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**SERIES X: DATA NETWORKS AND OPEN SYSTEM
COMMUNICATION**

**Interworking between networks – Satellite data
transmission systems**

**Connection of VSAT systems with
Packet-Switched Public Data Networks
based on X.25 procedures**

ITU-T Recommendation X.361

(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.361 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 applies to private network implementations of VSAT systems. It describes their interconnection to PSPDNs via the X.25 protocol together with specifications for Quality of Service (QOS) levels compatible with the X.130-Series performance Recommendations on X.25/X.75 packet-switched performance.

Pam Wrensch

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Recommendation X.361

CONNECTION OF VSAT SYSTEMS WITH PACKET-SWITCHED PUBLIC DATA NETWORKS BASED ON X.25 PROCEDURES

(Geneva, 1996)

1 Scope

This Recommendation describes the requirements for interconnecting a VSAT system [operating as a Private Data Network (PvtDN)] to a Packet-Switched Public Data Network for provision of the Data Transmission Service as defined in clause 3/Recommendation X.2.

VSAT systems may also be connected to Packet-Switched Public Data Networks using other scenarios. The interconnections under such scenarios are not covered by this Recommendation.

2 References

The following 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 the currently valid ITU-T Recommendations is regularly published.

- ITU-T Recommendation X.2 (1996), *International data transmission services and optional user facilities in public data networks and ISDNs*.
- 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*.
- 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*.
- ITU-T Recommendation X.35 (1993), *Interface between a PSPDN and a private PSDN which is based on X.25 procedures and enhancements to define a gateway function that is provided in the PSPDN*.
- ITU-T Recommendation X.121 (1996), *International numbering plan for public data networks*.
- CCITT Recommendation X.134 (1992), *Portion boundaries and packet layer reference events: basis for defining packet-switched performance parameters*.
- CCITT Recommendation X.135 (1992), *Speed of service (delay and throughput) performance values for public data networks when providing international packet-switched services*.
- CCITT Recommendation X.136 (1992), *Accuracy and dependability performance values for public data networks when providing international packet-switched services*.
- CCITT Recommendation X.137 (1992), *Availability performance values for public data networks when providing international packet-switched services*.

- CCITT Recommendation X.138 (1992), *Measurement of performance values for public data networks when providing international packet-switched services.*
- CCITT Recommendation X.139 (1992), *Echo, drop, generator and test DTEs for measurement of performance values in public data networks when providing international packet-switched services.*
- ITU-T Recommendation X.213 (1995) | ISO/IEC 8348:1996, *Information technology – Open Systems Interconnection – Network service definition.*
- ITU-T Recommendation X.223 (1993), *Use of X.25 to provide the OSI connection-mode network service for ITU-T applications.*
- ITU-T Recommendation X.327 (1993), *General arrangements for interworking between Packet Switched Public Data Networks (PSPDNs) and private data networks for the provision of data transmission services.*

3 Abbreviations

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

BCD	Binary Coded Decimal
DCE	Data Circuit-terminating Equipment
DM	Disconnect Mode
DNIC	Data Network Identification Code
DTE	Data Terminal Equipment
FCS	Frame Checking Sequence
FRMR	Frame Reject Mode Response
ISDN	Integrated Services Digital Network
LAPB	Link Access Procedure Balanced
NTN	Network Terminal Number
OSI	Open Systems Interconnection
PNIC	Private Network Identification Code
PSDN	Packet-Switched Data Network
PSPDN	Packet-Switched Public Data Network
PVC	Permanent Virtual Circuit
PvtDN	Private Data Network
SABM	Set Asynchronous Balanced Mode
VSAT	Very Small Aperture Terminal (Terminal communicating via satellite with a very small aperture antenna)

4 Interconnection scenarios

4.1 General

A VSAT system is considered as a particular form of implementation of a Private Data Network (PvtDN). This type of PvtDN is a specific type of network covered by Recommendation X.327.

A VSAT DTE connected to the PSPDN shall appear to the PSPDN as a normal X.25 DTE. The PSPDN makes no allowance for, and has no knowledge of, the VSAT system.

The set of all the elements of a VSAT system which constitute this PvtDN is called hereafter the VSAT network.