

Usage tKey Android SDK

Once you've installed and successfully instantiated tKey and initialized the service provider in your constructor, you can use it to authenticate your users and generate their tKey shares. Further, you can use various functions exposed by the tKey SDK and its modules to manage different aspects of your users' authentication needs.

ThresholdKey

[^](#)

Natively, the instance of tKey, (i.e., ThresholdKey) returns many functions. However, we have documented a few relevant ones here.

Log In

The login with the tKey SDK is a two-step process. First, you need to trigger the login process by calling the triggerLogin() function of the CustomAuth SDK. Using the returned information, use the initialize() function of the tKey to generate the Threshold Key corresponding to the user.

However, before starting this process, you must set up Custom Authentication on your Web3Auth Dashboard. You must [Create a Verifier](#) from the Custom Auth section of the [Web3Auth Developer Dashboard](#) with your desired configuration.

tip For further information on how to set up and use a verifier, please visit the [Custom Authentication Documentation](#).

Triggering Login and Initializing Service Provider

```
import
```

```
org . torusresearch . customauth . CustomAuth ;
```

```
private
```

```
CustomAuth torusSdk ; MainActivity activity =
```

```
( ( MainActivity )
```

```
requireActivity ( ) ) ;
```

```
CustomAuthArgs args =
```

```
new
```

```
CustomAuthArgs ( "https://scripts.toruswallet.io/redirect.html" , TorusNetwork . TESTNET ,  
"torusapp://org.torusresearch.customauthandroid/redirect" ) ;
```

```
this . torusSdk =
```

```
new
```

```
CustomAuth ( args , activity ) ;
```

selectedLoginVerifier

```
new
```

```
LoginVerifier ( name :
```

```
"Google" , typeOfLogin :
```

```
LoginType . GOOGLE , clientId :
```

```
GOOGLE_CLIENT_ID , verifier :
```

```
GOOGLE_VERIFIER ) ;
```

torusLoginResponseCf

```

torusSdk . triggerLogin ( new
SubVerifierDetails ( selectedLoginVerifier . get.TypeOfLogin ( ) , selectedLoginVerifier . getVerifier ( ) , selectedLoginVerifier .
getClientId ( ) ) . setPreferCustomTabs ( true ) . setAllowedBrowsers ( allowedBrowsers ) ) ;

torusLoginResponseCf . whenCompleteAsync ( ( torusLoginResponse , error )

->

{ if

( error !=

null )

{ renderError ( error ) ; }

else

{ activity . runOnUiThread ( ( )

->

{ String publicAddress = torusLoginResponse . getPublicAddress ( ) ; activity . postboxKey = torusLoginResponse .
getPrivateKey ( ) . toString ( 16 ) ; binding . resultView . append ( "publicAddress: "

+ publicAddress ) ; } ) ; } } ) ;

activity . tkeyStorage =

new

StorageLayer ( enableLogging :

false , hostUrl :

"https://metadata.tor.us" , serverTimeOffset :

2 ) ;

activity . tkeyProvider =

new

ServiceProvider ( enableLogging :

false , postboxKey : activity . postboxKey ) ; Generating a private key is an essential step for the tKey to create its share.
The triggerLogin() function of the CustomAuth is called to accomplish this.

```

SubVerifierDetails

[â](#)

Parameter	Type	Mandatory	Description
typeOfLogin	LoginType	Yes	loginProvider to be used. [google ,facebook ,twitch ,reddit ,discord ,apple ,github ,linkedin ,kakao ,twitter ,weibo ,line ,wechat ,email_password , and jwt]
verifier	String	Yes	Web3Auth verifier name
clientId	String	Yes	login provider's client Id.
jwtParams	String	No	Additional JWT parameters to be passed.
isNewActivity	boolean	No	isNewActivity Boolean
preferCustomTabs	boolean	No	preferCustomTabs
allowedBrowsers	String[]	No	String[] array

CustomAuth

[â](#)

CustomAuth(CustomAuthArgs, activity)

CustomAuthArgs

Parameter	Type	Mandatory	Description
browserRedirectUri	String	Yes	It refers to a page that the browser should use in the login flow, it should have a http or https scheme. e.g. https://scripts.toruswallet.io/redirect.html
redirectUri	String	Yes	It refers to a url for the login flow to redirect into your app, it should have a scheme that is registered by your app, for example com.mycompany.myapp://redirect
network	Network	Yes	Network to be used. [MAINNET ,TESTNET ,CYAN ,AQUA]

Instantiate tKey

```
activity . appKey =  
new  
ThresholdKey ( metadata :  
null , shares :  
null , storage : activity . tkeyStorage , provider : activity . tkeyProvider , transitions :  
null , lastFetchedCloudMetadata :  
null , enableLogging :  
false , manualSync :  
false ) ;
```

Parameters

Parameter Type Description Mandatory metadata Metadata Metadata object containing the metadata details of tKey. No shares ShareStorePolyIdIndexMap Array of ShareStore with PolyId. No storage StorageLayer Takes in the Storage Provider Instance No provider ServiceProvider Takes in the Service Provider Instance No transitions LocalMetadataTransitions Local metadata transitions No lastFetchedCloudMetadata Metadata lastFetchedCloudMetadata No enableLogging boolean This option is used to specify whether to enable logging or not. No manualSync boolean manual sync provides atomicity to your tkey share. If manualSync is true, you should sync your local metadata transitions manually to your storageLayer, which means your storage layer doesn't know the local changes of your tkey unless you manually sync, gives atomicity. Otherwise, If manualSync is false, then your local metadata changes will be synced automatically to your storage layer. If manualSync = true and want to synchronize manually. No Usage activity . postboxKey = torusLoginResponse . getPrivateKey () . toString (16) ;

```
activity . tkeyStorage =  
new  
StorageLayer ( enableLogging :  
false , hostUrl :  
"https://metadata.tor.us" , serverTimeOffset :  
2 ) ;  
activity . tkeyProvider =  
new  
ServiceProvider ( enableLogging :  
false , postboxKey : activity . postboxKey ) ;  
activity . appKey =  
new  
ThresholdKey ( metadata :  
null , shares :  
null , storage : activity . tkeyStorage , provider : activity . tkeyProvider , transitions :  
null , lastFetchedCloudMetadata :  
null , enableLogging :  
false , manualSync :  
false ) ;
```

Initialize tKey

initialize(params?)

[^](#)

Once you have triggered the login process, you're ready to initialize the tKey. This will generate a Threshold Key corresponding to your login provider.

Parameters^{[^](#)}

Parameter Type Description Mandatory importShare String An optional string representing the import share. No input ShareStore An optional ShareStore object representing the input. No neverInitializedNewKey Bool A boolean value indicating whether or not to initialize a new key. No includeLocalMetadataTransitions Bool A boolean value indicating whether or not to include local metadata transitions. No Usage activity . appKey . initialize (activity . postboxKey ,

null ,

false ,

false , result ->

{ }) ;

Get tKey Details^{[^](#)}

getKeyDetails()

ThegetKeyDetails() function provides information about the keys created for a particular user. It includes the user's public key X and Y, as well as the share descriptions, number of required shares, total shares, and threshold.

Usage Sample^{[^](#)}

```
KeyDetails keyDetails = activity . appKey . getKeyDetails ( ) ;
```

```
// Returns a KeyDetails object.
```

```
//Required shares keyDetails . getRequiredShares ( )
```

```
// Threshold keyDetails . getThreshold ( )
```

```
// Total Shares keyDetails . getTotalShares ( )
```

```
// Share Descriptions keyDetails . getShareDescriptions ( )
```

```
// This is a json object in string format From here, you can know whether the user key can be reconstructed or not.
```

- If the value ofkeyDetails.getRequiredShares()
 - is more than zero, it implies that the threshold hasn't been met yet, and as a result, the key
 - can't be reconstructed since the user hasn't generated enough shares.
- When the value ofkeyDetails.getRequiredShares()
 - is 0 or less, the user can reconstruct the key. They can then use the shares to generate their
 - private key and carry out additional operations on the tKey to manage their keys.

Reconstruct Private Key^{[^](#)}

The functionreconstruct() reconstructs the private key of the user from the shares. This function returns the private key of the user once the threshold has been met.

```
activity . appKey . reconstruct ( result ->
```

```
{ //... KeyReconstructionDetails details =
```

```
( ( Result . Success < KeyReconstructionDetails
```

```
    ) result ) . data ; } )
```

```
// public final class KeyReconstructionDetails { // public String getKey() // public ArrayList getSeedPhrase() // public ArrayList  
getAllKeys() // } Example activity . appKey . reconstruct ( result ->
```

```
{ // show loading state if
```

```

( result instanceof
Result . Error )

{ renderError ( ( ( Result . Error < KeyReconstructionDetails
    ) result ) . exception ) ; // hide loading state }

else

if

( result instanceof
Result . Success )

{ requireActivity ( ) . runOnUiThread ( ( )
->

{ try

{ KeyReconstructionDetails details =
( ( Result . Success < KeyReconstructionDetails
    ) result ) . data ; binding . generateNewShare . setEnabled ( true ) ; }

catch

( RuntimeError e )

{ renderError ( e ) ; }

finally

{ // hide loading state } } ) ; } )

```

Generate a New Share^â

The function `generateNewShare()` generates a new share on the same threshold (e.g, 2/3 -> 2/4). This function returns the new share generated.

```

activity . appKey . generateNewShare ( result ->
{ } ) ;

```

Delete a Share^â

The function `deleteShare()` deletes a share from the user's shares. This function returns the updated `shareStore` after the share has been deleted.

```

activity . appKey . deleteShare ( shareIndex , result ->
{ } ) ;

```

Using Modules for Further Operations^â

To perform advanced operations and manipulate keys, `tKey` offers modules that can be utilized. As previously stated in the [initialization](#) section, modules need to be configured beforehand to function properly with `tKey`. After configuration, the respective module's instance is accessible within your `tKey` instance and can be utilized for additional operations.

Modules Please visit the [Modules](#) section to view a comprehensive list of available modules and their respective functions. [Edit this page](#) [Previous](#) [Initialize](#) [Next](#) [Modules](#)