

Inland Revenue

Build Pack: TDS APIs

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1 Overview

1.1 This solution

The TDS REST APIs is a pull model, in which IR not responsible for state management. The Digital Software Provider is expected to maintain state and take active role in the reconciliation of their data set. The following are the three APIs:

- TDS Summary: this API is used as a change detection mechanism for transaction data change for a particular client list, customer or account.
- TDS Financials: this API is used to provide a high level financial break down of a particular customer or account.
- TDS Transactions: this API is used to provide transaction details of a particular account's filing period.

Before continuing, please consult
www.ird.govt.nz/digital-service-providers/services-catalogue
for business-level context, use cases and links to relevant policy.
The information available here explains how to integrate with
Inland Revenue's services.

1.2 Intended audience

The solution outlined in this document is intended to be used by Digital Service Providers.

The reader is assumed to have a suitable level of technical knowledge in order to comprehend the terms and abbreviations are used throughout this document.

1.3 Related services

The following application programming interfaces (APIs) complement this Gateway Service. Instructions on where to find the build packs for these APIs can be found in [section 4](#) of this document.

1.3.1 Identity and Access Services (required)

The START Identity and Access Management Service (IAMs) is used to authenticate access. Authentication tokens will need to be retrieved via START IAMs prior to making calls to this API.

2 Solution design

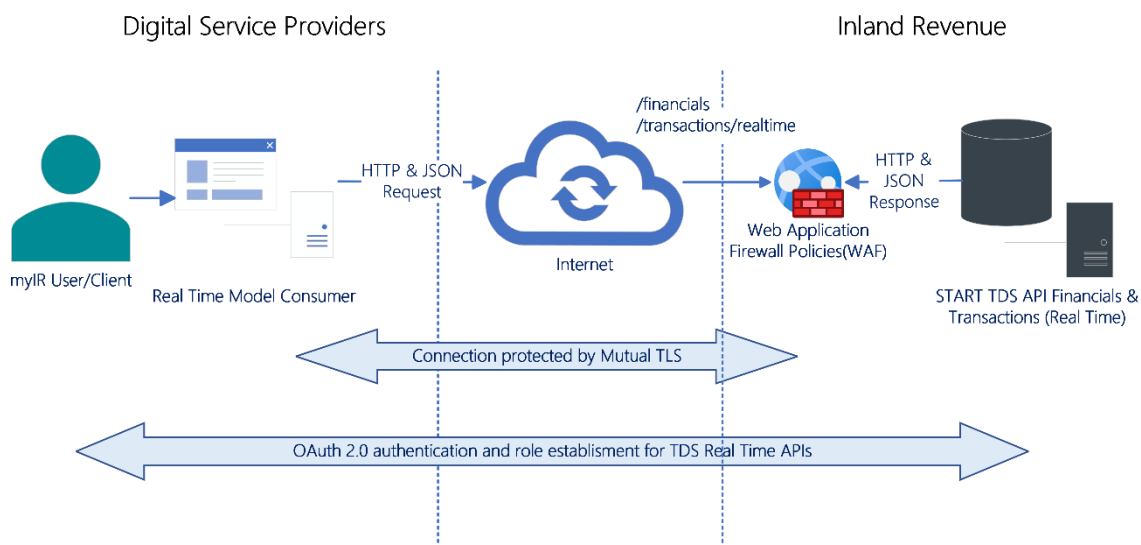
2.1 Architecture

Inland Revenue is offering a suite of web applications in order to facilitate interactions via software packages. This API will be used by approved organisations to transactional data from Inland Revenue.

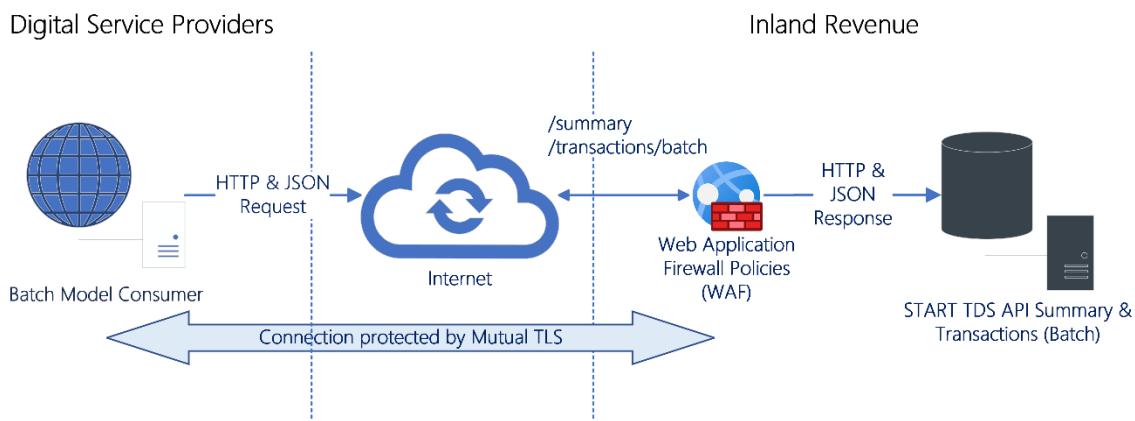
The diagrams below illustrate the flow of data to Digital Service Providers from Inland Revenue.

2.2 Flow of data to Digital Service Providers from Inland Revenue

2.2.1 TDS Real Time Model



2.2.2 TDS Reconciliation Model



2.3 Messaging

This service has three APIs:

- Financials
- Summary
- Transactions

The 3 APIs are built with a modularized service approach to support two distinct models used by software providers. Each model supports different use cases and requires its own security model. The two models and their intended usages are as following:

- **REAL TIME MODEL: ("real time user")**
In this model, software providers build applications that interacts with IR web services to retrieve data on demand. The end user of the third-party application is the main driver of the request to IR web service. Therefore, this model requires a myIR web logon to authenticate with the service. The myIR logon will be supplied via OAuth token. Software providers that implement this model are required to implement the two APIs: TDS Financials and TDS Transactions.
This is the model that IR should encourage all software providers to implement for TDS APIs to retrieve financial and transaction details from START.
- **DATA RECONCILIATION MODEL: ("batch user")**
In this model, software providers replicates START financial and transaction data (currently supplied via TDS bulk file) into their own database, which is subsequently consumed by their applications. Software providers that implement this model are required to implement the two APIs: TDS Summary and TDS Transactions. The myIR logon is not required to authenticate with this service.
For any incumbent software providers who consume the TDS bulk file, this is the model IR recommends to replace their existing process with.

2.4 Associated Services

The following Associated Services may be used to obtain the required information:

- Software Intermediation SOAP service to obtain the client list IDs
- Customer API to obtain the Customer IDs
- Account API to obtain the Account IDs

2.5 TDS Financials

This service only supports retrieving data at the customer level (via the use of `customerId`) and account level (via the use of `accountId`)

- `customerId`: this is the identifier (IRD number) of a particular customer that the software provider is authorized to receive data for. When used, the response returns financial break down of all accounts of the requested customer.
- `accountId`: this is the identifier (ACC number) of a particular account that the software provider is authorized to receive data for. When used, the response returns financial break down of all filing periods of the requested account

Optional parameters:

- `filingPeriod`: only returns data pertained to a specific filing period
- `filingPeriodFrom`: only returns data pertained to filing period beginning from this date
- `filingPeriodTo`: only returns data pertained to filing period ending on this date
- `OutstandingPeriodOnly`: only returns filing period with non-zero balance

2.5.1 Request payload

POST /gateway/tds/financials

Content Type: application/json; charset=utf-8

Field	Requirement	Description
customerId	conditional	The unique identifier of a customer. When <code>customerId</code> is supplied, <code>accountId</code> must be omitted.
accountId	conditional	The unique identifier of an account. When <code>accountId</code> is supplied, <code>customerId</code> must be omitted.
filingPeriod	optional	An optional filter to retrieve the data set for inclusive filing periods beginning at a date. Note: INC balance dates are filed 31 March. Only <code>accountId</code> can be used in conjunction with this filter.
filingPeriodFrom	optional	An optional filter to retrieve the data set for inclusive filing periods beginning at a date. Note: INC balance dates are filed 31 March.
filingPeriodTo	optional	An optional filter to retrieve the data set for filing periods ending at a date. Only <code>accountId</code> can be used in conjunction with this filter
outstandingPeriodOnly	optional	An optional filter to include only outstanding periods with non-zero balance. Only <code>accountId</code> can be used in conjunction with this filter.

2.5.2 Response payload

HTTP Status: 200 OK

Content Type: application/json; charset=utf-8

Field	Description
periodCount	The number periods included in the response.
customer	Data object representing customer
customer ➤ customerId	Unique identifier of a customer
customer ➤ account	Data object representing an account
Account ➤ accountId	Unique identifier of an account
Account ➤ accountType	An optional filter to retrieve the summary for a specific account type only
Account ➤ accountForecastedBalance	Account forecasted balance
Account ➤ period	Data object representing a filing period
period ➤ filingPeriod	Filing period
period ➤ tax	Balance of a filing period
period ➤ penalty	Penalty
period ➤ penaltyForecasted	Penalty Forecasted
period ➤ interest	Interest
period ➤ interestForecasted	Interest Forecasted
period ➤ other	Other
period ➤ otherForecasted	Other Forecasted
period ➤ credit	Credit
period ➤ creditForecasted	Credit Forecasted

Field	Description
period ➤ balance	Balance
period ➤ balanceForecasted	Balance Forecasted
period ➤ lastPeriodActivity	The most recent date when there is a financial activity occurs for this filing period. When omitted, this means there is no financial activity ever occurred for this filing period. This is omitted when there is no activity.

2.6 TDS Summary

TDS Summary API is used as a change detection mechanism for transaction data change for a particular client list, customer or account.

2.6.1 GET Request

GET /gateway/tds/summary

Returns a JSON response of when the last known transaction data is ready to be consumed.

There are no query parameter strings required for this GET method.

To determine if the transaction data is ready to be consumed, the **tdsLastUpdate** date-time value must be greater than the **tdsStarted** date-time value. The **tdsLastUpdate** field becomes re-assigned once the TDS process has completed.

Note: The date time is in NZ local time.

Field	Description
tdsStarted	When TDS process started
tdsLastUpdated	When TDS data last updated

2.6.2 POST Request payload

POST /gateway/tds/summary

Content Type: application/json; charset=utf-8

The request requires at least one input as parameter in order to specify which data set to retrieve.

- **clientId**: this is the identifier of a tax preparer client list that the software provider is authorized to receive data for. When used, the response returns the transaction summary for all active filing periods of client accounts linked to the requested client list.
- **customerId**: this is the identifier (IRD number) of a particular customer that the software provider is authorized to receive data for. When used, the response returns the transaction summary for all active filing periods of supported account types that the requested customer has.
- **accountId**: this is the identifier (ACC number) of a particular account that the software provider is authorized to receive data for. When used, the response returns the transaction summary for all active filing periods of the requested account.

By default, the service only includes filing period that has transactions.

Optional parameters:

- **accountType**: only returns data pertained to this specific account type

- **filingPeriodFrom**: only returns data pertained to filing period beginning from this date
- **filingPeriodTo**: only returns data pertained to filing period ending on this date
- **includeNoTransPeriod**: include filing period that has no transactions

Field	Requirement	Description
clientListId	conditional	Unique identifier of a tax preparer's client list. This can be used to retrieve the summary of all clients linked to a particular client list. When clientListId is supplied, customerId and accountId must be omitted.
customerId	conditional	The unique identifier of a customer. This can be used to retrieve the summary of all accounts belonging to the specified customer. When customerId is supplied, clientListId and accountId must be omitted.
accountId	conditional	The unique identifier of an account. This can be used to retrieve the summary of an account. When accountId is supplied, clientListId and customerId must be omitted.
filingPeriodFrom	optional	An optional filter to retrieve the summary for inclusive filing periods beginning at a date. Note: INC balance dates are filed 31 March.
filingPeriodTo	optional	An optional filter to retrieve the summary for filing periods ending at a date
accountType	optional	An optional filter to retrieve the summary for a specific account type only
includeNoTransPeriod	optional	An optional filter to retrieve the summary for all periods, including periods without transactions.

When consuming the Summay API the request needs to contain one of the following fields, clientListID, cutomerId or accoutnID.

2.6.3 Response payload

HTTP Status: 200 OK

Content Type: application/json; charset=utf-8

Field	Description
periodCount	The number periods included in the response.
customer	Data object representing customer

Field	Description
customer ➤ customerId	Unique identifier of a customer
customer ➤ account	Data object representing an account
Account ➤ accountId	Unique identifier of an account
Account ➤ accountType	An optional filter to retrieve the summary for a specific account type only
Account ➤ accountForecastedBalance	Account forecasted balance
Account ➤ period	Data object representing a filing period
period ➤ filingPeriod	Filing period
period ➤ periodBalance	Balance of a filing period
period ➤ periodForecastedBalance	Forecasted balance of a filing period
period ➤ transactionCount	Number of transactions contained within a filing period

2.7 TDS Transactions (Real Time and Reconciliation)

This service supports retrieving data of one single filing period per account per request. This service is accessible via 2 different endpoints:

- POST /gateway/tds/transactions/realtime
- POST /gateway/tds/transactions/batch

These two distinct endpoints will execute the same underlying service. The difference between the two is the security model being enforced. This allows software providers to be specific with their intent when calling the TDS Transactions API, if they happen to implement both models of the service (real time model vs. data reconciliation model).

The service returns both active and reversed transactions from START. List of transaction types available can be found in the YAML.

The value transferAccountAccountType within the credit transfer data set includes all account types available in START. It is not limited to the list of account types supported. This is due to credit can be transferred to all account types within START.

The object bankAccountDetail in the response payload varies based on the bankAccountStandard value. Following is the full list of expected values:

Bank standard description	bankAccountStandard values	bankAccountDetail object structure
New Zealand bank	"NZB"	bank branch suffix account
Australian bank	"AUB"	branch account
New Zealand credit union	"NZCU"	bank branch account suffix referenceNumber
USA/Canada bank	"ABA" or "CAB"	routingNumber accountNumber
SWIFT standard	"BIC"	swiftBICcode basicBankAccountNumber
IBAN standard	"IBAN"	twoCharCountryCode checkDigit basicBankAccountNumber
Any other standard not specified above	Any other enumerated values not specified above	branch account

2.7.1 Request payload

POST /gateway/tds/transactions/realtime | batch
 Content Type: application/json; charset=utf-8

Field	Required	Description
accountId	conditional	The unique identifier of an account. This can be used to retrieve the summary of an account
filingPeriod	conditional	The filing period to retrieve the summary for inclusive filing periods beginning at a date. Note: INC balance dates are filed 31 March.
postedFrom	optional	An optional filter to retrieve transactions from this particular posted date.
postedTo	optional	An optional filter to retrieve transactions up to this particular posted date.

2.7.2 Response payload

HTTP Status: 200 OK
 Content Type: application/json; charset=utf-8

Field	Description
filingPeriod	Filing period
periodBegin	Filing period begin
periodEnd	Filing period end
tax	Tax
penalty	Penalty
penaltyForecasted	Penalty Forecasted
interest	Interest
interestForecasted	Interest Forecasted
other	Other
otherForecasted	Other Forecasted
credit	Credit
creditForecasted	Credit Forecasted
balance	Balance
balanceForecasted	Balance Forecasted
lastPeriodActivity	The most recent date when there is a financial activity occurs for this filing period. When omitted, this means there is no financial activity ever occurred for this filing period. This is omitted when there is no activity.
billItems	Data object representing bill items

Field	Description
billItems ➤ id	Bill item Id
billItems ➤ dueDate	Bill item due date
billItems ➤ tax	Balance of a filing period
billItems ➤ penalty	Penalty
billItems ➤ penaltyForecasted	Penalty Forecasted
billItems ➤ interest	Interest
billItems ➤ interestForecasted	Interest Forecasted
billItems other	Other
billItems ➤ otherForecasted	Other Forecasted
billItems ➤ credit	Credit
billItems ➤ creditForecasted	Credit Forecasted
billItems ➤ balance	Balance
billItems ➤ balanceForecasted	Balance Forecasted
billItems ➤ transactions	Data object representing transactions
transactions ➤ transactionId	Transaction Id
transactions ➤ transType	Transaction types (see YAML for a full list of Transaction Types)
transactions ➤ postedDate	Transaction posted date
transactions ➤ effectiveDate	Transaction effective date
transactions ➤ amount	Transaction amount

Field	Description
transactions	Linked transaction Id
➤ linkedTransactionId	
pendingPayments	Data object representing pending payments
pendingPayments	Pending payment Id
➤ paymentId	
pendingPayments	Pending payment amount
➤ paymentAmount	
pendingPayments	Pending payment date
➤ paymentPendingDate	
creditTransfers	Data object representing credit transfer
creditTransfers	Transaction Id of the credit transfer
➤ transactionId	
creditTransfers	Account Id of the credit transfer destination
➤ transferAccountId	
creditTransfers	Account type of the credit transfer destination (see YAML file for a full list of Account Type)
➤ transferAccountAccountType	
creditTransfers	Filing period of the credit transfer destination
➤ transferPeriod	
disbursements	Data object representing disbursement
disbursements	Transaction Id of the credit transfer
➤ transactionID	
disbursements	Bank account standard of the disbursement bank account
➤ bankAccountStandard	
disbursements	Data object representing bank account detail. This object varies for different bank account standards.
➤ bankAccountDetail	
bankAccountDetail	Bank account detail - bank
➤ bank	
bankAccountDetail	Bank account detail - branch
➤ branch	
bankAccountDetail	Bank account detail - account
➤ account	
bankAccountDetail	Bank account detail - suffix
➤ suffix	
bankAccountDetail	Bank account detail - accountNumber
➤ accountNumber	
bankAccountDetail	Bank account detail - routingNumber

Field	Description
➤ routingNumber	
bankAccountDetail	Bank account detail - referenceNumber
➤ referenceNumber	
bankAccountDetail	Bank account detail - basicBankAccountNumber
➤ basicBankAccountNumber	
bankAccountDetail	Bank account detail - swiftBICcode
➤ swiftBICcode	
bankAccountDetail	Bank account detail - twoCharCountryCode
➤ twoCharCountryCode	
bankAccountDetail	Bank account detail - checkDigit
➤ checkDigit	
transactions	Data object representing transactions not associated to a bill item
transactions	Transaction Id
➤ transactionId	
transactions	Transaction types (see YAML for a full list of Transaction Types)
➤ transType	
transactions	Transaction posted date
➤ postedDate	
transactions	Transaction effective date
➤ effectiveDate	
transactions	Transaction amount
➤ amount	
transactions	Linked transaction Id
➤ linkedTransactionId	

2.8 Security

2.8.1 Information classification

The information exchanged via this service has an information classification of “**IN CONFIDENCE**”. The following security standards therefore apply.

2.8.2 Transport layer security and certificates

Mutual Transport Layer Security (TLS) is implemented for this service. This requires the use of a publicly-issued X.509 certificate from one of the trusted certificate authorities listed further below in this section. (Note that Inland Revenue does not issue certificates to external vendors for web service security implementations.)

Inland Revenue has the following requirements for accepting public X.509 keys:

- ECDSA (preferred) key length: 384 bits (or RSA key length: 2048 bits)
- Self-signed certificates are not accepted
- Certificates issued by private/internal certificate authorities are not accepted
- The same certificate cannot be used for the Test and Production environments.

Inland Revenue has adopted a trust-based authentication model and will only accept certificates that contain a pre-approved subject common name and have been issued by one of the following root certificate authorities, trusted and approved by Inland Revenue:

- [Amazon](#)
- [Comodo](#)
- [DigiCert](#)
- [Entrust](#)
- [GeoTrust](#)
- [Let's Encrypt](#)
- [Sectigo](#)
- [Thawte](#).

Inland Revenue expects Digital Service Providers to use their Inland Revenue Developer Portal account to create their common name for both Test and Production certificates.

Please refer to the [Digital Service Providers](#) pages on the Inland Revenue website or contact your Inland Revenue onboarding representative at GatewayServices@ird.govt.nz for further details.

In addition, we impose two different security models depending on which TDS API (and endpoint) being accessed to validate whether the request has sufficient access and authorization to retrieve the data set requested. At a high level, they are:

Available APIs	Security model enforced	OAuth supported	Targeted use case
TDS Summary	Link validation	no	Data reconciliation model
TDS Transaction (batch endpoint)	Link validation	no	Data reconciliation model
TDS Financials	myIR access	yes (myIR logon)	Real time model
TDS Transaction (real time endpoint)	myIR access	yes (myIR logon)	Real time model

2.9 Authentication options

This design will use OAuth2.0 tokens and protocol to establish the calling party's identity. The OAuth2.0 method requires a myIR user to logon.

Self-signed M2M JWT access tokens is not supported for this service.

This API will require a unique identifier in order to establish the calling party's identity and to allow the access model to authenticate.

Refer to the Identity and Access Services build pack for more information.

2.9.1 OAuth

When using OAuth, the interaction with Inland Revenue is transacted under the identity of a myIR user, with the OAuth token being used to identify which customers the consumer of service has access to. If the member/investor does not exist in this list, access will be denied. The myIR user must be available to supply their user ID, password and consent at run-time in order to be authenticated. OAuth is especially suited to cloud-based applications where the transacting parties are application users rather than providers.

HTTP headers intended for OAuth access services will have the JWT prefixed with "Bearer ":

HTTP header	Example value
Authorization	Bearer {JWTAccessToken}

To authenticate successfully using OAuth token, **one of the following must be true** about the myIR user being authenticated:

- **Link validation** (applicable to Data reconciliation model)
The gateway credential who consume the TDS APIs must be associated to the software intermediary customer entity (in START) which holds all the necessary software intermediation links.
 - when clientListId is used (for the applicable API), the request is considered authorized when the associated software intermediary customer entity holds an active and current "Software intermediary" link to the requested tax preparer's client list. The data set returned includes all accounts with an active and current tax preparer links to the requested tax preparer's client list.
 - when customerId or accountId is used, the request is considered authorized when:
 - the associated software intermediary customer entity holds an active and current "Software intermediary" link to the requested customer's account(s); OR
 - the associated software intermediary customer entity holds an active and current "Software intermediary" link to a tax preparer client list, and the aforementioned client list holds an active and current tax preparer links to the requested customer's account(s).
- **myIR access** (applicable to Real time model)
The gateway credential who consume the TDS APIs does not need to be associated to the software intermediary customer entity (in START) which holds all the

software intermediation links. Instead, the myIR logon supplied via OAuth is used to perform the required delegation check.

- when clientListId is used (for the applicable API), the request is considered authorized when the supplied myIR web logon is of the Intermediary logon type and such web logon has client list access to the requested client list.
- when customerId or accountId is used, the request is considered authorized when:
 - the supplied myIR web logon has myIR access to the requested customer's account(s); OR
- the supplied myIR web logon is of the Intermediary logon type and such web logon has client list access to the requested customer's account(s)
- **Note:** In this context, "client list access" refers to myIR client list security. This is an existing security functionality supported in myIR.
- In this context, the "tax preparer links" references the following START's account level link types:

Tax preparer types	START Link types	START link types decode
Tax Agent	TAXAGT	Tax Agent to Account
PAYE intermediary	PAYINT	PAYE Intermediary to Account
Payroll Bureau	PAYBUR	Payroll Bureau to Account
Bookkeeper	BOOKPR	Bookkeeper to Account
Other Representative	OTHREP	Other Representative to Account

3 Error codes

3.1 Field validation error codes

Error code	Occurs	TDS Summary	TDS Financials	TDS Transactions
TDS101	Request does not meet defined specifications.	yes	yes	yes
TDS102	At least one parameter is required.	yes	yes	yes

For field validation errors the HttpStatusCode returned will be '400—bad request'.

3.2 Authentication validation error codes

Error code	Occurs	TDS Summary	TDS Financials	TDS Transactions
TDS200	Insufficient access for the requested client list or customer.	yes	yes	yes
TDS201	The requester is not eligible for this service.	yes	yes	yes
TDS202	Authentication failure.	no	yes	yes
TDS203	Authentication failure due to missing token	no	yes	yes
TDS204	Authentication failure due to invalid token	no	yes	yes
TDS205	Authentication failure due to missing authentication header	no	yes	yes
TDS206	Unknown authentication failure.	no	yes	yes
TDS301	Invalid Id	yes	yes	yes
TDS302	Filing period does not exist	no	no	yes

For authentication errors the HttpStatusCode returned will be '401—unauthorized'.

Example JSON response:

```
{
  "errors": [
    {
      "code": "TDS102",
      "type": "validation",
      "message": " At least one parameter is required."
    }
  ]
}
```

3.3 Other error codes

For other errors, the HttpStatusCode returned will be '500—internal server error'.

4 Additional development resources

4.1 End points

Current environment information for this service—including the end points for each environment—is available within the relevant Software Development Kit (SDK).

To access the SDK, do one of the following:

- Go to <https://github.com/InlandRevenue> and select this service
- Go to <https://developerportal.ird.govt.nz> and click the link to the SDK within the Gateway Service documentation (please register first).

4.2 OpenAPI specifications

An OpenAPI file allows for the description of the entire API, end points, operations on each end point, 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.

To access the latest OpenAPI definition for this service, please do the following:

- Login to the developer portal at <https://developerportal.ird.govt.nz> (register first)
- Download and view the OpenAPI definition within the Gateway Service documentation.

5 Change log

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

Date of change	Document section	Description
20/12/2022		<ul style="list-style-type: none">Draft version 0.5