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AMENDMENT 1
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Information technology — Data communications — X.25 Packet Layer Protocol for Data Terminal Equipment

AMENDMENT 1 : Alternative Logical Channel Identifier assignment

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

AMENDEMENT 1 : Alternative pour l'attribution d'une référence de voie logique

Reference number
ISO/IEC 8208 : 1990/Amd.1 : 1990 (E)

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 8208/Amd.1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

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

AMENDMENT 1 : Alternative Logical Channel Identifier assignment

Introduction

International Standard ISO/IEC 8208 : 1990 describes the X.25 Packet Layer Protocol for Data Terminal Equipment. This Amendment defines an alternative mechanism for Logical Channel Identifier assignment.

The material contained in this Amendment shall be incorporated into the body of ISO/IEC 8208 when the next edition is published. The text is presented as additions to the text of ISO/IEC 8208 : 1990.

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Subclause 3.7

Add to the end of this subclause the following: "An alternative mechanism for Logical Channel Identifier assignment, which may be used in DTE/DTE environment only, is provided by the Reference Number Optional User Facility. When this mechanism is used, figure 1 does not apply. Instead, one logical channel exists for each Logical Channel Identifier value in the range 1 to 4 095, but only a limited number of values — as determined by the DTE — need be assigned at any given time to Permanent Virtual Circuits and to Virtual Calls established or in the process of being established.

"NOTE — The alternative mechanism, by allowing a DTE to choose the logical channel identifier values that can appear in received packets, can ease the task of managing logical channels where a DTE can be involved in simultaneous operation over multiple DTE/DTE interfaces, a situation typical in LAN environment (e.g. in figure 2, DTE Z in its communication with DTEs A and B).

"See also:

— Optional User Facility for Reference Number (13.28)."

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Subclause 4.5

First paragraph, add the following: "When using the alternative Logical Channel Identifier assignment mechanism (Reference Number Facility), this subclause does not apply."

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Subclause 4.5

Last line, add the following: "— Optional User Facility for Reference Number (13.28)."

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Clause 5

First paragraph, add the following: "The procedures for selecting a logical channel can be as described here or as described for the Reference Number Facility."

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Subclause 5.2.5

Last line, add the following:

"NOTE — When using the alternative Logical Channel Identifier assignment mechanism (Reference Number Facility), this subclause does not apply."

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Subclause 5.5.4

Add the following immediately under "See also:" "— Optional User Facility for Reference Number (13.28);"

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Subclause 12.2.4.2

First paragraph, delete the second sentence and insert the following: "The extended format is used for CLEAR CONFIRMATION PACKETS issued by a DTE only in conjunction with the Reference Number Facility (see 13.28)."

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New subclause 13.28

Add the following:

"**13.28 Reference Number**

"This optional user facility applies only in a DTE/DTE environment.

"Reference Number is an optional user facility which may be agreed to for a period of time. It applies to a packet layer entity. It is used as an alternative mechanism for Logical Channel Identifier assignment. It should be noted that, as this is an optional facility, the normal mode of operation of a DTE does not make use of this facility.

"**13.28.1 General description**

"For each Virtual Call or Permanent Virtual Circuit, a pair of reference numbers (a Source reference number and a Destination reference number) is assigned to identify the Virtual Call or the Permanent Virtual Circuit. For Virtual Calls, these reference numbers are assigned by the two DTEs using the Reference Number Facility during call setup. Reference numbers are in the range from 1 through 4 095, inclusive (0 shall not be assigned as a reference number).

"For Virtual Calls the Source reference number is chosen by the calling DTE when transmitting a CALL REQUEST packet. The Destination reference number is chosen by the called DTE when transmitting a CALL ACCEPTED packet. If the called DTE does not accept the call, no Destination reference number is chosen.

"For a Permanent Virtual Circuit, the reference numbers are chosen independently by the DTEs. Each DTE is informed of the remote DTE's choice as part of the agreement to operate the Permanent Virtual Circuit.

"The Logical Channel Identifier contained in subsequent packets transmitted on a Virtual Call or a Permanent Virtual Circuit by a DTE is equal to the reference number value chosen by the remote DTE.

"In RESTART, DIAGNOSTIC and REGISTRATION packets, the Logical Channel Identifier Field is coded with all zeros.

"See also:

— Coding of Reference Number Facility (15.2.1 and 15.2.2.14);

— Logical Channels (3.7).

"**13.28.2 Negotiating Reference Numbers for a Virtual Call**

"**13.28.2.1 Virtual Call Setup**

"When originating a Virtual Call, the calling DTE sets the Logical Channel Identifier Field to zero in the CALL REQUEST packet and specifies the Source reference number (assigned by the calling DTE) in the Reference Number Facility.

"A DTE receiving an INCOMING CALL packet containing the Reference Number Facility indicates its acceptance by sending a CALL ACCEPTED packet across the interface. This packet contains the Source reference number (assigned by the calling DTE) coded in the Logical Channel Identifier Field and the Destination reference number (chosen by the called DTE) coded in the Reference Number Facility.

"If a DTE sends a CALL REQUEST Packet, or a CLEAR REQUEST packet, abandoning a call, to a DTE which does not support the Reference Number Facility, one of the following situations will result:

a) a DIAGNOSTIC packet is returned with the Diagnostic code = 36; or

b) no packet is returned.

"When a) applies, the logical channel indicated in the original CALL REQUEST packet's Reference Number Facility may be returned immediately to state p1, and re-used as necessary.

"When b) applies, however, the logical channel indicated in the originated CALL REQUEST packet's Reference Number Facility remains assigned to the original call setup attempt, according to the procedures specified in 5.2.1 and, following expiry of timer T21, 5.4 and 5.5.1. Assuming no response is received to the CLEAR REQUEST packets transmitted on T21 and T23 expiry, the logical channel may be returned to the p1 state, ready for subsequent re-use, on expiry of the retransmission count R23.

"In both situations, the requesting DTE may change its mode of operation and process all subsequent virtual calls without using the Reference Number Facility.

"See also:

— Flow of information [figure 36a)].

"**13.28.2.2 Rejecting a Call**

"If the called DTE wishes to reject an incoming call that uses the Reference Number Facility, it sends a CLEAR REQUEST packet with a Logical Channel Identifier set to the value received in the Reference Number Facility of the INCOMING CALL packet.

"The Reference Number Facility is not used in the CLEAR REQUEST packet.

"See also:

— Flow of Information [figure 36b)].

"**13.28.2.3 Abandoning a Call**

"If the calling DTE, having sent a CALL REQUEST packet, does not wish to proceed with the Virtual Call, then it sends a CLEAR REQUEST packet with a Logical Channel Identifier set to zero and with the Reference Number Facility set to the value chosen in the CALL REQUEST packet.

"See also:

— Flow of Information [figure 36c)].

"NOTE — In the figure 36c) it is assumed that the called DTE supports the Reference Number Facility.

"**13.28.3 Use of Reference Numbers after Assignment**

"All DATA, interrupt, flow control and reset packets transmitted on a Virtual Call or Permanent Virtual Circuit, and all call clearing packets transmitted after Virtual Call setup, contain the reference number chosen by the remote DTE as the Logical Channel Identifier.

"See also:

— Flow of Information [figure 36d)];

— Clearing a virtual call with reference number [figure 36e)].

"13.28.4 Exception conditions resulting from erroneous usage of reference numbers

"When one of the following conditions applies:

— an expected Reference Number Facility is missing in a received packet;

— an INCOMING CALL packet is received with a non-zero Logical Channel Number;

— a DIAGNOSTIC packet is sent back with the Diagnostic Code 36."

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Table 9 (2 of 2)

Add the following to table 9:

Optional User Facility	Classification[1]: VC	PVC	Agree For Period Of Time?	Applies Per Call?	Applies To DTE/DTE Operation? (Note 6)
Reference number	–7	–7	Yes	Yes[4]	Yes

Add the following note to table 9:

"7 This facility, which does not appear in CCITT Recommendation X.2, applies only to DTE/DTE operation."

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Table 17 (2 of 2)

Add the following to table 17:

Facility	CALL REQUEST	INCOMING CALL	CALL ACCEPTED	CALL CONNECTED	CLEAR REQUEST	CLEAR INDICATION	CLEAR CONFIRMATION	Facility Code Bits 8 7 6 5 4 3 2 1
Reference number	X	X	X	X	X	X	X	0 1 1 0 0 0 0 0

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New subclause 15.2.2.14

Add the following:

"15.2.2.14 Reference Number Facility

"The Facility Parameter Field contains two octets. The *reference number is a number from* 1 to 4 095 *and is encoded in* 12 bits.

"The reference number is binary-coded, using bit positions 4 through 1 of octet 1 followed by bit positions 8 through 1 of octet 2, where bit 1 of octet 2 is the low order bit. Bits 8 through 5 of octet 1 are set to 0."

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Clause 19

Add the following:

"In figures 36a) to 36e) the type of the packet is indicated above the arrow. It should be noted that, considering that the mode of operation is DTE/DTE, the CALL REQUEST packet is identical to the INCOMING CALL PACKET. This is also true for CALL ACCEPTED/CALL CONNECTED and for CLEAR REQUEST/CLEAR INDICATION.

"The two symbols between parentheses indicate respectively the value of the Logical Channel Identifier field, and of the Facility Parameter Field of the Reference Number Facility. If the facility is not present, the symbol "X" is used."

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Figure 32

Add the following:

"NOTE — When using the alternative Logical Channel Identifier mechanism (Reference Number Facility), state P5 is not applicable."

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New figures 36a) to 36e)

Insert the following:

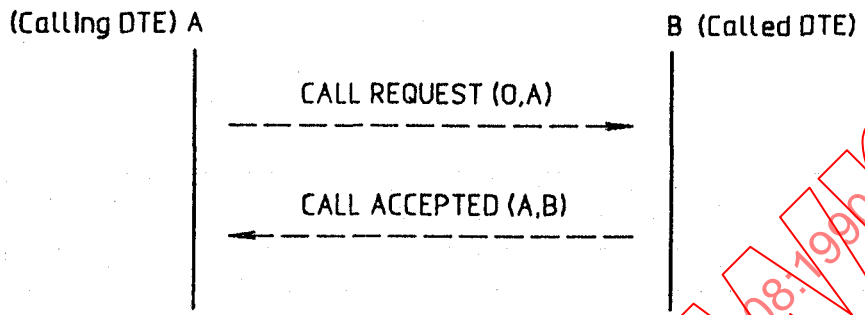

Figure 36a) — Virtual Call setup with Reference Numbers

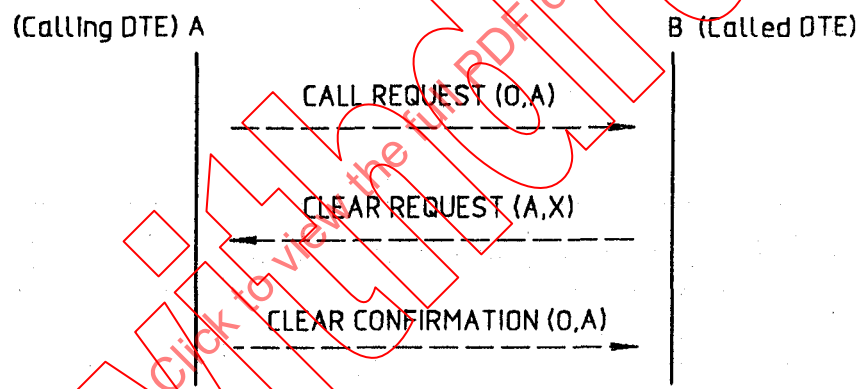

Figure 36b) — Rejecting a call with Reference Numbers

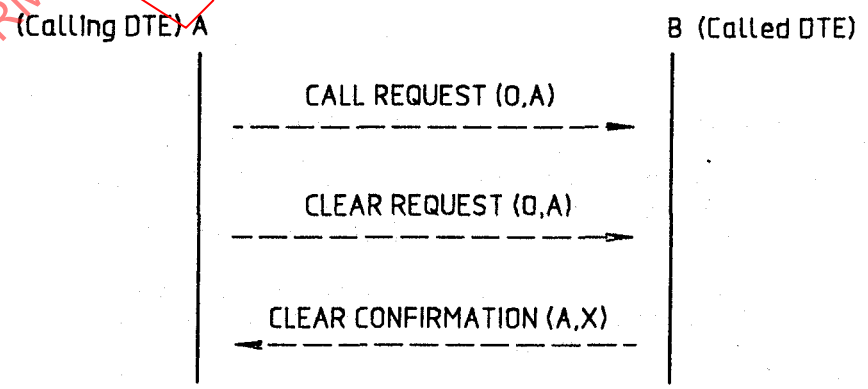

Figure 36c) — Abandoning a call with Reference Numbers