – 25				
	— Cause = 0, standard diagnostic codes,					
Y5a	— specific codes		O.16	Yes ☐		No ☐
Y5b	— generic codes (including zero)		O.16	Yes ☐		No ☐
Y5c	— code zero, always		O.16	Yes ☐		No ☐
Y5d	— Cause = 128, private diagnostic codes		O.16	Yes ☐		No ☐
Y5e	— other		X			No ☐
(Y6)	If response to resetting, item RSr, is not supported, mark N/A and continue at C.7.2 below.			N/A ☐		
	In RESET INDICATION packets received:	12.5.1.1, table 6, 12.5.1.2				
Y6a	— Cause = 0 or 128, any diagnostic code value		M	Yes ☐		
Y6b	— Cause not 0 or 128, any diagnostic code value		Ec: M	N/A ☐	Yes ☐	
			¬Ec: O	N/A ☐	Yes ☐	No ☐

C.7.2 Operation in an X.25 (1980) environment

If operation in an X.25 (1980) environment, item Ec/0, is not supported, mark N/A and continue at C.7.3:   N/A ☐

Item	Protocol Feature	References	Support (Note 1)	
	When operating in an X.25 (1980) DTE/DCE environment, are any of the following transmitted:			
B1	INTERRUPT packets with User Data field longer than one octet?	3.1.2 (f)	Yes ☐	No ☒
	If the Virtual Call service, item Vs, is not supported, mark N/A and continue at C.7.3.		N/A ☐	
B2	Flow Control Parameter Negotiation facility elements offering a packet size of 2048 (Note 2)?	3.1.2 (a)	Yes ☐	No ☐
B3	CALL REQUEST, CALL ACCEPTED or CLEAR REQUEST packets with Facility fields longer than 63 octets?	3.1.2 (b)	Yes ☐	No ☒
B4	RESTART REQUEST, CLEAR REQUEST or RESET REQUEST packets with bit 8 of the Cause code set to 1?	3.1.2 (c)	Yes ☐	No ☐
B5a	CLEAR REQUEST packets with non-zero Address Length or Facility Length fields?	3.1.2 (d)	Yes ☐	No ☐
B5b	Extended format CLEAR REQUEST packets with no User Data field?	3.1.2 (d)	Yes ☐	No ☐
B5c	Extended format CLEAR REQUEST packets after completion of call setup?	3.1.2 (h)	Yes ☐	No ☐
B6	REGISTRATION REQUEST packets?	3.1.2 (g)	Yes ☐	No ☐
B7a	Network User Identification facility elements?	3.1.2 (g)	Yes ☐	No ☐
B7b	Charging Information Request facility elements?	3.1.2 (g)	Yes ☐	No ☐
B7c	Called Line Address Modified Notification facility elements?	3.1.2 (g)	Yes ☐	No ☐
B7d	Transit Delay Selection And Indication facility elements?	3.1.2 (g)	Yes ☐	No ☐
B7e	Extended format Closed User Group Selection facility elements?	3.1.2 (h)	Yes ☐	No ☐
B7f	Closed User Group With Outgoing Access Selection facility elements?	3.1.2 (h)	Yes ☐	No ☐
B7g	Extended format RPOA Selection facility elements?	3.1.2 (h)	Yes ☐	No ☐
B7h	Call Deflection Selection facility elements (Note 5)?	3.1.1 (a)	Yes ☐	No ☐
B8	Facility Marker for CCITT-specified DTE facilities (Note 3)?	3.1.2 (i)	Yes ☐	No ☐
B9a	Priority facility elements (Note 5)?	3.1.1 (b)	Yes ☐	No ☐
B9b	Protection facility elements (Note 5)?	3.3.3 (b)	Yes ☐	No ☐

NOTES

1   A "Yes" answer for any item indicates that operation is not compatible with X.25 (1980).

2   This item also covers the case of packet size 4096.

3   This item also covers facility elements for CCITT-specified DTE facilities.

4   Extended format CLEAR CONFIRMATION packets — see 3.1 (e) — are never transmitted by a DTE conforming to ISO 8208.

5   A "Yes" answer for this item indicates that operation is not compatible with either X.25 (1980) or X.25 (1984).

C.7.3 Operation in an X.25 network environment

Item	Protocol Feature	References (Note 2)	Support (Note 1)
N1	Is the Facility Length field always present in a basic format CALL ACCEPTED packet (Note 3)?	3.3 (a); SP4b	Yes ☐ No ☐
N2	Is the Diagnostic Code field always present in RESTART REQUEST, CLEAR REQUEST and RESET REQUEST packets?	3.3 (b); Z1i, CP3b, RSi	Yes ☐ No ☐
N3	Are DATA packets with User Data fields shorter than the packet size for the logical channel and with the D-bit set to 0 always transmitted with the M-bit set to zero?	3.3 (c); DS1, DS4a, DS4b	Yes ☐ No ☐
N4	Is restarting of the Packet layer always initiated on completion of Link layer initialization and on recovery from failure of the Link layer?	3.3 (d); L1a, L1b	Yes ☐ No ☐

NOTES

1   A "No" answer for any of these items indicates failure of conformance to ISO/IEC 8208 : 1990, but the implementation's behaviour is nevertheless acceptable to a DCE according to CCITT Recommendation X.25.

2   This column includes cross-references to related PICS items.

3   This item also covers the case of omitted Address Length fields, since the Address Length field cannot be absent if the Facility Length field is present in a packet.

C.7.4 Transient states

Item	Protocol Feature	References	Status	Support	
	Are the following, potentially transient, states observable?	tables 30 – 35			
O1	— r3 (DXE RESTART INDICATION)		O		Yes ☐ No ☐
O2	— p3 (DXE INCOMING CALL)		Vs: O	N/A ☐	Yes ☐ No ☐
O3	— p7 (DXE CLEAR INDICATION)		Vs: O	N/A ☐	Yes ☐ No ☐
O4	— d3 (DXE RESET INDICATION)		RSr: O	N/A ☐	Yes ☐ No ☐
O5	— j2 (DXE INTERRUPT SENT)		Ir: O	N/A ☐	Yes ☐ No ☐

C.8 Facilities

If the Virtual Call service, item Vs, is not supported, mark N/A and continue at C.9:   N/A ☐

C.8.1 Facilities sent during call setup and clearing

Item	Protocol Feature	References	Status	Support	
FS0	General coding of facilities in transmitted packets	15.1, table 16, table 17, 15.3.1, table 19	M		Yes ☐
FS14	Reference Number facility in transmitted packets	15.2.2.14	RN: M	N/A ☐	Yes ☐

Support for each of the remaining items in the following subclauses of C.8.1 is optional.

C.8.1.1 Facilities sent in CALL REQUEST packets

If outgoing Virtual Calls, predicate S1, are not supported, mark N/A and continue at C.8.1.2:   N/A ☐

Item	Protocol Feature	References	Support	
* FS1pi	Flow Control Parameter Negotiation, packet size	13.12, 15.2.2.1.1	Yes ☐	No ☐
* FS1wi	Flow Control Parameter Negotiation, window size	13.12, 15.2.2.1.2	Yes ☐	No ☐
* FS2i	Throughput Class Negotiation	13.13, 15.2.2.2, table 18	Yes ☐	No ☐
FS3b	Closed User Group Selection, basic format	13.14.6, 15.2.2.3.1	Yes ☐	No ☐
FS3e	Closed User Group Selection, extended format	13.14.6, 15.2.2.3.2	Yes ☐	No ☐
FS4b	Closed User Group With Outgoing Access Selection, basic format	13.4.7, 15.2.2.4.1	Yes ☐	No ☐
FS4e	Closed User Group With Outgoing Access Selection, extended format	13.4.7, 15.2.2.4.2	Yes ☐	No ☐
FS5	Bilateral Closed User Group Selection	13.15, 15.2.2.5	Yes ☐	No ☐
FS6a	Fast Select	13.16, 15.2.2.6	Yes ☐	No ☐
FS6b	Reverse Charging	13.18, 15.2.2.6	Yes ☐	No ☐
FS7i	Network User Identification	13.21, 13.21.3, 15.2.2.7	Yes ☐	No ☐
FS8i	Charging Information, requesting service	13.22, 15.2.2.8.1	Yes ☐	No ☐
FS9b	RPOA Selection, basic format	13.23, 13.23.2, 15.2.2.9.1	Yes ☐	No ☐
FS9e	RPOA Selection, extended format	13.23, 13.23.2, 15.2.2.9.2	Yes ☐	No ☐
FS12	Transit Delay Selection And Indication	13.27, 15.2.2.13	Yes ☐	No ☐
FS99i	Local non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	No ☐
FS98i	Remote non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	No ☐
FS20i	Facility Marker, CCITT-specified DTE facilities	15.1	Yes ☐	No ☐
FS21i	Calling Address Extension	14.1, 15.3.2.1	Yes ☐	No ☐
FS22i	Called Address Extension	14.2, 15.3.2.2	Yes ☐	No ☐
FS23i	Minimum Throughput Class Negotiation	14.3, 15.3.2.3	Yes ☐	No ☐
FS24i	End-to-End Transit Delay Negotiation	14.4, 15.3.2.4	Yes ☐	No ☐
FS25i	Expedited Data Negotiation	14.7, 15.3.2.7	Yes ☐	No ☐
FS26i	Priority	14.5, 15.3.2.5	Yes ☐	No ☐
FS27i	Protection	14.6, 15.3.2.6	Yes ☐	No ☐

Predicate usage: FS1pi, FS1wi, FS2i are used in C.10.1

C.8.1.2 Facilities sent in CALL ACCEPT packets

If acceptance of incoming Virtual Calls, predicate S2ac, is not supported, mark N/A and continue at C.8.1.3: N/A ☐

Item	Protocol Feature	References	Support	
* FS1pr	Flow Control Parameter Negotiation, packet size	13.12, 15.2.2.1.1, table 11	Yes ☐	No ☐
* FS1wr	Flow Control Parameter Negotiation, window size	13.12, 15.2.2.1.2, table 11	Yes ☐	No ☐
* FS2r	Throughput Class Negotiation	13.13, 15.2.2.2, table 18	Yes ☐	No ☐
FS7r	Network User Identification	13.21, 13.21.3, 15.2.2.7	Yes ☐	No ☐
FS8r	Charging Information, requesting service	13.22, 15.2.2.8.1	Yes ☐	No ☐
FS10r	Called Line Address Modified Notification	13.26, 15.2.2.12	Yes ☐	No ☐
FS99r	Local non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	No ☐
FS98r	Remote non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	No ☐
FS20r	Facility Marker, CCITT-specified DTE facilities	15.1	Yes ☐	No ☐
FS22r	Called Address Extension	14.2, 15.3.2.2	Yes ☐	No ☐
FS24r	End-to-End Transit Delay Negotiation	14.4, 15.3.2.4	Yes ☐	No ☐
FS25r	Expedited Data Negotiation	14.7, 15.3.2.7	Yes ☐	No ☐
FS26r	Priority	14.5, 15.3.2.5	Yes ☐	No ☐
FS27r	Protection	14.6, 15.3.2.6	Yes ☐	No ☐

Predicate usage: FS1pr, FS1wr, FS2r are used in C.10.1

C.8.1.3   Facilities sent in CLEAR REQUEST packets

If initiation of call clearing, predicate C2, is not supported, mark N/A and continue at C.8.2:   N/A ☐

Item	Protocol Feature	References	Support	
FS10d	Called Line Address Modified Notification	13.26, 15.2.2.12	Yes ☐	No ☐
FS13	Call Deflection Selection	13.25.2.2, 15.2.2.10	Yes ☐	No ☐
FS99d	Local non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	No ☐
FS98d	Remote non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	No ☐
FS20d	Facility Marker, CCITT-specified DTE facilities	15.1	Yes ☐	No ☐
FS22d	Called Address Extension	14.2, 15.3.2.2	Yes ☐	No ☐
	If Call Deflection Selection, item FS13, is not supported, mark N/A and continue at C.8.2.		N/A ☐	
FS21d	Calling Address Extension	14.1, 15.3.2.1	Yes ☐	No ☐
FS23d	Minimum Throughput Class Negotiation	14.3, 15.3.2.3	Yes ☐	No ☐
FS24d	End-to-End Transit Delay Negotiation	14.4, 15.3.2.4	Yes ☐	No ☐
FS25d	Expedited Data Negotiation	14.7, 15.3.2.7	Yes ☐	No ☐
FS26d	Priority	14.5, 15.3.2.5	Yes ☐	No ☐
FS27d	Protection	14.6, 15.3.2.6	Yes ☐	No ☐

C.8.2 Facilities received during call setup and clearing

Item	Protocol Feature	References	Status	Support	
FR0	General coding of facilities in received packets	15.1, table 16, table 17, 15.3.1, table 19	M		Yes ☐
FR14	Reference Number facility in received packets	15.2.2.14	RN: M	N/A ☐	Yes ☐

Support for each of the items in the following subclauses of C.8.2 is optional. Mark "Ignore" for unsupported facilities that are ignored on receipt; mark "Error" for unsupported facilities that cause ERROR-C action on receipt.

C.8.2.1 Facilities received in INCOMING CALL packets

If incoming Virtual Calls, predicate S2, are not supported, mark N/A and continue at C.8.2.2:   N/A ☐

Item	Protocol Feature	References	Support		
* FR1pi	Flow Control Parameter Negotiation, packet size	13.12, 15.2.2.1.1	Yes ☐	Ignore ☐	Error ☐
* FR1wi	Flow Control Parameter Negotiation, window size	13.12, 15.2.2.1.2	Yes ☐	Ignore ☐	Error ☐
* FR2i	Throughput Class Negotiation	13.13, 15.2.2.2, table 18	Yes ☐	Ignore ☐	Error ☐
FR3b	Closed User Group Selection, basic format	13.14.6, 15.2.2.3.1	Yes ☐	Ignore ☐	Error ☐
FR3e	Closed User Group Selection, extended format	13.14.6, 15.2.2.3.2	Yes ☐	Ignore ☐	Error ☐
FR4b	Closed User Group With Outgoing Access Selection, basic format	13.4.7, 15.2.2.4.1	Yes ☐	Ignore ☐	Error ☐
FR4e	Closed User Group With Outgoing Access Selection, extended format	13.4.7, 15.2.2.4.2	Yes ☐	Ignore ☐	Error ☐
FR5	Bilateral Closed User Group Selection	13.15, 15.2.2.5	Yes ☐	Ignore ☐	Error ☐
FR6a	Fast Select	13.16, 13.17, 15.2.2.6	Yes ☐	Ignore ☐	Error ☐
FR6b	Reverse Charging	13.18, 13.19, 15.2.2.6	Yes ☐	Ignore ☐	Error ☐
FR11	Call Redirection or Call Deflection Notification	13.25.3, 15.2.2.11	Yes ☐	Ignore ☐	Error ☐
FR12i	Transit Delay Selection And Indication	13.27, 15.2.2.13	Yes ☐	Ignore ☐	Error ☐
FR99i	Local non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	Ignore ☐	Error ☐
FR20i	Facility Marker, CCITT-specified DTE facilities	15.1	Yes ☐	Ignore ☐	Error ☐
FR21	Calling Address Extension	14.1, 15.3.2.1	Yes ☐	Ignore ☐	Error ☐
FR22i	Called Address Extension	14.2, 15.3.2.2	Yes ☐	Ignore ☐	Error ☐
FR23	Minimum Throughput Class Negotiation	14.3, 15.3.2.3	Yes ☐	Ignore ☐	Error ☐
FR24i	End-to-End Transit Delay Negotiation	14.4, 15.3.2.4	Yes ☐	Ignore ☐	Error ☐
FR25i	Expedited Data Negotiation	14.7, 15.3.2.7	Yes ☐	Ignore ☐	Error ☐
FR26i	Priority	14.5, 15.3.2.5	Yes ☐	Ignore ☐	Error ☐
FR27i	Protection	14.6, 15.3.2.6	Yes ☐	Ignore ☐	Error ☐

Predicate usage: FR1pi, FR1wi, FR2i are used in C.10.1

C.8.2.2   Facilities received in CALL CONNECT packets

If outgoing calls (without restricted response), predicate S1ac, are not supported, mark N/A and continue at C.8.2.3:   N/A ☐

Item	Protocol Feature	References	Support		
* FR1pr	Flow Control Parameter Negotiation, packet size	13.12, 15.2.2.1.1, table 12	Yes ☐	Ignore ☐	Error ☐
* FR1wr	Flow Control Parameter Negotiation, window size	13.12, 15.2.2.1.2, table 12	Yes ☐	Ignore ☐	Error ☐
* FR2r	Throughput Class Negotiation	13.13, 15.2.2.2, table 18	Yes ☐	Ignore ☐	Error ☐
FR10r	Called Line Address Modified Notification	13.26, 15.2.2.12	Yes ☐	Ignore ☐	Error ☐
FR12r	Transit Delay Selection And Indication	13.27, 15.2.2.13	Yes ☐	Ignore ☐	Error ☐
FR99r	Local non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	Ignore ☐	Error ☐
FR20r	Facility Marker, CCITT-specified DTE facilities	15.1	Yes ☐	Ignore ☐	Error ☐
FR22r	Called Address Extension	14.2, 15.3.2.2	Yes ☐	Ignore ☐	Error ☐
FR24r	End-to-End Transit Delay Negotiation	14.4, 15.3.2.4	Yes ☐	Ignore ☐	Error ☐
FR25r	Expedited Data Negotiation	14.7, 15.3.2.7	Yes ☐	Ignore ☐	Error ☐
FR26r	Priority	14.5, 15.3.2.5	Yes ☐	Ignore ☐	Error ☐
FR27r	Protection	14.6, 15.3.2.6	Yes ☐	Ignore ☐	Error ☐

C.8.2.3   Facilities received in CLEAR INDICATION packets

If response to call clearing, item C1, is not supported, mark N/A and continue at C.8.2.4:   N/A ☐

Item	Protocol Feature	References	Support		
FR8ad	Charging Information, monetary unit	13.22, 15.2.2.8.2	Yes ☐	Ignore ☐	Error ☐
FR8bd	Charging Information, segment count	13.22, 15.2.2.8.3	Yes ☐	Ignore ☐	Error ☐
FR8cd	Charging Information, call duration	13.22, 15.2.2.8.4	Yes ☐	Ignore ☐	Error ☐
FR10d	Called Line Address Modified Notification	13.26, 15.2.2.12	Yes ☐	Ignore ☐	Error ☐
FR99d	Local non-X.25 facilities, following Facility Marker	15.1, table 16	Yes ☐	Ignore ☐	Error ☐
FR20d	Facility Marker, CCITT-specified DTE facilities	15.1	Yes ☐	Ignore ☐	Error ☐
FR22d	Called Address Extension	14.2, 15.3.2.2	Yes ☐	Ignore ☐	Error ☐

C.8.2.4   Facilities received in CLEAR CONFIRMATION packets

If initiation of call clearing, predicate C2, is not supported, mark N/A and continue at C.9:   N/A ☐

Item	Protocol Feature	References	Support		
FR8af	Charging Information, monetary unit	13.22, 15.2.2.8.2	Yes ☐	Ignore ☐	Error ☐
FR8bf	Charging Information, segment count	13.22, 15.2.2.8.3	Yes ☐	Ignore ☐	Error ☐
FR8cf	Charging Information, call duration	13.22, 15.2.2.8.4	Yes ☐	Ignore ☐	Error ☐

Predicate definition and usage: FR8f = FR8af OR FR8bf OR FR8cf   is used in item CP4e (predicate C2ci)

C.9 Registration-facilities

C.9.1 Registration-facilities sent

If On-line Facility Registration, item Z4i or Z4r, is not supported, mark N/A and continue at C.10: N/A ☐

Item	Protocol Feature	References	Status	Support
GS0	General coding of Registration-Facilities in transmitted packets	16.1, table 21, table 22	M	Yes ☐

C.9.1.1 Registration-Facilities sent in REGISTRATION REQUEST packets

If initiation of On-line Facility Registration, item Z4i, is not supported, mark N/A and continue at C.9.1.2: N/A ☐

Item	Protocol Feature	References	Status	Support		
GS1i	Non-negotiable Facilities Values Registration-Facility	16.2.2.1	X		No ☐	
GS2i	Availability of Facilities Registration-Facility	16.2.2.2	X		No ☐	
GS3i	Facilities That May Be Negotiated At Any Time Registration-Facility	16.2.2.3	O		Yes ☐	No ☐
	If item GS3i is not supported, mark N/A and continue at GS4i below.			N/A ☐		
	Invocation indicated (see Note) :	16.2.2.3				
GS3ia	— Incoming Calls Barred		O		Yes ☐	No ☐
GS3ib	— Outgoing Calls Barred		O		Yes ☐	No ☐
GS3ic	— Fast Select Acceptance		O		Yes ☐	No ☐
GS3id	— Reverse Charging Acceptance		Ec: O	N/A ☐	Yes ☐	No ☐
			else: X	N/A ☐		No ☐
GS3ie	— Flow Control Parameter Negotiation		O		Yes ☐	No ☐
GS3if	— Throughput Class Negotiation		O		Yes ☐	No ☐
GS3ig	— Charging Information per Interface		Ec: O	N/A ☐	Yes ☐	No ☐
			else: X	N/A ☐		No ☐
GS4i	Facilities That May Ne Negotiated Only When All Logical Channels Used For Virtual Calls Are In State p1 Registration-Facility	16.2.2.4	O		Yes ☐	No ☐
	If item GS4i is not supported, mark N/A and continue at GS5i below.			N/A ☐		
	Invocation indicated (see Note) :	16.2.2.4				
GS4ia	— Extended Packet Sequence Numbering		O		Yes ☐	No ☐
GS4ib	— Packet Retransmission		O		Yes ☐	No ☐
GS4ic	— D-bit Modification		Ec: O	N/A ☐	Yes ☐	No ☐
			else: X	N/A ☐		No ☐
	If Virtual Call service, item Vs, is not supported, mark N/A and continue at C.9.1.2			N/A ☐		
* GS5i	Nonstandard Default Packet Sizes Registration-Facility	16.2.2.5	O		Yes ☐	No ☐
* GS6i	Nonstandard Default Window Sizes Registration-Facility	16.2.2.6	O		Yes ☐	No ☐
* GS7i	Default Throughput Classes Assignment Registration-Facility	16.2.2.7, table 23	O		Yes ☐	No ☐
* GS8i	Logical Channel Types Ranges Registration-Facility	16.2.2.8	O		Yes ☐	No ☐

NOTE — Each of the following items corresponds to negotiation of a single facility. A "Yes" answer means that the implementation (always or sometimes) sets the relevant bit in the Registration Parameter to 1, to indicate invocation of the facility; a "No" answer means that the bit is always set to 0 to indicate revocation.

Predicate usage: GS5i, GS6i, GS7i, GS8i are used in, respectively, items GR5i, GR6i, GR7i, GR8i.