Android MCU Client

Android MCU conference participant client example

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

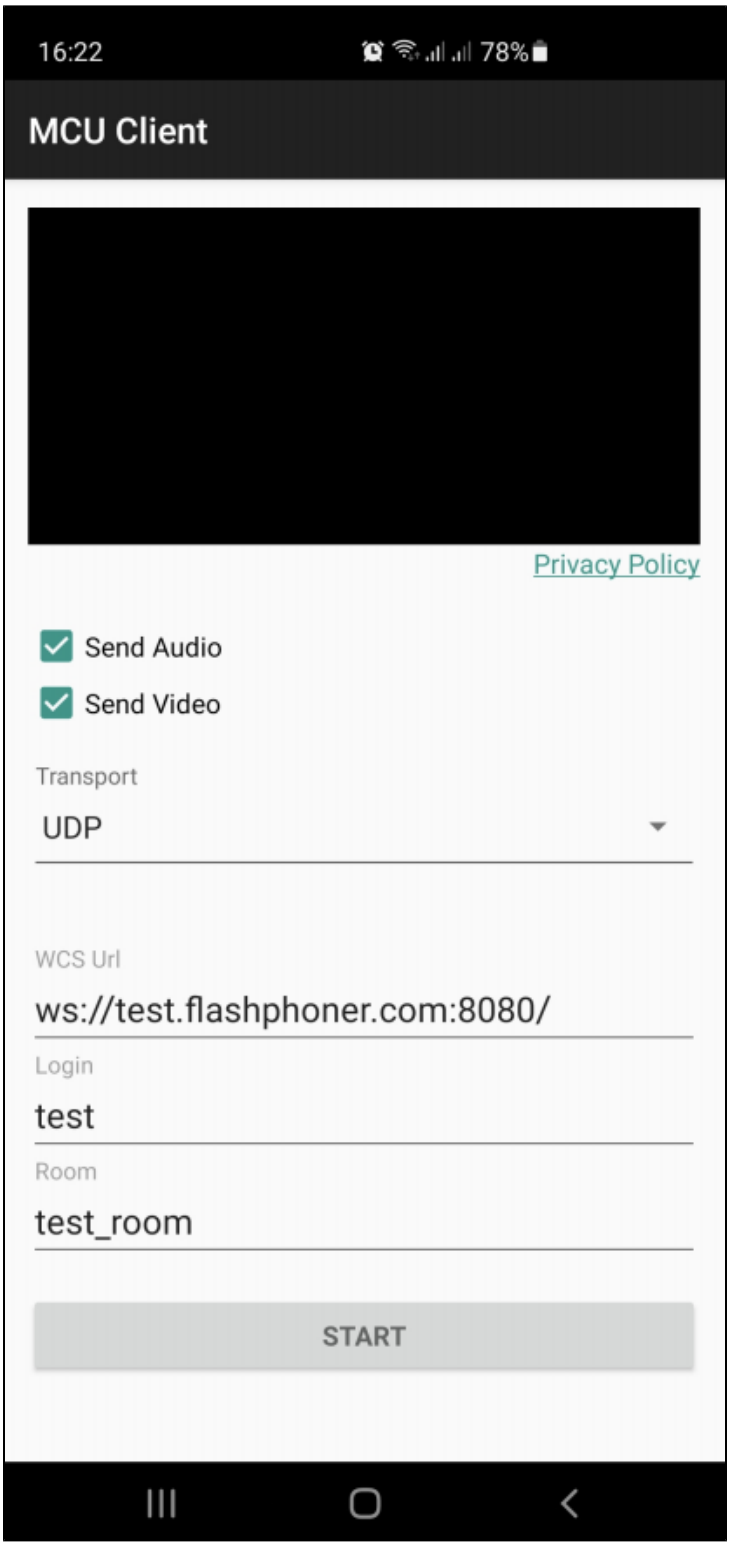
```
mixer_auto_start=true
mixer_mcu_audio=true
mixer_mcu_video=true
```

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

Input fields

- 'WCS URL', wheretest.flashphoner.com - WCS server address
- 'Login' - user login
- 'Room' - room name
- 'Transport' - WebRTC transport type
- 'Send Audio' - switcher to enable/disable audio publishing
- 'Send Video' -switcher to enable/disable video publishing



Example code analyzing

To analyze the code useMcuClientActivity.javaclass of mcu-client example which is available in build1.1.0.24.

1. API intializing

Flashphoner.init() code

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

A Context object is passed to init() method.

2. Session creation

Flashphoner.createSession() code

A SessionOptions object is passed to createSession method with the following parameters

- URL of WCS server
- SurfaceViewRenderer remoteRenderer to display a mixer stream to playback

```
sessionOptions = new SessionOptions(mWcsUrlView.getText().toString());
sessionOptions.setRemoteRenderer(remoteRender);

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

3. Connecting to the server

Session.connect(). code

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

4. Receiving an event confirming successful connection

session.onConnected() code

```
@Override
public void onConnected(final Connection connection) {
    runOnUiThread(new Runnable() {
        @Override
        public void run() {
            mStatusView.setText(connection.getStatus());
            ...
        }
    });
});
```

5. Stream creation

Session.createStream() code

```
                                    StreamOptions streamOptions = new StreamOptions(publishStreamName);
                                    Constraints constraints = getConstraints();
                                    streamOptions.setConstraints(constraints);
                                    streamOptions.setTransport(Transport.valueOf(mTransportOutput.getSpinner().
getSelectedItem().toString()));

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

6. Requesting microphone and camera permissions

ActivityCompat.requestPermissions() code

```
@Override
public void onConnected(final Connection connection) {
    runOnUiThread(new Runnable() {
        @Override
        public void run() {
            ...
            ActivityCompat.requestPermissions(StreamingMinActivity.this,
                  new String[]{Manifest.permission.RECORD_AUDIO, Manifest.permission.CAMERA},
                  PUBLISH_REQUEST_CODE);
            ...
        }
        ...
    });
});
```

7. Stream publishing after permissions are granted

Stream.publish() code

```
    @Override
    public void onRequestPermissionsResult(int requestCode,
                                           @NonNull String permissions[], @NonNull int[] grantResults) {
        switch (requestCode) {
            case PUBLISH_REQUEST_CODE: {
                if (grantResults.length == 0 ||
                        grantResults[0] != PackageManager.PERMISSION_GRANTED ||
                        grantResults[1] != PackageManager.PERMISSION_GRANTED) {
                    muteButton();
                    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");
                }
                break;
            }
            ...
        }
   }
```

8. Playing mixer output stream for the participant

Session.createStream(), Stream.play() code

```
                                    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)) {
                                                        /**
                                                         * The options for the stream to play are set.
                                                         * The stream name is passed when StreamOptions object
is created.
                                                         */
                                                        String playStreamName = roomName + "-" + login +
roomName;
                                                        StreamOptions streamOptions = new StreamOptions
(playStreamName);
                                                        streamOptions.setTransport(Transport.valueOf
(mTransportOutput.getSpinner().getSelectedItem().toString()));
                                                        playStream = session.createStream(streamOptions);
                                                        ...
                                                        /**
                                                         * Method Stream.play() is called to start playback of
the stream.
                                                         */
                                                        playStream.play();
                                                    } else {
                                                        Log.e(TAG, "Can not publish stream " + stream.getName()
+ " " + streamStatus);
                                                    }
                                                    mStatusView.setText(streamStatus.toString());
                                                }
                                            });
                                        }
                                    });
```

9. Closing the connection

Session.disconnect() code

```
        mStartButton.setOnClickListener(new OnClickListener() {
            @Override
            public void onClick(View view) {
                muteButton();
                if (mStartButton.getTag() == null || Integer.valueOf(R.string.action_start).equals(mStartButton.
getTag())) {
                    ...
                } else {
                    /**
                     * Connection to WCS server is closed with method Session.disconnect().
                     */
                    session.disconnect();
                }
                ...
            }
        });
```

10. Receiving an event when connection is closed

session.onDisconnection() code

```
                        @Override
                        public void onDisconnection(final Connection connection) {
                            runOnUiThread(new Runnable() {
                                @Override
                                public void run() {
                                    mStatusView.setText(connection.getStatus());
                                    mStatusView.setText(connection.getStatus());
                                    onStopped();
                                }
                            });
                        }
```

11. Audio/video publishing/playback constraints configuration

code

```
    @NonNull
    private Constraints getConstraints() {
        AudioConstraints audioConstraints = null;
        if (mSendAudio.isChecked()) {
            audioConstraints = new AudioConstraints();
        }
        VideoConstraints videoConstraints = null;
        if (mSendVideo.isChecked()) {
            videoConstraints = new VideoConstraints();
        }
        return new Constraints(audioConstraints, videoConstraints);
    }
```