

AVTCORE WG

IETF 117

Hybrid Meeting

Wednesday, July 26, 2023

13:00 - 15:00 Pacific Daylight Time

Session II, Plaza A

Mailing list: avtcore@ietf.org

Notes: <https://notes.ietf.org/notes-ietf-117-avtcore>

MeetEcho link: <https://meetecho.ietf.org/conference/?group=avtcore>

IETF 117 Meeting Tips

In-person participants





- Make sure to sign into the session using Meetecho (usually the “Onsite tool” client) from the Datatracker agenda
- Use Meetecho to join the mic queue
- *Keep audio and video off if not using the onsite version*



Remote participants

- Make sure your audio and video are off unless you are chairing or presenting during a session
- Use of a headset is strongly recommended

IETF 117 Remote Meeting Tips

- Enter the queue with  , leave with 
- When you are called on, you need to enable your audio to be heard.
- Audio is enabled by unmuting  and disabled by muting 
- Video can also be enabled, but it is separate from audio.
- Video is encouraged to help comprehension but not required.

Resources for IETF 117

- Information about IETF 117
<https://www.ietf.org/how/meetings/117>
- Agenda
<https://datatracker.ietf.org/meeting/agenda>
- If you need technical assistance, see the Reporting Issues page:
<http://www.ietf.org/how/meetings/issues/>

About this meeting



- Agenda: <https://datatracker.ietf.org/doc/agenda-117-avtcore/>
- Notes: <https://notes.ietf.org/notes-ietf-117-avtcore>
- Secretariat: mtd@jabber.ietf.org
- WG Chairs (Remote): Bernard Aboba
- Onsite: Jonathan Lennox
- Zulip Scribe: Jonathan Lennox
- Note takers: Stephan Wenger

Note well

This is a reminder of IETF policies in effect on various topics such as patents or code of conduct. It is only meant to point you in the right direction. Exceptions may apply. The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set forth in BCP 79; please read it carefully.

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- Personal information that you provide to IETF will be handled in accordance with the IETF Privacy Statement.
- As a participant or attendee, you agree to work respectfully with other participants; please contact the ombudsteam (<https://www.ietf.org/contact/ombudsteam/>) if you have questions or concerns about this.

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)

Note really well

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- IETF participants must not engage in harassment while at IETF meetings, virtual meetings, social events, or on mailing lists. Harassment is unwelcome hostile or intimidating behavior -- in particular, speech or behavior that is aggressive or intimidates.
- If you believe you have been harassed, notice that someone else is being harassed, or have any other concerns, you are encouraged to raise your concern in confidence with one of the Ombudspersons.

Agenda



1. IETF 117 tips, Note Well, Note Takers, Agenda Bashing, Draft status (Chairs, 10 min)
2. [RTP Payload Format for Essential Video Coding \(EVC\)](https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-enc) (B. Aboba & S. Wenger, 10 min)
<https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-enc>
3. [RTP Payload Format for Volumetric Video Coding](https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-v3c) (L. Ilola, 10 min)
<https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-v3c>
4. [RTP Payload Format for SCIP](https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-scip) (D. Hanson & M. Faller, 10 min.)
<https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-scip>
5. [RTP over QUIC](https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-over-quic) (M. Engelbart, J. Ott, S. Dawkins, 15 min)
<https://datatracker.ietf.org/doc/html/draft-ietf-avtcore-rtp-over-quic>
6. [Peer-to-Peer QUIC](https://datatracker.ietf.org/doc/html/draft-thatcher-p2p-quic) (P. Thatcher, 10 min)
<https://datatracker.ietf.org/doc/html/draft-thatcher-p2p-quic>
7. [Using QUIC to traverse NATs](https://datatracker.ietf.org/doc/html/draft-seemann-quic-nat-traversal) (M. Seemann, 15 min)
<https://datatracker.ietf.org/doc/html/draft-seemann-quic-nat-traversal>
8. [HEVC Profile for WebRTC](https://datatracker.ietf.org/doc/html/draft-aboba-avtcore-hevc-webrtc) (B. Aboba, 10 min)
<https://datatracker.ietf.org/doc/html/draft-aboba-avtcore-hevc-webrtc>
9. [RTP Payload Format for SFrame](https://datatracker.ietf.org/doc/html/draft-thatcher-avtcore-rtp-sframe) (P. Thatcher, 10 min)
<https://datatracker.ietf.org/doc/html/draft-thatcher-avtcore-rtp-sframe>
10. [Wrapup and Next Steps](#) (Chairs, 10 min)

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-payload-vp9 (MISSREF)
- IESG: AD Followup (1 DISCUSS position: Z. Sarker)
 - draft-ietf-avtcore-rtp-scip
 - Ballot statements: <https://datatracker.ietf.org/doc/draft-ietf-avtcore-rtp-scip/ballot/>
 - More discussion today.
- Waiting for AD Go-Ahead::Revised I-D Needed
 - draft-ietf-avtext-framemarking

Draft Status (cont'd)



- Adopted
 - draft-ietf-avtcore-rtp-over-quic
 - draft-ietf-avtcore-rtp-evc
 - draft-ietf-avtcore-rtp-green-metadata
 - draft-ietf-avtcore-rtp-v3c

RTP Payload Format for Essential Video Coding (EVC)

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

S. Zhao

S. Wenger

Y. Lim

PubReq Status

- Draft PubReq posted to the mailing list on July 22, 2023:
<https://mailarchive.ietf.org/arch/msg/avt/ZqXDvX468m1pxlBUupR7gsZqKiM/>
- Summary of WGLC posted on May 2, 2023:
<https://mailarchive.ietf.org/arch/msg/avt/9KnavogwIX6Wi77VtYNmV3Sjfhik/>
 - Are there any WG concerns or issues that have not been raised, but need to be discussed?
- Implementation experience request posted to the WG mailing list on June 16, 2023:
[\[AVTCORE\] Response Required: Implementation experience relating to draft-ietf-avtc core-rtp-evc](#)
 - Tencent has implemented the EVC payload; no SDP implementation.
 - No interop testing yet
- Author confirmations
 - Author and contributor confirmation request posted to the WG mailing list on June 26, 2023: [\[AVTCORE\] Response Required: Author and Contributor consent for draft-ietf-avtc core-rtp-evc](#)
 - All authors and contributors have responded affirmatively.
 - BCP 78/79 conformance request posted to the WG mailing list on June 16, 2023:
<https://mailarchive.ietf.org/arch/msg/avt/-IVJ9hRTn0Y7iz369pW88N6jy-4/>
 - All authors have responded affirmatively.

media-types Review



- Review request sent to the media-types mailing list by Stephan Wenger on March 29, 2023: [\[media-types\] Media type review request for draft-ietf-avtcore-rtp-enc-04](#)
 - Based on H.266 IANA assignment:
iana.org/assignments/media-types/video/H266
- Review by Roni Even on April 03, 2023: [Re: \[media-types\] Media type review request for draft-ietf-avtcore-rtp-enc-04](#)
 - Recommended IETF AVTCORE WG as change controller, no other issues found

IPR Issues



- draft-ietf-avtcore-rtp-enc Section 1:
 - "The Essential Video Coding [EVC] standard, which is formally designated as ISO/IEC International Standard 23094-1 [ISO23094-1] has been published in 2020. One goal of MPEG is to keep [EVC]'s Baseline profile essentially royalty-free by using technologies published more than 20 years ago or otherwise known to be available for use without a requirement for paying royalties, whereas more advanced profiles follow a reasonable and non-discriminatory licensing terms policy."
- IPR declaration received:
<https://datatracker.ietf.org/ipr/search/?submit=draft&id=draft-ietf-avtcore-rtp-enc>
- Message sent to the WG on June 16, 2023 requesting confirmation to proceed:
 - <https://mailarchive.ietf.org/arch/msg/avt/JUDZDgW31xjHMO-kMb6NSr-Buj0/>
 - Only document authors responded (3, affirmatively)
- Is there consensus to proceed within the WG?

RTP Payload Format for Volumetric Video Coding (V3C)

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

L. Ilola

L. Kondrad

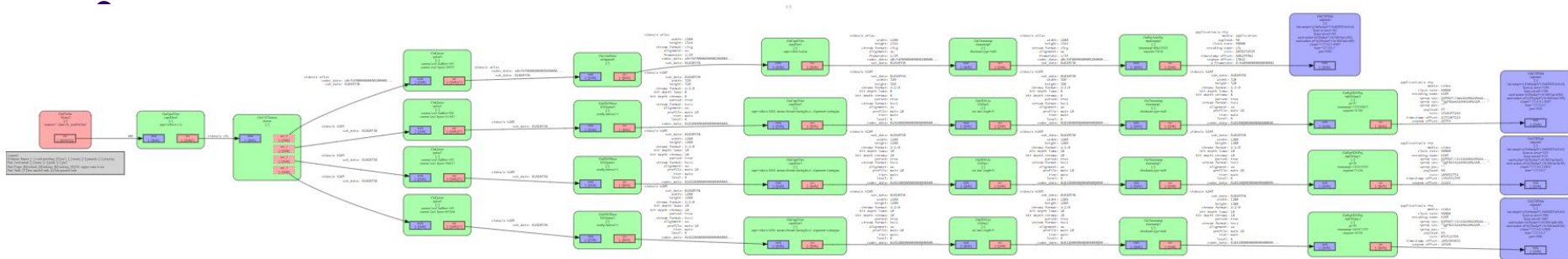
Updates to the draft



- v2 is available - diff is available [here](#)
- We conducted a thorough review of the text
 - Updated examples with “real” values
 - Clarified normative vs informative parts
 - Improved language in several occasions
 - Added text for “Declarative SDP Considerations” and “IANA Considerations” sections
- One minor normative technical change introduced
 - Fragmentation unit payload header NUT changed from 58 to 57
 - 57 was previously used for temporal aggregation units, which were removed from the draft to align better with VVC

What's next?

- We are working on Gstreamer plugin as a reference implementation for V3C RTP payload format (should be available by November meeting)



- Further feedback is always welcome
 - Spec is available [here](#), feel free to create issues and pull requests
- In the previous meeting it was discussed, that the specification is largely stable and mature
 - We would like to request moving the draft to last call

RTP Payload Format for SCIP

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

Dan Hanson

Mike Faller

Status



- **draft-ietf-avtcore-rtp-scip-05** was published on March 29, 2023
 - One outstanding DISCUSS (Z. Sarker)
 - R. Danyliw DISCUSS ballot changed to ABSTAIN on July 24, 2023
 - Responses to additional comments to follow
 - NATO and U.S. Government are asking about the status
-
- **How do we move forward?**

Z. Sarker DISCUSS



[Ballot for draft-ietf-avtcore-rtp-scip-05](#)

Zaheduzzaman Sarker

Discuss

Discuss (2023-01-05 for -04)

Sent

Thanks for working on this specification. My understanding is that SCIP is not a typical audio/video codec and intention here is to define a payload format used along with other audio/video codecs. Thanks to Olivier Bonaventure for an excellent TSVART review.

I would like to discuss the followings -

- It is not clear to me what RTP profile should be used with this payload format. The RTP profiles are mentioned only in the security considerations. I think this specification would not be sufficient to be implemented without specifying the profile usage. I am getting that all the control messages are sent as SCIP messages, hence it needs to be clear on the RTP/RTCP usage.

- This statement needs to be clarified more -

"SCIP traffic is highly variable and the bit rate specified in the SDP [[RFC8866](#)] is OPTIONAL since discontinuous transmission (DTX) or other mechanisms may be used."

What does this "highly variable" traffic mean? In what sense it is variable, variable bitrate? if this is highly variable how this would react to congestion and rate control?

what bitrate is specified in the SDP? are you talking about the "b" parameter and interpretation of that? how is that to be interpreted in the session level and media level due to DTX?

- it says -

"a jitter buffer MAY be implemented in endpoint devices only"

Given that "both discontinuous and continuous traffic are highly probable", a jitter buffer is a MAY? How to handle late loss or reordering? is it expected that no transmission error possible in the environment where SCIP operates?

Z. Sarker DISCUSS (cont'd)



[Ballot for draft-ietf-avtcore-rtp-scip-05](#)

- what is the plan to include the changes agreed to with the TSVART reviewer? I mostly agreed with the resolution agreed with the reviewer and would like to see those changes in the document before we approve this document. That is the reason I am not bringing those topics back in this discuss. Please consider them as my discuss points as well.

Comment (2023-01-05 for -04)

Sent

Some further comments -

- Please add a link to SCIP specification, I had hard time finding public description or documentation of SCIP codecs.
- I think it would be great to provide the design principles behind SCIP with some details. This will be helpful for understanding the motivation and rtp format specified in the document.

Re: Z. Sarker DISCUSS



- *"SCIP traffic is highly variable and the bit rate specified in the SDP [RFC8866] is OPTIONAL since discontinuous transmission (DTX) or other mechanisms may be used."*
- *What does this "highly variable" traffic mean? In what sense it is variable, variable bitrate? if this is highly variable how this would react to congestion and rate control?*
- *"a jitter buffer MAY be implemented in endpoint devices only"*
 - **These sentences were removed in rev. 05**
- *What bitrate is specified in the SDP? are you talking about the "b" parameter and interpretation of that? how is that to be interpreted in the session level and media level due to DTX?*
 - **No longer applies since text was removed**
- *What is the plan to include the changes agreed to with the TSVART reviewer?*
 - **Nearly all changes were applied in rev. 05**

Re: Z. Sarker DISCUSS (2)



- *Please add a link to SCIP specification...*
 - **Quick Google search:**
 - **Public link to 2013 version of the SCIP-210 document:**
<https://www.iad.gov/SecurePhone/>
 - **Newer versions have not (yet) been published to the public domain by NATO**
- *I think it would be great to provide the design principles behind SCIP with some details. This will be helpful for understanding the motivation and rtp format specified in the document.*
 - **Additional text was added to Introduction and Background sections in rev. 05**

R. Danyliw Abstain

[Ballot for draft-ietf-avtcore-rtp-scip-05](#)



Roman Danyliw

(was Discuss) **Abstain**

Comment (2023-07-26)

Sent

(Revised position)

Thank you to Magnus Nystrom for the SECDIR review.

I am abstaining on this document as it is unclear to me how to evaluate this document. Unlike most of the other recent “RTP Payload Format” document I could find, the text here avoids making a normative reference to a document formally describing a payload. Colloquially, I’m not sure how one can describe the “payload format of `_something_`” without normatively citing that `_something_`. Furthermore, the security basis for this document comes from this informative reference.

The IETF 117 AVTCORE meeting discussions helpfully pointed out that [RFC8817](#), a document I balloted on with a “No Objection” position, cites the codec it relies on informatively. I appreciate the inconsistency of my position. Simply put, I missed this detail in my review of [RFC8817](#). I’ll note that [RFC8817](#) does normatively cite SCIP, albeit the 2013 version, and this document references 2017.

In my assessment, this approach meets the DISCUSS criteria of “[t]he draft omits a normative reference necessary for its implementation, or cites such a reference merely informatively rather than normatively” per <https://www.ietf.org/about/groups/iesg/statements/iesg-discuss-criteria/#stand-disc>. However, I won’t hold a document for reference mismatch as it is clear that the WG has discussed this issue in depth and there is IETF consensus on this way ahead.

Additional comments

** I would have appreciated additional justification for the proposed standard (PS) status either in the text or in the shepherd write-up. The underlying codec is proprietary, neither available or intended for users outside of a closed consortium; and the need for standardization isn’t clear since this is intended for this closed consortium. MIME registrations can be done without a PS in the IETF stream.

R. Danyliw Abstain (2)



[Ballot for draft-ietf-avtcore-rtp-scip-05](#)

** Section 1.

This document provides essential information about audio/scip and video/scip media subtypes that enables network equipment manufacturers to include settings for "scip" as a known audio and video media subtype in their equipment. This enables network administrators to define and implement a compatible security policy

It wasn't clear which text in this document was intended to inform the definition of security policies.

** Section 5.1 and 5.2. The IANA review will clarify this, but the stated "Intended usage" of "Common, Government and Military" doesn't seem consistent with the guidance in [RFC6838](#) which says that:

Intended usage:

(One of COMMON, LIMITED USE, or OBSOLETE.)

** Section 5.1. and 5.2. I concur with Francesca's ballot which wonders why the IETF is registering a media type for which it has no change control and the challenges it might create.

Re: R. Danyliw Abstain



- *... However, unlike all of the other recent “RTP Payload Format” document I could find, the text here avoids making a normative reference to a document formally describing a payload.*
 - **There is precedence: RFC 8817 TSVCIS has an informative reference to the TSVCIS specification**
- *It wasn't clear which text in this document was intended to inform the definition of security policies.*
 - **Rev. 05 shifted the focus so that the SCIP payload should be supported by network devices - stated in the Introduction and Background**
- *... the stated “Intended usage” of “Common, Government and Military” doesn't seem consistent with the guidance in RFC6838 ...*
 - **The IANA Media Type submission form allows ‘Additional Information’ in the Intended Usage field. We can remove “Government and Military” to avoid confusion.**

Re: R. Danyliw Abstain (2)



- *Section 5.1. and 5.2. I concur with Francesca's ballot which wonders why the IETF is registering a media type for which it has no change control and the challenges it might create.*
 - **There is precedence: RFC 8817 TSVCIS is a government/military-only Media Type (and RTP payload) over which the IETF does not have change control authority**
 - **SCIP is requesting the same consideration**

Re: R. Danyliw Abstain (3)



- *... The underlying codec is proprietary, neither available or intended for users outside of a closed consortium; and the need for standardization isn't clear since this is intended for this closed consortium.*
 - **Again there is precedence: RFC 8817 TSVCIS is *proprietary, neither available to or intended for users outside of a closed consortium***
 - **Based on non-public TSVCIS and SCIP specifications**
 - **RFC 8817 presents only a small portion of the RTP traffic - only the Narrowband MELP voice. There are other payloads such as Wideband voice and NB/WB Data that are not presented. And there are several control messages (e.g., preamble, EOM, etc.) that are transmitted that are not presented in RFC 8817.**
 - **Our main purpose is for network devices to support SCIP**

RTP over QUIC

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

<https://datatracker.ietf.org/doc/draft-dawkins-avtcore-sdp-rtp-quic/>

<https://datatracker.ietf.org/doc/draft-dawkins-avtcore-sdp-rtp-quic-issues/>

Mathis Engelbart, Jörg Ott, Spencer Dawkins

Merged since last interim

- [PR#97](#): Fix a reference (editorial)
- [PR#98](#): STOP_SENDING (see following slides)
- [PR#99](#): Add green metadata to RTCP considerations
- [PR#100](#): Add list of header extensions (similar to RTCP considerations)
- [PR#101](#): Add list of optional QUIC extensions in an appendix
- [PR#102](#): Considerations for aggregating frames
- [PR#105](#): Adding Spencer as co-author
- [PR#106](#): Change STOP_SENDING wording
- [PR#108](#): Reference CLOSE_STREAM and ENOUGH
- [PR#109](#): Motivations section
- [PR#110](#): RoQ wording (editorial)

WIP

- [PR#91](#): Error Codes (see later slides)

STOP_SENDING

- RoQ receiver **MUST** be prepared to receive RTP packets on any number of QUIC streams (subject to flow control limits)
- RoQ receiver **SHOULD** not make assumptions which RTP sequence numbers are carried in which QUIC streams
- (RoQ sender may or may not discontinue using a lower QUIC stream ID after starting packet transmission on a higher stream ID)
- RoQ sender **MAY** use RESET_STREAM to *cancel media frames*
- RoQ receiver **MAY** use STOP_SENDING to request *cancelling media frames*

STOP_SENDING

- RoQ sender that receives STOP_SENDING for the last open stream available to send RTP/RTCP-data, MUST open one or more new QUIC streams to send new media frames
- Any media frame that has already been sent on the QUIC stream that received the STOP_SENDING frame, MUST NOT be sent again on the new QUIC stream(s).
- May still accidentally cancel following frames
- May benefit from CLOSE_STREAM and ENOUGH to avoid cancelling earlier frames accidentally

Error Codes (PR#91)

- ROQ_NO_ERROR
 - No error, but need to close stream/connection
- ROQ_INTERNAL_ERROR
 - Internal implementation error
- ROQ_PACKET_ERROR
 - Protocol violated by peer
- ROQ_STREAM_CREATION_ERROR
 - Invalid stream type, e.g., open bi-directional stream for RTP-stream

Error Codes (PR#91) (cont)

- ROQ_FRAME_CANCELLED
 - Cancelling certain media frames using STOP_SENDING and RESET_STREAM
- ROQ_UNKNOWN_FLOW_ID
 - Receiver does not accept flow ID
- ROQ_SIGNALING_ERROR
 - E.g., extension negotiated in signaling but connection does not support extension

Error Codes (PR#91)

- Issue [#13](#) and [#76](#)
- Setup IANA registry for RoQ error codes
- Still need to assign real codes
- Do we need an additional ROQ_GENERAL_ERROR for errors that do not match any of the more specific codes?

Next Steps/Open Issues

- #50: Coordination with NAT traversal (ICE, etc.) for QUIC?
- #65: RTP and non-RTP sharing multiple connections on same 5-tuple (Multiplexing)
- #75: Considerations for multi-hop topologies
- #84: Details on congestion control when sharing a connection between RTP and non-RTP
- #86: Considerations for coalescing RTP packets in a single QUIC packet
- #87: Real-time congestion controllers in QUIC stacks
- #93: Using Streams/Datagrams/Per frame Streams
- #111: Check SHOULD requirements

Peer-to-Peer QUIC

[draft-thatcher-p2p-quic](#)

<https://w3c.github.io/p2p-webtransport/>

<https://w3c.github.io/webrtc-ice/>

Peter Thatcher

Purpose of the draft



- Things can point at it for doing ICE+QUIC.
 - RoQ
 - W3C documents
 - draft-seemann-quick-nat-traversal?
 - MoQ?

Things in the draft



- ALPN
- (de)mux
- Signaling/Neogitation
- (Client) Certificate verification
- Multipath and Network migration and Connection IDs

Details in the draft



- ALPN is "q2q"
- Demux between ICE/STUN/TURN and QUIC using STUN magic cookie
- What needs to be signaled/negotiated
 - ICE parameters and candidates
 - Roles (passive or active)
 - QUIC certificate fingerprints
 - QUIC options (like grease bit)
- Client certificate must be verified
 - Can use self-signed certs with signalled fingerprints (just like DTLS)
- Should not use QUIC multipath (unless "p2p" is really client/server)
- Turn off QUIC migration (ICE handles that; just like SCTP)
- Connection ID should not change
- Can send QUIC PINGs in place of ICE checks
 - Overlaps with draft-seemann-quic-nat-traversal-00

Do we really need it? Well, just in case:

```
v=0
o=- 4962303333179871722 1 IN IP4 0.0.0.0
s=-
t=0 0
a=ice-ufrag:7sFv
a=ice-pwd:d0TZKZNV109RSGsEGM63JXT2
a=ice-options:trickle
a=fingerprint:sha-256
7B:8B:F0:65:5F:78:E2:51:3B:AC:6F:F3:3F:46:1B:35:DC:B8:5F:64:1A:24:C2:43:F0:A1:58:D0:A1:2C:19:08
a=setup:active
a=group:BUNDLE 1 2 3
m=audio 9 UDP/QUIC/RTP/AVPF 99
a=mid:1
a=sendrecv
a=rtpmap:99 OPUS/4800/2
m=video 9 UDP/QUIC/RTP/AVPF 100
a=mid:2
a=sendrecv
a=rtpmap:100 VP8/90000
a=rtcp-fb:100 ccm fir
m=application 9 UDP/QUIC generic
a=quic-options:multiplexing-id
a=mid:3
....
```

MultiplexingID



- What
 - An optional varint at the beginning of every stream and datagram
- Why
 - If you have multiple "things" that all want to use lots of stream, how do you know which stream goes with which "thing"?
 - Example: you're doing MoQ/RoQ and with control data on the side at the same time
 - How do you (de)mux *within* QUIC?
 - We could perhaps build this into a Web API to make things easier
- How it works
 - If you have only one "thing", turn it off
 - If you have "things" 1 and 2, put 1 or 2 in front of every stream and datagram.
- Other options considered: ConnectionID, WebTransport frames

draft-seemann-quic-nat-traversal



Mode 1: ICE + QUIC

- Just like this draft, only less detailed
- Compatible with envisioned Web APIs

Mode 2: ICE + QUIC with "relay first"

- Does an initial relayed QUIC connection (for media+signaling) to bootstrap ICE
- Might be compatible with envisioned Web APIs
(Potential problems: relay mechanism and QUIC migration)

Mode 3: ICE over Quic (loQ?)

- Uses QUIC packets for ICE checks instead of STUN packets
- Envisioned Web API may need to be changed considerably
- Potential problems?: large ICE checks, check before handshake

Next Steps?



- Is it a good idea to have such a draft?
- Is this the right WG?
- Should RoQ depend on it?
 - Does it conflict?

Using QUIC to traverse NATs

[draft-seemann-quic-nat-traversal](#)

Marten Seemann

QUIC v1 (RFC 9000)

- Assumes that the server is always publicly reachable
- The client might be behind a NAT
- Defines how to handle NAT rebindings
- Defines how a client can actively migrate to a different path

ICE (RFC 8445)

1. Gather candidates
2. Exchanges candidates between peers
 - a. Match candidate pairs
3. Connectivity Checks
4. Nominate candidate pair
5. Keeping paths alive

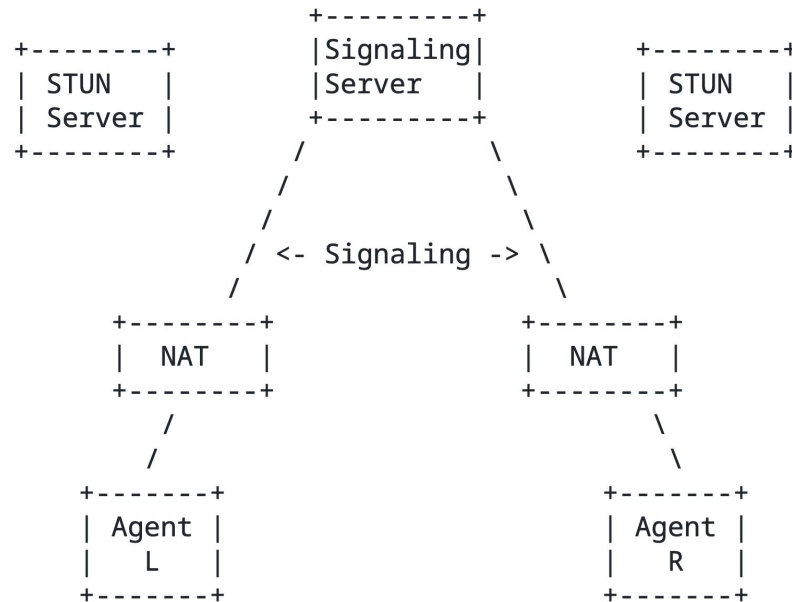


Figure 1: ICE Deployment Scenario

Purpose of this Draft

- Make it possible to use QUIC in a p2p setting
- Possible use cases:
 - Building block for WebRTC over QUIC
 - ... lots of other p2p protocols

Mode 1: Use External Signaling Channel

- Run ICE to completion first
 - Then run a QUIC handshake on the nominated address candidate pair
-
- ⊕ No need to change any ICE / QUIC stacks
 - ⊖ Requires running a (non-QUIC) signaling server
 - ⊖ Lots of round trips

Mode 2

1. Gather candidates
2. **Exchanges candidates between peers**
 - a. Match candidate pairs
3. Connectivity Checks
4. Nominate candidate pair
5. Keeping paths alive

Mode 2: Use a Proxied QUIC Connection

- Use a proxied QUIC connection for signaling (e.g. CONNECT-UDP)
- Signal using a new QUIC frame type: ICE frame

```
ICE Frame {  
    Type (i) = 0x1ce,  
    Length (i),  
    Data (...),  
}
```

- QUIC then migrates the connection to the nominated candidate pair
-
- ⊕ No (non-QUIC) signaling server needed
 - ⊖ What if ICE Connectivity Check and QUIC Path Probe disagree?

Mode 3

1. Gather candidates
2. **Exchanges candidates between peers**
 - a. Match candidate pairs
3. **Connectivity Checks**
4. **Nominate candidate pair**
5. **Keeping paths alive**

Mode 3: Use Connection Migration to Probe Paths

- Use a proxied QUIC connection for signaling
- Use QUIC connection migration to probe paths
 - Requires the server to send a probe packet to create NAT binding
- QUIC then migrates the connection to the nominated candidate pair

Does this require QUIC Multipath?

Probably not necessary. But potentially beneficial.

	QUIC v1	QUIC Multipath
Client can probe (multiple) paths	✓	✓
Server can probe paths	✗	✗
Concurrent data transfer on multiple paths	✗	✓

What's next?

- Interest in the WG?
- This is a -00 version
- Lots of work necessary

HEVC Profile for WebRTC

[draft-aboba-avtcore-hevc-webrtc](#)

Bernard Aboba

Philipp Hancke

Recent Developments



- Support for HEVC decode (WebCodecs):
 - Chrome 104 supports HEVC hardware decoders with `--enable-features=PlatformHEVCDecoderSupport`
 - Safari 17 preview supports HEVC decode
- HEVC support for WebRTC:
 - WebKit Issue: [258794 – WebRTC HEVC RFC 7798 RTP Payload Format Implementation \(webkit.org\)](#)
 - PR: [WebRTC HEVC RFC 7798 RTP Payload Format Implementation by xingri · Pull Request #15494 · WebKit/WebKit · GitHub](#)
 - Chromium Tracking Bug: <https://bugs.chromium.org/p/webrtc/issues/detail?id=13485>
 - PR: <https://webrtc-review.googleusercontent.com/c/src/+298421>
- Draft link posted to the RTCWEB WG mailing list: [\[rtcweb\] HEVC support in WebRTC \(ietf.org\)](#)

Next Steps



- Call for adoption?

RTP Payload Format for SFrame

[draft-thatcher-avtcore-rtp-sframe](#)

Peter Thatcher

Reminder of progress



- I presented on how we can packetize SFrame (not SPacket!)
- I was told to write a draft
- I wrote a draft
- I was told to upload the draft and wait for people to review it
- I updated and uploaded the draft to data tracker
- I still need people to review it
- There seemed to be agreement that we should do this and this was generally a good direction, but we need to iron out the details.

Reminder of the solution



- **Packetize** with codec-specific packetizer into one big RTP packet
- **Encrypt** that (payload) using SFrame
- **Packetize** that using SFrame-specific packetizer
- **Copy headers** from first to second packetization
- "Outer" PT is for SFrame; "Inner" PT is in the RTP payload for the "inner codec"
 - One SFrame payload type per clock rate needed

If we want to discuss details



- Do all SFrame packets contain all of the inner-codec's header extensions?
 - If yes: duplicates data like Dependency Descriptor
 - If no: have to figure out which ones go when
- Do all SFrame packets contain the inner-codec's payload type?
 - If yes: duplicates a byte per SFrame packet after the first of each frame
 - If no: save a byte, but don't know what the inner payload type is until you get the first packet of each frame

Next Steps?



Call for Adoption?

Wrapup and Next Steps



- Action Items
 - Item 1
 - Item 2
- Next Steps
 - Step 1
 - Step 2

Thank you

Special thanks to:

The Secretariat, WG Participants & ADs