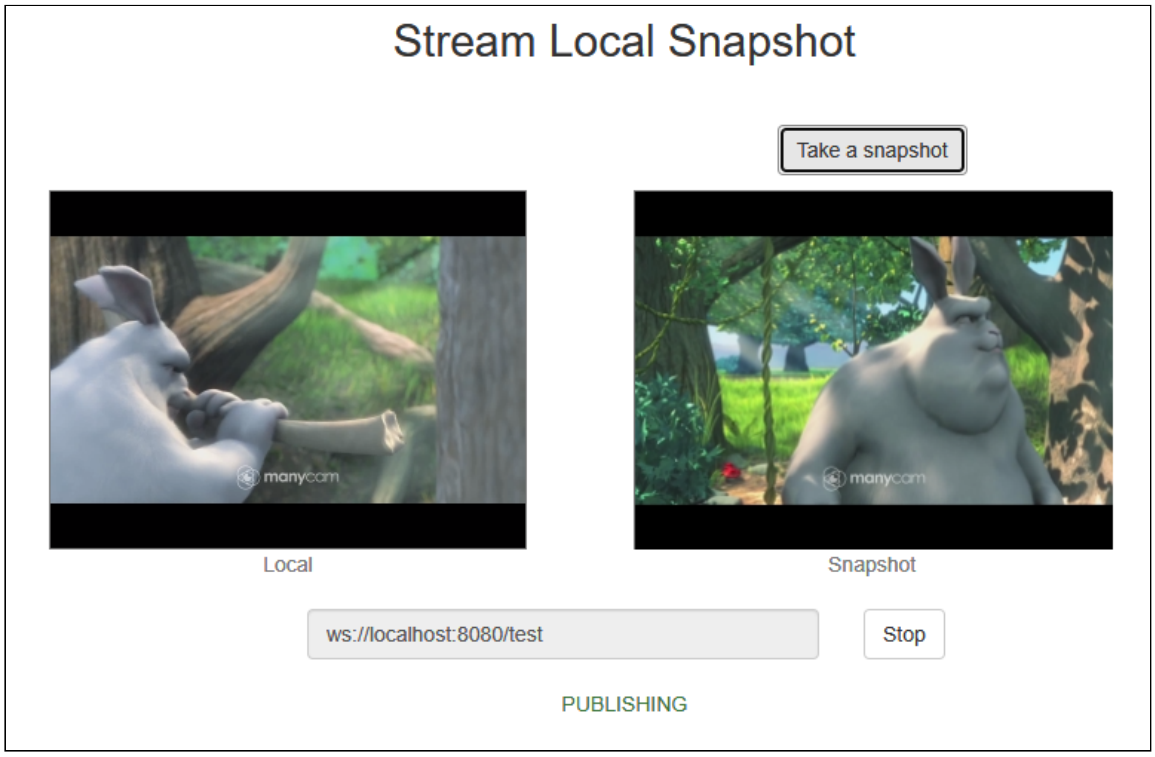
Stream Local Snapshot

The example to show stream snapshot capturing in local browser

The example shows how to capture published stream snapshot locally in browser.

On the screenshot below, stream snapshot is already captured



When publishing starts, video is playin in `Local` element at left side. After clicking `Take a snapshot` button snapshot is capturing from HTML5 video element, when is shown in `Snaphot` element at right side.

The code of the example

The code of the example is on WCS server by the following path:

/usr/local/FlashphonerWebCallServer/client2/examples/demo/streaming/stream-local-snapshot

- stream-local-snapshot.css - styles file
- stream-locall-snapshot.html - example HTML page

- stream-local-snapshot.js - main example script

The example can be tetsted by the fiollowing address:

https://host:8888/client2/examples/demo/streaming/stream-local-snapshot/stream-local-snapshot.html

where host is WCS server address.

Analyzing the code

To analyze the code let's take a `stream-local-snapshot.js` version with hash `ecbadc3`, which is available here and can be downloaded in build 2.0.212.

1. API initialization

`Flashphoner.init()` code

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

2. HTML page elements initialization and storing snapshot preview picture size

code

```
localVideo = document.getElementById("localVideo");
snapshotImg = document.getElementById("snapshotImg");
canvas = document.getElementById("canvas");

//preview size
snapshotImgSize = {
  w: snapshotImg.width,
  h: snapshotImg.height
};
```

Where

- `localVideo` - `div` to create vide element to capture a stream
- `snapshotImg` - `img` element to preview snapshot picture
- `canvas` - element to draw a picture captured fron video stream and convert to PNG
- `snapshotImgSize` - a structure to store snapshot preview size

3. Connection establishing to the server

`Flashphoner.createSession()` code

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

4. Receiving the event confirming successful connection

`ConnectionStatusEvent ESTABLISHED` code

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

5. Stream publishing

`Session.createStream()`, `Stream.publish()` code

The following parameters are passed to `createStream()`:

- `streamName` - stream name
- `localVideo` - `div` element to display a video from web camera

```
session.createStream({
    name: streamName,
    display: localVideo,
    cacheLocalResources: true,
    receiveVideo: false,
    receiveAudio: false
    ...
}).publish();
```

6. Receiving the event confirming successful publishing

`StreamStatusEvent PUBLISHING` code

```
session.createStream({
    ...
}).on(STREAM_STATUS.PUBLISHING, function(publishStream){
    setStatus(STREAM_STATUS.PUBLISHING);
```

```
    onPublishing(publishStream);
}).on(STREAM_STATUS.UNPUBLISHED, function(){
    ...
}).on(STREAM_STATUS.FAILED, function(){
    ...
}).publish();
```

7. Snapshot capture function invokation by button click

code

```
    $("#snapshotBtn").off('click').click(function(){
        snapshot(stream);
    }).prop('disabled', false);
```

8. Frame captured drawing on the canvas and converting to PNG

code

```
function snapshot(stream) {
    let video = document.getElementById(stream.id());
    let canvasContext = canvas.getContext("2d");
    if (video === undefined) {
        console.log("Failed to get video item for stream " + stream.name);
    } else {
        let videoSize = {
            w: video.videoWidth,
            h: video.videoHeight
        };
        // Draw snapshot on hidden canvas in full video size
        canvas.width = videoSize.w;
        canvas.height = videoSize.h;
        canvasContext.drawImage(video, 0, 0, canvas.width, canvas.height);
        let data = canvas.toDataURL('image/png');
        if (data === undefined) {
            console.log("Failed to get image data from canvas");
        } else {
            ...
        }
    }
}
```

9. Snapshot picture scaling to display preview and adding data to `img` element

code

```
function snapshot(stream) {
    let video = document.getElementById(stream.id());
    let canvasContext = canvas.getContext("2d");
```

```
    if (video === undefined) {
        console.log("Failed to get video item for stream " + stream.name);
    } else {
        ...
        if (data === undefined) {
            console.log("Failed to get image data from canvas");
        } else {
            // Downscale snapshot preview keeping video aspect ratio
            let previewSize;
            previewSize = downScaleToFitSize(videoSize.w, videoSize.h,
snapshotImgSize.w, snapshotImgSize.h);
            console.log("previewSize: " + previewSize.w + "x" +
previewSize.h);
            snapshotImg.style.width = previewSize.w + "px";
            snapshotImg.style.height = previewSize.h + "px";

            // Snapshot preview vertical align
            let margin = 0;
            if (snapshotImgSize.h - previewSize.h > 1) {
                margin = Math.floor((snapshotImgSize.h - previewSize.h) / 2);
            }
            snapshotImg.style.margin = margin + "px auto";

            // Set image data to snapshot page item. "Open image in new tab"
or "Save image as" will open full size snapshot
            snapshotImg.setAttribute('src', data);
        }
    }
}
```

10. Helper function to scale the picture

code

```
function downScaleToFitSize(videoWidth, videoHeight, dstWidth, dstHeight) {
    let newWidth, newHeight;
    let videoRatio = videoWidth / videoHeight;
    let dstRatio = dstWidth / dstHeight;
    if (dstRatio > videoRatio) {
        newHeight = dstHeight;
        newWidth = Math.floor(videoRatio * dstHeight);
    } else {
        newWidth = dstWidth;
        newHeight = Math.floor(dstWidth / videoRatio);
    }
    return {
        w: newWidth,
        h: newHeight
    };
}
```

11. Stream stopping

`stream.stop()` code

```
function onPublishing(stream) {
    $("#publishBtn").text("Stop").off('click').click(function(){
        $(this).prop('disabled', true);
        stream.stop();
    }).prop('disabled', false);
    ...
}
```

12. Receiving the event confirming successful stopping

`StreamStatusEvent UNPUBLISHED` code

```
session.createStream({
    ...
}).on(STREAM_STATUS.PUBLISHING, function(publishStream){
    ...
}).on(STREAM_STATUS.UNPUBLISHED, function(){
    setStatus(STREAM_STATUS.UNPUBLISHED);
    //enable start button
    onUnpublished();
}).on(STREAM_STATUS.FAILED, function(){
    ...
}).publish();
```