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SERIES X: DATA NETWORKS AND OPEN SYSTEM
COMMUNICATION

Public data networks – Interfaces

**Access to packet switched data transmission
services via B-ISDN**

ITU-T Recommendation X.34

(Previously "CCITT Recommendation")



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FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union (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 (Helsinki, March 1-12, 1993).

ITU-T Recommendation X.34 was prepared by ITU-T Study Group 7 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 5th of October 1996.

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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SUMMARY

This Recommendation defines services available and signalling procedures operated at the S_B/T_B reference point of a B-ISDN for access to packet switched data transmission service via the B-ISDN.

Recommendation X.34**ACCESS TO PACKET SWITCHED DATA TRANSMISSION
SERVICES VIA B-ISDN***(Geneva, 1996)***1 SCOPE**

This Recommendation defines the procedures of access to PSDTS via a B-ISDN. It includes two cases;

- a) PSPDN provides the PSDTS.
- b) ISDN provides the PSDTS.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision: all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of Currently valid ITU-T Recommendations is regularly published.

- [1] CCITT Recommendation E.164 (1991), *Numbering plan for the ISDN era*.
- [2] ITU-T Recommendation E.166/X.122 (1996), *Numbering plan interworking for E.164 and X.121 numbering plans*.
- [3] ITU-T Recommendation I.211 (1993), *B-ISDN service aspects*.
- [4] ITU-T Recommendation I.361 (1995), *B-ISDN ATM layer specification*.
- [5] ITU-T Recommendation I.362 (1993), *B-ISDN ATM adaptation layer (AAL) functional description*.
- [6] ITU-T Recommendation I.363 (1993), *B-ISDN ATM adaptation layer (AAL) specification*.
- [7] ITU-T Recommendation I.413 (1993), *B-ISDN user-network interface*.
- [8] ITU-T Recommendation I.430 (1995), *Basic user-network interface – Layer 1 specification*.
- [9] ITU-T Recommendation I.431 (1993), *Primary rate user-network interface – Layer 1 specification*.
- [10] ITU-T Recommendation I.432 (1993), *B-ISDN user-network interface – Physical layer specification*.
- [11] ITU-T Recommendation I.580 (1995), *General arrangements for interworking between B-ISDN and 64 Kbit/s based ISDN*.
- [12] ITU-T Recommendation Q.2110 (1994), *B-ISDN ATM adaptation layer – Service Specific Connection Oriented Protocol (SSCOP)*.
- [13] ITU-T Recommendation Q.2130 (1994), *B-ISDN signalling ATM adaptation layer – Service specific coordination function for support of signalling at the user-network interface (SSCF at UNI)*.
- [14] ITU-T Recommendation I.610 (1995), *B-ISDN operation and maintenance principles and functions*.

- [15] ITU-T Recommendation Q.2931 (1995), *Broadband Integrated Services Digital Network (B-ISDN) – Digital Subscriber Signalling System No. 2 (DSS 2) – user network – interface (UNI) layer 3 specification for basic call/connection control.*
- [16] ITU-T Recommendation X.1 (1996), *International user classes of service in, and categories of access to, public data networks and Integrated Services Digital Networks (ISDNs).*
- [17] ITU-T Recommendation X.25 (1996), *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit.*
- [18] ITU-T Recommendation X.31 (1995), *Support of packet mode terminal equipment by an ISDN.*
- [19] ITU-T Recommendation X.32 (1996), *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and accessing a packet switched public data network through a public switched telephone network or an integrated services digital network or a circuit switched public data network.*
- [20] ITU-T Recommendation X.75 (1996), *Packet switched signalling system between public networks providing data transmission services.*
- [21] ITU-T Recommendation X.121 (1996), *International numbering plan for public data networks.*
- [22] ITU-T Recommendation X.213 (1995), *Information technology – Open Systems Interconnection – Network service definition.*
- [23] ITU-T Recommendation I.365.4 (1996), *Service specific convergence sublayer for HDLC applications.*

3 Terms and definitions

For the purposes of this Recommendation, the following definition applies.

3.1 HDLC applications SSCS (HDLC Applications Service Specific Convergence Sublayer, see Recommendation I.365.4): HDLC Applications SSCS is used at the TE and AU for interworking between AAL and X.25 LAPB.

4 Abbreviations

For the purposes of this Recommendation, the following abbreviations are used.

AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
AU	Access Unit
BCOB	Broadband Connection Oriented Bearer class
B-ET	Exchange Terminal for Broadband ISDN
B-ISDN	Broadband ISDN
B-NT	Network Termination for Broadband ISDN
B-TA	Terminal Adaptor for Broadband ISDN
CH	Cell Handler
CPCS	Common Part Convergence Sublayer
CPCS-CI	CPCS-Congestion Indication
CPCS-LP	CPCS-Loss Priority
CPCS-UU	CPCS-User to User indication
DNIC	Data Network Identification Code
DTE	Data Terminal Equipment
ISDN	Integrated Services Digital Network

IWF	InterWorking Function
NT	Network Termination
PH	Packet Handler
PMBS	Packet Mode Bearer Service
PSPDN	Packet Switched Public Data Network
PSDTS	Packet Switched Data Transmission Services
PVC	Permanent Virtual channel Connection
QOS	Quality of Service
SSCS	Service Specific Convergence Sublayer
SVC	Switched Virtual channel Connection
TA	Terminal Adapter
TE	Terminal Equipment
VCI	Virtual Channel Identifier
VPCI	Virtual Path Connection Identifier

5 General service aspects

Packet Switched Data Transmission Services (PSDTSs) are provided by Packet Switched Public Data Networks (PSPDNs) or by Integrated Services Digital Networks (ISDNs). These PSDTSs may be accessed by users of Broadband ISDNs (B-ISDNs).

- a) This Recommendation defines the aspects of packet switched data transmission services provided by a PSPDN or an ISDN to the users of B-ISDN in accordance with the services defined in Recommendations I.211 and X.1.
- b) This Recommendation defines the procedures at the user-network interface of a B-ISDN to access packet switched data transmission services provided by a PSPDN or an ISDN in alignment with Recommendations Q.2931 and X.25.
- c) This Recommendation defines the procedures at the user-network interface of a B-ISDN to access packet switched data transmission services provided by a PSPDN or an ISDN in alignment with Recommendations I.432, I.361, I.362, I.363, Q.2110 and Q.2130.
- d) This Recommendation defines the Terminal Adaptation functions to adapt existing X.25 terminals for use at the user-network interface of a B-ISDN in order to access packet switched data transmission services provided by a PSPDN or an ISDN.

6 Reference configurations

There are two reference configurations:

Type A: Access to the Packet Switched Data Transmission Service (PSDTSs) provided by a Packet Switched Public Data Network (PSPDN) using the B-ISDN.

Type B: Access to the PSDTS provided by an ISDN using the B-ISDN.

In the configurations given below, a Terminal Equipment (TE) with X.25 and ATM capabilities is equivalent to a combination consisting of an X.25 Data Terminal Equipment (DTE) and a Terminal Adapter (TA) with ATM capabilities.

NOTE 1 – ATM capabilities are in accordance with Recommendations I.361, I.362, I.363, I.432, Q.2110 and Q.2130 for TEs/TAs attached to a B-ISDN.

In this Recommendation, every reference to the combination of an X.25 DTE and its TA should always be considered as being applicable to a TE with X.25 and also TA and TE should support AAL type 5 function (CPCS + HDLC Applications SSCS) to convey X.25 frames. (See Recommendation I.365.4).

NOTE 2 – Use of AAL type 1 with HDLC framing instead of AAL type 5 should not be precluded.

In case AAL type 5 is used, AAL type 5 message mode service will be available. The functionality of the HDLC Applications SSCS only provides for the mapping of the equivalent primitives of AAL to CPCS and vice versa. The CPCS-UNITDATA primitive parameters should be set by SSCS as specified in 7.4/I.365.4.

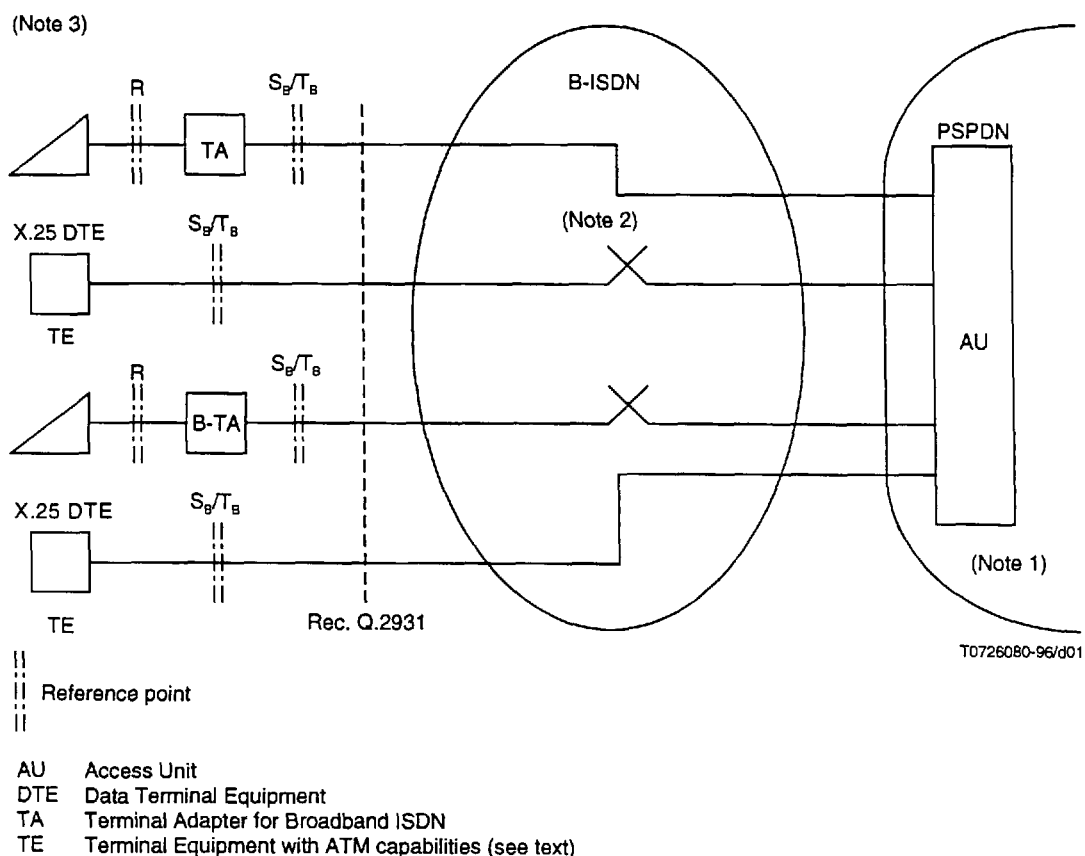
6.1 Configuration when accessing PSPDN via a B-ISDN

This configuration (Figure 6-1) refers to the case where the PSDTS provided by a PSPDN is accessed using the B-ISDN. In this case, a TE/X.25 DTE+TA accesses the PSDTS of the PSPDN by means of an ATM virtual channel connection established through the B-ISDN. The ATM virtual channel connection is routed, within the B-ISDN, to an access port of the PSPDN referred to as "Access Unit (AU)".

An ATM virtual channel connection is set up to/from an AU port. An AU supports the possible path setting-up functions for Layer 1 and possible rate adaptation between the PSPDN and the B-ISDN. An AU also supports the necessary processing functions for ATM virtual channel connections and X.25 virtual calls. The same AAL as that of TEs/TAs are also applicable for AU.

NOTE 1 – The PSDTS may be provided by physically the same network as B-ISDN.

It is important to note that the procedures for accessing PSDTS through a B-ISDN user-network interface are independent of where the service provider chooses to locate the AU function. The AU function, logically belonging to the PSPDN, may physically be located either in the B-ISDN or in the B-ISDN.



NOTES

- 1 The AU logically belongs to the PSPDN.
- 2 ATM demand channel connection.
- 3 Reference points S_B, T_B and R are defined in Recommendation I.413.

FIGURE 6-1/X.34

Reference configuration for access to PSDTS in PSPDN using B-ISDN