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SERIES X: DATA NETWORKS AND OPEN SYSTEM
COMMUNICATIONS

Public data networks – Services and facilities

**International data transmission services and
optional user facilities in public data networks
and ISDNs**

ITU-T Recommendation X.2

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION X.2

INTERNATIONAL DATA TRANSMISSION SERVICES AND OPTIONAL USER FACILITIES IN PUBLIC DATA NETWORKS AND ISDNs

Summary

This Recommendation describes international data transmission services (leased circuit, circuit switched, packet switched, and frame relay) and optional user facilities in public data networks and ISDNs. This revision includes optional user facilities for priority and service classes aspects of frame relay data transmission service. The revision also takes into account the addressing aspects connected with the using of E.164 Escape Code "0".

Source

ITU-T Recommendation X.2 was revised by ITU-T Study Group 7 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 31 March 2000.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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.2

INTERNATIONAL DATA TRANSMISSION SERVICES AND OPTIONAL USER FACILITIES IN PUBLIC DATA NETWORKS AND ISDNs

(Geneva, 1972; amended at Geneva, 1976 and 1980; Malaga-Torremolinos, 1984; Melbourne, 1988 and Helsinki, 1993; revised in Geneva, 1996 and 2000)

The ITU-T,

considering

- a) the international user classes of service and categories of access defined in Recommendation X.1;
- b) the need to standardize data transmission services, optional user facilities and *DTE services*, in public data networks and ISDNs, which should be made available on an international basis;
- c) the need to standardize additional optional user facilities and *DTE services* which may be provided by Administrations and which may be available on an international basis;
- d) that the optional user facilities indicated in this Recommendation are defined in other Recommendations, for example Recommendation X.301 for network implementations, where appropriate, and Recommendations X.21, X.25, etc. for network procedures;

NOTE – Alignment and interworking between the facilities in this Recommendation and supplementary services in the I.250-Series Recommendations are described in Appendix II.

- e) the need to standardize the identification methods applicable to these *DTE services*, which identification methods should be made available on an international basis, and which identification methods may be provided by Administrations and may be available on an international basis;
- f) the impact which these optional user facilities and *DTE services* could have on tariff structures,

unanimously declares

- 1) that the optional user facilities should be standardized for each of the user classes of service indicated in Recommendation X.1 for each of the following:
 - i) circuit switched data transmission services;
 - ii) packet switched data transmission services;
 - iii) leased circuit data transmission services;
 - iv) frame relay data transmission services;
- 2) that the optional user facilities to be made available on an international basis are indicated in the following clauses. Some of the optional user facilities are available on a per-call basis and others may be assigned for an agreed contractual period. In all cases, the user has the option of requesting a given optional user facility;
- 3) that the *DTE services* and the relative identification methods used when the packet switched data transmission service is obtained via a Public Switched Telephone Network (PSTN), a Circuit Switched Public Data Network (CSPDN), an Integrated Services Digital Network (ISDN) and a PDN providing frame relay data transmission service should also be standardized and are indicated in the following clauses.

1 Introduction

1.1 Optional user facility: Is a facility which complements the basic data transmission service defined in Recommendation X.1 and based on the basic user facility(ies). Consequently, it cannot be offered to a user as stand-alone service. It must be offered together or in association with a basic user facility. An optional user facility may be applicable to a number of data transmission services.

This Recommendation indicates the degree of support required for the capabilities associated with the data transmission services. In general, this degree of support can be expressed as one of the following:

E: An Essential user or DTE service or facility to be made available internationally.

A: An Additional user or DTE service or facility which may be available in certain data networks and may also be available internationally.

FS: This item is for Further Study as to whether it will be supported at all in conjunction with one of the data transmission services.

—: This item is not applicable.

In certain cases, the degree of support depends on the support of other services or facilities, or other aspects. This is indicated by adopting the following additional notation:

Cn: Refers to a "conditional statement of support" given below the table in which Cn appears.

M: Support for the user or DTE service or facility is Mandatory by an Administration but it may not be available internationally.

Definitions of particular optional user facilities are contained in Recommendation X.7.

2 Circuit switched data transmission service

Table 1 indicates the optional user facilities which should be made available on an international basis in the circuit switched data transmission service provided by a CSPDN and those facilities which may be available in certain data networks and may also be available internationally.

3 Packet switched data transmission services

3.1 Direct access to a packet switched data transmission service

Tables 2 and 3 indicate the services and the optional user facilities, respectively, which should be made available on an international basis in the packet switched data transmission service, and those which may be available on certain data networks and may also be available internationally in case of a direct access to a packet switched data transmission service.

These services and optional user facilities are described in Recommendation X.25.

A DTE may make use of one or more of these services and facilities.

Some of optional user facilities in multicast service have another role (see Table 8).

It should be noted that Recommendation X.25 has inherent features (e.g. the conveying of an address extension), which can be used end-to-end by users for providing an OSI network service (see Recommendations X.213 and X.223). Such features are described in Recommendation X.25 and are so-called "ITU-T defined DTE facilities" (see Annex G/X.25).

NOTE – The study of "connectionless services" is for further study.

Table 1/X.2 – Optional user facilities in circuit switched data transmission service provided by a CSPDN

Optional user facility	All user classes of service
1 <i>Optional user facilities assigned for an agreed contractual period</i> 1.1 Direct call 1.2 Closed user group 1.3 Closed user group with outgoing access 1.4 Closed user group with incoming access 1.5 Incoming calls barred within a closed user group 1.6 Outgoing calls barred within a closed user group 1.7 Calling line identification 1.8 Incoming calls barred 1.9 Outgoing calls barred 1.10 Bilateral closed user group 1.11 Bilateral closed user group with outgoing access 1.12 Reverse charging acceptance 1.13 Connect when free 1.14 Waiting allowed 1.15 Call redirection 1.16 On-line facility registration 1.17 DTE inactive registration/cancellation 1.18 Date and time indication 1.19 Hunt group 1.20 Manual answer	A E A A A A A A A A A A A A A A A A A
2 <i>Optional user facilities requested by the DTE on a per-call basis</i> 2.1 Direct call 2.2 Abbreviated address calling 2.3 Multi-address calling (Note) 2.4 Reverse charging 2.5 ROA selection 2.6 Charging information 2.7 Called line identification 2.8 Closed user group selection 2.9 Bilateral closed user group selection	A A A A A A A E A
ROA Recognized Operating Agency (previously "recognized private operating agency") NOTE – This optional user facility also provides the user with the capability to request the establishment of a point-to-multipoint configuration amongst the following: centralized multipoint, decentralized multipoint, broadcasting multipoint.	

**Table 2/X.2 – Services in packet switched data transmission service
(direct access) provided by a PSPDN**

Type of Service	User classes of service		
	8-11, 26 (synchronous mode), 30-61	20-26 (start-stop mode)	29
Virtual call service	E	E	E
Permanent virtual circuit service	E (Note)	FS	FS
NOTE – This service continues to be allocated an "E" classification. However, while some Administrations continue to believe that the offering of this service is an essential feature of the international service, other Administrations have expressed the view that they will not offer the service internationally. The international application depends on bilateral agreement. This service may not be available for the maritime mobile services.			

**Table 3/X.2 – Facilities of packet switched data transmission service
(direct access) provided by a PSPDN**

Optional user facility	User classes of service			
	8-11, 26 (synchronous mode), 30-61		20-26 (start-stop mode) (Note 1)	
	VC	PVC	VC	PVC
1 <i>Optional user facilities assigned for an agreed contractual period</i>				
1.1 Extended frame sequence numbering (modulo 128)	C1	C1	–	–
1.2 Super-extended frame sequence numbering (modulo 32768)	C1	C1	–	–
1.3 Multilink procedure	A	A	–	–
1.4 Extended packet sequence numbering (modulo 128)	A (Note 2)	A (Note 2)	–	–
1.5 Super extended packet sequence numbering (modulo 32768)	A (Note 2)	A (Note 2)	–	–
1.6 D-bit modification	A	A	FS	–
1.7 Packet retransmission	A	A	–	–
1.8 Incoming calls barred	E	–	A	–
1.9 Outgoing calls barred	E	–	A	–
1.10 One-way logical channel outgoing	E	–	–	–
1.11 One-way logical channel incoming	A	–	–	–
1.12 Non-standard default packet sizes (16, 32, 64, 256, 512, 1024, 2048, 4096)	C1	C1	FS	FS
1.13 Non-standard default window sizes	A (Note 2)	A (Note 2)	–	–
1.14 Default throughput classes assignment	A	A	FS	FS
1.15 Flow control parameter negotiation	E	–	FS	–
1.16 Basic throughput class negotiation	E	–	FS	–
1.17 Extended throughput class negotiation	A	–	FS	–
1.18 Closed user group	E	–	E	–
1.19 Closed user group with outgoing access	A	–	A	–
1.20 Closed user group with incoming access	A	–	A	–