

Considerations for RAMS Scenarios

draft-begen-avt-rams-scenarios-00

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Introduction

- When there is only one stream in a multicast RTP session to be acquired rapidly, RAMS is straightforward
- In practice, however,
 - An RTP session may carry multiple SSRC-mixed RTP streams
 - A multicast session may carry multiple RTP sessions
 - Receivers may desire to acquire RTP streams from multiple multicast sessions
- In such scenarios, RAMS coordination is essential
- This draft
 - Provides examples
 - Makes recommendations
- Intended status is informational (for now)

Background

- SSM sessions are identified by (S, G)

An SSM session can have only one feedback target (address + port)

Different SSM sessions may share the same feedback target

- Some fields in RAMS messages depend on clock rate

Payloads with different clock rates can be

In different RTP sessions

In the same RTP session → Use SSRC-muxed streams

(So that they can be acquired individually)

Examples

- We consider two RTP streams in the examples
 - These could be audio and video elementary streams
 - They could be and MPEG2-TS and its FEC stream

Scenario #1: 2 Streams, 2 Multicast Groups

```
a=group:FEC-XR RTP1 RTP2
m=video 40000 RTP/AVP 96
c=IN IP4 233.252.0.1/127
a=rtcp:41001 IN IP4 192.0.2.1
a=ssrc:1 cname:rtp1@example.com
a=mid:RTP1
m=application 40000 RTP/AVP 97
c=IN IP4 233.252.0.2/127
a=rtcp:41001 IN IP4 192.0.2.1
a=ssrc:2 cname:rtp2@example.com
a=mid:RTP2
```

Notes

Receiver runs a separate RAMS session for each RTP stream to be acquired rapidly

If RAMS sessions are run in parallel, receiver needs to coordinate the shared resources

Scenario #2: 2 Streams, 1 Multicast Group

```
m=video 40000 RTP/AVP 96
c=IN IP4 233.252.0.1/127
a=rtcp:41001 IN IP4 192.0.2.1
a=ssrc:1 cname:rtp1@example.com
a=mid:RTP1
m=application 40001 RTP/AVP 97
c=IN IP4 233.252.0.1/127
a=rtcp:41001 IN IP4 192.0.2.1
a=ssrc:2 cname:rtp2@example.com
a=mid:RTP2
```

Notes

Receiver runs a separate RAMS session for each RTP stream to be acquired rapidly

If RAMS sessions are run in parallel, receiver needs to coordinate the shared resources

Receiver needs to jointly coordinate the join time

Scenario #3: SSRC-Muxed Streams

```
m=video 40000 RTP/AVP 96 97
c=IN IP4 233.252.0.1/127
a=rtcp:41001 IN IP4 192.0.2.1
a=ssrc:1 cname:rtp1@example.com
a=ssrc:2 cname:rtp2@example.com
a=mid:Channel1
```

Notes

Receiver runs a separate RAMS session for each RTP stream to be acquired rapidly

If RAMS sessions are run in parallel, receiver needs to coordinate the shared resources

Receiver needs to jointly coordinate the join time

Feedback Target and SSRC Signaling Issues

- FTAp = Feedback target with a specific address and port
- An FTAp may serve for multiple SSM sessions
- All RTP streams sharing an FTAp must have a unique SSRC value
- Unique FTAp's
 - May be used without any issues in scenario #1
 - May or may not be sufficient in scenario #2
 - (Depends on whether the SSM sessions share the same distribution source)
- In scenario #3, there is one FTAp
 - SSRCs must be unique among the RTP streams associated with the FTAp

FEC Scenario #1: 2 Multicast Groups

```
a=group:FEC-XR RTP1 RTP2
m=video 40000 RTP/AVP 96
c=IN IP4 233.252.0.1/127
a=rtpmap:96 MP2T/90000
b=TIAS:10000
a=mid:RTP1
m=application 40000 RTP/AVP 97
c=IN IP4 233.252.0.2/127
a=rtpmap:97 1d-interleaved-parityfec/90000
b=TIAS:1000
a=mid:RTP2
```

Notes

This is the preferred deployment model for FEC as it provides backward compatibility

FEC reception can be delayed until RAMS has been completed for the primary stream

FEC Scenario #2: 1 Multicast Group

```
a=group:FEC-XR RTP1 RTP2
m=video 40000 RTP/AVP 96
c=IN IP4 233.252.0.1/127
a=rtpmap:96 MP2T/90000
b=TIAS:10000
a=mid:RTP1
m=application 40001 RTP/AVP 97
c=IN IP4 233.252.0.1/127
a=rtpmap:97 1d-interleaved-parityfec/90000
b=TIAS:1000
a=mid:RTP2
```

Notes

If desired, RAMS can be initiated only for the primary stream with all the resources

Upon join, FEC immediately starts taking up some of the resources

FEC Scenario #3: SSRC-Muxed Streams

```
m=video 40000 RTP/AVP 96 97  
c=IN IP4 233.252.0.1/127  
a=rtpmap:96 MP2T/90000  
a=rtpmap:97 1d-interleaved-parityfec/90000  
b=TIAS:11000  
a=mid:Channel1
```

Notes

It may be difficult to optimize individual RAMS sessions w/o the explicit bitrates info

With “a=fmtp” line for the FEC stream, it may be possible to infer the FEC bitrate

Next Steps

- Should the draft stay in informational status?
- WG adoption?