Inland Revenue
Te Tari Taake

Inland Revenue

Build pack: Transaction Data Services—Bulk File Feed

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Contents

1 Overview

This document is provided to software providers to support the build and use of the Transaction Data Service (TDS) Real Time web services.

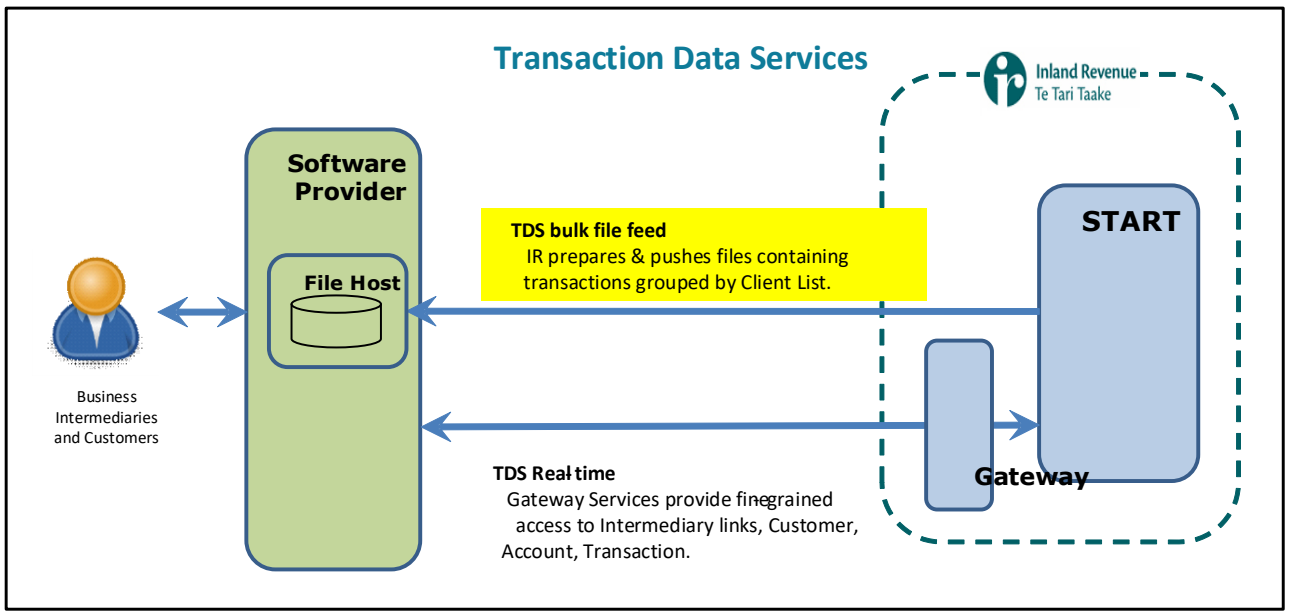
It also describes the relationship with other build packs, the architecture of the technical solution, schemas (file formats), end points, and sample payloads.

This document is part of the suite of build packs that software providers need for implementing interfaces between their software and Inland Revenue TDS.

1.1 Solution overview

Inland Revenue has a suite of digital services available for consumption by our partners that support electronic business interactions with Inland Revenue.

Transactional Data Services, as a business service, provide the two technical services shown in the figure below:



1. The *TDS Bulk File Feed* **is documented in this build pack** and is an overnight file feed that pushes transaction data to tax agents or customers via the software provider software they utilise. It is designed to cater for the high volumes of transactional data.

2. The *TDS Real Time Technical Service* and is a set of web services for querying individual customer accounts and their periods and transactions. It is intended for occasional use when the latest information is required quickly, such as for a new customer.

These services will only provide data for account types in Inland Revenue's new system, START. The TDS Overview and Transition Build Pack contains details of which particular account type data will be available through TDS.

1.2 Intended audience

This document is intended to be used by technical teams and development staff. The reader is assumed to have a reasonable 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. Business context is provided in the TDS Overview and Transition Build Pack.

Details of security, schemas and samples are in multiple sections of this document as follows:

Subject	Location
Security	Section 2.7 Security
Schemas	Section 3 Field descriptions, sample files Section 4 Schemas Schemas on GitHub
Samples	Samples on GitHub

1.3 Related documents

All Build Packs are available on the Inland Revenue BT GitHub website here:
https://github.com/InlandRevenue/Gateway-Services/wiki

The following table contains the links to specific build packs.

Name	Description
TDS – Overview and Transition Pack	Describes the service components at a high level and provides an overview of the data available through TDS. Also contains information about how the component services that make up the TDS solution interact with each other. Note: At this stage there is an Overview and Transition document to support users of the existing Tax Agent Web Services (TAWS). Some later variations of that document will not include Transition information.
TDS Bulk File Feed	This document
TDS Real Time Feed Build Pack	Details the technical requirements and specifications, processes and sample payloads for the TDS Real Time Service.
Identity and Access Build Pack	Details the authentication and authorisation mechanisms used by IR.
Intermediation Build Pack	Details the technical requirements and specifications for querying the links between Business Intermediaries and Clients to enable these links to be used by the TDS Real Time queries.
Software Intermediation Build Pack	Details the technical requirements and specifications for the linking of Business Intermediaries /Customers to Software Providers to enable these links to be used by the Bulk File Feed and Bulk File History Service.

1.4 Prerequisites

Only onboarded parties are able to call these web services. For more information on Onboarding, refer to the **Software providers** page on www.ird.govt

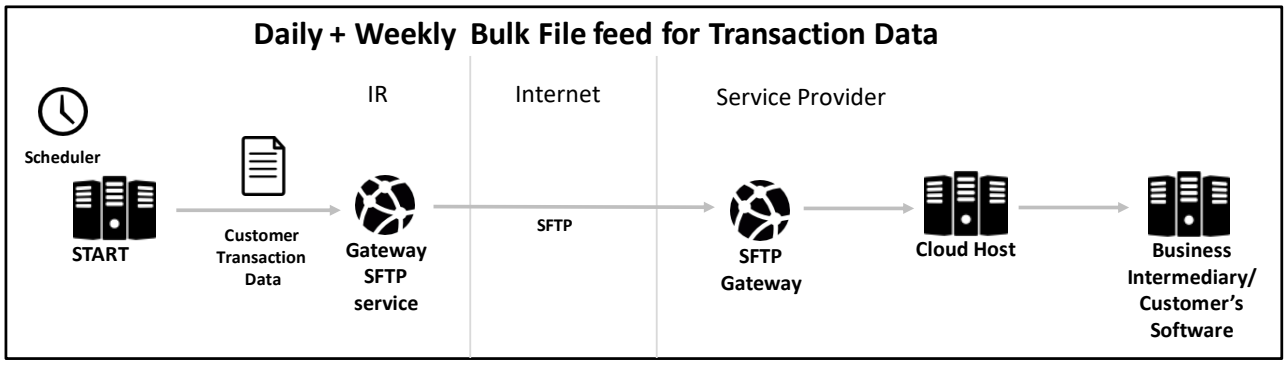
2 Solution design

2.1 Architecture

The TDS Bulk File Feed is intended to be used by Software Providers where large quantities of data are required.

The TDS Bulk File Feed is based around a file transfer solution, where Inland Revenue will send information to the Software Provider on a daily basis at the evening of each business day. At the end of each START business day batch cycle Inland Revenue will connect to an SFTP server hosted by the service provider in order to transfer files containing the data.

In parallel an independent second weekly cycle will also provide the same information on Sunday evenings.



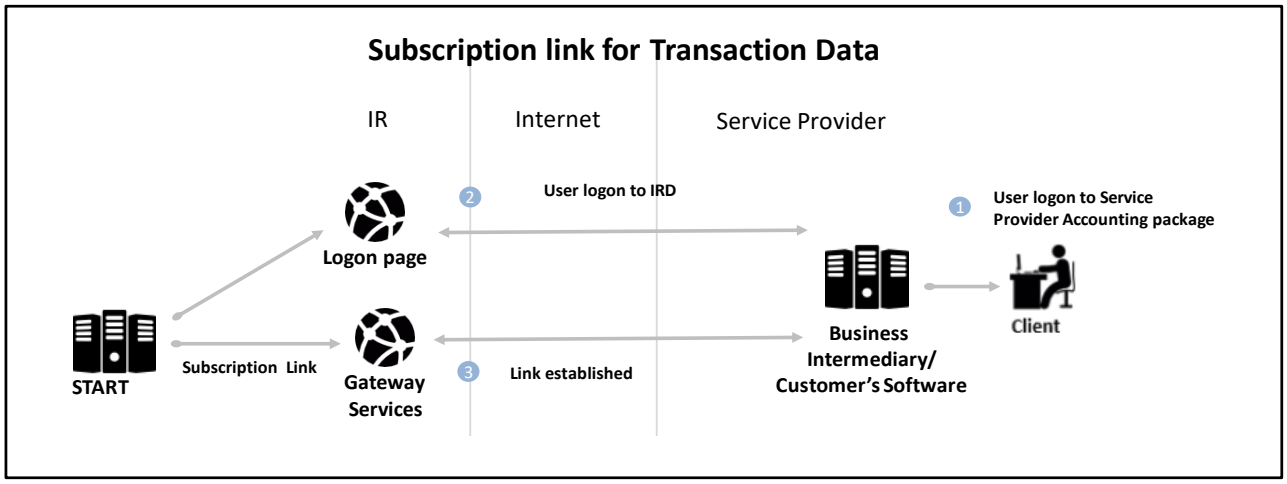
Daily and weekly files are sent from START via a gateway SFTP service to the Software Provider's SFTP gateway in a central cloud location from where it can be made available to their software applications and users.

Each subscribing Software Provider will receive a number of zipped files containing information relating to Business Intermediaries that use their software product. The service also supports sending of Customer information related to corporate customers.

To determine which Customer information is sent to which Software Provider, a link needs to be established at Inland Revenue between the Business Intermediary Client List or Customer and the Software Provider – this link is maintained via the Software Intermediation Service.

Please see the TDS – Overview and Transition Pack for the full process and context. More details about the Software Intermediation Service and the Client Intermediation linking are available in the Software Intermediation Build Pack and the Intermediation Build Pack.

For the purposes of this document, it is assumed that these links are in place and the business context is understood.

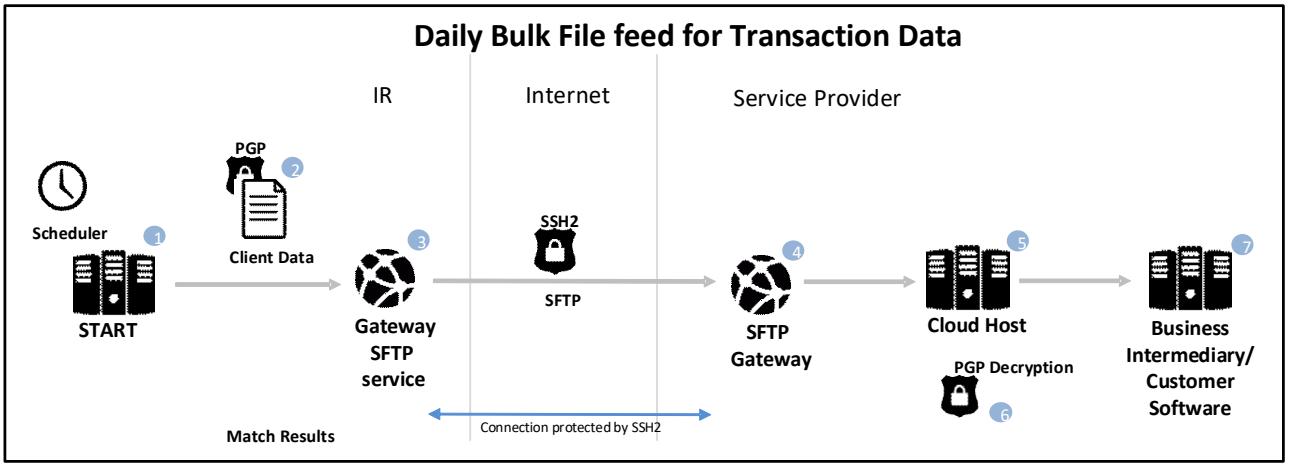


The diagram above depicts the following steps:

1. The Business Intermediary or other user logs into their Software Provider software application.
2. The software will guide the user through a process of requesting daily bulk file updates.
3. Their myIR logon is used by the software to establish a subscription link between the Software Provider and user (Business Intermediary Client List or direct Customer using their Software Provider software application)

2.2 Transfer mechanisms

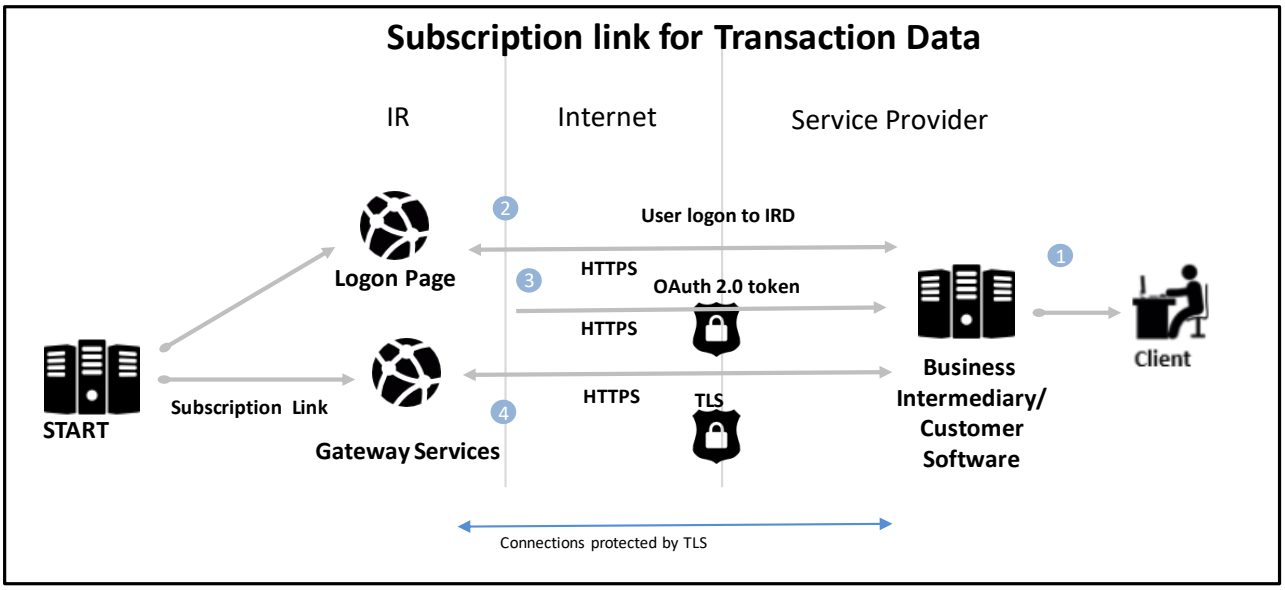
2.2.1 Connectivity for bulk file feed



The numbers above show the sequence in the path the bulk update files travel as described in the rest of this document.

2.2.2 Connectivity for subscription

The following diagram explains the connectivity sequence protocols and security around setting up the subscription link for receiving Transaction Data:



The numbers above refers to the following sequence of events:

1. Business Intermediary or Customer uses their Software Provider software application
2. The user is presented with a browser showing a myIR logon the user needs to complete
3. Based on the myIR logon an OAuth token is returned to the Software Provider software
4. That token and the Software Provider's connection to Inland Revenue are used to call the Software Intermediation Service to link the Customer or Business Intermediary Client List to the Software Provider so that any transaction data updates are sent to that Software Provider going forward.

2.3 File structure

The files sent via SFTP are zipped files as described below.

2.3.1 Multiple ZIP files

Each daily set of information will be sent as one or more ZIP files containing customer information.

The daily increment cycle and weekly increment cycle are independent but very similar. The structural description and zip file logic and control files described below applies to both, with only filenames and timing differing. There will therefore be two types of sets of files - a set for a day and a set for a week.

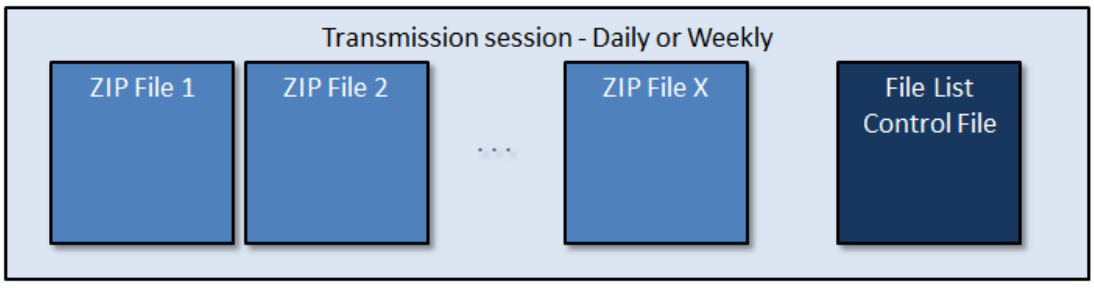
A control file will be sent containing a list of all ZIP files to be sent and the files inside each of them. The individual zip files and control files are separately and potentially concurrently transferred and no sequence can be assumed.

The control file serves various purposes:

- It needs to be used to know when the zip files received are equal to the intended list in the control file.
- Some Software Providers might use it to validate that all intended files in the zip files are present, other Software Providers might just rely on the PGP signing to ensure that.

The size of each ZIP file will be limited to 100 million transactions to optimise file transmission performance including retry overhead in case of failure. It is possible for Business Intermediary Client Lists to be spread across multiple files.

Zip files are individually PGP encrypted, allowing verification that content was received and unmodified.



For every occasion data is sent, whether daily as part of the daily cycle, or weekly, as part of the weekly cycle, there will be a control file listing:

- The zip file(s)
- For each zip file a list of files inside it and how many transactions and periods are included

2.3.2 ZIP file structure and control file content

Each ZIP file will contain Business Intermediary files and/or Customer files. The last zip file in a set will also contain a Software Intermediation link listing file. This file lists all the Business Intermediary Client Lists with a Software Intermediary link to the Software Provider.

Each Zip file will be encrypted using the Software Providers Public PGP key.

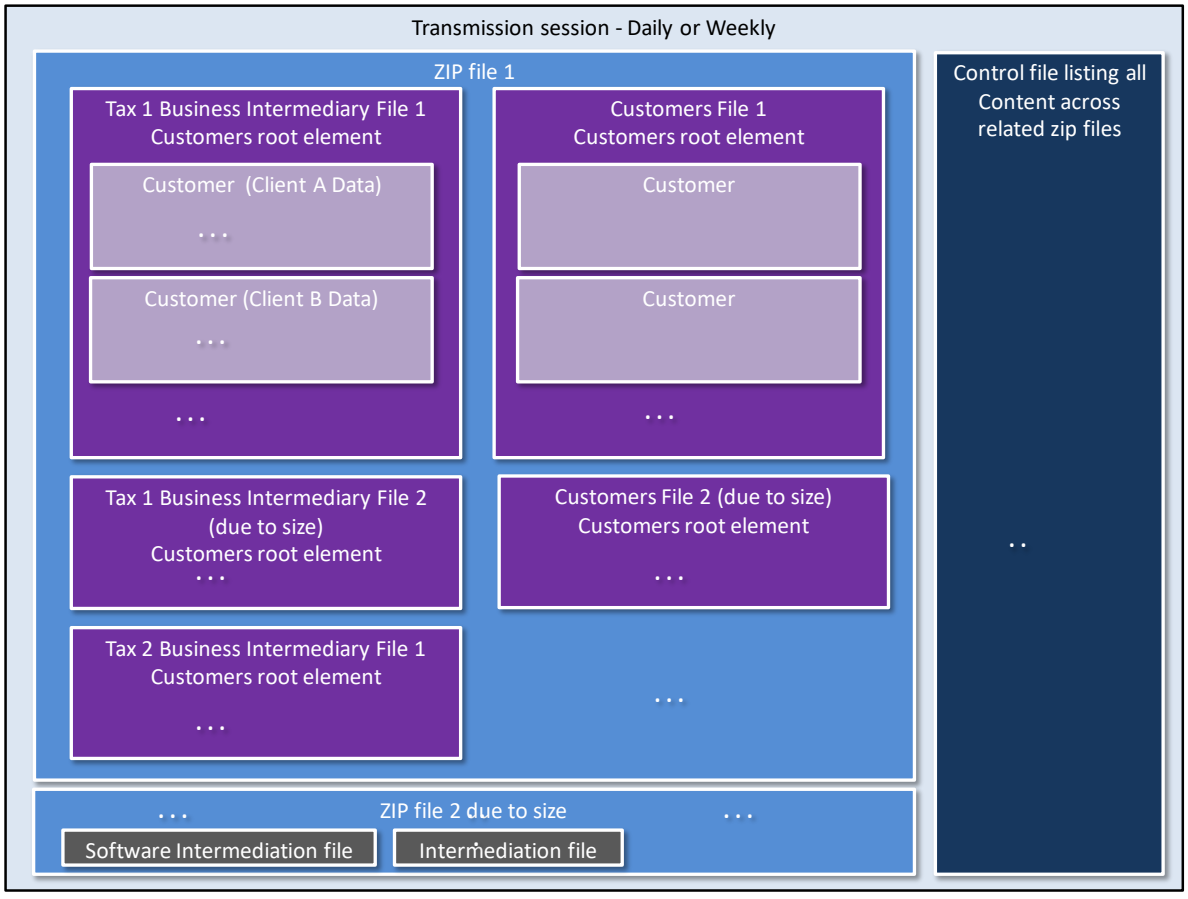
There will initially be one Business Intermediary Client file with the data for all the clients linked to the given Business Intermediary. To optimise performance (of encryption processing) the files with Business Intermediary information will be split across more than one file when they go beyond 100,000 transaction level elements.

All Customer data linked to a Software Provider directly, not via a Business Intermediary Client List, will be put into one Customer file for that Software Provider. That file will have a root Customers element representing the list of all Customers directly linked to the Software Provider.

All the above will initially go into one zip file, but will be split across multiple zip files whenever the total size exceeds 100 million (100,000,000) transactions.

In such a scenario the data for a period of a specific Customer (or Business Intermediary Client) might be split across multiple files but will not be split across multiple zip files.

Along with each set of ZIP files a control file will also be present that will contain a list of zip files and the files within the ZIP file(s). This control file will also reflect the number of transactions and periods contained in each file.



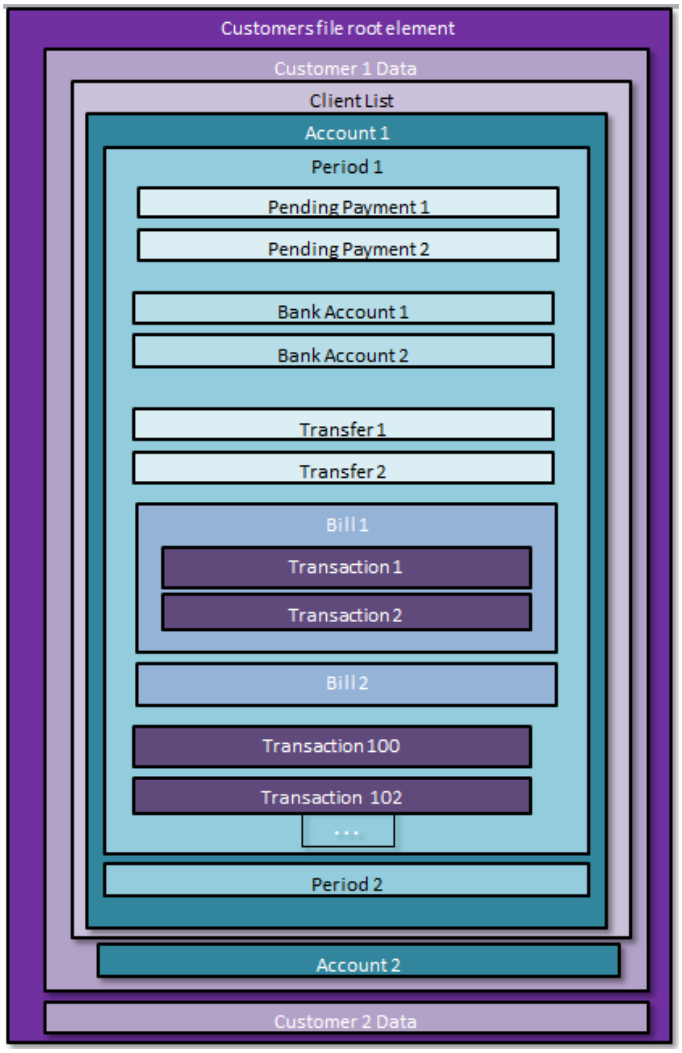
2.3.3 File structure and content and variations

Where the Software Provider linked user is a direct Customer (not a Business Intermediary), there will be a single file containing all this data across all Customers. There will be a single **CUSTOMER.xml** file, up to the size of 100,000 transaction level elements, where after it will be split into multiple files with an incremental counter.

Where the Software Provider linked user is a Business Intermediary, the file provided for that Business Intermediary's Client List will contain data for one or more Clients of that Business Intermediary. There will be a **AGENT_IRD.xml** file per Business Intermediary Client List, up to the size of 100,000 transaction level elements, where after it will be split into multiple files.

An AGENT_IRD.xml file will only exist in the daily set if there are changes (new transactions or new links) otherwise it will be omitted. Only currently linked Busines Intermediary or Customer accounts will be included.

Within both file types – AGENT_IRD.xml or CUSTOMER.xml, there is a root element called Customers and then for each Customer the data is structured as follows:



Inside the customer section will be subsections for accounts (tax types). Data inside accounts will be grouped by period.

2.3.3.1 Weekly Files

Customers linked to a Business Intermediary Client List will be included in the AGENT_IRD.xml file. Customers linked directly to the Software Provider will be included in the CUSTOMER.xml file.

Inside each Customer element will be one or more ClientList elements. For the CUSTOMER.xml file this will be a single entity with no ID – a dummy list. For the AGENT_IRD.xml file these will represent the client lists of that agency with their IRD numbers.

All Accounts linked for that Business Intermediary Client List will be included. All Accounts that exist for a directly linked Customer will be included. In both cases it will contain the data for current links at the time the file is generated, as reflected in the retrieve date.

All periods in START for each of these Accounts will be included. (See TDS Overview Build Pack for more on the data available in START.) A period element will always have a short summary ("FilingPeriod", "Balance" and max "Activity" date attributes). This allows one to see whether the summary matches with data kept locally. (See TDS Overview Build Pack for details of the data available through TDS.)

Daily files contain the same structure and data but will contain only new sections or new Transactions. Customers, Client Lists, Accounts, and Periods with no new Transactions or new sections will all be completely omitted. The period summaries when included in the daily files will always be more extensive than the short period summaries in the weekly file. (See TDS Overview Build Pack for details of the data available in period summaries.)

2.3.3.2 Daily Files

Customers linked to the Business Intermediary Client List will be included in the AGENT_IRD.xml file only if they contain Accounts to be included. Customers linked directly to the Software Provider will be included in the CUSTOMER.xml file only if they contain Accounts to be included. In both cases it will contain the data for current links at the time the file is generated, as reflected in the retrieve date.

Accounts will only be included if they contain periods to be included.

A period element will only be included if there are new transactions to report (which might be all transactions for a new link or initial file). The period summaries when included in the daily files will always be more extensive than the short period summaries in the weekly file.

In some cases the period element will contain billing groups and transactions:

- If there were new transactions since the last file it will be included. Most transactions will be inside the respective billing group. Credit transactions will be after all the billing groups
- If the account was recently linked to the Business Intermediary, since the last bulk file feed, all transaction data for periods in START for that account will be included. In addition a History File will be included (see History Bulk File Feed Build Pack)
- If the Software Provider subscribed for the data for the Business Intermediary Client List in the last day and has not received a file yet this will be a full file: All transactions for periods in START for all linked accounts and clients for the Business Intermediary Client List will be included. In addition a History File will be included (see History Bulk File Feed Build Pack)
- Software Providers can request ad hoc manually generated files to compensate for system failures. This is requested via agreed support channels or Account Management. If this request has no start date the file will contain full sections.

To summarise: The daily increment cycle and weekly increment cycle are independent but very similar. The structural description and zip file logic and control files described elsewhere in this section apply to both, with only differences being:

	Daily cycle file	Weekly cycle files
Filenames	DAILY_...	WEEKLY_...
File creation	In cases where a daily differential file has no new transactions to report the file won't be created at all nor mentioned in the control file as omitted.	Files will always be created for every party linked to service provider.
Empty period summaries	No empty period summaries, only included after initial file if there are new transactions	All periods always have a summary present including in differential files
Transactions included	Apart from initial file, files will only contain new transactions since last daily cycle file	Apart from initial file, files will only contain new transactions since last weekly cycle file
Period summary detail level	Extensive – around 16 attributes	Basic – around 4 attributes
Timing	Weekdays that are business days (excluding public holidays)	Sundays (regardless of public holidays)
	There might be an additional set if there was a request for some manual files.	

As a result of not reflecting linked parties with unmodified data at all ambiguity might be created as to whether the Business Intermediary or their clients are still linked. This ambiguity is removed by the addition of the SOFTWARE_INTERMEDIATION.xml file and INTERMEDIATION.xml file that reflect current links at time of file generation. These files will only appear in the last zip file for a file set. They will also be listed in the control file.

The filenames of all these files will indicate when the batch run generated the file – at what time did this file set provide all known transactions and intermediation links.

2.4 Transfer of files - processing

On a daily basis the following is expected to happen on the site of the Software Provider SFTP endpoint/server.

1. Receive control file to help calculate processing
2. Receive one or multiple zip files from Inland Revenue
3. Validate file list in the control file matches the list of zip files received, if not, escalate to Inland Revenue support.
4. Process each zip file:
    a. Decrypt zip file using agreed PGP key
    b. For each file in the zip
        i. Process content of the file
        ii. Make content available to relevant data stores for users

2.5 Verifying there are no gaps between files

Max-activity timestamps on period summaries are a way to see that a period has changed since the last processed file.

Balances are similar but there are cases where there could be new transactions but no balance change, so Inland Revenue includes the max activity date in period summaries.

The primary purpose is to build trust that there are no gaps in transactions provided.

This mechanism will help highlight, together with balances changing, if an update file has been skipped – the max-activity timestamp would be different from what was stored previously but there would be no new transactions.

The intention with the max-activity timestamp on a period is to store it and compare the stored value against the next file processed the following day.

If daily files are always processed, then for any period where there is a new max-activity timestamp there will also be new transactions.

If the next file is processed and the max-activity timestamp has changed since the previously processed file, but there are no new transactions, it implies there is an update file in between that was not processed.

Max-activity timestamps on period summaries are NOT a way to validate the timestamp of the last transaction in the period.

2.6File naming conventions

2.6.1 Name of control file listing zip files

This pattern is almost the same as for the individual zip files which is defined next below.

Format:
<frequency>_PROVIDER_<software_platform_id>_<filesequence>_<timestamp>_<environment>_CONTROL.xml

For example: DAILY_PROVIDER_1500011034_1_201710100921548813_NZD_CONTROL.xml

Part	Format	Possible values
<Frequency>	See list:	DAILY WEEKLY MANUAL
PROVIDER	Constant	PROVIDER
<software_platform_id>	ID allocated to Software Platform by Inland Revenue during the onboarding process	Numeric 10 digit, should remain constant for a given Software Provider
<file sequence>	Next number after zip file count – last number in sequence	1 2 3 …
<timestamp>	Time file was created yyyyMMddHHmmssffff	e.g. 201710100921548813
<environment>	Inland Revenue environment	Three letters Production: PRD Partner testing: NZH NZI Internal IRD testing: NZT, NZD

2.6.2 ZIP files names

This pattern is almost the same as the pattern for the control files - which is defined above.

Format:
<Frequency>_PROVIDER_<software_platform_id>_<file sequence>_<timestamp>_<environment>.zip

For example: DAILY_PROVIDER_1500011034_0_201710100921548813_NZD.zip

Part	Format	Possible values
<Frequency>	See list:	DAILY WEEKLY MANUAL
PROVIDER	Constant	PROVIDER
<software_platform_id>	ID allocated to Software Platform by Inland Revenue during the onboarding process	Numeric 10 digit, should remain constant for a given Software Provider
<file sequence>	Start with 0 for first zipfile of day and increments if there are more than one	0 1 2 …
<timestamp>	Time file was created yyyyMMddHHmmssffff	e.g. 201710100921548813
<environment>	Inland Revenue environment	Three letters Production: PRD Partner testing: NZH NZI Internal IRD testing: NZT, NZD

The following file types are embedded in the zip files:

2.6.2.1 Tax agent files

Format:
<Frequency>_AGENT_<tax_agent_id>_<file sequence>_<timestamp>_<environment>.xml
For example:DAILY_AGENT_IRD_000000000_0_201710111532239353_NZD.xml

Part	Format	Possible values
<Frequency>	See list:	DAILY WEEKLY MANUAL
AGENT	Constant denoting this file is sent for all the Customers data linked to a Tax Agent or other Intermediary	AGENT
<tax_agent_id>	ID allocated to Tax Agent by Inland Revenue	Numeric 9 digit IRD Number of Agent
<file sequence>	Start with 0 for first zipfile of day and increments if there are more than one	0 1 2 …
<timestamp>	Time file was created yyyyMMddHHmmssffff	e.g. 20171010092154813
<environment>	Inland Revenue environment	Three letters Production: PRD Partner testing: NZH NZI Internal IRD testing: NZT NZD – Inland Revenue Production

2.6.2.2 Customer file

Format:
<Frequency>_CUSTOMER_<file sequence>_<timestamp>_<environment>.xml

For example: DAILY_CUSTOMER_000000000_0_201710111532239353_NZD.xml

Part	Format	Possible values
<Frequency>	See list:	DAILY WEEKLY MANUAL
CUSTOMER	Constant denoting this file is sent for all the Customers data linked to the Software Provider	CUSTOMER
<file sequence>	Start with 0 for first zipfile of day and increments if there are more than one	0 1 2 …
<timestamp>	Time file was created yyyyMMddHHmmssffff	e.g. 20171010092154813
<environment>	Inland Revenue environment	Three letters Production: PRD Partner testing: NZH NZI Internal IRD testing: NZT NZD

2.6.2.3 Software Intermediation file

This pattern is almost the same as the pattern for the control and zip files - which is defined above.

Format:
<Frequency>_PROVIDER_<software_platform_id>_<filesequence>_<timestamp>_<environment>_SOFTWARE_INTERMEDIATION.xml

For example: DAILY_PROVIDER_1500011034_0_201710100921548813_NZD_SOFTWARE_INTERMEDIATION.xml

Part	Format	Possible values
<Frequency>	See list:	DAILY WEEKLY MANUAL
PROVIDER	Constant	PROVIDER
<software_platform_id>	ID allocated to Software Platform by Inland Revenue during the onboarding process	Numeric 10 digit, should remain constant for a given Software Provider
<file sequence>	Start with 0 for first zipfile of day and increments if there are more than one	0 1 2 …
<timestamp>	Time file was created yyyyMMddHHmmssffff	e.g. 201710100921548813
<environment>	Inland Revenue environment	Three letters Production: PRD Partner testing: NZH NZI Internal IRD testing: NZT NZD
SOFTWARE_INTERMEDIATION	Constant	SOFTWARE_INTERMEDIATION

2.6.2.4 Intermediation file

This pattern is almost the same as the pattern for the control and zip files - which is defined above.

Format:
<Frequency>_PROVIDER_<software_platform_id>_<filesequence>_<timestamp>_<environment>_INTERMEDIATION.xml

For example: DAILY_PROVIDER_1500011034_0_201710100921548813_NZD_INTERMEDIATION.xml

Part	Format	Possible values
<Frequency>	See list:	DAILY WEEKLY MANUAL
PROVIDER	Constant	PROVIDER
<software_platform_id>	ID allocated to Software Platform by Inland Revenue during the onboarding process	Numeric 10 digit, should remain constant for a given Software Provider
<file sequence>	Start with 0 for first zipfile of day and increments if there are more than one	0 1 2 …
<timestamp>	Time file was created yyyyMMddHHmmssffff	e.g. 201710100921548813
<environment>	Inland Revenue environment	Three letters Production: PRD Partner testing: NZH NZI Internal IRD testing: NZT, NZD
INTERMEDIATION	Constant	INTERMEDIATION

2.7 Security

Gateway services requests are access controlled using an OAuth token to identify the user making the request. Users will authenticate using their Inland Revenue myIR credentials. For instructions on how to acquire an OAuth token, review the Identity and Access Build Pack. For TDS Real Time web service requests an OAuth access token is required in the HTTP header.

Authorisation for using the Gateway Services is defined in the permissions set in myIR. Permissions will reflect those granted in myIR. For example, if a user does not have permission to view data for a Customer online, they will not be able to view that data via Gateway Services either. This applies to users granted access as staff inside an organisation or as staff in a Tax Agency.

The Gateway Services use an HTTPS transport layer, with HTTP1.1 transport protocol supported.

The Gateway Services also use the SOAP version 1.2 protocol.

The SOAP service contract is published using WSDL version 1.1.

Transport layer encryption is mandatory and Gateway Services generally use the TLS version 1.2 specification.

Inland Revenue requires the following ciphers and key strengths to be used:

Encryption:	Advanced Encryption Standard (AES)	FIPS 197	256-bit key
Hashing:	Secure Hash Algorithm (SHA-2)	FIPS 180-3	SHA-256

There will be two end points, summarised below (please see Table 4 on the following page for more detail):

1. There is an end point for centralised cloud locations of Software Providers to connect to. This will involve mutual TLS certificates that need to be exchanged during the onboarding phase. On the cloud end point, Inland Revenue has controls to shield Software Providers from issues caused by heavy usage from other providers.

2. For Software Providers connecting from desktops there is a separate end point that does not use mutual TLS. For this service, certificates do not need to be exchanged during onboarding. On the desktop end point Inland Revenue has less ability to shield consumers of the service from heavy usage by others.

End point	Cloud	Desktop
Purpose	Default end point to connect to from Software Providers for Gateway Services	Additional 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 setup certificate trust.
Client application type	Cloud applications	• Desktop/native applications. For connecting from multiple decentralised clients.
Constraints	• Only for source locations with client-side TLS certificates. On the cloud end point Inland Revenue has controls to shield Software Providers from issues caused by heavy usage from other providers.	• Less scalable. • Subject to tighter security controls. • On the desktop end point Inland Revenue has less ability to shield consumers of the service from heavy usage by others. OAuth2 Refresh Tokens will not be offered to Desktop clients.
Mutual TLS	Inland Revenue explicitly trusts the certificate the Software Provider associates with the TLS connection as client for Mutual TLS connections and uses it to identify the Software Provider in conjunction with the web service identification below.	Server-side certificates only.
Minimum TLS version	1.2	1.0(+)
URL	Contains …/gateway/..	Contains …/gateway2/..
Port	4046	443 (Default https port)
Web service consumer Identification	• Each software provider is given a software platform ID during onboarding of type Customer ID, independent of end point • To be identified in web service calls related to getting an OAuth token each cloud application will be given identity and access system client_id/client_secret credentials during	• Each software provider is given a software platform ID during onboarding of type Customer ID, independent of end point • Desktop clients will be given different identity and access system client_id/client_secret credentials to cloud application clients.

End point	Cloud	Desktop
	onboarding to allow it to get OAuth tokens to call this end point. The mutual TLS certificate is used to identify the service provider	
Firewalling in production	No IP address restrictions. Access limited by certificate enrolment.	No IP address restrictions.
Firewalling in non-production environments	No IP address restrictions. Access limited by certificate enrolment.	Firewalled –IP whitelisting needed

Delegated permissions: The services will allow one to retrieve all of the data for a customer that the calling user (as represented by the OAuth token) has access to. There might be additional accounts this identity does not have access to, those will not be mentioned. If an account or data in it is targeted by the request parameters but the user does not have permission an error will be returned. This access will depend on delegation permissions set up in myIR. If the token represents a user in a Tax Agency or other Intermediary the agent-client linking is also considered.

Gateway services like these typically have a 60 second timeout configured, although this might be adjusted after testing.

3 Field descriptions, sample files

3.1 Field descriptions

The following data items will be available as transactions through TDS:

Attribute	Description	Data Type	Length
Account			
IRD Number	Standard IRD Number – always 8 or 9 digits i.e. 8 digits can be padded	String	8/9
Account Type	The type of Account – e.g. GST, INC	String	3
Profile Number	This allows for multiple 'locations' for one IRD Number ie subsidiary locations for one entity eg 001,002,003	String	3
Account ID	The Identifier of the Account IRD number, appended with account type and profile number	String	30
Filing Frequency	The filing frequency for the Account	Char	8
Commence	Commencement Date of the Account	Date	8
Cease	Cessation Date of Account	Date	8
Balance	The Balance for the account in total	Currency	8
Forecasted Balance	The Balance for the Account including the forecasted amounts as explained below	Currency	8
MaxActivity	The last date/Time of Activity on Account	DateTime	8
Migration	The last date that data was converted into this Account. (Only included in History file)	DateTime	8
Period **** The Period Summary data in each weekly file where there has been no change***			
Period *	The filing period of the Account – usually the last day of the period	Date	8
Filing Frequency	The filing frequency for the Account/period	Char	8
Period Begin	The first day of the period	Date	8
Period End	The last day of the period	Date	8
Filing Period	Same as Period End – last day of period	Date	8

Attribute	Description	Data Type	Length
Tax	The amount assessed	Currency	8
Penalty	The amount of Penalty applied	Currency	8
Penalty Forecasted	In the Bulk File this is the amount of **additional** Penalty forecasted for the Period since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Penalty forecasted for the Period for the date of the request, since the time of the last posted Penalty transaction.	Currency	8
Interest	The amount of interest applied	Currency	8
Interest forecasted	In the Bulk File this is the amount of **additional** Interest forecasted for the Period since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Interest forecasted for the Period for the date of the request, since the time of the last posted Interest transaction.	Currency	8
Other	Amounts other than penalty, interest, payments or credit transfers in that have been applied to this period e.g. remission, write off or credit transfer out	Currency	8
Other forecasted	In the Bulk File this is the amount of **additional** Other forecasted for the Period since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Other forecasted for	Currency	8

Attribute	Description	Data Type	Length
	the Period for the date of the request, since the time of the last posted Other transaction.		
Credit	Payments or credit transfers in which have been made for this period	Currency	8
Credit forecasted	In the Bulk File this is the amount of **additional** Credit forecasted for the Period since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Credit forecasted for the Period for the date of the request, since the time of the last posted Credit transaction.	Currency	8
Balance *	The Balance for the period	Currency	8
Forecasted Balance	The Balance for the Period including the forecasted amounts	Currency	8
Max Period Activity *	This is the last date/time of activity on the account. To ascertain if there have been any further transactions since the last set of data, compare the current Activity date to the Activity date in the last set of data received for the same period	DateTime	8
Bank Account Transactions – for Direct Credits			
Transaction ID	Transaction ID of the Refund which used this Bank Account	String	30
NZ Bank Standard - *See Appendix E for other Bank Standards*			
Bank Number	The Bank where the Account is held	Char	2
Branch Number	The branch number of the bank	String	4
Account Number	Number of the bank account	String	8
Account Number Suffix	Suffix to the bank account number	String	4
Pending Payment			
Payment ID	The unique identifier for the payment	String	30

Attribute	Description	Data Type	Length
Pending Amount	The amount of the payment	Currency	8
Pending Date	The date the payment was made pending	Date	8
Transfer			
Transaction ID	The unique identifier for the transaction in the current list of transactions	String	30
Transfer Account ID (Other Account ID)	The IRD Number for the Account to which the amount was applied or from which it was received.	String	8/9
Transfer Account Type (Other Account Type)	The Account Type for the Account to which the amount was applied or from which it was received.	String	3
Transfer Period	The period for that Account to which the amount has been applied – Period above	Date	8
Bill – Transactions are organised by Bill – each with a different due date			
Bill ID	The Bill Number internally	String	30
Bill ID for Display	The externally displayed Bill Number which is likely to be a single digit – starts as 1 and increases for each Bill within a Period	String	3
Bill Due Date	The due date for the Bill	Date	8
Tax	The amount assessed	Currency	8
Penalty	The amount of Penalty applied	Currency	8
Penalty Forecasted	In the Bulk File this is the amount of **additional** Penalty forecasted for this Bill since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Penalty forecasted for the Bill for the date of the request, since the time of the last posted Penalty transaction.	Currency	8
Interest	The amount of interest applied	Currency	8

Attribute	Description	Data Type	Length
Interest forecasted	In the Bulk File this is the amount of **additional** Interest forecasted for this Bill since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Interest forecasted for the Bill for the date of the request, since the time of the last posted Interest transaction.	Currency	8
Other	Amounts other than penalty, interest, payments or credit transfers in that have been applied to this period e.g. remission, write off or credit transfer out	Currency	8
Other Forecasted	In the Bulk File this is the amount of **additional** Other forecasted for this Bill since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Other forecasted for the Bill for the date of the request, since the time of the last posted Other transaction.	Currency	8
Bill Credit	The amounts paid towards the Bill	Currency	8
Credit forecasted	In the Bulk File this is the amount of **additional** Credit forecasted for this Bill since the time of the last posted Penalty transaction, as at the date the file was created plus 1 day. This is to cater for an overnight file being created to show the amount which needs to be paid if it is paid the next day when the file data is available to Business Intermediaries and Customers. In the Real Time Query this is the **additional** amount of Credit forecasted for the Bill for the date of the request, since the time of the last posted Credit transaction.	Currency	8
Bill Balance	The Balance due on the Bill	Currency	8

Attribute	Description	Data Type	Length
Forecasted Balance	The Balance for the Bill including the forecasted amounts	Currency	8
Transaction - Organised by Bill Number			
Amount	The amount of the transaction	Currency	8
Transaction ID	The unique identifier for the transaction	String	30
Trans Type	The code for the Type of Transaction	String	12
Posted Date	The Posted Date for this transaction	DateTime	8
Effective Date	The Effective Date for this transaction	Date	8
Link ID	The unique identifier for a linked transaction e.g. a transaction which has been reversed by this transaction. In the History File this is called newtxid as it represents the new transaction id to which the converted transactions have been aggregated. Note: In the History file in some cases (like old closed periods, or zero amounts, or superseded transactions) there will be no equivalent transactions created during migration and therefore no newTxID present here.	String	30
Retrieve Date	Each file in the Bulk File Feed will contain a Retrieve Date which is the date of the data it contains. The forecasted amounts will always forecast an additional day, ie being the Retrieve date + 1. In essence the Bulk Feed extraction process will always ensure the forecasted penalties and interest will be for the day for which the file is delivered. Each Real Time Request will also contain a Retrieve Date which will be the date of the request and forecasted amounts will be for that date.		

3.2 Sample file extracts

Refer to the sample files extracts on the GitHub: TDS documentation

4 Schemas and WSDLs

IMPORTANT: *The 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: https://github.com/InlandRevenue/Gateway-Services*

4.1 Schemas

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

The Account.xsd and Transactions.xsd import the Common.xsd and TDSCommon.xsd and creates data types to be used within the operations. It also includes the request and response root elements for the supported operations. Schemas are available here.

5 Glossary

Term	Definition
Authentication	The process of verifying an identity claimed by or for a system entity. [RFC 2828]
Authorisation	A right or a permission that is granted to a system entity to access a system resource. [RFC 2828]
Build Pack	A document that details the technical requirements and specifications, processes and sample payloads for the specified activity
Business Intermediary	A party who interacts with Inland Revenue on behalf of a Customer. Inland Revenue's Customer is a Client of the Business Intermediary. There are several types of Intermediary including Tax Agents, Payroll Bureaus, Payroll Intermediaries, Bookkeepers etc.
Business Processing	Processing by Inland Revenue systems in retrieving data and constructing the Payload (business information content) of a message.
Business Service	An integration interface (description) of the Solution which provides a set of business data and information in fulfilling the Service and is specified in this document. The Solution may offer more than one Business Service.
Confidential Information	Means, in relation to a party, any information (in any form whether written, electronic or otherwise): (a) relating to the business or operations of that party or its suppliers or customers; (b) disclosed by that party to the other party on the express basis that such information is confidential; or (c) which might reasonably be expected by that party to be confidential in nature;
Customer	A Customer is the party who is a tax payer or a participant in the social policy products that are operated by Inland Revenue. The Customer might be a person (an "individual") or a non-individual entity such as a company, trust, society etc. Practically all of the service interactions with Inland Revenue are about a Customer (e.g. their returns, accounts, entitlements etc.) even though these interactions might be undertaken by an Intermediary such as a tax agent on their behalf.
Credentials	Information used to authenticate identity, for instance an account username and password.
Data integrity	The property that data has not been changed, destroyed, or lost in an unauthorized or accidental manner. [RFC 2828]
Encryption	Cryptographic transformation of data (called "plaintext") into a form (called "cipher text") that conceals the data's original meaning to prevent it from being known or used. If the transformation is reversible, the corresponding reversal process is called "decryption", which is a transformation that restores encrypted data to its original state. [RFC 2828]
GWS	Gateway Services—the name for the suite of web services that Inland Revenue is providing.
HTTP	Hypertext Transfer Protocol is a networking protocol and is the foundation of data communication for the World Wide Web.

Term	Definition
HTTPS	HTTP that uses SSL.
IAS Build Pack	Identity and Access Build Pack
Intermediation Service	The Intermediation Service is a new Gateway Service for creating and maintaining delegated access relationships between intermediaries and their clients. These relationships enable access by the intermediary to a resource (e.g. an account, correspondence etc.) that belongs to their client. There are several types of intermediaries such as Tax Agents, book keepers, PAYE Intermediaries.
IP	Internet Protocol—the principal communication protocol in the Internet protocol suite for relaying datagrams across networks.
MSH	Messaging Service Handler.
NZISM	NZ Information Security Manual—the security standards and best practices for Government agencies. Maintained by the NZ Government Communications Security Bureau (GCSB).
OAuth 2.0	OAuth 2.0 is an industry-standard protocol for authorization
Pattern	A constraint on data type values that require the string literal used in the data type's lexical space to match a specific pattern.
Payload	The business information content of the message and/or file(s) between Inland Revenue and a Business Partner.
Schemas	An XML schema defines the syntax of an XML document, in particular of a payload. The schema specifies what a valid payload must/can contain, as well as validating the payload.
Service	The exchange, as enabled by the Solution, of information, data and/or funds for the purpose of Clients' tax administration by Tax Agents.
Software Provider	The organisation developing the software connecting to Inland Revenue gateway services Also known as Software Intermediary Also known as Software Developer Also known as Software Provider
Software Provider Software	A Client Application is an operating instance of Software that is deployed in one or more sites. A number of deployment patterns are possible: 1. A single cloud-based instance with multiple tenants and online users, 2. An on-premise instance (e.g. an organisation's payroll system) 3. A desktop application with an online user. This is the computer software that contains interfaces to consume the services that Inland Revenue exposes. Software is developed and maintained by a Software Developer and subsequently deployed as one or more Client applications.
SFTP	Secure File Transport Protocol. SFTP 3.0 is used.
SOAP	Simple Object Access Protocol (SOAP) is a protocol specification for exchanging structured information in the implementation of Web Services in computer networks.
Solution	The technology components, systems and interface specifications constituting the TAWS capability which enables integration and

Term	Definition
	communication across the Gateway channel between Inland Revenue and Tax Agents for the purpose of providing the Service.
Software Developer	The developer of a Tax Agent software package and its Gateway Channel integration capability which forms part of the Solution.
SSL	Secure Sockets Layer (SSL) is a cryptographic protocol that provides security for communications over networks such as the Internet.
START	Simplified Taxation and Revenue Technology—Inland Revenue's new core tax processing application. It is an implementation of the GenTax product from FAST Enterprises.
System	The parts of the Solution operated by a single Business Partner; typically, this term means the Business Partner's MSH.
Tax Agent	A Tax Agent who is formally registered as such with Inland Revenue.
TDS	Transaction Data Services
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'.
User	The user referred to in this document is the user of the software provider accounting or tax package. This user needs delegated permissions on Customer tax accounts (potentially via a tax agency or other intermediary) in order to use TDS. The web logon used in eServices needs to be used in making Inland Revenue queries. This web logon must be granted permission there to access Customer Accounts
WSDL	Web Services Description Language (WSDL) is an XML-based language that provides a model for describing Web Services.
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 X509 certificate to which it is bound identifies whose key it is, who issued it, when it expires etc. When a counterparty's X509 digital certificate is received, the recipient takes their public key out of it and store the key in their own keystore. The recipient can then use this key to encrypt and sign the messages that they exchange with this counterparty.
XIAMS	External IAMS—an instance of IAMS that authenticates and authorises access by external parties, for example customers, trading partners etc, as opposed to internal parties such as staff.
XML	EXtensible Mark-up Language
XSD	XML Schema Definition—the current standard schema language for all XML data and documents.

6 Change log

This table lists all changes that have been made to this build pack document since the release of version 1.0.

Version	Date	Description
1.2	25032019	1. Updated the Version column in this table to show what version should have been since the 1.0 version – rather than having a date as a Version Number 2. The TDS solution for Release 3 has been extended to cater for additional Business Intermediaries. Hence all references to "Tax Agent" have been changed to "Business Intermediary" 3. Changed all references to Tax Agent Web Services to TAWS after it is first mentioned in Section 1.3 4. Updating the document structure to more closely align (wherever applicable) to the standard build pack template 5. Inclusion of Field Descriptions 6. Inclusion of links to sample files on the GitHub
1.1	09102018	Removed old sections 2.6 and 2.9.2.5 and updated diagram in section 2.3.3 to reflect Permissions file no longer required Updated various sections to reflect the Software Intermediation link is between the Software Platform and Tax Agency **Client List** (previously the link was to the Tax Agent or Tax Agency). Changes highlighted in yellow.
1.0	12042018	**P1,2** Removed duplicate versions and dates on title page and second page Added Samples Index Updated references and links to other Build packs Updated Table 1 and added Table 2 Replaced Fig 3 – 6 - MyIR Portal removed Clarification of support ability to do ad hoc request for data file. **2.2.1** Clarification of PGP key usage 2.3.1 Clarification of Control file transfer **2.3.2** XML files sample added **2.3.3** Picture adjusted to show all Account elements are now within Client List elements 2.3.10 Samples extended and put in context of sections describing structure in order to illustrate the text. Single set of files drilled down across sample sections in order to simplify reading. 2.4 Updated Summary statement for Software Intermediation and added sample file 2.5 Updated summary statement for Intermediation and added sample file 2.6 Added Sample Permissions file **2.10** removed embedded samples zip and schemas zip files and refers to GitHub3. Operational considerations section added 4. Updated and added some information to Onboarding

		5.1 Figure 11 updated to reflect history for new links, removal of extended history, align terminology. Description for 120 updated to reflect that history data will also be provided. 5.2 Updated Use case overview diagram to reflect removal of Ad hoc History file, and use case listing to reflect the changes in the diagram Updated and added some elements into the Glossary