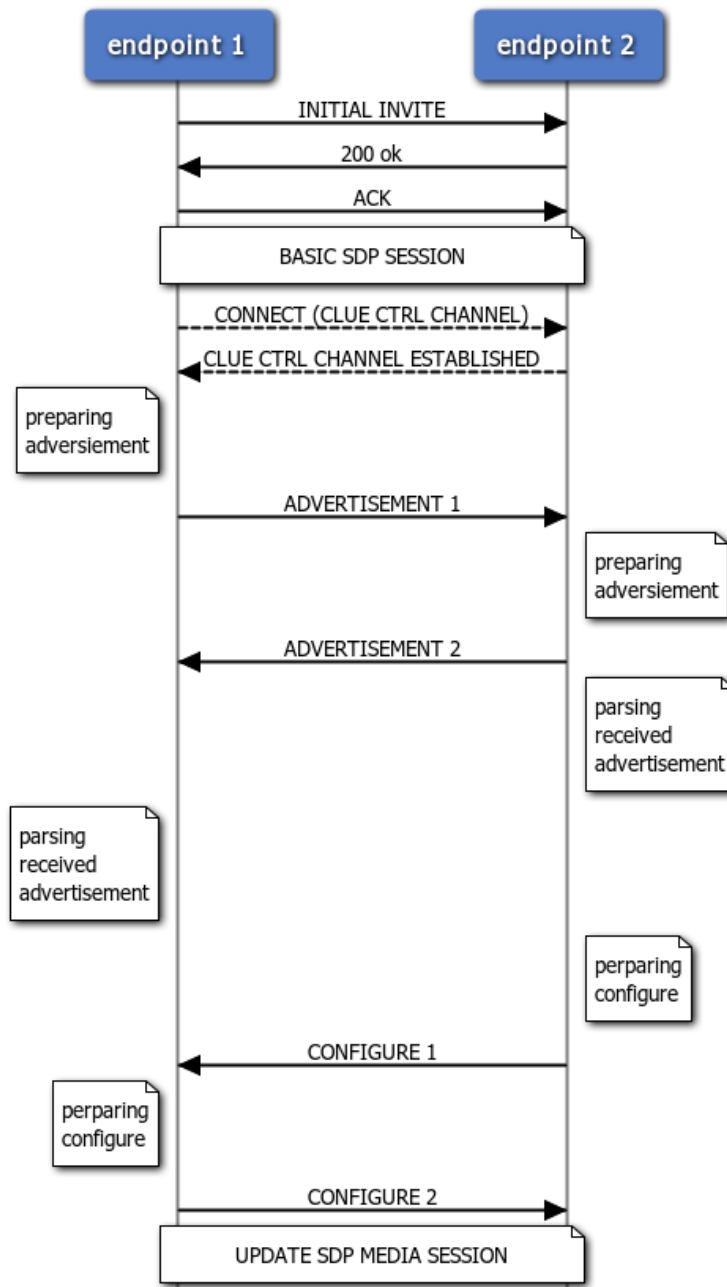


Clue protocol over WebRTC data channel: ‘running code’ trials

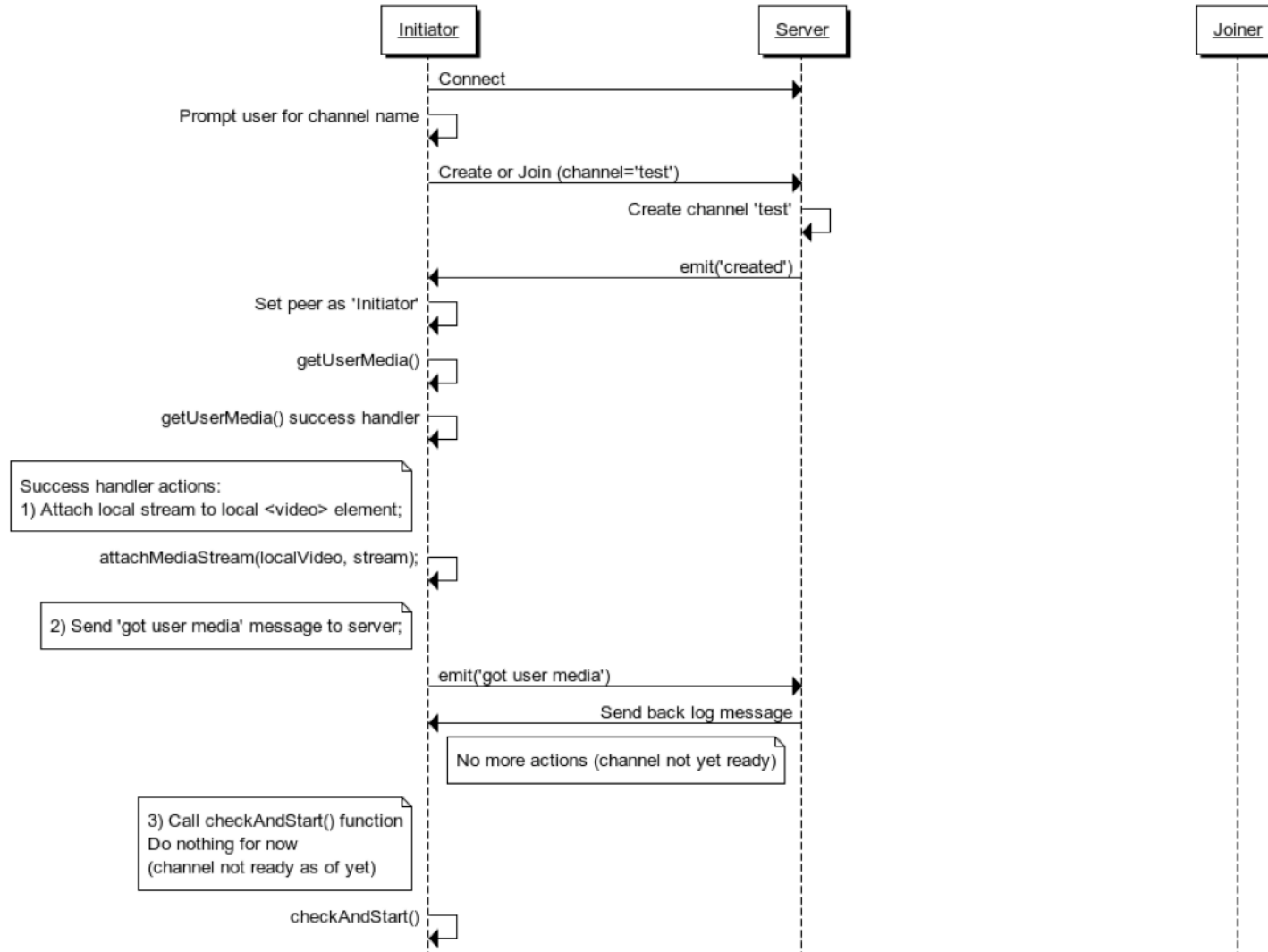
CLUE Virtual Interim meeting
January 27th, 2014

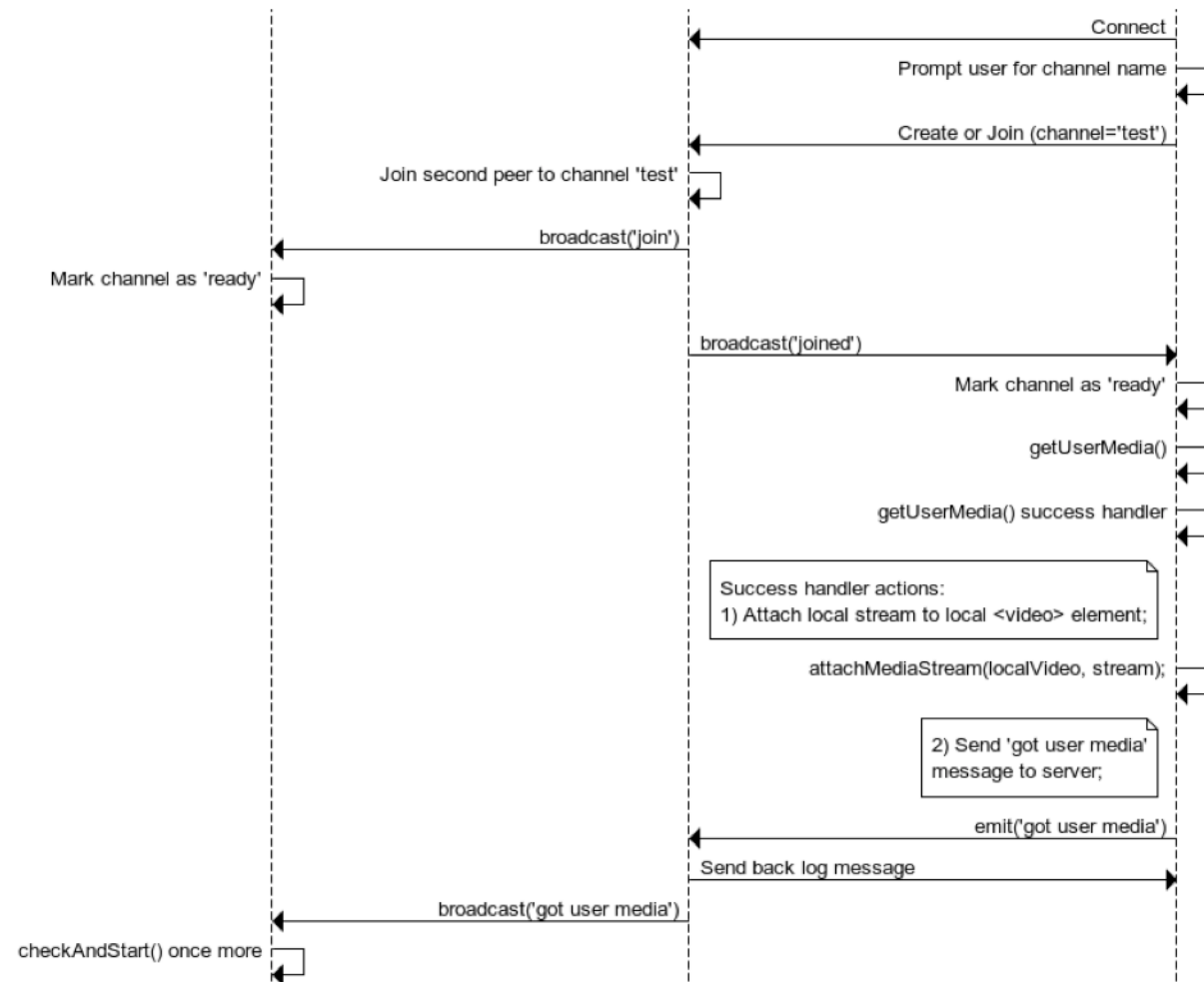
Roberta Presta & Simon Romano
{roberta.presta,spromano}@unina.it

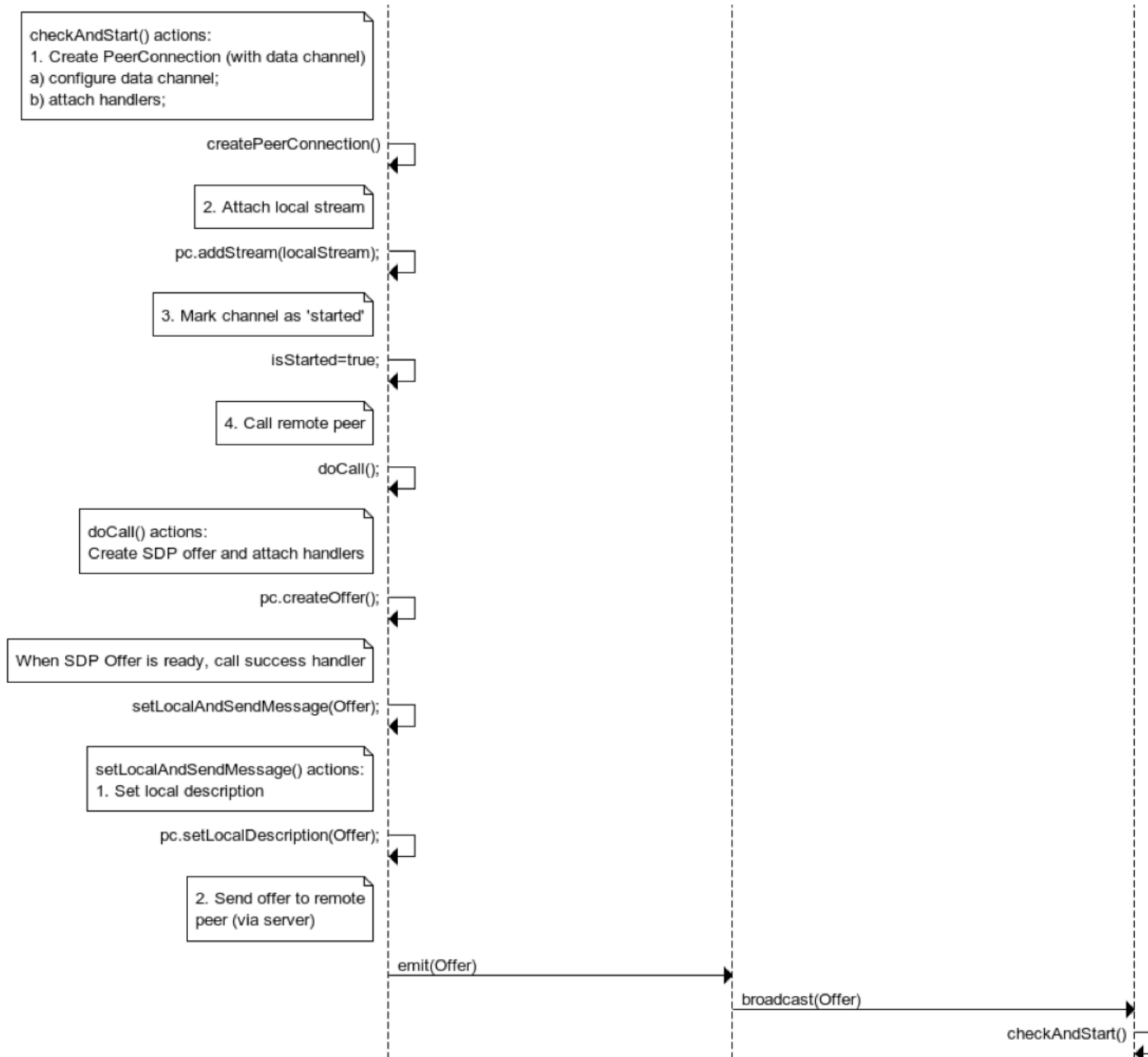
BASIC CLUE MESSAGE FLOW

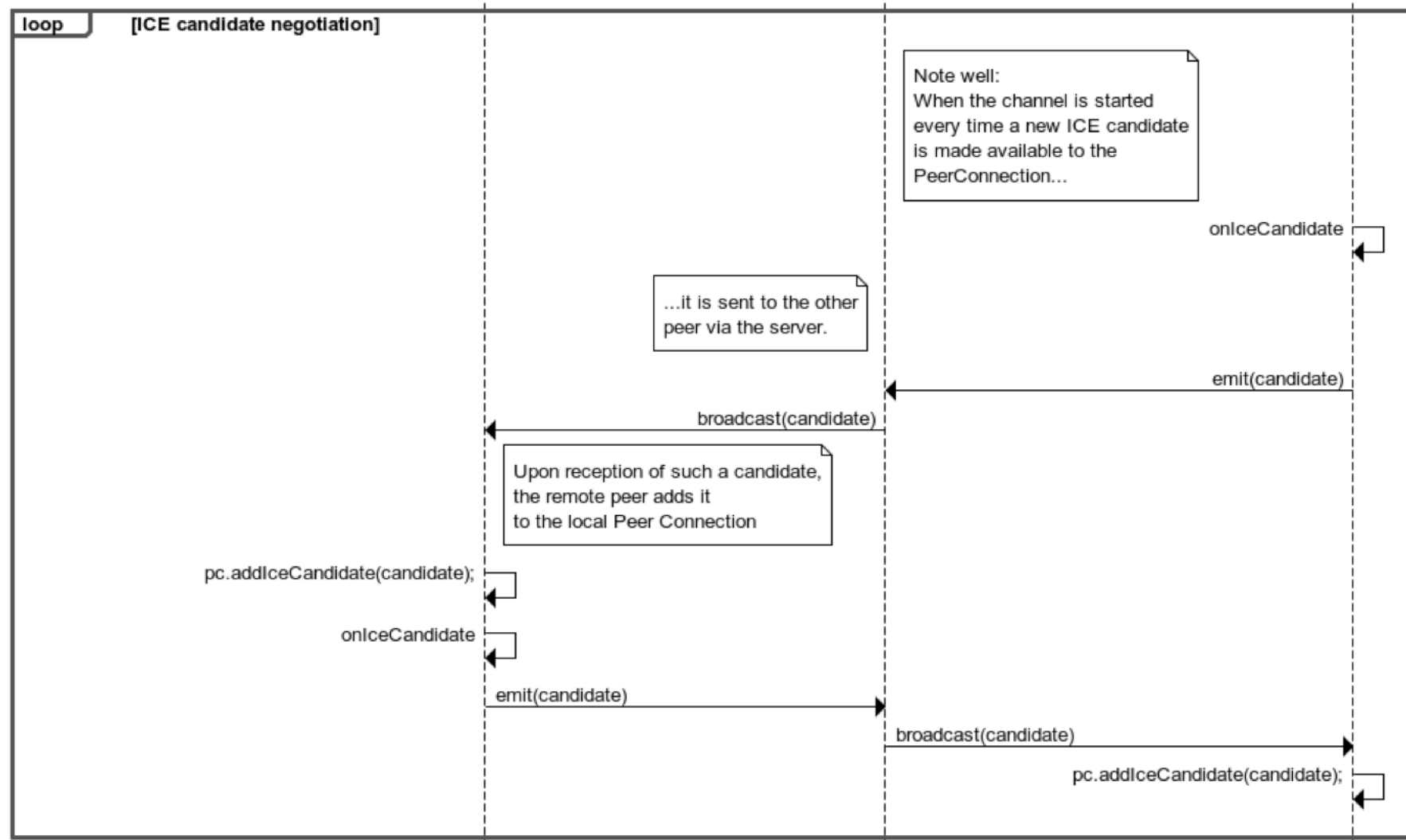


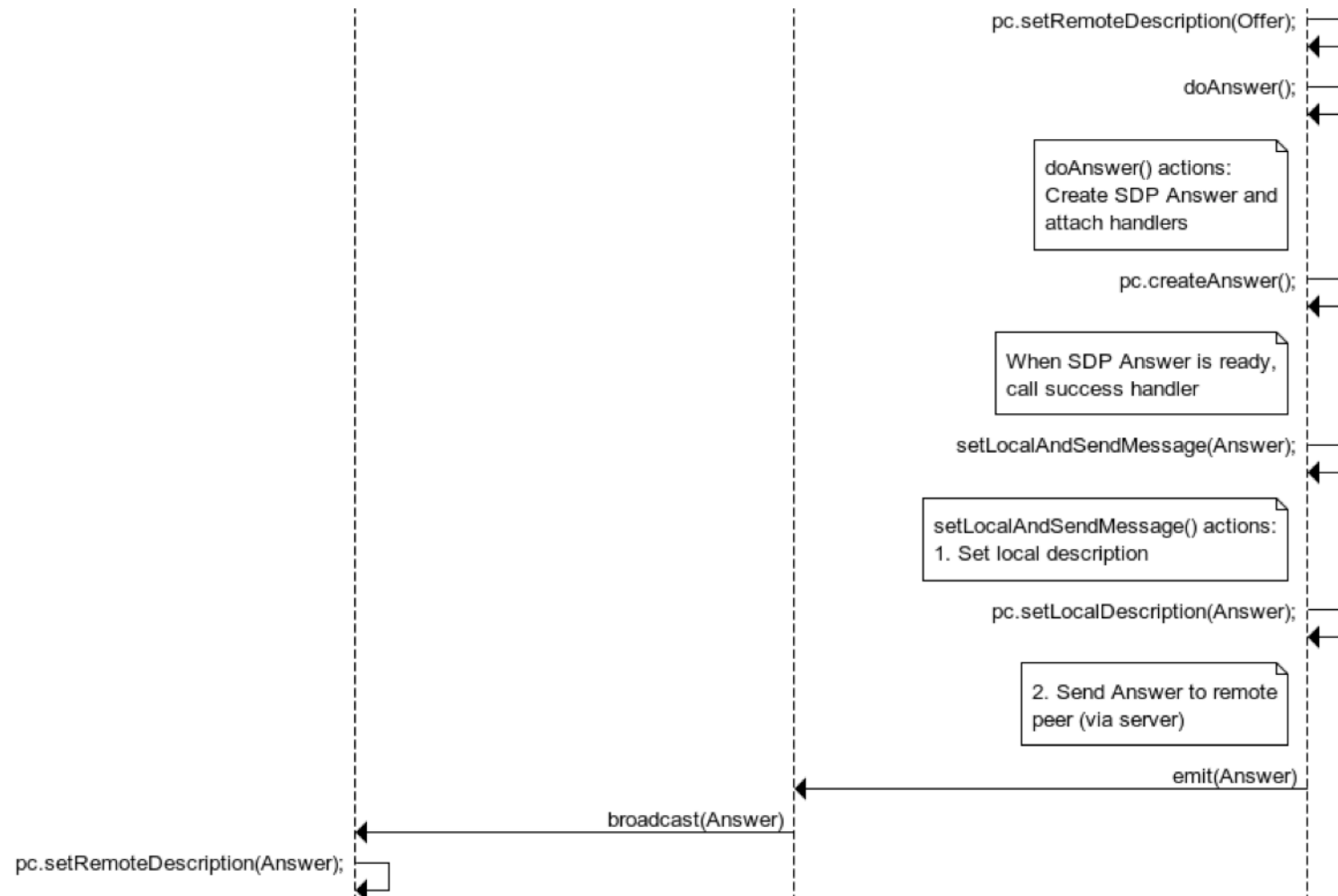
Complete WebRTC call flow

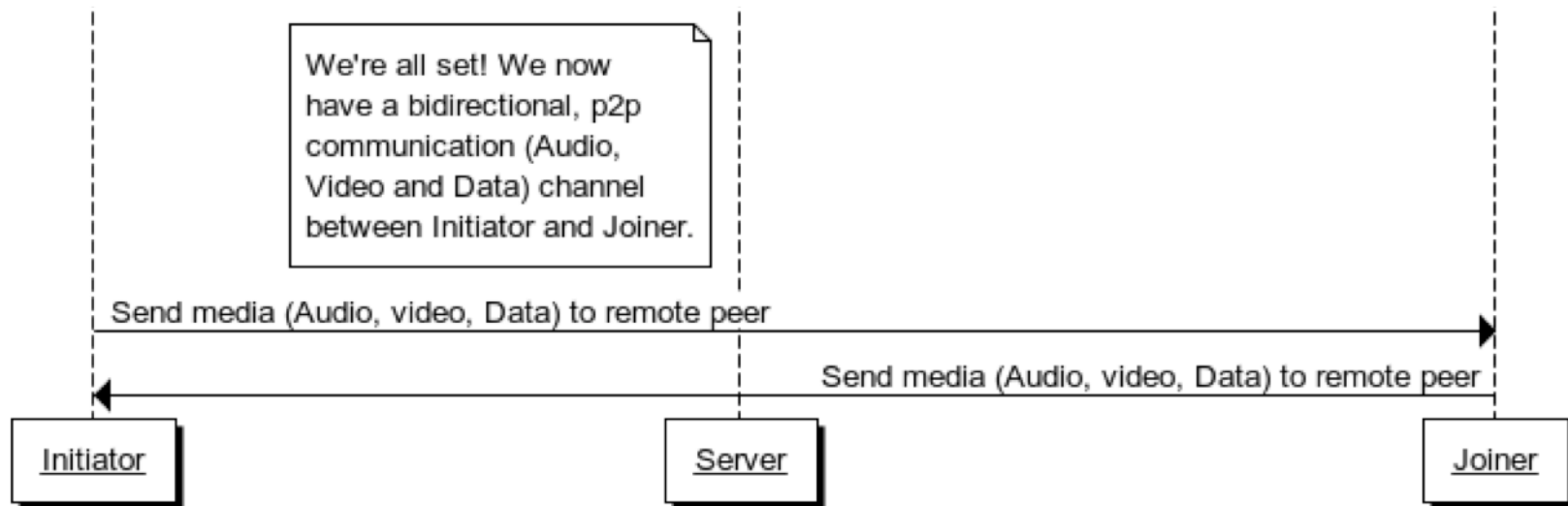




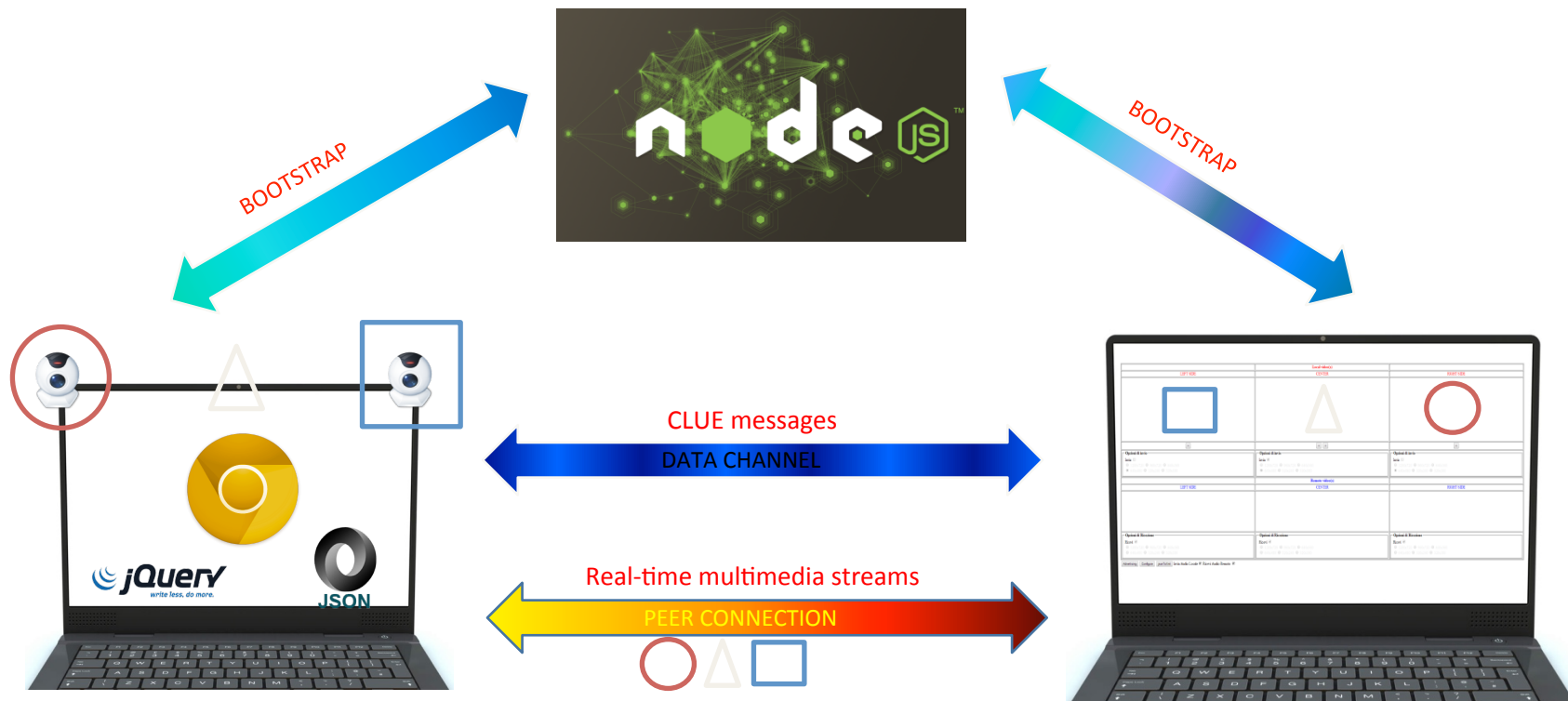








Clue over WebRTC demo



http://localhost:2013/ wants to use your camera. [Learn more](#)

Deny

Allow



	Local video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
>	< >	<
Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
	Remote video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180

ADVERTISE

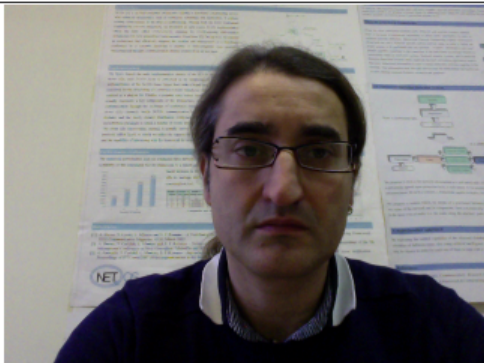
CONFIGURE

http://localhost:2013/ wants to use your camera. [Learn more](#)

Deny

Allow

×

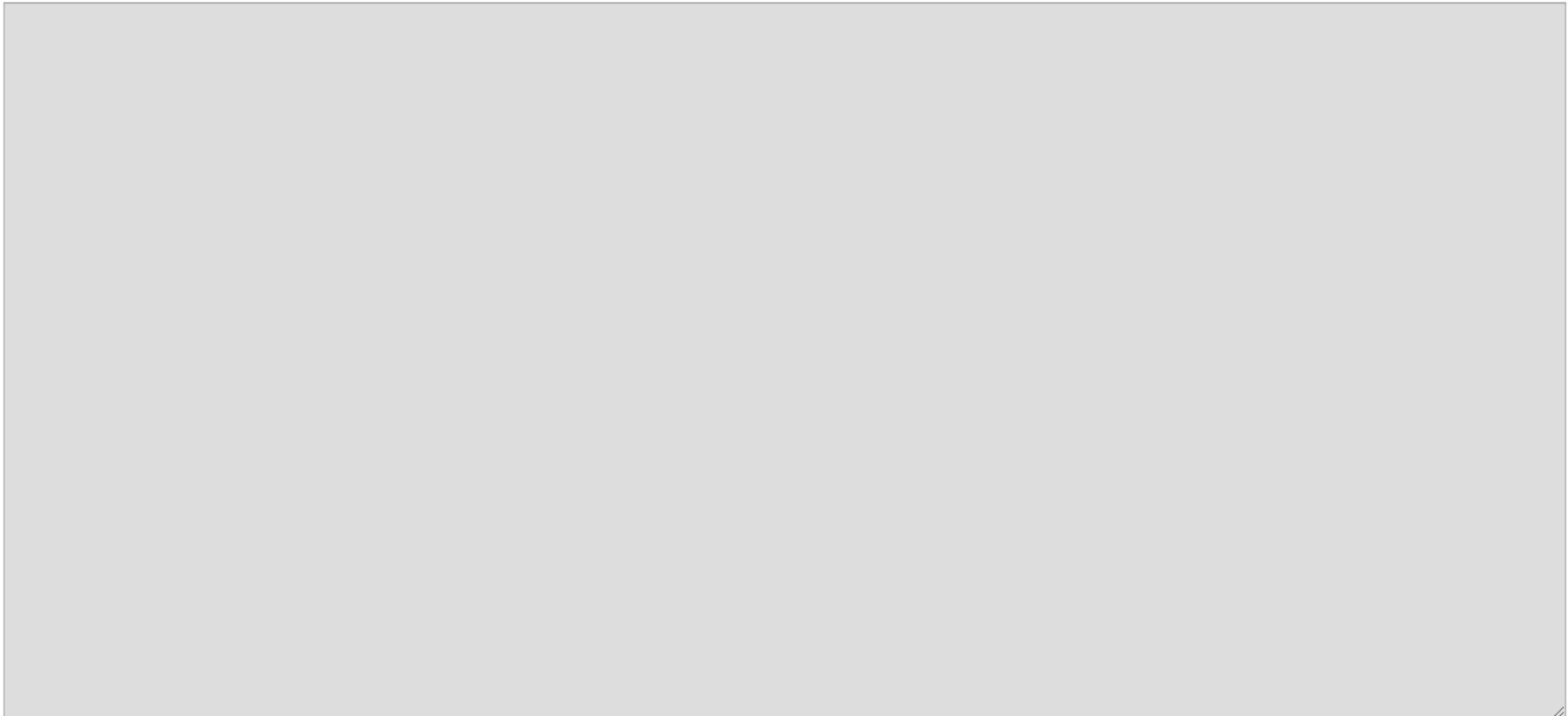
	Local video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
		
>	< >	<
Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
	Remote video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180

ADVERTISE

CONFIGURE

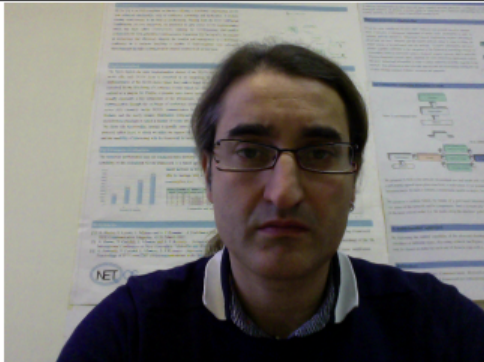
	Local video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
		
>	< >	<
Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
	Remote video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180
ADVERTISE CONFIGURE		

CLUE over WebRTC log page



Clean logs

> Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	< > Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	< Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
	Remote video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
		
Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180
ADVERTISE	CONFIGURE	

	Local video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
		
>	< >	<
Send Options Send ☒ ☒ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
	Remote video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180
ADVERTISE	CONFIGURE	

CLUE over WebRTC log page

CLUE over WebRTC log page

Clue message SENT by Initiator:

```
<advertisement
  xmlns='urn:ietf:params:xml:ns:clue-message'
  xmlns:ns2='urn:ietf:params:xml:ns:clue-info' protocol='CLUE' version='0.1'>
  <sequenceNr>0</sequenceNr>
  <senderId>Prova</senderId>
  <advNr>1</advNr>
  <mediaCaptures>
    <ns2:mediaCapture
      xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance' xsi:type='ns2:audioCaptureType' captureID='randomAudioID'>
      <ns2:capturedMedia>audio</ns2:capturedMedia>
      <ns2:captureSceneIDREF>ScEn1</ns2:captureSceneIDREF>
      <ns2:encGroupIDREF>AuEncGroup0</ns2:encGroupIDREF>
      <ns2:spatialInformation>
        <ns2:capturePoint>
          <ns2:x>0</ns2:x>
          <ns2:y>0</ns2:y>
          <ns2:z>0</ns2:z>
          <ns2:lineOfCapturePoint>
            <ns2:x>0</ns2:x>
            <ns2:y>0</ns2:y>
            <ns2:z>10</ns2:z>
          </ns2:lineOfCapturePoint>
        </ns2:capturePoint>
      </ns2:spatialInformation>
      <ns2:description lang='en'>media Capture</ns2:description>
      <ns2:audioChannelFormat>mono</ns2:audioChannelFormat>
    </ns2:mediaCapture>
  </ns2:mediaCaptures>
</advertisement>
```

Clean logs

CLUE over WebRTC log page

Message RECEIVED by Consumer:

```
<advertisement
  xmlns='urn:ietf:params:xml:ns:clue-message'
  xmlns:ns2='urn:ietf:params:xml:ns:clue-info' protocol='CLUE' version='0.1'>
  <sequenceNr>0</sequenceNr>
  <senderId>Prova</senderId>
  <advNr>1</advNr>
  <mediaCaptures>
    <ns2:mediaCapture
      xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance' xsi:type='ns2:audioCaptureType' captureID='randomAudioID'>
      <ns2:capturedMedia>audio</ns2:capturedMedia>
      <ns2:captureSceneIDREF>ScEn1</ns2:captureSceneIDREF>
      <ns2:encGroupIDREF>AuEncGroup0</ns2:encGroupIDREF>
      <ns2:spatialInformation>
        <ns2:capturePoint>
          <ns2:x>0</ns2:x>
          <ns2:y>0</ns2:y>
          <ns2:z>0</ns2:z>
          <ns2:lineOfCapturePoint>
            <ns2:x>0</ns2:x>
            <ns2:y>0</ns2:y>
            <ns2:z>10</ns2:z>
          </ns2:lineOfCapturePoint>
        </ns2:capturePoint>
      </ns2:spatialInformation>
      <ns2:description lang='en'>media Capture</ns2:description>
      <ns2:audioChannelFormat>mono</ns2:audioChannelFormat>
    </ns2:mediaCapture>
    <ns2:mediaCapture
      xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance' xsi:type='ns2:videoCaptureType'
      captureID='db6f9228a8d4e65f8589391a339c0bf82b4dd41d48b9ec3df6dd5a04adedfefd'>
```

Clean logs

> Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	< > Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	< Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
	Remote video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
		
Receive Options Receive ☒ ☒ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180
ADVERTISE	CONFIGURE	

CLUE over WebRTC log page

Clue message SENT by Consumer:

```
<configure
  xmlns='urn:ietf:params:xml:ns:clue-message'
  xmlns:ns2='urn:ietf:params:xml:ns:clue-info' protocol='CLUE' version='0.1'>
  <sequenceNr>1</sequenceNr>
  <senderId>consumer</senderId>
  <advNumber>1</advNumber>
  <captureEncodings>
    <ns2:captureEncoding ID='AuCE'>
      <ns2:mediaCaptureID>randomAudioID</ns2:mediaCaptureID>
      <ns2:encodingID>AuEn0</ns2:encodingID>
    </ns2:captureEncoding>
    <ns2:captureEncoding ID='CodecEnc0'>
      <ns2:mediaCaptureID>db6f9228a8d4e65f8589391a339c0bf82b4dd41d48b9ec3df6dd5a04adedfef</ns2:mediaCaptureID>
      <ns2:encodingID>VidEnc0</ns2:encodingID>
      <ns2:encodingParameters>
        <ns2:width>1280</ns2:width>
        <ns2:height>720</ns2:height>
      </ns2:encodingParameters>
    </ns2:captureEncoding>
    <ns2:captureEncoding ID='CodecEnc1'>
      <ns2:mediaCaptureID>d723b28c62d705c3b437bfa0f9c46ea3d6f66323500a54dc70422c783e0e766e</ns2:mediaCaptureID>
      <ns2:encodingID>VidEnc1</ns2:encodingID>
      <ns2:encodingParameters>
        <ns2:width>640</ns2:width>
        <ns2:height>480</ns2:height>
      </ns2:encodingParameters>
    </ns2:captureEncoding>
  </captureEncodings>
</configure>
```

Clean logs

CLUE over WebRTC log page

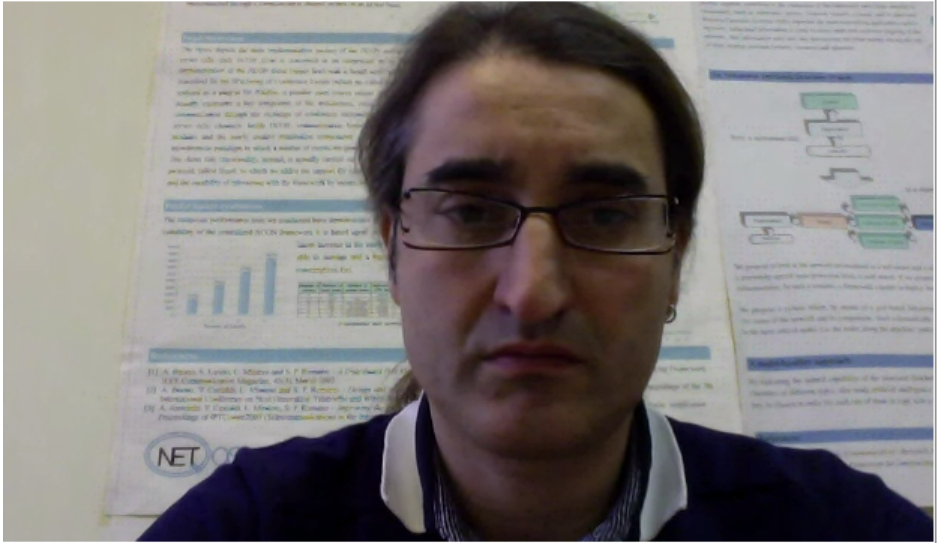
Message RECEIVED by Initiator:

```
<configure
  xmlns='urn:ietf:params:xml:ns:clue-message'
  xmlns:ns2='urn:ietf:params:xml:ns:clue-info' protocol='CLUE' version='0.1'>
  <sequenceNr>1</sequenceNr>
  <senderId>consumer</senderId>
  <advNumber>1</advNumber>
  <captureEncodings>
    <ns2:captureEncoding ID='AuCE'>
      <ns2:mediaCaptureID>randomAudioID</ns2:mediaCaptureID>
      <ns2:encodingID>AuEn0</ns2:encodingID>
    </ns2:captureEncoding>
    <ns2:captureEncoding ID='CodecEnc0'>
      <ns2:mediaCaptureID>db6f9228a8d4e65f8589391a339c0bf82b4dd41d48b9ec3df6dd5a04adedfefd</ns2:mediaCaptureID>
      <ns2:encodingID>VidEnc0</ns2:encodingID>
      <ns2:encodingParameters>
        <ns2:width>1280</ns2:width>
        <ns2:height>720</ns2:height>
      </ns2:encodingParameters>
    </ns2:captureEncoding>
    <ns2:captureEncoding ID='CodecEnc1'>
      <ns2:mediaCaptureID>d723b28c62d705c3b437bfa0f9c46ea3d6f66323500a54dc70422c783e0e766e</ns2:mediaCaptureID>
      <ns2:encodingID>VidEnc1</ns2:encodingID>
      <ns2:encodingParameters>
        <ns2:width>640</ns2:width>
        <ns2:height>480</ns2:height>
      </ns2:encodingParameters>
    </ns2:captureEncoding>
  </captureEncodings>
</configure>
```

Message RECEIVED by Initiator:

Clean logs

	Local video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
		
>	< >	<
Send Options Send ☒ ☒ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
	Remote video(s)	
LEFT SIDE	CENTER	RIGHT SIDE
Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180
ADVERTISE	CONFIGURE	

>	< >
Send Options Send ☐ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180	Send Options Send ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180
LEFT SIDE	Remote video(s) CENTER
	
Receive Options Receive ☒ ☒ 1280x720 ☐ 960x720 ☐ 640x360 ☐ 640x480 ☐ 320x240 ☐ 320x180	Receive Options Receive ☒ ☐ 1280x720 ☐ 960x720 ☐ 640x360 ☒ 640x480 ☐ 320x240 ☐ 320x180