Element FM SDK

The Element FM (Face Matching) SDK provides an API library to identify users by taking face images on Android devices. The images will be processed on a server in order to obtain the identification results. This document contains information to integrate the Element FM SDK into an Android application by using Android Studio.

Version Support

- The Element FM SDK supports Android 5.0+ / API 21+ (Lollipop and up)
- Android Studio 3.1.3 with Gradle 4.4
- Last Target SDK Version: 27
- Last Compiled Support Library Version: 27.1.0
- Last Compiled Google Play Services Version: 15.0.1
- AWS Mobile SDK: 2.6.+
- Google Guava for Android: 23.5

Prerequisites

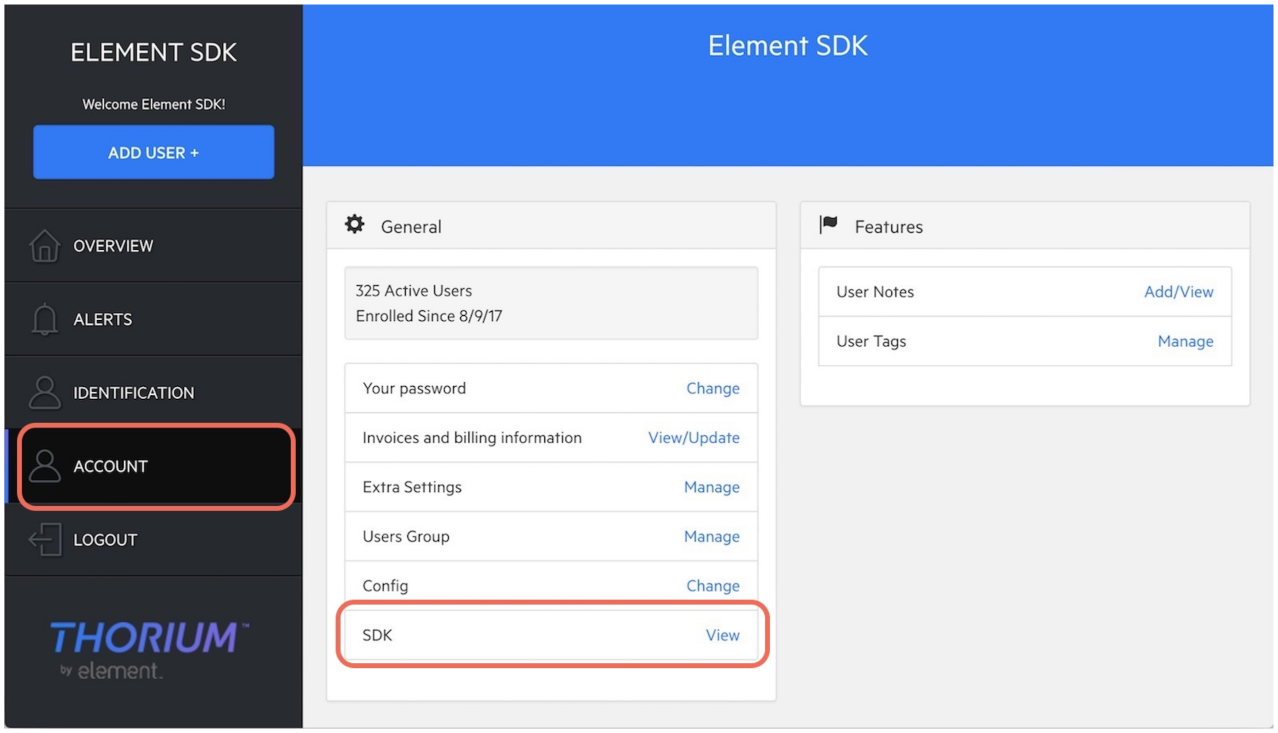
Element Dashboard

The Element Dashboard is the gateway to the assets in order to use the Element FM SDK. The URL of the Element Dashboard varies based on your region. Also an account is required to access the Element Dashboard. Please contact Element for more information.

AAR

The Element FM SDK is in the AAR format. Download the AAR:

1. Log into the Element Dashboard with your account.
2. Select `Account` tab in the left navigation bar.
3. Find the menu item named `SDK`, click the `View` button next to it.

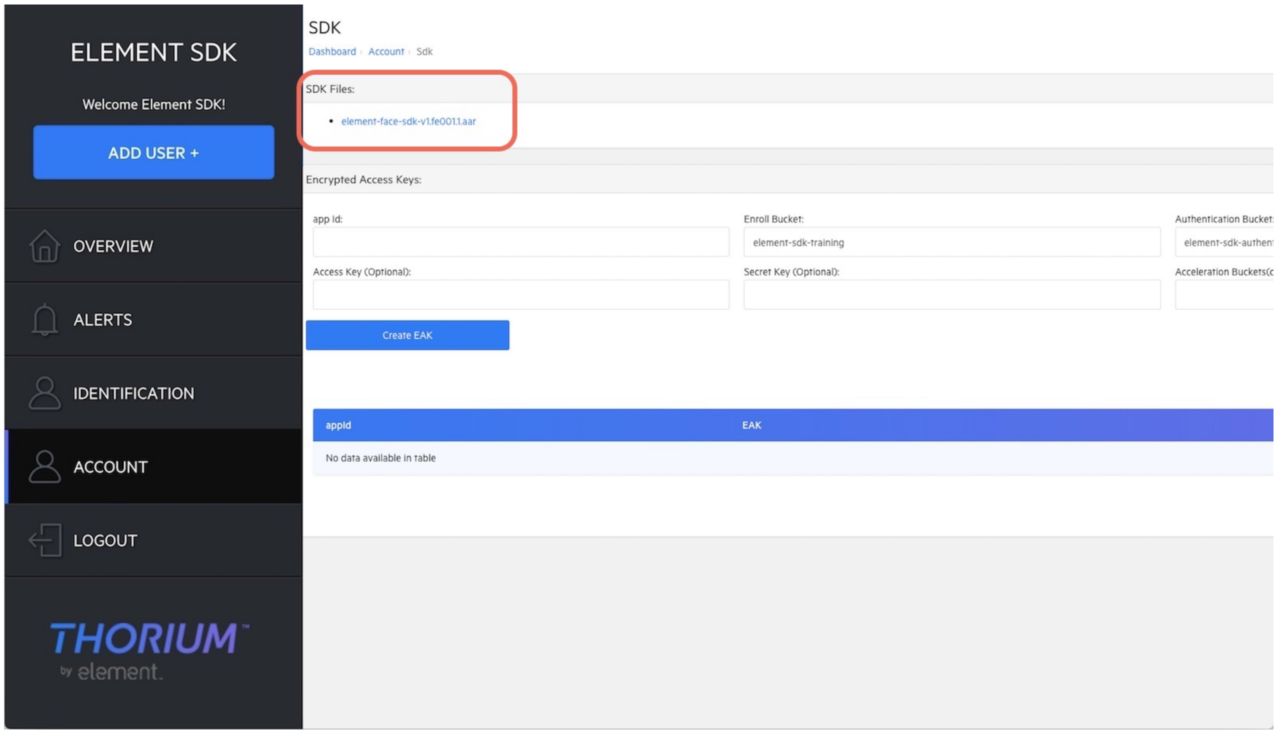


325 Active Users
Enrolled Since 8/9/17

Your password	Change
Invoices and billing information	View/Update
Extra Settings	Manage
Users Group	Manage
Config	Change
SDK	View

User Notes	Add/View
User Tags	Manage

4. Under `SDK Files` section, click the SDK download link and save it to the desktop of your computer.



SDK Files:

- element-face-sdk-v1.fe001.1.aar

Encrypted Access Keys:

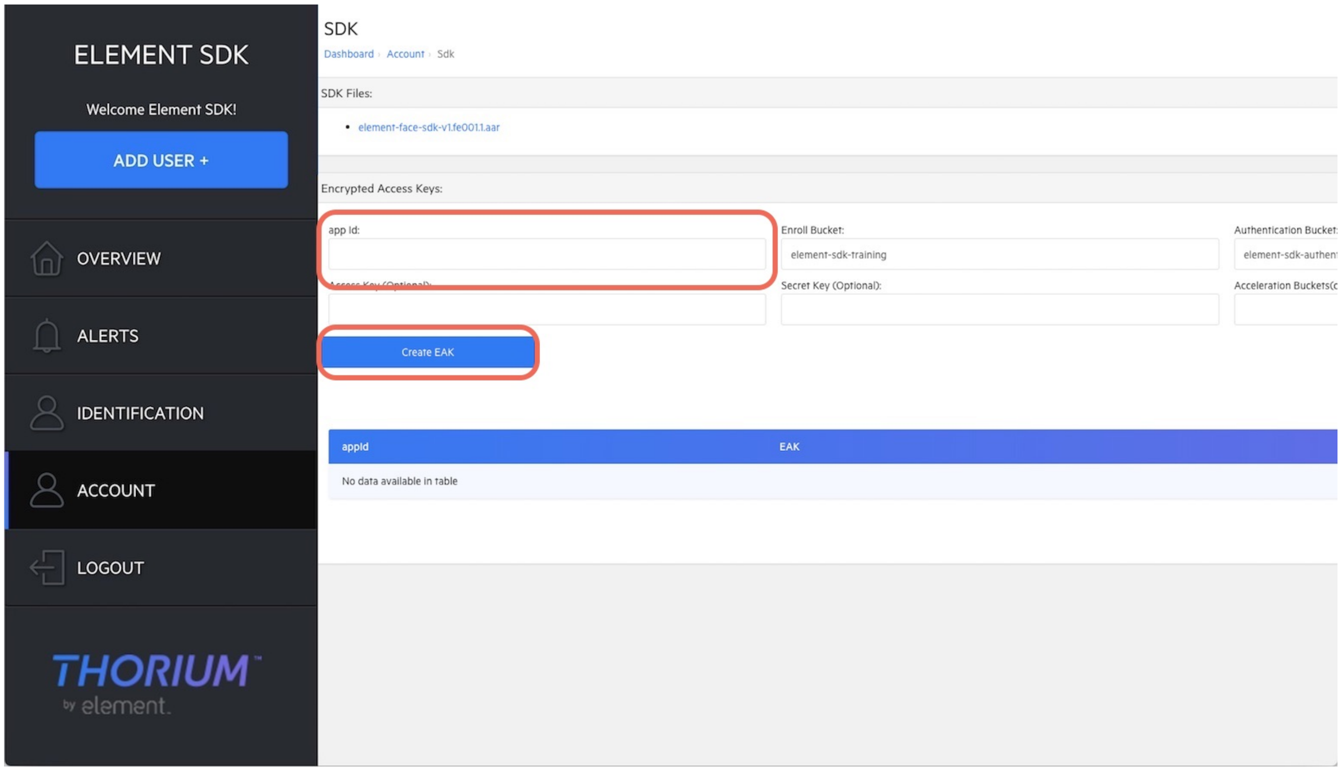
app Id:
Enroll Bucket: element-sdk-training
Authentication Bucket: element-sdk-authen
Access Key (Optional):
Secret Key (Optional):
Acceleration Buckets(c

appId	EAK
No data available in table	

Register the Application Id (App Id) to Element and obtain the Encrypted Access Key (EAK)

The Element FM SDK requires the *Encrypted Access Key* (*EAK*) file. The *EAK* file carries encrypted information including the [Application Id (App Id)]() of your Android app. Your registered *EAK* is available on the Element Dashboard, under `Account -> SDK`. Here is how you get a new *EAK* file:

1. On the same page of where you download the SDK file, fill in the `App Id` field with your `application id`. You can find your `application id` in your module-level `build.gradle` file. Leave other fields unchanged and click `Create EAK`.
2. You new EAK will be listed on the page. Hover your mouse on the EAK you want to download and a little download icon will appear next to your `app id`. Click it, name the file `element.eak` and save it to the desktop of your computer.



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- element-face-sdk-v1.fe001.1.aar

Encrypted Access Keys:

app Id:

Enroll Bucket: element-sdk-training

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Access Key (Optional):

Secret Key (Optional):

Acceleration Buckets(

appId	EAK
No data available in table	

Setup with Android Studio

Import the AAR

1. Open your project in Android Studio.
2. On the top menu bar, click `File -> New -> New Module`. In the `Create New Module` window, click `Import .JAR/.AAR Package`, then click `Next`.

3. In the next window, click the `...` next to `File name` field and select the AAR file in your computer's desktop directory. Then type in `element-fm-sdk` in the `Subproject Name` field.
4. Click the `Finish` button and wait for Android Studio to finish building the project.

Add element-fm-sdk and dependencies

1. Add `element-fm-sdk` module to your project by adding the following code to the `settings.gradle` file in the root directory of your project:

   ```
   include ':element-fm-sdk'
   ```

2. On the top menu bar, click `File -> Project Structure`.
3. Select your app module under `Modules` on the left pane, click on the `Dependencies` tab, and click on the `+` button at the bottom of the window. In the popup, click `Module Dependency` and select `:element-fm-sdk`. Click `Ok`.
4. Add the following dependencies to the module-level `build.gradle`:

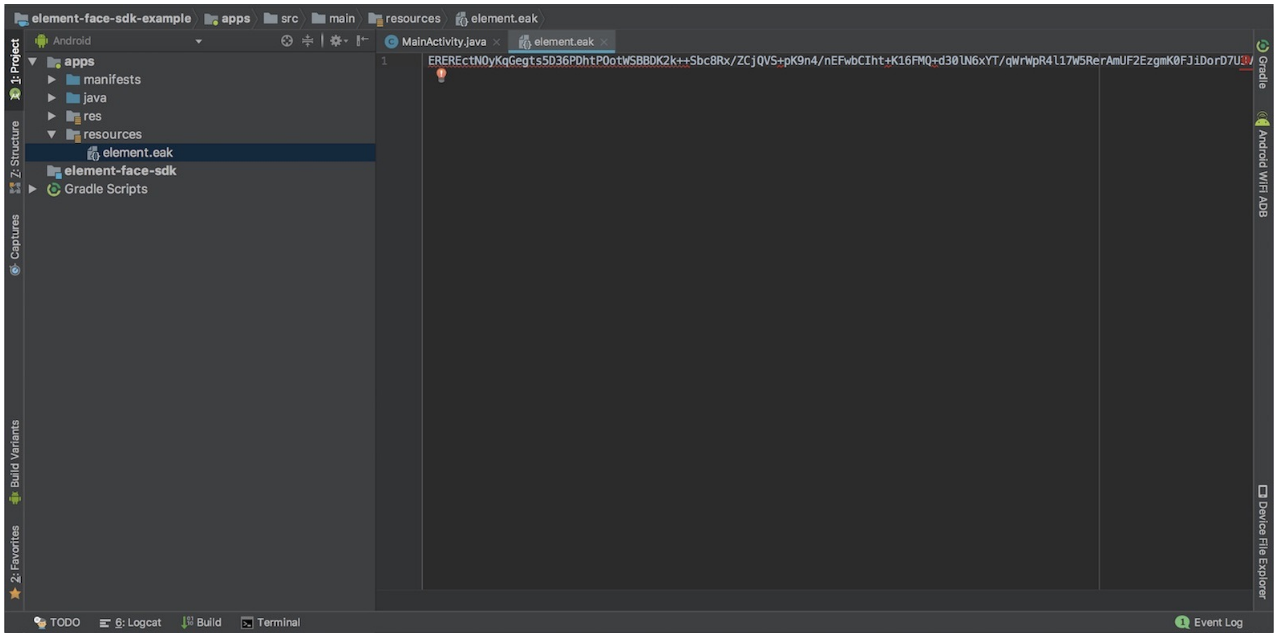
   ```
       dependencies {
         .....
         implementation 'com.android.support:appcompat-v7:27.1.0'
         implementation 'com.amazonaws:aws-android-sdk-core:2.6.+'
         implementation 'com.amazonaws:aws-android-sdk-s3:2.6.+'
         implementation 'com.google.android.gms:play-services-location:+'
         implementation 'com.google.guava:guava:23.5-android'
       }
   ```

   Note that you might have already declared some of these dependencies in your module-level `build.gradle` file, so please make sure you did not declare them twice. And you might also have to tweak a little bit on the versions of the dependencies as well as `compileSdkVersion` and `targetSdkVersion` in the `build.gradle`. Please follow the Android Studio's prompts on this. More information can be found here.
5. Wait for the Android Studio to sync.

Include the EAK in the application

1. Create a resources directory at `[project dir]/app/src/main/resources`.

2. Copy the `element.eak` file into the `resources` directory.



```
ERERECtNOyKqGegts5D36PDhtPOotWSBBDK2k++Sbc8Rx/ZCjQVS+pK9n4/nEFwbCIht+K16FMQ+d30lN6xYT/qWrWpR4l17W5RerAmUF2EzgmK0FJiDorD7U
```

Using the Element FM SDK APIs

Initialize the Element FM SDK

1. Create a class which extends android.app.Application if you haven't, and initialize the Element FM SDK in `onCreate()` method:

```
public class MainApplication extends Application {
  @Override
  public void onCreate() {
    super.onCreate();
    ElementFaceSDK.initSDK(this);
  }
}
```

2. Declare the `MainApplication` class in AndroidManifest.xml:

```
<manifest>
  .....
  <application android:name=".MainApplication">
    .....
  </application>
</manifest>
```

Ask for user permissions

1. The Element FM SDK requires the following permissions:

    - `android.Manifest.permission.CAMERA`
    - `android.Manifest.permission.ACCESS_FINE_LOCATION`
    - `android.Manifest.permission.ACCESS_COARSE_LOCATION` Those permissions are declared in the Element FM SDK AAR, so no need to declare them again in the manifest in your app.
2. The Element FM SDK provides `PermissionUtils.verifyPermissions(Activity activity, String... permissionsToVerified)` for requesting the permissions:

   ```
   PermissionUtils.verifyPermissions(
     MainActivity.this,
     Manifest.permission.CAMERA,
     Manifest.permission.ACCESS_FINE_LOCATION,
     Manifest.permission.ACCESS_COARSE_LOCATION);
   ```

   For the Android Marshmallow 6.0 (API 23) OS and up, make sure the permissions are granted before starting any Activity provided by the Element FM SDK.

User face matching

The Element FM SDK utilizes the `ElementFaceMatchingActivity` for face matching. It's based on the [`startActivityForResult`] method.

1. Declare a request code:

   ```
   public static final int FM_REQ_CODE = 25600;
   ```

2. Start the `ElementFaceMatchingActivity`:

   ```
   Intent intent = new Intent(MainActivity.this, ElementFaceMatchingActivi
   intent.putExtra(ElementFaceMatchingActivity.EXTRA_ELEMENT_USER_ID, user
   startActivityForResult(intent, FM_REQ_CODE);
   ```

3. Override the [`onActivityResult`] method to receive the matching results:

   ```
   @Override
   protected void onActivityResult(int requestCode, int resultCode, Intent
     if (requestCode == FM_REQ_CODE) {
       if (resultCode == Activity.RESULT_OK) {
         String results = data.getStringExtra(ElementFaceMatchingActivity.
         if (ElementFaceAuthActivity.USER_VERIFIED.equals(results)) {
             // The user is verified
         } else {
             // The user is not verified
         }
       } else {
         // Verification cancelled
       }
   ```

```
    }
  }
```

4. Declare the `ElementFaceMatchingActivity` in AndroidManifest.xml:

```
<manifest>
  .....
  <application android:name=".MainApplication">
    .....
    <activity android:name="com.element.camera.ElementFaceMatchingActiv
      android:clearTaskOnLaunch="true"
      android:hardwareAccelerated="true" />
    .....
  </application>
</manifest>
```

User enquiries

The Element FM SDK provides a AsyncTask to query users from the server.

- Implement UserQueryTask.Callback

```
UserQueryTask.Callback callback = new UserQueryTask.Callback() {
  @Override
  public void onResult(UserQueryTask.UserQueryResult result) {
    ...
    if (result.isSuccess()) {
      ProviderUtil.insertUserInfo(getContext(), userInfo);
      ...
    } else if (result.isTimeout()) {
      ...
    } else {

    }
  }
}
```

- Invoke UserQueryTask

```
new UserQueryTask(callback, getPackageName(), userId).execute();
```

Questions?

If you have questions, please contact devsupport@discoverelement.com.