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## TELEMATIC SERVICES

## TERMINAL EQUIPMENTS AND PROTOCOLS FOR TELEMATIC SERVICES

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# SYNTAX-BASED VIDEOTEX END-TO-END PROTOCOLS FOR THE CIRCUIT MODE ISDN

## ITU-T Recommendation T.102

(Previously “CCITT Recommendation”)

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## FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. 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, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation T.102 was prepared by the ITU-T Study Group VIII (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

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NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 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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# SYNTAX-BASED VIDEOTEX END-TO-END PROTOCOLS FOR THE CIRCUIT MODE ISDN

*(Helsinki, 1993)*

## 1 Scope

This Recommendation specifies the usage of all protocols and supplementary services up to and including layer 3 for syntax-based Videotex terminal equipment in the ISDN. The scope of this Recommendation is limited to circuit switched calls using the 64 kbit/s unrestricted digital information bearer capability and the DTE/DTE case of the network layer peer entities in B-channel connection.

This standard is applicable to terminal equipment supporting the syntax-based Videotex using either basic access or primary rate access to the ISDN. In this context, a terminal equipment is either a Videotex terminal, a Videotex service centre, a Videotex access point or a Videotex host.

This Recommendation is based on other CCITT Recommendations and International Standards and where necessary, it adds new or other requirements as application rules.

## 2 Normative references

This Recommendation incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references subsequent amendments to, or revisions of, any of these publications apply to this Recommendation only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[0] CCITT Recommendation F.300 (1988), *Videotex Service*.

[1] CCITT Recommendation I.430 (1988), *Integrated Services Digital Network (ISDN) – Basic user-network interface, Layer 1 specification*.

[2] CCITT Recommendation I.431 (1988), Integrated Services Digital Network (ISDN) – *Primary rate user-network interface, Layer 1 specification*.

[3] CCITT Recommendation Q.921 (1990), *Integrated Services Digital Network (ISDN) – User-network interface data-link layer specification*.

[4] CCITT Recommendation Q.931 (1990), *Integrated Services Digital Network (ISDN) – User-network interface Layer 3, specification for basic call control*.

[5] CCITT Recommendation Q.932 [1988], *Generic Procedures for the Control of ISDN Supplementary Services*.

[6] CCITT Recommendation T.90 [1991], *Characteristics and Protocols for Terminals for Telematic Services in ISDN*.

[7] CCITT Recommendation T.105, *Syntax-based Videotex Application Layer Protocol*.

[8] CCITT Recommendation X.3, *Packet Assembly/Disassembly Facility (PAD) in a Public Data Network*.

[9] CCITT Recommendation X.75 (1984), *Packet-Switched Signalling System between Public Networks providing Data Transmission Services*.

[10] ISO/IEC 8208: 1990, *Information Technology – Data Communications – X.25 Packet Layer Protocol for Data Terminal Equipment*.

[11] ISO 7498, *Information processing systems – Open Systems Interconnection – Basic Reference Model*.

# 3 Definitions and abbreviations

## 3.1 Definitions

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

**data terminal equipment**: See ISO/IEC 8208 [10].

**network connection**: See OSI Reference Model ISO 7498 [11].

**network layer**: See OSI Reference Model ISO 7498 [11].

**packet layer**: See ISO/IEC 8208 [10].

**videotex access point**: See CCITT Recommendation F.300 [0].

**videotex host**: This term describes a computer which offers one or more applications and/or facilities. It can be represented through a Videotex Host Computer, an External Videotex Host or a Videotex Service Centre.

**videotex service centre**: See CCITT Recommendation F.300 [0].

NOTE – According to CCITT Recommendation F.300 [0], a Videotex Service Centre provides host and/or access functions, i.e. it may also act as a Videotex Access Point.

**videotex terminal**: See CCITT Recommendation F.300 [0]

## 3.2 Abbreviations

For the purpose of this Recommendation, the following abbreviations apply:

| | |
|---|---|
| BIS | Bearer Independent Service |
| CD | Call Deflection |
| DTE | Data Terminal Equipment |
| ISDN | Integrated Services Digital Network |
| HLC | High Layer Compatibility |
| NSAP | Network Service Access Point |
| SBV | Syntax-based Videotex |
| SUB | Sub-addressing |
| UUS | User-to-User Signalling |

# 4 Overview

Clause 4/T.105 [7] applies.

The following subclauses specify the additional requirements to those as specified in Recommendation T.105 [7] to provide the Bearer Independent Service for syntax-based Videotex (SBV BIS).

ISDN end-systems conforming to this Recommendation present protocol stacks at the S-or T-reference point as indicated in 6.2.

# 5 Configurations

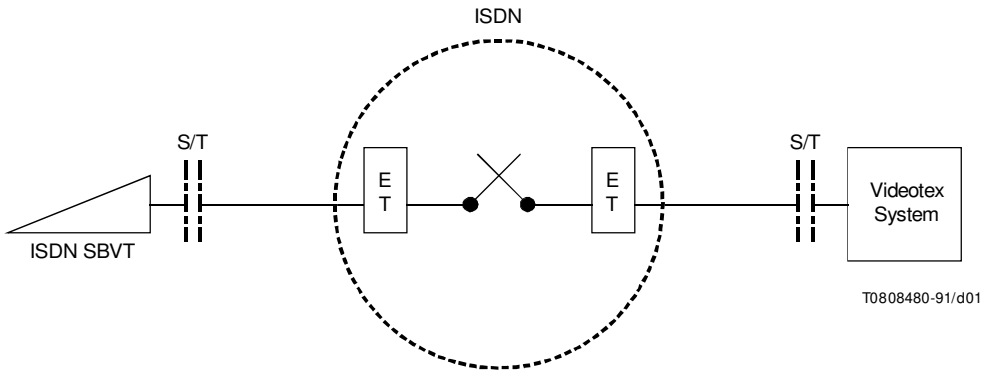
Various configurations and topologies may be used, examples of which are given in informative Annex A/T.105 [7]. It shall be the responsibility of the Videotex Service providers to opt for the appropriate configuration(s) in the definition of the syntax-based Videotex Service.

# 6 General model

Clause 6/T.105 [7] applies with the additions given in 6.1 and 6.2.

## 6.1 Reference configuration

Figure 1 below illustrates the reference configuration for the DTE/DTE case of connection. The ISDN provides for an end-to-end circuit switched link between the terminal and the Videotex System.




S/T Coincident S- and T-reference point
ET Exchange termination
SBVT Syntax-based Videotex Terminal

FIGURE 1/T.102

**Reference configuration**

## 6.2 Protocol pillars

The protocol pillars are given in Figure 2.

At layer 1, Recommendation I.430 [1] is used for ISDN basic access and Recommendation I.431 [2] is used for ISDN primary rate access.

At layer 2, Recommendation Q.921 [3] provides for the LAPD data link procedures on the D-channel and Recommendation X.75 [9] provides for the LAPB data link procedures on the B-channel (additional application rules are given in clause 12).

At layer 3, CCITT Recommendation Q.931 [4] signalling procedures are used on the D-channel, and ISO/IEC 8208 [10] packet level protocol is used in DTE/DTE operation on the B-channel (additional application rules are given in clause 13).

The provision of the SBV BIS as defined in clause 11/T.105 [7] apply with regard to the mappings of the BIS primitives and parameters to and from the elements (additional rules are given in clause 14).

# 7 Service definition

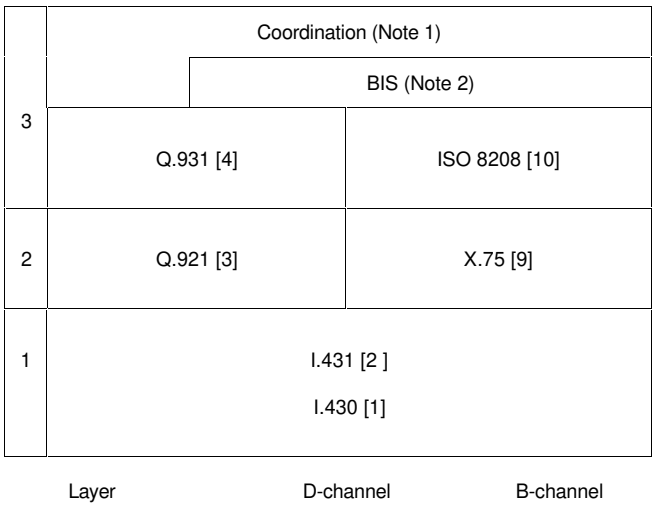
Clause 7/T.105 [7] applies without any additional rule.

# 8 Protocol

Clause 8/T.105 [7] applies without any additional rule.

# 9 Coding

Clause 9/T.105 [7] applies without any additional rule.




NOTES

1 The coordination function specifies the relationship between D-channel and B-channel protocol pillars.

2 The syntax-based Videotex Bearer Independent Service (SBV BIS) is defined in clause 11/T.105 [7]. It also covers some aspects of the out-band signalling procedures.

FIGURE 2/T.102

**Protocol pillars**

## 10 Use of CCITT Recommendation X.3 [8] parameters

In addition to clause 10/T.105 [7], the "X.3 parameter reference number 11" is defined in this Recommendation and shall take the value 18 (64 kbit/s).

## 11 Layer 1

### 11.1 Basic access

For terminals using the basic access to an ISDN, Recommendation I.430 [1] is applicable without any additional rule.

### 11.2 Primary rate access

For terminals using the primary rate access to an ISDN, Recommendation I.431 [2] is applicable without any additional rule.

## 12 Layer 2 protocols

### 12.1 Layer 2 protocol for the D-channel

Subclause 2.2.2/T.90 [6] shall apply without any additional rule.

### 12.2 Layer 2 protocol for the B-channel

Subclause 2.2.3/T.90 [6] shall apply without any additional rule.

# 13 Layer 3 protocols

## 13.1 Layer 3 protocol for the D-channel

### 13.1.1 Terminal selection

Subclause 2.2.4/T.90 [6] shall apply without any additional rule.

### 13.1.2 Compatibility checking

Compatibility checking as part of the access protocol is specified in Annex B/Q.931 and shall apply without any additional rule.

### 13.1.3 Service specific use of supplementary services

The procedures which are required for the use of supplementary services are specified in Recommendation Q.932 [5] and in I.240-Series and I.250-Series Recommendations.

The use of supplementary services is optional.

In order to realize some of the configurations mentioned in Annex A/T.105 [7], the following services may be necessary:

- Sub-addressing (SUB);
- User-to-User Signalling (UUS) Service 1;
- Call Deflection (CD) in combination with UUS Service 1.

### 13.1.4 Call progress signals

Call progress signals may be handled locally by the terminal.

## 13.2 Layer 3 protocol for the B-channel

Subclause 2.2.5/T.90 [6] shall apply. Clause 4/T.90 [6] is also relevant, including the restrictions for Videotex. The use of NSAP does not apply.

# 14 Use of the Bearer Independent Service (BIS)

## 14.1 Out-band procedure

The base Recommendation for the layer 3 protocol of the D-channel is Recommendation Q.931 [4] as already mentioned above. Clause 11/T.105 [7] defines the Bearer Independent Service (BIS) for syntax-based Videotex.

General information about the out-band procedure of the BIS are described in subclause 11.3.1/T.105 [7] and the specific mapping is given below.

### 14.1.1 Mapping of the BIS to Recommendation Q.931

#### 14.1.1.1 BIS-N-CONNECT

The protocol elements providing the BIS-N-CONNECT service are carried by the D-channel messages as defined in Table 1. Also the mapping of the parameters is given in Table 1.

#### 14.1.1.2 BIS-N-DISCONNECT

The protocol elements providing the BIS-N-DISCONNECT service are carried by the D-channel messages as defined in Table 2. Also the mapping of the parameters is given in Table 2.

## 14.2 In-band procedure

The service that the network layer entity provides to the Videotex application with respect to the establishment, release and data transfer of network connections, shall be as described in clause 11/T.105 [7].

TABLE 1/T.102

**BIS-N-CONNECT mapping**

| BIS | D-channel | Reference Q.931 |
|---|---|---|
| Service primitives | Messages | |
| BIS-N-CONNECT request<br>BIS-N-CONNECT indication<br>BIS-N-CONNECT response<br>BIS-N-CONNECT confirm | SETUP<br>SETUP<br>CONNECT<br>CONNECT | 3.2.9<br>3.2.9<br>3.2.3<br>3.2.3 |
| Parameters | Information elements | |
| Called Address<br><br><br>Calling Address<br>Responding Address<br>BIS-user-data | Called party number<br>Called party subaddress (Note)<br><br>Not used<br>Not used<br>User-user | 4.5.8<br>4.5.9<br><br><br><br>4.5.29 |
| NOTE – The use of the subaddress is not mandatory and depends on local operation requirements. | | |

TABLE 2/T.102

**BIS-N-DISCONNECT mapping**

| BIS | D-channel | Reference Q.931 |
|---|---|---|
| Service primitives | Messages | |
| BIS-N-DISCONNECT request<br>BIS-N-DISCONNECT indication | DISCONNECT<br>DISCONNECT or<br>RELEASE or<br>RELEASE COMPLETE | 3.2.5<br>3.2.5<br>3.2.7<br>3.2.8 |
| Parameters | Information elements | |
| Originator and Reason<br>Responding Address<br>BIS-user-data | Cause<br>Not used<br>Not used | 4.5.12 |

## 15 Coordination between D- and B-channel

Clause 6/T.90 [6] shall apply without any additional rule.

Annex A/T.105 [7] applies.

Annex B/T.105 [7] applies.

Annex C/T.105 [7] applies, with the following addition:

– The default value for “X.3 parameter reference 11” is 18 [64 kbit/s].

Annex D/T.105 [7] applies.

Annex E/T.105 [7] applies.