Simulcast in SDP

with RSIDs

Problem: PT-based simulcast

1. PT configuration is codec-specific (fmtp)
2. PT configuration is sometimes not precise enough
3. You can run out of PTs
4. Many people think it's just plain gross overloading the PT like that

Solution: RSID

RSID == ID of RTP Source Stream

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RSID == ID of an RTP Source Stream

- **Header extension** tells receiver which RTP Source Stream the packet applies to
- **SDP a= lines** have a way to refer to multiple RTP Source Streams within an m= line

RSID Example (offer to receive)

Offer: "I want to send RSIDs A, B, and C"

Answerer: "I only want to receive RSIDs A and B"

RSID Example (offer to send)

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```
m=video 9 UDP/TLS/RTP/SAVPF 100
...
a=rsid:A send pt=100 max-width=320;max-height=180
a=rsid:B send pt=100 max-width=640;max-height=360
a=rsid:C send pt=100 max-width=1280;max-height=720
a=simulcast: send rsid=A;B;C
```

Answerer: "I only want to receive RSIDs A and B"

```
m=video 9 UDP/TLS/RTP/SAVPF 100
...
a=rsid:A recv pt=100 max-width=320;max-height=180
a=rsid:B recv pt=100 max-width=640;max-height=360
a=simulcast: recv rsid=A;B
```

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Answerer: "I'll send you RSIDs A and B"

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Simulcast with RSIDs in SDP

- One a=rsid configures one encoding with one RTP source stream
- Symmetric: answer can't change it
- Unidirectional: either send or recv, not both
- Answer can remove them or constrain them further down
- Scoped to m-line (may be reused by other m-lines)

The attributes

```
max-width
max-height
max-fps
max-fs
max-br
max-pps
depend
```

Pause for discussion

Question: Int or String?

- String can convey some meaning ("small", "medium", "large"), which several people in the WebRTC WG have asked for
- Int might be smaller in the header extension and SDP (or bigger; "s", "m", "l" work as RSIDs as well)

Recommendation: String

Question: Is PT=* allowed?

Is this allowed?

```
a=rsid:A recv pt=* max-width=320;max-height=180
```

or

```
a=rsid:A recv max-width=320;max-height=180
```

Recommendation: Yes. If omitted means "any"

Question: RSID as RTCP SDES or not?

Pro SDES:

Bandwidth savings if RSID changes are infrequent; mainly use RTCP

SDES RTP Header Extension can be used for same reasons as SDES MID

Question: What is mandatory?

- Is PT-based simulcast?
- Is RSID-based simulcast?
- Is the header extension?
- Are *all* of the attributes?

Recommendation: ???

Question: What if a client doesn't support an attr?

- WebRTC clients might not support max-width or max-height. How do we put in the offer "I only know certain attributes, not others"
- In the future, we may add a new attribute. Is it supported?
- Possible solutions:
    - `a=rsid-known-attrs max-br,depend`
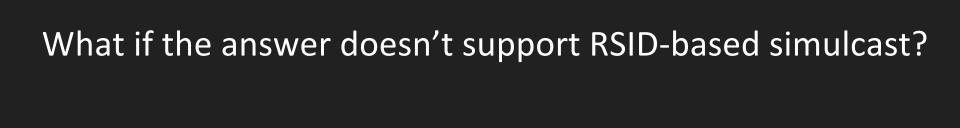   - `a=rsid send max-br=none depend=none`

Recommendation: Include some kind of whitelist

Question: Have "sendrecv"?

```
a=rsid sendrecv A
```

- Saves a line
- Complex when answer breaks it up

```
Recommendation: No sendrecv
```

What if the answer doesn't support RSID-based simulcast?

Question: Simulcast over multiple transports?

- Some use cases want it
- But it's complicated

Recommendation: Out of scope