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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Communication procedures

Gateway control protocol: Transport over Stream Control Transmission Protocol (SCTP)

Recommendation ITU-T H.248.4

ITU-T H-SERIES RECOMMENDATIONS

AUDIOVISUAL AND MULTIMEDIA SYSTEMS

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Recommendation ITU-T H.248.4

Gateway control protocol: Transport over Stream Control Transmission Protocol (SCTP)

Summary

Recommendation ITU-T H.248.4 defines the transport of ITU-T H.248.1 Gateway Control Protocol messages over the Stream Control Transmission Protocol (SCTP). SCTP is an alternative to UDP or TCP. Transport of ITU-T H.248.1 over UDP or TCP is defined in Annex D of Recommendation ITU-T H.248.1.

This revision specifies the use of the LONG-TIMER to remove a Transaction Identity from the list of responses.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T H.248 Annex H	2000-11-17	16
1.0	ITU-T H.248.4	2000-11-17	16
1.2	ITU-T H.248.4 (2000) Cor. 1	2004-03-15	16
2.0	ITU-T H.248.4	2009-12-14	16

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.

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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.

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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 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/.

CONTENTS

Recommendation ITU-T H.248.4

Gateway control protocol: Transport over Stream Control Transmission Protocol (SCTP)

1 Scope

This Recommendation defines a package that extends the applicability of [ITU-T H.248.1], Gateway control protocol. In particular, this Recommendation defines the transport of ITU-T H.248.1 Gateway Control Protocol messages over the Stream Control Transmission Protocol (SCTP) [IETF RFC 2960].

Protocol messages may be transmitted over the Stream Control Transmission Protocol (SCTP).

In a transaction-oriented protocol like H.248.1, there are still ways for transaction requests or responses to be lost, e.g., caused by entity/component failure. As such, it is recommended that entities using SCTP transport implement application level timers for each request.

Commands should be sent to the default port number, 2944 for text-encoded operation, or 2945 for binary-encoded operation. Responses must be sent to the address and port from which the corresponding commands were sent, except if the response is to a handoff or failover, in which case the procedures of clause 11.5 of [ITU-T H.248.1] apply. SCTP payload protocol identifier shall be 7.

To provide interworking between MTP3B and SCTP, and to allow for flexible implementations of gateways and controllers in order to offer efficient use of SCTP associations, the M3UA layer may be added on top of SCTP.

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.248.1]   Recommendation ITU-T H.248.1 (2005), *Gateway control protocol: Version 3*.

[IETF RFC 2960]   IETF RFC 2960 (2000), *Stream Control Transmission Protocol*.

3 Definitions

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations:

MG   Media Gateway

MGC   Media Gateway Controller

MTP3B   Message Transfer Part Layer 3 – Broadband

M3UA   Message Transfer Part 3 (MTP3) – User Adaptation layer

SCTP   Stream Control Transmission Protocol

5   Conventions

None.

6   Providing the at-most-once functionality

SCTP is designed to recover from transport losses or duplications, but loss of a transaction request or its reply may nonetheless be noted in real implementations. In the absence of a timely response, [ITU-T H.248.1] may repeat commands. Most ITU-T H.248.1 commands are not idempotent. The state of the media gateway (MG) would become unpredictable if, for example, Add commands were executed several times.

To guard against such losses, it is recommended that entities follow the procedures in Annex D.1.1 of [ITU-T H.248.1] with one exception:

–   the TransactionResponseAck parameter shall not be used.

NOTE – The use of a received SCTP DATA acknowledge, instead of the LONG-TIMER, to remove a Transaction Identity from the list of responses is deprecated, as this method does not ensure the at-most-once functionality. A received SCTP DATA acknowledge indicates that the peer SCTP has received the message, but does not indicate that it has been delivered to its user, i.e., the ITU-T H.248 layer.

7   Transaction identifiers and three-way handshake

7.1   Transaction identifiers

It is recommended that clause D.1.2.1 of [ITU-T H.248.1] be followed.

7.2   Three-way handshake

Clause D.1.2.2 of [ITU-T H.248.1] is not applicable.

8   Computing retransmission timers

With reliable non-duplicate delivery guaranteed by SCTP, application level timers are only used to guard against entity/component failure. Therefore, only simple timer mechanisms are required. The first retransmission of a request can occur after a short interval. If additional retransmissions are required, a longer time interval is recommended between the retransmissions.

9   Provisional responses

The procedures in clause 8.2.3 of [ITU-T H.248.1] apply. If an entity receives a repetition of a transaction that is still being executed, a TransactionPending should be sent.

10   Ordering of commands

SCTP provides both ordered and unordered reliable delivery, settable on a per-transaction basis. Therefore, [ITU-T H.248.1] can take advantage of the ordered capability of SCTP. High priority transactions can get expedited treatment by properly using unordered delivery. No special procedures are therefore required.

11 Stream independence

SCTP can provide up to 65535 unidirectional streams in each direction of an MGC-MG association. SCTP transmits messages and processes received messages in one stream, independent from the order or status of messages in any other streams. [ITU-T H.248.1] may avoid head-of-line blocking by transmitting unrelated transactions on different streams. Reliability is still provided. Ordering of messages is available per-stream.

It is recommended that transactions related to one context are transported over the same stream.

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Series A	Organization of the work of ITU-T
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	**Audiovisual and multimedia systems**
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	Telecommunication management, including TMN and network maintenance
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Terminals and subjective and objective assessment methods
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks, open system communications and security
Series Y	Global information infrastructure, Internet protocol aspects and next-generation networks
Series Z	Languages and general software aspects for telecommunication systems