

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.361

Amendment 1

(06/2008)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Quality of service
architecture for audiovisual and multimedia services

End-to-end quality of service (QoS) and service
priority signalling in H.323 systems

**Amendment 1: New Annex A "IntServ/RSVP
support for H.323 systems", Annex B "DiffServ
support for H.323 systems" and Annex C
"Priority support for H.323 systems"**

Recommendation ITU-T H.361 (2006) – Amendment 1



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Recommendation ITU-T H.361

End-to-end quality of service (QoS) and service priority signalling in H.323 systems

Amendment 1

New Annex A "IntServ/RSVP support for H.323 systems", Annex B "DiffServ support for H.323 systems" and Annex C "Priority support for H.323 systems"

Summary

Amendment 1 to Recommendation ITU-T H.361 introduces three new annexes.

Annex A describes the procedures of H.323 quality of service (QoS) signalling when RSVP-based QoS signalling is used in the transport plane. Resource reservation protocol (RSVP) is the QoS signalling protocol used in the integrated services (IntServ) architecture. RSVP is a path-based QoS mechanism which is used to reserve resources for both individual flows and flow aggregates. RSVP can be used in a pure IntServ architecture or can be coupled with differentiated services architecture (DiffServ) to provide IntServ operation over DiffServ network. Annex A describes the procedures for H.323 QoS to allow the use of RSVP in the transport plane.

Annex B describes the procedures of H.323 QoS signalling under the differentiated services (DiffServ) architecture in the transport plane. DiffServ is a class-based QoS architecture which supports in-band signalling. The signalling occurs via a value defined in the differentiated services (DS) field of the IP header. This value is referred to as the differentiated services code point (DSCP). The packet forwarding treatment given to a packet in a network device is based on the DSCP value.

Annex C describes the QoS service priority support signalling used for H.323 systems. The service priority mechanism defines procedures and constructs within the signalling plane that are used to prioritize bearer traffic during periods of resource contention. This allows traffic of higher priority to receive preferred QoS treatment.

Source

Amendment 1 to Recommendation ITU-T H.361 (2006) was approved on 13 June 2008 by ITU-T Study Group 16 (2005-2008) under Recommendation ITU-T A.8 procedure.

FOREWORD

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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.

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Recommendation ITU-T H.361

End-to-end quality of service (QoS) and service priority signalling in H.323 systems

Amendment 1

New Annex A "IntServ/RSVP support for H.323 systems", Annex B "DiffServ support for H.323 systems" and Annex C "Priority support for H.323 systems"

Add the following normative references to clause 2.1:

- ITU-T Recommendation H.245 (2008), *Control protocol for multimedia communication.*
- ITU-T Recommendation H.323 (2006), *Packet-based multimedia communications systems.*
- ITU-T Recommendation H.460.4 (2002), *Call priority designation for H.323 calls.*
- ITU-T Recommendation H.460.11 (2004), *Delayed call establishment within H.323 systems.*
- ITU-T Recommendation H.460.14 (2004), *Support for Multi-Level Precedence and Preemption (MLPP) within H.323 systems.*
- IETF RFC 2210 (1997), *The Use of RSVP with IETF Integrated Services.*
- IETF RFC 3550 (2003), *RTP: A Transport Protocol for Real-Time Applications.*

Add the following informative reference to clause 2.2:

- IETF RFC 4594 (2006), *Configuration Guidelines for DiffServ Service Classes.*

Add the following abbreviations to clause 4:

PHB	Per-Hop Behaviour
RAS	Registration, Admission and Status
SLA	Service Level Agreement

Insert new Annexes A, B and C as follows:

Annex A

IntServ/RSVP support for H.323 systems

(This annex forms an integral part of this Recommendation)

A.1 Summary

This annex describes the procedures of H.323 QoS signalling when RSVP-based QoS signalling is used in the transport plane. Resource reservation protocol (RSVP) in IETF RFC 2205 is the QoS signalling protocol used in the integrated services (IntServ) architecture. The use of RSVP in integrated services architecture is described in IETF RFC 2210. RSVP is a path-based QoS mechanism which is used to reserve resources for both individual flows and flow aggregates. RSVP can be used in a pure IntServ architecture or can be coupled with differentiated services architecture (DiffServ) to provide IntServ operation over DiffServ network described in IETF RFC 2998. This annex describes the procedures for H.323 QoS to allow the use of RSVP in the transport plane.

A.2 Background

RSVP is a QoS signalling protocol that enables applications to request reservation of network resources. These requests dictate the level of resources (e.g., bandwidth, buffer space) that must be reserved along with the transmission scheduling behaviour. The transmission scheduling behaviour must be installed in the network layer devices (e.g., routers) to provide the desired end-to-end QoS commitment for the data flow. The QoS can be provided on a per-flow basis according to requests from the end application. RSVP is described in IETF RFC 2205 and also summarized in Appendix II of ITU-T Rec. H.323. For higher scalability, RSVP has been extended to reserve resources for aggregation of flows. RSVP offers a "guaranteed" and a "controlled" service to the network.

The guaranteed service is for real-time applications that are unable to handle delay – it tries to deliver a practicable, constant stream of network capacity that is as close as possible to the end-to-end network delay.

The controlled-load service is a better than best-effort service; it tries to deliver end-to-end network capacity as close as possible to the condition of an unloaded network, but still provides the best-effort service. Controlled-load contracts agree that a flow will be handled within a certain range, but variance is anticipated. It is not expected to accept or use specific values for control parameters that include information about delay or loss.

In RSVP, traffic can be characterized by peak rate of flow (bytes per second), maximum datagram size/maximum burst size (bytes), token bucket rate/service rate/bandwidth (bytes per second), slack term/delay (milliseconds), variation in delay, and other parameters. It may be noted that packet losses (or bit errors) are not taken into account by RSVP specifications.

As described above, RSVP may be utilized in two ways. One is a pure IntServ approach where RSVP acts not only on the control plane providing admission control but is also used on the data plane providing the policing, queueing and scheduling of the flow. This was the original model of RSVP. However, as the per-flow state information with RSVP increases proportionally with the number of flows, it causes storage and processing overhead on the routers. To address this issue, the control plane and the data plane actions in RSVP were separated in the IntServ/DiffServ approach in IETF RFC 2298. RSVP acts on the control plane and allows class-based processing in the data plane. This has helped alleviate some of the scaling concerns.