MCU client

Example of client for MCU conference participant

This example can be used to organize an MCU video conference on Web Call Server. Each participant of such conference can publish a WebRTC stream and play a mixer stream with audio and video from the other participants and own video (without own audio).

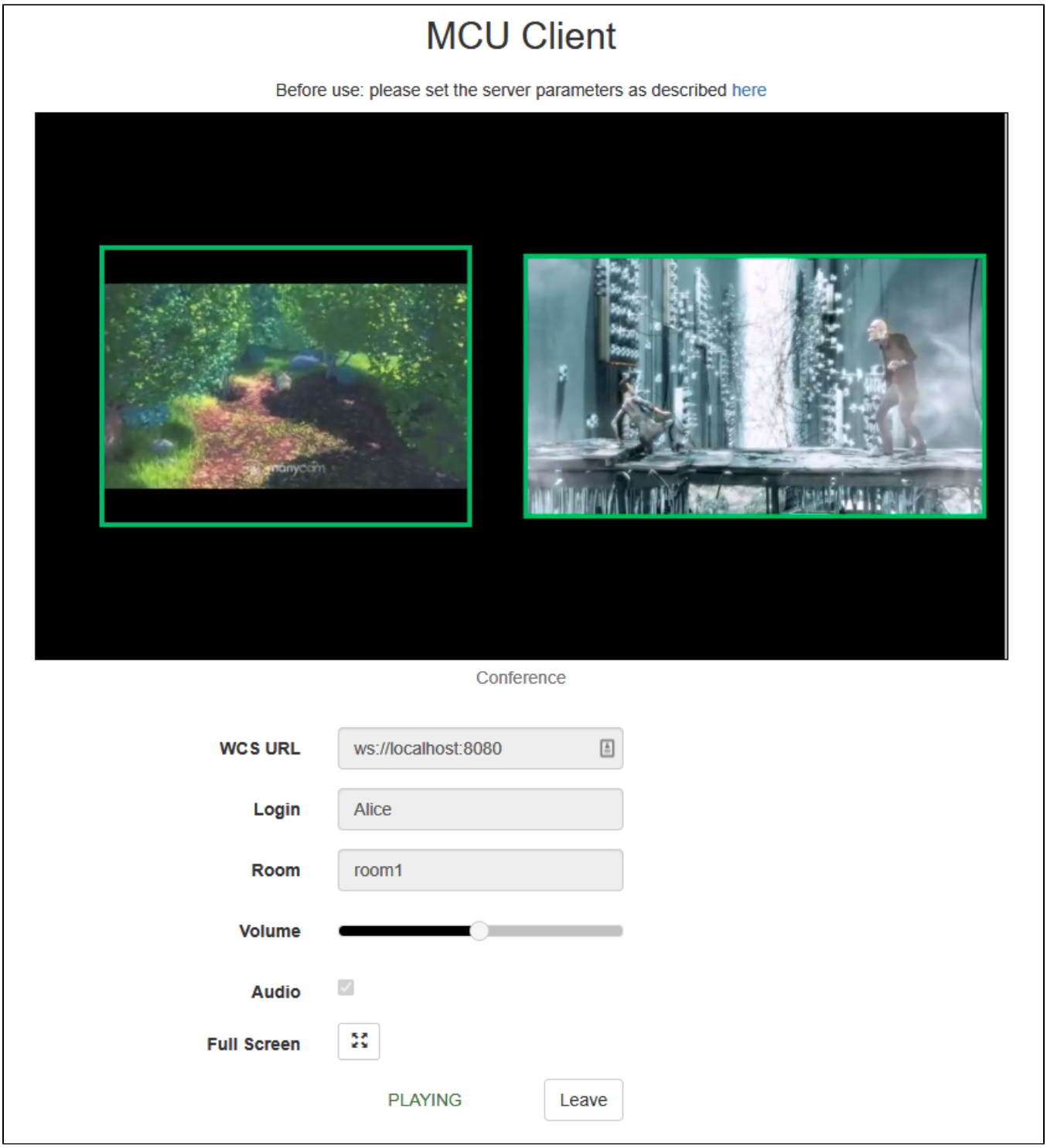
The following settings are required in WCS flashphoner.properties

```
mixer_auto_start=true
mixer_mcu_audio=true
mixer_mcu_video=true
```

When a participant joins a conference using the client

- a stream with video of the participant, named <participantName> + "#" + <roomName>, is published
- the participant's stream is added to mixer named <roomName> (in case such mixer did not exist, it is auto created)
- a new mixer named <roomName> + "-" + <participantName> + <roomName> and containing video from all the participants (including this one) and audio only from the other participants is created and played for the participant

On the screenshot below the participant is publishing a stream and playing his conference mixer stream:



Code of the example

The path to the source code of the example on WCS server is:

/usr/local/FlashphonerWebCallServer/client/examples/demo/streaming/mcu_client

mcu_client.css- file with styles
mcu_client.html- page of MCU conference participant
mcu_client.js- script providing functionality for participating in MCU conference

This example can be tested using the following address:

https://host:8888/client/examples/demo/streaming/mcu_client/mcu_client.html

Here host is the address of the WCS server.

Analyzing the code

To analyze the code, let's take file mcu_client.js with hash ecbadc3, which is available here and can be downloaded with corresponding build 2.0.212.

1. Initialization of the API

Flashphoner.init() code

```
    Flashphoner.init();
```

2. Connection to server

Flashphoner.createSession() code

```
    Flashphoner.createSession({urlServer: url}).on(SESSION_STATUS.ESTABLISHED, function (session) {
        ...
    }).on(SESSION_STATUS.DISCONNECTED, function () {
        ...
    }).on(SESSION_STATUS.FAILED, function () {
        ...
    })
```

3. Receiving the event confirming successful connection

ConnectionStatusEvent ESTABLISHED code

On receiving the event, streaming is started

```
    Flashphoner.createSession({urlServer: url}).on(SESSION_STATUS.ESTABLISHED, function(session){
        setStatus(session.status());
        //session connected, start playback
        startStreaming(session);
    }).on(SESSION_STATUS.DISCONNECTED, function(){
        ...
    }).on(SESSION_STATUS.FAILED, function(){
        ...
    });
```

4. Get publishing and playing constraints from the client page

getConstraints() code

Audio constraint: true or false (depending on the value both published and played stream will have or have not audio)

Video constraint: true (published and played streams will have video)

```
function getConstraints() {
    var constraints = {
        audio: $("#hasAudio").is(':checked'),
        video: true
    };
    return constraints;
}
```

5. Video streaming

session.createStream(), stream.publish() code

When stream is created, the following parameters are passed

- streamName - name of the stream (login + "#" + roomName in this case, where login is the name of the participant)
- mockLocalDisplay - element, required for the local camera video (will not be displayed to the user in the case)
- constraints - getConstraints() code(in this case is used to specify if the published stream will have audio)

```
    publishStream = session.createStream({
        name: streamName,
        display: mockLocalDisplay,
        receiveVideo: false,
        receiveAudio: false,
        constraints: getConstraints()
    }).on(STREAM_STATUS.PUBLISHING, function (publishStream) {
        ...
    });
    publishStream.publish();
```

6. Receiving the event confirming successful streaming

StreamStatusEvent PUBLISHING code

On receiving the event, a stream for playing the participant's conference mixer is created

```
    publishStream = session.createStream({
        ...
    }).on(STREAM_STATUS.PUBLISHING, function (publishStream) {
        //play preview
        playStream(session);
        ...
    });
```

7. Playback of conference stream

session.createStream(), play() code

When stream is created, the following parameters are passed

- streamName - name of the stream (roomName + "-" + login + roomName in this case, where login is the name of the participant)
- remoteVideo - element, in which the video will be displayed
- constraints - getConstraints()code(in this case is used to specify if the played stream will have audio)

```
    conferenceStream = session.createStream({
        name: streamName,
        display: remoteVideo,
        constraints: getConstraints()
        ...
    });
    conferenceStream.play();
```

8. Receiving the event confirming playback

StreamStatusEvent PLAYING code

```
    conferenceStream = session.createStream({
        name: streamName,
        display: remoteVideo,
        constraints: getConstraints()
    }).on(STREAM_STATUS.PENDING, function (stream) {
        ...
    }).on(STREAM_STATUS.PLAYING, function (stream) {
        $("#preloader").hide();
        setStatus(stream.status());
        onStarted();
    }).on(STREAM_STATUS.STOPPED, function () {
        ...
    }).on(STREAM_STATUS.FAILED, function (stream) {
       ...
    });
```

9. Stop of playback and streaming on leaving the conference

stream.stop() code

```
function stopStreams() {
    if(conferenceStream) {
        conferenceStream.stop();
    }
    if(publishStream) {
        publishStream.stop();
    }
}
```

10. Receiving the event confirming streaming stop

StreamStatusEvent UNPUBLISHED code

```
    publishStream = session.createStream({
        ...
    }).on(STREAM_STATUS.PUBLISHING, function (publishStream) {
        ...
    }).on(STREAM_STATUS.UNPUBLISHED, function () {
        onStopped();
    }).on(STREAM_STATUS.FAILED, function (stream) {
        ...
    });
```

11. Receiving the event confirming playback stop

StreamStatusEvent STOPPED code

```
    conferenceStream = session.createStream({
        ...
    }).on(STREAM_STATUS.PENDING, function (stream) {
        ...
    }).on(STREAM_STATUS.PLAYING, function (stream) {
        ...
    }).on(STREAM_STATUS.STOPPED, function () {
        $("#preloader").hide();
        setStatus(STREAM_STATUS.STOPPED);
        onStopped();
    }).on(STREAM_STATUS.FAILED, function (stream) {
        ...
    });
```