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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Supplementary services for multimedia

Using H.225.0 call signalling connection as transport for H.323 RAS messages

ITU-T Recommendation H.460.17

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ITU-T Recommendation H.460.17

Using H.225.0 call signalling connection as transport for H.323 RAS messages

Summary

The current version of ITU-T Rec. H.323 requires two completely independent transports: one for RAS and another for H.225.0 call signalling. For several reasons, one of them is FW/NAT traversal; it would be advantageous to be able to use the same transport for both protocols.

This Recommendation defines the mechanism of encapsulating RAS messages inside H.225.0 messages and the method for discovering the ability of a peer H.323 entity to support features defined in this Recommendation.

Source

ITU-T Recommendation H.460.17 was approved on 13 September 2005 by ITU-T Study Group 16 (2005-2008) under the ITU-T Recommendation A.8 procedure.

FOREWORD

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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.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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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, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

ITU-T Recommendation H.460.17

Using H.225.0 call signalling connection as transport for H.323 RAS messages

1 Scope

This Recommendation defines the mechanism of encapsulating RAS messages inside H.225.0 messages and the method for discovering the ability of a peer H.323 entity to support features defined in this Recommendation.

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 (2003), *Packet-based multimedia communications systems*.

[2] ITU-T Recommendation H.225.0 (2003), *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.235.0 (2005), *H.323 security: Framework for security in H-series (H.323 and other H.245-based) multimedia systems*.

[5] ITU-T Recommendation H.235.1 (2005), *H.323 security: Baseline security profile*.

[6] ITU-T Recommendation H.235.2 (2005), *H.323 security: Signature security profile*.

[7] ITU-T Recommendation H.235.3 (2005), *H.323 security: Hybrid security profile*.

[8] ITU-T Recommendation H.235.4 (2005), *H.323 security: Direct and selective routed call security*.

[9] ITU-T Recommendation H.235.5 (2005), *H.323 security: Framework for secure authentication in RAS using weak shared secrets*.

[10] ITU-T Recommendation H.235.6 (2005), *H.323 security: Voice encryption profile with native H.235/H.245 key management*.

[11] ITU-T Recommendation H.235.7 (2005), *H.323 security: Usage of the MIKEY key management protocol for the Secure Real Time Transport Protocol (SRTP) within H.235*.

[12] IETF RFC 2246 (1999), *The TLS Protocol Version 1.0*.

3 Terms and Definitions

This Recommendation defines the following term:

3.1 RAS over H.225.0: The mechanism allowing transport of RAS messages inside the H.225.0 call signalling connection.

4 Abbreviations

This Recommendation uses the following abbreviations:

EP Endpoint

GK Gatekeeper

RAS Registration, Admission and Status

RCF Registration Confirm

RRQ Registration Request

SCTP Stream Control Transmission Protocol

TCP Transport Control Protocol

TLS Transport Level Security

TSAP Transport Service Access Point

5 Feature Description

This Recommendation defines two mechanisms:

- Discovery of the remote entity's support of RAS over H.225.0
- Transport of RAS messages over the H.225.0 call signalling connection.

6 Discovering remote entity's support of RAS over H.225.0

RAS messages are sent between EP and GK or between two GKs. In both cases the first RAS message between two particular H.323 entities is sent in the GK direction. The support of RAS over H.225.0 by a particular GK may be either known *a priori* (provisioned) or may require discovery. H.460 feature negotiation mechanisms cannot be used in this case because the discovery should be performed before the first message between the H.323 entities is sent.

Annex O/H.323 GK discovery mechanism should be used for discovery of support of RAS over H.225.0. The service for the discovery shall be either h323rs or h323ls. The H.225.0 transport will be discovered based on the following rules:

In the case of H.225.0 signalling over TCP, the transport shall be tcp.

In the case of H.225.0 signalling over Annex E/H.323, the transport shall be h323mux.

In the case of H.225.0 signalling over SCTP, the transport shall be sctp.

If the IP address of the GK is known *a priori* and the port is unknown, the well-known H.225.0 call signalling port 1720 shall be used for RAS over H.225.0 procedure.

7 Transport of RAS over H.225.0

7.1 Usage of H.225.0

The entity which supports RAS over H.225.0 shall also support persistent H.225.0 transport connections as described in 7.3/H.323. An endpoint shall indicate such support by setting maintainConnection in RRQ to TRUE.

If both the entity sending the RAS message, and the entity receiving it support RAS over H.225.0, then they should use it for RAS messages transport.

In order to keep the transport connection open, the two entities should use lightweight RRQ, as described in 7.2.2.1/H.323. In the case of NAT traversal, the timeToLive value should be shorter

than the NAT binding timeout. The entities may use the IRR mechanism to support the same functionality. Alternatively, for the cases when transport is TCP, an entity which established the TCP connection may periodically send empty TPKT packets (packets containing bytes 03 00 00 04 only). A keep-alive interval in the range of 5 to 30 seconds should be used except in cases where it is known (for example, from the specifics of the network) that a longer interval will not result in the closure of pinholes.

To send a RAS message between two H.323 entities supporting RAS over the H.225.0 feature, a persistent H.225.0 transport connection shall be used between the entities. If such a connection is already established it may be re-used, or a new connection may be established. If no persistent connection is currently established, then it shall be established. Generally, the entity sending the first RAS message establishes the connection to the entity receiving the RAS message. The H.225.0 signalling TSAP of the entity receiving the RAS message is used as the transport connection destination. The same transport connection should be used for RAS over H.225.0 signalling and regular H.225.0 signalling.

If desired, more than one H.225.0 transport connection between the same two entities may be used for RAS messages transfer. No association is mandated between RAS messages and transport connections in such a case.

To signal that the same GK's H.225.0 transport signalling TSAP shall be used for all RAS and H.225.0 communication, the callSignalAddress and rasAddress fields of the RRQ and RCF shall contain a SEQUENCE OF containing zero elements.

The H.225.0 FACILITY message shall be used to transfer RAS messages. The CRV field of the message shall have a value of 0 (including the flag bit). Such a message shall contain User-user Information Element with the h323-message-body field of H323-UU-PDU set to empty. The genericData field of the H323-UU-PDU shall contain RAS messages as described in 7.2 and 7.4.

An H.323 entity, which supports RAS over H.225.0, shall also support tunnelling of H.245 channel over H.225.0.

7.2 Generic data usage

RAS messages to be sent over H.225.0 call signalling shall be encapsulated in the genericData field of the H323-UU-PDU in the User-user Information Element of the H.225.0 FACILITY message. Each such genericData field has the id field specifying RAS over H.225.0 (as defined in Table 1) and one or more RAS message parameters (as defined in Table 2) containing binary encoding of one RAS message each.

7.3 RAS over H.225.0 feature definition

Table 1 defines the RAS over the H.225.0 feature.

Table 1/H.460.17 – RAS over H.225.0 feature

Feature name:	RAS over H.225.0
Feature Description:	This feature allows transport of RAS messages over H.225.0 call signalling connection.
Feature identifier type:	Standard
Feature identifier value:	17

7.4 RAS over H.225.0 parameters

Table 2 defines the RAS over H.225.0 parameters.

Table 2/H.460.17 – RAS message parameter

Parameter name:	RAS message
Parameter description:	This parameter contains basic-aligned PER-encoded RAS message.
Parameter identifier type:	Standard
Parameter identifier value:	1
Parameter type:	raw
Parameter cardinality:	One or more

8 Security considerations

The transport of RAS messages provided by RAS over H.225.0 mechanism does not provide a means of security. It relies on the security mechanisms provided by underlying transport and security mechanisms defined for RAS messages.

TLS may be used for the RAS over a TCP or SCTP channel. The procedure for supporting TLS is out of the scope of this Recommendation and needs to be addressed by H.235.

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