

IRAS API SERVICES INTERFACE SPECIFICATIONS

Corppass Authentication

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Version Control

Version History

Revision Date	Version Number	Change Log Summary
16 Jul 2020	1.1	Updated Specifications to align with new template.
2 Sep 2020	1.2	Included scope for e-stamping API. Included samples for both Sandbox and Production environments.
6 Oct 2020	1.3	Included scope for Submission of Commission Records API. Update scope and callback url requirements (i.e case-sensitive).
19 Apr 2021	1.4	Updated Specifications to align with Singpass/Corppass brand refresh.

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1. Introduction

The Inland Revenue Authority of Singapore (IRAS) provides application programming interface (API) services to allow application developers to submit and retrieve tax related matters using HTTP requests. Most of the APIs will be in the form of a JSON web service which reduces client/server coupling and thus enabling easier integration between IRAS' services with external developers.

While some services require a simple GET, others may be secured and require credentials that can be passed via HTTP header parameters which are as follows:

X-IBM-Client-Id	String containing the client ID of the application invoking IRAS API. This value will be provided to the application vendor by IRAS. E.g. a1234b5c-1234-abcd-efgh-a1234b5cdef
X-IBM-Client-Secret	String containing the client secret of the application invoking IRAS API. This value will be provided to the application vendor by IRAS. E.g. a12345bC67e8fG9a12345bC67e8fG9a12345bC67e8fG9

This document serves as a guide for developers to consume IRAS API services.

2. Registration

Developers are required to test APIs in the Sandbox environment first, before using them in Production. Create a developer account at https://apisandbox.iras.gov.sg/ to subscribe to IRAS APIs for Sandbox Testing, and a developer account at https://apiservices.iras.gov.sg/ to subscribe to IRAS APIs for Production use.

Note: In order for IRAS to identify your API subscriptions, please enter your details as follows when creating an account:

- "First name" field: To enter "Name of organisation";
- "Last name" field: To enter "Tax Reference No. of organisation"

Step 1: Create Account

- Create an account at the IRAS API Marketplace with your personal particulars. An autogenerated notification email will be sent to you.
- After logging into your new account, click on your Username at the top-right corner of the page > My Organization > Edit organization.

Note: Organization name should reflect your actual company / organisation name (followed by the ROC or UEN where applicable), e.g. ABC Pte Ltd_201712345X.

* Take note of the underscore after the company / organisation name

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Step 2: Register App

- Click on Apps on the Menu Bar > Register New Application
- Ensure that the App Title is recognisable by software users, as they will be asked to give consent for the App to call this API. Refer to Appendix 7.3 for a sample Consent Page.

Step 3: Subscribe

- Click on API Products > Select the Singpass Authentication API Product > Click Subscribe
- Select your registered App > Click Subscribe

A computer-generated email will be sent to the subscriber's email account for account activation of the API Marketplace.

Refer to https://go.gov.sg/iras-apiuserguide for more details on how to get started.

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3. API Services

Name of API Service	Description	Endpoint
CorpPassAuth	This API can be used to retrieve Corppass' Uniform Resource Locator (URL) in order to obtain the authorisation code from Corppass.	For Sandbox Testing: https://apisandbox.iras.gov.sg/iras/sb /Authentication/CorpPassAuth For Production Usage: https://apiservices.iras.gov.sg/iras/prod /Authentication/CorpPassAuth
CorpPassToken	This API can be used to retrieve the access token.	For Sandbox Testing: https://apisandbox.iras.gov.sg/iras/sb /Authentication/CorpPassToken For Production Usage: https://apiservices.iras.gov.sg/iras/prod /Authentication/CorpPassToken

Refer to Appendix 7.2 for the high-level interaction flow.

3.1 Network Security

The API endpoint has to be triggered from a Server-to-Server connection. Transport Layer Security (TLS) and IP Whitelisting will be used to secure end-to-end communications between the server invoking the API and IRAS API Gateway.

Your server, software or application must be able to:

- 1. Support the following protocols: HTTP/2, TLS 1.2/1.3, and
- 2. Trigger HTTP/GET and HTTP/POST requests.

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3.2 Message Security

The following parameters must be populated in the HTTP header:

X-IBM-Client-Id	String containing the client ID of the application invoking IRAS API. This value will be provided to the application vendor by IRAS.
X-IBM-Client-Secret	String containing the client secret of the application invoking IRAS API. This value will be provided to the application vendor by IRAS.
Content-Type	application/json

Sample HTTP GET Request (Sandbox)

GET

/iras/sb/Authentication/CorpPassAuth?scope=EmpIncomeSub+CITFormCSSub&ca llback_url=https%3a%2f%2fwww.yourdomain.com%2fcallback&tax_agent=false&state=390b25fa-4427-4b10-9ae2-34d6e0cd91a1

HTTP/1.1

Host: https://apisandbox.iras.gov.sg

X-IBM-Client-Id: 40e7be2f-0b4f-4985-bcc9-cdfd38c5b5c8

X-IBM-Client-Secret: vD0kR8iT3kR1hB8dP1gS3hC4lJ1aA1fV4p00uW0hI3uI5bW4rU

Content-Type: application/json

Accept: application/json

Sample HTTP GET Request (Production)

GET

/iras/prod/Authentication/CorpPassAuth?scope=EmpIncomeSub+CITFormCSSub&callback_url=https%3a%2f%2fwww.yourdomain.com%2fcallback&tax_agent=false&state=390b25fa-4427-4b10-9ae2-34d6e0cd91a1

HTTP/1.1

Host: https://apiservices.iras.gov.sg

X-IBM-Client-Id: 40e7be2f-0b4f-4985-bcc9-cdfd38c5b5c8

X-IBM-Client-Secret:

vD0kR8iT3kR1hB8dP1qS3hC4lJ1aA1fV4pQ0uW0hI3uI5bW4rU

Content-Type: application/json

Accept: application/json

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3.3 General Usage

A Callback URL is required to redirect users to the Consumer Software App after Corppass login (via Singpass Login page) and consent. Refer to Appendix 7.4 for Callback URL Requirements.

Each API request payload is limited to 2 MB in total data size.

3.4 Sandbox Usage

API services in the Sandbox environment are designed to mimic the Production environment so that developers can perform integration tests on the API before consuming actual data from the Production environment.

After you have registered your App and subscribed to this API, proceed to register your Callback URLs via https://go.gov.sg/apicallback. The turnaround time for this process is 1-2 weeks. IRAS will notify you via email once your Callback URLs have been registered.

Refer to Appendix 7.6 for the list of available test entities for Corppass Login.

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3.5 Production Usage

Upon successful completion of sandbox testing, please inform digital_partnerships@iras.gov.sg. You will also be required to register your Callback URLs via https://go.gov.sg/apicallback for the production environment, if you haven't done so.

Thereafter, we will inform you to subscribe to the respective APIs in production for IRAS' approval. The turnaround time for this process is 1-2 weeks. IRAS will notify you via email once your subscription request has been approved and your Callback URLs have been registered.

Approval **is required** to use this service in the Production environment. Subscribe to the API Plan to request for approval. An email notification will be sent to your registered email when your request has been processed. If approval is granted by IRAS, the client application can successfully consume the API.

Use of IRAS API(s) are governed by the Additional API Terms of Use found at the API Marketplace.

The use of IRAS API(s) in the Production environment is only intended for the purpose as indicated in the API service description. Any other forms of use, **including all forms of tests**, are strictly prohibited. In the event such activities are found to have occurred in the Production environment, you will be deemed to have breached the API Terms of Use, which may result in the suspension or termination of your account.

3.6 Common Interface Information

- JSON is case sensitive by specifications.
- All date strings are to be represented in compliance to the ISO-8601 standard.
- All string fields are subject to validation of the following acceptable characters that is allowed (in red):
 - [a-zA-Z0-9'@#()\-,./&+_] (Note: whitespace is included)
- All properties follow the camel-case convention.
- Unless stated as optional, all JSON object properties must be specified.
- Unless otherwise specified, all JSON services are invoked using HTTP verb POST.
- All input data format are as specified like the following:

Data Type and Size	Description	Example
String(12)	A string containing maximum 12 characters.	"180084010K"
Number(4)	A numeric value containing maximum 4 whole numbers.	1990

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3.7 **Common Response Payload**

All response payloads share the following common fields:

Parameter Name	Data Type	Description
data	Object	The data property will be populated differently based on the API that is being invoked.
returnCode	Integer	 10 : Success - The request was successfully processed. 20 : Warning - The request was successfully processed. However, there are non-fatal issues. Please refer to the "info" object for diagnostic information. 30 : Failure - The request was not processed. Refer to "info" object for error information.
info	Object	This complex object holds any diagnostic information that will allow developers to debug their failed requests.
info.message	String	Diagnostic message in the event of warning or error.
Info.messageCode	Integer	Integer code signifying the type of error or warning. 850300: Request object is null – The incoming JSON request is null. 850301: Arguments error – There is an error with one of the arguments provided. 850302: Generic error – There is an exception within the service. 850303: Service is inactive. 850304: Service is not authorized for usage based on the provided credentials. 850305: Invalid test user – The input fields provided are not valid for sandbox testing.
info.fieldInfoList	Array	An array for FieldInfo objects.
info.fieldInfoList.field	String	Name of the field that resulted in a warning / error.
Info.fieldInfoList.message	String	Diagnostic message provided to aid consumer's developers. Refer to Section 6 for a list of diagnostic messages.

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4. CorpPassAuth API Service

The CorpPassAuth endpoint has to be triggered from a Server-to-Server connection using **HTTP GET request**. The response will be a URL which should be returned to the client for redirection to Singpass Login Page. The intended result after Singpass Login is to obtain the authorisation code to invoke the CorpPassToken API service to retrieve the access token.

The following are the 5 steps involved to obtain the authorisation code from the Consent Platform:

- 1. Invocation of the CorpPassAuth API service from IRAS (using HTTP GET request)
- 2. IRAS returns the Singpass Login Page's URL as part of the response message
- 3. Software redirects software user to the Singpass Login Page
- 4. Software user enters his/ her Singpass credential
- 5. Software is redirected to Corppass Consent Page for software user to accept the agreement

4.1 API Endpoint

Method	Endpoint
GET	/Authentication/CorpPassAuth

4.2 Request Payload

Parameter Name	Data Type	Description
scope	String	The list of functions that the external application is requesting for.
		Refer to Appendix 7.5 for the list of Scopes.
callback_url	String	The callback url is required to redirect the authorisation code to the consumer software, after the user has completed login and consent.
		The callback url must be registered with IRAS prior to usage.
		Refer to Appendix 7.4 for Callback URL Requirements.
tax_agent	Boolean	Boolean Indicator to indicate type of transaction.
		If tax_agent = true, user is transacting as a tax agent for its business client.
		If tax_agent = false, user is transacting for its own business tax matters.
state	String	Identifier to reconcile request and response. This will be sent back via the callback url. The identifier should be unique.

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Consumer Software Server must use this value to validate the state returned by consent platform via callback_url.

Request Payload Sample (Sandbox)

GET

/iras/sb/Authentication/CorpPassAuth?scope=EmpIncomeSub+CITFormCSSub&callback_url=https%3a%2f%2fwww.yourdomain.com%2fcallback&tax_agent=false&state=390b25fa-4427-4b10-9ae2-34d6e0cd91a1

HTTP/1.1

Host: https://apisandbox.iras.gov.sg

X-IBM-Client-Id: 40e7be2f-0b4f-4985-bcc9-cdfd38c5b5c8

X-IBM-Client-Secret:

vD0kR8iT3kR1hB8dP1qS3hC4lJ1aA1fV4pQ0uW0hI3uI5bW4rU

Content-Type: application/json

Accept: application/json

Request Payload Sample (Production)

GET

/iras/prod/Authentication/CorpPassAuth?scope=EmpIncomeSub+CITFormCSSub&callback_url=https%3a%2f%2fwww.yourdomain.com%2fcallback&tax_agent=false&state=390b25fa-4427-4b10-9ae2-34d6e0cd91a1

HTTP/1.1

Host: https://apiservices.iras.gov.sg

X-IBM-Client-Id: 40e7be2f-0b4f-4985-bcc9-cdfd38c5b5c8

X-IBM-Client-Secret:

vD0kR8iT3kR1hB8dP1qS3hC4lJ1aA1fV4pQ0uW0hI3uI5bW4rU

Content-Type: application/json

Accept: application/json

4.3 Response Payload

Parameter Name	Data Type	Description
data	Object	The object payload containing the
		information after successful invocation
data.url	String	Corppass Login Page's url
returnCode	As per Sect	ion 3.7
Info		
info.message		
info.messageCode		
info.fieldInfoList		
info.fieldInfoList.field		
info.fieldInfoList.message		

Successful response payload sample

```
"returnCode":"10",
   "data":{
    "url":"https://api.myinfo.gov.sg/serviceauth/iras-
    cp/v1/authorise?response_type=code&client_id=YourRegisteredClientID&s
    cope=EmpIncomeSub&state=test&appName=YourRegisteredAppName&redirect_u
    ri=https%3a%2f%2fyourdomain.com%2fcallback&esrvcID=E-IRIN-CP"
    },
    "info":{
        "fieldInfoList":[]
    }
}
```

Error response payload sample

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4.4 Response (Singpass Login Page)

The response given by Corppass will be a **HTTP temporary redirect (302)** response with the Corppass Consent Page URL and the following parameters in the redirection url.

Parameter Name	Data Type	Description
client_id	String	Unique identifier for external application
scope	String	The list of functions that the external application is requesting for.
		Refer to Appendix 7.5 for the list of Scopes.
callback_url	String	The callback url is required to redirect the authorisation code to the consumer software, after the user has completed login and consent. The callback url must be registered with IRAS prior to usage.
		Refer to Appendix 7.4 for Callback URL Requirements.
state	String	Identifier to reconcile request and response. This will be sent back via the callback url. The identifier should be unique.

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4.5 Response (Corppass Consent Page)

The response given by Corppass will be a **HTTP temporary redirect (302)** response with the given callback URL and the following parameters. The authorisation code has to be received by a server for the subsequent token API service invocation.

Parameter Name	Data Type	Description
code	String	Authorisation Code
state	String	Identifier to reconcile request and response. Consumer Software Server are to ensure that the value is the same as the one originally requested in <u>Section 4.2</u>

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5. CorpPassToken API Service

The CorpPassToken endpoint has to be triggered from a Server-to-Server connection using **HTTP POST request.** The response will be the access token that is necessary for authorised functional API service invocation.

5.1 API Endpoint

Method	Endpoint
POST	/Authentication/CorpPassToken

5.2 Request Payload

Parameter Name	Data Type	Description
scope	String	The list of functions that the external application is requesting
		for.
		Refer to Appendix 7.5 for the list of Scopes.
callback_url	String	The callback url must be registered with IRAS prior to usage.
		Refer to Appendix 7.4 for Callback URL Requirements.
code	String	Authorisation Code
state	String	Identifier to reconcile request and response. This value must
		be the same as the state requested in 3.2.1.

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Request Header Sample (Sandbox)

```
POST /iras/sb/Authentication/CorpPassToken
HTTP/1.1
Host: https://apisandbox.iras.gov.sg
X-IBM-Client-Id: 40e7be2f-0b4f-4985-bcc9-cdfd38c5b5c8
X-IBM-Client-Secret:
vD0kR8iT3kR1hB8dP1qS3hC4lJ1aA1fV4pQ0uW0hI3uI5bW4rU
Content-Type: application/json
Accept: application/json
```

Request Header Sample (Production)

```
POST /iras/prod/Authentication/CorpPassToken
HTTP/1.1
Host: https://apiservices.iras.gov.sg
X-IBM-Client-Id: 40e7be2f-0b4f-4985-bcc9-cdfd38c5b5c8
X-IBM-Client-Secret:
vD0kR8iT3kR1hB8dP1qS3hC4lJ1aA1fV4pQ0uW0hI3uI5bW4rU
Content-Type: application/json
Accept: application/json
```

Request JSON payload sample

```
{
    "scope": "EmpIncomeSub+CITFormCSSub",
    "callback_url": "https%3a%2f%2fwww.yourdomain.com%2fcallback",
    "code": "322c89af-3921-9f8e-1ab3-87f8de0bc8ce",
    "state": "390b25fa-4427-4b10-9ae2-34d6e0cd91a1"
}
```

5.3 Response Payload

The response will be returned with the access token. This token has to be passed as additional parameters for functional API service invocation that requires this access token.

Note: The Corppass token is valid for 30 mins only.

Parameter Name	Data Type	Description
data	Object	The object payload containing the information
		after successful invocation
data.token	String	Access Token
data.scope	String	List of scope(s) granted access delimited by '+'
returnCode	As per Sect	ion 3.7
Info		
info.message		
info.messageCode		
info.fieldInfoList		
info.fieldInfoList.field		
info.fieldInfoList.message		

Successful response payload sample

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Successful response payload sample with warning

```
"returnCode":"20",
  "data":{
    "token":
"eyJhbGciOiJSU0EtT0FFUCIsImVuYyI6IkEyNTZHQ00ifQ.OKOawDo13qRp2ojaHV7LF
pZcqV7T6DVZKTyKOMTYUmKoTCVJRqckCL9kiMT03JGeipsEdY3mx etLbbWSrFr05kLzc
Sr4qKAq7YN7e9jwQRb23nfa6c9d-
StnImGyFDbSv04uVuxIp5Zms1qNxKKK2Da14B8S4rzVRltdYwam lDp5XnZAYpQdb76Fd
IKLaVmggfwX7XWRxv2322i-
vDxRfqNzo tETKzpVLzfiwQyeyPGLBIO56YJ7eObdv0je81860ppamavo35UqoRdbYaBc
oh9OcfylOr66oc6vFWXRcZ ZT2LawVCWTIy3brGPi6UklfCpIMfIjf7iGdXKHzg.48V1
ALb6US04U3b.5eym8TW c8SuK0ltJ3rpYIzOeDQz7TALvtu6UG9oMo4vpzs9tX EFShS8
iB7j6jiSdiwkIr3ajwOzaBtOD A.XFBoMYUZodetZdvTiFvSkO",
    "scope": "EmpIncomeSub"
  "info":{
    "messageCode": "850301",
    "message": "Arguments Error",
    "fieldInfoList":[
         "field": "scope",
         "message": "One or more scopes unauthorised"
    1
  }
```

Error response payload sample

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6. List of Diagnostic Messages

The table below contains the list of diagnostic messages that would be returned as a response in case of failure during the processing of the Corppass Authentication Request. These diagnostic messages will be part of the information within the **info.fieldInfoList** array (found in <u>Section 3.7</u>).

Field	Message	Remarks
callback_url	Value cannot be null, empty, or white space	The callback_url entered is empty or invalid.
	Callback_url mismatch with client registered callback url	The callback_url must be registered with IRAS. It is case-sensitive and must be url-encoded.
scope	Value cannot be null, empty, or white space	The scope entered is empty or invalid.
	Scope mismatch with client registered scope	The scope entered is either incorrect or have not been granted access by IRAS.
	One or more scopes unauthorised	The user is not authorised for one or more scopes. The scopes that are authorised is given in the 'scope' parameter.
code	Value cannot be null, empty, or white space	The code entered is empty or invalid.
	Authentication code verification failed	The authentication code failed verification. Note that it has a validity of 2 minutes from the time of issuance.

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7. Appendix

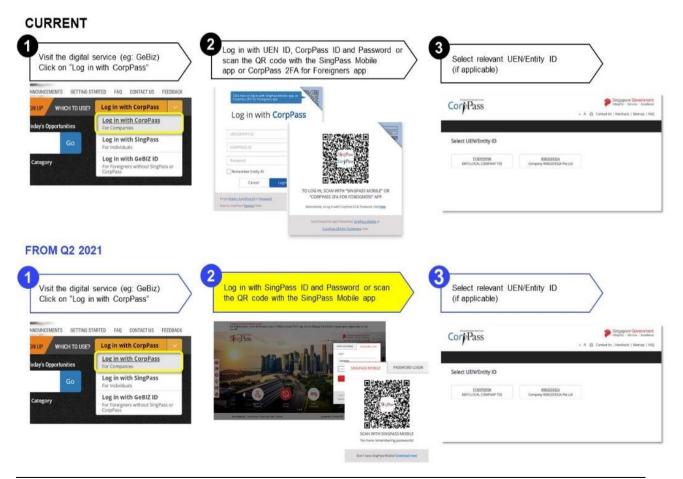
7.1 Change of Corppass to Singpass login flow

The login process for Corppass has been changed to verify the user's identity via Singpass first, before the user can proceed to access and transact with government digital services.

Singpass is re-introduced as the login mechanism for businesses to access digital services to simplify the user experience of managing multiple sets of login credentials of corporate transactions.

While Singpass is used for logins, **Corppass will continue to be the authorisation system for corporate transactions.** The Corppass portal enables company administrators to specify the digital services that each employee can transact on the company's behalf.

Having a single Singpass login system, instead of maintaining two separate modes of identity authentication, not only improves convenience for users but also streamlines system operations.



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7.2 Interaction Flow

The flow generally consists of two (2) APIs:

1. Auth

This API will provide redirection URLs to the Singpass Login and Corpass Consent pages. If login is successful, your application (Consumer Software App) will receive the authorisation code via your callback url.

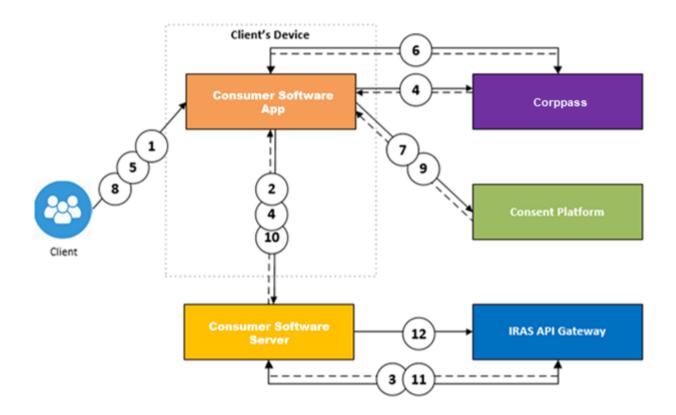
2. Token

This API will provide an access token if a valid authorisation code is supplied.

The application can proceed to use the access token to call an IRAS Resource API securely.

Note: The access token is valid for 30 minutes only.

The following interaction flow depicts the flow of events on the usage of the APIs.



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- 1. Client clicks "Submit to IRAS" from Consumer Software App.
- Consumer Software App to trigger Consumer Software Server to perform IRAS API CorpPassAuth call.
- 3. The **IRAS API Gateway** will return a URL string of the Singpass Login Page with the callback URL and other parameters.
- 4. Consumer Software Server to send the Singpass URL string to Consumer Software App to redirect to Singpass Login Page for entry of credentials.
- Client enters their login credentials and clicks "Login" at the Consumer Software App with Singpass Login Page.
- 6. Client is redirected to UEN/Entity ID selection page (if applicable) to select the relevant UEN/Entity ID that the client is filing for.
- 7. Upon successful login, Corppass will trigger a HTTP Temporary Redirection (302) to Consent Platform.
- 8. **Consumer Software App** is redirected to **Consent Platform** Page for agreement of the term of use. Refer to Appendix 7.3 for a sample of the Consent Page.
- 9. Client clicks "Allow" at the Consumer Software App with Consent Platform Page.
- 10. **Consent Platform** will trigger a HTTP Temporary Redirection (302) with the callback URL with the Authorisation Code with other parameters.
- 11. The callback URL should be the Consumer Software Server's domain so that the Authorisation Code and other parameters are sent to the server for further processing.
- 12. Using the Authorisation Code, **Consumer Software Server** will perform IRAS API CorpPassToken call to **IRAS API Gateway** to request for an Access Token.
- 13. Consumer Software Server can proceed to perform functional IRAS API calls to IRAS API Gateway with the Access Token.

7.3 Consent Page

The name of the App that is subscribed to the service on the IRAS API Marketplace will be reflected on the Consent Page. Please ensure that you define the correct App name when you first register the App during the registration process as described in Section 2 Registration > Step 2: Register App

The sample consent page below shows an App named "My Consumer App" requesting for permission to proceed.

Note: Users must make a selection within 2 minutes, otherwise the page will expire.



Request for Permission

Your permission is required for the following purpose(s):

Submission of Employment Income	
Do you allow EmplocomeSub Sandbo your behalf with Inland Revenue Author the Terms of Use?	
Note: EmpIncomeSub Sandbox Test is not an author IRAS shall not be responsible or held accountabl expense whatsoever, arising directly or indirectly of websites, software or services of this Third Par	e in any way for any damage, loss or as a result of or in connection with your use
DECLINE	ALLOW

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7.4 Callback URL Requirements

Callback URLs must use Fully Qualified Domain Name (FQDN) and meet the following requirements:

- Must be different for Sandbox and Production environments:
- Must not contain IP address, port number, Hash (#) or Wildcard (*) characters;
- Is case-sensitive;
- Must be able to accept parameters;
- Must be hosted on a server with a Secure Sockets Layer (SSL) certificate (e.g. https://yourdomain.com/callback).

After you have registered your App and requested for a subscription to an API Plan, register your callback urls via https://go.gov.sg/apicallback.

It takes about 1-2 weeks to register your callback URLs. IRAS will notify you via email once your callback URLs have been registered.

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7.5 List of Scopes

The use of Scope allows proper permissioning of the functional API via the Authorisation Token. For requests containing multiple Scopes, concatenate them with '+' char.

Note: Scopes are case-sensitive.

S/N	API	Scope
1	Submission of Employment Income Records	EmpIncomeSub
2	Retrieval of Corporate Tax Data	CITPrefillCS
3	Submission of Corporate Tax Return (Form C-S)	CITFormCSSub
4	Submission of Tax Clearance for Foreign Employees (Form IR21)	IITFormIR21Sub
5	Submission of GST F5 Return and F8 Final Return	GSTF5F8SubCP
6	Submission of Transaction Listings	GSTTxnLstgSubCP
7	Submission of GST F7 Disclosure of Errors on GST Return	GSTF7SubCP
8	e-Stamping	e-Stamping
9	Submission of Commission Records	CommissionSub

7.6 Test Entities for Singpass

To test Corppass with a specific Business API (e.g. Submission of Employment Income Records), refer to the test scenarios located in the Business API Product page at the <u>API Marketplace</u> [Sandbox Environment].

Alternatively, contact digital_partnerships@iras.gov.sg to retrieve the latest set of test entities and test scenarios.

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