

Aadhaar Face RD App

API Specification Document

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1. Introduction

This is an API specification document to enable interaction between AUA application and UIDAI's FaceRD app.

Aadhaar FaceRd (headless android) apps are released by UIDAI to enable AUA applications to use face authentication using android intents:

1. Secure interface to capture live person image for online Aadhaar auth/eKYC is supported by **CAPTURE intent** api.
2. Secure interface to capture live person image for offline match using UIDAI signed eKYC xml is supported by **STATELESS MATCH intent** api.

Aadhaar FaceRdPlus apps enabled AUA applications to handle face biometric data in accordance to Aadhaar Registered Devices Technical Specification - version 2.0 (Revision 6)[document link](#)

UIDAI has released a sample reference AUA integration project to help developers quick start the headless app intents integration.

1.1 Device Specifications

Feature	Existing	New Procurement
Android API version	Android 7.0 (SDK 24) or greater	Android 9 (SDK 28) or greater
Disabled USB ports	Yes	Yes
Non-Rooted OS (Goolge Play Store Compatible)	Yes	Yes
RAM	2 GB	4+ GB
Geek Benchmark score	>500 (Single Core), >1800 (Multi Core)	>500 (Single Core), >1800 (Multi Core)
Disk Space	32 GB (Minimum 500MB free disk space)	64 GB (Minimum 500MB free disk space)
Display Size (for assisted mode)	8 inches or greater	8 inches or greater
Connectivity	Wifi, USB for FingerPrint	Wifi & GSM; USB for FingerPrint
Camera Resolution	5MP or greater	5MP or greater
Camera Types	Integrated Rear and Front camera	Integrated Rear and Front camera
Support for STQC certified Finger Print device	Yes	Yes
Exclusive USB port for Finger Print	Yes	Yes

Note:

1. Android API version above SDK24, disabled USB ports and Non-Rooted OS are mandatory for the apps to work.
2. The other options are recommendations to get ideal performance and user experience.
3. UIDAI recommends specification under new procurement column if any AUAs are procuring new devices.

1.2 Aadhaar Face RD App flavours

Feature	FaceRd	FaceRdPlus	Comments
CAPTURE intent	Yes	Yes	Captures live person image and returns signed/encrypted PID to enable AUAs to perform online Aadhaar auth/eKYC api calls. Online connectivity is mandatory.
STATELESS MATCH intent	Yes	Yes	Captures live person image and matches against the provided UIDAI signed eKYC xml. Offline mode.
CHECK LIGHTING Intent	Yes	Yes	Check Lighting intent enables AUA apps to find good lightning enviorement and better position to capture required images for FaceRD App. This intent can be used as a diagnostic utility.
CHECK DEVICE Intent	Yes	Yes	AUA apps can get average time for completing the online capture journey on a particular device. This intent can be used as a diagnostic utility.
Download size through playstore (aprox)	~70 MB	~175 MB	
APK availablity	Beta play store	Beta play store	
Intended audience	self/assisted svc use	self/assisted svc use	
Playstore links	https://play.google.com/store/apps/details?id=in.gov.uidai.facerd		

Note: 1. Current recommneded and supported version is FaceRD flavour.

2. CAPTURE Intent

Capture Intent shall enable AUA apps to securely capture a live image to get a signed and encrypted PID data block that can be used for Aadhaar face authentication. The ‘otp’ and ‘wadh’ elements in the capture intent request shall enable AUA apps to do Face+OTP based authentication and eKYC API calls respectively.

2.1 API Contract

Intent action : "in.gov.uidai.rdservice.face.CAPTURE"

Intent request payload key : "request"

Intent request payload value : "pid options"

2.2 Invocation

```
context.startActivityForResult(intent, request-code);
```

Notes:

1. Activities of faceRd app or faceRdPlus app should be started using startActivityForResult() expecting result in onActivityResult for given request-code.
2. If both faceRd and faceRdPlus apps are installed on the same device, AUA app can explicitly mention the fully qualified app component name.
3. Please refer to the sample reference project for any help in integrating with the headless apps.
4. UIDAI recommends to support multiple language feature to enable users to select preferred language to follow the instructions. This option should be enabled in AUA app context.
5. AUA should handle error codes/message with right feedback messages to enhance the user experience. Headless app messages are designed to provide actionable messages that are applicable to both end users of app and backend development/support teams. Below categorization of error codes should help:
 - a. 1xx, 2xx are usually interaction time error codes
 - b. 7xx are end user usage related information messages. End users should be guided appropriately.
 - c. 8xx error codes are related to device. End users should be guided appropriately to take corrective measures.
 - d. 9xx error codes are related to network.
 - e. 97xx, 98xx and 99xx are related to rd app.

2.3 Request

```
<?xml version="1.0" encoding="UTF-8"?>
<PidOptions ver="1.0" env="P"
  <Opts format=0 pidVer="2.0" otp="" wadh="<refer to kyc api>" />
  <CustOpts>
    <Param name="txnId" value="<unique uuid>"/>
    <Param name="language" value="<string>"/>
  </CustOpts>
  <BioData />
</PidOptions>
```

2.3.1 Request Params

Element	M/O	Type	Description
pidOption	M	String	Refer to RD specification section 2.6.2. ver, env are mandatory attributes.

Element	M/O	Type	Description
pidOption:opts	M	String	Refer to specification section 2.6.2. format (0=XML, 1=PROTOBUF), pidVer are mandatory attributes. PROTOBUF is currently not supported. otp and wadh are optional.
pidOptions:custOpts	M	String	name: "txnId" value: new UUID to correlate between Capture intent call. This txnId MUST NOT be same as AUA's auth xml txn Id.
pidOptions:custOpts	O	String	name: "language" value: new string to correlate between Capture intent call. This language will be used to change app language as per input (en:English, hi:Hindi, bn:Bengali, mr:marathi, kn:Kannada, ml:Malayalam, or:Oriya, ta:Tamil, te:Telugu)
BioData	O	String	Currently not supported. Holds list of PidData elements obtained from Finger or Iris RD Services. This feature enables Fusion Authentication between Face and other biometric modalities.

M - Mandatory fields, O - Optional fields

2.4 Response

```

<PidData>
  <Resp errCode="" errInfo="" fCount="" fType="" iCount="" iType=""
    pCount="" pType="" nmPoints="" qScore=""/>
  <DeviceInfo rdsId="" rdsVer="" dpId="" dc="" mi="" mc="" />
  <Skey ci="">encrypted and encoded session key</Skey>
  <Hmac>SHA-256 Hash of Pid block, encrypted and then encoded</Hmac>
  <Data type="X|P"> base-64 encoded encrypted pid block </Data>
  <CustOpts>
    <Param name="txnId" value="<txnId from the request>" />
    <Param name="txnStatus" value="PID_CREATED" />
    <Param name="responseCode" value=""/>
  </CustOpts>
</PidData>

```

2.4.1 Response Params

Element	M/O	Type	Description
pidOption	M	String	Refer to RD specification section 2.6.2.
pidOptions:custOpts	M	String	Param name: "txnId" value: uuid passed in the request.
pidOptions:custOpts	M	String	Param name: "txnSstatus" value: "PID_CREATED".
pidOptions:custOpts	O	String	Param name: "responseCode" value: "uuid received from facerd app".
DeviceInfo	M	String	Device details as per RD specification section 2.6.2.
Skey	M	String	This is used in AUA app to create AUTH xml request. Encrypted (PKI) AES key used to encrypt the PID.
Hmac	M	String	This is used in AUA app to create AUTH xml request. Hash of Pid block, encrypted and then base4 encoded.
Data	M	String	This is used in AUA app to create AUTH xml request. base64 encoded encrypted pid block. This is used in AUA app to create AUTH xml request.

M - Mandatory fields (when request is processes successfully), O - Optional fields

2.5 Error Codes

Error Codes	Error Message
0	"Images captured successfully"
100	"Invalid PidOptions input. XML should strictly adhere to spec"
101	"txnId not present", "Missing transaction id"
102	"Duplicate txnId" (Reserved)
103	"Please install the correct app".
110	"Invalid value for fType" (Reserved)
120	"Invalid value for fCount" (Reserved)
130	"Invalid value for iType" (Reserved)
140	"Invalid value for iCount" (Reserved)
150	"Invalid value for pidVer"
160	"Invalid value for timeout"
170	"Invalid value for posh" (Reserved)
190	"Invalid value for pidFormat"
200	"Invalid Demo structure" (Reserved)

Error Codes	Error Message
210	"Protobuf format not supported"
730	"Capture failed. Please improve lighting and try again."
731	"User abort."
732	"Capture failed. Please move to better lighting."
733	"Capture failed. Please improve lighting and hold still."
734	"Capture failed. Please check background."
735	"UserCapture failed. Please check background."
736	"Capture failed. Please blink during capture."
737	"Capture failed. Please improve lighting."
738	"Capture failed. Please focus towards the camera."
850	"Unsupported application version. Please upgrade."
860	"Application seems to be corrupted. Please reinstall."
861	"Application seems to be corrupted. Please lock your bootloader."
862	"Application seems to be corrupted. Please restore to factory ROM."
863	"Application seems to be corrupted. Please lock your bootloader and restore to factory ROM."
864	"Application seems to be corrupted. Please retry after {n} hrs."
870 to 879	"Application is not allowed to run on this device - {xxx}"
880	"Application is not allowed, please upgrade Google play services."
881	"Unsupported android version. Please upgrade."
890	"Application is not allowed to run on this device due to low resources."
891	"This functionality not supported below Android 8 OS version."
892	"Application will not work on this device as USB Debugging is enabled."
901	"Resource out of memory."
902	"Device not connected to internet."
903	"Failed to connect with server (Timed Out)."
904	"Failed due to network related issues."
9701 to 9799	"Failed to capture image - {xxxx}"
9801 to 9899	"Failed to capture image - {xxxx}"
9901 to 9999	"Failed to capture image - {xxxx}"

3. STATELESS MATCH Intent

Stateless match enables AUA apps to use a singed eKYC XML to do local face match.

3.1 API Contract

Intent action : "in.gov.uidai.rdservice.face.STATELESS_MATCH"

Intent request payload key : "request"

Intent request payload value : "stateless match request in xml string"

3.2 Invocation

```
context.startActivityForResult(intent, request-code);
```

Notes:

1. Activities of faceRd or faceRdPlus app should be started using startActivityForResult() expecting result in onActivityResult for given request-code.
2. If both faceRd and faceRdPlus apps are installed on the same device, AUA app can explicitly mention the fully qualified app component name.
3. Please refer to the sample reference project for any help in integrating with the headless apps.

3.3 Request

```
<statelessMatchRequest requestId = "" signedDocument = ""  
    documentType="" language = ""/>
```

3.3.1 Request Params

Attribute	M/O	Type	Description
requestId	M	String	uuid format without any hyphens. Note: This requestId has no relation with any other API calls.
signedDocument	M	String	Any one of the currently supported (mentioned below) signed document.
documentType	O	String	Document type of signed document sent in requestBy default : Aadhaar(eKYC)
language	O	String	To change app language as per input (en:English, hi:Hindi, bn:Bengali, mr:marathi)

Currently the following signed documents are supported:

Signed Document	documentType
UIDAI signed eKYC XML (Online eKYC service)	Aadhaar(eKYC)
UIDAI signed eKYC XML (Offline eKYC service through uidai website)	Aadhaar(eKYC)
UIDAI signed eKYC XML using latest downloaded eAadhaar QR code	Aadhaar(eKYC)

AUA app should provide an interface to fetch the above signed documents from the user.

3.4 Intent Response

```
<statelessMatchResponse requestId = "" responseCode = ""  
    dateTime = "" errCode = "" errInfo = "" />
```

3.4.1 Response Params

Attribute	M/O	Type	Description
requestId	M	String	requestId from the request.
responseCode	M	String	New uuid against every match request received by Face RD App.
dateTime	M	String	Date and time of the local match in YYYYMMDD'T'hhmmss format.
errCode	M	Integer	For more details see below Error Codes.
errInfo	M	String	For more details see below Error Codes.

3.5 Error Codes

Error Code	Error Message
0	"Match successful"
100	"Invalid Match request XML should strictly adhere to spec"
101	"requestId is missing"
110	"Signed document is invalid"
730	"Capture failed. Please improve lighting and try again."
731	"User abort."
732	"Capture failed. Please move to better lighting."
733	"Capture failed. Please improve lighting and hold still."
734	"Capture failed. Please check background."
735	"UserCapture failed. Please check background."
736	"Capture failed. Please blink during capture."
737	"Capture failed. Please improve lighting."
738	"Capture failed. Please focus towards the camera."
760	"Local stateless match failed."
850	"Unsupported application version. Please upgrade."
860	"Application seems to be corrupted. Please reinstall."
861	"Application seems to be corrupted. Please lock your bootloader."
862	"Application seems to be corrupted. Please restore to factory ROM."
863	"Application seems to be corrupted. Please lock your bootloader and restore to factory ROM."

Error Code	Error Message
864	“Application seems to be corrupted. Please retry after {n} hrs.”
870 to 879	“Application is not allowed to run on this device - {xxx}”
880	“Application is not allowed, please upgrade Google play services.”
891	“This functionality not supported below Android 8 OS version.”
892	“Application will not work on this device as USB Debugging is enabled.”
901	“Resource out of memory.”
9901 to 9999	“Failed to capture image - {xxxx}”

4. DEVICE INFO Intent

Currently DEVICEINFO intent is not supported.

Device Info intent shall share the underlying face rd service signing key related info. Currently this information is part of the CAPTURE intent response.

5. CHECK LIGHTING Intent

Check Lighting intent enables AUA apps to find good lightning enviorement and better position to capture required images for FaceRD App.

5.1 API Contract

Intent action : "in.gov.uidai.rdservice.face.CHECK_LIGHTING"
 Intent request payload key : "request"
 Intent request payload value : "check lighting request in xml string"

5.2 Invocation

```
context.startActivityForResult(intent, request-code);
```

Notes:

1. Activities of faceRd or faceRdPlus app should be started using startActivityForResult() expecting result in onActivityResult for given request-code.
2. If both faceRd and faceRdPlus apps are installed on the same device, AUA app can explicitly mention the fully qualified app component name.
3. Please refer to the sample reference project for any help in integrating with the headless apps.

5.3 Request

```
<checkLighingRequest txnId = "" language = ""/>
```

5.3.1 Request Params

Attribute	M/O	Type	Description
txnId	M	String	Auto generated id which is sent to faceRd app to uniquely identify single transaction
language	O	String	To change app language as per input (en:English, hi:Hindi, bn:Bengali, mr:marathi)

5.4 Intent Response

```
<checkLightingResponse txnId = "" responseCode = ""  
    dateTime = "" errCode = "" errInfo = "" />
```

5.4.1 Response Params

Attribute	M/O	Type	Description
txnId	M	String	txnId from the request.
responseCode	M	String	New uuid against every match request received by Face RD App.
dateTime	M	String	Date and time of the local match in YYYYMMDD'T'hhmmss format.
errCode	M	Integer	For more details see below Error Codes.
errInfo	M	String	For more details see below Error Codes.

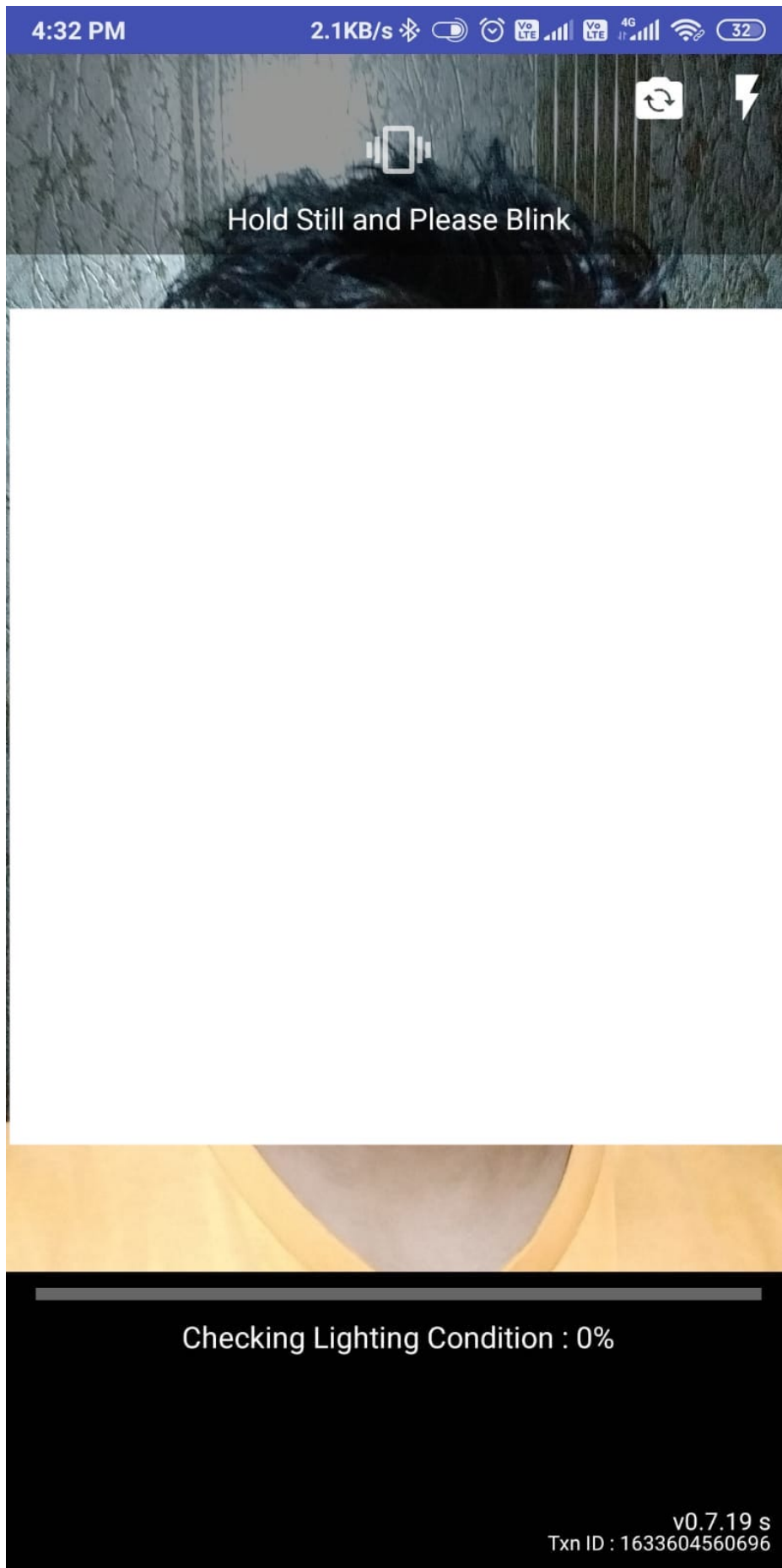
5.5 Error Codes

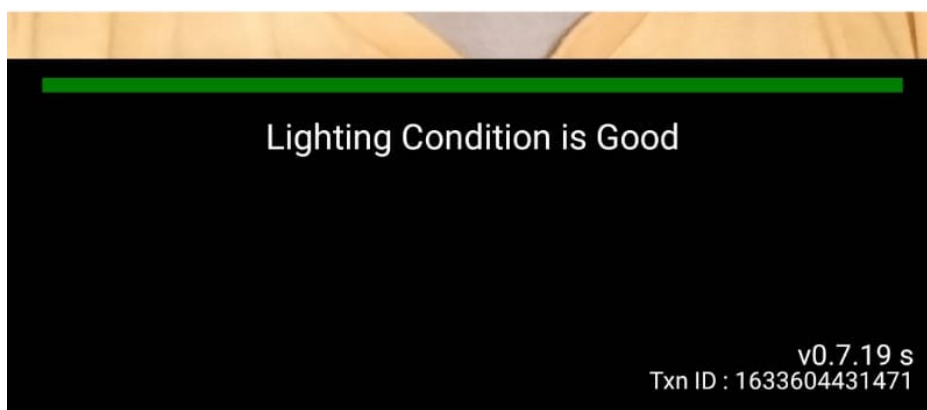
Error Code	Error Message
0	“Success.”
100	“Invalid Match request XML should strictly adhere to spec”
101	“txnId is missing”
731	“User abort”
778	“Unable to find Good Lighting Condition. Please try again...”
850	“Unsupported application version. Please upgrade.”
851	“Application seems to be corrupted. Please reinstall.”
852	“Application is not allowed to run on this rooted device.”
853	“Application is not allowed, please upgrade Google play services.”
855	“This functionality not supported below Android 7 OS version”
901	“Resource out of memory”

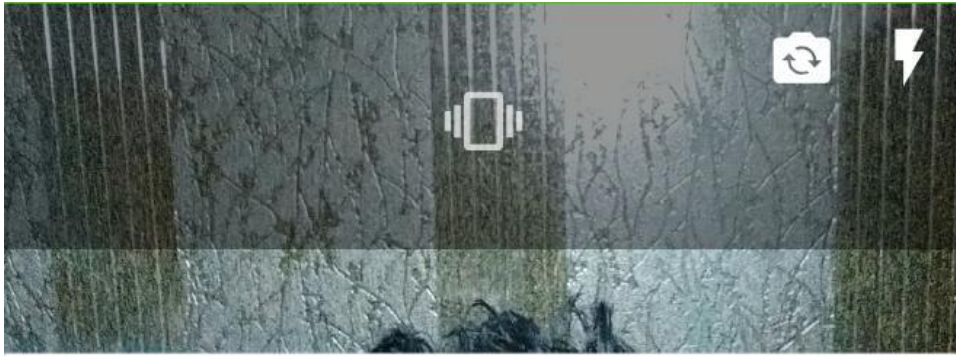
Error Code	Error Message
9901 to 9999	“Failed to capture image - error code: {xxxx}”

5.6 CHECK LIGHT Intent sample screen shots

Below screen shots are indicative reference that users can experience when using check lighting intent. AUA apps are required to expose an option to invoke check lighting intent.







Lighting condition is Moderate

v0.7.19 s
Txn ID : 1633605371520



6. CHECK DEVICE Intent

Check device intent enables AUA apps to get average time for completing the online capture journey

6.1 API Contract

```
Intent action : "in.gov.uidai.rdservice.face.CHECK_DEVICE"
Intent request payload key : "request"
Intent request payload value : "pid options"
```

6.2 Invocation

```
context.startActivityForResult(intent, request-code);
```

Notes:

1. Activities of faceRd app or faceRdPlus app should be started using startActivityForResult() expecting result in onActivityResult for given request-code.
2. If both faceRd and faceRdPlus apps are installed on the same device, AUA app can explicitly mention the fully qualified app component name.
3. Please refer to the sample reference project for any help in integrating with the headless apps.

6.3 Request

```
<checkDeviceRequest txnId = "" env = "" language = ""/>
```

6.3.1 Request Params

Attribute	M/O	Type	Description
txnId	M	String	Auto generated id which is sent to faceRd app to uniquely identify single transaction
env	M	String	env are mandatory attribute, which refer to stage (S), PreProd (PP) and Prod (P) etc
language	O	String	To change app language as per input (en:English, hi:Hindi, bn:Bengali, mr:marathi)

M - Mandatory fields, O - Optional fields

6.4 Response

```
<checkDeviceResponse txnId = "" responseCode = ""  
    dateTime = "" errCode = "" errInfo = "" totalTime = "" success = "" />
```

6.4.1 Response Params

Attribute	M/O	Type	Description
txnId	M	String	txnId from the request.
responseCode	M	String	New uuid against every match request received by Face RD App.
dateTime	M	String	Date and time of the local match in YYYYMMDD'T'hhmmss format.
errCode	M	Integer	For more details see below Error Codes.
errInfo	M	String	For more details see below Error Codes.
totalTime	M	String	For caputre journey average time
success	M	String	For success completion of capture journey

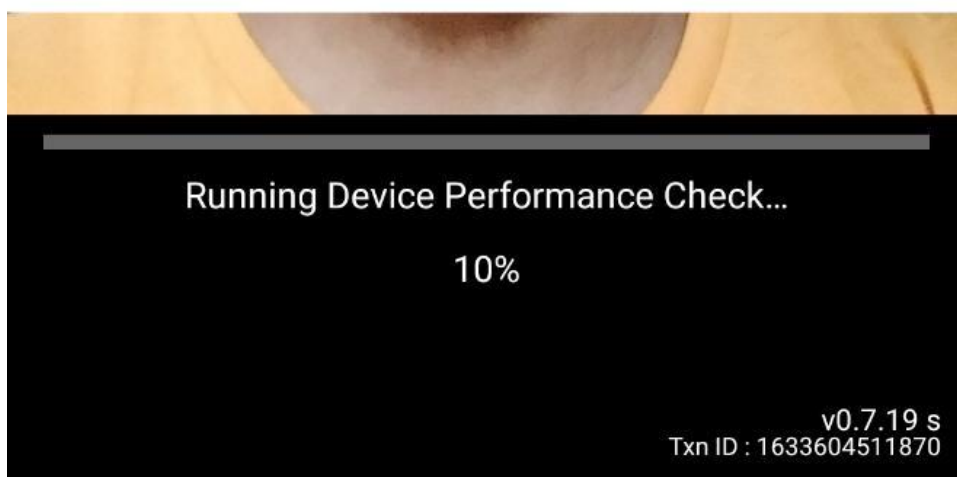
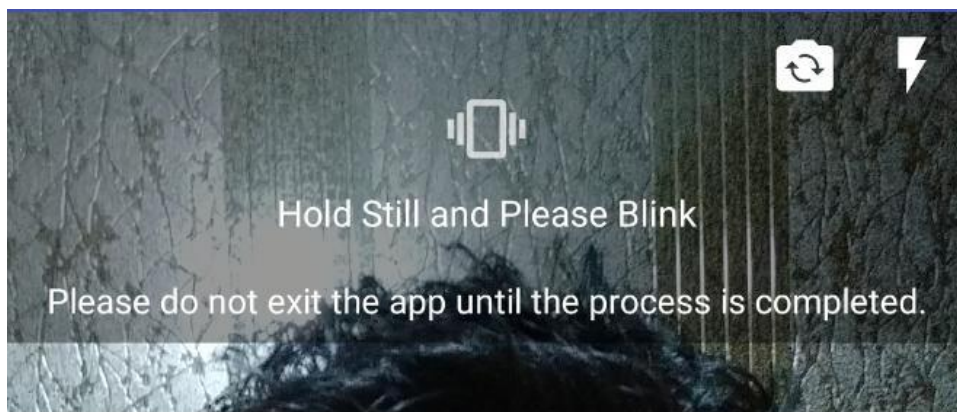
M - Mandatory fields (when request is processes successfully), O - Optional fields
6.5 Error Codes

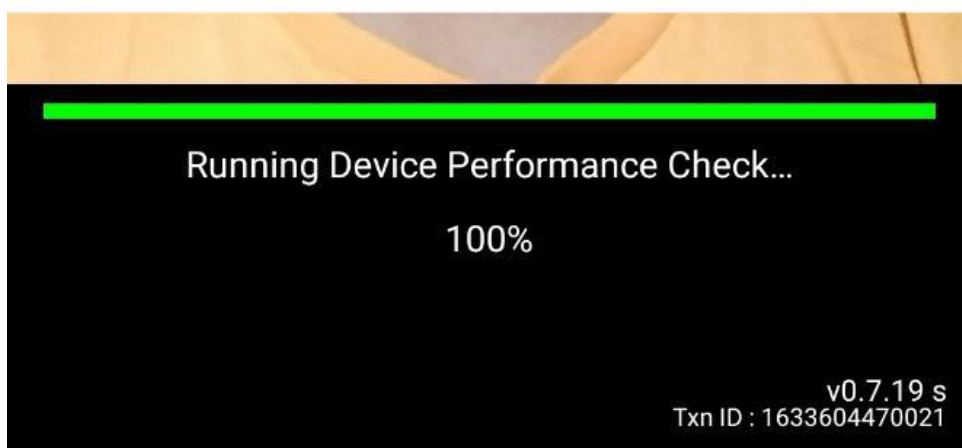
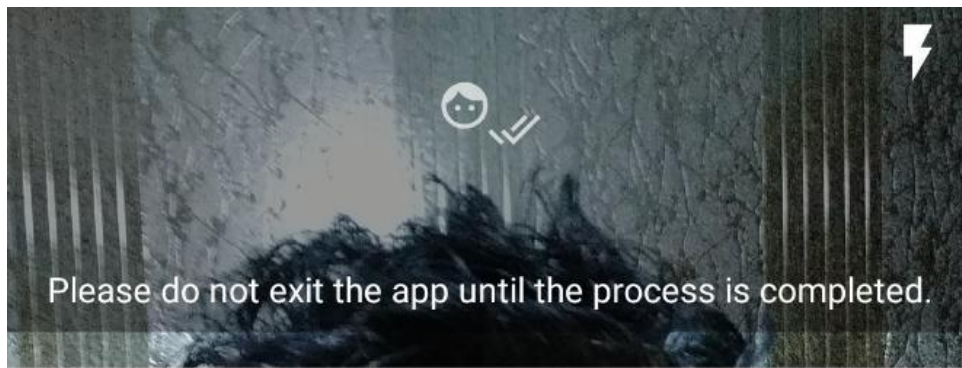
Error Codes	Error Message
0	"Success"
101	"txnId not present", "Missing transaction id"
102	"Duplicate txnId" (Reserved)
731	"User abort"
850	"Unsupported application version. Please upgrade."
851	"Application seems to be corrupted. Please reinstall."
852	"Application is not allowed to run on this rooted device."
853	"Application is not allowed, please upgrade Google play services."
854	"Application is not allowed to run on this device due to low resources."
855	"This functionality not supported below Android 7 OS version"
856	"Application will not work on this device as USB Debugging is enabled"
880	" " (Reserved)
881	" " (Reserved)

Error Codes	Error Message
901	“Resource out of memory”
902	“Device not connected to internet”
903	“Failed to connect with server (Timed Out)”
904	“Failed due to network related issues”
9701 to 9799	“Failed to capture image - error code: {xxxx}”
9801 to 9899	“Failed to capture image - error code: {xxxx}”
9901 to 9999	“Failed to capture image - error code: {xxxx}”

6.6 CHECK DEVICE Intent sample screen shots

Below screen shots are indicative reference that users can experience when using check device intent. AUA apps are required to provide an option to invoke check device intent in AUA apps.







Check Device Performance

Estimated time to do face
authentication on this device is : 7
seconds.

OK