

# Inland Revenue

# Build pack: Intermediation Service

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# Contents

1	Ov	ervie	ew	4
	1.1	Thi	s solution	.4
	1.2	Inte	ended audience	.4
	1.3	Rel	ated services	.4
	1.3	3.1	Identity and Access Services (required)	.4
2	So	lutio	n design	5
	2.1	Arc	hitecture	.5
	2.2	Ser	vice scope	.5
	2.3	Mes	ssaging	.6
	2.4	Sec	curity	.7
	2.4	1.1	Transport layer security and certificates	.7
	2.4	1.2	Ciphers	.7
	2.4	1.3	End points	.7
	2.4	1.4	Authentication and authorisation	.9
	2.4	1.5	Information security obligations	10
	2.4	1.6	Delegated authority	10
3	Op	erati	ions:	L1
	3.1	Ret	rieveClientList	13
	3.1	.1	Request	13
	3.1	.2	Response	14
	3.2	Lin	k	16
	3.2	2.1	Request	16
	3.2	2.2	Response	17
	3.3	Del	ink	18
	3.3	3.1	Request	18
	3.3	3.2	Response	19
	3.4	Ret	rieveClient	20
	3.4	ŀ.1	Request	20
	3.4	1.2	Response	21
	3.5	Upo	date	23
	3.5	5.1	Request	23
	3.5	5.2	Response	24
4	Ad	ditio	nal development resources	25
	4.1	Sch	nemas	25
	4.2	WS	DLs	25
5	Re	spon	ses	26
	5.1	Ger	neric Gateway response codes	26
	5.2	Ger	neric Intermediation response codes	28

# [UNCLASSIFIED]



6 Арј	pendix	30
6.1	Expected values	30
6.1	1 Client list ID types	30
6.1	2 Client list type	30
6.1	3 Access levels	30
6.2	Active account types	31
7 Cha	ange log	32



#### 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. The Intermediation Service described in this build pack document forms part of a suite of Gateway Services.

Intermediation is the process of linking a business intermediary (such as a tax agent, bookkeeper, payroll bureau, payroll intermediary etc) to an individual or organisation so the intermediary can act on their behalf for tax purposes. This Intermediation Gateway Service provides the ability for intermediaries to manage links to clients as well as provides the ability for business intermediaries to retrieve client lists already established in myIR.

This build pack document is intended to provide the technical information required to support the end-to-end onboarding of the Intermediation Service. It describes the architecture of the technical solution, schemas, end points, sample payloads to use in non-production environments, and also its interaction with other build packs that cover different aspects of Gateway Services.

Before continuing, please consult <a href="www.ird.govt.nz/digital-service-providers/services-catalogue">www.ird.govt.nz/digital-service-providers/services-catalogue</a> 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 technical teams and development staff. It describes the technical interactions, including responses, provided by the Intermediation service.

The reader is assumed to have a suitable level of technical knowledge in order to understand the information provided.

#### 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 <u>section 4</u> of this document.

# 1.3.1 Identity and Access Services (required)

The Identity and Access Services (IAS) are used to authenticate access. Authentication tokens will need to be retrieved via IAS prior to making calls to the Intermediation Service. This Intermediation Service build pack was written using information from version 1.5 of the IAS build pack.

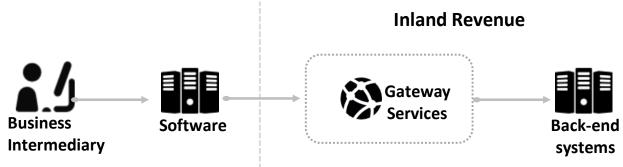


# 2 Solution design

#### 2.1 Architecture

Inland Revenue's Gateway Services suite is used by approved service providers to facilitate everything from registration activities, filing returns, making payments and other service offerings to allow customers to interact with Inland Revenue.

The diagram below illustrates the flow of data from the business intermediary to Inland Revenue.



The WSDLs for the Gateway Services define an 'any' XML request and response structure, which then relies on a group of XSDs to define the data structure of those requests and responses. Each request and response type will define a lower, 'wrapper' element.

Any malformed XML will instantly be rejected by the Gateway Services prior to any schema validation.

#### 2.2 Service scope

This service supports the following operations:

- **RetrieveClientList:** This operation is used to retrieve client lists belonging to a business intermediary as well as the clients in each list.
- **Link:** This operation is used to link an intermediary to a client or a business intermediary's client list to a client account.
- **Delink:** This operation is used to delink a client from a business intermediary or a client account from an business intermediary's client list.
- **RetrieveClient:** This operation is used to retrieve the link attributes between a business intermediary and client or client accounts.
- **Update:** This operation is used to update an existing business intermediary to client relationship. This can also be used to switch clients between client lists.



#### 2.3 Messaging

All SOAP messages require a SOAP header and a SOAP body containing a structured XML payload. Correct values can be found in the relevant WSDL, the link to which is provided in section 4 of this document.

The Gateway Services allow the consumption of any structured XML payload but will be validated against the Inland Revenue-published XSDs.

This is a late binding validation, performed after authentication has been reviewed. The message structure of these services is a simple request/response. The XML request will be checked for well-formed XML before the schema validation. Responses to these requests will be in XML format as well and will be defined in the same schema that define the requests.

Any XML submissions in the SOAP body that do not meet the provided schema will not be accepted by the Gateway Services. Incorrect namespaces will also fail validation against the published schema.

Note that the Gateway Services use the SOAP version 1.2 protocol, and the SOAP service contract is published using WSDL version 1.1.

#### Example SOAP request structure

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"</pre>
       xmlns:int="https://services.ird.govt.nz/GWS/Intermediation/"
       xmlns:ret=https://services.ird.govt.nz/GWS/Intermediation/:types/RetrieveClientListReques
       xmlns:a="http://www.w3.org/2005/08/addressing">
    <soap:Header/>
    <soap:Header>
         <a:Action>https://services.ird.govt.nz/GWS/Intermediation/Intermediation/RetrieveClientList</a:Action>
    </soap:Header>
    <soap:Body>
            <int:RetrieveClientList>
                     <int:RetrieveClientListRequestMsg>
                           <ret:RetrieveClientListRequestWrapper>
                                 <!-- Intermediation Fields -->
                           </ret:RetrieveClientListRequestWrapper>
                     </int:RetrieveClientListRequestMsg>
            </int:RetrieveClientList>
    </soap:Body>
</soap:Envelope>
```



#### Example SOAP response structure

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
       xmlns:a=http://www.w3.org/2005/08/addressing
      xmlns:int1="https://services.ird.govt.nz/GWS/Intermediation/"
      xmlns:int2="urn:www.ird.govt.nz/GWS:types/Intermediation.v1"
      xmlns:b=https://services.ird.govt.nz/GWS/Intermediation/:types/RetrieveClientListResponse
      xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
      <s:Header>
         <a:Actions:mustUnderstand="1">
              https://services.ird.govt.nz/GWS/Intermediation/Intermediation/RetrieveClientList
         </a:Action>
      </s:Header>
      <s:Body>
          <int1:RetrieveClientListResponse>
             <int1:RetrieveClientListResult>
                <br/>
<b:RetrieveClientListResponseWrapper>
                   <int:retrieveClientListResponse >
                        <!-- Response fields -->
                   </int:retrieveClientListResponse>
                </b:RetrieveClientListResponseWrapper>
             </int1:RetrieveClientListResult>
          </int1:RetrieveClientListResponse>
      </s:Body>
</s:Envelope>
```

#### 2.4 Security

#### 2.4.1 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. Please refer to the <u>Identity and Access Services</u> build pack for more details.

#### 2.4.2 Ciphers

Inland Revenue currently supports TSL1.2 and TLS1.3. Please refer to <u>Identity and Access</u> <u>Services</u> build pack for supported ciphers.

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# 2.4.3 End points

There are two end points, which are summarised in the bullet points below (the table immediately afterwards provides more detail):

- 1. There is an end point to which service providers' centralised **cloud** locations can connect. This will require X.509 certificates for mutual TLS with an agreed common name, however certificates no longer need to be exchanged with Inland Revenue. On the cloud end point, Inland Revenue has controls to shield service providers from issues caused by heavy usage from other providers.
- 2. For service providers connecting from **desktops/native apps** that are unable to securely store certificates and access tokens. There is a separate end point that does not use mutual TLS and therefore does not require certificates. On the desktop end point, Inland Revenue has less ability to shield consumers of the service from heavy usage by others.



	End point for cloud-based	End point for desktop
	connections	connections
Purpose	Primary preferred end point to connect to from service providers for Gateway Services	<ul> <li>Additional transitory end point provided to facilitate connecting from desktops which might be high volumes of sources addresses, transient DHCP addresses, not realistically associated with client-side TLS certificates, not individually onboarded to set up certificate trust</li> </ul>
Client application type	Cloud applications	<ul> <li>Desktop/native applications</li> <li>For connecting from multiple decentralised clients</li> </ul>
Constraints	<ul> <li>Only for source locations with client-side TLS certificates</li> <li>On the cloud end point Inland Revenue has controls to shield service providers from issues caused by heavy usage from other providers</li> </ul>	<ul> <li>Less scalable</li> <li>Subject to tighter security controls</li> <li>On the desktop end point Inland Revenue has less ability to shield consumers of the service from heavy usage by others</li> <li>OAuth2 refresh tokens will not be offered to desktop clients</li> </ul>
Mutual TLS	Inland Revenue explicitly trusts the certificate the service provider associates with the TLS connection as client for Mutual TLS connections and uses it to identify the service provider in conjunction with the web service identification below	Server-side certificates only
Minimum TLS • 1.2 version		• 1.2
URL	Contains/gateway/	Contains/gateway2/
<b>Port</b> • 4046		• 443 (Default https port)
Web service consumer identification	To be identified in web service calls—each cloud application will be given client_id/client_secret credentials during onboarding to allow it to call this end point	<ul> <li>Desktop clients will be given client_id/client_secret credentials in the same manner as cloud application clients. However, desktop clients will not be able to redeem refresh tokens to obtain a new OAuth token when it expires.</li> </ul>
Firewalling in production	No IP address restrictions	No IP address restrictions



	End point for cloud-based connections	End point for desktop connections
	<ul> <li>Access limited by certificate enrolment</li> </ul>	
Firewalling in non-production environments	<ul> <li>No IP address restrictions</li> <li>Access limited by certificate enrolment</li> </ul>	<ul> <li>Firewalled—IP whitelisting needed</li> </ul>

#### 2.4.4 Authentication and authorisation

Authentication and authorisation are the mechanisms by which the consumer of the service is identified, and their access rights enforced. This service uses the standard OAuth2 authorisation code flow. For instructions on how to acquire an OAuth access token, and the properties of this token (eg its expiry and refresh parameters) please refer to the Identity and Access build pack.

Authentication and authorisation is described in terms of two parties:

- **Consumer**—this is the party under whose identity the interaction is being transacted (the party who has been authenticated)
- Resource—this is the data entity/object being accessed (eg created, read, updated or deleted) via the service.

When using OAuth, the consumer is authenticated using their Inland Revenue myIR credentials and their access is authorised using the same access rights as myIR. For example, if a myIR user does not have permission to file a return online, they will not be able to file a return via Gateway Services either. This applies to users who are granted access as staff inside an organisation or as staff in a tax agency.



The following steps are applied by the Gateway Services when authorising access by the consumer to a resource:

- 1. If the consumer is the resource owner then access to the resource is authorised (ie the consumer is authorised to manage their own affairs).
- 2. Otherwise, if the consumer's myIR credential has been granted access to the resource, with the appropriate level of access, then access is authorised.
- 3. Otherwise, if the consumer is an intermediary of an appropriate type who has been delegated access by being linked to the resource, with the appropriate level of access, then access is authorised.
- 4. Otherwise access is denied.

#### 2.4.5 Information security obligations

The software provider is responsible for ensuring that the data their system has retrieved from Inland Revenue is used for the intended purpose and is protected from inappropriate access by software users and external parties. This obligation is particularly important for consumers of the Intermediation Service, due to the access granted to sensitive personal and/or commercial information about tax payers.

The Gateway Services enforce the same access controls as Inland Revenue's other channels, but they enable access to large data sets which, when using the other channels, tend to be restricted to one record at a time. Software developers therefore need to be aware of this heightened risk and their responsibility to secure this data from unintended disclosure.

#### 2.4.6 Delegated authority

Software developers will need to include a prompt in their intermediation service for the intermediary to check that the IRD number they have entered is correct and to confirm they hold a signed authority to act for the client before they can submit this to Inland Revenue through their software.

#### For example:

I declare that I hold a signed authority to act for the tax types and activities I am representing on behalf of this client. I acknowledge that linking or accessing their accounts without a signed authority to act is a breach of my obligations as a registered intermediary.



# 3 Operations

The schemas and WSDLs listed here are subject to change.
For the authoritative definitions, please visit
www.ird.govt.nz/digital-service-providers/services-catalogue

The structures of all Gateway Service operations are intended to produce the most efficient requests and responses. Any common structures and fields will be used across many schemas and tax types through an intentional inheritance method. The section below describes the structure of each operation and the scenarios in which certain fields will be used in XML requests and responses.

This section contains these schema aliases:

Cmn: Common.v2.xsdInt: Intermediation.v1.xsd

All requests and responses live in the Intermediation.xsd.

All operations for the Intermediation Service will contain two standard header fields: **softwareProviderData** and **identifier**.

The **identifier** field is common across all Gateway Services but refers to different parties in different services. In all cases it is the party with delegated permissions to whom an OAuth token is provided. If the value cannot be resolved to a known context, or if it can but the provided OAuth token does not have the necessary delegated permissions, then the error code 4 "unauthorised delegation" is returned. Please refer to individual operations for the nature of the identifier expected in this parameter in any given context.

#### For example:



Field	Description		
softwareProvider	The company that developed the software		
softwarePlatform	The field value will be provided by Inland Revenue during the onboarding process		
softwareRelease	The version of the software package		
IdentifierValueType	The ID type being submitted for the tax preparer		
identifier	The value submitted for this field should contain only digits, with no dashes. IRD numbers that are eight digits must be padded with a leading zero.		
accountType	NOT USED. No intermediation links will originate from an intermediary account. This field will be omitted from all below examples.		

# Proper use:

- The only softwareProviderData fields into which users will be able to enter information are the ones that were provided to Inland Revenue at the time of onboarding.
- The identifier is that of the business intermediary on whose behalf the operations are being performed.
- For most cases in the Intermediation Service the IdentifierValueType field will be IRD. However, if submitting a customer ID the value CST can be used.

# Example scenario:

- Tax agency with IRD 021894334 wants to retrieve a client list
  - $_{\odot}$  Tax agent with access to agency calls /Intermediation/RetrieveClientList/ with <cmn:identifier IdentifierValueType="IRD">021894334 </cmn:identifier>

After October 2021, Inland Revenue will no longer be issuing new IRD numbers for bankrupt clients. When a client's bankruptcy is finalised, the existing income tax account will be closed (pre-adjudicated), and a new account will be opened (post-adjudicated) automatically. This will result in multiple income tax accounts for a single IRD number. When specifying IRD or ACCIRD as the **IdentifierTypeValue**, the gateway automatically link or delink both accounts.

In order to reference the pre-adjudicated account, the **IdentifierTypeValue** will need to reference a more specific "ACC" identifier instead of "IRD" or "ACCIRD".

IRD	Туре	ACC	Status	Identifier Type	Default
131-065-914	INC	131-065-914-INC003	Active	IRD, ACCIRD	Yes
131-065-914	INC	131-065-914-INC002	Closed	ACC	Yes



#### 3.1 RetrieveClientList

The RetrieveClientList operation will be used to retrieve all or some of a business intermediary's clients. There is also an option to retrieve all of a business intermediary's clients of a given account type. For those who are not registered as either a tax agent, bookkeeper or payroll intermediary, this operation will also provide a client's status. All links returned by this operation will be active links but the accounts they are linked to may be ceased.

#### 3.1.1 Request

Field	Required	Description
filterAccountType	Optional	This is used to limit the resulting accounts to only this specified account type.
filterClientListID	Optional	This filter will be used to only retrieve one client list. This can be used in conjunction with filterAccountType. If all available client lists are filtered out, error code 103 will be returned.

**NOTE:** The IRD number submitted in the identifier field will **ALWAYS** be that of the business intermediary and NOT that of the client list. If a single client list is desired be sure to use the filterClientListID field.



#### 3.1.2 Response

```
<!--Tax Agent, Payroll Intermediary, or Bookkeeper Response-->
<agency agencyID="123154150" agencyIDType="IRD">
      <cli>clientList clientListId="123154150" clientListIdType="LSTID" clientListType="TAXCLI"
        hasRefundAccount="false">
             <client>
                    <cli>dentifierValueType="ACCIRD">123154134</clientIRD>
                    <cli>deligner < clientAccountType > GST < /clientAccountType > 
             </client>
             <client>
                      <cli>clientID IdentifierValueType="IRD">123154126</clientIRD>
             </client>
     </clientList>
      <clientList clientListId="1231544" clientListIdType="CLTID" clientListType="BKPCLI"</p>
        hasRefundAccount="true">
             <client>
                    <cli>dentifierValueType="ACCIRD">123163915</clientIRD>
                    </client>
      </clientList>
</agency>
<!--Payroll Bureau or Other Rep Response-->
<agency agencyID="123154150" agencyIDType="IRD">
      <cli>clientList clientListId="1231234" clientListIdType="CLTLID" clientListType="PAYCLI"
        hasRefundAccount="false">
                  <cli><cli><cli><cli>status="APPROVED">
                    <cli>clientID IdentifierValueType="ACCIRD">123154134</clientID>
                    <cli>clientAccountType>EMP</clientAccountType>
             </client>
                  <cli>client status="APPROVED">
                     <cli>dentifierValueType="ACCIRD">123154133</clientID>
                    <cli>entAccountType>EMP</clientAccountType>
             </client>
                  <cli>client status="PENDING">
                     <cli>dentifierValueType="ACCIRD">123154126</clientID>
                    <cli>entAccountType>EMP</clientAccountType>
             </client>
     </clientList>
      <clientList clientListId="1231544" clientListIdType="CLTID" clientListType="OTHCLI"</p>
        hasRefundAccount="false">
             <cli>client status="PENDING">
                    <cli>dentifierValueType="ACCIRD">123163915</clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></clientID></
                    <cli>dientAccountType>GST</clientAccountType>
             </client>
      </clientList>
</agency>
```

Field	Required	Description
agencyID	Required	This attribute of the <agency> tag will display the ID of the agency.</agency>
clientListId	Required	This attribute of the <clientlist> tag will display the ID of the client list.</clientlist>
clientListIdType	Required	This attribute will show the client list ID type. For expected values see <a href="mailto:appendix">appendix</a> .



Field	Required	Description
clientListType	Required	This attribute is used to distinguish the type of client list being returned. This is useful for business intermediaries that work in multiple compacities (Tax Agent and Bookkeeper) and have different client lists for the different roles. For expected values see appendix.
hasRefundAccount	Required	This attribute will be used to state whether or not the client list has a refund account on it.
clientID	Required	This field is the client's ID in the format of the IdentifierValueType.
IdentifierValueType	Required	The ID type being returned for the clientID value.
clientAccountType	Optional	This field is the client account. If the link associated to this client list is a customer master link, then this field will not be provided (See second client in the TAXCLI list above).
status	Optional	This field will only be returned for payroll bureaus and other representatives. If a link to a client has been requested but not approved yet, this attribute will be supplied as PENDING. Once approved the status will return APPROVED.



#### 3.2 **Link**

The Link operation will be used to establish a relationship between a business intermediary and a client. There are two different uses for this operation—linking to an account and declaring as the customer master of the client. To link to a client as the customer master a link to a client account must be made prior to making the customer master link call. For business intermediaries that require client approval, a client correspondence will be created once the link operation is called. This will be delivered via email where the client can approve the link. It is worth noting that any existing EQU or ERA accounts will be automatically linked when linking to a client's income tax account.

**Service behaviour note:** The back-end updates for the Link and Delink operations are <u>near-real time</u>. Creating and updating links is resource-intensive and the speed of these actions will depend on the current queue of requests. Synchronous success responses will determine the request has been received but it does not mean that the back-end resource has been updated yet. No update should take longer than three minutes.

#### 3.2.1 Request

```
<int:linkRequest
       xmlns:cmn="urn:www.ird.govt.nz/GWS:tvpes/Common.v2"
       xmlns:int="urn:www.ird.govt.nz/GWS:types/Intermediation.v1">
       <cmn:softwareProviderData>
              <cmn:softwareProvider>...</cmn:softwareProvider>
              <cmn:softwarePlatform>...</cmn:softwarePlatform>
              <cmn:softwareRelease>...</cmn:softwareRelease>
       </cmn:softwareProviderData>
       <cmn:identifier IdentifierValueType="IRD">111111111
      <int:clientListID IdentifierValueType="LSTID">123321441</int:clientListID>
       <int:target>
              <int:clientID IdentifierValueType="IRD">123123123</int:clientID>
              <int:clientAccountType>GST</int:clientAccountType>
      <int:redirectMail>true</int:redirectMail>
      <int:redirectDisbursements>false</int:redirectDisbursements>
       <int:updateCustomerMaster>false</int:updateCustomerMaster>
</int:linkRequest>
```

Field	Required	Description
clientListID	Required	This is the identifier for the client list. The identifier value types expected here can be found in



Field	Required	Description
redirectDisbursements	Optional	This field is used to set the redirect disbursements flag on a link. This can only be done on account links and not for customer master links. Redirect disbursements can <b>only</b> be used if a refund account has been setup on the source client list.
updateCustomerMaster	Required	This field is to designate whether the requested link is to establish customer master or not. This action is only accessible to tax agents and should always be false for all other intermediaries.

**NOTE:** The IRD number submitted in the identifier field will **ALWAYS** be that of the business intermediary and NOT that of the client list.

# 3.2.2 Response

Field	Required	Description
clientListID	Required	This field is the identifier for the client list. The identifier value types expected here can be found in the appendix
clientID	Required	This field is the identifier for the client that was linked to.
clientAccountType	Optional	This field is the account that was linked. This field will not be provided if the link request was to establish a customer master.
status	Optional	This field will only be returned for payroll bureaus and other representatives. If a link to a client has been requested but not approved yet, this attribute will be supplied as PENDING. Once approved the status will return APPROVED.



#### 3.3 Delink

The Delink operation will be used to cease a relationship between a business intermediary and a client. There are two different uses for this operation—delinking from an account and removing the business intermediary as the customer master for the client.

**Service behaviour note:** The back-end updates for the Link and Delink operations are <u>near</u> real time. Creating and updating links is resource-intensive and the speed of these actions will depend on the current queue of requests. Synchronous success responses will determine the request has been received but it does not mean that the back-end resource has been updated yet. No update should take longer than three minutes to be made.

# 3.3.1 Request

```
<n1:delinkRequest
       xmlns:cmn="urn:www.ird.govt.nz/GWS:types/Common.v2"
       xmlns:n1="urn:www.ird.govt.nz/GWS:types/Intermediation.v1">
       <cmn:softwareProviderData>
              <cmn:softwareProvider>...</cmn:softwareProvider>
              <cmn:softwarePlatform>...</cmn:softwarePlatform>
              <cmn:softwareRelease>...</cmn:softwareRelease>
       </cmn:softwareProviderData>
       <cmn:identifier IdentifierValueType="IRD">021894334</cmn:identifier>
      <n1:clientListID IdentifierValueType="LSTID">123445111</n1:clientListID>
       <n1:target>
              <n1:clientID IdentifierValueType="ACCIRD">123321125</n1:clientID>
              <n1:clientAccountType>GST</n1:clientAccountType>
       </n1:target>
       <n1:updateCustomerMaster>false</n1:updateCustomerMaster>
</n1:delinkRequest>
```

Field	Required	Description
clientListID	Required	This is the identifier for the client list. The identifier value types expected here can be found in the appendix.
clientID	Required	This is the identifier for the client. The expected value for the identifier value type here is ACCIRD unless the delink request is for a customer master—then the expected value is IRD.
clientAccountType	Optional	This field is the client account. If the delink request is for a customer master link, then this field should not be provided.
updateCustomerMaster	Required	This field is to designate whether the request is to remove customer master. This action is only accessible to tax agents and should always be false for all other intermediaries.

**NOTE:** The IRD number submitted in the identifier field will **ALWAYS** be that of the business intermediary and NOT that of the client list.



#### 3.3.2 Response

Field	Required	Description
clientListID	Required	This field is the identifier for the client list. The identifier value types expected here can be found in the appendix
clientID	Required	This field is the identifier for the client that was linked to.
clientAccountType	Optional	This field is the account that was linked. This field will not be provided if the link request was to establish a customer master.

**NOTE:** All values returned here should match the values submitted in the request. Pending links can be cancelled with a delink call for payroll bureaus and other representatives.



#### 3.4 RetrieveClient

The RetrieveClient operation will be used to retrieve the attributes of a client relationship. If there are multiple links for the designated client and a client account type is not provided then all links will be retrieved. All links returned by this operation will be active links but the accounts they are linked to may be ceased.

#### 3.4.1 Request

Field	Required	Description		
clientID	Required	This field is the identifier for the client that is linked to.		
clientAccountType	Optional	This field is to narrow a request down to a particular linked account. If this field is not provided then all links to this client will be returned.		

**NOTE:** The IRD number submitted in the identifier field will **ALWAYS** be that of the business intermediary and NOT that of the client list.



# 3.4.2 Response

```
<n1:retrieveClientResponse xmlns:cmn="urn:www.ird.govt.nz/GWS:types/Common.v2"
xmlns:n1="urn:www.ird.govt.nz/GWS:types/Intermediation.v1">
       <cmn:statusMessage>
              <cmn:statusCode>0</cmn:statusCode>
              <cmn:errorMessage></cmn:errorMessage>
              <cmn:errorDescription> </cmn:errorDescription>
       </cmn:statusMessage>
       <n1:clientID IdentifierValueType="IRD">132123123</n1:clientID>
       <!--Tax Agent client examples-->
       <n1:link customerMaster="true">
              <n1:clientListID IdentifierValueType="LSTID">111111111</n1:clientListID>
              <n1:redirectMail>true</n1:redirectMail>
       </n1:link>
       <n1:link clientAccount="IPS">
              <n1:clientListID IdentifierValueType="LSTID">123133211</n1:clientListID>
              <n1:redirectMail>true</n1:redirectMail>
              <n1:redirectDisbursements>true</n1:redirectDisbursements>
       <!--Payroll Intermediary and Bookkeeper client example -->
       <n1:link clientAccount="EMP">
              <n1:clientListID IdentifierValueType="LSTID">123133211
              <n1:redirectMail>false</n1:redirectMail>
              <n1:redirectDisbursements>false</n1:redirectDisbursements>
       </n1:link>
       <!--Payroll Bureau and Other Rep client example-->
       <n1:link clientAccount="EMP" status="PENDING">
              <n1:clientListID IdentifierValueType="CLTLID">1080221</n1:clientListID>
              <n1:redirectMail>false</n1:redirectMail>
              <n1:redirectDisbursements>false</n1:redirectDisbursements>
       </n1:link>
       <n1:link clientAccount="EMP" status="APPROVED">
              <n1:clientListID IdentifierValueType="CLTLID">1083061</n1:clientListID>
              <n1:redirectMail>false</n1:redirectMail>
              <n1:redirectDisbursements>false</n1:redirectDisbursements>
       </n1:link>
</n1:retrieveClientResponse>
```

Field	Required	Description			
clientID	Required	This field is the identifier for the client that is linked to.			
clientAccount	Optional	This attribute will display the account type of the client link. This attribute will only be displayed if it is an account level link.			
clientListID	Required	This field is the identifier for the client list. The identifier value types expected here can be found in the appendix.			
redirectMail	Required	This field shows the current redirect mail flag set on the given link.			
redirectDisbursements	Optional	This field shows the current redirect disbursements flag set on the given link. This will not be returned if it is a customer master link.			



Field	Required	Description
customerMaster	Optional	This attribute designates that the link is a customer level link establishing a customer master relationship. This will not be returned if the link is an account level link.
status	Optional	This field is for payroll bureaus and other representatives. If a link to a client has been requested but not approved yet, this attribute will be supplied as PENDING. Once approved the status will return APPROVED.

**NOTE:** While some restricted users may have view access to particular clients, they do not have the access to run the RetrieveClient operation.



#### 3.5 Update

The Update operation will be used to update an existing relationship between a business intermediary and a client. Most fields in this request are optional and should be supplied if those fields are intended to be updated. If the desired outcome of the update is to change the source of the client link from one client list to another then <u>ALL</u> optional fields need to be provided or else defaults will be assigned, and the existing link attributes will not be preserved.

#### 3.5.1 Request

```
<n1:updateRequest
      xmlns:cmn="urn:www.ird.govt.nz/GWS:types/Common.v2"
      xmlns:n1="urn:www.ird.govt.nz/GWS:types/Intermediation.v1">
              <cmn:statusCode>0</cmn:statusCode>
              <cmn:errorMessage> </cmn:errorMessage>
              <cmn:errorDescription> </cmn:errorDescription>
      </cmn:statusMessage>
      <cmn:identifier IdentifierValueType="IRD">123123120</cmn:identifier>
       <n1:clientListID IdentifierValueType="LSTID">123123123</n1:clientListID>
       <n1:target>
              <n1:clientID IdentifierValueType="ACCIRD">123321125</n1:clientID>
              <n1:clientAccountType>GST</n1:clientAccountType>
       <n1:redirectMail>true</n1:redirectMail>
      <n1:redirectDisbursements>true</n1:redirectDisbursements>
      <n1:updateCustomerMaster>true</n1:updateCustomerMaster>
       <n1:newClientListID IdentifierValueType="LSTID">123123456</n1:newClientListID>
</n1:updateRequest>
```

Field	Required	Description			
clientListID	Required	This field is the identifier for the client list. The identifier value types expected here can be found in the appendix.			
clientID	Required	This field is the identifier for the client that is being updated.			
clientAccountType	Optional	This field is the account that is currently linked. This field will not be provided if the link request is to update a customer master.			
redirectMail	Optional	This field is used to update the redirect mail flag. If the update request is not intended to change this field then this field should not be submitted.			
redirectDisbursements	Optional	This field is used to set the redirect disbursements flag on a link. This can only be done on account links and not for customer master links. Redirect disbursements can <b>only</b> be used if a refund account has been setup on the source client list.			
updateCustomerMaster	Required	This field is to designate whether the requested update is for a customer master link or not. This action is only accessible to tax agents and should always be false for all other intermediaries.			
newClientListID	Optional	This field is used to change the source of the client link from one client list to another. If this action is			



Field	Required	Description
		performed then all optional fields above should be supplied. Attributes of the existing link will not be preserved on the move from one list to another. If the new client list does not have proper settings (eg no refund account for redirect disbursements or different list type [see <a href="mailto:appendix">appendix</a> ]) then an error message will be returned.

**NOTE:** The IRD number submitted in the identifier field will **ALWAYS** be that of the business intermediary and NOT that of the client list.

**Service behaviour note:** The back-end updates for the Update operation is <u>near</u> real time. Updating links is resource-intensive and the speed of these actions will depend on the current queue of requests. Synchronous success responses will determine the request has been received but it does not mean that the back-end resource has been updated yet. No update should take longer than three minutes to be made.

#### 3.5.2 Response

**NOTE**: It is recommended that the retrieveClient operation is used before the update call to ensure the correct link fields are being updated. All fields returned in the updateResponse are identical to the retrieveClientResponse. See <a href="retrieveClientResponse">retrieveClientResponse</a> table for field descriptions. For business intermediaries that require client approval, the update operation will not require the client to approve the link again.



# 4 Additional development resources

Current environment information for this service—including the end points for each environment, schemas and WSDLs—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 <a href="https://developerportal.ird.govt.nz">https://developerportal.ird.govt.nz</a> and click the link to the SDK within the Gateway Service documentation (please register first).

#### 4.1 Schemas

All schemas for the Intermediation service import a common.v2.xsd which has some data types specific to Inland Revenue. This common.v2.xsd will be used in other gateway services outside of the /Intermediation/ namespace so it must be kept up-to-date, without numerous redundant versions remaining.

#### 4.2 WSDLs

The Intermediation Gateway Service has one WSDL, which has a target namespace of https://services.ird.govt.nz/GWS/Intermediation/ and can be found at https://services.ird.govt.nz:4046/gateway/GWS/Intermediation/?singleWsdl.

Note: The production URL above will not work until after onboarding with Inland Revenue.

All WSDL messages follow this naming convention:

A development version of the WSDL is provided with this build pack. For easier WSDL consumption, the <xs:any> structure has been replaced with a reference to the corresponding element in the Intermediation.xsd. This will allow any tools that consume the WSDL to automatically pull in the data structures from the XSD. To use this, ensure the WSDL provided by Inland Revenue is in the same directory as Common.xsd, ReturnCommon.xsd and Intermediation.xsd. See beginning of this section for instructions on where to find WSDLs for this service.



# 5 Responses

The response message from the Gateway Services will always include a status code and status message. These values will describe any successes or failures of a web service call. Following the status message will be the response data for the given operation.

# **5.1** Generic Gateway response codes

The following response codes are common to all Gateway Service calls. This service applies framework security validation as follows, and the descriptions in the table below reflect that:

Standard codes	Standard message Description		Customer level validation
-1	An unknown error has occurred	This is generally what will be returned for internal errors that are not due to the service request	Υ
0	(Success)	Standard success code is 0	Υ
1	Authentication failure	General authentication failure status.  Could be the result of inability to validate security token.	Y
2	Missing authentication token(s)	Tokens were not included in the HTTP header as expected	Υ
3	Unauthorised access	Access is not permitted for the requester to use the gateway services. Access could not be confirmed due to the failure of OAuth token validation. This could be due to invalid format of the token or infrastructure being unavailable.	
4	Unauthorised delegation		
5	Unauthorised vendor	The vendor code provided does not permit access—has not been onboarded for this operation	Y



Standard codes	Standard message	Description	Customer level validation
6	Authentication expired	(NOTE: Error code 6 is now deprecated and you will receive error code 1 when the authorisation token has expired.)	N/A
7	Account Type not supported  This code will be returned when an unsupported account types is requested. For retrieveClientList, an in unsupported filterAccountType value mig in a 103 code as per the table below.		N
20	Unrecognised XML request	This could be due to the external sender sending in incorrect XML or it could be due to bad/poor/missing configuration	Y
21	XML request failed The external requestor submitted XML that is not formatted according to our defined schemas.		Υ
(none)	(non xml)  In some scenarios where the request message does not have a well-formed XML structure or is not valid or does not adhere to the SOAP protocol formats, the framework generates a parsing exception that is not wrapped in XML nor has a response status code.		Y
(none)	(none) (SOAP fault) UnAuthorised  An unexpected technical fault has been detected. Depending on the context (eg if an online user is waiting), try the request again after at least five seconds. If the fault recurs then please contact <a href="mailto:GatewayServices@ird.govt.nz">GatewayServices@ird.govt.nz</a> .		Y



# **5.2** Generic Intermediation response codes

The following response codes are specific to Intermediation Gateway Service calls:

Standard codes	Standard message	Description		
100	Could not extract data from XML payload	Could not extract data from XML payload		
101	Tax agency IRD is not valid	The provided IRD number does not belong to a business intermediary		
102	No client lists available for agent	The requesting agent has not been delegated access to any client lists		
103	No client found for requested parameters	There are no client accounts for the request parameters provided. User and restricted user logons will also receive this if they don't have access.		
104	No tax preparer indicator	The intermediary attempting to link does not have the proper preparer indicator		
105	Invalid client list	The client list details provided do not resolve to a valid client list. This will only be returned to owner and administrator logons.		
106	Client list doesn't allow refunds	The intended client list doesn't have a refund account to redirect disbursements		
107	No existing customer master link	There is no customer master link to update		
108	Insufficient client list access	The caller doesn't have access to the required client list. This will only be returned to owner and administrator logons.		
109	Cannot redirect refunds on customer master	Customer master links do not allow the redirecting of refunds		
110	Customer master requests cannot include client accounts	A client account cannot be provided when creating a customer master link		
111	Account link must exist before customer master link	A customer master link cannot be created until a link to a client's account exists		
112	New client list must be of the same client list type	The new client list must be of the same client list type		
113	A customer master link already exists between this tax agent and client	A link already exists to the customer provided		
114	Only tax agents can establish customer master links	Only business intermediaries can create a link to the customer master		
115	A link to the client account already exists	A link already exists to the client's provided account		
116	Tax preparer cannot redirect mail	The business intermediary cannot redirect the client's mail		
117	Tax preparer cannot redirect refunds	The business intermediary cannot redirect the client's refunds		



Standard codes	Standard message	Description		
118	Invalid account type for intermediary link	Intermediaries cannot link to the specified account type		
119	No update action provided	One of the redirect fields or a new client list must be provided in an Update call		
120	Client account type required	If an account level link is being created ther the account type must be provided		
121	PAYE intermediary must redirect mail	PAYE Intermediaries are required to redirect mail		
122	Redirect disbursements not allowed for account type	Tax agents are only allowed to redirect refunds from particular account types		
124	Account link already requested and still awaiting approval	Account link already requested and still awaiting approval		



# 6 Appendix

#### **6.1** Expected values

#### 6.1.1 Client list ID types

List ID type	ID description	Available for tax agents	Available for payroll intermediaries	Available for payroll bureaus	Available for bookkeepers	Available for others
CLTLID	Client List Identifier	No	Yes	Yes	Yes	Yes
LSTID	List Identifier	Yes	Yes	No	No	No
IRD	IRD Number	Yes	Yes	No	No	No

**NOTE:** In the past, Inland Revenue has assigned and identified client lists by IRD numbers. This has changed as part of the Business Transformation Programme and the two new client list ID types above will now be used. While older client lists can be referenced by an IRD number, the use of LSTID is encouraged to prepare for a future state in which the IRD client list ID type is no longer supported.

#### 6.1.2 Client list type

List type	List description	
TAXCLI	Tax Agent Client List	
BKPCLI	Bookkeeper Client List	
PRBCLI	Payroll Bureau Client List	
PAYCLI	Payroll Intermediary Client List	
OTHCLI	Other Representative Client List	

#### 6.1.3 Access levels

Access level	Access description		
FILE	File access allows the filing of returns on behalf of the client for any linked accounts		
NONE	None access restricts all information for any linked clients		
VIEW	View access allows the viewing of all tax attributes, statuses and obligations on the linked client accounts		
FULL	Full access allows the filing, payment and viewing of all account information and obligations on behalf of the linked client		

**NOTE:** Web logons with the access level of 'restricted user' only have access to retrieve client lists through the Intermediation Service.



# 6.2 Active account types

The following active account types can be both submitted and returned by the Intermediation Service:

•	AIL	•	FBT	•	RDI
•	AIP	•	FTR	•	REB
•	MPO	•	GMD	•	RLT
•	CAD	•	GSD	•	RUL
•	CRS	•	GST	•	RSP
•	DWT	•	INC	•	RWT

EMP	<ul><li>IPS</li></ul>	<ul><li>SLS</li></ul>
EQU	<ul> <li>LOD</li> </ul>	<ul> <li>TOD</li> </ul>
ERA	<ul><li>NRT</li></ul>	<ul><li>UCM</li></ul>
FAM	<ul><li>PIE</li></ul>	<ul> <li>CSP</li> </ul>
FAT	<ul><li>PRS</li></ul>	<ul> <li>SBC</li> </ul>



# 7 Change log

This table lists all concrete changes that have been made to this build pack document.

Date of change	Document section	Description
18/06/2024	2.4.1, 2.4.2	Removed details of supported certificate and ciphers from this document and replaced with the link to latest Identity and Access services build pack for the most current details
27/03/2024	5.2	Error code 123 removed
12/07/2022	6.2	Included SBC (Small Business Cashflow Scheme) into Active account type list
29/03/2022	6.2	Included CSP (COVID-19 Support Payments) into Active account type list - Tax agents, bookkeepers and other representatives will be able to link and delink for CSP (PAYE intermediaries and payroll bureaus cannot), and tax agents change mail and refund redirect settings
17/09/21		October 2021 release changes
	6.1.1	Updated to allow CLTLID for payroll intermediaries
	3	Information added to end of opening section to cover October bankruptcy changes
		Glossary removed
21/06/21	2.4	<ul> <li>Security section restructured – now contains sub-sections on information classification, transport layer security and certificates, ciphers, end points, and authentication and authorisation</li> <li>New information added to provide for Inland Revenue's support for TLS1.3, and deprecation of certain TLS1.2 ciphers</li> <li>Updated end point information on web service consumer identification for desktop connections (in table)</li> <li>Updated list of recommended certificate authorities</li> <li>Updated list of requirements for accepting public X.509 keys – now includes ECDSA</li> </ul>
	1	Moved 'Mutual Transport Layer Security and certificates' section into section 2.4
		'Prerequisites' table removed and absorbed into section 2.4.2
	4	Renamed 'End points, schema and WSDLs' section to 'Additional development resources'



Removed section with redundant reference to energoints  5.1 Updated description of following response code:
(none) (soap fault) UnAuthorised  7.2 'Active account types' moved into appendix  10/05/21 2.7 Added RSP to list of account types  N/A Common.v2.xsd updated  17/02/21 2.7 Updated list of applicable account types  27/05/20 3.5.1 Service behaviour note added  15/05/20 3.2, 3.3 Service behaviour note added
10/05/21 2.7 Added RSP to list of account types  N/A Common.v2.xsd updated  17/02/21 2.7 Updated list of applicable account types  27/05/20 3.5.1 Service behaviour note added  15/05/20 3.2, 3.3 Service behaviour note added
10/05/21 2.7 Added RSP to list of account types  N/A Common.v2.xsd updated  17/02/21 2.7 Updated list of applicable account types  27/05/20 3.5.1 Service behaviour note added  15/05/20 3.2, 3.3 Service behaviour note added
N/A Common.v2.xsd updated  17/02/21 2.7 Updated list of applicable account types  27/05/20 3.5.1 Service behaviour note added  15/05/20 3.2, 3.3 Service behaviour note added
27/05/20 3.5.1 Service behaviour note added 15/05/20 3.2, 3.3 Service behaviour note added
15/05/20 3.2, 3.3 Service behaviour note added
1.1 Undates made to haved instructions for whom to
1.1 Updates made to boxed instructions for where to find additional information such as business-level context, use cases and links to relevant policy.
1.3 Updated instructions on where to find related bui packs.
Text added at end of section:  For updates to versions of the SOAP architecture including the communication standards, security and service end points please follow the links provided in section 4.
3 Updated hyperlink in boxed text at start of section
4 Removed boxed instructions on where to find current end points, schemas and WSDLs and updated with new instructions.
4.1 Text updated to this:  See instructions above for where to find end point for this service.
4.2 Note added:  See instructions at beginning of section 4 for where to find schemas for this service.
4.3 Removed redundant note at end of section regarding WSDLs.  Added following text:  See beginning of section 4 for instructions on where to find WSDLs for this service.
06/05/20 Front page Version number corrected
30/04/20 2.3 Removed paragraph regarding XSD 'any' structur
4.3 Removed references to development WSDLs
2.4 Paragraph added regarding updates to SOAP architecture
3.2 Sentence added:



Date of change	Document section	Description
		It is worth noting that any existing EQU or ERA accounts will be automatically linked when linking to a client's income tax account.
11/03/20	3.1, 3.4	Added "All links returned by this operation will be active links but the account they are linked to may be ceased."
09/03/20	2.7	Active account types RDI and RUL added
06/03/20	2.7	New section added: Active account types
	1.4	Note added to table of TLS requirements:  NOTE: The same certificate cannot be used for the Test and Production environments.
	2.4	Information regarding TLS1.3 added
08/08/19	2.6	New section added: 'Delegated authority'
15/04/19	3	<ul> <li>Bullet point added to proper use notes:</li> <li>For most cases in the Intermediation         Service the IdentifierValueType field will be         IRD. However, if submitting a customer ID         the value CST can be used.</li> </ul>
12/04/19	Entire document	References to 'tax agent' changed to 'business intermediary'
	1.3	'Related build packs' section renamed to 'Related services' and wording modified.
	2.1	Diagram updated to say 'business intermediary' instead of 'tax agent'
	3.5.2	Updated notes at end for payroll bureau and other rep service behaviour
	3.1.2	<ul> <li>Updated sample response payload:</li> <li>Changed clientIRD to ClientID</li> <li>Added IdentifierValueType to ClientID</li> <li>Added IdentifierValueType to response table</li> </ul>
	3.2	Updated Link definition for payroll bureau and other reps requiring client link approval
	3.3.2	Updated notes at end for payroll bureau and other rep service behaviour
	3.4	Added note at the end regarding Restricted Users access to RetrieveClient operation
	3.4.2	Expanded responses to include examples for each intermediary type
	5.1	Error code 6 (Authentication expired) description changed
	5.2	Updated descriptions for error codes 103, 105 and 108
	7.1	Note added after client list ID type table
	7.3	Update description for NONE access level
19/03/19	5.2	Added error codes 119-124



Date of change	Document section	Description
	3.5.2	Added fields to updateResponse sample and added note below
	3	Description of IdentifierValueType in table removed:
		"The ID type being submitted—most cases will be IRD."
		Replaced with new description: "The ID type being submitted for the tax preparer."
	2.5	Add section 2.5 Information Security Obligation
	3.4.2, 3.2.2, 3.1.2	Added status field for Payroll Bureaus and Other intermediary types
	3.1.2	Added Payroll Bureau or Other Rep Response
26/02/19	3	Description of softwarePlatform in table removed: "The software package that is making the request".
		Replaced with new description: "The field value will be provided by Inland Revenue during the onboarding process."
18/02/19	5.2	Added error codes 113-118
	7.1	Added 'Available for others' column to table
	7.3	Note added to bottom of table
	3.1	Opening paragraph amended to include reference to client status
	3.1.2, 3.2.2	Payloads changed – 'pendingApproval' changed to 'status'
	All response payloads	References to 'accessLevel' removed from all response payloads
08/02/19	3.2, 3.4, 3.5	Removed all references to access type field
	3.1	Update operation description
	3.2	Update operation description
07/02/19	5.18	Added error codes 105, 107-115
18/01/19	1.3	Section on `Transaction Data Services Overview and Transition Build Pack' removed from `Related build packs' section
16/01/19	1.1	Updated
	2.2	Updated
	3.1	Updated
	3.2	`Delink' section added
	3.3	'RetrieveClient' section added
	3.4	`Update' section added
	4.1, 4.2, 4.3	End points, Schemas, WSDLs sections updated
	5	Responses updated
	7	Added "Expected Values" section



Date of change	Document section	Description
03/12/18	(formerly section 6)	<ul> <li>REMOVED:</li> <li>Section on use cases and scenarios. Readers are instead advised to visit         https://www.ird.govt.nz/software-providers/for such information     </li> </ul>
	Table of contents	Removed 'List of tables' and 'List of figures'
	Entire document	Removed all 'table' and 'figure' captions
	1.1	Removed     The associated onboarding documents (see sections 1.3 and 1.4, below) describe the endto-end business-level solution, of which this build pack forms part.
	1.1	<ul> <li>REMOVED: The associated onboarding and overview documents describe the end-to-end business level solution, of which this build pack forms part. Development versions of schemas, and sample requests and responses are also available with this build pack.</li> <li>ADDED:         Before you continue, please be sure to consult <a href="http://www.ird.govt.nz/software-providers/">http://www.ird.govt.nz/software-providers/</a> for the products that use this</li> </ul>
	(Farma ault) as attices	Service, business-level context and use cases, links to relevant policy, and information on how to integrate with Inland Revenue's products and services.
	(Formerly section 1.3)	<ul> <li>Removed section 1.3 'Supported onboarding packs'</li> </ul>
	1.4	Removed row from prerequisites table on Inland Revenue:      INLAND REVENUE: Provide the Inland Revenue public certificate for mutual TLS. Inland Revenue's public X.509 certificate to support TLS will be provided as part of connectivity testing.
	3 4	Removed:     IMPORTANT: The end points, schemas and WSDLs listed here are subject to change. For the authoritative definitions, please refer to the information provided on the Inland Revenue Gateway Services GitHub site: <a href="https://github.com/InlandRevenue/Gateway-Services">https://github.com/InlandRevenue/Gateway-Services</a> Services
		Replaced with:  IMPORTANT  The end points, schemas and WSDLs listed here are subject to change. For the authoritative definitions, please visit https://www.ird.govt.nz/software-providers/



Date of change	Document section	Description
19/11/2018	1.5.1	<ul> <li>Added section 1.5.1 to cover mutual TLS security and certificates</li> </ul>
	7 Glossary and 8 Change log	Removed word 'Appendix' from both headings
13/04/2018	2.4 Security	Reworded delegation note at end of section
	Entire document	Cosmetic/formatting changes