

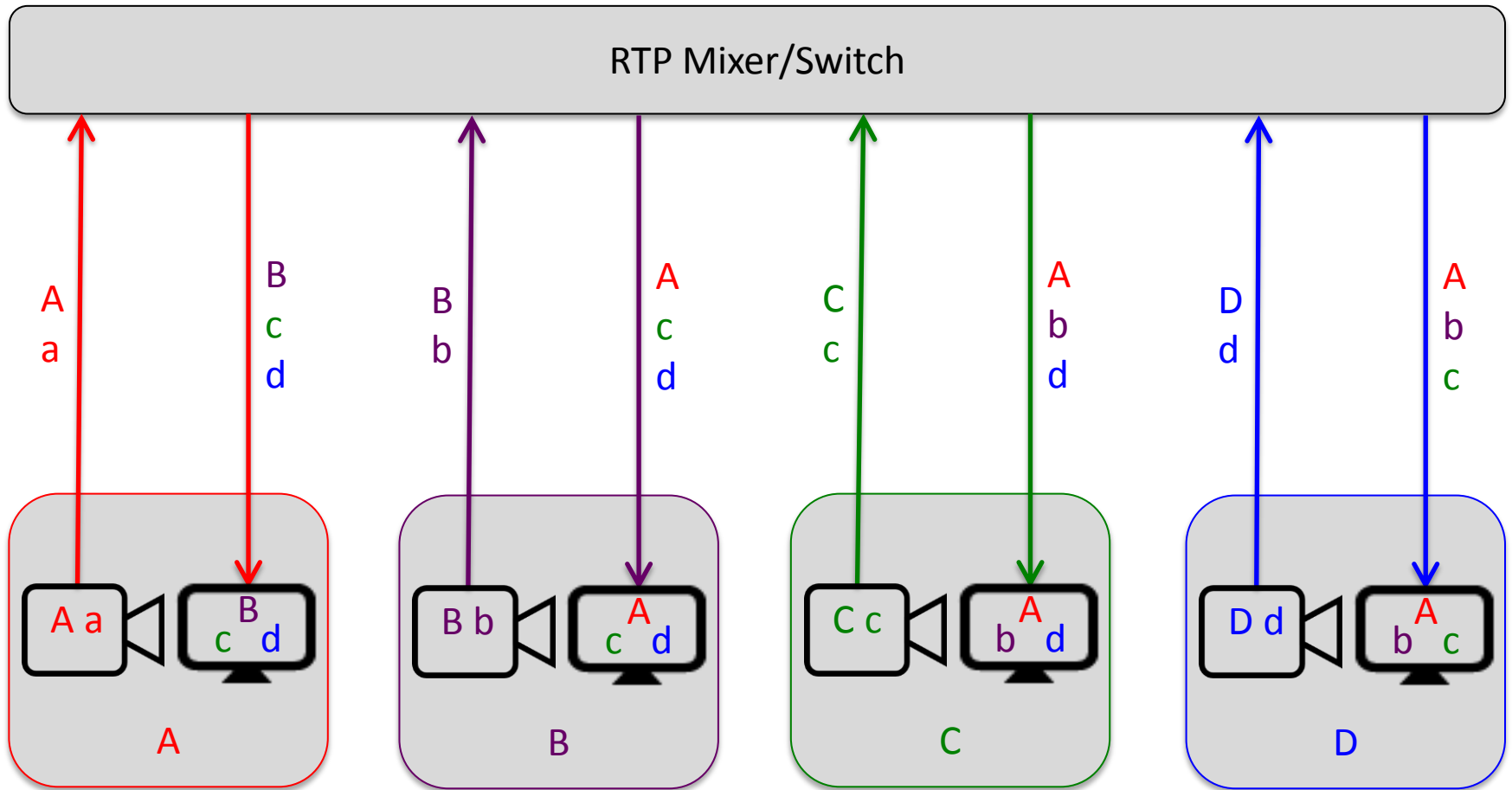
# MMUSIC RTP Simulcast

draft-burman-mmusic-sdp-simulcast-00

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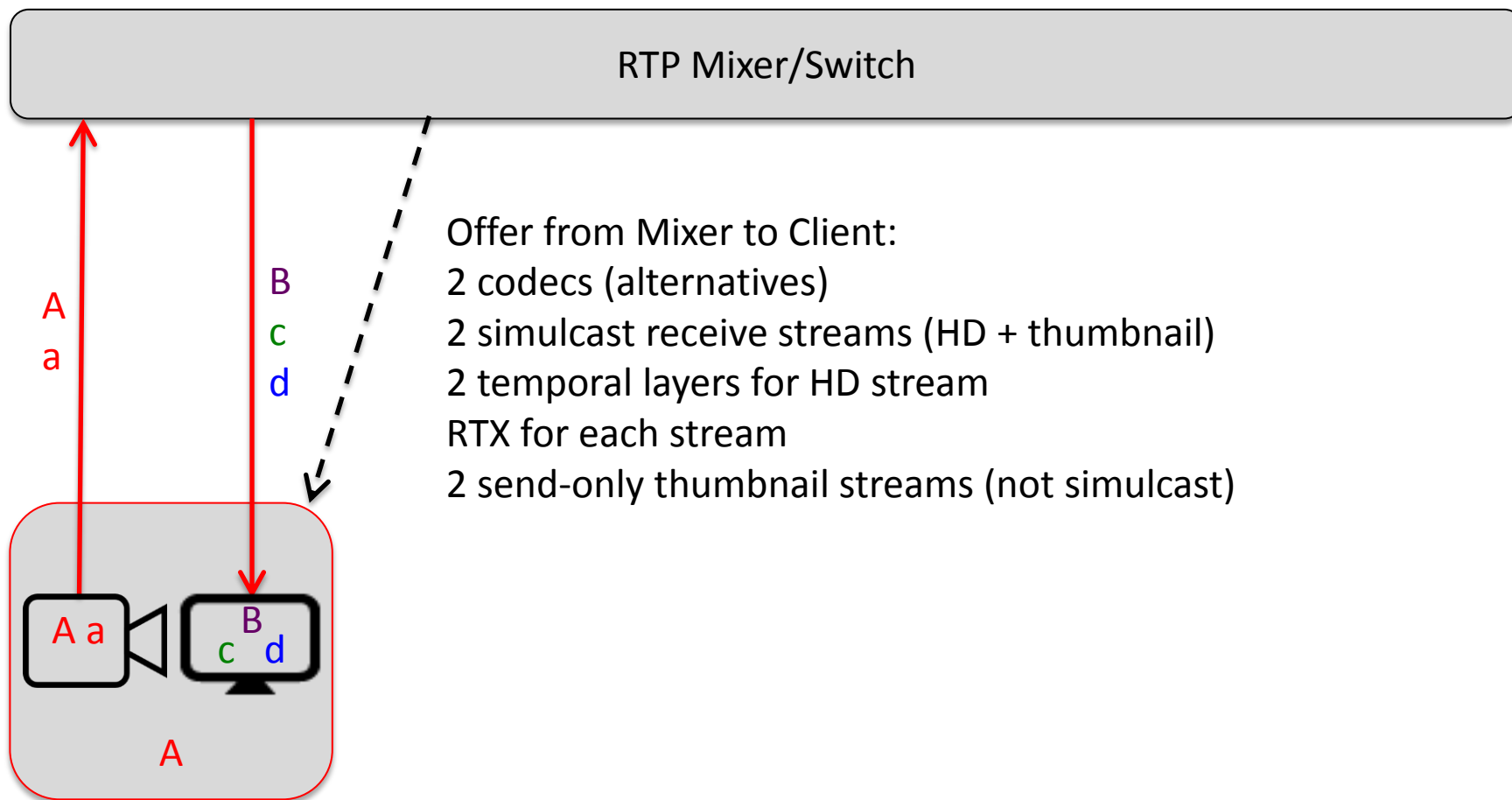
# Review Common Use Case: Simulcast of HD + thumbnail to Mixer



# Requirements

- WebRTC and CLUE Clients can use N Encoded Streams for one Media Source
  - Support send/receive asymmetry
- Have SDP interoperable simulcast
  - Aligned with Unified Plan
  - Aligned with BUNDLE
- Support Layered, RTX, FEC mechanisms

# Review Common Use Case: Simulcast of HD + thumbnail to Mixer



# Offer from Mixer to Client

m=video 10000 RTP/AVP 96 97 98 101 102 103 104 105 106 107 108 109

a=mid:v0

a=rtpmap:96 VP8/90000 (fmp: thumbnail 180p 15fps)

a=rtpmap:97 VP8/90000 (fmp: HD 720p 15fps)

a=rtpmap:98 VP8/90000 (fmp: HD 720p 30fps)

a=rtpmap:104 RTX/90000 (fmp: apt=96)

a=rtpmap:105 RTX/90000 (fmp: apt=97)

a=rtpmap:106 RTX/90000 (fmp: apt=98)

a=rtpmap:101 H264/90000 (fmp: thumbnail 180p 15fps)

a=rtpmap:102 H264/90000 (fmp: HD 720p 15fps)

a=rtpmap:103 H264/90000 (fmp: HD 720p 30fps)

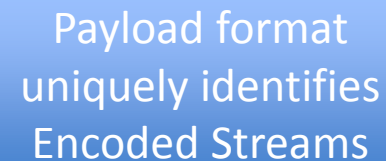
a=rtpmap:107 RTX/90000 (fmp: apt=101)

a=rtpmap:108 RTX/90000 (fmp: apt=102)

a=rtpmap:109 RTX/90000 (fmp: apt=103)

a=depend:98 lay v0:97; 103 lay v0:102

**a=simulcast rcv 96,101; sendrcv 97,102; 98,103 (receive thumbnail; send+receive HD 15+30)**



Payload format  
uniquely identifies  
Encoded Streams

m=video 10000 RTP/AVP 96 101 // thumbnail 1 – not simulcast!

a=mid:v1

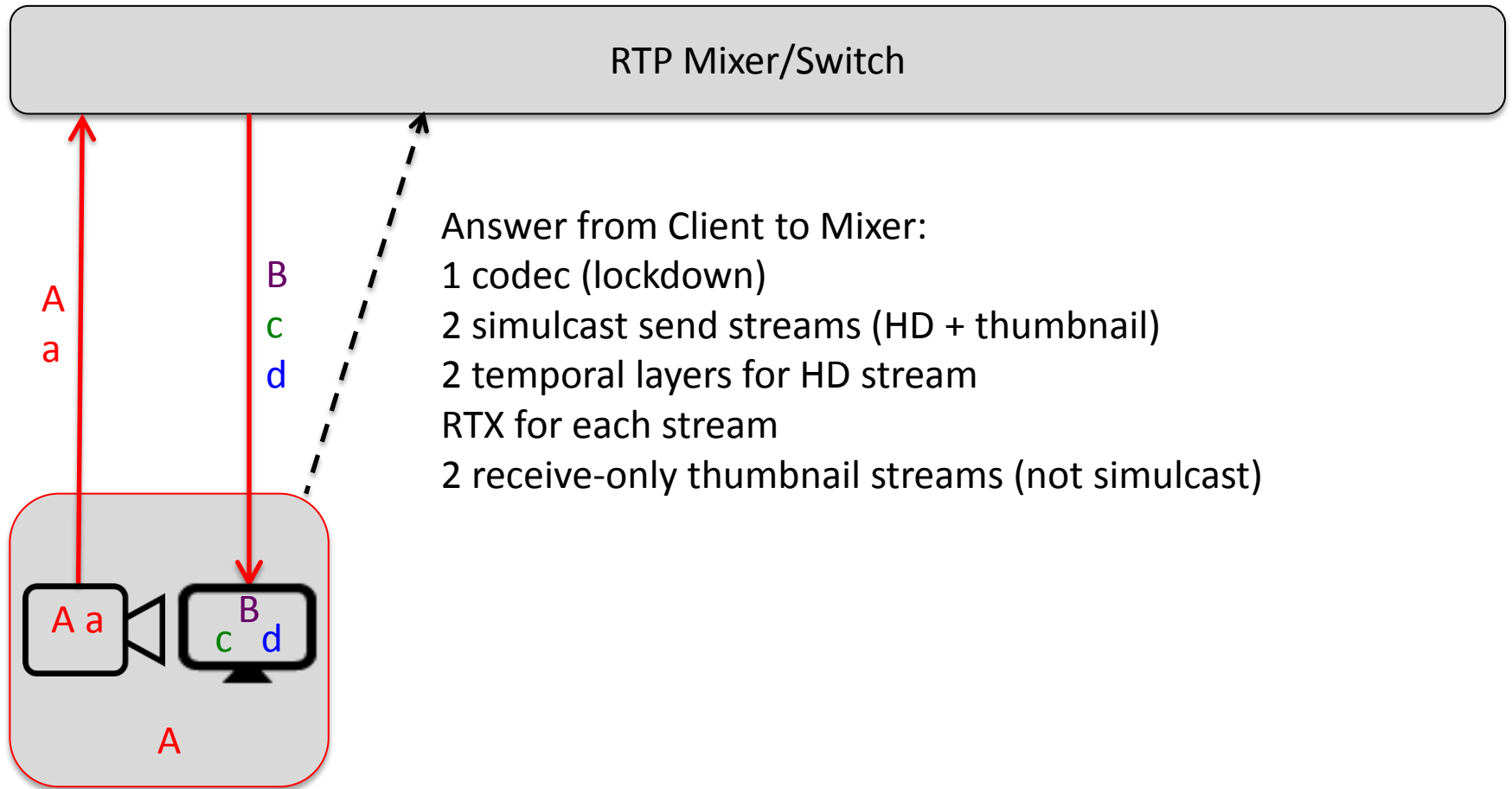
a=sendonly

m=video 10000 RTP/AVP 96 101 // thumbnail 2 – not simulcast!

a=mid:v2

a=sendonly

# Review Common Use Case: Simulcast of HD + thumbnail to Mixer



# Answer from Client to Mixer

m=video 10000 RTP/AVP 101 102 103 107 108 109

a=mid:v0

a=rtpmap:101 H264/90000 (fmt: thumbnail 180p 15fps)

a=rtpmap:102 H264/90000 (fmt: HD 720p 15fps)

a=rtpmap:103 H264/90000 (fmt: HD 720p 30fps)

a=rtpmap:107 RTX/90000 (fmt: apt=101)

a=rtpmap:108 RTX/90000 (fmt: apt=102)

a=rtpmap:109 RTX/90000 (fmt: apt=103)

a=depend:103 lay v0:102

**a=simulcast send 101; sendrecv 102; 103 (send thumbnail; send+receive HD 15+30)**

m=video 10000 RTP/AVP 101 // thumbnail 1 – not simulcast!

a=mid:v1

a=recvonly

m=video 10000 RTP/AVP 101 // thumbnail 2 – not simulcast!

a=mid:v2

a=recvonly

# Simulcast Attribute

**a=simulcast [send|recv|sendrecv] PT1a,PT1b; PT2a,PT2b;...**

- A list of payload types for the indicated direction(s)
  - Comma-separated alternatives for the same simulcast stream
  - Semicolon-separated different simulcast streams

m=video 10000 RTP/AVP 96 97

a=rtpmap:96 VP8/90000 (HD)

a=rtpmap:97 VP8/90000 (thumbnail)

a=fmtp:96 max-fs=3600;max-fr=30 (1280x720p30)

a=fmtp:97 max-fs=240;max-fr=15 (320x180p15)

**a=simulcast send 96; 97; recv 96**

**(send HD + thumbnail, receive HD)**



# Other Approaches

- SDP CapNeg, MediaCapNeg, and MiscCapNeg
  - Complicated
- ConfigID / appld
  - Cloning many existing SDP attributes per ID
- Non-Unified Plan
  - Don't go there, please!

# WG adoption?

- Allow CLUE and RTCWEB to support simulcast