MCU client

Example of client for MCU conference participant

This example can be used to arrange 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).

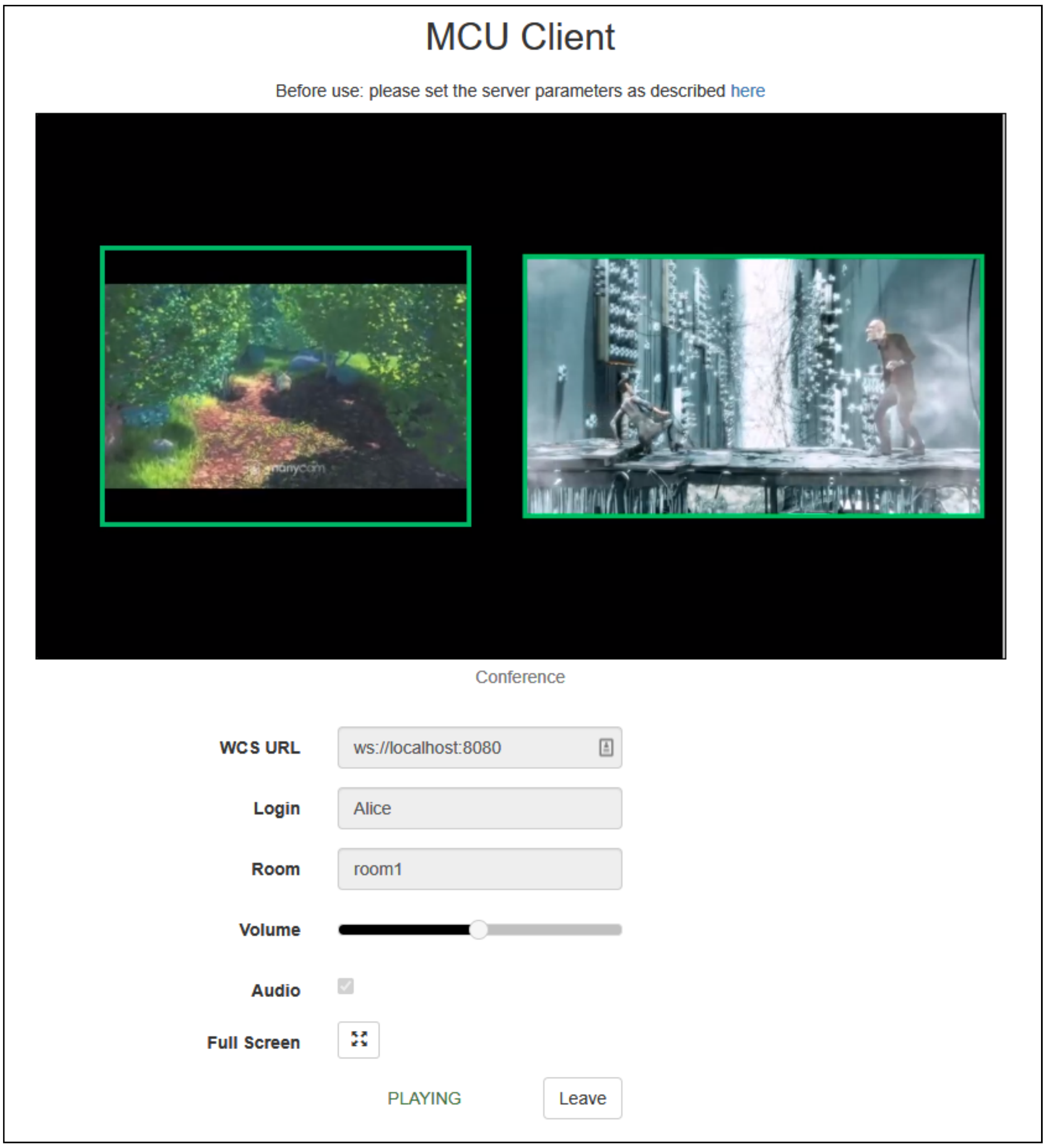
The following settings are required in WCS flashphoner.properties

```
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, for example `Alice#room1`
- the participant's stream is added to mixer named `roomName` (if such mixer does not exist, it is auto created)
- a new mixer output stream 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, for example `room1-Aliceroom1`

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


MCU Client

Before use: please set the server parameters as described here

WCS URL	ws://localhost:8080
Login	Alice
Room	room1
Volume	
Audio	✓
Full Screen	

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` - `div` element, required for the local camera video (will not be displayed to the user in the case)
- `constraints` - `getConstraints()` invokation (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()`, `Stream.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` - `div` element, in which the video will be displayed
- `constraints` - `getConstraints()` invokation (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) {
    ...
});
```