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SERIES I: INTEGRATED SERVICES DIGITAL NETWORK

Internetwork interfaces

Connection of VSAT based private networks to the public ISDN

ITU-T Recommendation I.571

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION I.571

CONNECTION OF VSAT BASED PRIVATE NETWORKS TO THE PUBLIC ISDN

Source

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FOREWORD

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Introduction

When VSAT based private networks are connected to public ISDN networks, it is desired to support the following: common and compatible functionality between the VSAT based private network and the public ISDN, end-to-end terminal compatibility over the composite network, terminal interchangeability whereby ISDN terminals for the different teleservices can indistinctly be attached to the VSAT based private network or the public ISDN, and a controlled quality of service by harmonizing the requirements of quality pertaining to the various portions of the connection.

This Recommendation describes different interconnection scenarios between VSAT based private networks and public ISDNs, specifies the requirements that VSAT based private networks should satisfy when connecting to the public ISDN, and provides guidelines for VSAT based private network configuration and operation that contribute to maintaining a controlled quality of service and interoperability between VSAT based private networks and the public ISDN.

Recommendation I.571

CONNECTION OF VSAT BASED PRIVATE NETWORKS TO THE PUBLIC ISDN

(Geneva, 1996)

1 Scope

This Recommendation describes the requirements for interconnection of VSAT based private networks to the public ISDN. In addition, guidelines are provided for VSAT based private network configuration and performance that contribute to maintaining a desirable quality of service and interoperability between VSAT based private networks and the public ISDN.

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 the currently valid ITU-T Recommendations is regularly published.

- CCITT Recommendation E.164 (1991), *Numbering plan for the ISDN era.*
- CCITT Recommendation I.231.1 (1988), *Circuit-mode bearer service categories – Circuit-mode 64 kbit/s unrestricted, 8 kHz structured bearer service.*
- CCITT Recommendation I.231.2 (1988), *Circuit-mode bearer service categories – Circuit-mode 64 kbit/s, 8 kHz structured bearer service usable for speech information transfer.*
- CCITT Recommendation I.231.3 (1988), *Circuit-mode bearer service categories – Circuit-mode 64 kbit/s, 8 kHz structured bearer service usable for 3.1 kHz audio information transfer.*
- CCITT Recommendation I.251.1 (1992), *Number identification supplementary services – Direct-dialling-in.*
- CCITT Recommendation I.251.2 (1992), *Number identification supplementary services – Multiple Subscriber Number.*
- CCITT Recommendation I.251.3 (1992), *Number identification supplementary services – Calling Line Identification Presentation.*
- CCITT Recommendation I.251.4 (1992), *Number identification supplementary services – Calling Line Identification Restriction.*
- CCITT Recommendation I.251.8 (1992), *Number identification supplementary services – Sub-addressing supplementary service.*
- ITU-T Recommendation I.258.1 (1995), *Mobility and modification supplementary services – Terminal Portability.*
- ITU-T Recommendation I.325 (1993), *Reference configurations for ISDN connection types.*
- ITU-T Recommendation I.430 (1995), *Basic user-network interface – Layer 1 specification.*
- ITU-T Recommendation I.431 (1993), *Primary rate user-network interface – Layer 1 specification.*

- ITU-T Recommendation I.570 (1993), *Public/private ISDN interworking*.
- ITU-T Recommendation Q.920 (1993), *ISDN user-network interface data link layer – General aspects*.
- ITU-T Recommendation Q.921 (1993), *ISDN user-network interface – Data link layer specification*.
- ITU-T Recommendation Q.930 (1993), *ISDN user-network interface layer 3 – General aspects*.
- ITU-T Recommendation Q.931 (1993), *ISDN user-network interface layer 3 specification for basic call control*.
- ITU-T Recommendation Q.932 (1993), *Generic procedures for the control of ISDN supplementary services*.
- Recommendation Q.950-Series, *Stage 3 description for supplementary services using DSS 1*.
- CCITT Recommendation X.135 (1992), *Speed of service (delay and throughput) performance values for public data networks when providing international packet-switched services*.
- ITU-T Recommendation X.361 (1996), *Connection of VSAT systems with packet-switched public data networks based on X.25 procedures*.

3 Definitions

This Recommendation defines the following terms.

- 3.1 hub:** The centralized node in VSAT star networks.
- 3.2 measurement point (MP):** An MP is located at a physical interface which separates either a (set of) Customer Premises Equipment (CPE), or a Switching or Signalling Node (SSN) from an attached transmission system at which the protocols can be observed.
- 3.3 measurement point T (MPT):** MPT is an MP located at the interface associated with a T reference point.
- 3.4 measurement point I (MPI):** MPI is an MP located at an interface that terminates a transmission system at an International Switching Centre (ISC).
- 3.5 network control station (NCS):** The centralized controller in mesh VSAT networks.
- 3.6 terminal equipment (TE):** This functional group includes functions belonging to the functional group TE, and which are connected to a Private Telecommunication Network (PTN) via an S reference point as defined in Recommendation I.570.
- NOTE – Terminals connected to Private Telecommunication Networks (PTNs) via an S interface are called TEs in Recommendation I.570 and not TE1s.
- 3.7 terminal equipment 1 (TE1):** This functional group includes functions belonging to the functional group TE, and with an interface that complies with the ISDN user-network interface standard.
- 3.8 VSAT based private ISDN:** A VSAT network or part of a VSAT network which offers ISDN services to non-public users.

NOTE – A VSAT based private ISDN is a special case of a VSAT based private network.

- 3.9 VSAT based private network:** A VSAT network which offers services to users via a satellite which includes intra-network communications terminals which may be connected to the VSAT network using standardised or non-standardised interfaces.

3.10 VSAT network: A type of satellite network in which Very Small Aperture Terminals (VSATs) are interconnected.

NOTE – VSATs are defined in ITU-R Recommendation S.725.

4 Abbreviations

This Recommendation uses the following abbreviations.

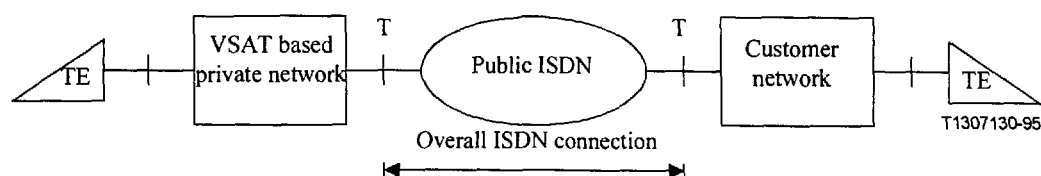
BER	Bit Error Ratio
CE	Connection Element
CONP	Connected Name Identification Presentation
CPE	Customer Premises Equipment
CTR	Common Technical Regulation
DDI	Direct-Dialling-In
DSS 1	Digital Subscriber Signalling System No. 1
ISC	International Switching Centre
ISDN	Integrated Services Digital Network
ISPBX	ISDN Private Branch Exchange
ITU	International Telecommunication Union
ITU-R	International Telecommunication Union – Radiocommunication Sector
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
LAPD	Link Access Procedure on the D-channel
MP	Measurement Point
MPI	Measurement Point at an ISC
MPT	Measurement Point at reference point T
MSN	Multiple Subscriber Number
NCS	Network Control Station
NT2	Network Termination 2
ONP	Open Network Provision
PTN	Private Telecommunication Network
PTNX	Private Telecommunication Network Exchange
R-ISPBX	Remote ISDN Private Branch Exchange
R-VSAT	Remote Very Small Aperture Terminal
S	Interface reference point S
SSN	Switching or Signalling Node
SUB	Subaddressing
T	Interface reference point T
T-ISPBX	Transit ISDN Private Branch Exchange
T-VSAT	Transit Very Small Aperture Terminal
TE	Terminal Equipment
TE1	Terminal Equipment type 1
TP	Terminal Portability

VSAT Very Small Aperture Terminal

5 Reference configurations

5.1 Overall scenario for interconnection of VSAT networks to public ISDNs

VSAT networks represent a particular form of a private network. VSAT networks should be connected to the public ISDNs using the general principles and guidelines for the interworking of public and private ISDNs described in Recommendation I.570, and as shown in Figure 1.



NOTE 1 – The functional group customer network is described in Recommendation I.411.

NOTE 2 – If the VSAT network is null (i.e., null NT2), the ISDN connection can be considered to end at coincident S and T reference points.

NOTE 3 – If the customer network is an ISPBX-based network, providing the same ISDN connection types according to Recommendation I.430 as the public ISDN does, the ISDN connection ends at the S reference point as shown in Figure 2.

Figure 1/I.571 – Overall scenario for interconnection of a VSAT based private ISDN to the public ISDN

The VSAT network is connected to the public network at a T reference point of the public ISDN. A Terminal Equipment (TE) can be connected to the VSAT network at either an S reference point, a coincident S/T reference point, or using a non-ISDN interface via a terminal adapter.

In the case that TEs are connected to the VSAT network using non-ISDN interfaces, the VSAT network is referred to as a *VSAT based private network*. In the case that TEs are connected to the VSAT network using ISDN interfaces, the VSAT network is referred to as a *VSAT based private ISDN*. The case of interconnection of TEs to the VSAT network using a non-standardised ISDN interface is considered to be outside the scope of this Recommendation. Therefore, this Recommendation will only consider the case where ISDN terminals are connected to the VSAT network via an interface at an S or a coincident S/T reference point.