INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.323
Annex Q
(07/2001)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Systems and terminal equipment for audiovisual services

Packet-based multimedia communications systems

Annex Q: Far-end camera control and H.281/H.224

ITU-T Recommendation H.323 – Annex Q

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

ITU-T Recommendation H.323

Packet-based multimedia communications systems

ANNEX Q

Far-end camera control and H.281/H.224

Summary

This annex defines H.281/H.224-based far-end camera control (FECC).

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. 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 Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

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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As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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ANNEX Q

Far-end camera control and H.281/H.224

Q.1   Scope

The purpose of this annex is to provide far-end camera control protocol based on H.281/H.224. It also permits an H.323 endpoint to run any H.224 application using the IP/UDP/RTP/H.224 protocol defined in this annex.

Q.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.

[1]   ITU-T H.224 (2000), *A real time control protocol for simplex applications using the H.221 LSD/HSD/MLP channels*.

[2]   ITU-T H.281 (1994), *A far end camera control protocol for videoconferences using H.224*.

[3]   ITU-T T.140 (1998), *Protocol for multimedia application text conversation*.

Q.3   Introduction

The protocol described in this annex may be used to support far-end camera control (FECC) in ITU-T H.323 using the stack IP/UDP/RTP/H.224/H.281. This protocol supports both point-to-point and multipoint scenarios.

This method may be used as a "simple" FECC scheme when the more sophisticated features of H.282/H.283 are not needed.

This method shall be used for FECC thru H.320-H.323 and H.324-H.323 gateways when the H.320 or H.324 endpoints do not support ITU-T H.282.

The requirements given below apply only in the case that the protocol described in this annex has been selected, using the normal procedures of ITU-T H.245.

It is allowed to run any H.224 application using the IP/UDP/RTP/H.224 protocol defined in this annex. The only other currently standardized H.224 application is ITU-T T.140.

Q.4   Far-end camera control protocol

Q.4.1   General

This protocol is based on ITU-T H.281 running over ITU-T H.224 in an RTP/UDP channel.

On IP transport networks, the H.224 protocol octet structure shall be the same as Figure 2/H.224 except that the HDLC bit stuffing, HDLC flags and HDLC Frame Check Sequence shall be omitted. The entire remaining content of each frame shall be placed in a single RTP packet.

References in ITU-T H.224 to the LSD channel of ITU-T H.221 shall be interpreted as referring to the H.224 logical channel as described in this annex. The maximum transmission time requirements of ITU-T H.224 shall be met, with the H.224 logical channel considered as operating at 4800 bit/s, regardless of the actual bit rate of the channel.

This protocol shall run over RTP in a unidirectional unreliable H.245 logical channel. The RTP payload value shall be dynamic. The payload descriptor field of H.245 **RTPPayloadType** shall use the H.224 Object ID.

Terminal numbering according to the procedures in ITU-T H.243 shall be used in order to support the data link layer in multipoint. The MCU/Terminal address pair <M><T> shall be used to uniquely identify each terminal in a conference. The special destination address of <0><0> shall be used as the broadcast address. The special source address <0><0> shall indicate that the sender does not know its address. An address with the terminal number set to 0 indicates the MC. For example, <n><0> indicates MC number n.

In a point-to-point call, when only two terminals are involved, then the terminals do not have an <M><T> address. In this case, the <M><T> source and destination addresses shall be always <0><0>.

In a centralized conference, an H.224 channel shall be opened between each terminal and the MC. When a terminal sends an H.224 packet, the MC shall forward the packet to the destination terminal by either retransmitting each packet to all other connected terminals or, by selectively retransmitting each packet only toward the destination terminal. The decision which method to use is up to the MCU manufacturer.

In a decentralized multicast conference, each terminal shall multicast the FECC packet to all other terminals. The MC is not involved in forwarding the packets. Terminal numbers per ITU-T H.243 shall be used to identify the source and destination terminals.

In decentralized multi-unicast conferences, each terminal shall use a separate logical channel to each far-end terminal to which it wants to send H.224 packets.

Q.4.2   H.320 to H.323 gateways

H.320-H.323 gateways shall insert and remove HDLC flags, HDLC bitstuffing, and HDLC Frame Check Sequence(s) as appropriate in each direction, so that the bitstream on the H.320 side shall conform with ITU-T H.224, and the bitstream on the H.323 side shall conform with the paragraphs above.

Q.4.3   H.324 to H.323 gateways

H.324-H.323 gateways shall insert and remove HDLC flags, HDLC octet-stuffing, and HDLC Frame Check Sequence(s) as appropriate in each direction, so that the bitstream on the H.324 side shall conform with the use of ITU-T H.224 as described in ITU-T H.324, and the bitstream on the H.323 side shall conform with the clauses above.

Q.4.4   H.245 signalling

The use of this protocol shall be signalled by the **GenericCapability** part of the **DataApplicationCapability** sequence in H.245. The Generic Capability for H.224, described in ITU-T H.224, shall be used. This shall be placed in the **receiveAndTransmitDataApplicationCapability** part of the **Capability** choice.

This protocol shall not be signalled in the **receiveDataApplicationCapability** or **transmitDataApplicationCapability** parts of the **Capability** choice.

Q.5   RTP header information

The following fields shall be filled in the RTP header:

V: 2

M: 0 NA

PT: The same number sent in the OLC dynamicRTPPayloadType field

Sequence number: Filled, incremented by one for each RTP packet sent

Timestamp: Filled with 8 kHz clock rate

SSRC: Filled with the synchronization source

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