INTERNATIONAL TELECOMMUNICATION UNION

CCITT

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

X.10
(11/1988)

SERIES X: DATA COMMUNICATION NETWORKS:
SERVICES AND FACILITIES, INTERFACES
Services and facilities

CATEGORIES OF ACCESS FOR DATA TERMINAL EQUIPMENT (DTE) TO PUBLIC DATA TRANSMISSION SERVICES

Reedition of CCITT Recommendation X.10 published in the Blue Book, Fascicle VIII.2 (1988)

NOTES

1   CCITT Recommendation X.10 was published in Fascicle VIII.2 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

Recommendation X.10

CATEGORIES OF ACCESS FOR DATA TERMINAL EQUIPMENT (DTE)
TO PUBLIC DATA TRANSMISSION SERVICES

(Malaga-Torremolinos, 1984; amended at Melbourne, 1988)

The CCITT,

considering

(a)   that Recommendation X.1 defines the international user classes of service in public data networks (PDNs) and ISDN;

(b)   that Recommendation X.2 defines the international user services and facilities in PDNs;

(c)   that Recommendation X.3 defines the Packet Assembly/Disassembly facility (PAD) in packet switched public data networks;

(d)   that Recommendation I.411 defines the reference configurations for access to ISDN services, including Terminal Adaptor (TA) functional grouping;

(e)   that Recommendations X.30 (I.461), X.31 (I.462) and the I.230 series, define the circuit switched and packet switched data transmission services available from ISDN (including through Terminal Adaptors);

(f)   the desirability for the users to have defined the various possibilities and requirements for accessing the different public data transmission services,

unanimously recommends

that categories of access for data terminal equipment (DTE) to the data transmission services provided by PDNs and by ISDNs through Terminal Adaptors should be as defined in this Recommendation.

1   Scope

This Recommendation defines the different categories of access for data terminal equipment to the different data transmission services provided by public data networks (PDNs) as defined in Recommendation X.2 and by ISDNs (including through Terminal Adaptors) as defined in Recommendations X.30 (I.461) X.31 (I.462) and the I.230 series, namely:

i)   circuit switched data transmission services;

ii)   packet switched data transmission services;

iii) leased circuit data transmission services.

The categories of access described in this Recommendation take into account direct connections (see Note) to public data networks and ISDNs and the various access cases where interworking with other public networks is involved. Access to the packet switched data transmission service via the PAD function as defined in Recommendation X.3 is also covered in this Recommendation.

Note – Direct connections may be provided by means of leased circuits or by dedicated access circuits.

2   General

Access for data terminal equipment to data transmission services may be achieved by either of the following (see Note):

a)   by direct connection of the DTE to the public data network or ISDNs;

b)   or by switched connection of the DTE to a PDN via an intermediate public network of another type (including a PDN, PSTN or ISDN);

c)   or by switched connection of the DTE to an ISDN (including through a Terminal Adaptor) via an intermediate public network of another type.

For example, packet mode terminals may access the public packet switched data transmission service, in user classes of service 8 to 11, either directly or via a switched connection. The switched connection will be established using a circuit switched data network or a public switched telephone network. In both switched cases an interworking function will be required to access the packet switched data transmission service.

Note – It is not mandatory for Administrations to provide all the categories of access contained in this Recommendation.

3 Categories of access

§ 3.1 specifies the categories of access to the data transmission services provided by PDNs for the direct connection case.

§ 3.2 specifies the categories of access to the data transmission services provided by PDNs for the switched connection case.

§ 3.3 specifies the categories of access to the data transmission services provided by ISDNs through Terminal Adaptors for the direct connection case.

§ 3.4 specifies the categories of access to the data transmission services provided by ISDNs through Terminal Adaptors for the switched connection case.

3.1   Direct connection to data transmission services provided by public data networks

TABLE 1/X.10

**Start-stop direct connection to a circuit switched
data transmission service**

(see Notes 1 and 2)

Category of access	Data signalling rate	DTE/DCE interface requirements
A1 A2	50 to 200 bit/s 300 bit/s	See Recommendations X.20 and X.20 *bis*

TABLE 2/X.10

**Synchronous direct connection to a circuit switched
data transmission service**

(see Note 1)

Category of access	Data signalling rate	DTE/DCE interface requirements
B1	600 bit/s	
B2	2 400 bit/s	
B3	4 800 bit/s	See Recommendations X.21 and X.21 *bis*
B4	9 600 bit/s	
B5	48 000 bit/s	
B6	64 000 bit/s	

TABLE 3/X.10

**Start-stop direct connection to a packet switched
data transmission service**

(see Notes 1 and 2)

Category of access	Data signalling rate	DTE/DCE interface requirements
C1	110 bit/s	
C2	200 bit/s	
C3	300 bit/s	See Recommendation X.28
C4	200 bit/s	
C5	75/1 200 bit/s	
C6	2 400 bit/s	

TABLE 4/X.10

**Synchronous direct connection to a packet switched
data transmission service**

(see Note 1)

Category of access	Data signalling rate	DTE/DCE interface requirements
D1	2 400 bit/s	
D2	4 800 bit/s	See Recommendations X.25 and X.31
D3	9 600 bit/s	(case A)
D4	48 000 bit/s	(see Note 3)
D5	64 000 bit/s	

TABLE 5/X.10

**Start-stop direct connection to a leased circuit
data transmission service**

(see Note 2)

Category of access	Data signalling rate	DTE/DCE interface requirements
E1	50 to 200 bit/s	See Recommendations X.20 and X.20 *bis*
E2	300 bit/s	

TABLE 6/X.10

**Synchronous direct connection to a leased circuit
data transmission service**

Category of access	Data signalling rate	DTE/DCE interface requirements
F1	600 bit/s	
F2	2 400 bit/s	
F3	4 800 bit/s	See Recommendations X.21 and X.21 *bis*
F4	9 600 bit/s	
F5	48 000 bit/s	

3.2   *Switched connection to data transmission services provided by public data networks*

TABLE 7/X.10

**Synchronous switched connection by means of the PSTN
to a circuit switched data transmission service**

For further study.

TABLE 8/X.10

**Start-stop switched connection by means of a CSPDN
to a packet switched data transmission service**

Category of access	Data signalling rate	DTE/DCE interface requirements
K1	300 bit/s	See Recommendation X.28

TABLE 9/X.10

**Start-stop switched connection by means of the PSTN
to a packet switched data transmission service**

Category of access	Data signalling rate	DTE/DCE interface requirements
L1	110 bit/s	
L2	200 bit/s	
L3	300 bit/s	See Recommendation X.28
L4	200 bit/s	
L5	75/1 200 bit/s	
L6	2 400 bit/s	

TABLE 10/X.10

Synchronous switched connection by means of a CSPDN
to a packet switched data transmission service

Category of access	Data signalling rate	DTE/DCE interface requirements
O1	2 400 bit/s	
O2	4 800 bit/s	
O3	9 600 bit/s	See Recommendation X.32
O4	48 000 bit/s	
O5	64 000 bit/s	

TABLE 11/X.10

Synchronous switched connection by means of the PSTN
to a packet switched data transmission service

Category of access	Data signalling rate	DTE/DCE interface requirements
P1	1 200 bit/s	
P2	2 400 bit/s	
P3	4 800 bit/s	See Recommendation X.32
P4	9 600 bit/s	

TABLE 12/X.10

Synchronous switched access by means of an ISDN B channel
to a packet switched data transmission service

Category of access	Data signalling rate	DTE/DCE interface requirements at	
		Reference point S/T	Reference point R
Q1	2 400 bit/s		
Q2	4 800 bit/s	See Recommendation X.31	
Q3	9 600 bit/s	(case A)	See Recommendation X.32
Q4	48 000 bit/s	and Recommendation X.32	
Q5	64 000 bit/s		

3.3   *Direct connection to data transmission services provided by ISDNs (including through Terminal Adaptors)*

TABLE 13/X.10

**Synchronous direct connection to a circuit switched
data transmission service**

Category of access	Data signalling rate	DTE/DCE interface requirements at	
		Reference point S/T	Reference point R
S1	600 bit/s	See Recommendation X.30	See Recommendations X.21 and X.21 *bis*
S2	2 400 bit/s		
S3	4 800 bit/s		
S4	9 600 bit/s		
S5	48 000 bit/s		
S6	64 000 bit/s		

TABLE 14/X.10

**Synchronous direct connection via the ISDN B channel
to a packet switched data transmission service**

Category of access	Data signalling rate	DTE/DCE interface requirements at	
		Reference point S/T	Reference point R
T1	2 400 bit/s	See Recommendation X.31 (case B)	See Recommendation X.25
T2	4 800 bit/s		
T3	9 600 bit/s		
T4	48 000 bit/s		
T5	64 000 bit/s		

TABLE 15/X.10

**Synchronous direct connection via the ISDN D channel
to a packet switched data transmission service**

Category of access	Data signalling rate	DTE/DCE interface requirements at	
		Reference point S/T	Reference point R
U1	2 400 bit/s	See Recommendation X.31	See Recommendation X.25
U2	4 800 bit/s		
U3	9 600 bit/s		
U4 .	48 000 bit/s (see Note 4)		
U5	64 000 bit/s (see Note 4)		

3.4 *Switched connection to data transmission services provided by ISDNs (including through Terminal Adaptors)*

TABLE 16/X.10

**Start-stop switched connection by means of the PSTN
to a packet switched data transmission service**

For further study.

TABLE 17/X.10

**Synchronous switched connection by means of a CSPDN
to a packet switched data transmission service**

For further study.

TABLE 18/X.10

**Synchronous switched connection by means of the PSTN
to a packet switched data transmission service**

For further study.

TABLE 19/X.10

**Synchronous switched connection by means of an ISDN B channel
to a packet switched data transmission service**

Category of access	Data signalling rate	DTE/DCE interface requirements at	
		Reference point S/T	Reference point R
Y1	2 400 bit/s		
Y2	4 800 bit/s		
Y3	9 600 bit/s	See Recommendation X.31 (case B)	See Recommendation X.25
Y4	48 000 bit/s		
Y5	64 000 bit/s		

Note 1 – Direct connections may be provided by means of leased circuits or by dedicated access circuits.

Note 2 – Some Administrations may offer the categories of access of 600 bit/s, 1200 bit/s, 2400 bit/s, 4800 bit/s and 9600 bit/s.

Note 3 – Recommendation X.31 (case A) is appropriate at the S/T reference point when category of access D5 is provided by means of ISDN B channel.

Note 4 – For 64 kbit/s D channel only.

ITU-T RECOMMENDATIONS SERIES

Series A	Organization of the work of the ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	**Data networks and open system communications**
Series Y	Global information infrastructure and Internet protocol aspects
Series Z	Languages and general software aspects for telecommunication systems