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**SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS**

Infrastructure of audiovisual services – Communication  
procedures

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## **Gateway control protocol: Facsimile, text conversation and call discrimination packages**

Recommendation ITU-T H.248.2

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AUDIOVISUAL AND MULTIMEDIA SYSTEMS

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*For further details, please refer to the list of ITU-T Recommendations.*

# Recommendation ITU-T H.248.2

## Gateway control protocol: Facsimile, text conversation and call discrimination packages

### Summary

Recommendation ITU-T H.248.2 defines packages that extend the applicability of the ITU-T H.248.1 Gateway Control Protocol Recommendation. Specifically, this Recommendation describes packages for fax, text telephone, call type discrimination and data call detection for use with the ITU-T H.248.1 Gateway Control Protocol. As defined in Recommendation ITU-T H.248.1, a "package" is an extension to ITU-T H.248.1 that supports specific behaviour.

The packages are intended for control over gateway functions for transport of facsimile or text conversation between different network environments. Extensions can be made for other kinds of data transport.

- **The Call Type Discrimination package** defines control and monitoring of a line for the signalling protocols used in the beginning of a session of data transmission for fax, text telephony or data. This package has been revised to enable the MG to autonomously determine the call type to be supported.
- **The Text Telephone package** defines control of a text telephone session in any of the modes supported by the automoding text telephone Recommendation, ITU-T V.18.
- **The Fax package** defines control of a fax transmission.
- **The Fax/Textphone/Modem Tones Detection package** defines control over a termination for detection of any signals from a fax, text telephone or data modem during a connection in voice mode.
- **The Text Conversation package** defines control over a real-time interactive text conversation session using a universal presentation format and transferred with a transport method from a multimedia protocol in any network environment.
- **The IP Fax package** defines control over facsimile transmission in a packet network.

All the packages have been editorially modified to align with the ITU-T H.248.1 packages template.

Amendment 1 (2007) to the 2005 revision provides an enhancement to the types of call that may be discriminated through in-band signalling. It groups existing call types into like types. It provides an explanation of when those types are used. Several new call types are added to the Discriminated Call Type event. The Call discrimination flows have been corrected with the correct events.

This 2013 revision incorporates a correction to the example call flow in Appendix I.

NOTE – This Recommendation has been renumbered. It was previously known as Recommendation ITU-T H.248, Annex F.

### History

| Edition | Recommendation              | Approval   | Study Group |
|---------|-----------------------------|------------|-------------|
| 1.0     | ITU-T H.248 Annex F         | 2000-11-17 | 16          |
| 1.0     | ITU-T H.248.2               | 2000-11-17 | 16          |
| 2.0     | ITU-T H.248.2               | 2005-01-08 | 16          |
| 2.1     | ITU-T H.248.2 (2005) Amd. 1 | 2007-01-13 | 16          |
| 3.0     | ITU-T H.248.2               | 2013-03-16 | 16          |

## FOREWORD

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

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## Recommendation ITU-T H.248.2

### Gateway control protocol: Facsimile, text conversation and call discrimination packages

#### 1 Scope

This Recommendation describes packages for the ITU-T H.248.1 gateway protocol related to data or telematic services. With terminations implementing these packages, a gateway is expected to handle initial modem negotiations, and the communication in voice, fax and text telephone call types. It contains:

- Package "ftmd" for general detection of signals on a fixed telephone line indicating a possible request to enter some data-related mode;
- Package "ctyp" for general call discrimination to sort out if a call should be handled as voice, fax, text telephone or modem data, and perform the initial negotiation;
- Package "txp" for communicating with text telephones in the telephone network;
- Package "fax" for communication with facsimile in the telephone network;
- Package "txc" for general text conversation in other environments;
- Package "ipfax" for fax transmission in IP networks.

#### 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; 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. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T H.224] Recommendation ITU-T H.224 (2005), *A real time control protocol for simplex applications using the H.221 LSD/HSD/MLP channels*, plus Cor.1 (2007).
- [ITU-T H.248.1] Recommendation ITU-T H.248.1 (2013), *Gateway control protocol: Version 3*.
- [ITU-T H.320] Recommendation ITU-T H.320 (2004), *Narrow-band visual telephone systems and terminal equipment*.
- [ITU-T H.323] Recommendation ITU-T H.323 (2009), *Packet-based multimedia communications systems*.
- [ITU-T H.324] Recommendation ITU-T H.324 (2009), *Terminal for low bit-rate multimedia communication*.
- [ITU-T T.30] Recommendation ITU-T T.30 (2005), *Procedures for document facsimile transmission in the general switched telephone network*, plus Amd.1 (2007).
- [ITU-T T.37] Recommendation ITU-T T.37 (1998), *Procedures for the transfer of facsimile data via store-and-forward on the Internet*, plus Amendments 1 (1999), 2 (2001) and 3 (2002).
- [ITU-T T.38] Recommendation ITU-T T.38 (2010), *Procedures for real-time Group 3 facsimile communication over IP networks*, plus Erratum 1 (2013).

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|                  |                                                                                                                                                                                                                                                                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [ITU-T T.50]     | Recommendation ITU-T T.50 (1992), <i>International Reference Alphabet (IRA) (Formerly International Alphabet No. 5 or IA5) – Information technology – 7-bit coded character set for information interchange.</i>                                                                                                                                   |
| [ITU-T T.134]    | Recommendation ITU-T T.134 (1998), <i>Text chat application entity.</i>                                                                                                                                                                                                                                                                            |
| [ITU-T T.140]    | Recommendation ITU-T T.140 (1998)/Add. 1 (2000), <i>Protocol for multimedia application text conversation.</i>                                                                                                                                                                                                                                     |
| [ITU-T V.8]      | Recommendation ITU-T V.8 (2000), <i>Procedures for starting sessions of data transmission over the public switched telephone network.</i>                                                                                                                                                                                                          |
| [ITU-T V.8 bis]  | Recommendation ITU-T V.8 bis (2000), <i>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 public switched telephone network and on leased point-to-point telephone-type circuits.</i>                           |
| [ITU-T V.17]     | Recommendation ITU-T V.17 (1991), <i>A 2-wire modem for facsimile applications with rates up to 14 400 bit/s, plus Corrigendum 1 (1998).</i>                                                                                                                                                                                                       |
| [ITU-T V.18]     | Recommendation ITU-T V.18 (2000), <i>Operational and interworking requirements for DCEs operating in the text telephone mode, plus Amendment 1 (2002).</i>                                                                                                                                                                                         |
| [ITU-T V.21]     | Recommendation ITU-T V.21 (1988), <i>300 bits per second duplex modem standardized for use in the general switched telephone network.</i>                                                                                                                                                                                                          |
| [ITU-T V.23]     | Recommendation ITU-T V.23 (1988), <i>600/1200-baud modem standardized for use in the general switched telephone network.</i>                                                                                                                                                                                                                       |
| [ITU-T V.25]     | Recommendation ITU-T V.25 (1996), <i>Automatic answering equipment and general procedures for automatic calling equipment on the general switched telephone network including procedures for disabling of echo control devices for both manually and automatically established calls, plus Corrigendum 1 (2001).</i>                               |
| [ITU-T V.27 ter] | Recommendation ITU-T V.27 ter (1988), <i>4800/2400 bits per second modem standardized for use in the general switched telephone network.</i>                                                                                                                                                                                                       |
| [ITU-T V.34]     | Recommendation ITU-T V.34 (1998), <i>A modem operating at signalling rates of up to 33 600 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits.</i>                                                                                                                                |
| [ITU-T V.61]     | Recommendation ITU-T V.61 (1996), <i>A simultaneous voice plus data modem, operating at a voice plus data signalling rate of 4800 bit/s, with optional automatic switching to data-only signalling rates of up to 14 400 bit/s, for use on the General Switched Telephone Network and on leased point-to-point 2-wire telephone type circuits.</i> |
| [ITU-T V.90]     | Recommendation ITU-T V.90 (1998), <i>A digital modem and analogue modem pair for use on the Public Switched Telephone Network (PSTN) at data signalling rates of up to 56 000 bit/s downstream and up to 33 600 bit/s upstream.</i>                                                                                                                |
| [IETF RFC 3550]  | IETF RFC 3550 (2003), <i>RTP: A Transport Protocol for Real-Time Applications.</i>                                                                                                                                                                                                                                                                 |
| [IETF RFC 4103]  | IETF RFC 4103 (2005), <i>RTP Payload for Text Conversation.</i>                                                                                                                                                                                                                                                                                    |

### 3 Definitions

This Recommendation defines the following terms:

**3.1 hexadecimal octet coding:** Hexadecimal octet coding is a means for representing a string of octets as a string of hexadecimal digits, with two digits representing each octet.

Each octet is issued by the DTE or DCE in the same time sequence as transmitted on the GSTN line, with no intervening characters.

For each octet, the 8-bit sequence is encoded as two hexadecimal digits. Bit 0 is the first transmitted; bit 7 is the last.

Bits 7-4 are encoded as the first hexadecimal digit, with bit 7 as MSB and bit 4 as LSB. Bits 3-0 are encoded as the second hexadecimal digit, with bit 3 as MSB and bit 0 as LSB.

#### Examples:

| Octet bit pattern (time order as specified in Recs ITU-T V.8 and ITU-T V.8 bis) | Hexadecimal coding | ITU-T T.50 codes                       |
|---------------------------------------------------------------------------------|--------------------|----------------------------------------|
| 00011011                                                                        | D8                 | 4/4, 3/8                               |
| 11100100                                                                        | 27                 | 3/2, 3/7                               |
| 10000011 10100010 11001000 00001001                                             | C1451390           | 4/3, 3/1, 3/4, 3/5, 3/1, 3/3, 3/9, 3/0 |

**3.2 hexadecimal octet sequence:** A hexadecimal octet sequence is an even number of hexadecimal digits, terminated by a <CR> (ITU-T T.50 0/13) character.

### 4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

|      |                                     |
|------|-------------------------------------|
| CR   | Carriage Return                     |
| DCE  | Data Circuit-terminating Equipment  |
| DTE  | Data Terminal Equipment             |
| DTMF | Dual Tone Multi Frequency           |
| EDT  | European Deaf Telephone             |
| FAX  | Facsimile                           |
| FCS  | Frame Check Sequence                |
| GSTN | General Switched Telephone Network  |
| ID   | Identity                            |
| IP   | Internet Protocol                   |
| ISDN | Integrated Services Digital Network |
| LSB  | Least Significant Bit               |
| MG   | Media Gateway                       |
| MGC  | Media Gateway Controller            |

MIME Multipurpose Internet Mail Extension  
 MSB Most Significant Bit  
 PSTN Public Switched Telephone Network  
 RTP Real-time Transfer Protocol  
 SDP Session Description Protocol  
 SIP Session Initiation Protocol  
 TCP Transmission Control Protocol

## 5 FAX/Textphone/Modem Tones Detection package

**Package name:** FAX/Textphone/Modem Tones Detection package

**Package ID:** ftmd (0x000E)

**Description:** This package defines an event to detect the presence of data traffic (fax, textphone or modem) on a line. The main intention of this event may be used to effect the compression option on the line so that an audio codec capable of transmitting modem signals can be invoked to handle the connection when needed. This Package extends the possible values of tone id in the "start tone detected" event. Note that there is no discrimination between tones from this package. If discrimination is desired, the Call Type Discrimination package should be invoked.

**Version:** 1

**Extends:** tonedet version 1

### 5.1 Properties

None.

### 5.2 Events

Events are defined as for the Tone Detection package (see [ITU-T H.248.1]).

#### 5.2.1 Additional tone id value

Tone Id: dtfm (0x0039)

This tone id is generated when any of the following tones are detected.

| "Tone"   | Description                                                                                   | Applicable to |
|----------|-----------------------------------------------------------------------------------------------|---------------|
| CNG      | an ITU-T T.30 fax calling                                                                     | Fax           |
| V21flag  | an ITU-T V.21 tone and flags                                                                  | Fax           |
| CIV18    | an ITU-T V.8 CI with ITU-T V.18 call function                                                 | Textphone     |
| XCI      | an ITU-T V.18 XCI                                                                             | Textphone     |
| V18txp   | an ITU-T V.18 "txp"                                                                           | Textphone     |
| Belltone | a Bell 103 carrier, either the high or the low frequency channel (as defined in [ITU-T V.18]) | Textphone     |
| Baudot   | a Baudot initial tone and character (as defined in [ITU-T V.18])                              | Textphone     |
| Edt      | an EDT initial tone and character (as defined in [ITU-T V.18])                                | Textphone     |
| Ctm      | a CTM signal was detected (as defined in [b-3GPP TS 26.226])                                  | Textphone     |

| "Tone"        | Description                                                         | Applicable to      |
|---------------|---------------------------------------------------------------------|--------------------|
| CIdata        | an ITU-T V.8 CI with any data call function                         | Data               |
| CT            | an ITU-T V.25 calling tone                                          | Text and data      |
| CIfax         | an ITU-T V.8 CI with facsimile call function                        | Fax                |
| V21tone       | an ITU-T V.21 carrier, either the high or the low frequency channel | Text and data      |
| V23tone       | an ITU-T V.23 carrier, either the high or the low frequency channel | Text and data      |
| V8 <i>bis</i> | an ITU-T V.8 <i>bis</i> modem handshaking signal                    | Fax, text and data |
| ANS           | ITU-T V.25 ANS, equivalent to T.30 CED from answering terminal      | Fax, text and data |
| ANSAM         | ITU-T V.8 ANSam                                                     | Fax, text and data |

### 5.3 Signals

None.

### 5.4 Statistics

None.

### 5.5 Procedures

None.

## 6 Text Conversation package

**Package name:** Text Conversation

**Package ID:** txc (0x000F)

**Description:** The Text Conversation package is intended for enabling real-time text conversation between terminals in different networks or multimedia environments. This package includes the mechanisms needed to transport ITU-T T.140 text conversation streams in multimedia environments. The transport mechanism will be different for each environment where the package is used.

**Version:** 1

**Extends:** None

### 6.1 Properties

#### 6.1.1 Text Buffering Time

**Property name:** Text Buffering Time

**Property ID:** bufftime (0x0001)

**Description:** This property indicates the time in ms that ITU-T T.140 data shall be collected before transmission in order to minimize text overhead. In low bit rate IP networks, a value of 300 ms is recommended. In environments with low overhead or high bit rates, this property should have the value 0, enabling immediate transmission of entered characters.

**Type:** Integer

**Possible values:** 0-500

**Default:** Provisioned  
**Defined in:** LocalControl  
**Characteristics:** Read/Write

### 6.1.2 Text Termination Connection State

**Property name:** Text Termination Connection State  
**Property ID:** connstate (0x0002)  
**Description:** The connection state property is used to register text capability, request a text connection, and reflect details of the achieved text connection. For transport methods having separate channel control procedures, managed by the MGC, only a subset of the values is used: Idle, Prepare, Connected.  
**Type:** Enumeration  
**Possible values:**

|           |          |                                                                                                             |
|-----------|----------|-------------------------------------------------------------------------------------------------------------|
| Idle      | (0x0001) | For no connection efforts                                                                                   |
| Prepare   | (0x0002) | For being known in the termination and ready to accept (the text capability is offered in session requests) |
| Initiate  | (0x0003) | For taking the initiative to establish a text connection opening a text channel                             |
| Accept    | (0x0004) | For accepting an incoming request for a text session                                                        |
| Deny      | (0x0005) | For denying an incoming text connect request                                                                |
| Connected | (0x0006) | For established connection in text mode                                                                     |

**Default:** Idle (0x0001)  
**Defined in:** TerminationState  
**Characteristics:** Read/Write

### 6.1.3 Text User Identity

**Property name:** Text User Identity  
**Property ID:** txuserid (0x0003)  
**Description:** This parameter holds the optional remote User Identity parameter of an ITU-T T.140 text conversation session, retrieved from the session.  
**Type:** String  
**Possible values:** String of up to 64 characters in Unicode UTF-8  
**Default:** None  
**Defined in:** LocalControl  
**Characteristics:** Read/Write

#### 6.1.4 Text Transport

|                         |                                                                                                                                                                                                                                                                          |          |                                                                                               |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------|
| <b>Property name:</b>   | Text Transport                                                                                                                                                                                                                                                           |          |                                                                                               |
| <b>Property ID:</b>     | trpt (0x0004)                                                                                                                                                                                                                                                            |          |                                                                                               |
| <b>Description:</b>     | The Transport parameter reflects the transport mechanism selected for the Text Conversation termination. When the media description has the full capability of describing sessions including the transport mechanism, this parameter is implied by the media descriptor. |          |                                                                                               |
| <b>Type:</b>            | Enumeration                                                                                                                                                                                                                                                              |          |                                                                                               |
| <b>Possible values:</b> | H224                                                                                                                                                                                                                                                                     | (0x0001) | For ITU-T H.224 Client ID = 2 in [ITU-T H.320]                                                |
|                         | AL1                                                                                                                                                                                                                                                                      | (0x0002) | For AL1 in [ITU-T H.324]                                                                      |
|                         | TCP                                                                                                                                                                                                                                                                      | (0x0003) | For TCP as in Annex G of [ITU-T H.323]                                                        |
|                         | RTP/T.140                                                                                                                                                                                                                                                                | (0x0004) | For RTP with ITU-T T.140 as in Annex G of [ITU-T H.323] or IETF SIP                           |
|                         | RTP/RED/T.140                                                                                                                                                                                                                                                            | (0x0005) | For RTP with ITU-T T.140 and redundancy coding RED as in Annex G of [ITU-T H.323] or IETF SIP |
|                         | T.134                                                                                                                                                                                                                                                                    | (0x0006) | For ITU-T T.134 in the ITU-T T.120 environment                                                |
|                         | Unassigned                                                                                                                                                                                                                                                               | (0x0007) | When no transport protocol is assigned                                                        |
| <b>Default:</b>         | Unassigned (0x0007)                                                                                                                                                                                                                                                      |          |                                                                                               |
| <b>Defined in:</b>      | LocalControl                                                                                                                                                                                                                                                             |          |                                                                                               |
| <b>Characteristics:</b> | Read/Write                                                                                                                                                                                                                                                               |          |                                                                                               |

#### 6.1.5 Text Protocol Version

|                         |                                                                           |  |  |
|-------------------------|---------------------------------------------------------------------------|--|--|
| <b>Property name:</b>   | Text Protocol Version                                                     |  |  |
| <b>Property ID:</b>     | TextProto (0x0005)                                                        |  |  |
| <b>Description:</b>     | The version of the ITU-T T.140 protocol used in the connection.           |  |  |
| <b>Type:</b>            | Integer                                                                   |  |  |
| <b>Possible values:</b> | Any integer corresponding to an ITU-T T.140 version number. (Currently 1) |  |  |
| <b>Default:</b>         | 1                                                                         |  |  |
| <b>Defined in:</b>      | LocalControl                                                              |  |  |
| <b>Characteristics:</b> | Read/Write                                                                |  |  |

#### 6.1.6 Redundancy Level

|                       |                  |
|-----------------------|------------------|
| <b>Property name:</b> | Redundancy Level |
| <b>Property ID:</b>   | red (0x0006)     |

|                         |                                                                                                                                                |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>     | The number of generations to use in RTP redundancy coding including the Primary.                                                               |
| <b>Type:</b>            | Integer                                                                                                                                        |
| <b>Possible values:</b> | 0-6<br>0 = use default or automatic decision on redundancy level<br>1 = use no redundancy<br>2-6 = use specified number of generations of data |
| <b>Default:</b>         | 0                                                                                                                                              |
| <b>Defined in:</b>      | LocalControl                                                                                                                                   |
| <b>Characteristics:</b> | Read/Write                                                                                                                                     |

### 6.1.7 Txc Request Timer

|                         |                                                                                                                                                                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Property name:</b>   | Txc Request Timer                                                                                                                                                                                                                                                                                             |
| <b>Property ID:</b>     | txctim (0x0007)                                                                                                                                                                                                                                                                                               |
| <b>Description:</b>     | The txctim property is a timer value in tenths of seconds for the requested operation. If the requested operation is not completed within this time, the state is returned to Idle and the result reported in the connchange event. An initial timer value of 0 indicates that no timer control is requested. |
| <b>Type:</b>            | integer                                                                                                                                                                                                                                                                                                       |
| <b>Possible values:</b> | 0-6000                                                                                                                                                                                                                                                                                                        |
| <b>Default:</b>         | 0                                                                                                                                                                                                                                                                                                             |
| <b>Defined in:</b>      | LocalControl                                                                                                                                                                                                                                                                                                  |
| <b>Characteristics:</b> | Read/Write                                                                                                                                                                                                                                                                                                    |

## 6.2 Events

### 6.2.1 Connection State Change

|                     |                                                                                                                                                                                                                  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Event name:</b>  | Connection State Change                                                                                                                                                                                          |
| <b>Event ID:</b>    | connchange (0x0001)                                                                                                                                                                                              |
| <b>Description:</b> | This event will occur when the text connection state for the termination has changed. Its parameter is the new contents of the Connection State property. If a request timed out, the state is returned to Idle. |

#### 6.2.1.1 EventDescriptor parameters

None.

#### 6.2.1.2 ObservedEventDescriptor parameters

##### 6.2.1.2.1 Connection Change

|                        |                                        |
|------------------------|----------------------------------------|
| <b>Parameter name:</b> | Connection Change                      |
| <b>Parameter ID:</b>   | connchnng (0x0001)                     |
| <b>Description:</b>    | Indicates the current connection state |

|                        |                           |
|------------------------|---------------------------|
| <b>Type:</b>           | Enumeration               |
| <b>Optional:</b>       | No                        |
| <b>Possible value:</b> | As property txc/connstate |
| <b>Default:</b>        | None                      |

### 6.3 Signals

None.

### 6.4 Statistics

#### 6.4.1 Characters Transferred

|                         |                                                                         |
|-------------------------|-------------------------------------------------------------------------|
| <b>Statistic name:</b>  | Characters Transferred                                                  |
| <b>Statistics ID:</b>   | chartrans (0x0001)                                                      |
| <b>Description:</b>     | Number of bytes of ITU-T T.140 data transferred through the termination |
| <b>Type:</b>            | Integer                                                                 |
| <b>Possible values:</b> | 0 and up                                                                |
| <b>Level:</b>           | Termination                                                             |

#### 6.4.2 Packets Lost

|                         |                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------|
| <b>Statistic name:</b>  | Packets Lost                                                                           |
| <b>Statistics ID:</b>   | packlost (0x0002)                                                                      |
| <b>Description:</b>     | Number of ITU-T T.140 packets lost as counted by the receiving ITU-T T.140 termination |
| <b>Type:</b>            | integer                                                                                |
| <b>Possible values:</b> | 0 and up                                                                               |
| <b>Level:</b>           | Termination                                                                            |

### 6.5 Procedures

The following are standard transport mechanisms for text conversation in different environments.

- In ITU-T H.320: ITU-T H.224 with Client ID = 2;
- In ITU-T H.324: AL1 channel connected with ITU-T H.245 procedures;
- In ITU-T T.120: ITU-T T.134 transport in ITU-T T.125 communication channel environment;
- In ITU-T H.323: RTP/T.140 or TCP as selected with ITU-T H.245 messages;
- In IETF SIP: RTP/T.140 as initiated with SDP.

NOTE – ITU-T T.140 text media is also used together with ITU-T V.18 modems for text telephony; this is specified in a separate package: Text\_Telephone (txp).

The Text Conversation package is intended to be added to a multimedia termination, handling appropriate multiplexing and control.

### 6.5.1 Function

A termination with Text Conversation adds capability declaration for a text conversation channel in the call set-up according to procedures defined for each environment. When matching capabilities exist, an ITU-T T.140 channel can be established according to the transport protocol used in the current environment. ITU-T T.140 text stream contents received from one termination are transferred for transmission to other ITU-T T.140 capable terminations in the context. The ITU-T T.140 contents may be buffered for a short moment for possible collection of more text in the same transmission according to the buffer time property.

### 6.5.2 Informative description

Real-time text conversation allows telecom users to carry out a written conversation. The presentation and coding aspects of standardized text conversation are defined in [ITU-T T.140]. Text is transmitted character by character (or in small blocks) so that the users experience a close interaction. The text and basic editing control is ISO/IEC 10646-1, UTF-8 coded. Figure 1 gives an example of how a text conversation can be displayed to the user.

| ANNE                                                       | EVE                                                                        |
|------------------------------------------------------------|----------------------------------------------------------------------------|
| Hi, this is Anne.                                          | Oh, hello Anne, I am glad you are calling!<br>It's been long since we met! |
| Yes, have you heard that I will come to Paris in November? | No, that's new to me. What brings you here?                                |

**Figure 1 – Possible display of a one-to-one text conversation**

For each transport environment, a suitable transport protocol must be selected to carry the text. Currently defined and recommended transport environments for ITU-T T.140 text media streams that can be supported by this package are:

- 1) packet networks, where the procedures described in Annex G of [ITU-T H.323] can be used for setting up and conducting text conversation sessions, using TCP or RTP/T.140 for the transport of ITU-T T.140;
- 2) packet networks, where the IETF Session Initiation Protocol (SIP) can be used for setting up and conducting text conversation sessions using RTP/T.140 for the transport of ITU-T T.140;
- 3) the ITU-T H.324 multimedia environment in PSTN, ISDN and Mobile networks, where an AL1 channel connected by ITU-T H.245 procedures is used for ITU-T T.140;
- 4) the ITU-T H.320 multimedia environment, where an ITU-T H.224 channel with Client ID = 2 is specified for transport of ITU-T T.140;
- 5) the ITU-T T.120 data conferencing environment, that can be used alone, or in conjunction with any of the environments above, where ITU-T T.134 specifies the application entity and ITU-T T.125 the data channel for ITU-T T.140.

A separate Text Telephone package (txp) supports text telephony in the PSTN using the ITU-T V.18 modem in native and legacy modes, and ITU-T T.140 for communication with terminations using this package.

Interworking between these forms of Text Conversation can be achieved through the use of gateways with packages defined here.

### 6.5.3 Total Conversation

Most text conversation transport environments are part of multimedia communication systems. With the introduction of text, they enable conversation in video, text and voice simultaneously, called Total Conversation. The total set of communication modes that people tend to use locally can be offered on a distance through Total Conversation. Since the text part is built on the unified presentation level T.140, the task to arrange interoperability of Total Conversation in different network environments through a gateway is simplified.

Video is optional in the multimedia systems. Therefore, compatible text-and-voice conversation can also be established within the same framework.

### 6.5.4 Descriptor to use for text conversation

One descriptor value is of specific interest for the Text Conversation and Text Telephone packages. That is the text conversation media stream. It is described here for information.

#### Text conversation stream

This descriptor is used for the text conversation stream, according to [ITU-T T.140]. [ITU-T T.140] gives a general presentation level description for a termination supporting real-time text conversation. The text and basic editing control is UTF-8 coded. For each transport environment, a suitable transport protocol must be selected to carry the text.

T.140 is a registered MIME text stream name, which can be specified to be used as it is or in RTP embedding of [IETF RFC 4103].

## 7 Text Telephone package

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Package name:</b> | Text Telephone package                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Package ID:</b>   | txp (0x0010)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description:</b>  | The Text Telephone package is used on a line termination in a Media Gateway, to handle text telephone calls. It includes ITU-T V.18 text telephone modem functionality that adapts to different legacy text telephone systems in the PSTN as well as it provides communication with ITU-T V.18-equipped text telephones. The text media stream is UTF-8 coded with a few editing functions as specified in [ITU-T T.140]. The Text Telephone package is intended to be operated together with the Call Type Discrimination package (ctyp) to perform ITU-T V.18 automoding functions. |
| <b>Version:</b>      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Extends:</b>      | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

#### Text telephony

Text telephony offers a real-time conversation in text between two parties. It may be combined with voice conversation. Text telephony in PSTN existed in at least six incompatible legacy modes before the automoding modem Recommendation for text telephony ITU-T V.18 was introduced by [ITU-T V.18]. It is suitable for use in PSTN text telephones, as well as in gateways for connection to the PSTN text telephones. When connected, it can operate in one of its native ITU-T V.18 modes, or in any of the six legacy modes described in [ITU-T V.18] annexes. The legacy modes are Baudot, EDT, DTMF, V.21, Minitel and Bell 103. The mode detection and adjustment of the transmission to the selected mode is automatic.

The native modes use [ITU-T T.140] for the text coding and control and [ITU-T V.21] or optionally [ITU-T V.61] for the modulation. The legacy modes use different character coding schemes, but

