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SERIES X: DATA NETWORKS AND OPEN SYSTEM
COMMUNICATION

Public data networks – Interfaces

**Procedures for the exchange of control
information and user data between a Packet
Assembly/Disassembly (PAD) facility and a
packet mode DTE or another PAD**

ITU-T Recommendation X.29

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION X.29

PROCEDURES FOR THE EXCHANGE OF CONTROL INFORMATION AND USER DATA BETWEEN A PACKET ASSEMBLY/DISASSEMBLY (PAD) FACILITY AND A PACKET MODE DTE OR ANOTHER PAD

Summary

This Recommendation provides procedures to facilitate international interworking between PADs or between a PAD and a packet mode DTE.

Source

ITU-T Recommendation X.29 was revised by ITU-T Study Group 7 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 12th of December 1997.

FOREWORD

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The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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Recommendation X.29

**PROCEDURES FOR THE EXCHANGE OF CONTROL INFORMATION AND
USER DATA BETWEEN A PACKET ASSEMBLY/DISASSEMBLY (PAD)
FACILITY AND A PACKET MODE DTE OR ANOTHER PAD**

*(Provisional, Geneva, 1977; amended, Geneva, 1980,
Malaga-Torremolinos, 1984, Melbourne, 1988, Helsinki, 1993;
revised in 1997)*

Preface

The establishment in various countries of public data networks providing packet-switched data transmission services creates a need to produce standards to facilitate international interworking.

The ITU-T,

considering

- a) that Recommendations X.1 and X.2 define the user classes of service and facilities in a public data network, and Recommendation X.96 defines call progress signals;
- b) that Recommendation X.3 defines the PAD in a public data network;
- c) that Recommendation X.8 defines the Multi-Aspect PAD (MAP) framework and service definition;
- d) that Recommendation X.28 defines the DTE/DCE interface for a start-stop mode DTE accessing the PAD in a public data network;
- e) that Recommendation X.25 defines the interface between the DTE and the DCE for DTEs operating in the packet mode in public data networks;
- f) the need to allow interworking between a packet mode DTE and a non-packet mode DTE in the packet-switched transmission service;
- g) the urgent need to allow interworking between a start-stop mode DTE in a public switched telephone network, public switched data network or a leased line and a packet mode DTE using the virtual call facility of the packet-switched transmission service;
- h) the need to allow interworking between PADs;
- i) that the packet mode DTE shall not be obliged to use the control procedures for PAD functions, but that some packet mode DTEs may wish to control specific functions of the PAD,

unanimously recommends that

- 1** the Recommendation X.29 procedures shall apply to the Recommendation X.25 interface between the DCE and the packet mode DTE;
- 2** the Recommendation X.29 procedures may be applied for interworking between PADs;
- 3** the procedures be as specified in clause 1 *Procedures for the exchange of PAD control information and user data*;
- 4** the manner in which user data is transferred be as specified in clause 2 *User data transfer*;



5 the procedures for the control of the PAD via *PAD* messages be as specified in clause 3 *Procedures for the use of PAD messages*;

6 the formats of the data fields which are transferable on a virtual call be as specified in clause 4 *Formats*.

NOTE 1 – For ease of understanding, this Recommendation refers to specific packet types and procedures of Recommendation X.25. When PAD-to-PAD interworking is considered within a national network, these packet types or procedures may have a different form from those used in Recommendation X.25 but will have the same operational meaning.

NOTE 2 – The following items are for further study:

- the use of the permanent virtual circuit service;
- interworking between DTEs having interfaces to different data transmission services;
- operation of non-packet mode DTEs in other than start-stop mode.

1 Procedures for the exchange of PAD control information and user data

1.1 The exchange of control information and user data between a PAD and a packet mode DTE or between PADs is performed by using user data fields defined in Recommendation X.25.

1.2 Annex A describes some of the characteristics of virtual calls as defined in Recommendation X.25, as related to the PAD representation of a start-stop mode DTE to a packet mode DTE. The characteristics described in Annex A also apply for interworking between PADs.

1.3 Call user data

The call user data field of *incoming call* or *call request* packets to or from the packet mode DTE or the PAD is comprised of two fields:

- a) the protocol identifier field; and
- b) the call data field.

The protocol identifier field is used for protocol identification purposes and the call data field contains user data.

An *incoming call* packet received by the PAD, containing no call user data field, will be accepted by the PAD.

If a call data field is present, the PAD will send it, unchanged, to the start-stop mode DTE, using the call data block of the *incoming call PAD service* signal (see 3.5.22/X.28).

1.4 User sequences

1.4.1 User sequences are used to exchange user data between the PAD and the packet mode DTE or a PAD.

1.4.2 User sequences are conveyed in the user data fields of complete packet sequences with $Q = 0$, and in both directions on a virtual call. (See Recommendation X.25.)

1.4.3 There will be only one user sequence in a complete packet sequence.

1.4.4 The PAD will transmit all *data* packets with the D bit set to 0.

On reception of a *data* packet with the D bit set to 1, the PAD will transmit the corresponding acknowledgement as soon as possible.

If the PAD does not support the D bit procedure, the PAD may reset the virtual call.

As no error correction procedure is in place from the PAD to the start-stop mode DTE, no guarantee of delivery can be implied from the acknowledgement.