Mobile Application Builder-Android Guide Oracle Banking Digital Experience Patchset Release 22.2.3.0.0

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Mobile Application Builder-Android Guide February 2024

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# 1. Preface

### 1.1 Intended Audience

This document is intended for the following audience:

- Customers
- Partners

## 1.2 **Documentation Accessibility**

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <a href="http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc">http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc</a>.

## 1.3 Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit

http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit

http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs\_if you are hearing impaired.

### 1.4 Structure

This manual is organized into the following categories:

Preface gives information on the intended audience. It also describes the overall structure of the User Manual.

The subsequent chapters describes following details:

- Introduction
- Preferences & Database
- Configuration / Installation.

### 1.5 Related Information Sources

For more information on Oracle Banking Digital Experience Patchset Release 22.2.3.0.0, refer to the following documents:

Oracle Banking Digital Experience Installation Manuals



# 2. OBDX Servicing Application

### 2.1 <u>Prerequisites</u>

OBDX Android App is supported only on versions n (current) and n-1 release.

- a. Download and Install node Js (will be downloaded to default path)
- b. Install node js from https://nodejs.org
- c. DOWNLOAD AND INSTALL ANDROID STUDIO
- d. Download and install Android Studio from https://developer.android.com/studio/index.html
- e. Download and Install Android platforms
- f. Update Android SDK to latest API Level.
- g. Gradle Version: gradle-4.6
- h. Android Gradle Plugin Version (3.4.0): 'com.android.tools.build:gradle:3.4.0' or above
- i. Set Environment variables
- j. Set following system variables:
  - 1. Click on Windows key and type Environment Variables.
  - 2. A dialog box will appear. Click on the Environment Variables button as shown below

System Properties	$\times$
Computer Name Hardware Advanced System Protection Remote	
You must be logged on as an Administrator to make most of these changes. Performance Visual effects, processor scheduling, memory usage, and virtual memory Settings	
User Profiles Desktop settings related to your sign-in Settings	
Startup and Recovery System startup, system failure, and debugging information Settings	
OK Cancel Apply	

3. NODEJS <nodejs\_path> Example: "C:\Program Files\nodejs\".



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	TEMP %USERPROFILE%\AppData\Local\Temp	
	in south to the stopport (court city)	vanced System Protection Remote
		dministrator to make most of these changes.
	New User Variable	ng, memory usage, and virtual memory
		Settings
	Variable game: NODEJS	
	Variable value: C:\Program Files\nodejs	ign-in
	Browse Directory Browse File OK Cancel	S <u>ettings</u>
	NUMBER_OF_PROCESSORS 4 OS Windows_NT	and debugging information
	Path C:\ProgramData\Oracle\Javajavapath;C:\app\MGARI\product\11.2	Settings
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	OK Cancel	OK Cancel Apply
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108		
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112 113	Variable Value ^	Settings
114 Page: 1 of 22 Words: 1,206 🕉	ComSpec C:\WINDOWS\system32\cmd.exe DEFLOGDIR C:\ProgramData\McAfee\DesktopProtection	
116 🖬 🖓 🗊 📜 🏮 🤮 📓 👰	NUMBER_OF_PROCESSORS 4	d debugging information
118	OS Windows_NT Path C:\ProgramData\Oracle\Javapath;C:\app\MGARI\product\11.2	
120	PATHEXT .COM; EXE; BAT; CMD; VBS; VBE; JS; JSE; WSF; WSH; MSC	Settings
122 123 124		Environment Variables
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k. Add the above variables in "PATH" system variable.



In 20.1, you can create app in two ways-using local UI or using remote UI (if want to create using remote go to section **Create project using Remote UI2.2** else directly to section **Local UI** )

### 2.2 Create project using Remote UI

- a. Index.html changes(use Android Studio or any other editor)
  - Update the server URL in app.properties against KEY\_SERVER\_URL key. This is the URL where the UI is also hosted.

After this proceed to 2.4 Importing in Android Studio directly.

### 2.3 Local UI by running on local machine or local server.

#### 2.3.1 Adding UI to workspace

Use any 1 option below of a/b

- a) Building un-built UI (required in case of customizations)
  - 1. For this version, since the UI is built with webpack, the built UI cannot be modified from with the mobile workspace as it is minified code. Hence, either bank can hoist the UI is two ways:
    - Use local machine as local server and host the UI on local development machine and connect the application using localhost.
    - OR host the UI on local development server and point the application to that server URL
  - 1. Ul is same for internet and mobile, same build process of internet to be followed.

Bank can follow the UI build steps from "Oracle Banking Digital Experience User Interface Guide".

2. For building UI for mobile, Open scripts->webpack->webpack.dev.js and add below line in devServer object:

as below:

headers: {

"Access-Control-Allow-Origin": "\*"

},

SAMPLE:

compress: true,



3. Also, in webpack.dev.js comment out below lines inside "entry" key.

entry: {

// main: "framework/js/configurations/require-config.js",

// Runtime code for hot module replacement

//hot: 'webpack/hot/dev-server.js',

// Dev server client for web socket transport, hot and live reload logic

//client: 'webpack-dev-server/client/index.js?hot=true&live-//reload=true',

},

- 4. Once the UI is built, run below command to start a local server on the development machine using below command:
  - npm run start

- 15	ssakpal@ssakpal-mac channel % npm start
- 12	> obdx-build-tool@20.1.0 start
- 10	> webpack serveopenconfig scripts/webpack/webpack.dev.js
1.	<i>[webpack-dev-server] [NPM] Proxy created: /digx -&gt; http://ofss-mum-715.snbomprshared1.gbucdsint02bom.oraclevcn.com:17777/</i>
-12	<i>[webpack-dev-server] Project is running at:</i>
- 12	<i>[webpack-dev-server] Loopback: http://localhost:4000/</i>
	<i>[webpack-dev-server] On Your Network (IPv4): http://192.168.29.50:4000/</i>
- 13	<i><iwebpack-dev-server] (ipv6):="" <="" [fe80::1]:4000="" http:="" network="" on="" td="" your=""></iwebpack-dev-server]></i>
- 18	<i>[webpack-dev-server] Content not from webpack is served from '/Users/ssakpal/Documents/work/svn/trunk/core/channel_liSept/channel/dist' directory</i>
	<i> [webpack-dev-middleware] wait until bundle finished: /</i>
18	<1> [webpack-dev-middleware] wait until bundle tinisned: /

 Once this server starts, below is the window which appears. This indicates local server is started.

rebpack 5.89.0 compiled with 27 warnings in 12461 ms	
?7 warnings have detailed information that is not shown. Jse 'stats.errorDetails: true' resp. 'stats-error-details' to show it.	
Q ./framework/js/view-model/generic-wiew-model.js 2:0-49 29:4-17 50:5-20 56:5-20 62:5-20 84:5-26 165:21-28 Q ./framework/js/configurations/require-config.js 20:4-56	
<pre>@ ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/ojconverterutils-i18n.js @ ./framework/js/dom-util.js 6:0-61 446:15-58 643:0-669:2</pre>	
<pre>@ ./node_modules/@cracle/oraclejet/dist/js/libs/oj/debug/ojcnfig.js 139:51-152 0 ./node_modules/@cracle/oraclejet/dist/js/libs/oj/debug/ojcnfig.js 139:51-152</pre>	
<pre>@ ./node_modules/@oraclejct/ora</pre>	
ARNING in ./node_modules/@oracle/oraclejet/dist/js/libs/oj/min/ojmodule.js 8:2000-2007 ritical dependency: require function is used in a way in which dependencies cannot be statically extracted 0./node_modules/@oracle/oracleiet/dist/js/libs/oj/svnc ^\.\.s.	
Q ./Tramework/js/view-model/generic-view-model.js 2:0-49 29:4-1/ 50:5-20 50:5-20 52:5-20 54:5-20 165:21-20 Q ./framework/js/configurations/require-config.js 20:4-56	
@ //nde_modules/@vracle/oraclejet/dist/js/lis/oj/debug/ojconverterutils-li8n.js @ ./framework/js/dom-util.js 6:0-61 446:15-58 643:0-669:2 @ ./framework/js/uem-modu/Jeneric-vis/me-modul.js 2:0-49 29:4-17 50:5-20 66:5-20 62:5-20 84:5-26 165:21-28	
<pre>@ ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/ojcom/ig.js/is/0i-loz @ ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/ojconslation.js @ ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/ojconverterutils-il8n.js</pre>	
<pre>@ ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/sitemattemap.js 201.3/149 @ ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/sitemattemap.is @ ./node modules/@oracle/oraclejet/dist/js/libs/oj/debug/sitemattemap.is</pre>	
Q ./node_modules/@oracle/oraclejet/dist/js/libs/oj/ sync ^\.\/.*\$ ./min/ojmodule-element-utils ./min/ojmodule-element-utils.js Q ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/ojthematicmap.js 2617:47-149	
/ARMING in ./node_modules/@oracle/oraclejet/dist/js/libs/oj/min/ojmodule-element-utils.js 8:558-565 >ritical dependency: require function is used in a way in which dependencies cannot be statically extracted	
0 ./framework/js/view-model/generic-view-model.js 2/0-4/2/14-1/ 50:5-20 50:5-20 52:5-20 54:5-20 155:21-28 0 ./framework/js/configurations/require-config.js 20:4-56	
@ ./framework/is/dom-util.js 6:8-61 446:15-58 643:8-669:2 0 ./framework/is/dom-util.js 6:8-61 446:15-58 643:8-669:2 0 ./framework/is/view-model/generic	
Q ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/ojtranslation.js Q ./node modules/@oracle/oracleiet/dist/js/libs/oj/debug/ojconverterutils-i18n.js	
@ ./node_modules/oracle/oraclejot/dist/js/libs/oj/debug/ sync ^.ee.\$/ojthematicmap ./ojthematicmap.js @ ./node_modules/ooracle/oraclei/oraclei/libs/oj/debug/ojconfia, is 139:51-152	
@ ./node_modules/@oracle/oraclejet/dist/js/libs/oj/debug/ojthematicmap.js 2617:47-149	
ritical dependency: require function is used in a way in which dependencies cannot be statically extracted © ./node_modules/@oraciele/oraciele/dist/js/jibs/oj/ sync ^\\/.ws./jmin/ojmodule-element-utils.js	

 Point the "key\_server\_url" to <u>http://localhost:4000</u> and run the application on simulator. To run on device, the internet proxy should allow localhost domain to accept incoming requests.



If it is blocked, UI should be built and "npm start" command should be executed on a development server machine which is accessible in the network. They "key\_server\_url" will then point to that local server URL instead of localhost

b) Using built UI (out of box shipped with installer)

Available at --

OBDX\_Installer/installables/ui/deploy (Main release, OBDX installer), OBDX\_Patch\_Installer/installables/ui/deploy (Patchsets)

- There will be production enabled dist generated in the built UI.
- Bank can either directly deploy this dist to their server and point the application to that server as mentioned in point a above OR
- Bank can copy the dist folder in their workspace and follow steps from point 3in section 2.5.
- If bank wants to do any changes, point a) steps needs to be followed.

NOTE: If banks want to debug UI in production builds, then dist should be created with below configuration enabled in webpack.prod.js

devtool: 'eval',

 This will however increase the files deployed on server and reduce the proformance on production. Refer Webpack documentation <u>https://webpack.js.org/configuration/devtool/</u> for more details.

#### 2.3.2 Create Project Using local UI within the workspace

- 1. Extract the unbuilt UI and follow steps up to 5 in the above section 2.4.
- 2. After step 4, run below command to generate dist folder.

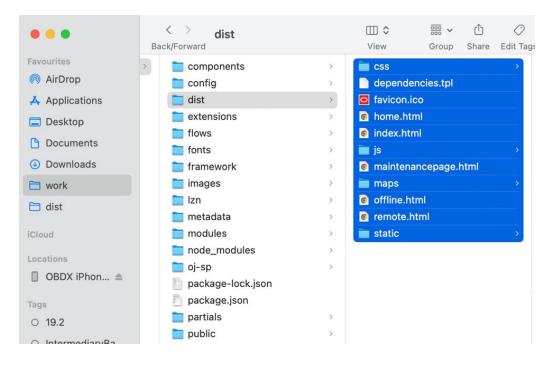
npm run webpack-dev - this will generate development enabled dist

npm run webpack-build- this will generate production enabled dist

3. Once the dist folder is created, copy all files inside dist folder and save it in the

workspace\_installer/zigbank/platforms/android/app/src/main/assets/www/.





4. Open Index.html and home.html and add below line inside head section below meta tag

<script src="cordova.js" type="text/javascript"></script>

- 5. Set the server URL in app.properties against key\_server\_url. This is the URL where backend services are hosted.
- 6. With this setup, since the files generated in dist folder are minified format we cannot change the code. If any change needs to be done in any UI file, then the changes must be done in the UI folder, built it again to generate dist and copy the files to workspace again. Since this is tedious process, we recommend to setup local server and host UI there for development.

### 2.4 Importing in Android Studio

**Open Android Studio** 

1. Import zigbank/platforms/android in android studio by clicking on Open an Existing Project.



👳 Select Eclipse or Gradle Project to Import 🛛 🗙 🗙				
Select your Eclipse project folder, build.gradle or settings.gradle				
🕆 📼 👁 🐂 🖾 🗙 🏹 🎒 Hide path				
:\Workspace18.1\android\service\workspace\obdx\platforms\android				
Workspace18.1				
▼ Imandroid				
🕨 👳 authenticator				
V service				
🕨 👳 libraryproject				
🔻 🖿 workspace				
V Dobdx				
platforms				
🔻 🙊 android				
.gradle				
idea				
assets				
BarcodescannerLib				
build				
Cordova				
CordovaLib				
Description of a line of a				
Drag and drop a file into the space above to quickly locate it in the tree				
OK Cancel Help				

# 2.5 <u>Widget Functionality</u>

Widgets are Android native feature. Below widgets are available in the application

- 1. All Accounts Widgets Widget, showing all accounts balances & account numbers.
- 2. Account Details Widget Widget, showing account balance of default account and last 5 transactions of the same account, can be added to the phone home screen. If default account is not set, then the details of the account fetched first is shown.
- Multi-Functional Widget Widget showing default account balance. If default account is not present, it shows details of account fetched first. Additionally, it has option to scan to pay feature
- 4. Scan to Pay Widget Widget which allows to scan to pay.

#### Prerequisite:

Quick Snapshot feature needs to be enabled in the app application from the login screen. (Refer function doc - User Manual Oracle Banking Digital Experience Quick Snapshot.docx)

Please enable below property in app.properties file

<bool name="ENABLE\_WIDGET">true</bool>



If bank does not want this feature, then they can disable this by making above flag to false.

## 2.6 Scan to Pay from Application Icon –

Users can long press on bank's application icon on home screen and click on scan-to-pay option to scan QR and make payments.

To enable this feature uncomment below from app's AndroidManifest.xml

android ) app ) src ) main ) 📇 And	roidManifest.xml			4- 1	🐹 app 🔻	🕞 Pixel XL API 31 2 👻			📀 💽
📱 🔤 Pr 😌 포 🛨 🗢 —									: 6
🖌 🗠 🐂 android –/Android Projects	Q+ ar_								Devic
b) B) (dea b) (dea		activitys tivity android:names"com.ofg android:comfigDhanges"-roi android:labol-"Futuma Bankf android:theme-"Bityle/Splas android:theme="Bityle/Splas android:themes"Bityle/Splas android:themes"Bityle/Splas android:themes"Bityle/Splas android:themes"Bityle/Splas android:themes"Bityle/Splas android:themes"Bityle/Splas android:themes"Bityle/Splas android:themes (intent-filter) actiony actiony actiony actiony	s_digx.mobils.android.Spl ntation[keyboardHidden[ke op" hTheme" ==adjustResize"> mp.ahortcuts" hT_shortcuts" />>					<u><u><u>A</u></u> 5 <u>×</u> 46</u>	vice Manager & Gradie & Notifications
g Logcat								*	×
No connected devices	No debuggable		• Q.			<ol> <li>Project up</li> </ol>	Show only sele	ipgraded.	Device File Explorer C <sup>B</sup> Android Emulator
P Version Control E Logcat 🔨	Build S Dependencies	III TODO O Problems III Termin	al 🖸 Services 🔮 App Inspection						ector

# 2.7 Scan Card using Augmented Reality

Users can scan card and view account details and transactions of the account associated with the card.

To enable this feature, do the same step which is mentioned on 2.6 section.

# 2.8 Passkey (Passwordless login)

Passkeys are a safer and easier replacement for passwords. With passkeys, users can sign in to apps and websites using a biometric sensor (such as a fingerprint or facial recognition), PIN, or pattern. This provides a seamless sign-in experience, freeing your users from having to remember usernames or passwords.

Passkeys are supported only on devices that run Android 9 (API level 28) or higher

TO DISBALE THIS OPTION:

By doing this, passkey option will not be available to users withing the application. User will not be able to register for passkey and also will not be able to login using passkey. Follow below steps



a. Remove RTM access from Client Servicing -> Authentication - > Passkey Setup for Mobile Application/Mobile (Responsive) and Internet touch points

Passkey Setup

b. Set this flag in channel-framework-js-configurations-config..js to false

thirdPartyAPIs -> passkey -> required -> false

#### TO ENABLE THIS OPTION:

1. Add RTM access from Client Servicing -> Authentication - > Passkey Setup for Mobile Application, Mobile (Responsive) and Internet touch points

Passkey Setup

2. Set this flag in channel-framework-js-configurations-config.js to true

thirdPartyAPIs -> passkey -> required -> true

3. Along with above, we need below server side and application side settup

Server-Side Setup:

 Update the relying party in below property select prop\_value from digx\_fw\_config\_all\_b where prop\_id='PASSKEY\_RP\_ID'

🕞 🕲 🗸 🎉 🗟 । 🕼 🌽 🧑 🤽 ।	C TRUNK IT NODE1
orksheet Query Builder	
ALTER SESSION SET CURRENT_SCHEMA = OBDX_TRUNK_N1;	
select * from digx_fw_config_all_b where prop_id like '%PASSKEY%'	
icript Output × Duery Result ×	
Script Output × PQuery Result × $\bigcirc @ \ SQL   All Rows Fetched: 1 in 1.259 seconds \bigcirc PROP ID   \emptyset CATEGORY ID   \emptyset PROP VALUE   ∅ FACTORY SI$	IPPED_FLAG  ∲ PROP_COMMENTS  ∲ SUMMARY_TEXT

2. Note – Relying partId is the domain name if the website to which credentials will be associated. (Eg google.com, example.com etc)

Relying party origin is the relying party of website prefixed with protocol without the port.

(E,g, https://google.com, https://example.com)

a. Create assetlinks file (assetlinks.json) -

A Digital Asset Links JSON file must be published on your website to indicate the Android apps that are associated with the website and verify the app's URL intents.



The following example assetlinks.json file grants link-opening rights to a com.example Android app:

[{

"relation": ["delegate\_permission/common.handle\_all\_urls"],

"target": {

"namespace": "android\_app",

"package\_name": "com.example",

"sha256\_cert\_fingerprints":["14:6D:E9:83:C5:73:06:50:D8:EE:B9:95:2F:34:FC:64:16:A0: 83:42:E6:1D:BE:A8:8A:04:96:B2:3F:CF:44:E5"]

}

#### }]

The JSON file uses the following fields to identify associated apps:

package\_name: The application ID declared in the app's build.gradle file.

sha256\_cert\_fingerprints: The SHA256 fingerprints of your app's signing certificate. You can use the following command to generate the fingerprint via the Java keytool:

keytool -list -v -keystore my-release-key.keystore

b. Publish assestlinks.json file-

This file needs to be on https server with valid SSL certificate

You must publish your JSON verification file at the following location:

https://domain.name/.well-known/assetlinks.json

For example, if your sign-in domain is signin.example.com, host the JSON file at https://signin.example.com/.well-known/assetlinks.json.

Verify your assetlink json on below statement list tester-

https://developers.google.com/digital-asset-links/tools/generator

The MIME type for the Digital Assets Link file needs to be JSON. Make sure the server sends a Content-Type: application/json header in the response.

Need to change host and port in Obdx.conf as,

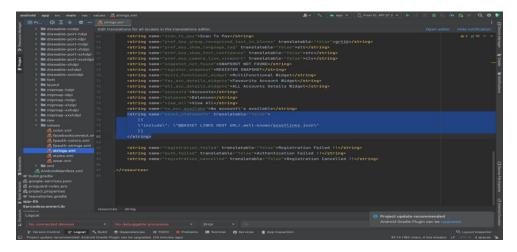


ProxyPass "/.well-known" "http://100.76.157.55:7003/digx-admin/sms/v1/.well-known"

ProxyPassReverse "/.well-known" "http://100.76.157.55:7003/digx-admin/sms/v1/.well-known"

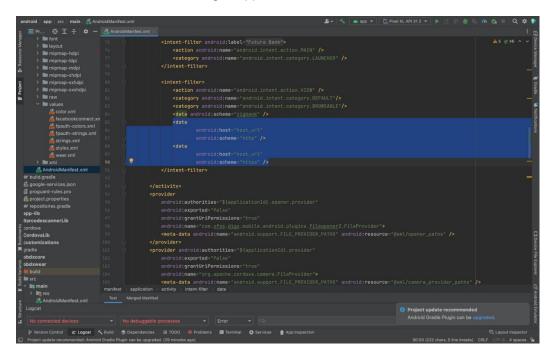
After the setup is done, this file must be accessible on mobile browser with this url. There should not by any redirects for accessing this file.

c. Add assetlinks.json file host in app's strings.xml file.





# 2.9 <u>Deeplinking - To open reset password, claim money links</u> with the application



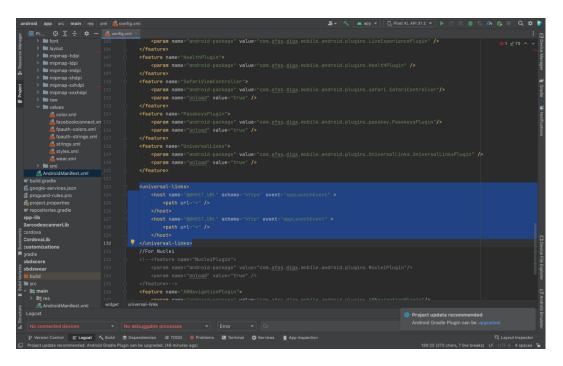
Please add host url under data tag in app's AndroidManifest.xml as,

Note - Please add host url without https or http.

For e.g. If your deeplink url is https://exmple.com/test then you can add only example.com in the data tag

Similary you can add the same host url in app's config.xml under universal-links tag as,





# 2.10 Device Registration and Push Registration Functionality

In this version, only one device is allowed to be registered for alternate login for the same username. If user tries to register another device with same username for alternate login, then the previous registration on other devices will be removed. User will get an error message if he/she tries to use PIN/PATTERN/BIOMETRIC on the de-registered devices.

While user registers his second device or same device again (by re-installing the application), a popup will appear to notify the same.

If user confirms, then the current device will be registered, and all previous registrations will be removed.



← Verify User	
	2.00-
Device Registration	×
Registering on this device will automatically cancel active registrations if any on other devices. Are you want to continue?	
Cancel Confirm	
. <u> </u>	

If user cancel, the process is exited.

Also, in this version, only one device is allowed to be registered for push.

Bank can allow multiple devices to be registered for same username in their setup by setting below two configurations:

ALLOWED\_DEVICE\_COUNT to any value between than 1 and 100.

- 1 will allow on one device registration.
- 100 will allow more than one device registration

ALLOWED\_PUSH\_DEVICE\_COUNT any value between 1 and -1

- 1 will only one one device to be registered for push.
- -1 will only multiple devices to be registered for push



# 2.11 Location Tracking Metrics

This is optional. Bank needs to do if they need location tracking metrics for monitoring locationbased data.

ALLOW\_LOCATION\_SHARE

By default, the value is false. If set to true, user will get location permission prompt to allow location tracking. It can be enabled if user's location needs to be tracked.

# 2.12 Displaying Rate Option to Redirect to Playstore Page

This is optional. User can have an option ("Rate Us") in settings to display Play Store rating for the application. This option can be enabled/disabled from UI.

Note: App should be listed on playstore before adding this functionality.



# 3. Google Play Integrity

- a. Go to URL <u>https://console.developers.google.com/</u>
- b. Create a new Project and set name of you project

New Project		
Project name 💿		
SafetyNet		
Your project ID will be safetynet-161214 🕐 Edit		

- c. Choose 'API's & Services' option from side bar.
- d. In API's & Services > Dashboard > Choose 'Enable APIS AND SERVICES'.

API	APIs & Services	APIS & Services + ENABLE APIS AND SERVICES
	Dashboard	
ш	Library	You don't have any APIs available to use yet. To get started, c
0-	Credentials	
:12	OAuth consent screen	
~	Domain verification	
≡¢	Page usage agreements	

e. This will redirect to 'Library' where we need to search 'Google Play Integrity API'.

$\leftarrow$ $\rightarrow$ C $\triangleq$ console.c	loud.google	a.com/apis/libra	ry/browse?organizationId=0&project=symmetric-sylph-374507&q=Google%20Play%20Integrity	*	<b>3</b> :
🖸 Oracle Login - Sin 🎽 19.	2 SUS IT - Or	a 🎇 JFrog	🞽 Environments - Or 🞽 18.1 - Oracle Bank 😵 Index of obdx-np 🎽 18.2 - Oracle Ban 🖸 Login - Futura Bank 📑 Archive Extractor		33
≡ Google Cloud	<ul> <li>Sample P</li> </ul>		9. 🗰 🗷 🌲	0	
RPI API Library			Q, Google Play Integrity/		
API Library > "Google Play In	tegrity"				
= Filter Type to filter		2 results			
Visibility	^		Google Play Integrity API Google		
Public	(2)		The Play Integrity API helps you check that you're interacting with your genuine app on a genuine Android device powered by Google Play services. The Play Integrity API has replaced SafetyNet Attestation and Android Device Verification.		
Category	(2)		Android Device Verification (DEPRECATED)		
			Google DEPRECATED. The SafetyNet Attestation API is deprecated and has been replaced by the Google Play Integrity API. Please see the link below for more information.		

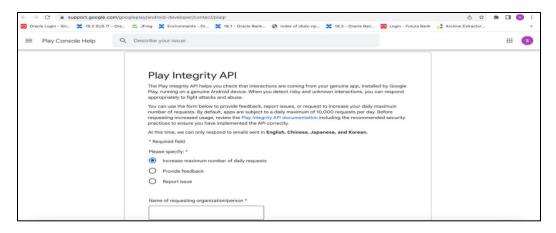
f. Click on Google Play Integrity API and enable it



	le.cloud.google.com/apis/library/playintegrity.googleapis.com?pro		💢 18.2 - Oracle Ban	🖸 Login - Futura Bank		Archive	1 Extract	☆ or	*		s : »
	🐉 Sample Project 👻				۹		5.	3	0	÷	S
- Product details											
	Google Play Integrity API Google Check that interactions are coming from your genuine app runni genuine Android device. ENABLE TRY THIS API (2	ng on a									
OVERVIEW	SUPPORT										
genuine app on a	API helps you check that you're interacting with your genuine Android device powered by Google Play services. API has replaced SafetyNet Attestation and Android Device	Additional details Type SaaS & APie Last updated: 23/12/2022 Category: Woblie Service name: playintegrity goog	leapis.com								

g. If the application usage is high, the quota request form needs to be submitted. Please fill quota request form from below site. Also select below options.

https://support.google.com/googleplay/android-developer/contact/piagr





	leplay/android-developer/contact/plaqr	0 x	* 🗆	•
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≡ Play Console Help Q	Describe your issue			5
	How are you calling the Play Integrity API? *         Image: My app is calling the API directly         Image: A third party fm using in the app is calling the API, please specify         Image: Mow often will you call the API for each user? *         Image: Once per day or less         Image: Once per hour         Image: Once per 5 min         Image: Once per 5 min or more         Is there any Pli or SPII used for the nonce (e.g. user id, user name, phone number, Android ID, SSN, etc)? *         Image: Yes, but hashed or encrypted         Image: Yes, in plain-text         Image: No			

Play Console Help	Q Describe your issue	
	How are you validating Play integrity API responses? *  Server side - by calling Play's server to decrypt and verify  Server side - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify In my app - by calling Play's server to decrypt and verify lay the servers?* In my app - by calling Play's server to decrypt and verify lay the servers?* In my app - by calling Play's server to decrypt and verify lay the servers?* In my app - by calling Play the server to decrypt and verify lay the server server to decrypt and verify lay the server	
Login - Sin 🎽 19.2 SUS IT - Ora	leplay/android-developer/contact/plagr ≥ JFrog ≥ Environments - Or ≥ 18.1 - Oracle Bank ⊗ Index of obdx-np ≥ 18.2 - Oracle Ban © Login - Futura Bank Archive Extractor Describe your issue How will your app act when the Play Integrity API detects risky traffic? * Please answer with your end goal in mixed even if your app is not acting yet. As a reminder, your app should also be able to deal with your terrors and the API being unavailable.	
Login - Sin 🎽 19.2 SUS IT - Ora	<ul> <li>JFrog X Environments - Or. X 18.1 - Oracle Bank Onlease of obdx-np X 18.2 - Oracle Ban Login - Futura Bank Archive Estracts</li> <li>Describe your issue</li> <li>How will your app act when the Play Integrity API dects risky traffic?*</li> <li>How some with your and goal in mind even if your app is not acting yet. As a reminder, your app should also be able to deal with Play Integrity API dects risky traffic?*</li> <li>Onery access to functionality (for example, users won't be able to log-in). I want unauthorized usage of my app to go down.</li> <li>Alter or limit specific features (for example, only users on good devices will be allowed on a leaderboard). Overall usage of my app to go down.</li> <li>An hir - demy access for some responses and change features for other responses. I want some unauthorized usage of my app to go down.</li> <li>No action. I'm only collecting data.</li> </ul>	or
a Login - Sin 🎽 19.2 SUS IT - Ora	<ul> <li>JFrog X Environments - Or. X 18.1 - Oracle Bank Ondex of obdx-np X 18.2 - Oracle Ban Login - Futura Bank</li> <li>Archive Estract</li> </ul> Describe your issue How will your app act when the Play Integrity API detects risky traffic?* Hease nonew with your end goal in mind even if your app in not acting yet. As a reminder, your app should also be able to deal with Play Integrity API detects risky traffic?* Play access to functionality (for example, users won't be able to log-in). I want unauthorized usage of my app to go down. A Inter or limit specific features (for example, only users on good devices will be allowed on a leaderboard). Overall usage of my app to go down. A mix - demy access for some responses and change features for other responses. I want some unauthorized usage of my app to go down.	or

Quota request - Estimated total queries per day  $* \rightarrow$  The approximate load, Play Integrity API is called once each time the app in opened



Quota request - Estimated peak queries per second  $\rightarrow$  Leave blank

h. To enable Play Integrity responses please follow below steps-

Go to Google Play Console->Side Menu->Setup->App Integrity

> :>) > i.⊡ (≝)	lesting Reach and devices App bundle explorer	App integrity Protect your app and your users Show more
- 🐵	Setup	Integrity API responses off 🛛 🧭 Releases signed by Google Play
	App integrity	
	Internal app sharing	Integrity API App signing
	Advanced settings	
Gro	w	*
• 🔊	Store presence	Protect your apps and games from risky and fraudulent interactions with the Play integrity API. Link to a Google
	Main store listing	Cloud project to get started. Learn more
	Custom store listings	Link project
	Store listing experiments	
	Store settings	
	Translation service	

Click on **Link project** and then link your existing google cloud project. If it is not created then create new and link the same.

M I. Stru	Release	App integrity	
e Manag	Link Google Cloud project	>	<
Resourc	Link your Google Cloud project to use the integri	ty API	
4	Google Cloud project	Unk existing project By linking your Google Cloud project you agree to the Terms of Service. Sample Project ↓ Enter project number manually	
Build Variants 🖈 Favorites	C	) Create new project	
		Discard changes Link project	

i. Add project number in below property of app.properties

<string name="GOOGLE\_CLOUD\_PROJECT\_NO">@@GOOGLE\_CLOUD\_PROJECT NO</string>

You will get the project number on google cloud console project



■ Google Cloud * Play Integrity ▼ Search (/) for resources, docs, products a	and more Q. Search 🗄 🗔 🕢 🗇 🕴 🔇
• 🛆 Welcome	
You're working in Play Integrity Project number: 420817979115 To Project ID: play-integrity-t4q4qu1he3dectm To Dashboard Recommendations	• 1/ •
Create a VM Run a query in BigQuery Create a GKE cluster	Create a storage bucket

j. Mention the time in seconds to which app can hit the play integrity api. By default it is 300seconds but you can configure as per the requirement. Please use below property in RootCheckFlags.java(workspace\_installer/zigbank/platforms/android/app/src/main/java/com/ofs s/digx/mobile/android/)

long playIntegrityAPICallTime = your\_time\_in\_seconds;



# **4. FCM Push Notifications**

- a. Go to URL <u>https://firebase.google.com/</u>
- b. Traverse to console and create a project

😕 Firebase		Go to docs 🧃	0
	Welcome to Firebase!		
	Tools from Google for developing great apps, engaging with your users, and earning more through mobile ads.		
	Q Learn more      ■ Documentation      □ Support		
	Recent projects		
	OBDX obdx:639e5		
	Add project		
	💋 Explore a demo project 🖷 i05		

c. Download google-services.json from below page and save to (zigbank\platforms\android\app) directory.

d. Remember to keep the projects package name and firebase package name same.

<u>&gt;</u>	Firebase	OBDX 👻	Settings				Go to docs	¢	0	
A	Project Overview 🌼		Project name Project ID (?)	OBDX pbdx-639e5						
Dev	relop		Cloud Firestore location	us-central						l
	Authentication		Web API Key	AlzaSyBnym	Fz0dRmembxyXWJt87mS9HdaneE0Gg					
	Database									
	Storage		Public settings							
S	Hosting		These settings control instances	of your project	shown to the public					
()	Functions		Public-facing name 💿	obdx 🎤						
ML	ML Kit		Support email	oraclefcd	bmobiledev@gmail.com					ł
<b>Qua</b> Cras	ality hlytics, Performance, Test Lab		Your apps							
Ana	lytics									
	Dashboard						Add app			
Spa Free	rk Upgrade \$0/month		Android apps		Download the latest config file	👤 google-servi	ces.json			
	<		com.ofss.digx.mobile.an	droid	This file contains configuration details such as keys and identifiers, for the services you just enabled.					Ŧ



e. Traverse to cloud messaging tab Enable Firebase Cloud Messaging API(V1) by clicking on Manage API in Google Cloud Console.

$\leftarrow$ $\rightarrow$ C $$ console.firebase.	google.com/project/obdx-639e5/settings/cloudmessaging/android:com.ofss.zigbank	2 6	*		0 :
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🔌 Firebase	OBDX -	?	F	۰	0
A Project Overview	Project settings				
Project shortcuts	General Cloud Messaging Integrations Service accounts Data privacy Users and permissions				
🔄 Test Lab					
Crashlytics	Firebase Cloud Messaging API (V1) 🖉 Enabled				
Analytics Dashboard     App Check	Recommended for most use cases. Learn more [2]	₫			
	Sender ID Service Account				
Product categories	1062626365675 Manage Service Accounts [2]				
Build ~			_		

f. Get the Project ID from Project Setting in Firebase console

$\leftrightarrow$ $\rightarrow$ C $\triangleq$ console.fireb	ase.google.com/project/obdx-639e5/settings/general/android:com.ofss.zigbank	☆ ஃ	*	<b>I O</b> :
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と Firebase	OBDX -	• •	F	۰ (
A Project Overview	Project settings			
Project shortcuts	General Cloud Messaging Integrations Service accounts Data privacy Users and permissions			
🕑 Test Lab				
🐔 Crashlytics	Your project			
Analytics Dashboard				
App Check	Project name OBDX 🥕			
C Messaging	Project ID ⑦ obdx-639e5			
Product categories	Project number ① 1062626365675			
Build ~	Default GCP resource location ③ nam5 (us-central)			
Release & Monitor 🗸 🗸	Web API Key AlzaSyBnymFz0dRmembxyXWJt87mS9HdaneE0Gg			
Analytics ~	Environment			
Engage ~	This setting customizes your project for different stages of the app lifecycle			
	Environment type Unspecified 🧨			
Spark Upgrade				
	Public settings			
<	These settings control instances of your project shown to the public		_	

g. Update FCM URL in below table as-

update DIGX\_FW\_CONFIG\_ALL\_B set prop\_value = 'https://fcm.googleapis.com/v1/projects/YOUR\_PROJECT\_ID/messages:send' where prop\_id = 'FCM\_URL';

Add YOUR\_PROJECT\_ID in url which is captured on above step

- h. If proxy address is to be used, provide the same in database as mentioned in point 3.
- i. Generate private key for your service account by using below steps-

- In the Firebase console, open **Settings >** <u>Service Accounts</u>



#### - Click Generate New Private Key, then confirm by clicking Generate Key

You can also follow below google doc -

https://firebase.google.com/docs/cloud-messaging/auth-server#provide-credentials-manually

Sr. No.	Table	PROP_ID	CATEGORY _ID	PROP_VALUE	Purpose
1	DIGX_FW_C ONFIG_VAR _B	FCM	DispatchDeta ils	<server_key></server_key>	Service account json file content captured in above step
2	DIGX_FW_C ONFIG_ALL_ B	FCMKeyStore	DispatchDeta ils	DATABASE or CONNECTOR	Specifies whether to pick server key from database or from connector. Default DB (No change)
3	DIGX_FW_C ONFIG_ALL_ B	Proxy	DispatchDeta ils	<protocol,proxy _address&gt;</protocol,proxy 	Provides proxy address, if any, to be provided while connecting to APNS server. Delete row if proxy not required. Example: HTTP,148.50.60.8



If CONNECTOR is selected in Step 2 update password as below

ORACLE WebLogic Server Ad	ministration Console 12c					
Change Center	🔒 Home Log Out Preferences 🖾 Record Help					
View changes and restarts	Home >Summary of Deployments >com.ofss.digv.connector.var >Roles					
Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.	Create a New Security Credential Happing           Back         Next           Finish         Cancel					
Domain Structure	ETS User Name and Password					
obdx_domain B-Domain Partitions B-Environment Deployments	Configure the ES User Name and Password that you would like to may the WebLopc Server User to: * Indicates required Initia					
Services     Security Realms     Difference of the security realms     Difference of the security     Difference of the security of the s	Enter the EIS User Name: * EIS User Name:	FCM				
	Enter the EIS Password: * EIS Password:					
How do L	* Confirm Password::					
Create outbound credential mappings	Back Neid Finish Gancel					
System Status						
Health of Running Servers as of 10:32 AM						
Failed (0) Critical (0) Overloaded (0) Warning (0) OK (2)						
WebLogic Server Version: 12.2.1.3.0 Copyright (c) 1996.2017. Oracle and/or its affiliates. /	Il rights reserved. and/or its afflitter. Other names may be insdemarks of their respective owners.					

Home



# 5. Build Release Artifacts

- 1. Clean and Rebuild your project in Android Studio.
- 2. In Android Studio, on the menu bar Click on Build -> Edit Build Types -> select release

😨 android - [C:\Users\vpenta\Desktop\17.2 docur	×	- 0 X
Eile Edit View Navigate Code Analyze Re		
🖿 🗑 🖉 🏕 🔉 🗂 🗂 🔍 🔍 🕇 🗕	Properties Signing Flavors Build Types Dependencies	Q. 🖪
android ) 🕑 build.gradle ) SDK Location	debug + Name: release	
n Project v ⊕ ÷ ☆ t+ c Project	release	cordova_plugins.js × 🝺 json.js × 🖃
B         Project         ▼         ⊕         ⊕         Project         Project           B         Project         ▼         ⊕         ⊕         ⊕         Project         Developer Services           Ads         ▶         En resources.nls         ■         ■         ■         ■		
Ads	Debuggable (false)	Gradle
Authentication     Notifications	Jni Debuggable (false) 🔽	
E Configuration.html 6 Modules	Signing Config	
g cordova,js	signing comig	
Cordova_plugins.js	Renderscript Debuggable (false) 🔻	
🔛 index.html 🧃 🔁 ObdxLib	Renderscript Optim Level (3)	
<sup>−</sup> ▶ □ build 6		
8 ► Cordova 7 E Cordovalib 7	Minify Enabled (false)	
	Pseudo Locales Enabled	
i gradie 7	Proquard File	
ObdxLib		
▶ D platform_www 7	Application Id Suffix	
▶ 📴 res 7	Version Name Suffix	
▶ 🕞 src 🛛	Zip Align Enabled (true)	
igitignore		
android.iml e		
월 🏧 android.json 🛛 🕫		
📲 🧕 AndroidManifest.xml 💡		
te mandroid joon a android Manifest.xml a te te t		_
Gardie.properties     Gardie.properties     Gardie.properties		
gradiew.bat		
E gradiew.bat		And
Image: Second		Android Mode
N Settings.gradle		Moo
* 💽 wrapper.gradle		4
🐳 😥 Android Monitor 🛛 🔤 Q: Messages	OK Cancel	1 Event Log 🔄 Gradie Console
	7 chars 73:4	4 LF: UTF-8: Context: < no context> 🚡 🚆
A Run Via 1000 de Mondar O Manager alles Arnalis Disson C 1 C C A Run Via C Via	🔊 💿 🔤 n ta 🎯 alla 🔯 lata 🚑 / con 🗱 dig 🕮 bita 🛷 did : 🚵 ta 🔼 soca 🐔 con 🔲 (today 11.59 AM) - 50:	3:33 PM mode 1 LF: ヘ 回 切 7/24/2017 司

3. Set Minify Enabled -> True & click on Proguard File selection -> Navigate to proguardrules.pro (zigbank\platforms\android\app)

android - [C:\Users\vpenta\Desktop\17.2 docur     File Edit View Navigate Code Analyze Re     Project Structure	×	- 0 ×
🖿 🖽 Ø 🛹 🖈 🖄 🖄 📬 🔍 🙊 + - Properties Signing Flavors Built	d Types Dependencies	Q. []]
Image: andread matrix of the or Project       ×         Image: and the or Project <td< td=""><td>Name release Debuggable (false)  Galaci  Galac</td><td>i condova,pluginc.js X   (ži j.son.js X   -==.2</td></td<>	Name release Debuggable (false)  Galaci  Galac	i condova,pluginc.js X   (ži j.son.js X   -==.2
sege >	Minity Enabled true  Proguard File Program File Program File Version Name Suffix Zrp Align Enabled Insel Ins	
Build.gradle     Bouild.gradle     Bouild.gradle     Bouild.gradle     Bouild.gradle.properties     Proguard-rules.pro     BarcodescannerLib     BarcodescannerLib     Comoracle.bots.client.sdk.android.core-20.3.1	OK Cancel	Artigiti Wedd
	7 chars 73:4	4 LF: UTF-8: Context: <no context=""> a</no>
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- 4. Click on OK -> again click on OK.
- 5. Adding URLs to app.properties.xml (customizations/src/main/res/values/)
  - a. NONOAM (DB Authenticator setup)

SERVER_TYPE	NONOAM
KEY_SERVER_URL	Eg. https://mumaa012.in.oracle.com:18443
WEB_URL	Eg. https://mumaa012.in.oracle.com:18443
SERVER_CERTIFICATE_KEY	Refer point 6.7

b. OBDXTOKEN (Token based mechanism)

SERVER_TYPE	OBDXTOKEN
KEY_SERVER_URL	Eg. https://mumaa012.in.oracle.com:18443
WEB_URL	Eg. https://mumaa012.in.oracle.com:18443
SERVER_CERTIFICATE_KEY	Refer point 6.7

c. OAM Setup (Refer to installer pre requisite documents for OAuth configurations)

SERVER_TYPE	OAM
KEY_SERVER_URL	Eg. https://mumaa012.in.oracle.com:18443
	(This URL must be of OHS without webgate)
WEB_URL	Eg. https://mumaa012.in.oracle.com:18443
KEY_OAUTH_PROVIDER_URL	http://mum00aon.in.oracle.com:14100/oauth2/rest/token
APP_CLIENT_ID	<base64 clientid:secret="" of=""> of Mobile App client</base64>
APP_DOMAIN	OBDXMobileAppDomain
WATCH_CLIENT_ID	<base64 clientid:secret="" of=""> of wearables</base64>
WATCH_DOMAIN	OBDXWearDomain
SNAPSHOT_CLIENT_ID	<base64 clientid:secret="" of=""> of snapshot</base64>
SNAPSHOT_DOMAIN	OBDXSnapshotDomain
LOGIN_SCOPE	OBDXMobileAppResServer.OBDXLoginScope
SERVER_CERTIFICATE_KEY	Refer point 6.7



d. IDCS Setup

SERVER_TYPE	IDCS
KEY_SERVER_URL	Eg. https://mumaa012.in.oracle.com:18443 (This URL must be of OHS without webgate)
WEB_URL	Eg. https://mumaa012.in.oracle.com:18443
KEY_OAUTH_PROVIDER_URL	http://obdx- tenant01.identity.c9dev0.oc9qadev.com/oauth2/v1/token
APP_CLIENT_ID	<base64 clientid:secret="" of=""> of Mobile App client</base64>
WATCH_CLIENT_ID	<base64 clientid:secret="" of=""> of wearables</base64>
SNAPSHOT_CLIENT_ID	<base64 clientid:secret="" of=""> of snapshot</base64>
LOGIN_SCOPE	obdxLoginScope
OFFLINE_SCOPE	urn:opc:idm:myscopes offline_access
SERVER_CERTIFICATE_KEY	Refer point 6.7

6. Domain Based Setup (This is same for OBDX servicing App and Authenticator App)

To use domain based setup please enable below flag in app.properties file -

<string name="DOMAIN\_BASED\_CATEGORIZATION">true</string>

If you are using local UI then enable below flag in config.js(platforms/android/app/src/main/assets/www/framework/js/configurations/config.js) file -

```
domainDeployment: {
```

enabled: true

}

7. Adding chatbot support to mobile application (Optional)

CHATBOT_ID	The tenant ID
CHATBOT_URL	The URL for the ChatApp application in ODA

8. If using http protocol for development add (android:usesCleartextTraffic="true") to application tag of AndroidManifest.xml (on app & obdxwear target)



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b bdxwear	30	android:hardwareAccelerated="true"	P O tobuxwear-inb
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http://www.android.iml	32	android:label="ZigBank" android:usesCleartextTraffic="true"	
android.json	34	android:supportsRtl="true">	
build.gradle	35	<a ctivity<="" td=""><td></td></a>	
gradle.properties	36	android:configChanges="orientation keyboardHidden keyboard	
aradlew	37	android:label="@string/launcher name"	
	38	android:launchMode="singleTop"	
gradlew.bat	39	android:name="com.ofss.digx.mobile.android.MainActivity"	
keystore.jks	40	android:theme="@android:style/Theme.DeviceDefault.NoAction	
local.properties	41	android:windowSoftInputMode="adjustResize">	
project.properties	42	<pre></pre>	
settings.gradle	43	<activity android:name="com.ofss.digx.mobile.android.SplashAct">activity android:name="com.ofss.digx.mobile.android.SplashAct</activity>	Can't use Subversion command line client: svn
wrapper.gradle	4.4	android:configChanges="orientation keyboardHidden keyboard	Probably the path to Subversion executable is
III External Libraries	45	android:label="@string/launcher_name"	wrong. Fix it.
	46	android:launchMode="singleTop" android:theme="@style/SplashTheme"	
	47	android:theme="#style/SplashTheme" android:windowSoftInputMode="adjustResize">	
	49	<pre><intent-filter android:label="@string/app name"></intent-filter></pre>	Platform and Plugin Updates
	Text	Merged Manifest	Android Studio is ready to update.

9. For Generating Signed Apk: To Generate release-signed apk as follows:

On menu bar click on Build -> Generate Signed Apk

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👳 Generate Signed APK		×
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g in Android ▼ ③ ☆ ☆ ? ▼ In app	<ul> <li>- # index.html × # config.js × # app.properties.xml × # AndroidManifest</li> <li>19 <uses-permission <="" android:name="android.permission.WRI" li=""> </uses-permission></li></ul>	
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2. Structure		¢ -
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The	Previous Next Cancel Hep 94/ms 11 ms 72.28 ms 14 5.25 ms 14 5.25 ms	nalNativeBuildTasks()' is obsolete and has been replaced of 2019.

10. If you have an existing keystore.jks file then select choose Existing else click on Create New



👳 Generate Signed API	к ×
Key store path:	C:\Users\adipatel\My Documents\keystore.jks
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Key store <u>p</u> assword:	•••••
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<u>File Edit View Navigate Code Analyze Refactor Build</u> <b>■ android</b> > <b>■: app</b> > <b>■: src</b> > <b>■: main</b> > <b>#:</b> AndroidManifesta	
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11. Select **Build Type** as **Release**, **Signature Version as V1(JAR Signature) and V2(Full APK Signature)** and Change APK Destination folder if you want and click on Finish



🙍 Generate Signed Bundle or APK X	
Destination Folder:	\android\service\workspace\zigbank\platforms\android\app 🔚
	debug release
Build Variants:	
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Signature versions:	✓ V1 ( <u>J</u> ar Signature) ✓ V2 (Full <u>A</u> PK Signature) Signature Help
	Previous <b>Finish</b> Cancel Help

- 12. This will generate APK by the given name and destination folder. Default APK Destination folder is **zigbank\platforms\android\app\release**
- 13. Run the App and select Device or Simulator.
- 14. Repeat same steps (From step 8 and obdxwear as module) for OBDX Wear App for Release Signing. Use proguard-rules.pro from workspace\_installer\zigbank\platforms\android\obdxwear using explorer. The select obdxwear as the module and follow same signing steps with same keystore.
- 15. The application has a config page at launch to enter the URL of the server (for development only). To remove this page, update the config.xml as shown below

The application has config page to add URL. This is for development purpose only and can be removed using below step. (Update content src tag)



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ng ● Project setup: synced successfully at 19/04/19, 3:25 PM	uild: Sync							ά.
	Project setup: synced successfully all	19/04/19, 3:25 PM						385 1

 Application will work on https only. If you want to run application on http then set targetSdkVersion, compileSdkVersion to 30 and buildToolsVersion to 30.0.3 in app's build.gradle(zigbank\platforms\android\app\) and remove remove below code from obdx.conf(config/obdx.conf).

<lfModule mod\_headers.c>

<If "%{HTTP\_USER\_AGENT} =~ /obdx-mobile-android/">

Header edit Set-Cookie ^(.\*)\$ \$1;SameSite=None;Secure

</lf>

<If "%{HTTP\_USER\_AGENT} =~ /obdx-softtoken/">

Header edit Set-Cookie ^(.\*)\$ \$1;SameSite=None;Secure

</lf>

</lfModule>

17. To enable App Widget, please enable below flag in app.properties file:

<bool name="ENABLE\_WIDGET">true</bool>

18. Disable below flag to reset the Biometric Alternate login on Add/Remove Fingerprint from mobile.

<bool name="ALLOW\_FACE\_BIOMETRIC">false</bool>

Note – This reset feature will support only if above flag is false.

19. Maintenance page configs-



**Build Release Artifacts** 

Enable below flag to show maintenance page when server is under maintenance

<string name="SHOW\_MAINTENANCE\_PAGE">true</string>

Also add the status code returned when server is under main in below property-

<string-array name="MAINTENANCE\_PAGE\_STATUS\_CODE">

<item>Your Status Code</item>

</string-array>

Note- You can add multiple status code

20. To disable caching in app, make below flag to flase

<bool name="ENABLE\_CACHING">true</bool>



## 6. OBDX Authenticator Application

- 1. This is an Authenticator Application which is used when bank has enabled Soft Token Authentication as Authentication mechanism for any transaction. This application basically supports one of below authentication:
  - HOTP: Random based Soft Token
  - TOTP: Time based Soft Token
- 2. Users should have this application installed and logged in and PIN is set before initiating any transaction which needs this token.
- 3. Based on the configuration set, user can any time log in with PIN and check the token and use that token for completing any transaction based on "Soft Token Authentication"

### 6.1 Authenticator UI (Follow any one step below)

### 6.1.1 Using built UI

For TOKEN-BASED - Unzip dist.tar.gz directory fromOBDX\_Patch\_Mobile\authenticator\TOKEN-BASED

### 6.1.2 Building UI manually

Extract authenticator\_ui.tar.gz from OBDX\_Patch\_Mobile\authenticator\unbuilt\_ui.

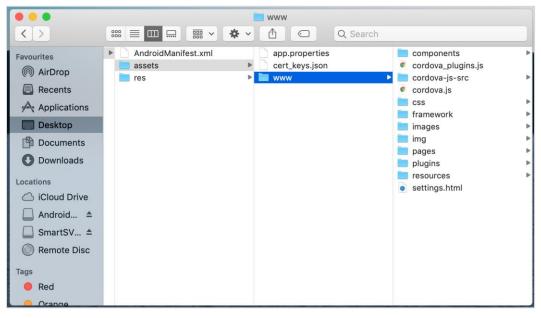
The folder structure is as shown:

		auther	nticator_ui		
< >	· · · ·		Q	Search	
Favourites AirDrop Recents Applications Desktop Downloads Locations Cloud Drive Android $\triangleq$ Red Red Orange Yellow		authentic		Þ	



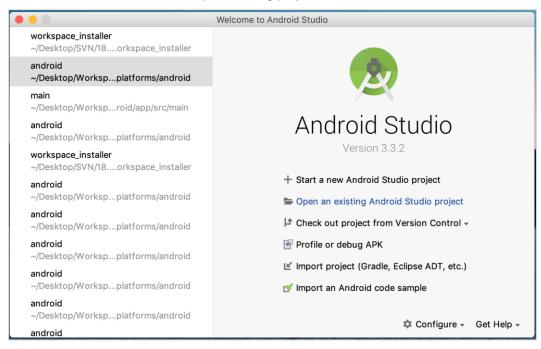
### 6.2 Authenticator Application Workspace Setup

 Copy UI (Directories – components, css, framework, images, pages, resources)from /dist directory to workspace/installer/app/src/main/assets/www/



In case any popup appears, click replace

#### 2. Launch Android Studio and open existing project

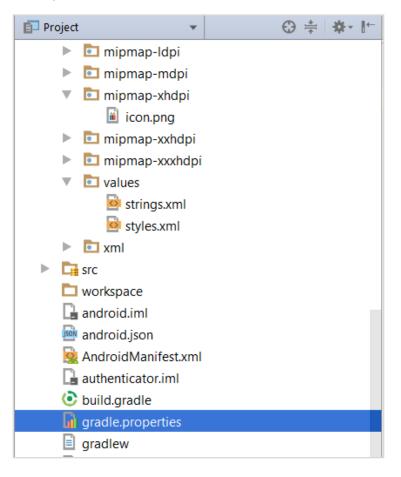




3. Open OBDX\_Installer/workspace\_installer folder in Android Studio.

Favorites     Android     12thApr     workspace_installer     android.json       Recents     App     13thApr     app		workspace_instal	ler 🗘 Q		
Applications       app-lib         Desktop       build.gradle         Documents       cordova         Downloads       gradle.properties         Locations       gradle.waster         ICloud Drive       gradle.properties         SmartSVN ±       local.properties         Remote Disc       proguard-rules.pro         Media       proguard-rules.pro         Photos       workspace_installer.iml	Recents         Applications         Desktop         Downloads         Oownloads         Icloud Drive         Android Stu         SmartSVN         Remote Disc		workspace_installer	app app-lib build build.gradle cordova CordovaLib gradle gradle.properties gradlew gradlew.bat keystore.properties local.properties platform_www proguard-rules.pro project.properties settings.gradle	* * * * * *

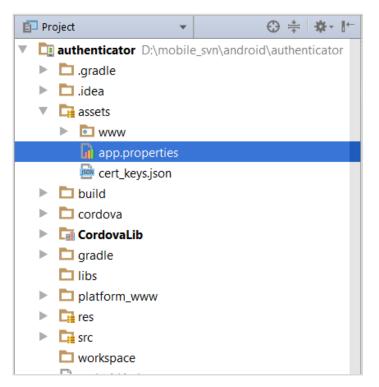
4. Open gradle.properties file and update following properties with relevant proxy address if required

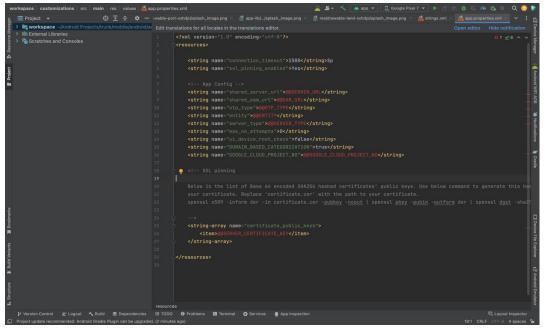




systemProp.http.proxyHost = <proxy\_address>
systemProp.https.proxyPort = <port\_number>

5. Open "assets app.properties" file and update following properties as per requirement







Set OTP type to HOTP/TOTP as per requirement.

Set Server Type to OBDXTOKEN

Set MAX No Attempts greater than 0

Set UI Device root check to true if you want to add check on login button.

**Note**: If selected authentication mechanism is not OAM based then remove "*shared\_oam\_url*" property.

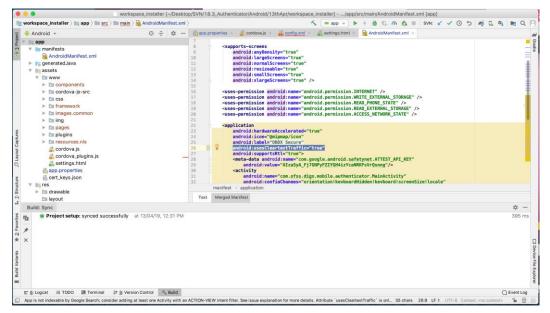
- 6. Click Build  $\rightarrow$  Clean & Build  $\rightarrow$  Rebuild project in Android Studio.
- 7. Click on Build  $\rightarrow$  Edit Build Type  $\rightarrow$  app  $\rightarrow$  release

Enable minify  $\rightarrow$  true

Add progurard file from workspace\_installer/proguard-rules.pro

Click OK

8. If using http protocol for development add (android:usesCleartextTraffic="true") to application tag of AndroidManifest.xml



- 9. For Generating Signed Apk: To Generate release-signed apk as follows:
- 10. On menu bar click on Build -> Generate Signed Apk



	Generate Signed Bundle or APK					
🔿 Android App Bu	O Android App Bundle					
Generate a signe	d app bundle for upload to app stores for the following benefits:					
<ul> <li>Smaller downloa</li> <li>On-demand app</li> <li>Asset-only mod</li> </ul>	o features					
Learn more						
о арк						
Build a signed AF	YK that you can deploy to a device					
? Cancel	Previous					
	Generate Signed Bundle or APK					
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Key store path	/Users/adi/Desktop/Android/keystore					
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Destination Folder:	18.3_Authenticator/Android/13thApr/workspace_installer/app 🗁					
	debug					
	release					
Build Variants:						
	1					
Signature Versions:	V1 (Jar Signature) V2 (Full APK Signature) Signature Help					
? Cancel	Previous Finish					



Click Finish to generate .apk

The application has config page to add URL. This is for development purpose only and can be removed using below step. (Update content src tag)

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IE TODO DI Terminal 5 Build E 6:	Logcat		C Event Lo



## 7. Application Security Configuration

Root Check  $\rightarrow$  Ensure Step 3.1 is completed

1. Open google developer console. Select your app then navigate to

Setup-> App Integrity-> change option of Response Encryption

In the window that appears, click Manage and download my response encryption keys and follow below steps to generate response encryption keys-

a. Create a new private-public key pair. RSA key size must be 2048 bits using below command-

openssl genrsa -aes128 -out your\_path/private.pem 2048

Then use your password phrase for creating private.pem and also use the same password for verifying the private.pem. Then hit the below command.

openssl rsa -in your\_path/private.pem -pubout -out your\_path/public.pem

Enter the same password which you have used while creating private.pem. These two files will now appear on your mentioned path. Then upload the public.pem file on the window which was appeared after clicking on Manage and download my response encryption keys option.Once you upload the public.pem file it will automatically download your\_app\_pkg\_name.enc file. Then hit below command as,

openssl rsautl -decrypt -oaep -inkey your\_path/private.pem -in your\_app\_pkg\_name.enc -out your\_path/api\_keys.txt

Enter the password for private.pem. It will create api\_keys.tx file on your path. It must be consist of VERIFICATION\_KEY and DECRYPTION\_KEY.

2. Maintain this VERIFICATION\_KEY and DECRYPTION\_KEY in **DIGX\_FW\_CONFIG\_ALL\_B** table corresponding to the following keys respectivel:

### PLAY\_INTEGRITY\_ENCRYPTION\_KEY and PLAY\_INTEGRITY\_DECRYPTION\_KEY

An example query will be:

update DIGX\_FW\_CONFIG\_ALL\_B set prop\_value = 'YOUR\_DECRYPTION\_KEY' where prop\_id = 'PLAY\_INTEGRITY\_DECRYPTION\_KEY';

update DIGX\_FW\_CONFIG\_ALL\_B set prop\_value = 'YOUR\_ENCRYPTION\_KEY' where prop\_id = 'PLAY\_INTEGRITY\_ENCRYPTION\_KEY';

3. Similarly, Obtain the same keys for authenticator app by using above step 1 and then maintain those in **DIGX\_FW\_CONFIG\_ALL\_B** table corresponding to the following keys respectivel:

# PLAY\_INTEGRITY\_ENCRYPTION\_KEY\_AUTHENTICATOR and PLAY\_INTEGRITY\_DECRYPTION\_KEY\_AUTHENTICATOR



An example query will be:

update DIGX\_FW\_CONFIG\_ALL\_B set prop\_value = 'YOUR\_DECRYPTION\_KEY' where prop\_id = 'PLAY\_INTEGRITY\_DECRYPTION\_KEY\_AUTHENTICATOR';

update DIGX\_FW\_CONFIG\_ALL\_B set prop\_value = 'YOUR\_ENCRYPTION\_KEY' where prop\_id = 'PLAY\_INTEGRITY\_ENCRYPTION\_KEY\_AUTHENTICATOR';

4. Similarly, we also have to maintain package names of Servicing and Authenticator app in the same table, i.e. **DIGX\_FW\_CONFIG\_ALL\_B** corresponding to the following keys respectively:

#### ANDROID\_SERVICING\_PACKAGE and ANDROID\_AUTHENTICATOR\_PACKAGE

An example query will be:

insert into digx\_fw\_config\_all\_b (PROP\_ID, CATEGORY\_ID, PROP\_VALUE, FACTORY\_SHIPPED\_FLAG, PROP\_COMMENTS, SUMMARY\_TEXT, CREATED\_BY, CREATION\_DATE, LAST\_UPDATED\_BY, LAST\_UPDATED\_DATE, OBJECT\_STATUS, OBJECT\_VERSION\_NUMBER) values ('ANDROID\_SERVICING\_PACKAGE', 'mobileconfig', 'com.ofss.zigbank', 'N', ", 'Stores device id in OUD', 'ofssuser', sysdate, 'ofssuser', sysdate, 'Y', 1,);

SSL Pinning

5. Get the list of Base 64 encoded SHA256 hashed certificates' public keys of server's valid certificates. Use below command to generate this hash for your certificate. Replace '<certificate.der>' with the path to your certificate.

openssl x509 -inform der -in <certificate.der> -pubkey -noout | openssl pkey -pubin -outform der | openssl dgst -sha256 -binary | openssl enc -base64

6. Add the hashed keys generated in point 6 to

**zigbank\platforms\android\customizations\src\main\res\values\app.properties.xml file** in 'certificate\_public\_keys' array. Append this key to 'sha256/' in an <item> tag as shown below. Multiple certificate keys can be added to 'certificate\_public\_keys' array by adding them in <item> tags.

Eg.:



Eg. for multiple certificates (In case OAM/IDCS is used):





</string-array>



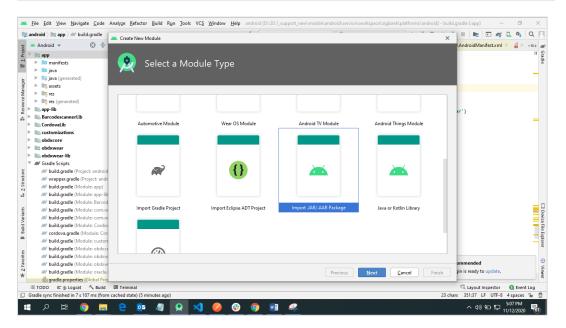
## 8. Live Experience With Jumio Integration

1. Download live experience android sdk from below download link.

https://www.oracle.com/downloads/cloud/oracle-live-experience-downloads.html

2. Import 'oracle.live.api-release' file as a New Module.

New 🕨	New Project	🔨 📄 android:app-lib [assemble] 💌 🗔 Android Wear Square Pie 🔻	🕨 菱 🕼 🖉 式 🔳 🖿 🖭 🍂 🔍 🔍			
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Profile or debug APK	Project from Version Control	.biometric:biometric:1.0.1				
Open Recent	New Module	<pre>k.biometric:biometric:1.0.1 gle.android.gms:play-services-vision:19.0.0'</pre>				
Close Project Link C++ Project with Gradle	Import Module Import Sample	gre.android.gms:piay-services-vision:19.0.0				
Settings     Ctrl+Alt+S     Project Structure     Ctrl+Alt+Shift+S	Android Resource File Android Resource Directory Sample Data Directory	' 'poracle.live.api-release') ij:slf4j-logdj12:1.7.25' ibs/oracle.wsc.feature.clientsdk.android-7.2.1.1-SNAPSHOT.jar')				
Import Settings Export Settings Settings Repository	File  Scratch File  Ctrl+Alt+Shift+Insert  Directory  Ctrl+Alt+Shift+Insert	<pre>ibs/peerconnection_android-84.0.4147.105-d25c2ac74afc25f65d111771 lbs/tyrus-standalone-client-1.13.jar') io.android:core:\${JUMI0_SDK_VERSION}@aar"</pre>	dbfabd6db25d2498.jar') :			
Export to Zip File Convert Module Groups to Qualified Names	C/C++ Source File	io.android:bam:\${JUMIO_SDK_VERSION}@aar" io.android:nv:\${JUMIO_SDK_VERSION}@aar"				
El 20VE All Cul+3	C/C++ Header File	lo.android:nv-mrz:\${JUMIO_SDK_VERSION}@aar" lo.android:nv-nfc:\${JUMIO_SDK_VERSION}@aar"				
Sync Project with Gradle Files     Reload All from Disk     Ctrl+Alt+Y     Invalidate Caches / Restart	Image Asset	io.android:nv-or:\${JUMIO_SDK_VERSION}@aar"				
	Vector Asset Kotlin Script	lo.android:nv-barcode:\${JUMIO_SDK_VERSION}@aar"				
Export to HTML	Rotlin Worksheet	lo.android:nv-barcode-vision:\${JUMIO_SDK_VERSION}@aar"				
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Add to Fgvorites 🕨	🛎 Activity 🕨	<pre>c.cardview:cardview:1.0.0"</pre>				
File Encoding	🛎 Automotive 🕨	<pre>pgle.android.gms:play-services-vision:19.0.0"){</pre>				
Remove BOM	🛎 Folder 🔹 🕨	.android.support', module:'support-v4'				
Associate with File Type	🛎 Fragment 🕨					
Line Separators	🛎 Google 🔹 🕨	<pre>3ag.spongycastle:prov:1.58.0.0"</pre>	-			
Make File Read-Only	🛎 Other 🕨 🕨	prains.kotlin:kotlin-stdlib-jdk7:1.3.72"	-			
Power Save Mode	🛎 Service 🕨	<pre>scuba:scuba-sc-android:0.0.18"</pre>				
Exit	🛎 Ul Component 🔹 🕨	<pre>stec:zoom-authentication:8.12.1@aar"</pre>	Plugin Update Recommended			
build.gradle (Module: oracle.live.api-rele		(dir: 'libs', include: '*.jar') Android Gradle Plugin is ready to u				
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3. Add Live Experience Client ID and Cloud Address in below two properties under app.properties.xml(zigbank\platforms\android\customizations\src\main\res\values)

<string name="LX\_CLIENT\_ID">@@CLIENT\_ID</string>

<string name="LX\_ADDRESS">@@ADDRESS</string>

### Note: Add LX\_ADDRESS without https://

For example. If the LX\_ADDRESS is <u>https://live.oraclecloud.com</u> then add only live.oraclecloud.com.

4. Click Next and navigate to oracle.live.api-release aar file location and click Finish.

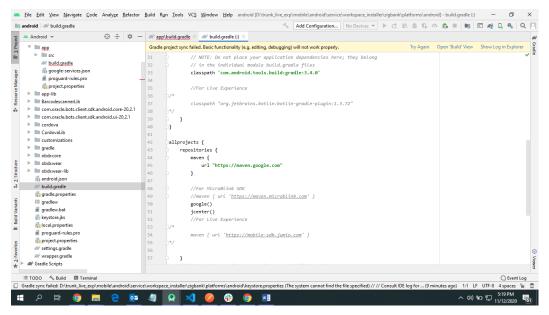
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#### 5. Un-comment the Live Experience SDK's from zigbank\platforms\android\app\build.gradle.



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6. Un-comment the gradle maven files for Live Experience from zigbank\platforms\android\ build.gradle



7. Add LiveExperienceActivity.java folder from AppExtensions\live experience\ at zigbank\platforms\android\app\src\main\java\com\ofss\digx\mobile\android



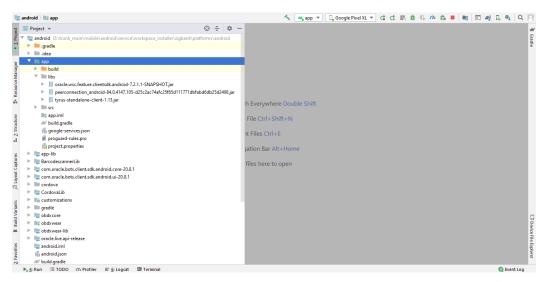
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8. Add libs folder at zigbank\platforms\android\app and copy below jars from downloaded sdk folder in it.

i) oracle.wsc.feature.clientsdk.android-7.2.1.1-SNAPSHOT.jar

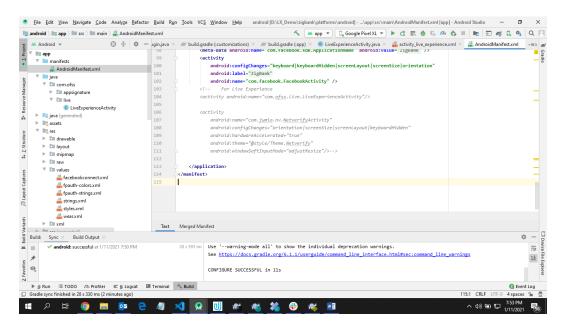
ii) peerconnection\_android-84.0.4147.105-25c2ac74afc25f65d111771dbfabd6db25d2498.jar

iii) tyrus-standalone-client-1.13.jar



9. Un-comment LiveExperienceActivity and NetverifyActivity from zigbank\platforms\android\app\src\main\AndroidManifest.xml







## 9. Adding Custom Cordova Plugin

#### Step 1 -

Create java folder and add yout package under app(zigbank\platforms\android\app)

Create java file under your package which will extends CordovaPlugin

Override execute method with JsonArray as a parameter

Retrive jsonobject from JsonArray and get the data which passed from js file

Example:

public class GetDirectionMapPlugin extends CordovaPlugin {

@Override

public boolean execute(String action, JSONArray args, CallbackContext callbackContext)

throws JSONException {

try{

JSONObject object = args.getJSONObject(0);

String yourKey = object.getString("your\_key");

}catch (Exception e){

```
Log.e(TAG,e.getMessage());
```

}

return true;

}

### Step 2 –

Create plugin file under plugins folder of

www(zigbank\platforms\android\service\workspace\app\src\main\assets\www\plugins) Example:

cordova.define("cordova-plugin-getdirection", function(require, exports, module) {

var exec = cordova.require('cordova/exec');



```
exports.navigate = function(args, successCallback, errorCallback) {
```

cordova.exec(successCallback, errorCallback, "GetDirectionMapPlugin", "direction",

```
[args]);
```

```
};
```

```
});
```

cordova-plugin-getdirection.getDirectionPlugin -> user defined id from

cordova\_plugin.js(zigbank\platforms\android\service\workspace\app\src\main\assets\ww

w\cordova\_plugin.js)

GetDirectionMapPlugin-> name of java plugin class

direction -> action

navigate -> this can be use in js file to this function

### Step 3 -

Make entry of plugin in

cordova\_plugin.js(zigbank\platforms\android\service\workspace\zigbank\platforms\android\app\sr

```
c\main\assets\www) as below ->
```

Example:

{

"id": "cordova-plugin-getdirection.getDirectionPlugin", -> user defined id

"file": "plugins/cordova-plugin-getdirection/www/mapgetdirection.js", -> path of plugin js

file

"pluginId": "cordova-plugin-getdirection",

```
"clobbers": [
```

"window.getDirection" -> this can be used in js file to call plugin

```
]
```

}

Step 4 -



Make entry of java plugin class in

config.xml(zigbank\platforms\android\service\workspace\zigbank\platforms\android\app\src\main\r

es\xml) file of app as below -

Example:

```
<feature name="GetDirectionMapPlugin">
```

<param name="android-package" value="Your\_Plugin\_Java\_Class\_Path" />

</feature>

GetDirectionMapPlugin -> Name of java plugin class

#### Step 5 -

Plugin calling in js file ->

### Example:

window.getDirection.navigate({

originLatLng: origin,

destinationLatLng: location

### })

window.getDirection -> clobber define in the cordova\_plugin.js file

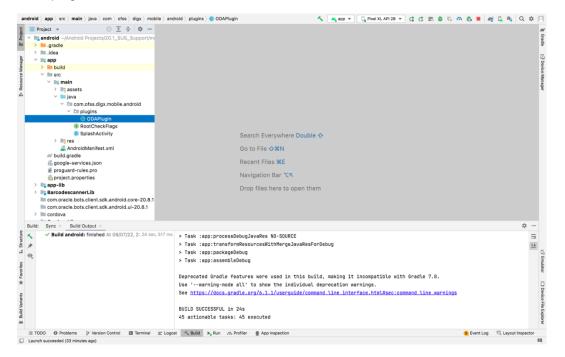
navigate -> name of the function defined in plugin js file



### **10. ODA Chatbot Inclusion**

To enable ODA Chatbot services in the mobile app, the following changes needs to be made:

 Copy ODAPlugin.java from workspace\_installer/AppExtension/oda to workspace\_installer/zigbank/platforms/android/app/src/main/java/com/ofss/digx/mobile/androi d/plugins/

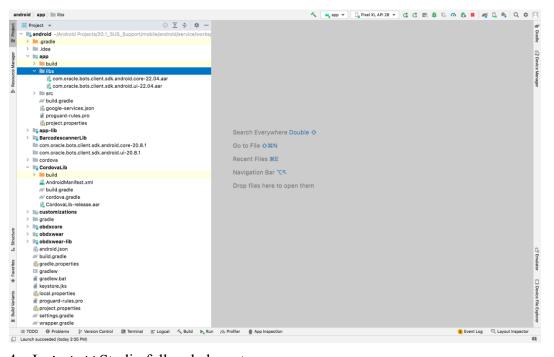


### 2. Download ODA Android sdk from below link-

https://www.oracle.com/downloads/cloud/amce-downloads.html

- 3. Add libs folder at zigbank\platforms\android\app and copy below files from downloaded sdk folder in it.
  - a. com.oracle.bots.client.sdk.android.core-xx.aar
  - b. com.oracle.bots.client.sdk.android.ui-22.04.aar





4. In Android Studio follow below steps-

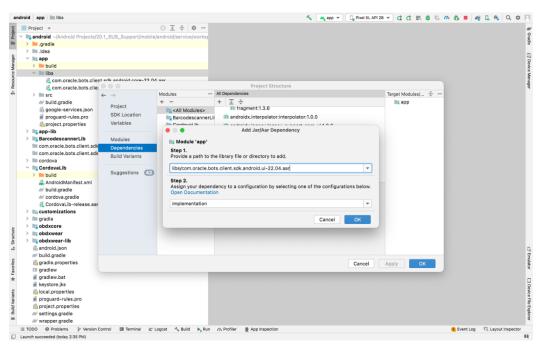
File -> Project Structure -> Dependencies

5. Click on "+" icon and select JR/AAR Dependency and select app module and click Ok.

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6. Add both .aar file paths from step3. Then click Apply and Ok.



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7. Add Chatbot ID and Chatbot URL in app.properties.xml(zigbank\platforms\android\customizations\src\main\res\values)

<string name="CHATBOT\_ID">@@CHATBOT\_ID</string>

<string name="CHATBOT\_URL">@@CHATBOT\_URL</string>



### **11. Live Experience Integration**

1. Download live experience android sdk from below download link.

https://www.oracle.com/downloads/cloud/oracle-live-experience-downloads.html

- Add libs folder at zigbank\platforms\android\app and copy below jars from downloaded sdk folder in it.
  - oracle.wsc.feature.clientsdk.android-7.2.1.1-SNAPSHOT.jar
  - peerconnection\_android-84.0.4147.105-25c2ac74afc25f65d111771dbfabd6db25d2498.jar
  - tyrus-standalone-client-1.13.jar
  - oracle.live.api-release.aar

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 Add Live Experience Client ID and Cloud Address in below two properties under app.properties.xml(zigbank\platforms\android\customizations\src\main\res\values) <string name="LX\_CLIENT\_ID">@ @CLIENT\_ID</string> <string name="LX\_ADDRESS">@ @ADDRESS</string>

Note: Add LX\_ADDRESS without https://

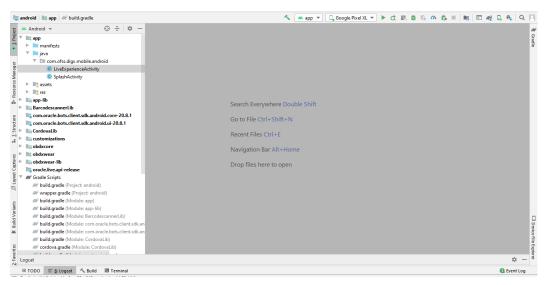
For example. If the LX\_ADDRESS is https://live.oraclecloud.com then add only live.oraclecloud.com.



4. Un-comment the Live Experience SDK's from zigbank\platforms\android\app\build.gradle.

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5. Add LiveExperienceActivtiy.java folder from AppExtensions\live experience\ at zigbank\platforms\android\app\src\main\java\com\ofss\digx\mobile\android



6. Un-comment LiveExperienceActivity from

zigbank\platforms\android\app\src\main\AndroidManifest.xml



## 12. Push Notification 2FA configuration

If Push notification 2fa is enabled at bank side for any transaction then, the screen displays message to wait for the push notification to accept/reject the transaction authentication. The message as well contains a timer of 5 minutes displayed on the UI. This value is set in the UI code. If bank needs to change this value, bank needs to update the value in UI code:

File path: channel/metadata/user-components/push-out-of-band/push-out-of-band/hook.js

Code to be changed: const mins = <<value>>;

Update the value to what bank needs to set it. This value is in minutes.

So, ideally 5 minutes (existing value in base UI code) is an ideal time. Any changes made in this value should satisfy below pre-condition.

- 1. There is an OTP expiration time set in "digx\_fw\_config\_ALL\_b" table.
- 2. Also, there is business policy check set to 10 minutes for validation of the generated 2fa token. Bank can write their own business policy where they can modify the 10 minutes time.

So, the time in UI code should not exceed 10 minutes and OTP expiration time in "digx\_fw\_config\_ALL\_b" table.

