

# Text Messaging within H.323 Systems

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DRAFT



## Summary

This Recommendation defines the capability and procedures for facilitating Text Messaging (TM) between devices using pre-existing H.323 call signalling mechanisms. The TM feature can be used to establish a connection between two or more H.323 enabled devices for the purpose of transmitting “short messages” or to establish and maintain a signalling connection for the purpose of facilitating Instant Messaging (IM) sessions.

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## Acknowledgements

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# Text Messaging within H.323 Systems

## 1 Scope

This Recommendation defines the capability and procedures for facilitating Text Messaging (TM) between devices using pre-existing H.323 call signalling mechanisms. The TM feature can be used to establish a connection between two or more H.323 enabled devices for the purpose of transmitting “short messages” or to establish and maintain a signalling connection for the purpose of facilitating Instant Messaging (IM) sessions.

## 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.

- [1] ITU-T Recommendation H.323 (2006), *Packet-based multimedia communications systems*.
- [2] ITU-T Recommendation H.225.0 (2006), *Call signalling protocols and media stream packetization for packet-based multimedia communication systems*.
- [3] ITU-T Recommendation H.460.1 (2002), *Guidelines for the Use of the Generic Extensible Framework*.
- [4] ITU-T Recommendation H.245 (2006), *Control Protocol for Multimedia Communications*.
- [5] ITU-T Recommendation H.235.0 (2006), *Security Framework for H series Multimedia Communications*.

## 3 Terms and Definitions

**Text Messaging (TM)** – Method of exchanging textual information via the H.225.0 call signalling channel.

## 4 Abbreviations

For the purpose of this Recommendation the following abbreviations are used.

IM	Instant Message
TM	Text based messaging feature
MCU	Multipoint Conference Unit

## 5 Feature Description

This Recommendation defines a procedure wherein a calling entity may establish a lightweight call or use an existing established call for the purpose of exchanging textual information.

When a called Endpoint receives a Setup message from a calling entity advertising the TM feature as a supported feature and when that called endpoint supports the TM feature, the two devices are capable of exchanging text messaging in accordance with this Recommendation. Calls may be established solely for the purpose of transmitting a message (using the **conferenceGoal** of **callIndependentSupplementaryService**) or may be exchanged as part of a normal H.323 call that may also include audio, video, or other data.

The TM feature can be used to send a one-time unidirectional message (“short message”) or to establish a session (IM) between the two entities for the purpose of bidirectional exchange of textual information.

## 6 Capability Advertisement

Endpoints capable of supporting TM shall advertise this capability via the Generic Extensibility Framework defined in Recommendations H.323 and H.460.1. Endpoints shall advertise this capability in the Setup message of a standard call as a supported feature. Called endpoints that are capable of supporting TM shall advertise this capability when responding to the incoming call via the Call Proceeding message and other response messages.

Table 1 below defines the Text Messaging feature in this Recommendation.

**Table 1 – Indication of the Text Messaging Feature**

Feature name:	Text Messaging (TM)
Feature Description:	This feature allows for the establishment of connections for non-call related services or for the support of these services during a call.
Feature identifier type:	OID
Feature identifier value:	iso(1) org(3) dod(6) internet(1) private(4) enterprise(1) packetizer(17090) gef (0) tm (1)

Parameters associated with the advertisement of this capability are specified in the following clauses. In consideration of backward compatibility with further revisions to this Recommendation, the recipient shall simply ignore any parameters received other than those specified in this document.

The TM Feature shall be capable of operating in 4 different modes:

1. Short Message outside the context of an existing call.
2. Instant Message session outside the context of an existing call.
3. Short Message inside the context of an existing call.
4. Instant Message session inside the context of an existing call.

## 7 Sending a short message outside the context of a call

An H.323 device requesting to send a short message outside the context of an existing call shall send a Setup message with the **conferenceGoal** set to **callIndependentSupplementaryService** and the TM feature present in the **neededFeatures** field. The advertisement of the TM feature shall also contain the “TM Type” parameter as shown in Table 2. At present the parameter shall be set to 1 to indicate a SMS/IM type TM.

Table 2 – TM TYPE Parameter

Parameter name:	TM Type
Parameter description:	Indicates the type of TM requesting establishment.
Parameter identifier type:	standard
Parameter identifier value:	1
Parameter type:	number8
Parameter cardinality:	Once

The TM feature advertisement may contain a “Supports Encryption” parameter that shall indicate to the called device that the calling device supports message encryption. The encryption exchange mechanism should adhere to the principals of H.235.0, though the mode or method of encryption of the messaging is for further study.

Table 3 below defines the “Supports Encryption” feature parameter to be used with the TM feature.

Table 3 – Supports Encryption Parameter

Parameter name:	Supports encryption
Parameter description:	Indicates the device supports TM encryption.
Parameter identifier type:	standard
Parameter identifier value:	3
Parameter type:	Boolean
Parameter cardinality:	Once

The TM Type parameter and optionally the “Supports Encryption” parameter should be present in the responding TM feature message contained in the **featureSet** parameter in messages from the called device to indicate to the caller that the called endpoint can support TM and optionally whether messages should be encrypted.

Called endpoints not supporting TM, on recognition of the conferenceGoal set to **callIndependentSupplementaryService** in the Setup message and this feature listed as needed feature shall automatically return a Release Complete with a reason **neededFeatureNotSupported**.

Note – Some older endpoints may discard the Generic Extensibility Framework fields and attempt to treat the call as a normal call. The calling endpoint shall be prepared to release the call in the event that support for the TM feature is not advertised by the time that a Connect message is received. At such time, the calling device shall send a Release Complete with a reason **neededFeatureNotSupported**.

On receipt of the Connect message the calling endpoint shall send a Facility message containing the IM feature in the **genericData** field. The feature must contain either the message contents parameter or, if encryption is mutually supported, the encrypted contents parameter containing the actual text message.

Table 4 below defines the messages contents parameter.

**Table 4 – Message Contents Parameter**

Parameter name:	Message content
Parameter description:	Message contents.
Parameter identifier type:	standard
Parameter identifier value:	5
Parameter type:	BMPString
Parameter cardinality:	Once

Table 5 below defines the encrypted contents parameter.

**Table 5 – Encrypted Contents Parameter**

Parameter name:	Encrypted contents
Parameter description:	Encrypted message contents.
Parameter identifier type:	standard
Parameter identifier value:	10
Parameter type:	OctetString
Parameter cardinality:	Once

Note: The encrypted contents parameter shall be in the format of an encrypted BMPString.

On receipt of the Facility Message containing the short message the called endpoint shall respond with a Release Complete with a Cause IE set to “normal call clearing” (16) to terminate the connection.

## **8 Initiating an instant message session outside the context of a call.**

When initiating an instant message session outside the context of a call, the same procedure as Clause 7 shall be followed, with the exception that when sending the first Facility message containing a text message the “Persistent Session” parameter shall be present and set to TRUE. This will indicate to the called endpoint that the calling endpoint wishes to establish an instant messaging session rather than send a single short message. The “Persistent Session” parameter needs to be sent only once in order to establish an instant message session. Subsequent Facility messages containing text message may omit the “Persistent Session” parameter.

Table 6 below defines the “Persistent Session” parameter for use with the TM feature.



**Table 6 – Persistent Session Parameter**

Parameter name:	Persistent Session
Parameter description:	Indicates a desire to open a persistent TM session.
Parameter identifier type:	standard
Parameter identifier value:	4
Parameter type:	Boolean
Parameter cardinality:	Once

On receipt of a “Persistent Session” parameter set to TRUE, the called endpoint shall maintain a persistent connection for the conveyance of bi-directional text messaging.

### **8.1 Exchanging Messages during an IM Session**

On establishment of an IM session, the endpoints are free to exchange messages via a Facility message containing the TM feature in the **genericData** field with the messages contained in either the “Message Contents” or, if encrypted, in the “Encrypted Contents” parameter as per Table 4 and 5.

### **8.2 Closing an IM session**

To close an IM session outside the context of a call, the endpoint wishing to terminate the IM session shall send a Facility message containing the TM feature in the **genericData** field with a “Persistent Session” parameter set to FALSE. The responding endpoint shall then process all queued messages and then close the connection by responding with a Release Complete with a Cause IE set to “normal call clearing” (16).

## **9 Sending a short message inside the context of a call.**

Supporting H.323 devices may exchange short messages at anytime during the context of an existing call by sending a Facility message containing the TM feature in the **genericData** field with the message contained in the “Message Contents” parameter or, if encrypted, in the “Encrypted Contents” parameter as per Table 4 and 5.

Note – Since an endpoint may send a “short message” at the same time that the other endpoint sends a Release Complete, implementations shall be prepared to alert the user that a message may not have been delivered.

## **10 Instant messaging sessions within the context of a call.**

Supporting H.323 devices may initiate or terminate an IM Session at anytime during the context of an existing call by sending a Facility message containing the TM feature in the **genericData** field with the “Persistent Session” parameter set to TRUE or FALSE, respectively. (Refer table 6.)

Messages sent between endpoints in a call and within an IM session shall be exchanged in the same manner as a short message inside the context of a call (see Clause 9).

It should be appreciated that the only real difference between “instant message” and “short message” messages is the context within which messages are sent (i.e., when the Persistent Session indicator has been transmitted or has not been transmitted). This may affect the way in which messages are presented to the user. For example, IM messages might appear in a single window on a computer, whereas “short messages” might appear in separate windows, disjointed from other text messages.

If a Facility message is transmitted requesting a transition to a persistent session (i.e., an IM session), then termination of that call later shall follow the procedures described in Clause 8.2. While billing issues are outside the scope of this document, it is recommended that endpoints that wish to terminate audio/video communication shall immediately send a Facility message with the “Persistent Session” parameter included and set to FALSE. If the users wish to continue exchanging messages, then a new call would be initiated as per Clause 8.)

Note – Since a request to transition to a persistent IM session may be transmitted at the same time that the other endpoint sends a Release Complete, implementations shall be prepared to see the request fail abnormally and alert the user that IM messages may not have been delivered.

## 11 Multipoint Messaging considerations

This recommendation may be used to facilitate TM within the context of a multipoint conference. In this case, the MCU and endpoints shall support the **H460tmControlCapability**.

Table 7 – h460tmControlCapability Identifier

Capability name	H460tmControlCapability
Capability class	Generic Control
Capability identifier type	OID
Capability identifier value	{ iso(1) org(3) dod(6) internet(1) private(4) enterprise(1) packetizer(17090) gef (0) tm (1) mpm (2)}
maxBitRate	This field shall not be included.
nonCollapsingRaw	This field shall not be included.
transport	This field shall not be included

## 11.1 Multipoint Messaging

Table 8 below lists the messages defined for clause 11.

Table 8 – subMessageIdentifier values

SubMessageIdentifier	Message name	Message type	Content Type
1	textSessionControlRequest	GenericRequest	unsignedMin
2	textSessionControlCommand	GenericCommand	unsignedMin
3	textSessionModeRequest	GenericRequest	unsignedMin
4	textSessionModeCommand	GenericCommand	unsignedMin
5	textSessionMessage	GenericIndication	octetString

For the purpose of this recommendation, Request messages shall only be valid between the control endpoint and the MCU. Command messages from the MCU to supporting endpoints and Indication messages between all parties in the TM conference.

NOTE: The assignment of control endpoint is outside the scope of this recommendation and shall be in accordance with conference control procedures.

## 11.2 Establishing TM Session

The control endpoint, which supports this recommendation, may open a TM session with an MCU by sending a **textSessionControlRequest** to the MCU with a value of 0 to indicate that the session is to be opened. The MCU shall then send a **textSessionControlCommand** with a value of 0 to all parties that support this recommendation in the conference to notify the commencement of a multipoint TM session.

Table 8 –Control Request/Control values

Value	Description
0	Open multipoint TM session
1	Close multipoint TM session

## 11.3 Multipoint TM Mode selection

The control endpoint may select the mode of operation of the TM session by sending a **textSessionControlRequest** to the MCU. The conference unit shall forward the message to all parties in the conference via a **textSessionControlCommand** to notify the mode of the TM session.

Table 8 indicates the list of prescribed Multipoint mode values to be used.

Table 9 –Multipoint Mode values

Value	Description
1	Open
2	Public
3	Private
4	Broadcast
5	Receive

**Open** : All TM session members shall send and receive and private messages between conference parties is permitted.

**Public** : All TM session members shall send and receive however private messages are prohibited.

**Private** : All messages are private between TM session members

**Broadcast** : Only the control endpoint can send messages

**Receive** : All TM session members messages are sent privately to the control endpoint.

NOTE: The MCU shall by default use the MultipointMode of *1-Open* until it receives a **textSessionControlRequest** instructing otherwise.

### 11.4 Multipoint TM Messages

Messages sent and received in the context of a multipoint conference shall be in the form of the **MultipointTM** element encoded and sent/received via a **textSessionMessage**. When sending a message, all messages shall be sent to the MCU. The MCU based upon the Multipoint Mode value shall decide how the MultipointTM is to be processed and distributed to the conference members.

The MultipointTM element contains: (ASN.1 syntax is contained in Clause 14)

**Message** : (Mandatory) The text message

**Sender** : (Optional) The source terminal number (only for receiving)

**Receiver** : (Optional) The intended terminal number (only for sending)

Note: The receiver field is only effectual if the **Multipoint Mode** supports private messages (mode of Open or Private). If the field is present in other modes the message shall be deemed to be invalid and not processed.

## 11.5 Closing TM Session

The control endpoint may close a TM session at any time by sending a **textSessionControlRequest** to the MCU with a value of 1 to indicate that the session is to be closed. The MCU shall then send a **textSessionControlCommand** with a value of 1 to all parties in the conference to notify the closing of the multipoint TM session.

## 12 Interaction between calls and Instant Messaging sessions.

Special consideration should be made to the operation of IM sessions and traditional establishment and termination of H.323 calls.

When terminating a call with an IM session open, the party requesting the call termination shall notify the responding party via a Facility message containing the TM feature in the **genericData** field with the “Persistent Session” parameter set to FALSE (refer Table 6) prior to sending a Release Complete. This will notify the responding endpoint that the IM session is closed. At any time after receipt of this message either endpoint may re-establish an IM session by establishing a new IM session (i.e., a new “call”) outside the context of a call (refer Clause 8) and continue textual dialog.

When the call is terminated outside the control of either party e.g., via a Gatekeeper), the receipt of the Release Complete by the endpoints shall indicate the IM session has closed unexpectedly. It should be understood that some messages may not have been delivered in such a case.

When an IM session is open and a call is to be established between the same endpoints, the IM session shall be treated as a separate call and operate independently of a new call that might be established. That is, calls initiated with a **conferenceGoal** of **callIndependentSupplementaryService** shall not transition into normal audio/video calls.

## 13 Gatekeeper Considerations

For the purpose of billing and TM routing, the Gatekeeper shall be notified that the call is a TM outside the context of a call by advertising the TM feature in the generic data field of the ARQ message. The Gatekeeper may then choose to route or bill TM outside the context of a call differently to traditional calls. How a gatekeeper routes or bills a call is for further study.

**Note:** Implementers shall ensure the gatekeeper is kept notified of the status calls that utilize this feature just as with any other call, such as by transmitting IRR messages.

## 14 ASN.1 Notation

```
H460TM { iso(1) org(3) dod(6) internet(1) private(4) enterprise(1) packetizer(17090) gef (0)
tm (1) } DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

MultipointMode ::= ENUMERATED
{
    tmOpen          (1),
    tmPublic        (2),
    tmPrivate       (3),
    tmBroadcast     (4),
    tmReceive       (5)
}

MultipointTM ::= SEQUENCE
{
    Message         BMPString (SIZE (1..256)),      -- Basic ISO/IEC 10646-1 (Unicode)
    sender          INTEGER (1..65535)  OPTIONAL,  -- source terminal number
    receiver        INTEGER (1..65535)  OPTIONAL,  -- destination terminal number
    ...
}

END
```