IRAS Auto-Inclusion Scheme (AIS) API Onboarding Guide
IRAS Digital Partnerships

This guide is open to AIS API Consumers.

Updated Nov 2021.

Version 1.5

INLAND REVENUE
AUTHORITY
OF SINGAPORE

Document Change History

Revision Date	Version No.	Changes
Sep 2021	1.0, 1.1, 1.2, 1.3	Onboarding guide created. Corrected typos.
28 Oct 2021	1.4	Updated link to Test Guide due to website revamp. Updated Connectivity Test requirement. See Annex E.
2 Nov 2021	1.5	Updated callback url restriction on having query parameters.

Auto-Inclusion Scheme (AIS) API for Employment Income

Who needs to file through AIS?

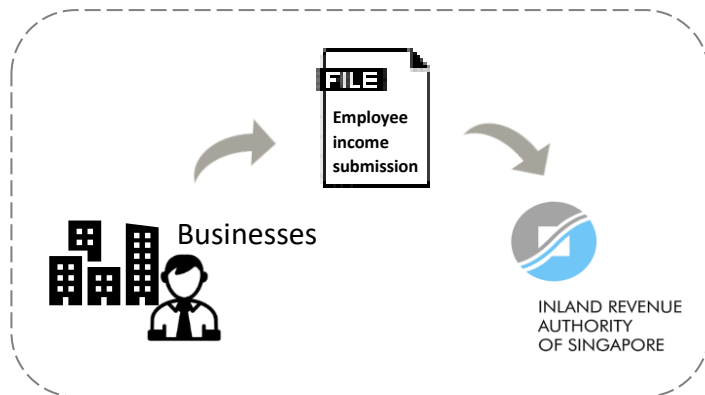- **Compulsory from YA2022** for companies **with 5 or more employees***

  📁 *see **Annex A** for **FULL DETAILS** on **compulsory participation**

- **Voluntary Participation** is encouraged for companies not mentioned above.

Businesses

FILE
Employee income submission

INLAND REVENUE AUTHORITY OF SINGAPORE

Integrate with IRAS AIS API for a seamless filing experience

IRAS API: Auto-Inclusion Scheme (AIS) for employment income
Electronic submission of employment income information of employees to IRAS.

- Submit electronically by **1st Mar each year**

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AIS API Onboarding Overview

Milestones & Checklist

Before Oct

By Oct-Nov

Submission can start **from Nov to Mar** following year

Activity 1
Solution Fit

- ✓ Check server specifications
- ✓ Check system design & connectivity and compatibility to IRAS APIs (e.g. cloud, on-prem solutions, private networks, etc.)

Activity 2:
Register and Integrate in Sandbox

- ✓ Register app and callback url
- ✓ Integrate with Corppass and AIS APIs
- ✓ Set up data transmission as per API specifications and schema
- ✓ Generate TXT/XML data for API submission as per Technical File/Format Specifications

Activity 3:
Annual Validation Test

- ✓ Pass annual validation test
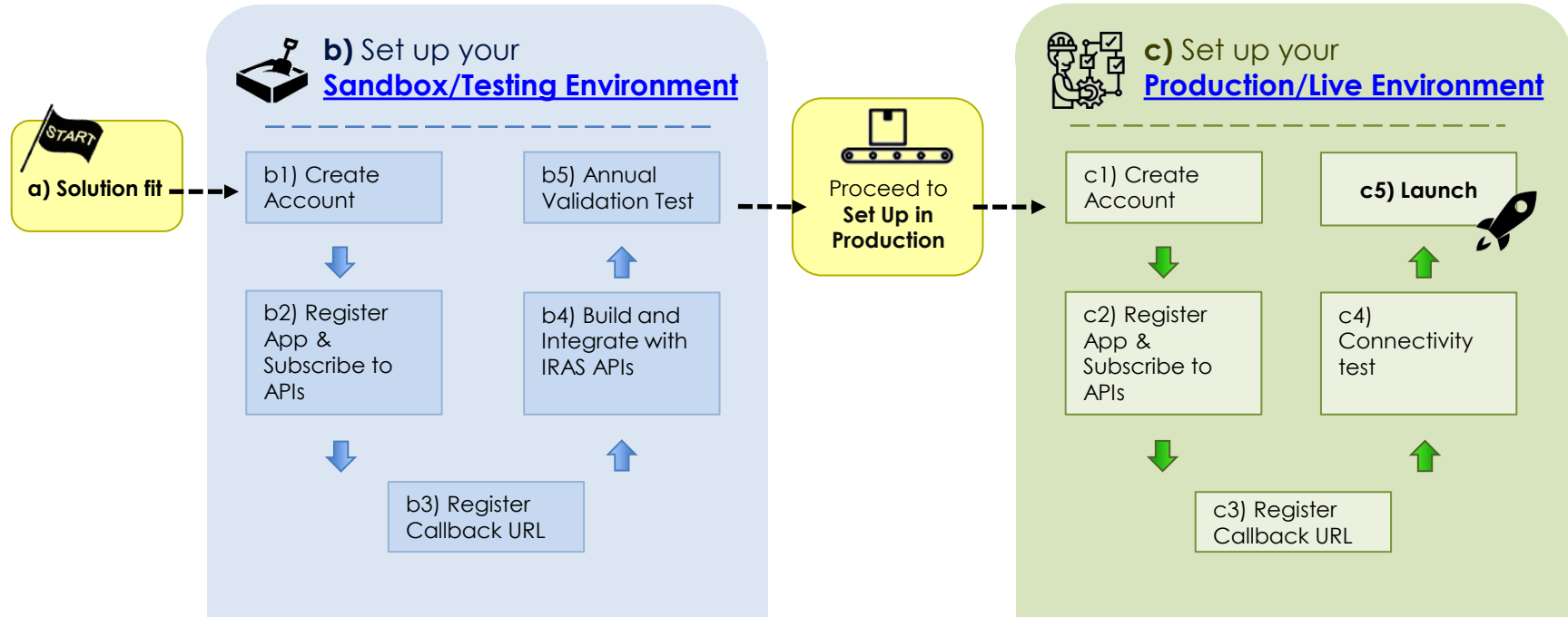- ✓ Submit test acknowledgement code to IRAS

Activity 4:
Set up in Production & Launch

- ✓ Register app and callback url for Production
- ✓ Connectivity test

📁 *see **Annex B** for an introduction video guide on AIS

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AIS API Onboarding Checklist

a) Solution fit

START

b) Set up your
Sandbox/Testing Environment

b1) Create Account

b2) Register App & Subscribe to APIs

b3) Register Callback URL

b4) Build and Integrate with IRAS APIs

b5) Annual Validation Test

Proceed to **Set Up in Production**

c) Set up your
Production/Live Environment

c1) Create Account

c2) Register App & Subscribe to APIs

c3) Register Callback URL

c4) Connectivity test

c5) Launch

Refer to the User Guide for step-by-step details with screenshots.

ⓘ Please take note of the Maintenance Hours (Singapore Time) for both Sandbox and Production environments in Annex C.

a) Solution Fit
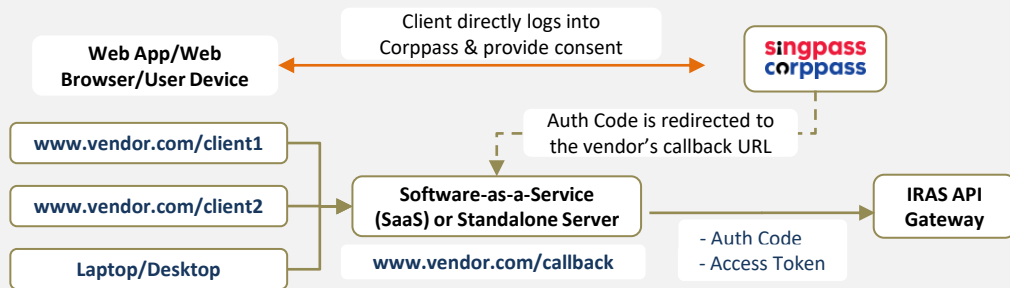
START

a) Solution Fit

i) Check your that your server/application/solution for these **pre-requisites**

- ☐ Support a **server-to-server connection**

- ☐ Support the following protocols: **HTTP/2, TLS 1.2/1.3**

- ☐ Trigger **HTTP/GET & HTTP/POST** requests

- ☐ **Accessible via internet**

ii) Ensure your system is able to **connect** to IRAS API Gateway

Scenario A (Default):
If your solution is hosted on a Cloud or Standalone Server:

Web App/Web Browser/User Device

Client directly logs into Corppass & provide consent

singpass corppass

www.vendor.com/client1

Auth Code is redirected to the vendor's callback URL

www.vendor.com/client2

Software-as-a-Service (SaaS) or Standalone Server

IRAS API Gateway

Laptop/Desktop

www.vendor.com/callback

- Auth Code
- Access Token

Scenario B:
If your solution is hosted on Sub-Domains or Private Servers:

A **proxy or gateway** is required to manage Auth Code and Access Token exchange for the respective sub-domains or private servers.

🔗 Refer to the IRAS Corppass and Callback url guide here for more details.

b) Set up your Sandbox/Testing Environment

b1) Create Account

Sandbox Environment
https://apisandbox.iras.gov.sg/iras/devportal/sb/

i) Create a new account using your **corporate email address**

Activate via email validation →

ii) **Log in** using newly set-up account

- - →

iii) Update your **organisation name**

ⓘ Use your **corporate email address**, whenever possible. If you already have a existing developer account for other APIs, please re-use the same account.

ⓘ Organisation name should reflect your **actual company name** (followed by the ROC or UEN where applicable). **For example: ABC Pte Ltd_20171234X**

b) Set up your Sandbox/Testing Environment

b2) Register App & Subscribe to APIs

i) Register **App**

Sandbox (application page)
https://apisandbox.iras.gov.sg/iras/devportal/sb/application

Ensure that the name of your registered App reflects the **actual name** of your software/application that will use the API.

Developers can use different Apps for different APIs.

(i) Every registered App will have their own unique Client ID and Client Secret. **Take note of the Client Secret**. If you lose the Secret, please use the reset function.

ii) Subscribe to **APIs**

Sandbox (API products page)
https://apisandbox.iras.gov.sg/iras/devportal/sb/product

The API products page lists all IRAS APIs that are available for your use. For AIS-specific APIs, please log in and subscribe to the following APIs:
- Submission of Employment Income (Corppass) API
- Corppass Authentication API

(i) You must be logged in before you can access All APIs.

b) Set up your Sandbox/Testing Environment

b3) Register **Callback URL**

Provide accurate details of the API Subscription, Environment, Email Account, App Name, Client ID and the Callback URL that you are registering for.

> 🔗 **Callback URL registration**
> 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.

> 📁 *See **Annex D** for **FULL REQUIREMENTS** on Callback URL

> ⓘ Developers should **avoid** changing the **App name, Client ID and Callback URL** where possible, after they have been registered. Developers would need to inform IRAS by email of any changes, which would require **at least 2 weeks** to take effect.

> ⓘ You will receive an **automated email notification** once your subscription request and Callback URLs are approved.

b) Set up your Sandbox/Testing Environment

b4) Build and Integrate with IRAS APIs

i) Build and Integrate with **AIS API**

Technical File Format/Specifications

Payroll software vendors or employers who are using payroll system/ software can refer to the AIS file format/ specifications to ensure that their software can create and generate files that comply with IRAS' API and data requirements.

> *For **FULL REQUIREMENTS** of the technical file format and specifications, click here .
> *(refer to the items below):*
> *- Text File Format (.txt)*
> *- Extensible Markup Language Format (.xml)*
> *- Supporting Specifications/ Important Note*

ii) Integrate with **Corppass API**

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 Auth Code that will be used to exchange for the Access Token via the CorpPassToken endpoint.

> *For Corppass **API SPECIFICATIONS**, click here

b) Set up your Sandbox/Testing Environment

b5) Annual Validation Test (For payroll vendors)

1) Perform AIS-API submissions to IRAS in Sandbox according to the **Test Guide** provided on the website.

🔗 *For the **TEST GUIDE**, click here

2) Record down the successful submissions' reference numbers

3) Submit the submission reference numbers via the **Self-Verification Form** during the Validation Test period

4) You will receive an email confirmation that will allow you to proceed to Production

ℹ️ If you are a payroll vendor and wish to integrate with AIS-API for the first time, please email your request to **data_mgmt@iras.gov.sg** by **31 Oct**.

ℹ️ Payroll vendors who wish to be listed as a supporting vendor will have to participate in the Annual Validation Test conducted from **Oct - Nov** each year.

ℹ️ The same app created in Sandbox will be use for the Annual Validation Test.
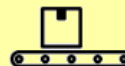
Proceed to Set Up in Production

Important Dates

IRAS will notify payroll vendors the details of the Validation Test in **Sep each year.**

Additional info: All successful payroll vendors who pass the validation test will be listed in the "Vendors Supporting AIS Employer List"

🔗 *For the list of Vendors Supporting AIS Employers' Submission, click here

c) Set up your Production/Live Environment

C1 – C4) Set up in Production environment

Production Environment
https://apiservices.iras.gov.sg/iras/devportal/

Set up in the Production Environment similar to the steps for the Sandbox environment in slide 7 - 9.

Refer to slide 7: b1) Create Account	→	Refer to slide 8: b2) Register App & Subscribe to APIs	→	Refer to slide 9: b3) Register Callback URL	→

C4) Follow the instructions on

📁 **Annex E** "Connectivity test"

ⓘ Software can only be released to clients after the connectivity test has been verified.

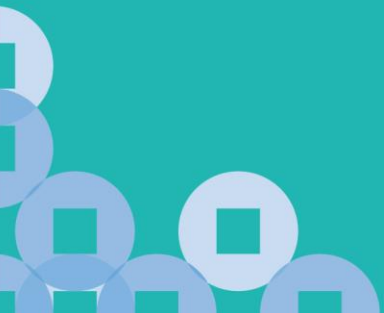# c) Set up in Production/Live environment

C5) Launch

ⓘ Recommend clients to **use only** the AIS-API mode to submit their employment records to IRAS.

- ✓ Start deploying your updated product to businesses

- ✓ Work with clients to use the service

FAQ
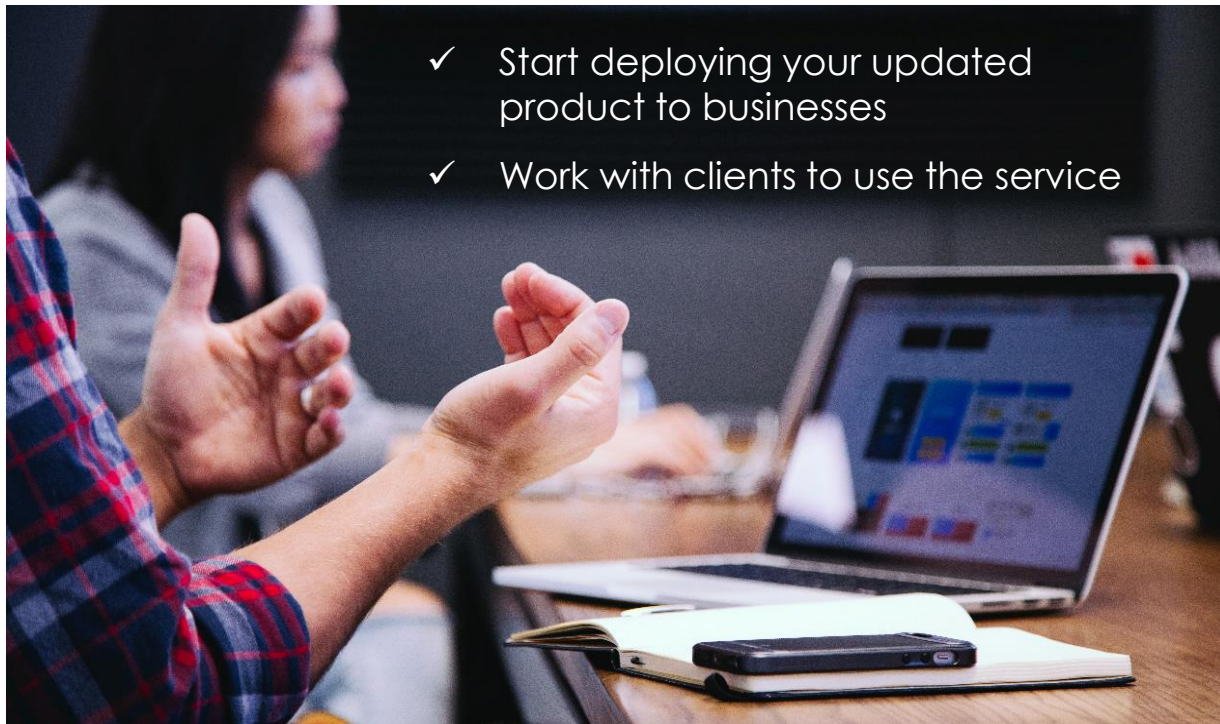
FAQ

Sandbox Testing

Question 1:

In sandbox testing, can the Callback URL be pointed to a our local test server using http://localhost? Our development is on the local machine, instead on the public cloud.

Answer:

The use of Corppass Authentication is a collaboration between IRAS and GovTech built on the National Digital Identity (NDI) framework. Currently, we have two (2) environments for Corppass – Staging and Production. The Staging environment is a near-replica of the Production environment, designed to simulate as close as possible the requirements for Production.

Since the requirements to use Corppass includes the use of TLS/SSL encrypted connections from the client via internet, the Sandbox environment also requires an internet-accessible server that Corppass can redirect back to the server that triggered the original call to Corppass, via a callback url.

FAQ

Callback URL

Question 2:

Our company offers the solution to multiple clients that are hosted on their own on-premise servers, or have their own dedicated domain servers. Should we register a different callback URL for each of those clients?

Answer:

Your main server is expected to manage and handle the various requests and responses for your respective clients whether or not their servers are hosted on their own servers or domains. As such, a single server callback url is required to act as a gateway or proxy.

To manage and reconcile the different requests and responses to the respective clients, is to use the **state parameter.** The state parameter can be used to identify which Auth Code and Access token belongs to which client, so that the correct submission is made for the client, through your server.

Please see the Corppass and Callback URL Guide for more details.

FAQ

Callback URL

Question 3:

Once we have generated a Client ID for our App and registered the Callback URL, can we change it at a later stage?

Answer:

Changing the App Client ID and Callback URL is possible but not advisable as it will cause disruptions to your subscription and services. Re-registration of new/ updated Client ID and Callback URL may also cause delays to onboarding. It will take up **1-2 weeks** to apply the change.

FAQ

Self-signed SSL

Question 4:

Can I use a self-signed SSL certificate for my server's domain name that will be used to support the Callback URL required for testing?

Answer:

You cannot use self-signed SSL certificate to support testing with Callback URLs our OAuth servers would need to know which domain to redirect to, on the internet. Ensure that the Callback URL follow the FQDN syntax. (e.g. https://www.AYP.com/callback)

Please see the pre-requisites for Callback URL registration here – https://go.gov.sg/apicallback.

FAQ

Private Domain Hosting

Question 5:

Due to the security and sensitivity of our clients' data, our customers' HR systems do not have access to the internet. How are my clients able to submit their payroll income via IRAS API?

Answer:

Where internet is available, the measures taken by Government going forward, is that submission of tax data would need to be authenticated, just like how Tax Payers access IRAS' online digital service at myTax Portal by logging in with Singpass or Corppass.

Please see the Corppass and Callback URL Guide for more details.

FAQ

Private Domain Hosting

Question 6:

To support my clients who are hosting the software on their own private domains, can I facilitate the submissions via a file upload service through our own server?

Answer:

The submissions of tax fata via API must be authenticated and authorised via Corppass by your clients directly. As such, you can provide a file upload UI facility on your server, as long as they are able to authenticate via Corppass.

This means that during the submission of tax data through your solution, your clients must be able to authenticate with Corppass and provide consent to your solution, to submit the data on their behalf. Corppass API integration is still required on your solution to support this submission.

FAQ

Misc

Question 7:

If I cannot integrate with this API or use Corppass, is there an alternative way to submit payroll income to IRAS? (e.g. IRAS Java App, CrimsonLogic PAT Solution)?

Answer:

The Offline IRAS Java App will be decommissioned in end Dec 2022. **From calendar year 2023**, the Submission of Employment Income Records API will be the **only mode of submission** to IRAS via Payroll Software.

Employers who do not use payroll software can prepare and submit employment income information directly via IRAS' online digital service at myTax Portal, or use the Provident and Tax (PAT) system managed by CrimsonLogic Pte Ltd.

FAQ

Misc

Question 8:

Can I use a desktop application (e.g "Windows Program") on my laptop or computer to integrate with this API and support Corppass authentication too?

Answer:

Corppass Authentication and Authorisation require a server-to-server connection, hereby requiring a need for a server on the internet to handle redirects from Corppass OAuth server via a Callback URL.

You can still use a desktop or laptop application, as long as there is an internet server in between, to handle auth code and token exchanges so that it can support Corppass Authentication via internet.

Please see the Corppass and Callback URL Guide for more details.

FAQ

Misc

Question 9:

Can I use the same Sandbox App for my own testing, and the validation test in Oct – Nov?

Answer:

Yes, you must use the same Sandbox App for any development, testing or validation in the Sandbox environment. It is also highly advisable to maintain the same App, Client ID and Callback URL registration in the Sandbox environment every year, to avoid any re-registration when Validation Tests are required in the proceeding years.

FAQ

Misc

Question 10:

What is the max length, allowable characters and format of the state parameter used for Corppass Authentication API?

Answer:

Max length: The same max length used string data type.

Allowable characters: Characters supported for string data type.

Format: The state parameter is used to protect against cross-site request attacks ("XSRF") attacks in an OAuth flow. It is also an identifier to reconcile API requests and responses. It must be unique for each API request, and must be the same value used in a single Corppass Authentication call *(i.e, when retrieving the Auth Code via CorpPassAuth and access token via CorpPassToken API methods).*

FAQ

Misc

Question 11:

In the event that a submission of employment income records are sent in "batches" (multiple API calls), and one of the batches failed, what will happen to the submitted data, if the entire batch is re-submitted again?

(e.g. 500 records submitted and only 300 were successful, system re-submits 500 records again)

Answer:

It is highly advisable never to re-submit employment income records that have been successfully submitted and returned a successful API response.

Only re-submit the set of data that failed to get a successful API response.

In the event, that data that has been successfully submitted, is re-submitted again, IRAS will still return a successful API response. However, the re-submitted data will not be processed or override the previous submission.

In case there is a difference in the amount of records in the re-submitted data, the delta will be processed and submitted to IRAS.

FAQ

Misc

Question 12:

How should the system determine that the records that were submitted via API were processed successfully?

Answer:

An API Response with Status Code "200 OK" will be returned is the API submission is successfully processed.

However, there will be no summary information of the number of records processed. Therefore, it is highly advisable that your system incorporates a way to check and display the status of your submitted records.

Thank You

For IRAS API marketplace onboarding & account matters

IRAS Digital Partnerships Team

Digital_Partnerships@iras.gov.sg

For AIS API technical support & enquiry

IRAS API support Team

api_support@iras.gov.sg

For AIS e-submission enquiry

IRAS Data Management Team

Data_Mgmt@iras.gov.sg

The information presented in the slides aims to provide a better general understanding of taxpayers' tax obligations and is not intended to comprehensively address all possible tax issues that may arise. While every effort has been made to ensure that this information is consistent with existing law and practice, should there be any changes, IRAS reserves the right to vary its position accordingly.

Annex
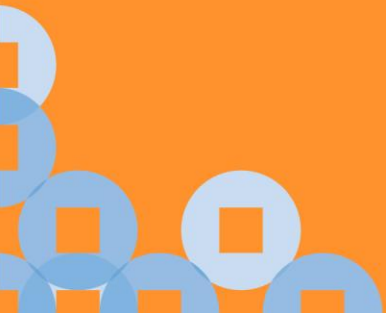
Annex A: Compulsory Participation in AIS

From YA 2022, participation in the AIS is compulsory for employers:

1. With 5 or more employees including:
   - Full-time resident employees
   - Part-time resident employees
   - Non-resident employees including those who are based overseas and are required to render service in Singapore during the year (exclude details of employment income where clearance has been filed)
   - Company directors (including non-resident directors)
   - Board members receiving Board/Committee Member Fees
   - Pensioners; **and**
   - Employees who have left the organisation but were in receipt of income in reporting year (e.g. stock option gains)
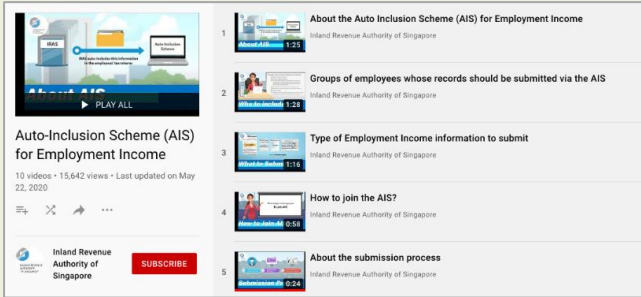
2. Employers who have received the "Notice to File Employment Income of Employees Electronically under the Auto-Inclusion Scheme (AIS)"

Voluntary Participation
Employers can register for YA 2022 submission from 1 Apr 2021 to 31 Dec 2021. To confirm the participation the AIS, employers are required to complete their authorisation for Submission of Employment Income Records (PDF, 1.01 MB) digital service.

Employers with 5 or more employees but have not received any notification from IRAS should inform IRAS at ais@iras.gov.sg. Please include your organisation name, UEN and the number of employees in your email

Annex B: AIS video guides

Auto-inclusion scheme (AIS) video guides

https://go.gov.sg/ais-submission-guide-video

Topics covered:

- About the Auto Inclusion Scheme (AIS) for Employment Income
- Groups of employees whose records should be submitted via the AIS
- Type of Employment Income information to submit

- How to join the AIS?
- About the submission process
- Who can submit the Employment Income Records?
- Modes of submitting the Employment Income records

- Important details to note when submitting Employment Income Records
- Steps to amend previously submitted records
- Benefits of joining the AIS

Annex C: Sandbox & Production Maintenance Hours

Please take note of our **Maintenance Hours** (Singapore Time) for both environments:-

Sandbox (Daily Maintenance Hours)	Sandbox (Corppass Weekly Maintenance Hours)	Production (Weekly Maintenance Hours)
Everyday 1:00 PM – 3:00 PM Everyday 8:00 PM – 10:00 PM	Every Wednesday 3:00 PM – 11:59 PM	Every Wednesday 2:00 AM – 6:00 AM Every Sunday 2:00 AM – 8:30 AM

Annex D: Callback URL requirements

Your company's system must support **Callback URL functionalities** including:

- Able to redirect users to the payroll software after Corppass login and consent

- Use Fully Qualified Domain Name (FDQN),

- Able to accept parameters

- Doesn't contain IP address, port number, Hash(#) or Wildcard(*) characters

- Must not contain any query parameters (E.g. https://yourdomain.com/yourCallbackURL?query1=myquery1&query2=my query2)

- Have a different URL set up for IRAS Sandbox & Production environments.

- Must be hosted on a server with a Secure Sockets Layer (SSL) certificate (e.g. **https**://yourdomain.com/yourCallbackURL)

🔗 **Callback URL registration**
https://go.gov.sg/apicallback

Annex E: Connectivity Test

To ensure that Corppass/Singpass can redirect to your server's registered callback url successfully, perform the following connectivity test **once** in the Production environment.

Connectivity Test

Perform a connectivity test from your software/ application in the Production environment to the API service in Production.

If your software/ application is able to load the Singpass login page within your software/ application, your connectivity test is successfully completed.

You **do not** have to log in and submit any data.

(i) Please email **Digital_Partnerships@iras.gov.sg** to let us know that you have performed the above connectivity test. Provide details of your app using the template on the right and include a screenshot of the Singpass Login page.

Singpass Login Page (sample)

Environment	Production
App Name	
Client ID	
Callback URL	