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J. Lennox
Vidyo
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Supporting Source-Multiplexing of the Real-Time Transport Protocol (RTP)
Payload for Generic Forward Error Correction
[draft-lennox-payload-ulp-ssrc-mux-00](#)

Abstract

The Real-Time Transport Protocol (RTP) Payload format for Generic Forward Error Correction (FEC), specified in [RFC 5109](#), forbids transmitting FEC repair flows as separate sources in the same RTP session as the flows being repaired. This document updates [RFC 5109](#) to lift that restriction, as long as the association between original and repair flows is properly signaled and negotiated.

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1. Introduction

The Real-Time Transport Protocol (RTP) [[RFC3550](#)] payload format for Generic Forward Error Correction (FEC) [[RFC5109](#)] defines two mechanisms by which the Forward Error Correction stream can be transmitted alongside the payload stream. As defined in [Section 14](#) of that document, the packets can either be sent in separate SDP media streams, i.e. a separate RTP session, associated through the "FEC" semantics [[RFC5956](#)] of the SDP grouping framework [[RFC5888](#)]; or they can be sent in the same packets, in an [[RFC2198](#)] redundant coding.

The payload format specifically says that "the FEC and the payload MUST NOT be multiplexed by SSRC into one single RTP session since they always have the same SSRC." However, this constraint is only necessary as a consequence of the fact that [[RFC5109](#)] chose to use SSRC alignment to associate the payload and the repair streams sent in separate RTP sessions. The mechanism described by which the forward error correction packets are used to reconstruct missing payload packets does not actually rely on this SSRC alignment property. The "MUST NOT" results from the absence of any alternative mechanism by which payload and repair streams can be associated.

The Source-Specific Media Attributes [[RFC5576](#)] specification defines an "ssrc-group" semantic, "FEC", which is designed to address this problem -- it allows endpoints to indicate, in SDP, the associations among source flows and repair flows within a single RTP session, through a similar mechanism to the [[RFC5888](#)] / [[RFC5956](#)] grouping of RTP sessions.

However, [[RFC5576](#)] did not update the "MUST NOT" statement in [[RFC5109](#)], so the FEC ssrc-group semantics arguably cannot be used. This document fixes that oversight, updating [[RFC5109](#)] to clarify when SSRC-multiplexed payload and repair streams can be used.

2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)] and indicate requirement levels for compliant implementations.

3. Change to [RFC 5109](#)

This sentence, the final sentence of the third paragraph of [section 14.1 of \[RFC5109\]](#):

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In addition, the FEC and the payload MUST NOT be multiplexed by SSRC into one single RTP session since they always have the same SSRC.

is updated instead to read:

The FEC and the payload MAY also be multiplexed by SSRC into one single RTP session, with separate SSRC values, if the association between FEC and payload streams are communicated to all members of the session. If SDP is used, this association MAY be communicated through the FEC ssrc-group semantic [[RFC5576](#)]; other mechanisms are also possible. Receivers MUST NOT attempt to interpret FEC streams for which they do not have information to associate them with the corresponding payload streams.

4. Other mechanisms

The wording about "other mechanisms" in the previous section is designed to address the possibility that non-SDP mechanisms could also be used to associate FEC and payload streams. Potential examples of this would be the BUNDLE [[I-D.ietf-mmusic-sdp-bundle-negotiation](#)] or SRCNAME [[I-D.westerlund-avtext-rtcp-sdes-srcname](#)] proposals, if standardized.

5. Security Considerations

An attacker who could force a receiver to mis-associate payload

streams and repair streams could potentially trick a receiver into mis-decoding streams. Thus, the association between payload streams and repair streams MUST be integrity-protected with at least the same strength of security as the streams are themselves.

[6.](#) IANA Considerations

This document makes no request of IANA.

[7.](#) References

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Author's Address

Jonathan Lennox
Vidyo, Inc.
433 Hackensack Avenue
Seventh Floor
Hackensack, NJ 07601
US

Email: jonathan@vidyo.com

