

Use of “Latent Configurations” in CLUE

draft-groves-clue-latent-config-00

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Introduction

- Issue
 - Encodings needs to be described outside CLUE.
 - However CLUE encodings are potential not actually offered media, i.e. no resources reserved.
 - There is a semantic difference between what CLUE is doing with encodings vs. SDP Offer/Answer procedures.
 - The potential large set of captures/encodings will lead to very large offers/answers that will need to be maintained.
 - Alternate approach?

Latent Configurations

- RFC6871 “Session Description Protocol (SDP) Media Capabilities Negotiation” introduces the latent configuration concept to SDP.

A latent configuration indicates which combinations of capabilities could be used in a future negotiation for the session and its associated media stream components. Latent configurations are neither ready for use nor offered for actual or potential use in the current offer/answer exchange.

More closely follows CLUE encoding semantic.

- Part of the SDP capabilities negotiation framework RFC5939
- Allows to assign SDP attributes to latent configurations, no extra m-lines needed, e.g.

a=lcfg:4 mt=video t=1 m=1 a=41,42

a=acap:41 label:13

a=acap:42 content:slides

- No resources reserved. No interaction with Bundle.

Example Offer for CLUE using latent config

Offer includes:

- Base audio stream
 - Request for CLUE channel
 - 4 Video Encodings
 - 2 alternative codecs
-
- Notice compact form!
 - “Label” provides link to CLUE

```
v=0
o=alice 2890844526 2890844526 IN IP4 host.anywhere.com
s=
c=IN IP4 host.anywhere.com
t=0 0
m=audio 49170 RTP/AVP 0 ; Base audio stream
a=rtpmap:0 PCMU/8000

; CLUE channel establishment request
m=application 49172 SCTP 49172
a=setup:actpass
a=connection:new
a=sctpmap:49172 CLUE 1

;Offered configurations
a=rmcap:1 H264/90000 ; this is needed for the m=
a=rmcap:2 VP8/90000
a=tcap:1 RTP/AVPF ; for the t=
a=acap:5 sendonly
a=acap:1 label:encoding1
a=lcfg:1 mt=video t=1 m=1|2 a=1,5 pt=1:100,2:101
a=acap:2 label:encoding2
a=lcfg:2 mt=video t=1 m=1|2 a=2,5 pt=1:102,2:103
a=acap:3 label:encoding3
a=lcfg:3 mt=video t=1 m=1|2 a=3,5 pt=1:104,2:105
a=acap:4 label:encoding4
a=lcfg:4 mt=video t=1 m=1|2 a=4,5 pt=1:106,2:107
```

Example Answer for CLUE using latent config

Answer indicates only
support for H.264

```
v=0
o=bob 2890844730 2890844730 IN IP4 host.example.com
s=
c=IN IP4 host.example.com
t=0 0
m=audio 49920 RTP/AVP 0
a=rtpmap:0 PCMU/8000

; Accepted SCTP CLUE connection
m=application 54321 SCTP 54321
c=IN IP4 192.0.2.1
a=setup:passive
a=connection:new
a=sctpmap:54321 CLUE 1

;Accepted configurations
a=rmcap:1 H264/90000 ; this is needed for the m=
a=tcap:1 RTP/AVPF ; for the t=
a=acap:5 sendonly
a=acap:1 label:encoding1
a=lcfg:1 mt=video t=1 m=1 a=1,5 pt=1:100
a=acap:2 label:encoding2
a=lcfg:2 mt=video t=1 m=1 a=2,5 pt=1:102
a=acap:3 label:encoding3
a=lcfg:3 mt=video t=1 m=1 a=3,5 pt=1:104
a=acap:4 label:encoding4
a=lcfg:4 mt=video t=1 m=1 a=4,5 pt=1:106
```

CLUE Signalling

Advertisement

+-----+-----+	
Capture Scene #1	
+-----+-----+	
VC1	CaptureArea=Left
	EncodingGroup=EG1
VC2	CaptureArea=Centre
	EncodingGroup=EG2
VC3	CaptureArea=Right
	EncodingGroup=EG3
VC4	CaptureArea=All
	EncodingGroup=EG4
CSE (VC1, VC2, VC3)	
CSE (VC4)	
+-----+-----+	
EncodingGroups	
+-----+-----+	
EG1	EncodeID=encoding1
EG2	EncodeID=encoding2
EG3	EncodeID=encoding3
EG4	EncodeID=encoding4
+=====+	

Configure

+-----+-----+	
VC1	encoding1
VC2	encoding2
VC3	encoding3
+-----+-----+	

Updated Offer for VC1, VC2, VC3 encodings

```
v=0
o=alice 2890844526 2890844526 IN IP4
    host.anywhere.com
s=
a=group:CLUE 1 2 3
c=IN IP4 host.anywhere.com
t=0 0
m=audio 49170 RTP/AVP 0 ; Base audio stream
a=rtpmap:0 PCMU/8000
```

```
;Offered configurations
a=rmcap:1 H264/90000 ; this is needed for the m=
a=tcap:1 RTP/AVPF ; for the t=
a=acap:5 sendonly
a=acap:4 label:encoding4
a=lcfg:4 mt=video t=1 m=1|2 a=4,5 pt=1:106,2:107
```

Continued across

```
;CLUE channel estab. Req.
    m=application 49172 SCTP 49172
    a=setup:actpass
    a=connection:new
    a=sctpmap:49172 CLUE 1
```

```
;Additional video streams
    m=video 49174 RTP/AVPF 100
    a=rtpmap:100 H264/90000
    a=label:encoding1
    a=mid:1
    a=sendonly
```

```
    m=video 49176 RTP/AVPF 102
    a=rtpmap:102 H264/90000
    a=label:encoding2
    a=mid:2
    a=sendonly
```

```
    m=video 49178 RTP/AVPF 104
    a=rtpmap:104 H264/90000
    a=label:encoding3
    a=mid:3
    a=sendonly
```

Latent Configuration issues

- Behaviour of SDP answerer and the behaviour of the recipient of the SDP Answer needs clarification