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SERIES V: DATA COMMUNICATION OVER THE TELEPHONE NETWORK

Interfaces and voiceband modems

DSVD terminal control procedures

ITU-T Recommendation V.75

(Previously "CCITT Recommendation")

ITU-T V-SERIES RECOMMENDATIONS
DATA COMMUNICATION OVER THE TELEPHONE NETWORK

- 1 – General
- 2 – **Interfaces and voiceband modems**
- 3 – Wideband modems
- 4 – Error control
- 5 – Transmission quality and maintenance
- 6 – Interworking with other networks

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FOREWORD

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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 V.75 was prepared by ITU-T Study Group 14 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 16th of August 1996.

NOTE

1. In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.
2. The status of annexes and appendices attached to the Series V Recommendations should be interpreted as follows:
 - an *annex* to a Recommendation forms an integral part of the Recommendation;
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INTRODUCTION

This Recommendation describes the DSVD control procedures for exchanging terminal capabilities, transmission of control information and establishing/releasing audio and data channels between two Digital Simultaneous Voice and Data (DSVD) terminals that comply with Recommendation V.70[6]. This Recommendation should be associated with Recommendation H.245 [1]. Recommendation H.245 defines a common encoding and syntax for multimedia terminals. The procedures described within this Recommendation use a subset of H.245 control messages carried within conventional HDLC frames specified by Recommendation V.76 to provide DSVD terminal control.

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Recommendation V.75

DSVD TERMINAL CONTROL PROCEDURES

(Geneva, 1996)

1 Scope

DSVD terminals provide communication of real-time audio and data information using ITU-T V-Series modems over the GSTN. This Recommendation specifies control procedures to establish a point-to-point DSVD connection. The procedures described within this Recommendation can be incorporated, for example, by a Multipoint Control Unit (MCU), to support a multipoint DSVD terminal conference.

The procedures described within this Recommendation specify the manner in which DSVD terminals with different connection capability sets exchange media and data link capability information so that a common mode of communication can be established. Procedures are defined for exchange of capabilities at the beginning of a DSVD connection and while a DSVD connection is in progress.

Establishing the physical connection (call control) is outside the scope of this Recommendation and is described elsewhere. DSVD terminals are made aware of a remote terminal's support of DSVD capabilities prior to a DSVD session using the procedures described in Recommendation V.8 *bis* [2].

DSVD specifies the use of two types of *media streams* – data and audio. Data and audio streams are multiplexed onto one physical connection using LAP-based multiplexing as defined in Recommendation V.76 [7].

Optional procedures are described within this Recommendation to support the exchange of connection capabilities that are independent of a media stream.

2 Normative references

The following Recommendations 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 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 listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- [1] ITU-T Recommendation H.245 (1996), *Control protocol for multimedia communication*.
- [2] ITU-T Recommendation V.8 *bis* (1996), *Procedures for the identification and selection of common modes of operation between Data Circuit-Terminating Equipments (DCEs) and between Data Terminal Equipments (DTEs) over the general switched telephone network and leased point-to-point telephone-type circuits*.
- [3] CCITT Recommendation V.25 (1984), *Automatic answering equipment and/or parallel automatic calling equipment on the general switched telephone network including procedures for disabling of echo control devices for both manually and automatically established calls*.
- [4] ITU-T Recommendation V.34 (1994), *A modem operating at data signalling rates of up to 28 800 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits*.
- [5] ITU-T Recommendation V.42 (1993), *Error-correcting procedures for DCEs using asynchronous-to-synchronous conversion*.
- [6] ITU-T Recommendation V.70 (1996), *Procedures for the simultaneous transmission of data and digitally encoded voice signals over the GSTN, or over, 2-wire leased point-to-point telephone type circuit*.
- [7] ITU-T Recommendation V.76 (1996), *Generic multiplexer using V.42 LAPM-based procedures*.

3 Definitions

For the purposes of this Recommendation, the following definitions apply.

3.1 in-band: In-band messages are those that are transported within the channel or logical channel to which they refer.

3.2 out-of-band: Out-of-band messages are those that are transported outside of the channel or logical channel to which they refer.

4 Symbols and abbreviations

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

CE	Control Entity
CESAP	Control Entity Service Access Point
DCE	Data Circuit-Terminating Equipment
DLCI	Data Link Connection Identifier
DSVD	Digital Simultaneous Voice and Data
DTE	Data Terminal Equipment
DTMF	Dual Tone Multiple Frequency
ERM	Error Recovery Mode
GSTN	General Switched Telephone Network
I frame	LAPM frame for error corrected data transmission
LAPM	Link Access Procedure for Modems
MF	Multiplexer Function
MFSAP	Multiplexer Function Service Access Point
PDU	Protocol Data Unit
SAP	Service Access Point
SCF	Supervisory and Control Function
UNERM	Unacknowledged Non-Error Recovery Mode
XID frame	LAPM frame for control information

5 Overview

DSVD control procedures use HDLC frames as defined in Recommendation V.76 for transport of H.245 messages. The application of H.245 messages for DSVD control conforms to the overall H.245 message syntax.

This Recommendation describes, in an abstract manner, those interface functions provided to the DSVD SCF (Supervisory and control function), the DSVD audio processing function, the data processing function and those interfaces required of the Multiplexer Function (MF) in order to support the functionality of DSVD. Collectively these functions are referred to in this Recommendation as the DSVD Control Entity (CE). The DSVD SCF is defined in V.70.

A model of the DSVD CE and its interfaces is given in 5.1 and the services provided at each interface are listed in Tables 1a, 1b and 2. Detailed procedures are described in clause 6 for the interface functions provided to the DSVD SCF and audio/data processing functions by the DSVD control entity. Clause 6 also describes what interface functions are required by the control entity of the MF. Clause 7 defines the master/slave role assignment for DSVD and clause 8 defines the MF user-data field encoding for DSVD control. The audio header is defined in clause 9 and clause 10 defines the encoding and procedures for handling of break events.

The DSVD control procedures define a subset of H.245 messages that are mandatory for DSVD control. For this subset of control messages, the message structure defined in Recommendation H.245 in ASN.1 notation shall be followed. Parameters contained within this structure not pertaining to a DSVD session shall be ignored.

MF user-data is carried in HDLC frames. The structure and format of these frames is defined in Recommendation V.76.

5.1 Model of the DSVD control entity

The DSVD CE communicates to a DSVD CE user through the CESAP by means of service primitives defined in this Recommendation. DSVD control entities communicate with each other through the MFSAP using multiplex function service primitives as specified in Table 2 and defined in Recommendation V.76. Figure 1 illustrates the relationship between the DSVD CE and its Service Access Points (SAPs). These abstractions are provided here for descriptive purposes only and are not meant to imply any requirements on implementations.

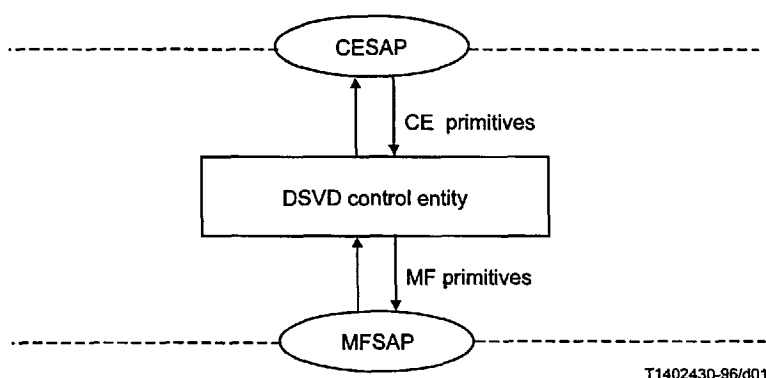


FIGURE 1/V.75
Model of the DSVD control entity

5.2 Services provided to the DSVD SCF

Primitives are specified here that are provided to the DSVD Supervisory and Control Function (SCF). See Table 1a.

5.3 Services provided to the data protocol and audio processing functions

Primitives are specified here that are provided to the data protocol and audio processing functions depicted in Figure 1/V.70. See Table 1b.

5.4 Services provided by the MF

Primitives are specified here that are required by the DSVD CE of the Multiplexer Function (MF). See Table 2.