

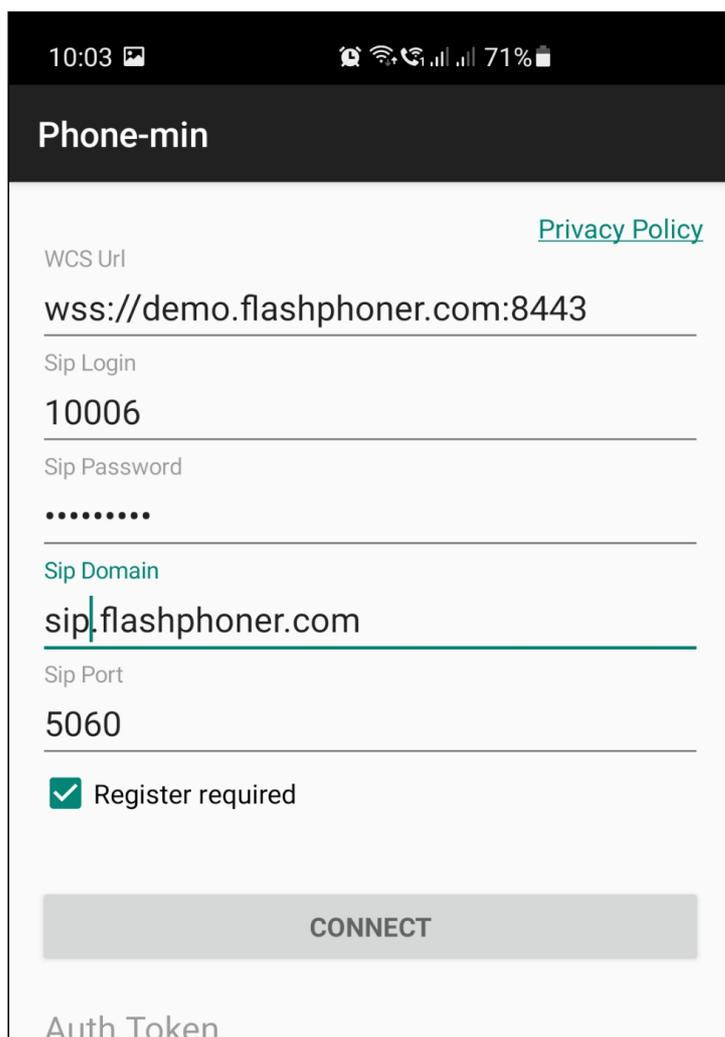
# Android Phone

## Example of Android application for audio calls

Input fields to establish SIP connection

- **WCS URL** - WCS server address
- **SIP Login** - SIP user name
- **SIP Password** - SIP password
- **SIP Domain** - SIP server address
- **SIP port** - SIP port

SIP callee user name should be set to **Callee** input field. **Connect/Disconnect** button establishes/closes SIP-connection. **Call/Hangup** button makes a SIP call or finishes it. **Hold/Unhold** button is used to hold the call.



The screenshot shows an Android application interface titled "Phone-min". At the top, the status bar displays the time 10:03, signal strength, Wi-Fi, and 71% battery. Below the title bar, there is a "Privacy Policy" link. The main form contains the following fields and controls:

- WCS Url**: `wss://demo.flashphoner.com:8443`
- Sip Login**: `10006`
- Sip Password**: `.....`
- Sip Domain**: `sip.flashphoner.com`
- Sip Port**: `5060`
- Register required**
- CONNECT** button
- Auth Token** field (partially visible at the bottom)

CONNECT WITH TOKEN

Invite Parameters

{header:value}

Callee

10008

- googEchoCancellation
- googAutoGainControl
- googNoiseSupression
- googHighpassFilter
- googEchoCancellation2
- googAutoGainControl2
- googNoiseSuppression2
- proximitySensor
- speakerPhone

CALL

HOLD

dtmf

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## Analyzing the example code

To analyze the code, let's take class [PhoneMinActivity.java](#) of the `phone-min` example, which can be downloaded with corresponding build [1.1.0.55](#).

### 1. Initialization of the API

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

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

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

## 2. Session creation

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

`SessionOptions` object with URL of WCS server is passed to the method.

```
SessionOptions sessionOptions = new
SessionOptions(mWcsUrlView.getText().toString());
session = Flashphoner.createSession(sessionOptions);
```

## 3. Connection to the server

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

`Connection` object with parameters required to establish SIP connection is passed to the method

```
Connection connection = new Connection();
connection.setSipLogin(mSipLoginView.getText().toString());
connection.setSipPassword(mSipPasswordView.getText().toString());
connection.setSipDomain(mSipDomainView.getText().toString());
connection.setSipOutboundProxy(mSipDomainView.getText().toString());
connection.setSipPort(Integer.parseInt(mSipPortView.getText().toString()));
connection.setSipRegisterRequired(mSipRegisterRequiredView.isChecked());
connection.setKeepAlive(true);
session.connect(connection);
```

## 4. Receiving the event confirming successful connection

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

A session token should be kept to connect to the session later

```
@Override
public void onConnected(final Connection connection) {
    runOnUiThread(new Runnable() {
        @Override
        public void run() {
            ...
            String token = connection.getAuthToken();
            if (token != null && !token.isEmpty()) {
                mAuthTokenView.setText(token);
                mConnectTokenButton.setEnabled(true);
            }
        }
    });
}
```

## 5. `Call/Hangup` button click handler

`Button.setOnClickListener()` code

```
mCallButton.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View view) {
        if (mCallButton.getTag() == null ||
            Integer.valueOf(R.string.action_call).equals(mCallButton.getTag())) {
            if ("".equals(mCalleeView.getText().toString())) {
                return;
            }
            ActivityCompat.requestPermissions(PhoneMinActivity.this,
                new String[]{Manifest.permission.RECORD_AUDIO},
                CALL_REQUEST_CODE);
            ...
        } else {
            mCallButton.setEnabled(false);
            call.hangup();
            call = null;
        }
        View currentFocus = getCurrentFocus();
        if (currentFocus != null) {
            InputMethodManager inputManager = (InputMethodManager)
            getSystemService(Context.INPUT_METHOD_SERVICE);

            inputManager.hideSoftInputFromWindow(currentFocus.getWindowToken(),
                InputMethodManager.HIDE_NOT_ALWAYS);
        }
    }
});
```

## 6. Outgoing call

`Session.createCall()`, `Call.call()` code

`CallOptions` object with these parameters is passed to the method:

- SIP username
- audio constraints
- `SIP INVITE` parameters

```
case CALL_REQUEST_CODE: {
    if (grantResults.length == 0 ||
        grantResults[0] != PackageManager.PERMISSION_GRANTED) {
        Log.i(TAG, "Permission has been denied by user");
    } else {
        mCallButton.setEnabled(false);
        /**
         * Get call options from the callee text field
         */
        CallOptions callOptions = new
        CallOptions(mCalleeView.getText().toString());
        AudioConstraints audioConstraints =
        callOptions.getConstraints().getAudioConstraints();
    }
}
```

```

        MediaConstraints mediaConstraints =
audioConstraints.getMediaConstraints();
        ...
        try {
            Map<String, String> inviteParameters = new
Gson().fromJson(mInviteParametersView.getText().toString(),
                new TypeToken<Map<String, String>>() {
                    }.getType());
            callOptions.setInviteParameters(inviteParameters);
        } catch (Throwable t) {
            Log.e(TAG, "Invite Parameters have wrong format of json object");
        }
        call = session.createCall(callOptions);
        call.on(callStatusEvent);
        /**
         * Make the outgoing call
         */
        call.call();
        Log.i(TAG, "Permission has been granted by user");
        break;
    }
}

```

## 7. Receiving the event on incoming call

`Session.onCall()` code

```

@Override
public void onCall(final Call call) {
    call.on(callStatusEvent);
    /**
     * Display UI alert for the new incoming call
     */
    runOnUiThread(new Runnable() {
        @Override
        public void run() {
            AlertDialog.Builder builder = new
AlertDialog.Builder(PhoneMinActivity.this);

            builder.setTitle("Incoming call");

            builder.setMessage("Incoming call from '" + call.getCaller() +
''");
            builder.setPositiveButton("Answer", new
DialogInterface.OnClickListener() {
                @Override
                public void onClick(DialogInterface dialogInterface, int i) {
                    PhoneMinActivity.this.call = call;
                    ActivityCompat.requestPermissions(PhoneMinActivity.this,
                        new String[]{Manifest.permission.RECORD_AUDIO},
                        INCOMING_CALL_REQUEST_CODE);
                }
            });
            builder.setNegativeButton("Hangup", new
DialogInterface.OnClickListener() {

```

```

        @Override
        public void onClick(DialogInterface dialogInterface, int i) {
            call.hangup();
            incomingCallAlert = null;
        }
    });
    incomingCallAlert = builder.show();
}
});
}
}

```

## 8. Answering incoming call

`Call.answer()` code

```

case INCOMING_CALL_REQUEST_CODE: {
    if (grantResults.length == 0 ||
        grantResults[0] != PackageManager.PERMISSION_GRANTED) {
        call.hangup();
        incomingCallAlert = null;
        Log.i(TAG, "Permission has been denied by user");
    } else {
        mCallButton.setText(R.string.action_hangup);
        mCallButton.setTag(R.string.action_hangup);
        mCallButton.setEnabled(true);
        mCallStatus.setText(call.getStatus());
        call.answer();
        incomingCallAlert = null;
        Log.i(TAG, "Permission has been granted by user");
    }
}
}

```

## 9. Call hold and retrieve

`Call.hold()`, `Call.unhold()` code

```

mHoldButton.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View view) {
        if (mHoldButton.getTag() == null ||
            Integer.valueOf(R.string.action_hold).equals(mHoldButton.getTag())) {
            call.hold();
            mHoldButton.setText(R.string.action_unhold);
            mHoldButton.setTag(R.string.action_unhold);
        } else {
            call.unhold();
            mHoldButton.setText(R.string.action_hold);
            mHoldButton.setTag(R.string.action_hold);
        }
    }
});
}
}
}
}

```

## 10. DTMF sending

`Call.sendDTMF()` code

```
mDTMF = (EditText) findViewById(R.id.dtmf);
mDTMFButton = (Button) findViewById(R.id.dtmf_button);
mDTMFButton.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View view) {
        if (call != null) {
            call.sendDTMF(mDTMF.getText().toString(), Call.DTMFType.RFC2833);
        }
    }
});
```

## 11. Outgoing call hangup

`Call.hangup()` code

```
mCallButton.setEnabled(false);
call.hangup();
call = null;
```

## 12. Incoming call hangup

`Call.hangup()` code

```
builder.setNegativeButton("Hangup", new DialogInterface.OnClickListener() {
    @Override
    public void onClick(DialogInterface dialogInterface, int i) {
        call.hangup();
        incomingCallAlert = null;
    }
});
```

## 13. Disconnection

`Session.disconnect()` code

```
mConnectButton.setEnabled(false);
session.disconnect();
```

## 14. Connection to an existing session using token

`Connection.setAuthToken()`, `Session.connect` code

```
mConnectTokenButton.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View v) {
        if (mConnectTokenButton.getTag() == null ||
Integer.valueOf(R.string.action_connect_token).equals(mConnectTokenButton.getTag
{
    connectWithToken = true;
    String authToken = mAuthTokenView.getText().toString();
    if (authToken.isEmpty()) {
        return;
    }
    mConnectButton.setEnabled(false);
    mConnectTokenButton.setEnabled(false);
    createSession();
    Connection connection = new Connection();
    connection.setAuthToken(authToken);
    connection.setKeepAlive(true);
    session.connect(connection);
} else {
    mConnectButton.setEnabled(false);
    mConnectTokenButton.setEnabled(false);
    session.disconnect();
}
}
});
```