In a browser with Delight Player

Overview

A stream published on WCS server can be played in a browser-based VR player, Delight Playerfor example. This way stream can be played in virtual and mixed reality devices if one of browsers supporteds work on this device. Note that the better quality of stream published, the better stream playback quality in VR device.

Supported platforms and browsers

	Chrome	Firefox	Safari 11	Edge
Windows	+	+		+
Mac OS	+	+	+	
Android	+	+		
iOS	-	-	+	

Supported technologies

- WebRTC
- HLS

Playback via WebRTC

Delaight Player can be integrated with WCS to play the stream by two ways:

1. Using WebSDK
2. Using JavaScript and HTML5

Using WebSDK

To play a stream via WebRTC in Delight Player or any other custom JavaScript player, the video ememento of the page in which a strem will be played shoukd be passed as`remoteVideo` parameter to the`session.createStream()` WebSDK function

session.createStream() code

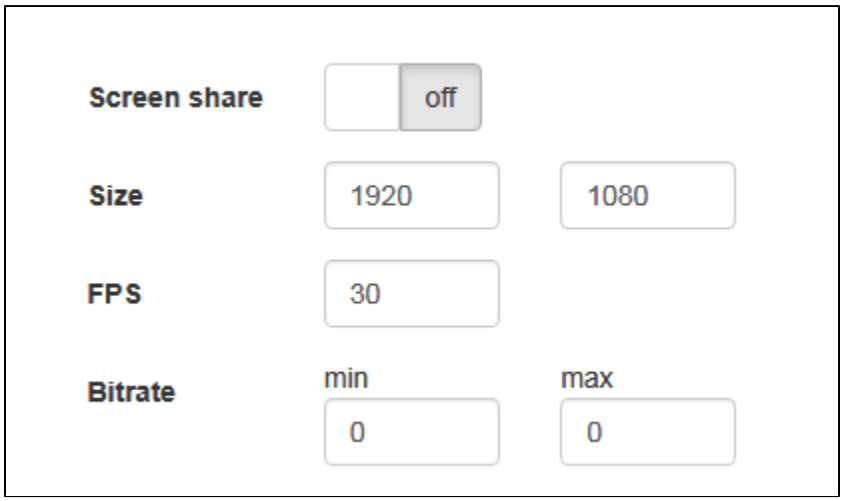
```
session.createStream({
        name: document.getElementById('playStream').value,
        display: display,
        remoteVideo: video
})
...
```

Testing

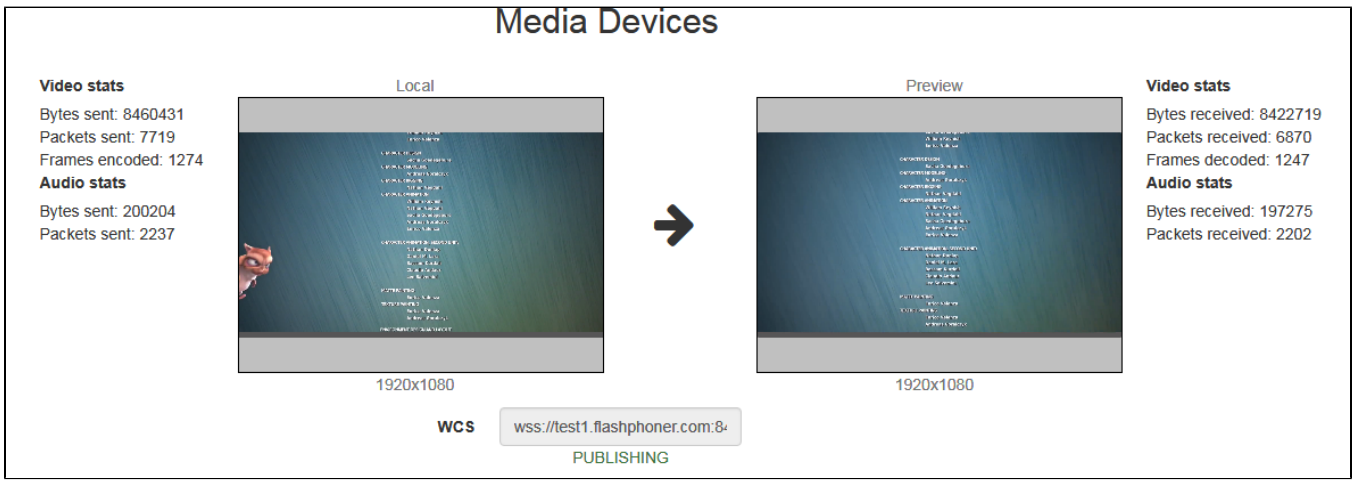
1. For the test we use:

- WCS server
- Media Devicesweb application to publish FullHD stream
- DelightVR player to play the stream

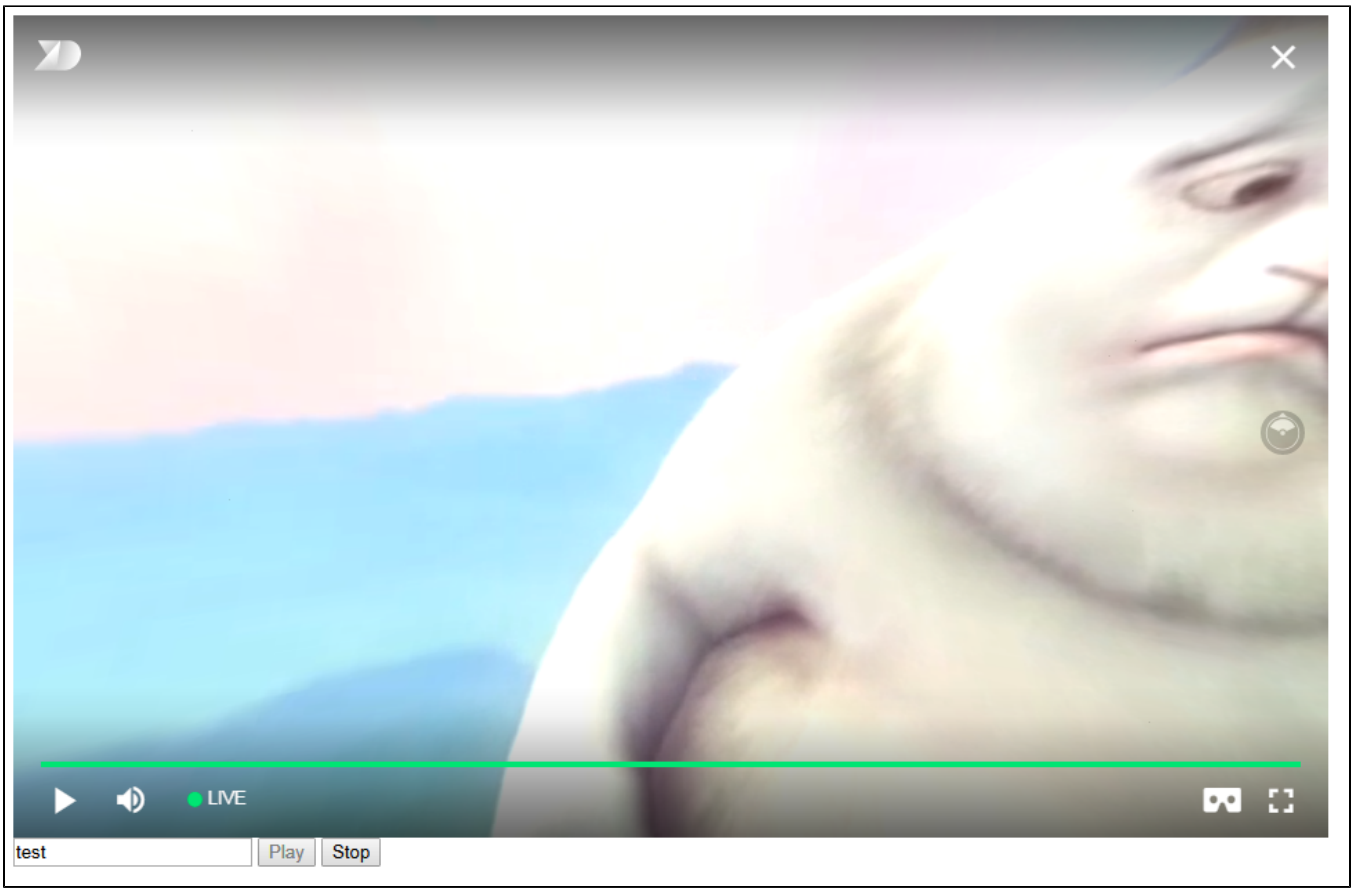
2. Set the stream resolution to 1920x1080



3. Set to WCS field stream name`wss://test1.flashphoner.com:8443/test`and press Start to publish



4. Play the stream `test` in VR player



A view angle can be changed with mouse drag in browser on PC or Mac, and can be changed depending on iOS device or dedicated VR device tilt angle.

Player page example code

1. Declaration of video element to play the stream, stream name input field and Play/Stop buttons

```
        <div style="width: 50%;" id="display">
            <dl8-live-video id="remoteVideo" format="STEREO_TERPON">
                <source>
            </dl8-live-video>
        </div>
                <input class="form-control" type="text" id="playStream" placeholder="Stream Name">
                <button id="playBtn" type="button" class="btn btn-default" disabled>Play</button>
                <button id="stopBtn" type="button" class="btn btn-default" disabled>Stop</button>
```

2. Player readiness event handling

```
            document.addEventListener('x-dl8-evt-ready', function () {
                                dl8video = document.getElementById('remoteVideo');
                                $('#playBtn').prop('disabled', false).click(function() {
                                        playStream();
                                });
            });
```

3. Establishing connection with a server and stream creation

```
                        var video = dl8video.contentElement;
                        Flashphoner.createSession({urlServer: url}).on(SESSION_STATUS.ESTABLISHED, function
(session) {
                        var session = Flashphoner.getSessions()[0];
                        session.createStream({
                                name: document.getElementById('playStream').value,
                                display: display,
                                remoteVideo: video
                        }).on(STREAM_STATUS.PLAYING, function (stream) {
                ...
                                }).play();
                                })
```

4. Playback start in VR player and Stop button handling

```
                        ...
                        }).on(STREAM_STATUS.PLAYING, function (stream) {
                                dl8video.start();
                                $('#stopBtn').prop('disabled', false).click(function() {
                                        $('#playBtn').prop('disabled', false);
                                        $('#stopBtn').prop('disabled', true);
                                        stream.stop();
                                        dl8video.exit();
                                });
                        }).play();
                        })
```

Full source code of the sample VR player page

Code

```
<!DOCTYPE html>
<html>
    <head>
        <title>WebRTC Delight</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
                  <script type="text/javascript" src="../../../../flashphoner.js"></script>
                  <script type="text/javascript" src="../../dependencies/jquery/jquery-1.12.0.js"></script>
                  <script type="text/javascript" src="../../dependencies/js/utils.js"></script>
                  <script src="dl8-66b250447635476d123a44a391c80b09887e831e.js" async></script>
        <meta name="dl8-custom-format" content='{"name": "STEREO_TERPON","base":"STEREO_MESH","params":{"uri":
"03198702.json"}}'>
    </head>
    <body>
        <div style="width: 50%;" id="display">
            <dl8-live-video id="remoteVideo" format="STEREO_TERPON">
                <source>
            </dl8-live-video>
        </div>
                <input class="form-control" type="text" id="playStream" placeholder="Stream Name">
                <button id="playBtn" type="button" class="btn btn-default" disabled>Play</button>
                <button id="stopBtn" type="button" class="btn btn-default" disabled>Stop</button>
        <script>
                        Flashphoner.init({flashMediaProviderSwfLocation: '../../../../media-provider.swf'});
                        var SESSION_STATUS = Flashphoner.constants.SESSION_STATUS;
                        var STREAM_STATUS = Flashphoner.constants.STREAM_STATUS;
                        var STREAM_STATUS_INFO = Flashphoner.constants.STREAM_STATUS_INFO;
                        var playBtn = document.getElementById('playBtn');
                        var display = document.getElementById('display');
                        var dl8video = null;
                        var url = setURL();
            document.addEventListener('x-dl8-evt-ready', function () {
                                dl8video = document.getElementById('remoteVideo');
                                $('#playBtn').prop('disabled', false).click(function() {
                                        playStream();
                                });
            });
                        function playStream() {
                        $('#playBtn').prop('disabled', true);
                        $('#stopBtn').prop('disabled', false);
                        var video = dl8video.contentElement;
                        Flashphoner.createSession({urlServer: url}).on(SESSION_STATUS.ESTABLISHED, function
(session) {
                        var session = Flashphoner.getSessions()[0];
                        session.createStream({
                                name: document.getElementById('playStream').value,
                                display: display,
                                remoteVideo: video
                        }).on(STREAM_STATUS.PLAYING, function (stream) {
                                dl8video.start();
                                $('#stopBtn').prop('disabled', false).click(function() {
                                        $('#playBtn').prop('disabled', false);
                                        $('#stopBtn').prop('disabled', true);
                                        stream.stop();
                                        dl8video.exit();
                                });
                        }).play();
                        })
                        }
        </script>
    </body>
</html>
```

Using JavaScript and HTML5

To play a stream via WebRTC in Delight Player or any other custom JavaScript player, a mock element for displaying the stream should be created

```
var mockRemoteDisplay = $('<div></div>');
var mockRemoteVideo = $('<video></video>',{id:'mock-REMOTE_CACHED_VIDEO'});
mockRemoteDisplay.append(mockRemoteVideo);
```

Mock element`mockRemoteDisplay`is passed as`display`parameter to WebSDK`session.createStream()`function, and`mockRemoteVideo`element is passed as stream source to VR player

session.createStream() code

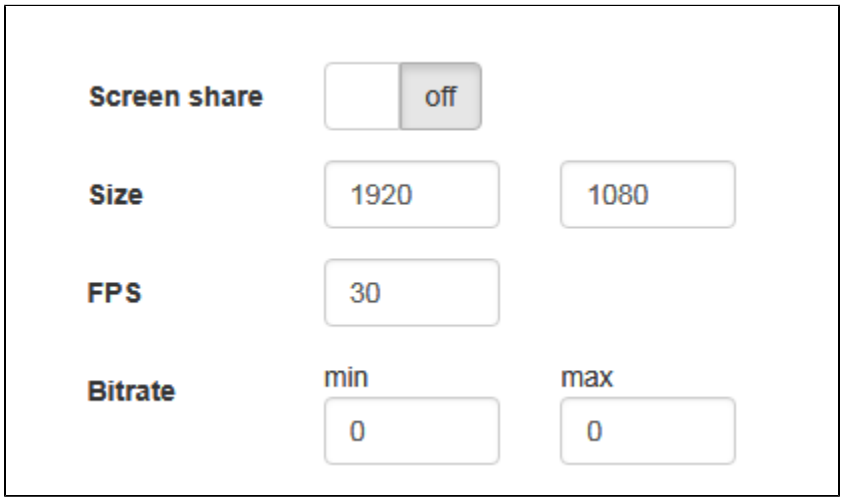
```
session.createStream({
        name: $('#streamName').val(),
        display: mockRemoteDisplay.get(0)
}).on(STREAM_STATUS.PLAYING, function (stream) {
        var srcObject = mockRemoteVideo.get(0).srcObject;
        video.srcObject = srcObject;
        dl8video.start();
...
}).play();
```

Testing

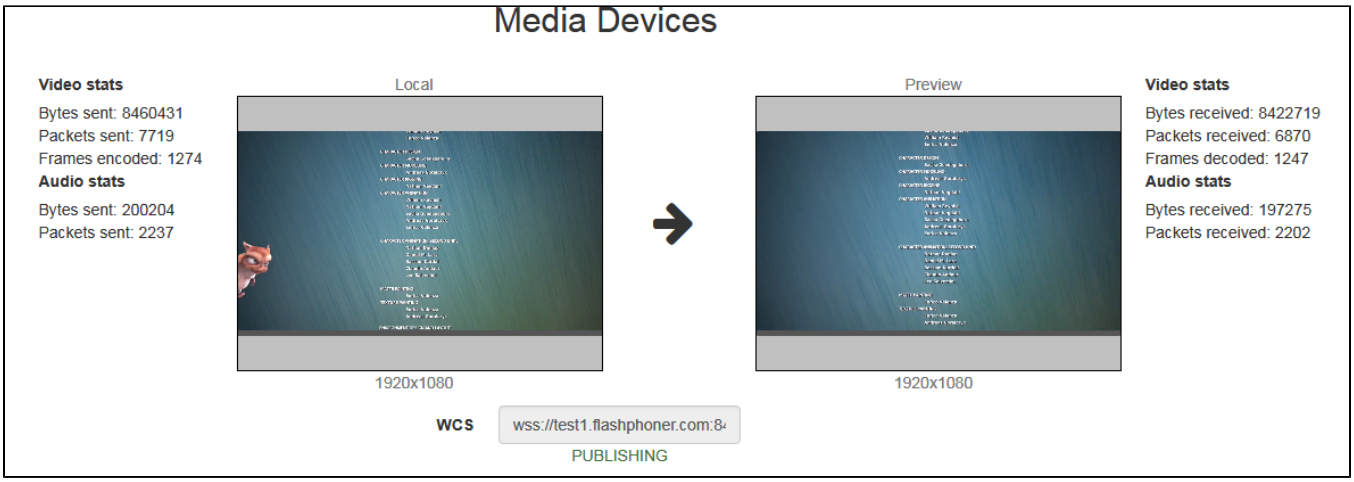
1. For the test we use:

- WCS server
- Media Devicesweb application to publish FullHD stream
- DelightVR player to play the stream

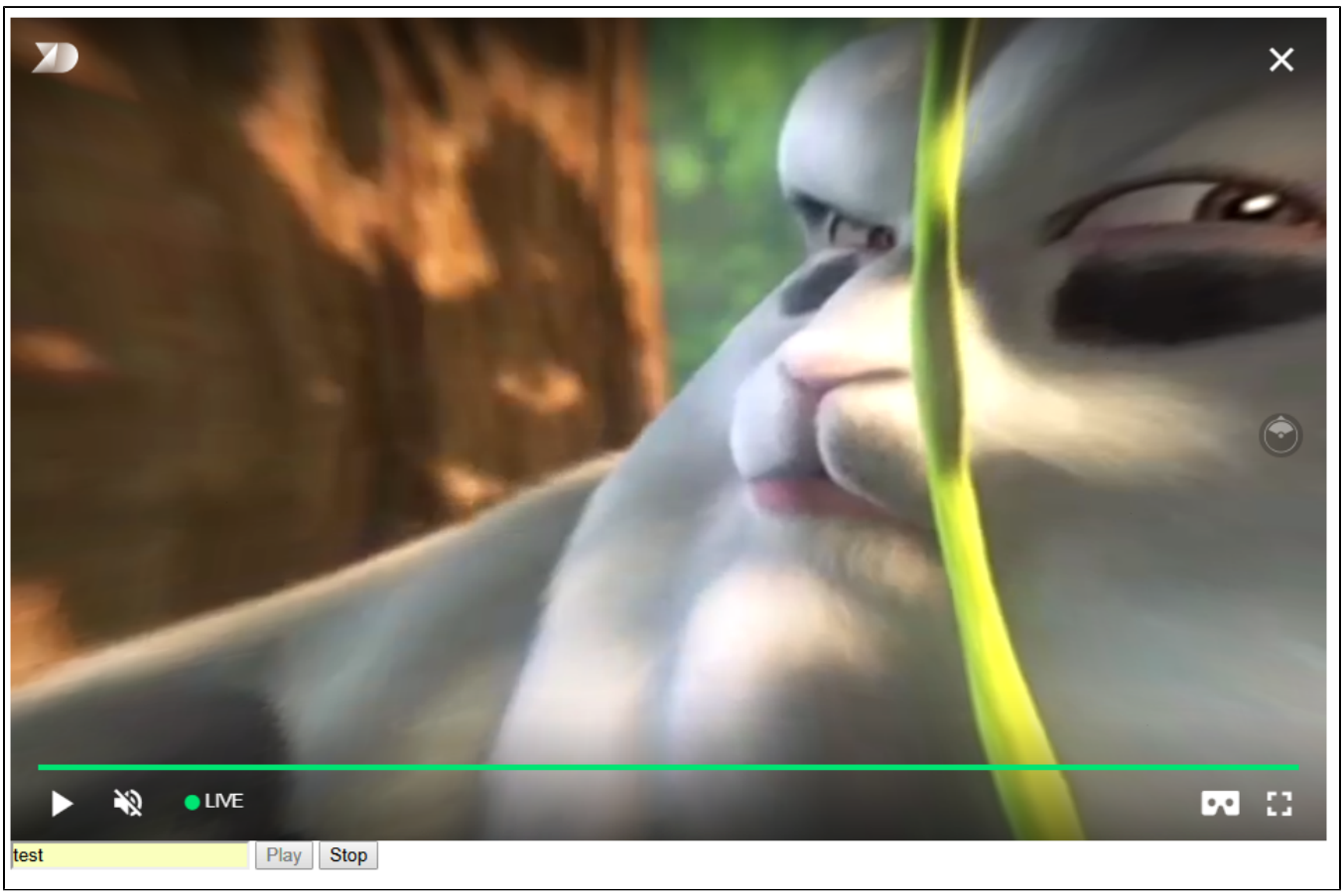
2. Set the stream resolution to 1920x1080



3. Set to WCS field stream name`wss://test1.flashphoner.com:8443/test`and press Start to publish



4. Play the stream `test` in VR player



Player page example code

1. Declaration of video element to play the stream, stream name input field and Play/Stop buttons

```
        <div style="width: 50%;">
            <dl8-live-video id="remoteVideo" format="STEREO_TERPON" muted="true">
                <source>
            </dl8-live-video>
        </div>
                <input class="form-control" type="text" id="streamName" placeholder="Stream Name">
                <button id="playBtn" type="button" class="btn btn-default" disabled>Play</button>
                <button id="stopBtn" type="button" class="btn btn-default" disabled>Stop</button>
```

2.Player readiness event handling

```
            document.addEventListener('x-dl8-evt-ready', function () {
                                dl8video = $('#remoteVideo').get(0);
                                $('#playBtn').prop('disabled', false).click(function() {
                                        publishStream();
                                });
            });
```

3. Creating mock elements to play a stream

```
                        var mockRemoteDisplay = $('<div></div>');
                        var mockRemoteVideo = $('<video></video>',{id:'mock-REMOTE_CACHED_VIDEO'});
                        mockRemoteDisplay.append(mockRemoteVideo);
```

4. Establishing connection to the server and stream creation

```
                        var video = dl8video.contentElement;
                        Flashphoner.createSession({urlServer: url}).on(SESSION_STATUS.ESTABLISHED, function
(session) {
                        var session = Flashphoner.getSessions()[0];
                        session.createStream({
                                name: $('#streamName').val(),
                                display: mockRemoteDisplay.get(0)
                        }).on(STREAM_STATUS.PLAYING, function (stream) {
                ...
                                }).play();
                                })
```

5. Playback start in VR player and Stop button handling

```
                        ...
                        }).on(STREAM_STATUS.PLAYING, function (stream) {
                                var srcObject = mockRemoteVideo.get(0).srcObject;
                                video.srcObject = srcObject;
                                dl8video.start();
                                mockRemoteVideo.get(0).pause();
                                mockRemoteVideo.get(0).srcObject = null;
                                $('#stopBtn').prop('disabled', false).click(function() {
                                        stream.stop();
                                        $('#playBtn').prop('disabled', false);
                                        $('#stopBtn').prop('disabled', true);
                                        dl8video.exit();
                                });
                        }).play();
```

Full source code of the sample VR player page

Code

```
<!DOCTYPE html>
<html>
    <head>
        <title>WebRTC Delight</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
                  <script type="text/javascript" src="../../../../flashphoner.js"></script>
                  <script type="text/javascript" src="../../dependencies/jquery/jquery-1.12.0.js"></script>
                  <script type="text/javascript" src="../../dependencies/js/utils.js"></script>
                  <script src="dl8-66b250447635476d123a44a391c80b09887e831e.js" async></script>
        <meta name="dl8-custom-format" content='{"name": "STEREO_TERPON","base":"STEREO_MESH","params":{"uri":
"03198702.json"}}'>
    </head>
    <body>
        <div style="width: 50%;">
            <dl8-live-video id="remoteVideo" format="STEREO_TERPON" muted="true">
                <source>
            </dl8-live-video>
        </div>
                <input class="form-control" type="text" id="streamName" placeholder="Stream Name">
                <button id="playBtn" type="button" class="btn btn-default" disabled>Play</button>
                <button id="stopBtn" type="button" class="btn btn-default" disabled>Stop</button>
        <script>
                        Flashphoner.init({flashMediaProviderSwfLocation: '../../../../media-provider.swf'});
                        var SESSION_STATUS = Flashphoner.constants.SESSION_STATUS;
                        var STREAM_STATUS = Flashphoner.constants.STREAM_STATUS;
                        var STREAM_STATUS_INFO = Flashphoner.constants.STREAM_STATUS_INFO;
                        var playBtn = $('#playBtn').get(0);
                        var dl8video = null;
                        var url = setURL();
            document.addEventListener('x-dl8-evt-ready', function () {
                                dl8video = $('#remoteVideo').get(0);
                                $('#playBtn').prop('disabled', false).click(function() {
                                        publishStream();
                                });
            });
                        var mockRemoteDisplay = $('<div></div>');
                        var mockRemoteVideo = $('<video></video>',{id:'mock-REMOTE_CACHED_VIDEO'});
                        mockRemoteDisplay.append(mockRemoteVideo);
                        function publishStream() {
                        $('#playBtn').prop('disabled', true);
                        $('#stopBtn').prop('disabled', false);
                        var video = dl8video.contentElement;
                        Flashphoner.createSession({urlServer: url}).on(SESSION_STATUS.ESTABLISHED, function
(session) {
                        var session = Flashphoner.getSessions()[0];
                        session.createStream({
                                name: $('#streamName').val(),
                                display: mockRemoteDisplay.get(0)
                        }).on(STREAM_STATUS.PLAYING, function (stream) {
                                var srcObject = mockRemoteVideo.get(0).srcObject;
                                video.srcObject = srcObject;
                                dl8video.start();
                                mockRemoteVideo.get(0).pause();
                                mockRemoteVideo.get(0).srcObject = null;
                                $('#stopBtn').prop('disabled', false).click(function() {
                                        stream.stop();
                                        $('#playBtn').prop('disabled', false);
                                        $('#stopBtn').prop('disabled', true);
                                        dl8video.exit();
                                });
                        }).play();
                        })
                        }
        </script>
    </body>
</html>
```

Playback via HLS

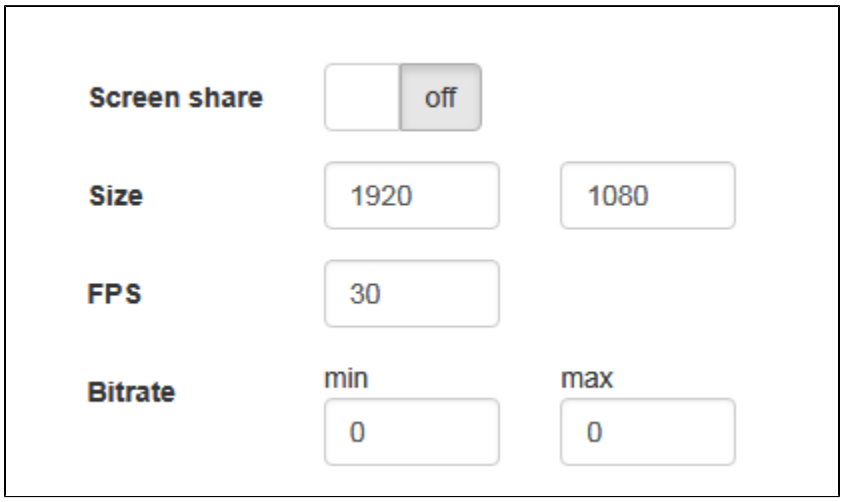
When ploblem occurs with stream playback in Delight Player via WebRTC, stream can be played via HLS

Testing

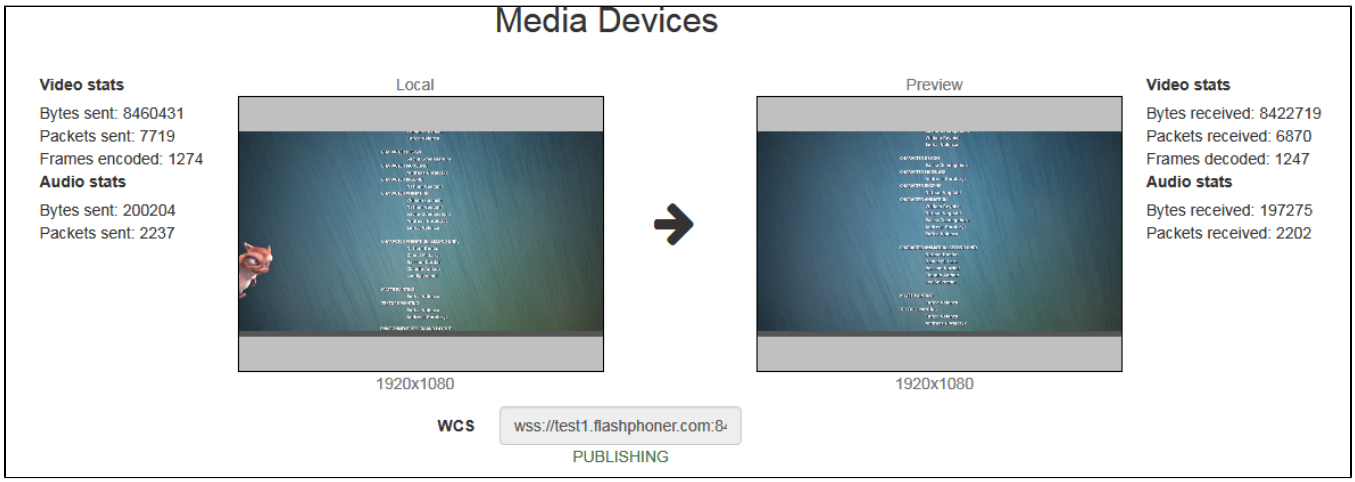
1. For the test we use:

- WCS server
- Media Devicesweb application to publish FullHD stream
- DelightVR player to play the stream

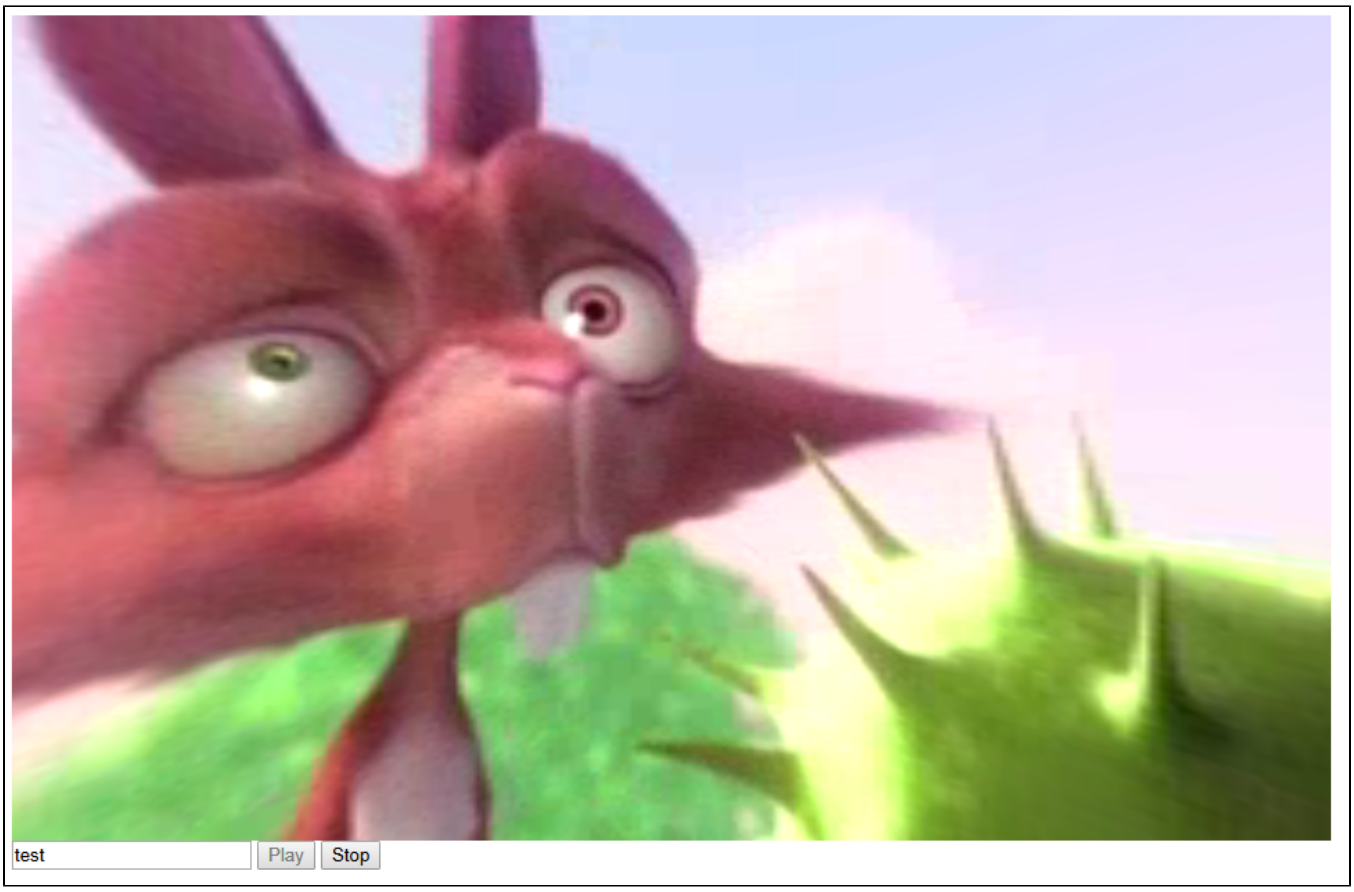
2. Set the stream resolution to 1920x1080



3. Set to WCS field stream name`wss://test1.flashphoner.com:8443/test`and press Start to publish



4. Play the stream`test`in VR player



Player page example code

1.Declaration of video element to play the stream, stream name input field and Play/Stop buttons

```
        <div style="width: 50%;" id="display">
            <dl8-live-video id="remoteVideo" format="MONO_360">
                <source type="application/x-mpegurl" id="hlsSource"/>
            </dl8-live-video>
        </div>
                <input class="form-control" type="text" id="playStream" placeholder="Stream Name">
                <button id="playBtn" type="button" class="btn btn-default" disabled>Play</button>
                <button id="stopBtn" type="button" class="btn btn-default" disabled>Stop</button>
```

2.Player readiness event handling

```
            document.addEventListener('x-dl8-evt-ready', function () {
                                dl8video = document.getElementById('remoteVideo');
                                $('#playBtn').prop('disabled', false).click(playStream);
            });
```

3. Getting server URL to play via HLS

```
                        var hlsUrl = getHLSUrl();
```

4.Playback start in VR player and Stop button handling

```
                        ...
                        var video = dl8video.contentElement;
                        var streamName = document.getElementById('playStream').value;
                        $('#hlsSource').attr("src",hlsUrl + "/" + streamName + "/" + streamName + ".m3u8");
                        dl8video.start();
                        $('#stopBtn').prop('disabled', false).click(function() {
                                $('#playBtn').prop('disabled', false);
                                $('#stopBtn').prop('disabled', true);
                                dl8video.exit();
                        });
```

Full source code of the sample VR player page

Code

```
<!DOCTYPE html>
<html>
    <head>
        <title>WebRTC Delight</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
                  <script type="text/javascript" src="../../../../flashphoner.js"></script>
                  <script type="text/javascript" src="../../dependencies/jquery/jquery-1.12.0.js"></script>
                  <script type="text/javascript" src="../../dependencies/js/utils.js"></script>
                  <script src="dl8-66b250447635476d123a44a391c80b09887e831e.js" async></script>
    </head>
    <body>
        <div style="width: 50%;" id="display">
            <dl8-live-video id="remoteVideo" format="MONO_360">
                <source type="application/x-mpegurl" id="hlsSource"/>
            </dl8-live-video>
        </div>
                <input class="form-control" type="text" id="playStream" placeholder="Stream Name">
                <button id="playBtn" type="button" class="btn btn-default" disabled>Play</button>
                <button id="stopBtn" type="button" class="btn btn-default" disabled>Stop</button>
        <script>
                        var playBtn = document.getElementById('playBtn');
                        var display = document.getElementById('display');
                        var dl8video = null;
                        var hlsUrl = getHLSUrl();
            document.addEventListener('x-dl8-evt-ready', function () {
                                dl8video = document.getElementById('remoteVideo');
                                $('#playBtn').prop('disabled', false).click(playStream);
            });
                        function playStream() {
                        $('#playBtn').prop('disabled', true);
                        $('#stopBtn').prop('disabled', false);
                        var video = dl8video.contentElement;
                        var streamName = document.getElementById('playStream').value;
                        $('#hlsSource').attr("src",hlsUrl + "/" + streamName + "/" + streamName + ".m3u8");
                        dl8video.start();
                        $('#stopBtn').prop('disabled', false).click(function() {
                                $('#playBtn').prop('disabled', false);
                                $('#stopBtn').prop('disabled', true);
                                dl8video.exit();
                        });
                        }
        </script>
    </body>
</html>
```

Known issues

1. A stream is not played in Delight Player via WebRTC or is played with freezes.

Symptoms: a stream is not played at all (MS Edge) or is played with constant freezes (iOS Safari)

Solution: use HLS to play the stream

2. VR view does not work in Delight Player via HLS in MS Edge on Windows 10 Mobile.

Symptoms: the stream is played in Delight Player via HLS, but the picture is flat

Solution: use device on actual platform with more browsers supported.

3. A stream is not played in Delight Player viaHLS.

Symptoms:a stream is not played inDelight Player, download indicator shows 99%, then black screen, or CORS error is displayed

Solution: usenginx as reverse proxyto play HLS stream in Safari browser