# Inland Revenue
## Te Tari Taake

Inland Revenue

# Build Pack: IRD Number Validation Service API

**Date:**       10/03/2020
**Version:**    v1.0

# Contents

# 1 Overview

## 1.1 This solution

Inland Revenue has a suite of digital services available for consumption by our service providers that supports efficient, electronic business interactions with Inland Revenue. This service is an application programming interface (API) that external applications can call in real-time when enrolling a customer to validate the customer's IRD number. The objective of this API is to reduce the occurrences of customers being enrolled with an incorrect IRD number which, when it does occur, can be very disruptive for external partners, customers and Inland Revenue.

It is important to note that this API does not return an IRD number. It enables the consumer of the API to assess whether the IRD number and the accompanying biographic attributes of a customer are consistent, and therefore whether the IRD number is likely to be correct.

Additionally, this service does not validate that the information provided in the request is correct, simply that Inland Revenue can identify a customer with enough certainty. This is especially pertinent to the NZBN, as Inland Revenue does not have a record of every NZBN, and as such the Companies Office should be consulted to verify an NZBN.

## 1.2 Intended audience

The solution outlined in this document is intended to be used by KiwiSaver scheme providers, employers, financial institutions and accounting/tax management applications.

The reader is assumed to have a suitable level of technical knowledge in order to comprehend the information provided. A range of technical terms and abbreviations are used throughout this document, and while most of these will be understood by the intended readers, a glossary is provided at the end.

## 1.3    Privacy considerations

Inland Revenue and its trading partners have an obligation to protect their customers' privacy, in accordance with the Privacy Act 1993. Due to the nature of the IRD Number Validation Service, it is important to note that the correctness or otherwise of the individual input attributes cannot be inferred from the match result.

> The API response **only** indicates whether the IRD number is a valid and active IRD number, and whether it **plausibly** belongs to the customer whose biographic attributes were supplied in the call to the API.

There is also a chance that a false negative may be returned. This may occur if Inland Revenue's data is out of date. If the response from the API indicates that the IRD number is valid and active but does not match the supplied biographic attributes then it may still be valid to proceed with the enrolment *if* the customer has provided evidence of their identity, change of name, address and/or other attribute. In this situation the customer should be advised to contact Inland Revenue. Also note that the customer can be directed to the *"What's my IRD Number?"* service at www.ird.govt.nz.

The API consumer can only proceed with the customer's enrolment once they have confirmed their identify (for example many organisations will perform an anti-money laundering check) and have evidence that the customer's IRD number is correct.

## 1.4    Prerequisites

| Party | Requirement | Description |
|---|---|---|
| **Digital Service Provider** | Acquire an X.509 certificate from a competent authority for the Test and Production environments | This is required when using mutual TLS with cloud-based service providers or financial institutions.<br>Note that the same certificate cannot be used for the Test and Production environments. |

### 1.4.1   Mutual Transport Layer Security and certificates

Mutual Transport Layer Security (TLS) is implemented for this API. This requires the use of a publicly-issued X509 certificate from one of the trusted certificate authorities. Inland Revenue does not issue certificates to external vendors for web service security implementations.

Inland Revenue has the following minimum requirements for accepting public X509 keys:

- Minimum Key Length: 2048
- Signature Algorithm: SHA256[RSA]
- Self-signed certificates are not accepted
- Certificates issued by a private/internal certificate authority are not accepted.

In general, shorter-lived certificates offer a better security posture since the impact of key compromise is less severe but there is no minimum requirement for certificate expiry periods.

Below is a list for examples of certificate authority providers with no recommendations or rankings incorporated. It is recommended that a business researches which certificate authority meets their requirements:

- Comodo
- GeoTrust
- DigiCert
- GlobalSign
- Symantec
- Thawte
- IdenTrust
- Entrust
- Network Solutions
- RapidSSL
- Entrust Datacard
- GoDaddy.

## 2　Solution design

### 2.1　Architecture

Inland Revenue offers a suite of web applications in order to facilitate interactions via software packages. This API will be used by approved organisations to validate customer information with Inland Revenue.

### 2.2　Supported message type

This service supports the following message type:

- **READ:** Retrieves match from Inland Revenue. Requires an IRD number and other information about the customer.

### 2.3　IRD number validation

#### 2.3.1　Request payload

**NOTE:** Some of the following input parameters are optional because in different scenarios it is valid for them to be omitted. However, API consumers should note that the quality of the data match increases with the number of input parameters supplied. It is therefore advisable to supply as many of the input parameters as is practical.

| Field | Requirement | Description |
|---|---|---|
| **IRD** | Required | Inland Revenue Department ID |
| **Classification** | Required | The customer type, either individual or non-individual |
| **Date** | Required | The birth date or commencement date of the customer<br>NOTE: Commencement date is the date on which a non-individual entity was registered (the non-individual equivalent of a date of birth) with Inland Revenue. |
| **FormattedName** | Optional | Name of a non-individual customer or a concatenation of the last and first names of an individual customer. Example: Smith, John Doe.<br>NOTE: FormattedName OR Name object should be supplied |
| **Name** | Optional | JSON object |
| ➢ **FirstName** | Conditional | First name of an individual customer |
| ➢ **MiddleName** | Conditional | Middle name of an individual customer |
| ➢ **LastName** | Conditional | Last name of an individual customer |

| Field | Requirement | Description |
|---|---|---|
| **FormattedAddress** | Optional | The address of the customer as a single string.<br>Example: 123 Easy Street, Te Aro, Wellington 6011 |
| **Address** | Optional | JSON object |
| ➤ **Street** | Conditional | Street of the address |
| ➤ **City** | Conditional | City of the address |
| ➤ **PostCode** | Conditional | Postcode of the address |
| ➤ **State** | Conditional | State of the address |
| ➤ **Country** | Conditional | Country of the address in ISO 2A format |
| **NZBN** | Optional | New Zealand Business Number of a non-individual. This is only used by the validation service if Inland Revenue has a record of an NZBN for the non-individual. |

The valid values for 'Classification' are as follows:

| Type | Description |
|---|---|
| **COM** | Non-individual customer |
| **IND** | Individual customer |

### 2.3.2   Response payload

| Field | Requirement | Description |
|---|---|---|
| **Match** | Required | Indicates if a match was found for the information provided |

The valid values for 'Match' are as follows:

| Type | Description |
|---|---|
| **Match** | A match was found for the information provided |
| **No match** | A match was **not** found for the information provided |

**NOTE:** Call throttling has been implemented on this API. This limits the number of calls per customer IRD number over a 24-hour period. This control has been implemented to prevent the 'brute force' deduction of the customer's identity attributes. Inland Revenue reserves the right to change the call throttling parameters without warning.

# 3     End points and OpenAPI specifications

**IMPORTANT**
For the authoritative definitions, please refer to the OpenAPI specifications at
https://www.ird.govt.nz/software-providers/

## 3.1     End points

| End point | URL |
|---|---|
| **Mock Data Testing** | https://test3.services.ird.govt.nz:4046/gateway/customer-service/validateIRD |
| **Production Data Testing** | https://test4.services.ird.govt.nz:4046/gateway/customer-service/validateIRD |
| **Production** | https://services.ird.govt.nz:4046/gateway/customer-service/validateIRD |

**NOTE:** These endpoints are subject to change due to environment updates in the future.

## 3.2     OpenAPI specifications

An OpenAPI file describes the entire API, along with endpoints, operations on each endpoint, and operation parameters. The included .yaml file can be used along with an OpenAPI editor such as editor.swagger.io to view technical specifications for this operation and generate example client code.

# 4  Glossary

| Acronym/term | Definition |
|---|---|
| **API** | Application Programming Interface—set of functions and procedures that allow applications to access the data or features of another application, operating system or other service. |
| **End points** | A term used to describe a web service that has been implemented |
| **Gateway** | Inland Revenue's web services gateway |
| **HTTP, HTTPS** | Hyper Text Transmission Protocol (Secure)—the protocol by which web browsers and servers interact with each other. When implemented over TLS1.2 HTTP becomes HTTPS. |
| **IRD** | Inland Revenue Department (ie IRD Numbers) |
| **OpenAPI specifications** | Formerly known as Swagger specifications—a specification for machine-readable interface files for describing, producing, consuming and visualising RESTful web services. |
| **Payloads** | This refers to the data contained within the messages that are exchanged when a web service is invoked. Messages consist of a header and a payload. |
| **START** | Simplified Taxation and Revenue Technology—IR's new core tax processing application. It is an implementation of the GenTax product from FAST Enterprises. |
| **TLS1.2** | Transport Layer Security version 1.2—the protocol that is observed between adjacent servers for encrypting the data that they exchange. Prior versions of TLS and all versions of SSL have been compromised and are superseded by TLS1.2. |
| **URL** | Universal Resource Locator—also known as a web address |
| **X.509 certificate** | An international standard for encoding and describing a digital certificate. In isolation a public key is just a very large number, the X.509 certificate to which it is bound identifies whose key it is, who issued it, when it expires etc. When a counterparty's X.509 digital certificate is received, the recipient takes their public key out of it and store the key in their own key store. The recipient can then use this key to encrypt and sign the messages that they exchange with this counterparty. |
| **YAML** | "YAML Ain't Markup Language"—a human-readable data-serialisation language commonly used for configuration files and in applications where data is stored or transmitted. |

## 5    Change log

This table lists all material changes that have been made to this build pack document since the release of V1.0 (most recent changes listed first). It does not encompass non-material changes, such as to formatting etc.

| Version | Date of change | Document section | Description |
|---------|----------------|------------------|-------------|
| **1.0** | 10/03/20 | | • V1.0 created |