

# Android Stream Recording

## Example of Android application for stream recording

This streamer can be used to publish and record WebRTC video stream on Web Call Server.

On the screenshot below the example is displayed when connection to server is closed and stream publication is stopped.

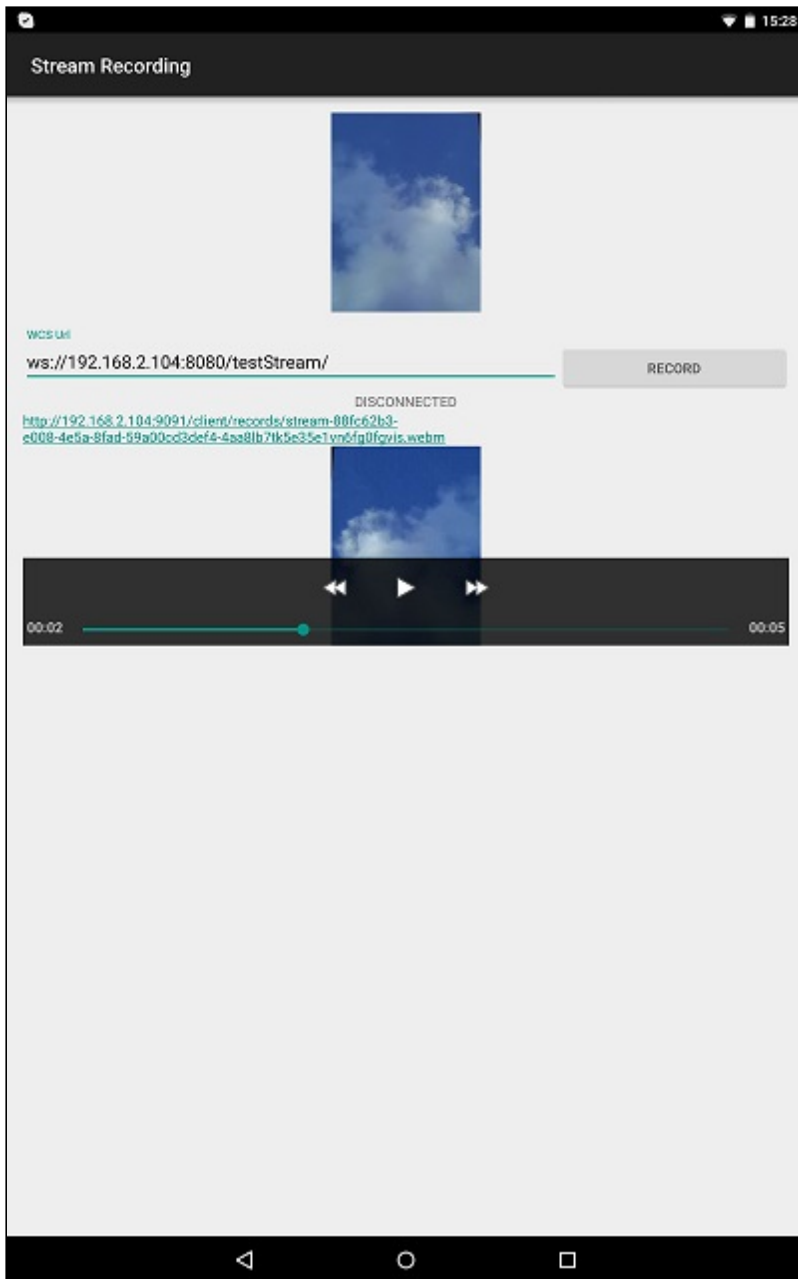
In the URL specified in the input field

- `192.168.2.104` is the address of the WCS server
- `testStream` is the stream name

Video from the camera is displayed above the input field.

The following items are displayed under the input field:

- download link for the recording of published stream
- media player, which can be used to play the recording



## Analyzing the example code

To analyze the code, let's take class `StreamRecordingActivity.java` of the `stream-recording` example, which can be downloaded with corresponding build `1.0.1.38`.

### 1. Initialization of the API

`Flashponer.init()` code

For initialization, `Context` object is passed to the `init()` method.

```
Flashponer.init(this);
```

## 2. Session creation

`Flashphoner.createSession()` [code](#)

`SessionOptions` object with the following parameters is passed to `createSession()` method:

- URL of WCS server
- `SurfaceViewRenderer localRendered`, which will be used to display video from the camera

```
SessionOptions sessionOptions = new SessionOptions(url);
sessionOptions.setLocalRenderer(localRender);

/**
 * Session for connection to WCS server is created with method
 * createSession().
 */
session = Flashphoner.createSession(sessionOptions);
```

## 3. Connection to the server

`Session.connect()` [code](#)

```
session.connect(new Connection());
```

## 4. Receiving the event confirming successful connection

`Session.onConnected()` [code](#)

```
@Override
public void onConnected(final Connection connection) {
    runOnUiThread(new Runnable() {
        @Override
        public void run() {
            mStartButton.setText(R.string.action_stop);
            mStartButton.setTag(R.string.action_stop);
            mStartButton.setEnabled(true);
            mStatusView.setText(connection.getStatus());
            ...
        }
    });
}
```

## 5. Video stream creation

`Session.createStream()` [code](#)

`StreamOptions` object with the following parameters is passed to the `createStream()` method:

- name of the stream
- `setRecord(true)` to enable stream recording

```
StreamOptions streamOptions = new StreamOptions(streamName);
streamOptions.setRecord(true);

/**
 * Stream is created with method Session.createStream().
 */
publishStream = session.createStream(streamOptions);

/**
 * Callback function for stream status change is added to display the
 * status.
 */
publishStream.on(new StreamStatusEvent() {
    @Override
    public void onStreamStatus(final Stream stream, final StreamStatus
streamStatus) {
        runOnUiThread(new Runnable() {
            @Override
            public void run() {
                if (StreamStatus.PUBLISHING.equals(streamStatus)) {
                    mStatusView.setText("RECORDING");

                    /**
                     * Filename of the recording is determined.
                     */
                    recordFilename = stream.getRecordName();
                    return;
                } else if (StreamStatus.FAILED.equals(streamStatus)) {
                    Log.e(TAG, "Can not publish stream " + stream.getName() +
" " + streamStatus);
                    recordFilename = null;
                }
                mStatusView.setText(streamStatus.toString());
            }
        });
    }
});

ActivityCompat.requestPermissions(StreamRecordingActivity.this,
    new String[]{Manifest.permission.RECORD_AUDIO,
Manifest.permission.CAMERA},
    PUBLISH_REQUEST_CODE);
```

## 6. Video stream publishing when permissions is granted

`Stream.publish()` code

```

case PUBLISH_REQUEST_CODE: {
    if (grantResults.length == 0 ||
        grantResults[0] != PackageManager.PERMISSION_GRANTED ||
        grantResults[1] != PackageManager.PERMISSION_GRANTED) {
        mStartButton.setEnabled(false);
        session.disconnect();
        Log.i(TAG, "Permission has been denied by user");
    } else {
        /**
         * Method Stream.publish() is called to publish stream.
         */
        publishStream.publish();
        Log.i(TAG, "Permission has been granted by user");
    }
}
}

```

## 7. Receiving the event confirming successful stream publishing

`StreamStatusEvent.PUBLISHING` code

On this event, stream record filename is defined with `Stream.getRecordName()` method.

```

publishStream.on(new StreamStatusEvent() {
    @Override
    public void onStreamStatus(final Stream stream, final StreamStatus
streamStatus) {
        runOnUiThread(new Runnable() {
            @Override
            public void run() {
                if (StreamStatus.PUBLISHING.equals(streamStatus)) {
                    mStatusView.setText("RECORDING");

                    /**
                     * Filename of the recording is determined.
                     */
                    recordFilename = stream.getRecordName();
                    return;
                } else if (StreamStatus.FAILED.equals(streamStatus)) {
                    Log.e(TAG, "Can not publish stream " + stream.getName() +
" " + streamStatus);
                    recordFilename = null;
                }
                mStatusView.setText(streamStatus.toString());
            }
        });
    }
});
}
});

```

## 8. Session disconnection

`Session.disconnect()` code

```

mStartButton.setEnabled(false);

/**
 * Connection to WCS server is closed with method Session.disconnect().
 */
session.disconnect();

```

## 9. Receiving the event confirming successful disconnection

`Session.onDisconnection()` code

On this event, the record file download link is formed, and local mediaPlayer is launched to play the file

```

@Override
public void onDisconnection(final Connection connection) {
    runOnUiThread(new Runnable() {
        @Override
        public void run() {
            mStartButton.setText(R.string.action_start);
            mStartButton.setTag(R.string.action_start);
            mStartButton.setEnabled(true);
            mStatusView.setText(connection.getStatus());

            /**
             * After disconnection, download link for the recording of the
             published stream is displayed, and the recording can be played in the media
             player of the application.
             */
            if (recordFilename != null) {
                /**
                 * Download link is formed.
                 * Stream recordings are saved to directory
                 WCS_HOME/client/records on the server.
                 */
                String url = "http://" + uri.getHost()
                    + ":9091/client/records/" + recordFilename;
                mRecordedLink.setText(url);
                Linkify.addLinks(mRecordedLink, Linkify.WEB_URLS);

                MediaController mediaController = new
                MediaController(StreamRecordingActivity.this);
                mediaController.setAnchorView(mRecordedVideoView);
                mRecordedVideoView.setMediaController(mediaController);
                mRecordedVideoView.setVideoURI(Uri.parse(url));

                /**
                 * Playback of the recording in the media player is started.
                 */
                mRecordedVideoView.start();
            }
        }
    });
}

```

