

CLUE interim meeting

SIP/CLUE call flows

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Principles

- SIP and CLUE messages are independent of each other and no ordering between them is enforced
- CLUE messages refer to SDP labels, no SDP->CLUE references
- Media is sent when **both** an SDP with suitable recv streams **and** a CLUE configure have been received
- Current SDP examples follow Plan Z – no new SDP attributes

Alice

Bob



1. Initial INVITE (A->B)

INVITE sip:bob@biloxi.example.com SIP/2.0
Via: SIP/2.0/TCP client.atlanta.example.com:5060;branch=z9hG4bK74bf9
Max-Forwards: 70
From: Alice <sip:alice@atlanta.example.com>;tag=9fxced76sl
To: Bob <sip:bob@biloxi.example.com>
Call-ID: 3848276298220188511@atlanta.example.com
CSeq: 1 INVITE
Contact: <sip:alice@client.atlanta.example.com;transport=tcp>;**sip.clue**
Content-Type: application/sdp
Content-Length: 273

v=0
o=alice 2890844526 2890844526 IN IP4 client.atlanta.example.com
s=-
c=IN IP4 192.0.2.101
t=0 0
m=audio 6000 RTP/AVP 0
a=rtpmap:0 PCMU/8000
a=sendrecv
m=video 6002 RTP/AVP 96
a=rtpmap:96 H264/90000
a=fmtp:96 profile-level-id=42e016;max-mps=108000;max-fs=3600
a=sendrecv

- Interoperable SDP
- Feature tag to signal CLUE support

4. Second Offer (A->B)

...
m=video 6002 RTP/AVP 96
...
a=sendrecv
m=video 6004 RTP/AVP 96
...
a=label:clue.1
a=sendonly
m=video 6006 RTP/AVP 96
...
a=label:clue.2
a=sendonly
m=video 6008 RTP/AVP 96
...
a=label:clue.3
a=sendonly

- Initial *sendrecv* m-line retained for media continuity
- 3 additional *sendonly* m-lines
- *sendonly* streams contain labels

5. Alice's CLUE Advertisement

Advertisement

Capture Scene 1

Capture 1: Spatial params <left camera>, Encoding Group 1

Capture 2: Spatial params <centre camera>, Encoding Group 1

Capture 3: Spatial params <right camera>, Encoding Group 1

Capture 4: Spatial params <switched>, Encoding Group 1

Capture 5: Spatial params <switched>, Encoding Group 1

Capture 6: Spatial params <switched>, Encoding Group 1

Capture Scene Entry: 1,2,3

Capture Scene Entry: 4,5

Capture Scene Entry: 6

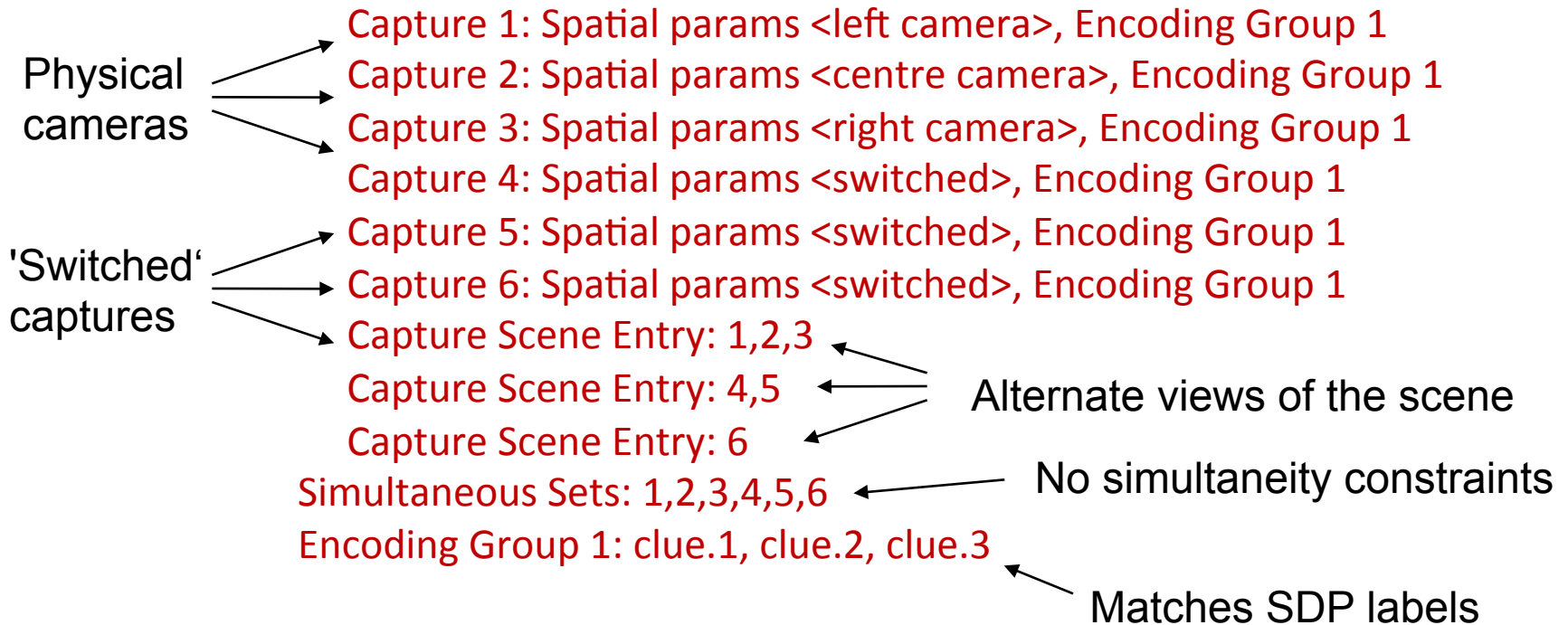
Simultaneous Sets: 1,2,3,4,5,6

Encoding Group 1: clue.1, clue.2, clue.3

5. Alice's CLUE Advertisement

Advertisement

Capture Scene 1



6. Bob's CLUE Advertisement

Advertisement

Capture Scene 1

Capture 100: Spatial params <left camera>, Encoding Group 1

Capture 200: Spatial params <centre camera>, Encoding Group 1

Capture 300: Spatial params <right camera>, Encoding Group 1

Capture 400: Spatial params <composed>, Encoding Group 1


Capture Scene Entry: 100,200,300

Capture Scene Entry: 400

Simultaneous Sets: 100,200,300,400

Encoding Group 1: clue.send-a, clue.send-b, clue.send-c

Bob has not yet sent
an SDP with these labels



7. Second Answer (B->A)

```
...  
m=video 49726 RTP/AVP 96  
...  
a=sendrecv  
m=video 49728 RTP/AVP 96  
...  
a=label:clue.recv-a  
a=recvonly  
m=video 49730 RTP/AVP 96  
...  
a=label:clue.recv-b  
a=recvonly  
m=video 0 RTP/AVP 96
```

- Initial *sendrecv* m-line retained for media continuity
- 2 unidirectional m-lines accepted, 1 not accepted
- *sendonly* streams contain labels

9. Alice's CLUE Configure

Configure

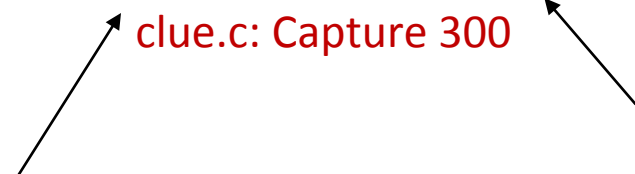
Capture Encodings

clue.a: Capture 100

clue.b: Capture 200

clue.c: Capture 300

Alice has not yet sent
an SDP with these labels

A diagram consisting of two arrows. One arrow starts from the text 'Alice has not yet sent an SDP with these labels' and points towards the 'clue.a: Capture 100' line. The other arrow starts from the text 'Alice asks for all 3 of Bob's camera streams' and points towards the 'clue.c: Capture 300' line.

Alice asks for all 3
of Bob's camera streams

Alice hasn't sent an SDP containing the labels she includes,
so Bob cannot yet send multiple video streams

10. Third Offer (B->A)

```
...  
m=video 49726 RTP/AVP 96  
...  
a=sendrecv  
m=video 49728 RTP/AVP 96  
...  
a=label:clue.recv-a  
a=recvonly  
m=video 49730 RTP/AVP 96  
...  
a=label:clue.recv-b  
a=recvonly  
m=video 0 RTP/AVP 96  
a=video 49732 RTP/AVP 96  
...  
a=label:clue.send-a  
a=sendonly  
a=video 49734 RTP/AVP 96  
...  
a=label:clue.send-b  
a=sendonly  
a=video 49736 RTP/AVP 96  
...  
a=label:clue.send-c  
a=sendonly
```

- Initial *sendrecv* m-line still retained for media continuity
- Have now added three *sendonly* streams to two *recvonly* ones

11. Third Answer (A->B)

```
...
m=video 6002 RTP/AVP 96
...
a=sendrecv
m=video 6004 RTP/AVP 96
...
a=label:clue.1
a=sendonly
m=video 6006 RTP/AVP 96
...
a=label:clue.2
a=sendonly
m=video 0 RTP/AVP 96
a=sendonly
m=video 6010 RTP/AVP 96
...
a=label:clue.a
a=recvonly
m=video 6012 RTP/AVP 96
...
a=label:clue.b
a=recvonly
m=video 6014 RTP/AVP 96
...
a=label:clue.c
a=recvonly
```

- Initial *sendrecv* m-line still retained for media continuity
- Answer, so third *sendonly* m-line disabled
- Added three *recvonly* streams
- Bob can now send Alice 3 video streams

13. Bob's CLUE Configure

Configure

Capture Encodings

Clue.stream-a: Capture 4

Clue.stream-b: Capture 5



Bob asks for Alice's
2 switched streams

Having already received the corresponding SDP,
Alice can now send Bob two streams of video

Unidirectional CLUE example



Summary

- Clue support signalled with feature tag
- m-lines controlled by clue have '*clue.*' label
- Initial sendrecv line left in SDP for cut-through media and to avoid gaps in media
- Glare will be frequent – not problematic (?)
- CLUE messages may contain references to SDP labels that have not yet been sent

Cannot be expressed in Plan Z

- Encoding Group Constraints
- Complete set of H264 send parameters
- Encoding Groups in SDP generally are problematic