

RTCWEB: Video Codec Selection

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Adam Who Now?

What are you doing up there?

- I don't have a horse in this race, which has (from my outside vantage point) become very partisan.
 - Which is to say: I am not constrained to promoting one codec over another by the organization that is paying for my airfare, hotel, registration fee, and salary.
- I do care about the health of the web and real-time communications.
 - I'm a consumer and technologist.
- That's not to say I don't have an opinion on the topic
 - As a technologist and occasional open-source programmer, I *do* believe one video codec is better for the future of the web than others.
 - But I'm working very hard to keep that from biasing what I say up here.

Background

- The working group has already reached consensus in favor of specifying a mandatory-to-implement video codec, so as to avoid interoperability failures.
- No consensus has yet been reached regarding *which* video codec is to be used.
- Conversation so far has revolved predominantly around H.264 and VP8, with both codecs having ardent proponents.

Codec Highlights

H.264

- More deployed hardware acceleration
- Well known, clearly identified patent pool; royalties due for some uses
- Quality, compression ratio, and complexity approximately equal to VP8

VP8

- Can be hardware accelerated, but current deployment is very low
- No specific patents asserted¹, no one collecting royalties
- Quality, compression ratio, and complexity approximately equal to H.264

¹ There have been some claims by MPEG-LA that unidentified parties believe that their patents may apply, but these cannot be verified. On2 claims that they carefully avoided patents in the development of VP8.

Potential Ways Forward

1. Specifying H.264 as the mandatory-to-implement video codec
2. Specifying VP8 as the mandatory-to-implement video codec
3. Abandoning the previous consensus to specify a mandatory-to-implement codec

Reflection on Option 3

Two young women who lived in the same house and who both had an infant son came to King Solomon for a judgment. One of the women claimed that the other, after accidentally smothering her own son while sleeping, had exchanged the two children to make it appear that the living child was hers. The other woman denied this and so both women claimed to be the mother of the living son and said that the dead boy belonged to the other.

After some deliberation, King Solomon called for a sword to be brought before him. He declared that there is only one fair solution: the live son must be split in two, each woman receiving half of the child.

Reflection on Option 3, cont.

- Of course, the real mother – who cared about the child – abandoned her claim so as to save the baby (and was consequently awarded the baby by Solomon).
- Abandoning a mandatory codec would guarantee interop failure, completely defeating the point of standardization, and effectively killing the WEBRTC baby.
- Feel free to stand up and argue for splitting the baby; I'm counting on the chairs learning something from the wisdom of Solomon.

Chairs: Call for Consensus

1. Those in favor of specifying ~~H.264~~ as the mandatory-to-implement video codec
2. Those in favor of specifying **VP8** as the mandatory-to-implement video codec
3. Those in favor of ~~splitting the baby in half~~ abandoning the previous consensus to specify a mandatory-to-implement codec

Backup Slides

RFC 3929: Alternate Decision
Making Process

Alternate Decision Making

- Designed for situations where the WG agrees that a decision must be made, but cannot reach consensus on the result of that decision.
- Rough consensus is still preferred; this set of tools is to be used as a last resort

Criteria for Use

- There must be a clear decision to be made
- There must be well-specified solutions for the various options people are proposing
- The working group must have had significant discussions on the topic without making headway
- The working group must agree to use the alternate decision making process via consensus

What if we don't agree to use it?

- Then we don't use it.
- The process is designed to “allow people to recognize the need for compromise in a new way, by backing away from entrenched technical positions and by putting the technical choice in the hands of the broader community. They highlight that the choice for each participant is now between achieving a result and failure.”
- I'll note that choosing, as a working group, to fail is not without precedent. But it's clearly not preferred.

What is the Process?

- Once we agree to use the process, the WG agrees on one of the four described methods:
 - External Review Team
 - Mixed Review Team
 - Qualified Short-Straw Selection
 - Random Assignment
- Once the working group agrees to use the process, that consensus stands in for agreement to the outcome of the process.

Method 1: External Review Team

- for review team members
 - Qualifications to participate and selection of members is similar to that used for NomCom
- viewable mailing list for one month.
- Each member submits a list of options in runoff voting algorithm to determine the outcome.

Method 2: Mixed Review Team

each solution (selected from the working group), five external members selected as with the external review team, and one team chair (selected by the IESG).

- The mixed review team otherwise proceeds in the same fashion as the external review team

Selection

selected, using the random selection process described in RFC 3797

- That one person sends an email to the working group, chairs, and IESG announcing which option is to be used.

Method 4: Random Assignment

technical distinctions between choices
(e.g., allocation of a DNS prefix or MIME format name).

- As these typically involve IANA, resolution of the issue generally involves asking IANA to select randomly from among several

A View from a Non-Horse Owner

- Those participants interested in success largely agree that we want a mandatory-to-implement codec.
- Those participants interested in success appear too entrenched in their positions to reach a consensus
- Current participants appear too entrenched in their positions to reach a consensus

Which Method Makes Sense?

- Given that the issues that differentiate the codecs themselves are rather small and would likely be arcane to external reviewers, the review team approaches are unlikely to produce a higher quality decision than random selection.
 - However, the discussion is not completely devoid of differentiators, so truly random assignment is also not appropriate.
 - Consequently, I recommend engaging in the