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**Mapping RTP streams to CLUE media captures  
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Abstract

This document describes mechanisms and recommended practice for mapping RTP media streams defined in SDP to CLUE media captures.

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## **1. Introduction**

Telepresence systems can send and receive multiple media streams. The CLUE framework [[I-D.ietf-clue-framework](#)] defines media captures as a source of Media, such as from one or more Capture Devices. A Media Capture (MC) may be the source of one or more Media streams. A Media Capture may also be constructed from other Media streams. A middle box can express Media Captures that it constructs from Media streams it receives.

SIP offer answer [[RFC3264](#)] uses SDP [[RFC4566](#)] to describe the RTP[RFC3550] media streams. Each RTP stream has a payload type number and SSRC. The content of the RTP stream is created by the encoder in the endpoint. This may be an original content from a camera or a content created by an intermediary device like an MCU.

The relation between the two descriptions is that the CLUE media capture defines some semantics describing the content of an RTP stream.

This document discusses the relation between the CLUE media captures and the RTP streams and makes recommendations on how to co-relate between the two.

## **2. Terminology**

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119](#)[[RFC2119](#)] and indicate requirement levels for compliant RTP implementations.

## **3. Mapping CLUE Media Captures to RTP streams**

The SDP description of the RTP streams provides among others the information about the encoding and decoding capabilities of the media as well as transport addresses for receiving the RTP streams and some channels capabilities like the maximum bandwidth available for the data.

The CLUE MCs provide semantic information of the stream which may be spatial information like left camera or on its content like loudest speaker

An RTP stream can have different content based on the MC description. For example one video capture from a camera may capture a third of the room while another from the same camera may provide a zoom

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version of the whole room. These two media captures can be mapped to the same RTP stream.

Using the video capture example from the framework document:

- o VC0- (the camera-left camera stream, purpose=main, auto-switched:no
- o VC1- (the center camera stream, purpose=main, auto-switched:no
- o VC2- (the camera-right camera stream), purpose=main, auto-switched:no
- o VC3- (the loudest panel stream), purpose=main, auto-switched:yes
- o VC4- (the loudest panel stream with PiPs), purpose=main, composed=true; auto-switched:yes
- o VC5- (the zoomed out view of all people in the room), purpose=main, composed=no; auto-switched:no
- o VC6- (presentation stream), purpose=presentation, auto-switched:no

Where the physical simultaneity information is:

{VC0, VC1, VC2, VC3, VC4, VC6}

{VC0, VC2, VC5, VC6}

To describe the MCs need 6 RTP streams since the first simultaneous entry defines 6 streams. The RTP stream used for VC1 is also the RTP stream for VC5 coming from the same camera. This mapping from a Media capture to an RTP stream is fixed. The number of RTP streams depends on the maximum number of captures in one capture set entry from the capture set.

This mapping can be done by defining a new [[RFC5888](#)] grouping attribute CaptureId and a new CLUE MC attribute RTP-id.

The above example will have the following SDP

```
a=group:captureId 1 2 3 4 5 6
```

```
m=video 49170 RTP/AVP 96
```

```
a=rtpmap:96 H264/900000
```

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mid=1

m=video 49172 RTP/AVP 96

a=rtpmap:96 H264/900000

mid=2

m=video 49174 RTP/AVP 96

a=rtpmap:96 H264/900000

mid=3

m=video 49176 RTP/AVP 96

a=rtpmap:96 H264/900000

mid=4

m=video 49178 RTP/AVP 96

a=rtpmap:96 H264/900000

mid=5

m=video 49180 RTP/AVP 96

a=rtpmap:96 H264/900000

mid=6

There is a need for a new MC attribute RTPid which will have the mid of the related RTP stream

- o VC0- (the camera-left camera stream, purpose=main, auto-switched:no, RTPid=1
- o VC1- (the center camera stream, purpose=main, auto-switched:no, RTPid=2
- o VC2- (the camera-right camera stream), purpose=main, auto-switched:no, RTPid=3
- o VC3- (the loudest panel stream), purpose=main, auto-switched:yes, RTPid=4

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- o VC4- (the loudest panel stream with PiPs), purpose=main, composed=true; auto-switched=yes, RTPid=5
- o VC5- (the zoomed out view of all people in the room), purpose=main, composed=no; auto-switched=no, RTPid=2
- o VC6- (presentation stream), purpose=presentation, auto-switched=no, RTPid=6

This will allow to provide different encoding parameters to each MC and leverage other grouping defined like bundle.

#### **4. Acknowledgements**

place holder

#### **5. IANA Considerations**

TBD

#### **6. Security Considerations**

TBD.

#### **7. References**

##### **7.1. Normative References**

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