

AVTCORE WG

Virtual Interim

June 4, 2024





09:00 - 11:00 AM Pacific Time

Mailing list: avt@ietf.org

Meeting info: <https://datatracker.ietf.org/meeting/interim-2024-avtcore-02/session/avtcore>

Notes: <https://notes.ietf.org/notes-ietf-interim-2024-avtcore-02-avtcore>

Virtual Interim Remote Meeting Tips

- Enter the queue with , leave with 
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- Audio is enabled by unmuting  and disabled by muting 
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- Video is encouraged to help comprehension but not required.
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Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

- [BCP 9](#) (Internet Standards Process)
- [BCP 25](#) (Working Group processes)
- [BCP 25](#) (Anti-Harassment Procedures)
- [BCP 54](#) (Code of Conduct)
- [BCP 78](#) (Copyright)
- [BCP 79](#) (Patents, Participation)
- <https://www.ietf.org/privacy-policy/>(Privacy Policy)

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- When starting a presentation you **MUST** say if:
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 - You **MUST** disclose any IPR your employer controls relating to the technology under discussion
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Note really well

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About this meeting



- Meeting info:

<https://datatracker.ietf.org/meeting/interim-2024-avtcore-02/session/avtcore>

- Notes: <https://notes.ietf.org/notes-ietf-interim-2024-avtcore-02-avtcore>
- Secretariat: mtd@jabber.ietf.org
- WG Chairs: Jonathan Lennox & Bernard Aboba
- Zulip Scribe: Jonathan Lennox
- Note taker: TBD

Draft Status

- Published
 - RFC 9071: was draft-ietf-avtcore-multi-party-rtt-mix
 - RFC 9134: was draft-ietf-payload-rtp-jpegxs
 - RFC 9328: was draft-ietf-avtcore-rtp-vcv
 - RFC 9335: was draft-ietf-avtcore-cryptex
 - RFC 9443: was draft-ietf-avtcore-rfc7983bis
- RFC Editor Queue
 - draft-ietf-avtext-lrr (EDIT)
 - draft-ietf-payload-vp9 (EDIT)
 - draft-ietf-avtcore-rtp-vcv (EDIT)
 - draft-ietf-avtcore-rtp-scip (EDIT)
 - draft-ietf-avtext-framemarking (EDIT)

Draft Status (cont'd)



- Adopted
 - draft-ietf-avtcore-rtp-haptics
 - draft-ietf-avtcore-rtp-over-quic
 - draft-ietf-avtcore-rtcp-green-metadata
 - draft-ietf-avtcore-hevc-webrtc
 - draft-ietf-avtcore-rtp-j2k-scl
 - draft-ietf-avtcore-rtp-sframe

AVTCORE GitHub Setup



- Organization created: <https://github.com/ietf-wg-avtcore>
- Recently adopted drafts need to create or transfer repositories within the new hierarchy
 - draft-ietf-avtcore-rtp-haptics
 - draft-ietf-avtcore-rtcp-green-metadata
 - draft-ietf-avtcore-hevc-webrtc
 - draft-ietf-avtcore-rtp-j2k-scl
 - draft-ietf-avtcore-rtp-sframe
- Need to repoint the “activity this week” script

Agenda



1. Note Well, Note Takers, Agenda Bashing, Draft status (Chairs, 10 min)
2. [Closing the RTP Payload Format Media Types IANA Registry](#) (M. Westerlund, 10 min)
[draft-westerlund-avtcore-rtp-payload-registry](#)
3. [RTP Payload Format for sub-codestream J2K streaming](#) (P. Lemieux, 10 min)
[draft-ietf-avtcore-rtp-j2k-scl](#)
4. [RTP Payload Format for Volumetric Video Coding \(V3C\)](#) (L. Ilola, 10 min)
[draft-ietf-avtcore-rtp-v3c](#)
5. [RTP over QUIC](#) (M. Engelbart, J. Ott, S. Dawkins, 20 min)
[draft-ietf-avtcore-rtp-over-quic](#)
6. [SDP Offer/Answer for RTP using QUIC as a Transport](#) (S. Dawkins, V. Pascual, 10 min)
[draft-dawkins-avtcore-sdp-rtp-quic](#)
7. [RTP Payload for Haptics](#) (H. Yang, 10 min)
[draft-ietf-avtcore-rtp-haptics](#)
8. [Viewport and Region-of-Interest-Dependent Delivery of Visual Volumetric Media](#) (S. Gudumasu, 10 min)
[draft-gudumasu-avtcore-rtp-volumetric-media-roi](#)
9. [Wrapup and Next Steps](#) (Chairs, 10 min)

Closing the RTP Payload Format Media Types IANA Registry

[draft-westerlund-avtcore-rtp-payload-registry](#)

M. Westerlund

Start time: 09:10

End time: 09:20

IANA Registries Background



- A post to the W3C public-webrtc mailing list pointed out an issue with IANA RTP payload format type registrations:
<https://lists.w3.org/Archives/Public/public-webrtc/2023Aug/0033.html>
 - RTP payload types registry is missing VP8, AV1, HEVC, VVC:
<https://www.iana.org/assignments/rtp-parameters/rtp-parameters.xhtml#rtp-parameters-2>
- IANA mime-types registry (see “video”) is more complete:
<https://www.iana.org/assignments/media-types/media-types.xhtml>
Spreadsheet: <https://www.iana.org/assignments/media-types/video.csv>
- Issue tracked by MEDIAMAN WG
 - <https://github.com/ietf-wg-mediaman/admin/issues/1>

Section 4: IANA Considerations



IANA is requested to add the following missing RTP Payload types to the "RTP Payload Format Media Types" registry [RTP-FORMATS].

Media Type	Sub Type	Clock Rate (Hz)	Channels (audio)	Reference	Reference
video	VP8	90000		RFC7741	
video	AV1	90000		https://www.iana.org/assignments/media-types/video/AV1	
video	HEVC	90000		RFC7798	
video	VVC	90000		RFC9328	

Table 1: Payload Types to Register in RTP Payload Format Media Type

Section 4: cont'd



IANA is further requested to close the "RTP Payload Format Media Types" registry [RTP-FORMATS] for any further registrations. IANA should add the following to the note to the registry:

"This registry has been closed as it was considered redundant as all RTP Payload formats are part of the Media Types registry (<https://www.iana.org/assignments/media-types/media-types.xhtml>). For further motivation see (RFC-TBD1)."

Is it ready for adoption?



[AVTCORE] Re: draft-westerlund-avtcore-rtp-payload-registry

Magnus Westerlund <magnus.westerlund@ericsson.com> | Tue, 21 May 2024 07:51 UTC | [Show header](#)

Hi,

>From my perspective it is. I just submitted an updated version with the typo fixes that Hyunsik Yang provided.

Cheers

Magnus

From: Bernard Aboba <bernard.aboba@gmail.com>

Date: Friday, 17 May 2024 at 22:46

To: Magnus Westerlund <magnus.westerlund@ericsson.com>

Cc: IETF AVTCORE WG <avt@ietf.org>

Subject: draft-westerlund-avtcore-rtp-payload-registry

Is the draft ready for a "Call for Adoption" as a WG work item?

High-performance JPEG 2000 RTP payload format

[draft-ietf-avtcore-rtp-j2k-scl](#)

P. A. Lemieux

Start time: 09:20

End time: 09:30

Quick update

- Receiver implementation in [OpenJPH](#)
- Minor update to the specification made in response to feedback received so far
 - <https://datatracker.ietf.org/doc/draft-ietf-avtcore-rtp-j2k-scl/01/>
- Expecting another implementation

RTP Payload Format for Volumetric Video Coding (V3C)

[draft-ietf-avtcore-rtp-v3c](#)

L. Ilola

L. Kondrad

Start time: 09:30

End time: 09:40

Changes since Brisbane



Version 6 available addressing WGLC and post-WGLC suggestions

New issues closed

- [\[#19\]](#) Clarification of 2D video stream encapsulation
 - Added several clarifications in text that respective RTP payload specifications are to be used.
- [\[#20\]](#) Reconsider the need for the three transmission modes (SRST, MRST and MRMT)
 - Section on different transmission modes removed from specification. Alignment with VVC RTP Payload spec
 - Grouping framework was preserved to provide tool for indicating which streams in SDP belong to the same presentation
- [\[#21\]](#) Evaluate the need for out-of-order decoding (i.e. decoding order number, DON)
 - It should be possible to structure atlas data NAL units similarly to HEVC bitstreams, so support for DON should be still required.

Changes since Brisbane



New issues closed

- [\[#22\]](#) V3C specific media format parameters can't be used with 2D video media lines
 - Solution to create a new attribute (v3cfmtp) that would be used similarly to a=fmtp to carry V3C specific media format parameters with any media line or on session level
- [\[#23\]](#) Clarify the nature V3C specific parameters (send properties vs. receive capabilities)
 - added “sprop-” in front of all send only properties
- [\[#24\]](#) Fix PT value for the BUNDLE example in 9.3
 - Fixed
- [\[#25\]](#) Incorrect PT type in answer example in 9.3
 - Fixed

RTP over QUIC

<https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-over-quic>

Mathis Engelbart, Jörg Ott, Spencer Dawkins

Start time: 09:40

End time: 10:00

Closed Issues (all resolved in -10)

- Restructure Directions for Future Work section [#187](#)
- Clarify RTP vs RTCP vs RTP/RTCP handling early in the document [#188](#)
- Replace RoQ/non-RoQ with real-time/non-real-time [#197](#)
- working well through NATs and firewalls [#193](#)
- Use of the term "peer" [#195](#)
- Add reference for pacing recommendation [#196](#)
- P2P and Client/Server connection setup [#194](#)
- General clean-up of the current draft [#163](#)
- Clarify RoQ relationship with QUIC client-server roles [#203](#)
- Update AVB RTCP packet description and correct PSFB value [#210](#)

Merged Pull Requests (1/2)

- Fix some spelling mistakes [#185](#)
- Improve Future Directions section [#189](#)
- Clarify usage of "RTP" and "RTCP" in the document [#190](#)
- I missed one lower-case "document" [#191](#)
- Apply clean-up comments [#192](#)
- Replace RoQ/non-RoQ with real-time non-real-time [#199](#)
- Remove reference to NATs/Firewalls [#201](#)
- This clarifies and corrects uses of "peer" and "receiver" [#200](#)
- Add pacing recommendation reference to RFC9002 [#198](#)
- Clarify usage of "peer-to-peer" term [#202](#)
- Clarify new QUIC streams may be client- or server-initiated [#204](#)

Merged Pull Requests (2/2)

- Fix 5-tuple sentence [#206](#)
- Fix target bitrate font/style [#207](#)
- Finish intro sentence [#208](#)
- Replace DTLS with SRTP [#205](#)
- Remove duplicate *and* [#209](#)
- Correct link and title for IEEE 1733 [#211](#)
- Review comments from Jörg [#216](#)
- **Fix a race condition cause by out of band signaling** [#212](#)
- Remove sentence that should have been removed PR 212 [#217](#)
- Clarify ROQ_EXPECTATION_UNMET usage [#218](#)

Buffering Unknown Flow IDs ([PR#212](#)) (Merged)

- Earlier version said:
The association between flow identifiers and RTP/RTCP streams MUST be negotiated using appropriate signaling. If a receiver cannot associate a flow identifier with any RTP/RTCP stream, it MUST close the connection with the application error code ROQ_UNKNOWN_FLOW_ID.
- Problem:
 - If signaling happens out-of-band, flow IDs may arrive before signaling finished, which should not be a fatal error
- Solution:
 - Buffer streams and datagrams with unknown flow identifier
 - Limit the amount of buffered streams or datagrams
 - Use STOP_SENDING or drop datagrams if limit exceeded

"Doing The Right Thing": Trade-off in [PR#212](#)

- The buffering solution in [PR#212](#) is modeled on WebTransport
 - But we're working with realtime media
- If an implementation doesn't buffer enough, there's a race condition
 - The implementation can't deliver media until signaling completes
 - The user will not see media from the beginning of the RTP stream
 - The sudden start in mid-stream can be visible to users
- If an implementation buffers too much, it can deliver a large initial burst
 - After that, it delivers at the incoming RoQ payload rate
 - The transition from "buffering" to "caught up" can be visible to users
- Balancing how much to buffer is an implementation decision
 - "MUST limit the number of streams and DATAGRAMs to buffer"
- Buffering without limit also has security implications

Implementation Status ([Issue#219](#), [PR#220](#)) (Open)

- We are using the format for Implementation Status from RFC 7942
- We have two (dependent) implementations listed
- We will ask BBC to fill out section for their implementation
- We will ask on the mailing list if other people have implementations

Next Steps

- Submitting -11 after this interim -11 and request WGLC before IETF 120
- Collecting information for Implementation Section
- We need to specify how to set up a RoQ connection to allow testing
 - Ideally using SDP, and that work has restarted (see next slide deck)
 - Mathis has been testing using static configuration
 - Other possibilities?

SDP Offer/Answer for RTP over QUIC (RoQ)

<https://github.com/SpencerDawkins/sdp-roq>

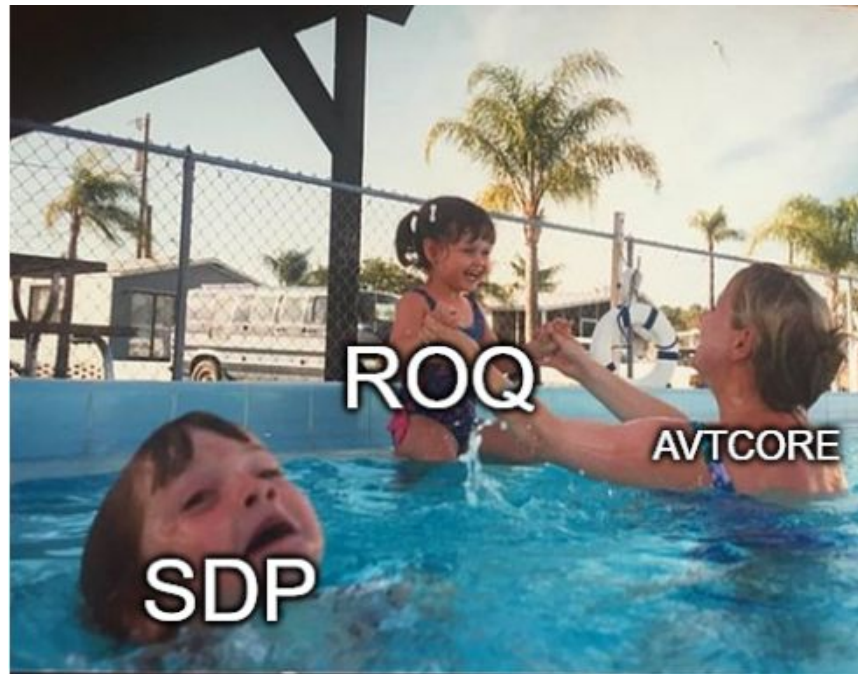
Spencer Dawkins, Victor Pascual

Start time: 10:00

End time: 10:10

Why are we here today?

- RoQ (RTP over QUIC) [draft](#) (experimental) specifies encapsulation of RTP and RTCP packets within the QUIC protocol.
- It **does not** cover signaling for session setup.



Why are we here today?

- SDP for RoQ will be defined in a separate document, intended to define a minimal usable SDP specification that enables negotiation to setup RoQ sessions
- Conformant SDP messages for RoQ can be carried in any signaling protocol that can carry SDP, including SIP, RTCWeb or WHIP.



How we got here

Spencer submitted [draft-dawkins-avtcore-sdp-rtp-quic](#) in January 2022

- Two accompanying I-Ds served as venues for discussion:
 - [draft-dawkins-sdp-rtp-quic-questions](#)
 - [draft-dawkins-avtcore-sdp-rtp-quic-issues](#)

Spencer joined Mathis and Joerg to progress RTP over QUIC ("RoQ")



We are all now two years older, and we are all wiser

The RoQ specification is approaching request for Working Group Last Call

- It's time to return to SDP for RoQ

Where we're going next

We now have a much clearer picture of what's needed for a useable specification

- It's time to revisit SDP for RoQ, to allow QUIC connection setup
- Start with text from [draft-dawkins-avtcore-sdp-rtp-quic](#)
- Fix any text that's outdated or overtaken by events
- Pick up questions discussed in previous drafts and presentations

We now have a plan

- Victor joined Spencer in his mission to bring RoQ (thank you, Victor!)
- Mathis has agreed to review work on SDP for RoQ (thank you, Mathis!)
- Other contributors are, of course, invited to come along

What will be in the draft?

What this draft should cover:

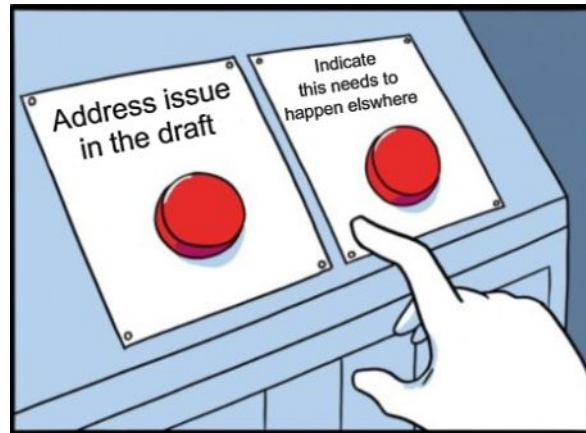
- Definition of protocol identifiers (added to [IANA SDP protos](#))
- Opening a QUIC connection for use with RoQ
- Implications of using ICE with SDP
- SDP Offer/Answer for RoQ (with examples)
- Support for RTP extensions of interest ([IANA RTP parameters](#))
- Replacing AVP/AVPF feedback with QUIC feedback

Other topics we need to cover, but perhaps in another draft:

- Considerations for RoQ use with RTP middleboxes
- Considerations for end-to-end payload protection

What's out of scope for now

- Anything for RoQ described in [Section 14 "Directions for Future Work"](#)



Next Steps

Victor and Spencer are organizing the GitHub repository as a starting point

- We'll be creating issues for discussion
- We'll be creating PRs proposing text as we reach resolution on issues

We want to make sure interested AVTCORE folk are aware of directions we take

Add <https://github.com/SpencerDawkins/sdp-roq> to the Github Activity Summary?

Author goal - publish -00 by IETF 120 as a reasonable starting point

RTP Payload for Haptics

<https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-haptics>

H. Yang

X. de Foy

Start time: 10:10

End time: 10:20

Status



- The WG call for adoption was completed on May 6, 2024
- The new WG Draft Version 00 is now available
- Access to the MPEG Specs
 - Any who needs access to 23090-31 for the purpose of review can contact Stephan Wenger (IETF liaison) privately at stewe – at – stewe – dot – org
- To do
 - We have one update planned, only to add aggregation
 - Besides aggregation, the document is ready for review
 - **GitHub:**
 - <https://github.com/7439henry/draft-ietf-avtcore-rtp-haptics/blob/main/Draft/WG%20draft/draft-ietf-avtcore-rtp-haptics-00.md>

Viewport and Region-of-Interest-Dependent Delivery of Visual Volumetric Media

<https://datatracker.ietf.org/doc/html/draft-gudumasu-avtcore-rtp-volumetric-media-roi>

S. Gudumasu

Start time: 10:20

End time: 10:30

Status since last meeting

- Updated the SDP offer answer examples based on V3C RTP payload format draft
- Addressed the comments received from IANA
 - Added details about the 3d-regions attribute to be added to SDP attributes registry
 - Added details about the new spatial region and 3D viewport format types for RTCP PSFB messages
 - Added details about the new RTP HE URIs used for signaling information of
 - Static 3d-regions / Arbitrary 3d-regions / Dynamic 3d-regions

Next Steps

- Suggestions and feedback
 - IETF mailing list
- Call for Working group adoption

Wrapup and Next Steps

Chairs

Start time: 10:30

End time: 10:45

Next Steps



1. Step 1
2. Step 2
3. Step 3

Thank you

Special thanks to:

The Secretariat, WG Participants & ADs