

# Considerations and Guidelines for Deploying RAMS

draft-begen-avtext-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
  - A receivers can acquire RTP streams from multiple multicast sessions
- In such scenarios, RAMS coordination is essential
- This draft
  - Provides examples
  - Offers guidelines
- Intended status is informational

# Examples

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

# Feedback Target and SSRC Signaling Issues

- FTAp = Feedback target with a specific address and port
- An FTAp could serve for multiple SSM sessions provided that all RTP streams sharing an FTAp have unique SSRC values
- Since this is not an easy requirement to satisfy, RAMS specification forbids to have more than one RTP session to be associated with a specific FTAp

# Scenario #1: Two Multicast Groups

```
a=group:FEC-FR Channel1_Video Channel1_FEC
m=video 40000 RTP/AVPF 96
c=IN IP4 233.252.0.1/127
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
a=rtcp:41000 IN IP4 192.0.2.1
a=ssrc:1 cname:ch1_video@example.com
a=mid:Channel1_Video
m=application 40000 RTP/AVPF 97
c=IN IP4 233.252.0.2/127
a=source-filter:incl IN IP4 233.252.0.2 198.51.100.1
a=rtcp:42000 IN IP4 192.0.2.1
a=ssrc:2 cname:ch1_fec@example.com
a=mid:Channel1_FEC
```

## 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: One Multicast Group

```
m=video 40000 RTP/AVPF 96
```

```
c=IN IP4 233.252.0.1/127
```

```
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
```

```
a=rtcp:41000 IN IP4 192.0.2.1
```

```
a=ssrc:1 cname:ch1_video@example.com
```

```
a=mid:Channell_Video
```

```
m=audio 40001 RTP/AVPF 96
```

```
c=IN IP4 233.252.0.1/127
```

```
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
```

```
a=rtcp:41000 IN IP4 192.0.2.1
```

```
a=ssrc:1 cname:ch1_audio@example.com
```

```
a=mid:Channell_Audio
```

## 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 Multiplexing

```
m=video 40000 RTP/AVPF 96 97
c=IN IP4 233.252.0.1/127
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
a=rtcp:41000 IN IP4 192.0.2.1
a=ssrc:1 cname:ch1_video@example.com
a=ssrc:2 cname:ch1_audio@example.com
a=mid:Channell
```

## 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

# FEC Scenario #1: Two Multicast Groups

```
a=group:FEC-FR Channell_Video Channell_FEC
m=video 40000 RTP/AVPF 96
c=IN IP4 233.252.0.1/127
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
a=rtcp:41000 IN IP4 192.0.2.1
a=rtpmap:96 MP2T/90000
b=TIAS:10000
a=mid:Channell_Video
m=application 40000 RTP/AVPF 97
c=IN IP4 233.252.0.2/127
a=source-filter:incl IN IP4 233.252.0.2 198.51.100.1
a=rtcp:42000 IN IP4 192.0.2.1
a=rtpmap:97 1d-interleaved-parityfec/90000
b=TIAS:1000
a=mid:Channell_FEC
```



# FEC Scenario #2: One Multicast Group

```
a=group:FEC-FR Channell_Video Channell_FEC
m=video 40000 RTP/AVPF 96
c=IN IP4 233.252.0.1/127
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
a=rtcp:41000 IN IP4 192.0.2.1
a=rtpmap:96 MP2T/90000
b=TIAS:10000
a=mid:Channell_Video
m=application 40001 RTP/AVPF 97
c=IN IP4 233.252.0.1/127
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
a=rtcp:41000 IN IP4 192.0.2.1
a=rtpmap:97 1d-interleaved-parityfec/90000
b=TIAS:1000
a=mid:Channell_FEC
```

## Notes

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 Multiplexing

```
m=video 40000 RTP/AVPF 96 97
c=IN IP4 233.252.0.1/127
a=source-filter:incl IN IP4 233.252.0.1 198.51.100.1
a=rtcp:41000 IN IP4 192.0.2.1
a=rtpmap:96 MP2T/90000
a=rtpmap:97 1d-interleaved-parityfec/90000
a=fmtp:97 L=10; D=10; repair-window=200000
a=ssrc:1 cname:ch1_video@example.com
a=ssrc:2 cname:ch1_fec@example.com
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

- Comments, things to add/remove?