Nasdaq Calypso

Bloomberg DL Products Integration Guide

Version 12.17.0

Revision 68.0
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Approved

Document History

Revision	Published	Summary of Changes
1.0	February 2014	First edition for version 12.1.0 - Core Calypso version 17.0.
2.0	April 2014	Second edition – Removed Curves and Volatility Surfaces.
3.0	October 2014	Third edition – Updates for version 14.1 of Core Calypso.
4.0	November 2014	Fourth edition – Updates for version 1.5.3.
5.0	April 2015	Fifth edition – Updates for version 1.14.2.
6.0	August 2015	Sixth edition – Updates for version 1.14.7 – Added Specific Source Pricing.
7.0	November 2015	Seventh edition – Updates for versions 1.14.8, 1.14.9.
8.0	December 2015	Eighth edition – Updates for version 1.14.10.
9.0	March 2016	Ninth edition – Updates for versions 1.14.11, 1.14.12.
10.0	June 2016	Tenth edition – Updates for version 5.0.0.
11.0	September 2016	Eleventh edition – Updates for version 5.0.2.
12.0	October 2016	Twelfth edition – Updates for version 5.1.0.
13.0	April 2017	Thirteenth edition – Updates for version 5.3.0.
14.0	May 2017	Fourteenth edition – Updates for version 5.3.2.
15.0	January 2018	Fifteenth edition – Updates for version 5.3.5.
16.0	May 2018	Sixteenth edition – Added support for HTTP Proxy.
17.0	October 2018	Seventeenth edition – Updates for version 9.0.1.

Revision	Published	Summary of Changes
18.0	November 2018	Eighteenth edition – Updates for version 10.0.0 - Version 16.1 of Core Calypso.
19.0	January 2019	Nineteenth edition – Updates for version 8.0.1.
20.0	March 2019	Twentieth edition – Updates for version 10.0.1.
21.0	March 2019	Twenty-first edition – Updates for version 8.0.2.
22.0	April 2019	Twenty-second edition – Updates for version 10.0.2.
23.0	April 2019	Twenty-third edition – Updates for version 8.0.3.
24.0	May 2019	Twenty-fourth edition – Updates for version 10.0.4.
25.0	May 2019	Twenty-fifth edition – Updates for version 8.0.5 – Version 15.2 maintenance of Core Calypso.
26.0	June 2019	Twenty-sixth edition – Updates for version 10.0.5.
27.0	July 2019	Twenty-seventh edition – Updates for version 8.0.6.
28.0	August 2019	Twenty-eighth edition – Updates for version 10.0.6.
29.0	September 2019	Twenty-ninth edition – Updates for version 8.0.7.
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32.0	November 2019	Thirty-second edition – Updates for version 10.0.9.
33.0	December 2019	Thirty-third edition – Updates for version 8.0.9.
34.0	January 2020	Thirty-fourth edition – Updates for version 8.0.10.
35.0	February 2020	Thirty-fifth edition – Updates for version 10.0.10.
36.0	February 2020	Thirty-sixth edition – Updates for version 8.0.12.
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47.0	August 2020	Edition 47 – Updates for version 10.1.2.
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50.0	October 2020	Edition 50 – Updates for version 8.0.21.
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53.0	March 2021	Edition 53 – Updates for version 11.1.0.
54.0	March 2021	Edition 54 – Updates for version 8.2.5.
55.0	April 2021	Edition 55 – Updates for version 11.3.0.
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57.0	June 2021	Edition 57 – Updates for version 11.4.0.
58.0	July 2021	Edition 58 – Updates for version 11.5.0.
59.0	November 2021	Edition 59 - Updates for 16.1 maintenance release.
60.0	December 2021	Edition 60 - Updates for version 11.8.1.
61.0	February 2022	Edition 61 - Updates for version 11.8.5.
62.0	April 2022	Edition 62 – Updates for version 11.8.7.
63.0	May 2022	Edition 63 – Updates for version 12.7.0.
64.0	September 2022	Edition 64 – Updates for version 12.9.2.
65.0	June 2023	Edition 64 – Updates for version 12.13.0

Revision	Published	Summary of Changes
66.0	January 2024	Edition 66 – Added support for CompoundedIndices mapping
67.0	June 2024	Edition 67 - Added Skip Existing Quotes attribute in the BLOOMBERG_UPDATE ST. Added column mapping BVOL_RFR_SWAPTION and BVOL_RFR_CAP.
68.0	August 2024	Edition 68 – Updated Columns Mapping and Coupon Panel. Added Access permission ViewOnlyBloombergMapping.

This document describes how to integrate Calypso with Bloomberg Data License for products, corporate actions, and trades.

For information on integrating market data from Bloomberg DL, please refer to the *Calypso Bloomberg DL Market Data Integration Guide* for details.

NOTE: The Calypso License to use this Calypso Integration Module does not include a license for any third-party data services to which this module can interface. Clients are responsible for contracting with the appropriate third-party data service(s) prior to using this Calypso Integration Module.

IMPORTANT NOTE: For Cloud deployments please contact your application management team as the deployment procedure for Cap Cloud is different.

Table of Contents

1 Introduction to Bloomberg Connect

Bloomberg Connect is Calypso's integration of the Bloomberg Data License. This facility allows one to request per-security data from the Bloomberg database of the Bloomberg-defined field types: Security Master (security indicative data), Historical Time Series Data, Derived Data, and End-of-Day Prices. The request to and reply from Bloomberg are handled via an FTP / SFTP Transfer process. Depending upon the specific information requested and the functions used, Calypso will take the information requested and create the following:

- A de novo bond product with all indicative information and cashflows
- A de novo equity product with a volatility surface and historical dividends
- A de novo equity index product with a volatility surface and historical dividends
- An update to the indicative information and cashflows of a bond resident in your Calypso database
- An update restricted to only the cashflows of a bond resident in your Calypso database
- An update to the indicative information for an equity or equity index product
- Quotes for a bond, an equity or an equity index may be imported when the indicative information is imported to form a product. In addition, quotes alone may be imported for bonds, equities, equity indices, rate indices, currencies, money markets, and commodities
- Certain corporate actions for equities resident in your Calypso database

This functionality allows the transfer of voluminous terms and conditions (e.g., security identifiers, issuer name, issue date, payment dates, payment frequency, coupon, call schedule, amortization schedule, etc.) and events (e.g., cashflows, amortization amounts, dividends, stock splits, mergers, price quotes, etc.) from the Bloomberg database to your Calypso database in a flexible, timely, and automated manner. Requests for information may be on an ad hoc basis, they may be scheduled via a Calypso Scheduled Task, or the request may be formulated to be recurring and placed on the Bloomberg server. With this information in the Calypso database, the user may calculate current valuations, process actual cashflows, forecast future cashflows, process dividends, and other equity corporate actions, etc.

Calypso supports online immediate requests for individual security information as well as the ability to schedule a recurring request. One may also use the Bloomberg Connect Window to build a list of requests to be sent to Bloomberg in one consolidated request. To facilitate a list of requests, a file of security identifiers may be imported into the Bloomberg Connect Window. Bloomberg Connect combines the security identification information that the user supplies along with a pre-defined, configurable list of Bloomberg data fields and forms what is known in Bloomberg jargon as a Request File (the file extension is "`.req`"). The Request File contains information that identifies the Bloomberg customer, the type of request, the time to run, a list of requested data items (not necessary for some requests), and a list of securities. The Request File is sent through an FTP / SFTP Transfer to the Bloomberg server. Bloomberg responds with an encrypted Reply File (the file extension is "`out.enc`"). The Calypso Bloomberg engine decrypts the encrypted file, producing a Reply File with a "`.out`" extension. The decrypted Reply File repeats the list of requested data field names along with the values of the data fields for the securities listed. Calypso receives the data and, depending on the functions used, creates a security product or an update to security information. The mapping from Bloomberg data to Calypso data can be made with a user-defined product template, a default product template, a user-configurable value mapping, or a hard-coded mapping created by Calypso.

▶ See Setting Bloomberg Mapping Values for details on the mapping process.

There are essentially two kinds of timed requests that may be made through the Calypso Bloomberg Connect to the Bloomberg Data License. These are either requests that are to be run one time only, immediately or at a scheduled time, or recurring scheduled requests. Bloomberg labels the one time only request as a “oneshot” for non-master data accounts and “adhoc” for master data accounts. Scheduled requests may be scheduled for a frequency of daily, weekly, monthly, weekdays or weekends.

Bloomberg refers to the types of requests as “Programs” or “Program Names” Calypso supports the following Bloomberg programs:

- Getdata – Used for Security Master (security indicative data), Historical Time Series Data, Derived Data and End of Day Prices.
- Gethistory — Used to retrieve historical data fields within a date range.
- Getactions — Used to obtain Equity Corporate Actions.
- Getsnap — Used to retrieve current and past snapshot pricing.
- Cancel – Used to cancel a request that has been scheduled on the Bloomberg server.

The Calypso Task Station monitors the events when a Request File is sent to Bloomberg, and a reply is subsequently received. A successful creation or an update of security information in your Calypso database is reported in the Task Station. It is important to monitor the Task Station for Bloomberg Connect events for the possibility of error conditions. If Bloomberg returns any errors in the Reply File, then these error codes are also raised as exceptions on the Task Station.

This guide provides instructions on integrating Calypso with Bloomberg: product integration (bonds and equities), market data, and trade integration.

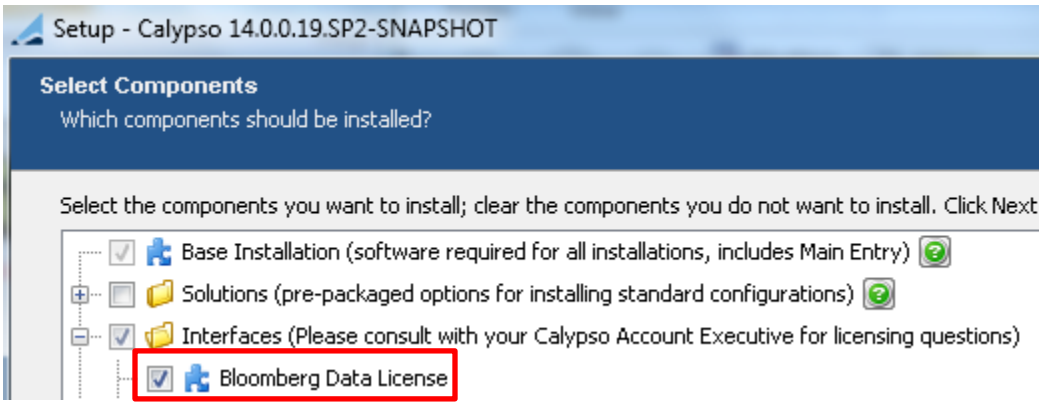
CapCloud Clients

System level installation and configuration of Bloomberg is performed by Calypso. Calypso configures the environment properties according to the requirements of your Bloomberg Implementation.

2 General Installation

This section applies only to Bloomberg Static Data and Bloomberg Trades.

Bloomberg Static Data and Bloomberg Trades are installed as part of the Calypso Installer when you select the "Bloomberg Data License" interface:



▶ Please refer to the Calypso Installation Guide for complete details on the Calypso Installer.

If you are installing a Calypso Upgrade package instead, the instructions are also in the Calypso Installation Guide.

Database Upgrade

When you run Execute SQL as part of your installation, the Bloomberg files will be already loaded. You just need to check the "Bloomberg" and "BloombergFeed" checkboxes.

3 Bloomberg Product Integration

Bloomberg Product integration allows Calypso users to retrieve Bloomberg data from the Bloomberg engine via Bloomberg Connect using the Calypso Scheduled Tasks window. You can monitor the status via Bloomberg events.

The integration currently supports generating Bloomberg request files to import Bond and Equity product data.

The following steps are required to integrate Bloomberg data into Calypso:

- Add Bloomberg encryption settings (if required).
- Configure the Bloomberg engine.
- Configure Calypso environment properties.
- Review the use of the Bloomberg Private Placement application.
- Create a batch file to launch the Bloomberg Connect application, or add it to the Calypso Navigator.
- Add the Bloomberg Cash Flow window to the Calypso Navigator.
- Configure Bond Templates for Bloomberg.
- Define the ZZ ISO Country Code in Calypso.
- Add and map issuers in Calypso.
- Configure Bloomberg mappings.
- Create Calypso Product Codes.
- Define Calypso Bond Subtypes.

Additionally, you must define various Bloomberg updates for use in Calypso and use the Task Station to create scheduled tasks for these updates.

The steps are described below.

3.1 Setup Requirements

3.1.1 Specifying the Bloomberg Encryption Utility Location

Ensure that "`bbdl/des.exe`" is installed on your machine. This application is part of the Data License Request Builder provided by Bloomberg.

Specify the application's installation location in the Calypso environment property BLOOMBERG_ENCRYPT_APP.

[NOTE: Bloomberg requires that you use their encryption application. You cannot use another application.]

3.1.2 Bloomberg Engine Configuration

The Bloomberg engine is configured in the Engine Manager of Web Admin: event subscription and engine parameters.

You may need to add this engine if it is not available for configuration: Create a new engine called BloombergEngine with class name `com.calypso.engine.bloomberg.BloombergEngine`.

It subscribes to the following events: PSEventBloomberg.

▶ Please refer to Calypso Web Admin documentation for complete details.

3.1.3 Connection Setup

Calypso supports FTP, FTPS (FTP over SSL), and SFTP (FTP via SSH).

You can select the connection type in the environment property BLOOMBERG_FTP_TYPE. It can be set to FTP, SFTP, or FTPS. If it is not set, the connection defaults to FTP.

▶ See Setting Environment Properties for additional settings.

FTPS

FTPS requires that any firewalls between the client and the server allow the connection. Your Network Administrator must add at least two rules for each firewall: One that permits the control connection and one that permits the (passive) data connection. Other rules may be required according to comply with your organization's internal policy (logging, etc.).

The table below lists the required connections to `bfmrr-ssl.bloomberg.com`:

Connection	Port	Protocol
Control	990	TCP
Data	10000-30000	TCP

SFTP

Version 4.6.1 of "`edtftpj-pro.jar`" is required.

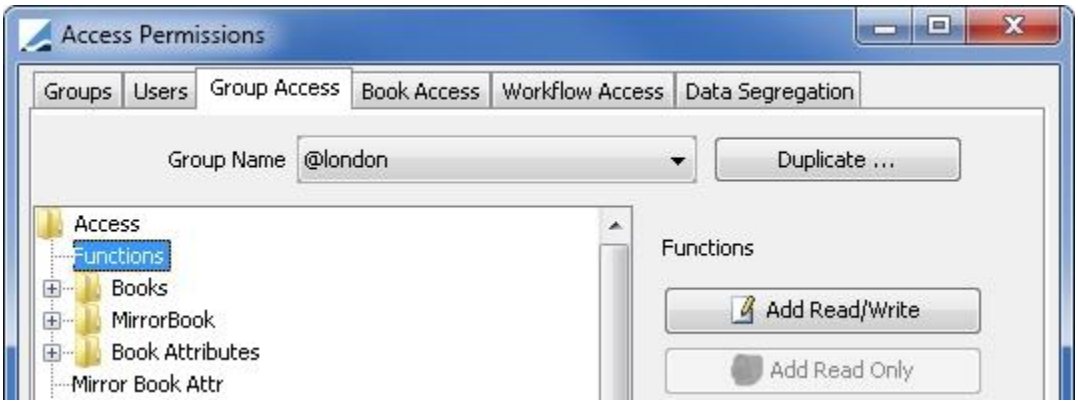
3.1.4 Access Permissions

The following access permission function must be granted.

AccessBloombergConnect – Permission to access the Bloomberg Connect window and to view and modify Bloomberg Connect configurations.

ViewOnlyBloombergMapping – Permission to offers the same capabilities as the AccessBloombergConnect permission, but with the distinction that it allows users to view the Bloomberg Mapping Window but restricts them from making any modifications.

From Calypso Navigator, select **Configuration > User Access Control > Access Permissions**, and select the Group Access panel.



» Select a user group from the Group Name drop down, then select the 'Functions' label.

» Click **Add Read/Write** to add access permissions functions as needed.

» Then click **Save** to save the changes.

[NOTE: Access permission functions are defined in the “function” domain.]

3.1.5 Environment Properties

Set the following environment properties as applicable.

Environment Property	Description
BLOOMBERG_ACCOUNT_NAME	FIRMNAME for Getsnap if BLOOMBERG_FTP_USER is already used. See also Feed Configuration if you are using multiple user accounts.
BLOOMBERG_ACCOUNT_TYPE	It should be set to "master" for a master data account. When set to “master”, the Bloomberg Connect requests become “adhoc” requests. When using Bloomberg Update, you can set the program flag to “adhoc” or “oneshot”. “oneshot” requests must be sent 15 minutes prior to processing. If not set, “adhoc” requests are not supported, and “oneshot” requests correspond to one-off requests.
BLOOMBERG_BYPASS_SECURITY_AUTHORIZATION	Set to true to bypass authorization for Bond, Equity and Equity Index securities. Authorization of securities will be required otherwise.
BLOOMBERG_BYPASS_QUOTE_AUTHORIZATION	Set to true to bypass authorization of quotes for the securities.

Environment Property	Description
	Authorization of quotes will be required otherwise.
BLOOMBERG_CALL_PUT_SCHEDULE	True or False. Default is False. If set to true, Calypso saves call/put schedules when importing the bond.
BLOOMBERG_CREATE_ISSUER	True or False. Default is False. When True, first Calypso verifies if the short name of LE matches the ISSUER field in the output file, then proceeds to iterate through Bloomberg, TICKER, TICKER_1, TICKER_2, TICKER_3, and TICKER_4, and if Calypso cannot find a matching Legal Entity, the application then creates a new Legal Entity on-the-fly (of role Issuer), based on the Bloomberg ISSUER field and the associated country. The Legal Entity is created with the status “Enabled” and the exception is placed in the Task Station. When False, if a pre-existing issuer is not found, the application creates the bond using BLOOMBERG_DUMMY_ISSUER as the short name. In addition, an exception is raised in the Task Station.
BLOOMBERG_DEFAULT_CLEAN_OR_DIRTY_PRICE_ON_CREATION BLOOMBERG_DEFAULT_DISCOUNT_OR_YIELD_ON_CREATION	(Optional) Default quote value. For example, “100”. If neither property is set, Calypso does not use a default value for the close value on the quote created when creating the bond. If the bond has a quote type of CLEAN_PRICE and there is no value for QUOTE_MID, Calypso sets the default value as follows: BLOOMBERG_CLEAN_OR_DIRTY_PRICE_ON_CREATION / 100 If the bond has a quote type of Yield or Discount and there is no value for QUOTE_MID, Calypso sets the default value to as follows: BLOOMBERG_DEFAULT_DISCOUNT_OR_YEILD_ON_CREATION / 100 These two environment properties are only relevant for bonds. This is a means to set the CLOSE value when QUOTE_MID is missing or it has not been imported from Bloomberg. If QUOTE_MID is imported from Bloomberg, then QUOTE_MID is used for the CLOSE.
BLOOMBERG_DISABLE_RECORD_LIMIT_CHECK	Set to true to enable processing more than 20,000 bonds via BLOOMBERG_UPDATE scheduled task.

Environment Property	Description
BLOOMBERG_DUMMY_ISSUER	Only needed if BLOOMBERG_CREATE_ISSUER is False. Short name of a Legal Entity to use if a Bloomberg issuer is not found. For example, “BLOOMBERG”. The Bloomberg issuer can be a Legal Entity of role Issuer with matching short name, or a Legal Entity with matching BLOOMBERG attribute. If such a Legal Entity does not exist in the Calypso system, the application uses the dummy issuer instead. If this value is not set, Calypso searches for the Legal Entity with short name BLOOMBERG, and if it does not exist, it creates it on-the-fly.
BLOOMBERG_ENCRYPT_APP	Full path to the Bloomberg encryption application. For example, “C:\bloomberg\bbdl\des.exe". (Required to implement password encryption) [NOTE: Do not set BLOOMBERG_ENCRYPT_APP or BLOOMBERG_ENCRYPT_KEY if you have an unencrypted private line to Bloomberg.]
BLOOMBERG_ENCRYPT_KEY	Encryption key. If not specified, no encryption is used. For example, “Z.?????b”. (Required to implement password encryption) [NOTE: Do not set BLOOMBERG_ENCRYPT_APP or BLOOMBERG_ENCRYPT_KEY if you have an unencrypted private line to Bloomberg.]
BLOOMBERG_ERROR_TO_LOG	Set to true to log critical error messages into the log file (errors that may terminate the process when they occur). Otherwise, the error will be logged in the Task Station only.
BLOOMBERG_FILE_PREFIX	If this property is set, a two-letter filename prefix is taken from the property. Otherwise, the application uses the default value, “CY”.
BLOOMBERG_FIRMNAME	(Mandatory) The FIRMNAME from the Bloomberg system. For example, “dI364883”.
BLOOMBERG_FLOWS_SAVEDAS_PRODUCT_CUSTOM_DATA	True or False. When set to True, the system will save the Bloomberg cashflows as custom cashflows in the Bond product.

Environment Property	Description
BLOOMBERG_FTP_DIR	(Optional) Home directory on the Bloomberg system (remote FTP folder).
BLOOMBERG_FTP_HOST	(Mandatory) Host name of the FTP/SFTP server. For example, “bfmrr.bloomberg.com” for FTP and “dlsftp.bloomberg.com” for SFTP.
BLOOMBERG_FTP_PASSWORD (Stored in plain text) BLOOMBERG_FTP_PASSWORD_ENCRYPT (Encrypted prior to storing)	You can choose to store the Bloomberg FTP/SFTP password in plain text or in encrypted form. To store a plain text password, enter the password in the BLOOMBERG_FTP_PASSWORD environment property. To store the password with encryption, enter the password in the BLOOMBERG_FTP_PASSWORD_ENCRYPT environment property [NOTE: Manually editing the ENV file to enter the password into the BLOOMBERG_FTP_PASSWORD_ENCRYPT environment property does not encrypt the password. You must edit and save the environment properties file using the User Env application.] (Only one environment property is required. Do not use both.)
BLOOMBERG_FTP_PORT	(Optional) Port number of the FTP/SFTP server. Defaults to 21 for FTP, 990 for FTPS, and 30206 for SFTP.
BLOOMBERG_FTP_TYPE	(Optional) It can be set to FTP, SFTP, or FTPS. If it is not set, the connection defaults to FTP.
BLOOMBERG_FTP_USER	(Mandatory) User name for the FTP/SFTP server. See also Feed Configuration if you are using multiple user accounts.
BLOOMBERG_HTTP_PROXY_HOST BLOOMBERG_HTTP_PROXY_PORT BLOOMBERG_HTTP_PROXY_TYPE BLOOMBERG_HTTP_PROXY_USER BLOOMBERG_HTTP_PROXY_PASSWORD	HTTP Proxy Connection If those environment properties are set, HTTP Proxy connection is used instead of FTP or SFTP. Host, port, user name and password for HTTP Proxy connection.

Environment Property	Description
	The default for BLOOMBERG_HTTP_PROXY_TYPE if not set is HTTP.
BLOOMBERG_INSERT_ISSUER_ROLE	(Optional) True or False. Default is True. TRUE - If legal entity found without Issuer role, add the role and set the issuer on the product. FALSE - Set dummy issuer on the product.
BLOOMBERG_IMPORT_ABSOLUTE_DIVIDEND_CURVE	True or False. Default is False. If set to True, the dividend is displayed without any manipulation. If set to False or not set, then we use the difference of Dividend Amount - Previous Dividend Amount.
BLOOMBERG_ITERATE_TICKER	(Optional) This property enables Calypso to map an ISSUER using multiple tickers. If the property is not set, Calypso retrieves the Issuer from the Legal Entity attribute, TICKER. If the property is set, then Calypso attempts to find the Issuer using LE issuers using the Legal Entity attributes TICKER, TICKER_1, TICKER_2..., TICKER_N.
BLOOMBERG_LOCAL_DIR	(Optional) This property allows specifying the folder where the .out/.req files are stored. The default if not set is: /calypso/<user home>/Calypso/Bloomberg
BLOOMBERG_MORTGAGE_FLOATER_COUPON	(Optional) This property controls the import of coupons for ABS floater bonds. If not set or set to false, the coupons are not imported. Is set to true, the coupons are imported.
BLOOMBERG_OVERRIDE_FACE_VALUE	(Optional) Default face value of the bond regardless of what is in the MIN_INCREMENT field of the Bloomberg file or the bond template. For example, “1”.
BLOOMBERG_SAVE_FLOWS	(Mandatory) True or False. True = Reconcile Bloomberg cashflows against Calypso. False = Do note reconcile cashflows. [NOTE: Unless there is a specific need for custom cashflows, this setting should be set to False. The overhead of continually fetching custom cashflows

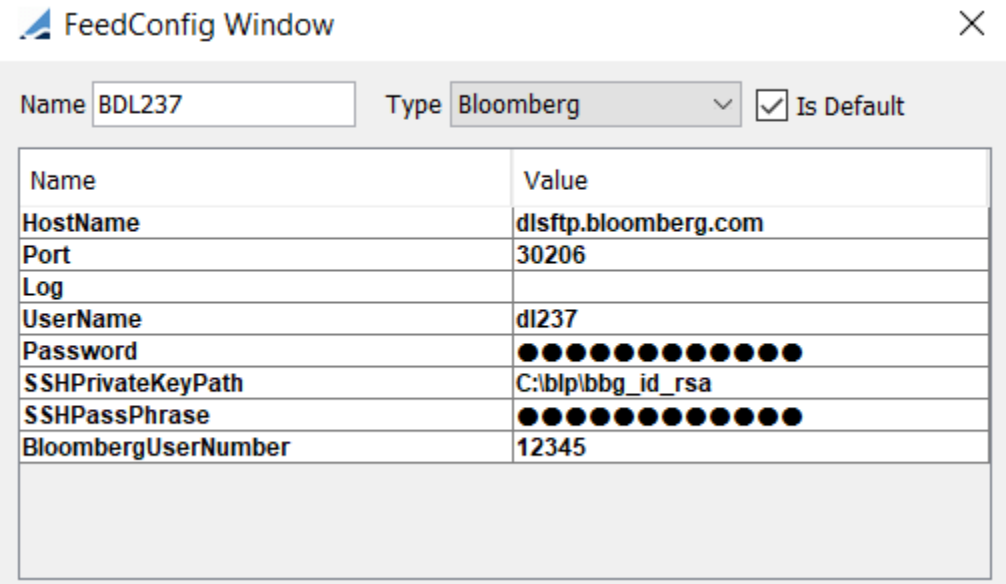
Environment Property	Description
	for the bond will have a negative effect on performance.]
BLOOMBERG_STATUS_INVALID	Not used.
BLOOMBERG_SFTP_KNOWN_HOSTS_FILENAME	SFTP Connection Only Name of Known Hosts file name. Example: <user home>\\.ssh\\known_hosts If not set, host validation is disabled.
BLOOMBERG_SFTP_PRIVATE_KEY_FILENAME	SFTP Connection Only Name of private key file name. Example: <user home>\\.ssh\\bbg_id_rsa If not set, password authentication is performed using the username and password provided in the environment properties BLOOMBERG_FTP_USER and BLOOMBERG_FTP_PASSWORD.
BLOOMBERG_SFTP_PASSPHRASE	SFTP Connection Only Passphrase string if one is used with private key file. Encrypted in User Environment editor.
BLOOMBERG_SFTP_PASSPHRASE_ENCRYPTED BLOOMBERG_ENCRYPT_KEY_ENCRYPTED	SFTP Connection Only Encryption of Bloomberg password. If these properties are set, then the passwords are encrypted, otherwise "BLOOMBERG_SFTP_PASSPHRASE" and "BLOOMBERG_SFTP_PRIVATE_KEY_FILENAME" are used to connect to sftp host. BLOOMBERG_SFTP_PASSPHRASE_ENCRYPTED is encrypted in both the User Environment Editor and the environment file.
BLOOMBERG_TICK_SIZE	(Mandatory) True or False. If the property is set to true, the tick size of 100 is set on the security. If the property is not set or is false, the tick size is taken from the QT_SPEC field.
BLOOMBERG_USE_DISABLED_ISSUERS	(Optional) True or False. Default is True.

Environment Property	Description
	TRUE - Set the issuer on the product, even if it is disabled FALSE - Set dummy issuer on the product
BLOOMBERG_USE_FIXED_MORTGAGE	(Optional) True or False. True to override the index and save the MTGE as Fixed coupon instead of floating.
BLOOMBERG_USE_PE_PRICING_PARAM_INSTANCE_TYPE_FOR_BVOL	True or False. Default is False. If set to True, then BVOL instance type will be set as per the pricing parameter set in the pricing environment. If set to False or not set, then the instance type will be set as "CLOSE".
BLOOMBERG_VAR_COUPON_SCHEDULE	(Optional) True or False. If False, then we build the Coupon Schedule from FLOATER_ACC_SCHEDULE if: Bond is a floater (FLOAT is 'Y') Reset_Index is not null Bond is Govt, Muni, or Corp The dates in FLOATER_ACC_SCHEDULE are assumed to be the start date, and any missing rates are filled with the last nonzero rates. The rate at maturity date in the schedule is set to the last non-zero rate.
MULTIPLE_PRODUCT_CUSTOM_DATA	Not used.

3.1.6 Feed Configuration

You can also specify a Feed Configurations if you need to use multiple user accounts using **Configuration > Market Data > Feed** from the Calypso Navigator.

Create a feed config for each user account for the Bloomberg type.



HostName replaces BLOOMBERG_FTP_HOST

Port replaces BLOOMBERG_FTP_PORT

UserName replaces BLOOMBERG_FTP_USER

Password replaces BLOOMBERG_FTP_PASSWORD

SSHPricateKeyPatch replaces BLOOMBERG_SFTP_PRIVATE_KEY_FILENAME

SSHPassPhrase replaces BLOOMBERG_SFTP_PASSPHRASE

BloombergUserNumber replaces BLOOMBERG_USERNUMBER.

The Feed Config can be selected in the Bloomberg Connect and Bloomberg Update windows.

3.1.7 Setup for Retrieving Private Placements

Creating securities in Bloomberg can be done via the Private Placement Creation (PPCR) application on the client's local system. PPCR is a Bloomberg-provided application. Use the submenus to narrow down the type of security to enter (Mtge, Muni, Govt, etc.).

This functionality is extremely useful to maintain securities created by a Bank that are not part of the Bloomberg universe. Depending on the setup access controls (Privileges), these securities are only seen by the Bank, or they may be setup for everyone to see.

When the following environment properties are specified, Calypso adds them to the request file for retrieving data related to private placements.

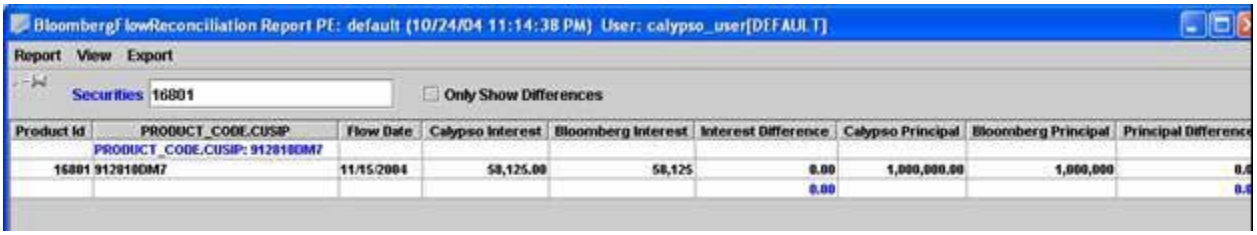
- BLOOMBERG_SN - Serial number of the terminal used to retrieve the items. Usually the terminal serial number associated with the BLOOMBERG_USERNUMBER (based on the license agreement).
- BLOOMBERG_WS - Workstation number, usually 1.
- BLOOMBERG_USERNUMBER - User number.

3.1.8 Starting the Bloomberg Flow Reconciliation Report

You can create a menu item for the action "`reporting.ReportWindow$BloombergFlowReconciliation`".

The Bloomberg Flow Reconciliation Report allows you to reconcile Bloomberg cashflows with Calypso cashflows. This only applies if the environment property BLOOMBERG_SAVE_FLOWS = true.

This report can also be accessed from the Task Station.



3.1.9 Configuring Bond Templates

Bond templates contain default values that Calypso will store in the database when a particular field is either not supported or not populated by Bloomberg.

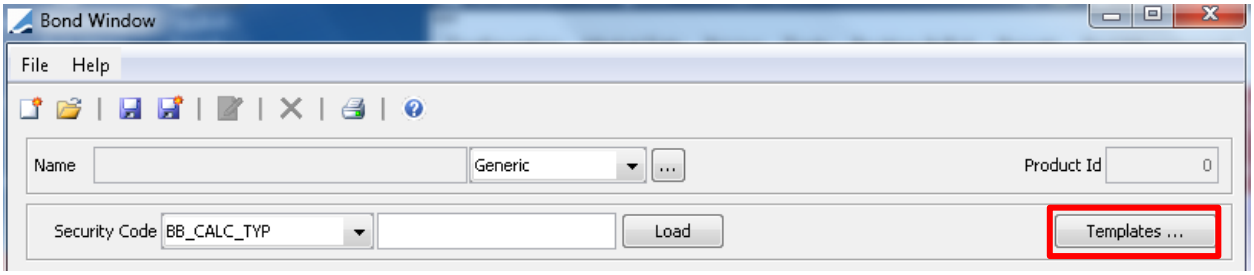
For example, on the Bond Window's Market tab, Bloomberg does not provide the number of decimals for Price, Yield, Nominal, and Coupon Rate, nor, in some cases, are Face Value and Total Issued provided.

When Bloomberg does not supply an expected value, the interface generates an exception in the Task Station to inform users that a default value was used rather than a Bloomberg value.

You should define a Bond Template for each Bond Class (e.g., Bond, Bond Asset Backed, Bond Brady, etc.). The full list of Bond classes is defined in the domain "bondType".

You can work with Bond templates using the Bond window (**Configuration > Fixed Income > Bond Product Definition**), or using the Bond Defaults window (**Configuration > Fixed Income > Default**) from the Calypso Navigator.

From the Bond Window, click **Templates** to choose a Template operation.



You can choose:

- Convert Defaults to convert any existing Bond Defaults to a template.
- Load Template to load a template in the window to review values.
- Remove Template to delete a previously defined template.

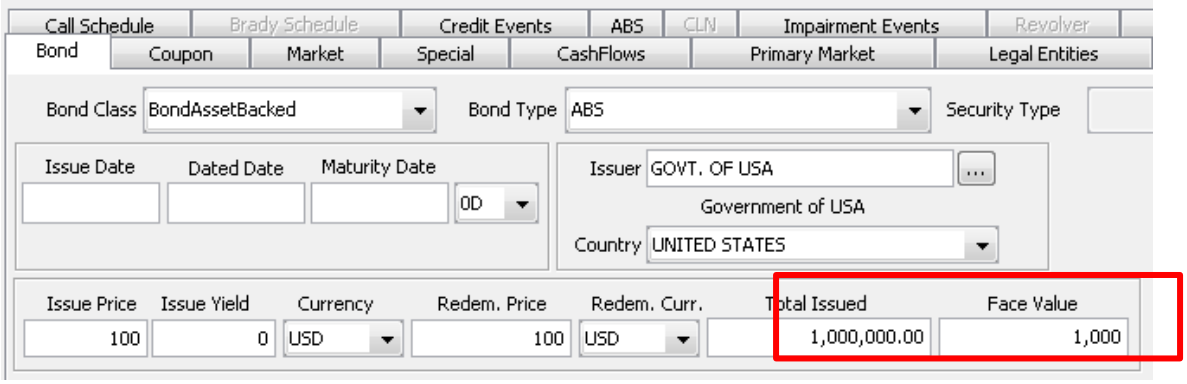
- Save Template to save a new or modified template, based on the values specified in the Bond window. Templates should not be saved as “private” so that multiple users can use them.

  Calypso suggests that at a minimum, you should create templates for:

  - Bond
  - Bond Asset Backed
  - Bond Brady
  - Bond Convertible
  - Bond FRN
  - Bond MM Discount

Sample Template for Asset Backed Bonds

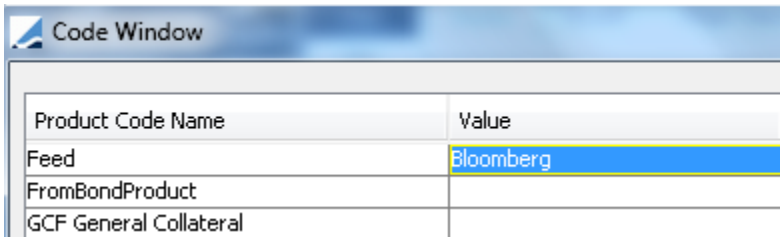
- Total Issued and Face Value:



  The Total Issued and Face Value values are essential for Calypso to generate cashflows and are sometimes not provided by Bloomberg. Enter default values for the instances where Total Issued or Face Value are missing.

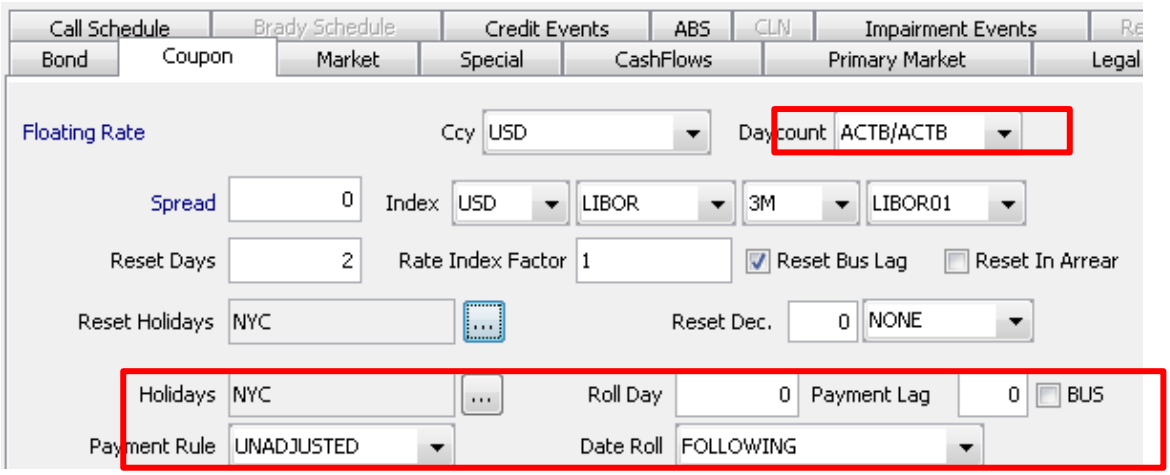
- Product Codes:

  You can click **Codes** to define product codes.



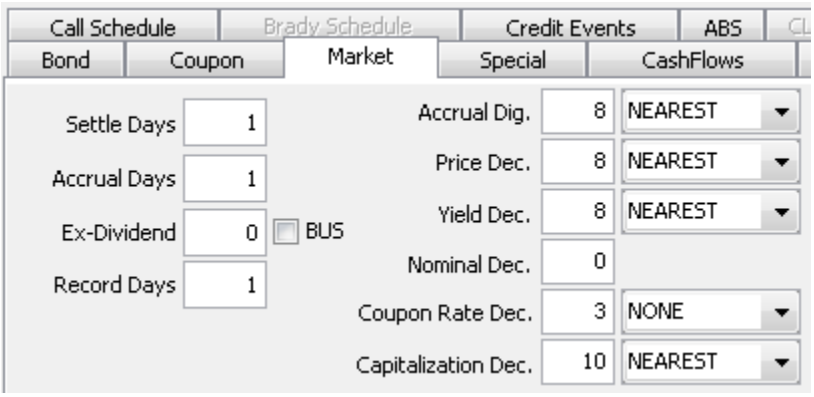
  Saving product codes as part of a template assigns default values to a bond product. Defining Feed as “Bloomberg” allows for easy identification of products created by the Bloomberg interface as opposed to manually created products.

- Holiday, Payment Rule, Date Roll, Daycount:



Bloomberg does not systematically provide the Holidays field. In addition, the Payment Rule and Date Roll mapping are contained in a mapping table. Default values are provided in the event that a new value is added in Bloomberg. In Bloomberg, the Daycount definition encompasses the Payment Rule and the Date Roll concepts.

- Settle Days, Accrual Days, Ex-Dividend, and Decimals:



Bloomberg does not provide Settle Days, Accrual Days, or Ex-Dividend Days. Nor does Bloomberg provide the decimal values. Calypso systematically uses the default values provided in the template.

This is particularly important for Ex-Dividend as it has an effect on the Corporate Action process.

Other Bond Templates: US Market - FED, DTC, PHY

In addition to the suggested minimum bond templates, one might add additional templates to pass along other attributes that are unavailable or difficult to obtain from Bloomberg. For example, in some implementations, it has been the practice to identify the depository as the DTC, FED, or PHY by using different templates for each unique attribute. These templates are essentially identical to the “standard” templates except that a product code for DTC, FED, or PHY is set to true for the corresponding name extension.

When saving these template definitions, be sure to click **Yes** on the Save Product Codes Confirmation dialog.

Also, all Munis must have Price Dec set to 3 DOWN and Yield Dec set to NEAREST.

You can define:

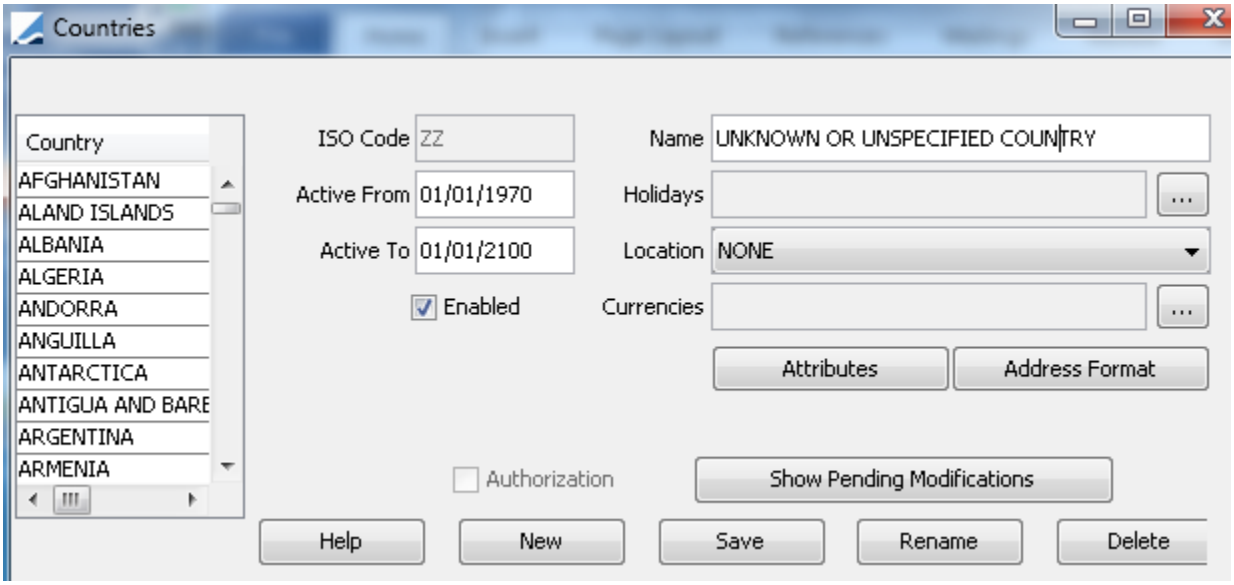
- bond
- bond_dtc
- bond_dtc_fed
- bond_dtc_muni
- bond_dtc_phy
- bond_fed
- bond_phy
- bond_phy_muni
- bondassetbacked
- bondassetbacked_cdn
- bondassetbacked_dtc
- bondassetbacked_dtc_phy
- bondassetbacked_fed
- bondassetbacked_fed_dtc
- bondbrady
- bondconvertible
- bondfrn
- bondfrn_fed
- bondmmdiscount
- bondmmdiscount_dtc
- bondmmdiscount_dtc_phy
- bondmmdiscount_fed
- bondmmdiscount_fed_dtc

3.1.10 Defining ISO ZZ as an “Unknown or Unspecified Country”

Bloomberg uses non-standard ISO codes (i.e., SNAT).

ISO has reserved codes for user defined information. Add a generic country code named “ZZ” for Calypso to use when Bloomberg provides an unauthorized code.

From the Calypso Navigator, navigate to **Configuration > Definitions > Countries**:

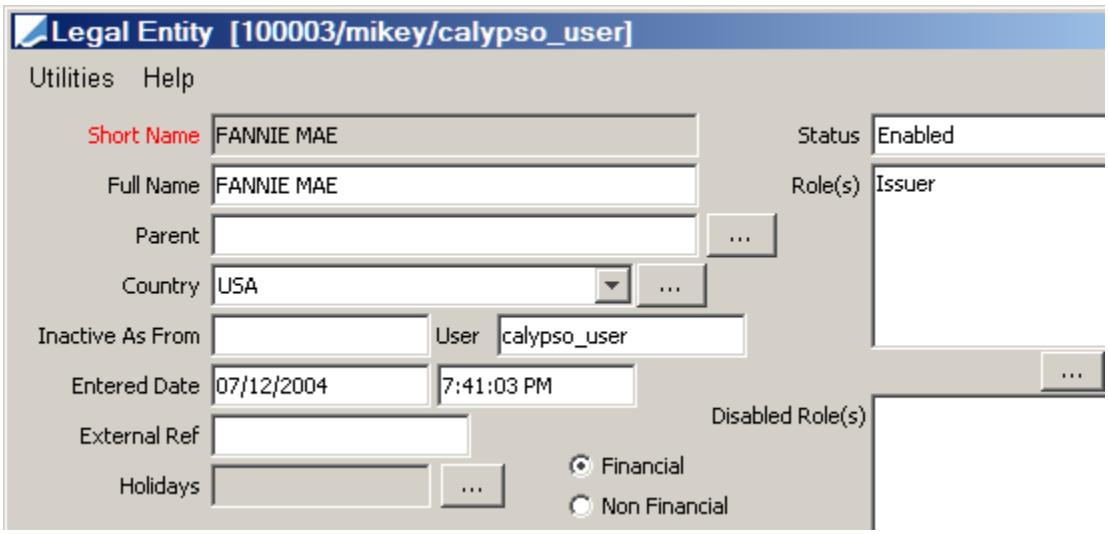


» When you click **New**, you will be prompted to enter the ISO Code.

» Then enter a name for the country and click **Save** to save it. The country is then available for selection in the Bond window.

3.1.11 Defining Issuers

Add Issuers and their corresponding attributes using **Configuration > Legal Data > Entities** from the Calypso Navigator.



It is recommended to create the following common US issuer names in Calypso:

Name	Roles
United States of America	Issuer
Fannie Mae	Issuer
Gment Natovernional Mortgage A	Issuer
Freddie Mac	Issuer

3.1.12 Mapping Issuers in Bloomberg

In Bloomberg, it is possible to map issuers using two fields:

- Ultimate Parent Company Name
- Ticker

[NOTE: If you also use the MarkIt interface in credit derivatives to load legal entities and reference obligations, an improperly configured system can cause duplicate legal entities (issuers) to appear in Calypso. For example, MarkIt may name issuer Alcoa as "Alcoa Inc." and Bloomberg may name the same issuer as "Alcoa Corporation." Both MarkIt and Bloomberg should consider these as the same issuer. It is recommended to use the legal entities imported from the MarkIt interface as the benchmark Legal Entity, if credit derivatives and fixed income are both implemented.]

Using the TICKER Field

Similarly, an Issuer mapping can be made using the TICKER field. This is particularly useful for UKT notes where Bloomberg incorrectly but consistently uses the ISSUER to identify the paper. As seen in the table below, the Issuer field identifies the Issue rather than the Issuer.

Ultimate Parent Company Name versus Issuer:

PARENT_COMP_NAME	TICKER	ISSUER
United Kingdom of Great Britain	UKT	TRY 8% 2021
United Kingdom of Great Britain	UKT	TSY 4 1/4% 2032
United Kingdom of Great Britain	UKT	TSY 4% 2009
United Kingdom of Great Britain	UKT	TSY 5 2014
United Kingdom of Great Britain	UKT	TSY 6% 2028
United Kingdom of Great Britain	UKT	TSY 7 1/2% 2006
United Kingdom of Great Britain	UKT	TSY 7 1/4% 2007

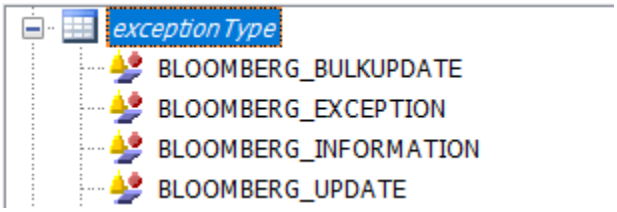
Using the TICKER field to reference the Ultimate Parent Company Name allows the system to accurately identify the Issuer.

[NOTE: Several Tickers can be attached to one issuer using the legal entity attributes, TICKER, TICKER_1, TICKER_2, ..., TICKER_N. The environment property BLOOMBERG_ITERATE_TICKER must be set accordingly to the number of tickers.]

3.1.13 Configuring the Task Station

Specific exception types are available for Bloomberg. Configure your Task Station so that you can monitor all relevant details related to the Bloomberg integration process.

Ensure that BLOOMBERG_BULKUPDATE, BLOOMBERG_EXCEPTION, BLOOMBERG_INFORMATION, and BLOOMBERG_UPDATE are defined in the “exceptionType” domain:



Open the Task Station (**Processing > Task Station** from the Calypso Navigator).

Add Bloomberg tabs as needed to the Task Station:

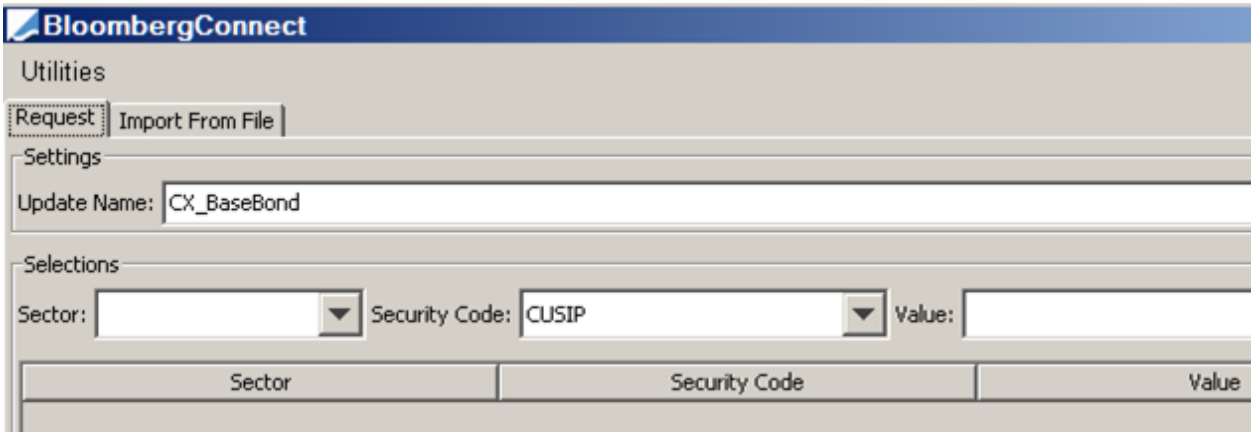
Name	Value
Tab Name	Bloomberg Exceptions
Workflow Types	Exception
Books	__ANY__
Book Attributes	
Event Types	EX_BLOOMBERG_BULKUPDATE,EX_BLOOMBERG_EXCEPTION,EX_BLOOMBERG_INFORMATION,EX_BLOOMBERG_UPDATE
Priorities	LOW, NORMAL, HIGH, CRITICAL, VERY CRITICAL
Task Statuses	NEW, UNDER_PROCESSING, COMPLETED, PASS_OVER, UNCOMPLETE
Enrichment Columns Filter	
Task Date Type	TaskDatetime
From Tenor	-1M
To Tenor	+1M
Catalog Auto Count	☐
Web Report	☐
Business Days	☐

- BLOOMBERG_BULKUPDATE - To monitor bulk updates.
- BLOOMBERG_EXCEPTION - To monitor errors.
- BLOOMBERG_INFORMATION - To monitor products that are created/ updated.
- BLOOMBERG_UPDATE - To monitor updates.

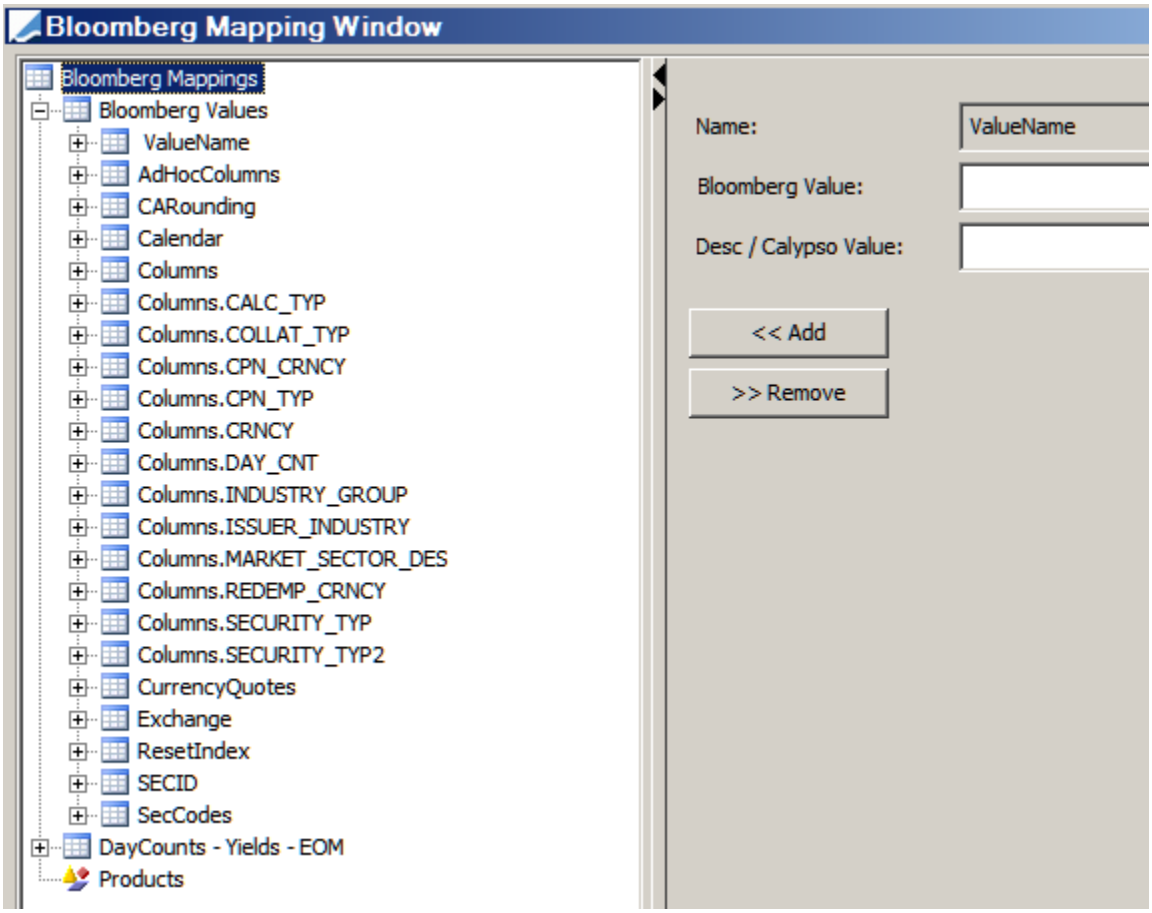
Once you load those exceptions in the Task Station, you can select a task, and choose **Investigate > Product** to view the product details.

3.2 Setting Bloomberg Mapping Values

You can create a menu item for the action "`bloomberg.BloombergConnectWindow`" to start the Bloomberg Connect window.



Choose **Utilities > Bloomberg Mapping Setup** to open the Bloomberg Mapping window. Double-click the "Bloomberg Values" label to define mappings between the Bloomberg values and the Calypso values.



» Select a type of data, then enter the Bloomberg value and the corresponding Calypso value.

[NOTE: The “ValueName” data type contains all of the other data types. If you need to add a data type, you first need to add its name to the “ValueName” data type.]

Using Regular Expressions in Bloomberg Mapping

Patterns should be given in Bloomberg value as 'PATTERN {YOUR PATTERN}'.

All the regular expression patterns should be given as per http://docs.oracle.com/javase/tutorial/essential/regex/

Example for ISSUER:

In mapping window for Bloomberg value 'Columns.ISSUER'

1. ISSUER value in Bloomberg file is 'FEDERAL HOME'.

In mapping window under 'Columns.ISSUER'

- Bloomberg value = PATTERN{^FEDERAL}
- Calypso value = FEDERAL HOME LOAN BANK

Issuer will be created as 'FEDERAL HOME LOAN BANK'.

2. ISSUER value in Bloomberg file is 'GOVT OF FRANCE'.

In mapping window under 'Columns.ISSUER'

- Bloomberg value = PATTERN {FRANCE$}
- Calypso value = FRENCH GOVERNMENT

Issuer will be created as 'FRENCH GOVERNMENT'.

Additional info:

- X? --> X, once or not at all
- X* --> X, zero or more times
- X+ --> X, one or more times

3.2.1 Mapping Bloomberg DELIVERY_TYP_LIST

The DELIVERY_TYP_LIST is a list of all possible depositories that may be used for settlement for that particular security. User may use this method rather than individual templates defined for specific depositories.

For example, Bloomberg may return the following list:

```
;2;3;1;1;FED FUNDS;1;DTC;1;FED WIRE;
```

This sample list provides the following information:

Value	Definition
;	The delimiter in use (semi-colon in this case).

Value	Definition
2	Number of dimensions (a single value would have the dimension of 1, a single row or a single column with more than one value would have a 2 dimension).
3	The number of rows.
1	The number of columns.
1	The data type (The “1” in this example means “Character”).
FED FUNDS	The character value of the first element (a depository).
1	The data type (The “1” in this example means “Character”).
DTC	The character value of the second element (a depository).
1	The data type (The “1” in this example means “Character”).
FED WIRE	The character value of the third element (a depository).

In Calypso, spaces in depository names are replaced by the underscore character, so “FED FUNDS” becomes FED_FUNDS in the database. You will need to map the depository Security Codes, Product Codes, and Product Mappings specific to your Calypso implementation. Mapping procedures are described below.

All Possible Delivery Types

- ACT
- ARGENT: CAJ
- AUSTRACLEAR - NYSE:ASX - Sole central securities depository in Australia
- BK SERVE
- BOJ - Bank of Japan - payments / JGB clearance
- BUNDESBANK
- CDC
- CDP
- CDS - Canadian Depository
- CENTRAL GIL
- CHESS
- CLEARING HOUSE

- CLEARSTREAM FFT
- CLEARSTREAM LUX
- CMU
- CVM
- DECKUNGSSTO
- DTC
- ECB-TIER 1 - European Central Bank
- ECB-TIER 2 - European Central Bank
- EEUROCLEAR
- ESPACLEAR
- EUROCLEAR BELG
- EUROCLEAR FRANCE
- EUROCLEAR NETH
- EUROCLEAR UK IR
- FED FUNDS
- FED WIRE
- GR-CSD
- IBERCLEAR
- INDEVAL - Mexico
- IRELAND STL
- KSD
- KSEI
- MONTE TITOL
- MONTREAL TR
- MUENDELSICH
- NSD
- NZ-AUSTRACL
- OKB
- PH-PCD
- RU-NDC
- SEGA - Now, SIS - SegaInterSettle AG - Swiss
- SSTS
- SUOMEN ARVO
- TH-TSD
- TRACE
- TRACE ELIGIBLE

- TU-ISE
- VPC DENMARK
- VPC SWEDEN
- VPS

3.2.2 Ad Hoc Columns

The AdHoc Columns define which Bloomberg data items are requested in the Bloomberg Cash Flow Update process. This process is defined using **Utilities > BloombergCashFlowUpdate**. It is necessary that all the identification values remain in this list, i.e., ID_BB_UNIQUE, ID_CUSIP, ID_ISIN and MARKET_SECTOR_DES. The cashflows are retrieved via the other two data values in the list, i.e., DES_CASH_FLOW and MTG_CASH_FLOW.

- DES_CASH_FLOW
- ID_BB_UNIQUE
- ID_CUSIP
- ID_ISIN
- MARKET_SEC_DES
- MTG_CASH_FLOW

If using External Cash Flows (BondAssetBacked.USE_EXTERNAL_FLOWS_FOR_PRICING=true) please add:

- HIST_CASH_FLOW
- MTG_PREPAY_SPEED

3.2.3 Bond Name Mapping

By default, Calypso creates bond names from Bloomberg using either SECURITY_DES, TICKER, or ID_BB_UNIQUE, if available, in that order.

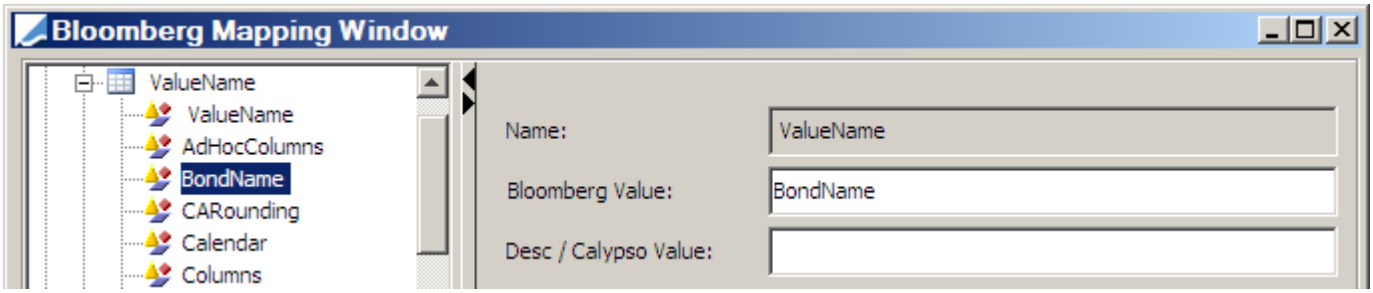
Rather than using the default naming convention, it is possible to use Bloomberg mapping to create the bond name using different fields to handle instances where SECURITY_DES is not unique (e.g., Series bonds).

Procedure to Generate Bond Names from Non-Standard Fields

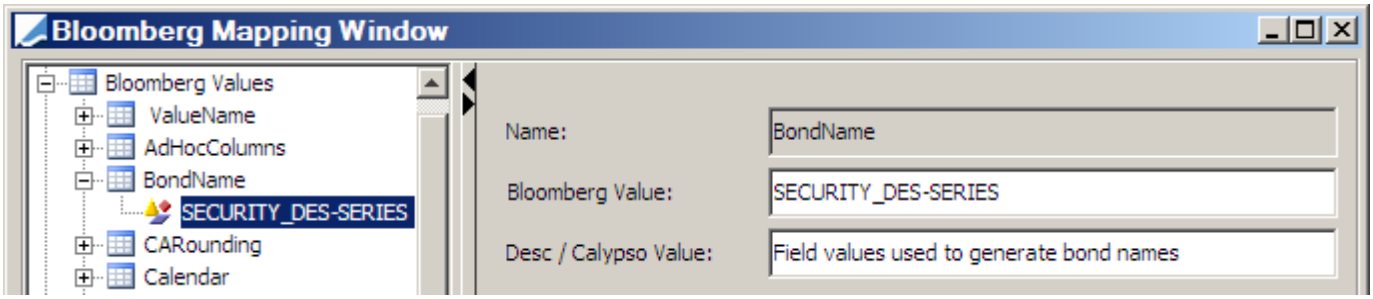
» Launch the Bloomberg Mapping Window.

» Navigate to **BloombergValues > ValueName**.

» In Bloomberg Value, add BondName:



Next, using the available Bloomberg fields, enter the Bloomberg fields you wish to use to generate Bond Names:

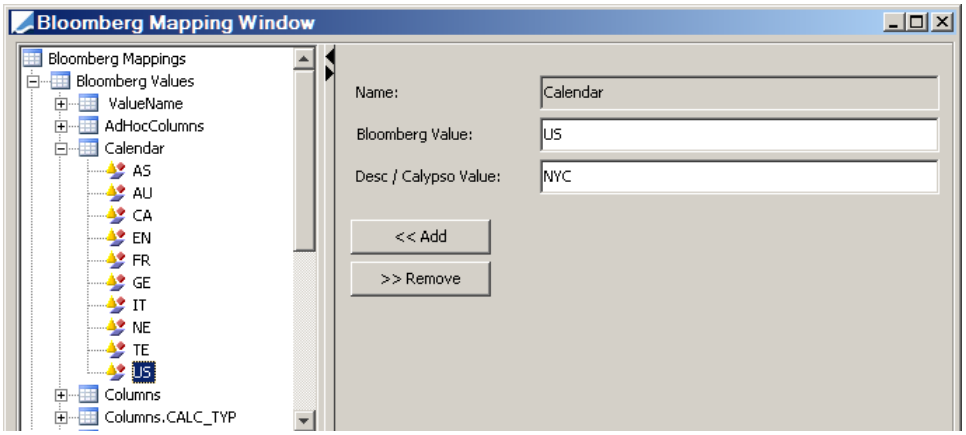


The example shown demonstrates the use of the fields, SECURITY_DES and SERIES. Note that the fields are separated with a hyphen: “SECURITY_DES-SERIES”.

[NOTE: Bond Names are only created when importing bonds from Bloomberg Connect. Bloomberg Update does not generate Bond Names. The maximum length of the Bond Name field in Calypso is 32 characters. If the Bond Name generated using this alternate method exceeds 32 characters, then Calypso reverts to the default naming scheme, which uses either SECURITY_DES, TICKER, or ID_BB_UNIQUE, in that order.]

3.2.4 Calendar Mapping

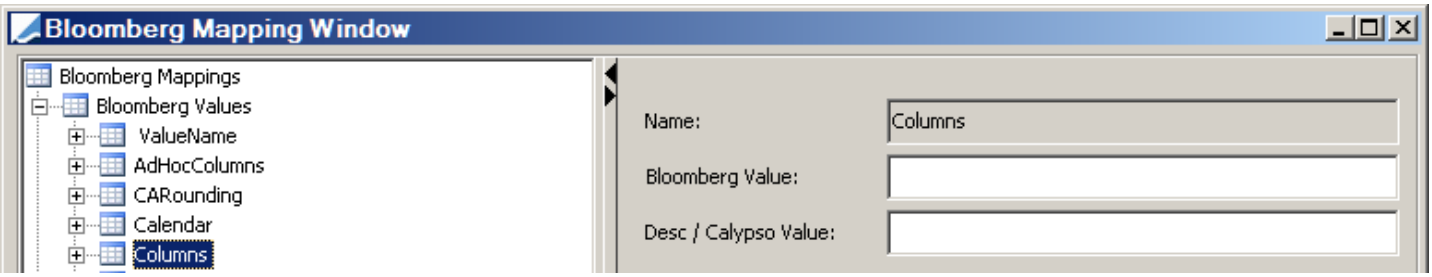
Calendar is a direct mapping of the Bloomberg value for a calendar to Calypso’s value for a calendar. For example, the US calendar in Bloomberg is mapped to the NYC calendar value in Calypso. Note that **Desc/Calypso Value** in this case identifies the Calypso value of this value mapping.



The entry in **Bloomberg Value** represents the Bloomberg code for that calendar. Ensure that the target calendar in Calypso (e.g., NYC) is also defined as a holiday calendar in Calypso.

3.2.5 Columns Mapping

Columns define which Bloomberg data items are requested by default in the Bloomberg Request process. All of these columns are requested regardless of the security market sector unless a custom "Configuration" is supplied. Custom Configuration is best reserved for retrieving Quotes or Corporate Actions. **Columns** are a superset of the data generally required for any of the markets supported. Calypso strongly advises that users do not remove any of these values as there is a chance that such removal may cause subsequent errors in the Bloomberg to Calypso mapping process. You may, however, add Bloomberg data items to this list. However, if not customized, Calypso will neither process nor save the additional data items out-of-the-box.



Field Name	Field Name (continued)
AMT_ISSUED	MTG_FACTOR_SET_DT
ANNOUNCE_DT	MTG_FACTOR_SET_DT_END_ACC_DT
BASE_ACC_RT_DT	MTG_FACTOR_SET_DT_START_ACC_DT
BASE_CPI	MTG_FACT_SET_DT_STRT_NEXT_ACC_DT
BRADY	MTG_FIRST_RESET_CAP_DOWN
BULLET	MTG_FIRST_RESET_CAP_UP
BVOL_RFR_CAP	MTG_FIRST_RST_DT
BVOL_RFR_SWAPTION	MTG_FLT_LAST_RST
CALC_TYP	MTG_FLT_NXT_RST
CALC_TYP_DES	MTG_HIST_CPN
CALENDAR_CODE	MTG_HIST_FACT
CALLED	MTG_HIST_WAC
CALLABLE	MTG_HIST_WAM

Field Name	Field Name (continued)
CALLED_DT	MTG_LIFE_CAP
CALL_SCHEDULE	MTG_LIFE_FLOOR
CMPD_FREQ_CNV_YLD	MTG_LOAN_AGE
CNTRY_ISSUE_ISO	MTG_LOAN_MRGN
COLLAT_TYP	MTG_LOOKBACK
CONVERTIBLE	MTG_ORIG_WAM
COUNTRY_ISO	MTG_PAY_DELAY
CPN	MTG_PER_RT_CAP
CPN_ASOF_DT	MTG_POOL_NUMBER
CPN_CAP	MTG_POOL_TYP
CPN_CRNCY	MTG_PREPAY_SPEED
CPN_FLOOR	MTG_PREPAY_TYP
CPN_FREQ	MTG_RT_CHG_FREQ
CPN_RATE_FIX_METH	MTG_TYP
CPN_TYP	MTG_WACPN
CRNCY	MTG_WAM
CUR_CPN	MTG_WAM_NXT_RST
CV_CNVS_PX	MULTI_CPN_SCHEDULE
CV_COMMON_ISIN	MULTI_CPN_SCHEDULE_TYP
CV_START_DT	MUNI_FED_TAX
CV_UNDERLYING_ID_BB_UNIQUE	MUNI_ISSUE_SIZE
CV_UNTIL	MUNI_MTY_SIZE
DAY_CNT	MUNI_STATE_TAX
DAY_CNT_DES	NAME

Field Name	Field Name (continued)
DAY_PAYER_FREQ	PAR_AMT
DES_CASH_FLOW	PAY_RULE
DES_NOTES	PCT_SINKER
DTC_ELIGIBLE	PENULTIMATE_CPN_DT
DVD_CRNCY	PRIOR_CLOSE_MID
DVD_DECLARED_DT	PRO_RATA_SINK
DVD_EX_DT	PUTABLE
DVD_PAY_DT	PUT_SCHEDULE
DVD_RECORD_DT	PX_ASK
EQY_DVD_FREQ	PX_BID
EQY_DVD_SH_LAST	PX_CLOSE_DT
EQY_PRIM_EXCH_SHRT	PX_DIRTY_CLEAN
EQY_SH_OUT_ACTUAL	PX_DT_1D
EXCH_CODE	PX_HIGH
EX_DIV_DAYS	PX_LAST
FACTOR_SCHEDULE	PX_LOW
FIRST_CPN_DT	PX_OPEN
FLOATER_ACC_SCHEDULE	PX_TRADE_LOT_SIZE
FLT_CPN_CONVENTION	PX_YEST_ASK
FLT_PAY_HOLIDAY_CDR	PX_YEST_BID
FLT_REFIX_HOLIDAY_CDR	PX_YEST_CLOSE
FLT_SPREAD	PX_YEST_DT
HIST_CASH_FLOW	QT_SPEC
ID_BB	QUOTE_ASK

Field Name	Field Name (continued)
ID_BB_COMPANY	QUOTE_BID
ID_BB_SECURITY	QUOTE_MID
ID_BB_UNIQUE	QUOTE_PRIOR_ASK
ID_COMMON	QUOTE_PRIOR_BID
ID_CUSIP	QUOTE_PRIOR_MID
ID_ISIN	QUOTE_TYP
INDUSTRY_GROUP	RATEDET_CALENDAR
INDUSTRY_SECTOR	REDEMP_VAL
INT_ACC_DT	REFERENCE_INDEX
ISSUER	REFIX_FREQ
ISSUE_DT	RESET_IDX
ISSUE_PX	RTG_FITCH
IS_CD	RTG_MOODY
IS_INDEX_LINKED	RTG_SP
IS_SECURED	SECURITY_DES
IS_SUBORDINATED	SECURITY_TYP
LAST_UPDATE_DT	SECURITY_TYP2
LOOKBACK_DAYS	SETTLE_DT
LU_MTG_RT_CHG_FREQ	SINKABLE
MARKET_SECTOR_DES	SINK_FUND_REDEMP_METHOD
MATURITY	SINK_SCHEDULE
MIN_INCREMENT	STEPUP_CPN
MTG_ACC_RT	STEPUP_CPN_SCHEDULE
MTG_ACC_RT_START_DT	STEPUP_DT

Field Name	Field Name (continued)
MTG_CALENDAR_CODE	TICKER
MTG_CASH_FLOW	WHEN_ISSUED
MTG_DEAL_TYP	WITHHOLDING_TAX
MTG_FACTOR	ZERO_CPN
MTG_FACTOR_NUM_DT	
MTG_FACTOR_PAY_DT	
MTG_FACTOR_PAY_RT	

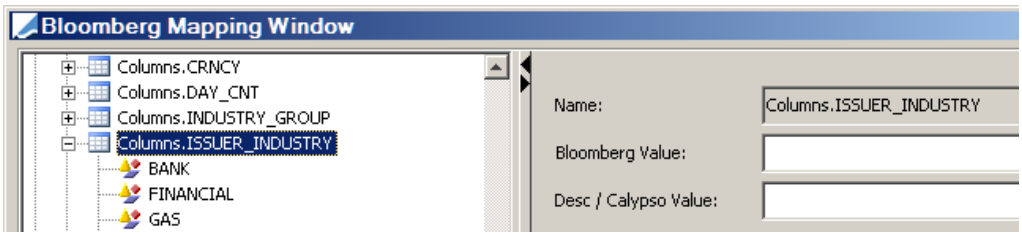
In general, the **Columns.XXXX** nodes supply a drop-down list for Product Mapping.

▶ Product Mapping is explained in detail in Configuring Product Codes in Calypso.

Product Mapping allows the user to utilize any Bloomberg data in combination to map to the Calypso values of **Product Type** and **Product Sub Type** to a Template. As discussed in previous sections, Templates provide certain default data that Bloomberg does not provide. If a **Columns.XXXX** node is defined and given a list of sub-nodes, the subnodes form a drop-down list from which the user may choose during Product Mapping. The user may use any Bloomberg data item for Product Mapping with a user-entered data value or values. The **Columns.XXXX** nodes facilitate this process by supplying a drop-down list for possible data values rather than relying on the user remembering and entering specific values.

Issuer Industry Codes

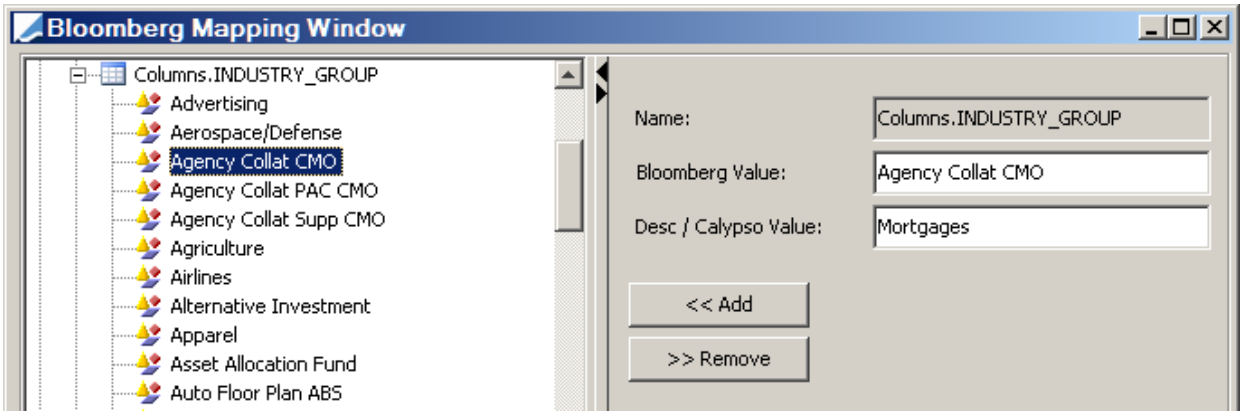
The Bloomberg Issuer Industry field is occasionally used for Product Mapping (i.e., mapping Bloomberg Fields to Calypso Product Type, Product Subtype and Template Name. It is also a Columns node (Columns.ISSUER_INDUSTRY), which provides values for a drop-down of available values for use in Product Mapping.



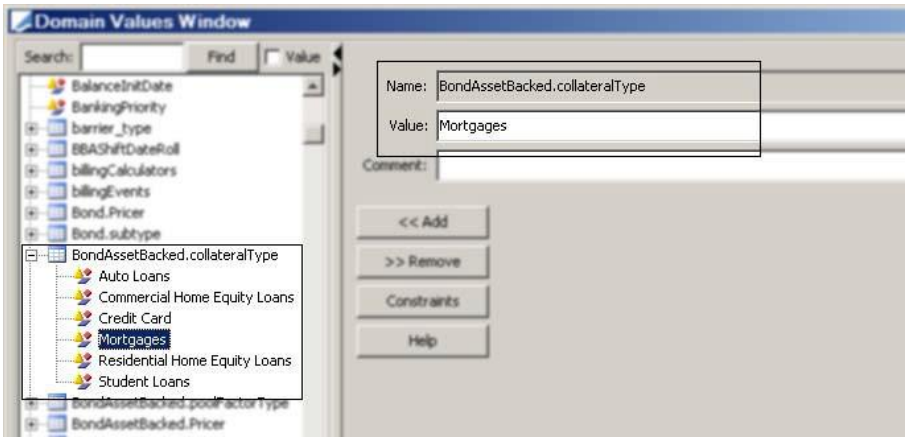
Industry Codes Mapping

Industry Codes can be used for Product Mapping. Because it is a **Columns.XXXX** field, items entered here will provide the user with a dropdown selection of defined nodes.

Currently this mapping is only used by the Backed Asset Bond class to populate the field Collateral of the ABS tab.



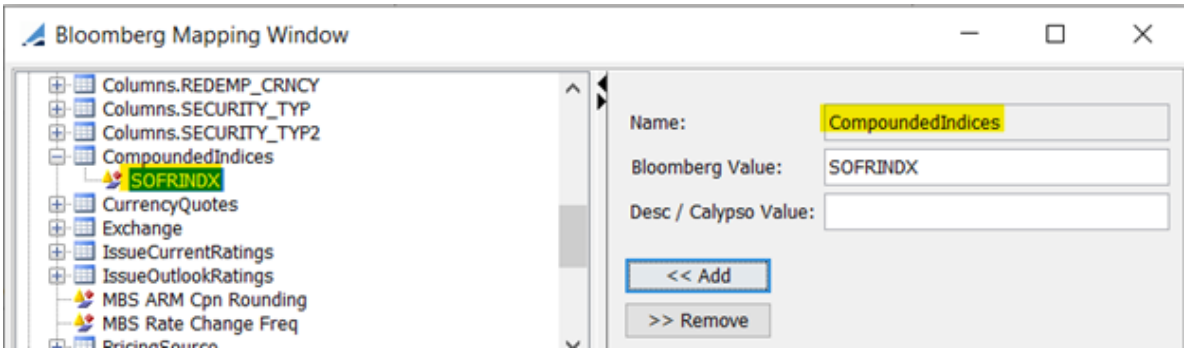
You must use the Domain Values window to predefine these values in the “BondAssetBacked.collateralType” domain:



3.2.6 CompoundedIndices Mapping

CompoundedIndices is a mapping of Bloomberg to import RFR Compounded Index (SOFR, SONIA, etc.) bonds. This will be applicable for different RFR Compounded Indices each having its own Bloomberg Value, below taking an example of SOFR Compounded Index.

The Bloomberg value for SOFR Compounded Indices is SOFRINDX, which we should define under CompoundedIndices in the Bloomberg mapping window in the "Bloomberg Values" section.



In ResetIndex map the defined Compounded Indices "SOFRINDX" to Calypso Value of SOFRINDEX configured in Calypso system.

NOTE: Refer to Getting Started documentation on how the Calypso Rate Index definition of SOFR and SOFRINDEX index.

3.2.7 Currency Quotes Mapping

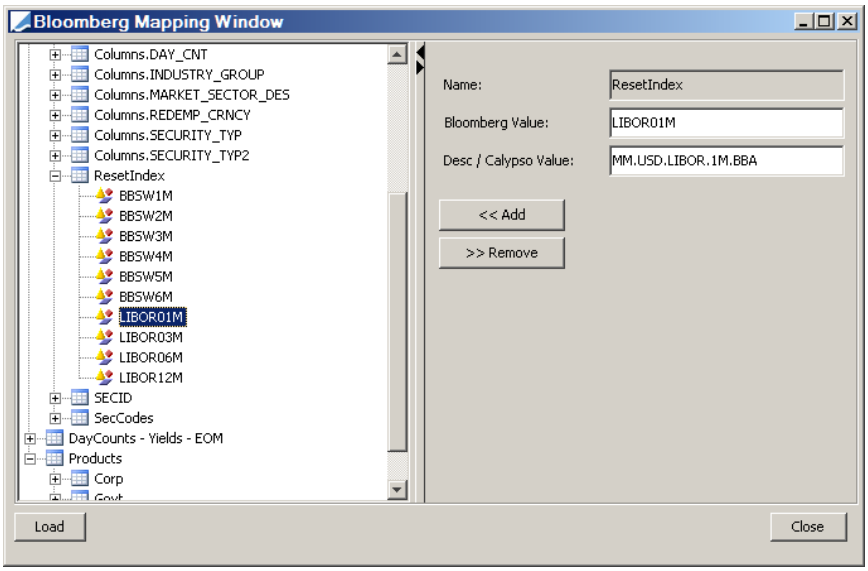
Currency Quotes are a direct mapping of the Bloomberg values for currency quotes to the Calypso values for currency quotes. For example, the USDJPY currency quote value in Bloomberg is mapped to the FX.USD.JPY currency quote value in Calypso.

3.2.8 Exchange Mapping

Exchange is a direct mapping of the Bloomberg value for an exchange to the Calypso value for an exchange. For example, the LI exchange value in Bloomberg is mapped to the LSE exchange value in Calypso to indicate the London Stock Exchange.

3.2.9 Reset (Reference) Index Mapping

Floating Rate products require a mapping between the Bloomberg Value and the Calypso Value. Simple reference indices are entered under the ResetIndex Node.

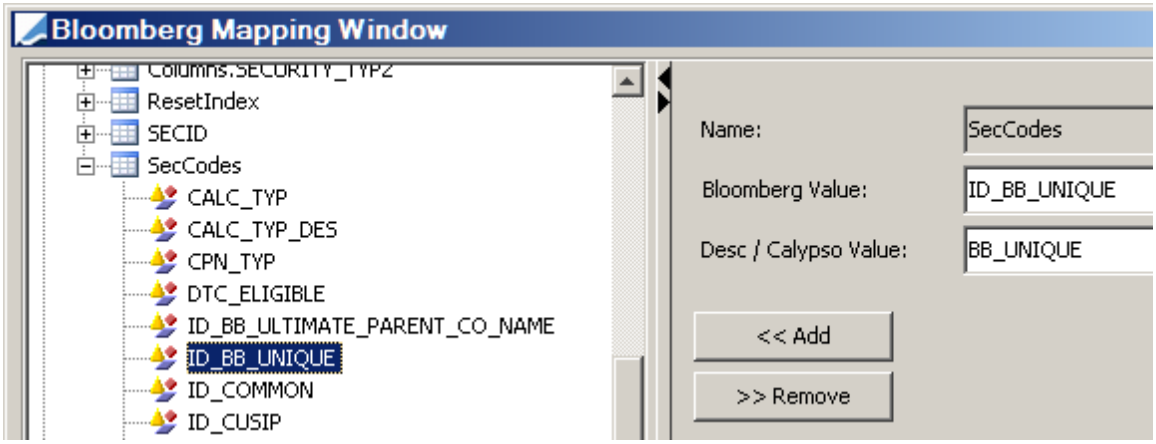


Desc/Calypso Value is the quote name that Calypso uses for a particular Bloomberg Value.

- Reference index quote names are defined in Calypso as: “MM.currency.reference index.tenor.source”
- For example, “MM.USD.LIBOR.1M.BBA”.
- Swaps are defined in Calypso as: “Swap.tenor.currency.reference index.index tenor/reset tenor.source”
- For example, “Swap.3Y.GBP.LIBOR.6M/6M.T3750”.
- Currency Quotes are defined in Calypso as: “FX.Currency.Currency.tenor”
- For example, “FX.EUR.USD.1M” or “FX.JPY.EUR” (tenor is optional). The application generates an exception if it does not find a mapping when loading the security.

3.2.10 Sec Codes Mapping

Sec Codes map a Bloomberg field name to a Calypso Product Sec Code.



Each client will map a set of Security Codes based on Products contained in their portfolio. For fields that originate from Bloomberg, it is typical to prefix those fields in Calypso with “BB_”. The table below provides the list of common mappings.

Bloomberg Value	Desc / Calypso Value
AU_OTC_ELIGIBLE_COLLATERAL_TYP	AU_OTC_ELIGIBLE_COLLATERAL_TYP
CA_OTC_ELIGIBLE_COLLATERAL_TYP	CA_OTC_ELIGIBLE_COLLATERAL_TYP
CALC_TYP	BB_CALC_TYP
CALC_TYP_DES	BB_CALC_TYP_DES
CALLABLE	BB_CALLABLE
CH_OTC_ELIGIBLE_COLLATERAL_TYP	CH_OTC_ELIGIBLE_COLLATERAL_TYP
COLLAT_TYP	BB_DEBT_SENIORITY

Bloomberg Value	Desc / Calypso Value
CPN_TYP	BB_CPN_TYP
DAY_CNT	BB_DAY_CNT
DELIVERY_TYP	BB_DELIVERY_TYP
EU_OTC_ELIGIBLE_COLLATERAL_TYP	EU_OTC_ELIGIBLE_COLLATERAL_TYP
HK_OTC_ELIGIBLE_COLLATERAL_TYP	HK_OTC_ELIGIBLE_COLLATERAL_TYP
ID_BB	BB
ID_BB_UNIQUE	BB_UNIQUE
ID_COMMON	COMMON
ID_CUSIP	CUSIP
DTC_ELIGIBLE	BB_DTC_ELIGIBLE
ID_ISIN	ISIN
INDUSTRY_GROUP	BB_INDUSTRY_GROUP
INDUSTRY_SECTOR	BB_INDUSTRY_SECTOR
INDUSTRY_SUBGROUP	BB_INDUSTRY_SUBGROUP
ISSUER	BB_ISSUER
IS_INDEX_LINKED	BB_IS_INDEX_LINKED
IS_SUBORDINATE	BB_IS_SUBORDINATE
IS_UNSECURED	BB_IS_UNSECURED
JP_OTC_ELIGIBLE_COLLATERAL_TYP	JP_OTC_ELIGIBLE_COLLATERAL_TYP
MARKET_SECTOR_DES	BB_MARKET_SECTOR_DES
MTG_DEAL_TYP	BB_MTG_DEAL_TYP
MTG_POOL_NUMBER	BB_MTG_POOL_NUMBER
MUNI_FED_TAX	BB_MUNI_FED_TAX
MUNI_STATE_TAX	BB_MUNI_STATE_TAX

Bloomberg Value	Desc / Calypso Value
NAME	BB_NAME
PRO_RATA_SINK	BB_PRO_RATA_SINK
RESET_IDX	BB_RESET_IDX
SECURITY_TYP	BB_SECURITY_TYP
SECURITY_TYP2	BB_SECURITY_TYP2
SG_OTC_ELIGIBLE_COLLATERAL_TYP	SG_OTC_ELIGIBLE_COLLATERAL_TYP
TICKER	BB_TICKER
TW_OTC_ELIGIBLE_COLLATERAL_TYP	TW_OTC_ELIGIBLE_COLLATERAL_TYP
US_OTC_ELIGIBLE_COLLATERAL_TYP	US_OTC_ELIGIBLE_COLLATERAL_TYP
ZA_OTC_ELIGIBLE_COLLATERAL_TYP	ZA_OTC_ELIGIBLE_COLLATERAL_TYP
ZERO_CPN	BB_ZERO_CPN

Security codes for CSDR information:

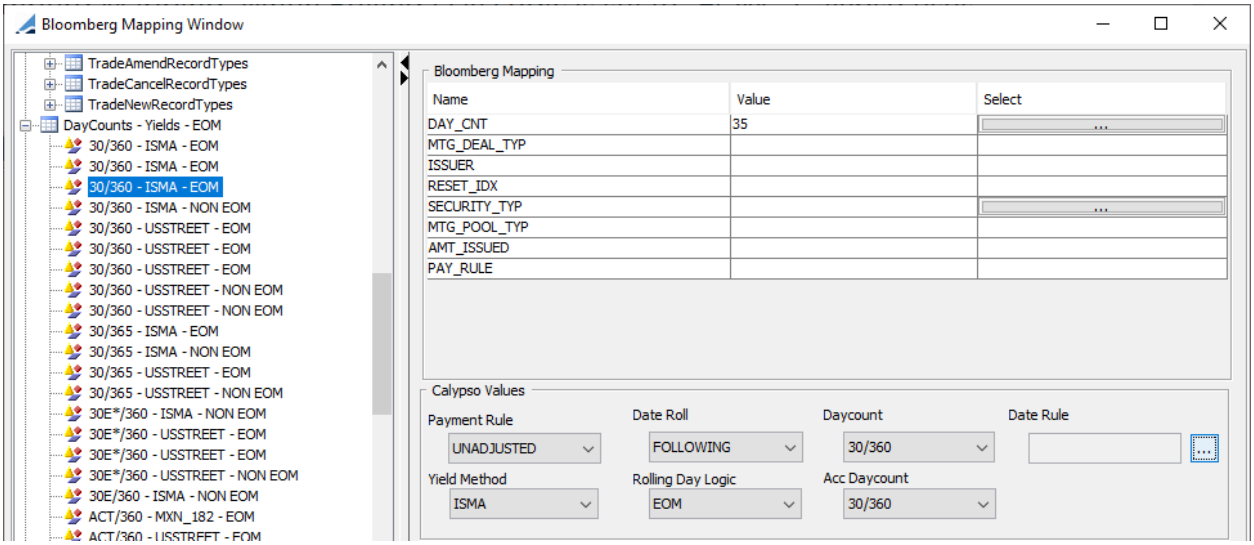
- CSDR_SME_Indicator - Trading venues classification based on average market capitalization
- CSDR_BuyIn_deliveryTimeframe - Number of days the BuyIn Agent disposes to deliver the securities to the receiving party
- CSDR_Penalty_Category – Type of security for CSDR
- CSDR_ExtensionPeriod - Number of days of days of the extension period
- CSDR_Eligibility – Eligible to CSDR regulation
- CSDR_MarketValue_Category – Used to calculate BuyIn Cash Compensation
- CSDR_SDR_Penalty_Rate – Penalty rate

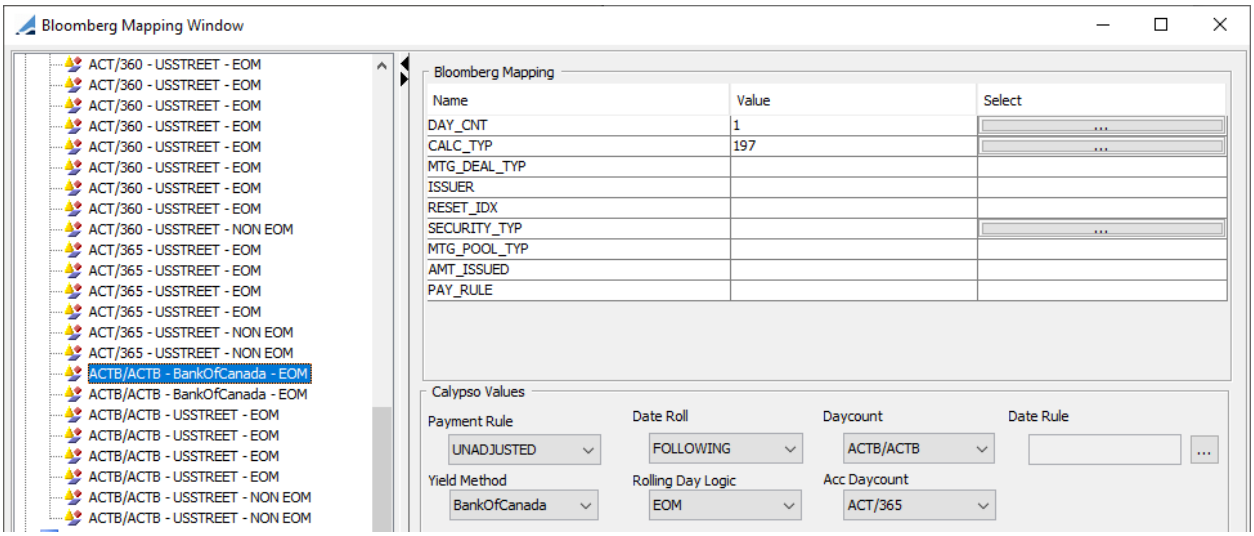
3.2.11 Day Counts — Yields — EOM

Bloomberg essentially uses the Day_Cnt field to record a variety of information, which in Calypso translates to a combination of Payment Rule, Date Roll, Daycount, Yield Method, Acc DayCount, and finally, Rolling day logic, which is used when pay dates fall on the last day of one month but not in another.

Calypso uses the actual maturity day or penultimate day as the rolling day when Rolling Day Logic is set to “NON EOM” in your Bloomberg Mapping. When Rolling Day Logic is set to “EOM,” Calypso uses the last day of the maturity month or the penultimate month as rolling day.

The mapping in Daycount Yields - EOM defines this mapping.

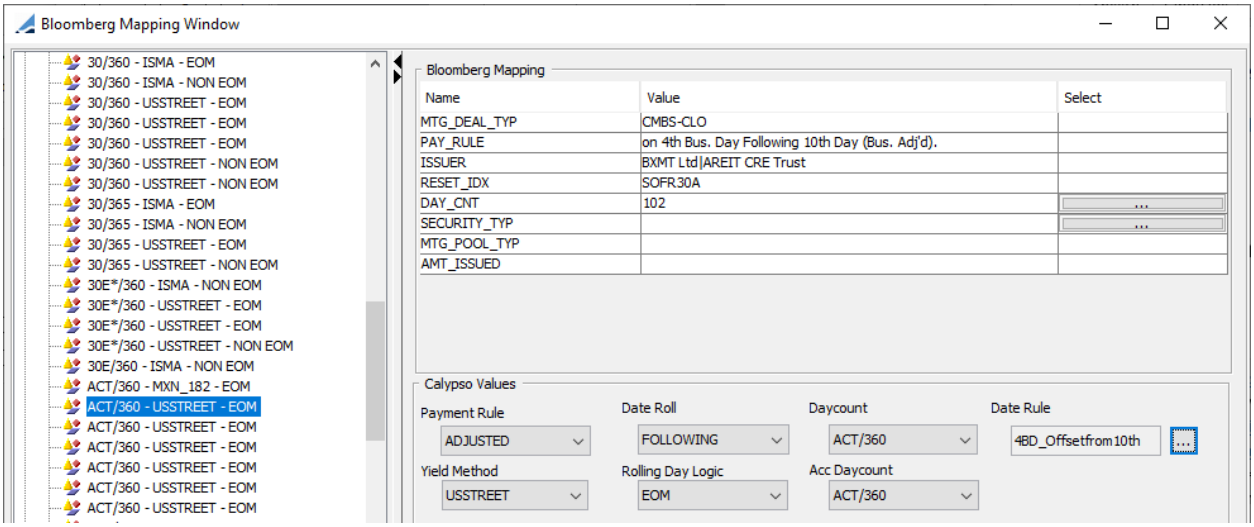




Date Rule

Special rolling conventions can be used in place of the standard Date Roll and Rolling Day Logic through the inclusion of a custom designed Date Rule. Once attached to the Day Counts - Yields - EOM configuration, the Date Rule will control the schedule roll day and payment date logic.

▶ Please refer to Calypso Getting Started documentation for complete details on creating date rules.

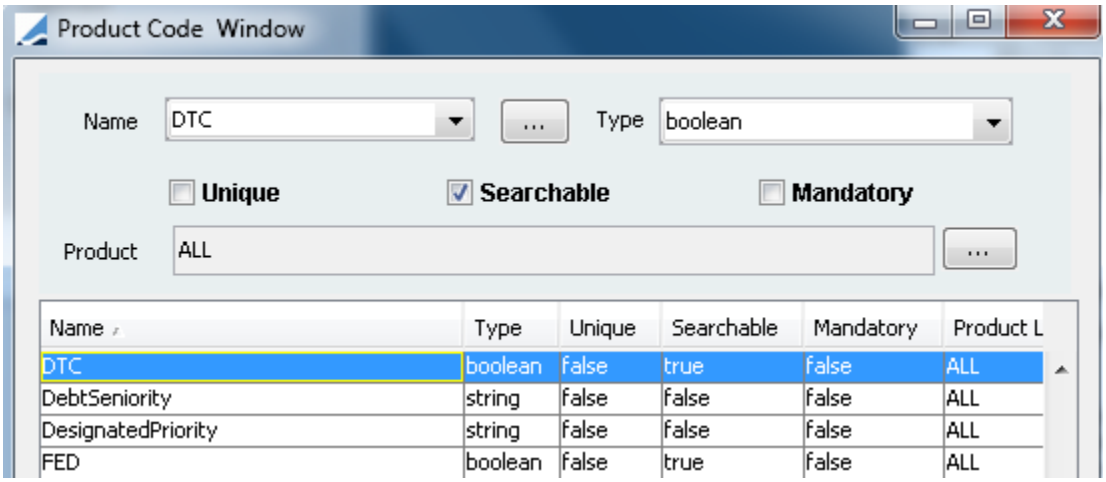


[NOTE: Only Date Rules of type DAY_FIXED will be displayed in the Day Counts - Yields - EOM configuration.]

Configuring Product Codes in Calypso

Additional information from Bloomberg can be stored as Product Codes as shown below.

From the Calypso Navigator, navigate to **Configuration > Product > Code** to open the Product Code Window.

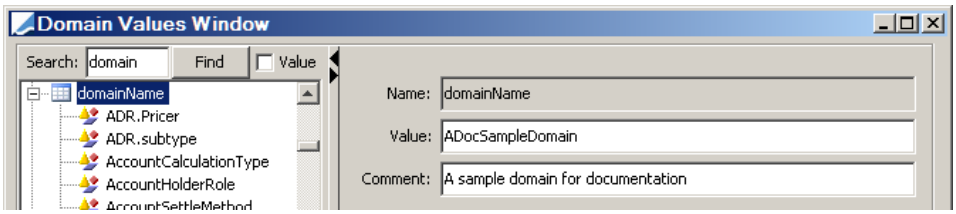


If the values DTC, FED, and Feed are not available on the “Name” dropdown, use the Domain Values window to add them to the securityCode domain. Add a list of values for the product codes in the domains, “securityCode.STATUS”, “securityCode.FED”, and “securityCode.DTC”. If these domains do not exist, create them using the Domain Values window.

Adding Domain Names and Domain Values

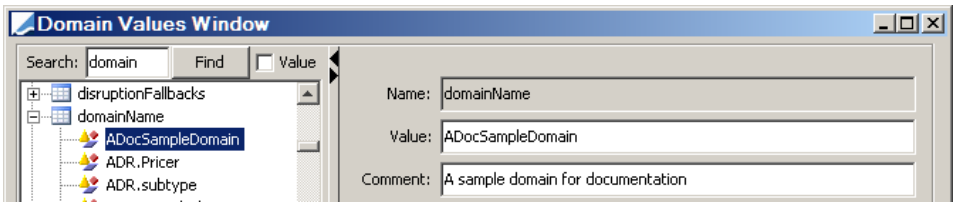
To add a new Domain Name, open the Domain Values window, and select the “domainName” domain.

Enter the name of the new domain in Value. Enter a Comment if desired.

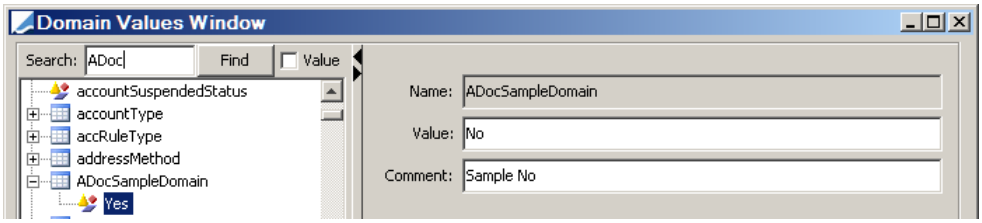


Click **Add** to move the new domain name to the list of domains, and save.

Click **Load** to make the new domain available:



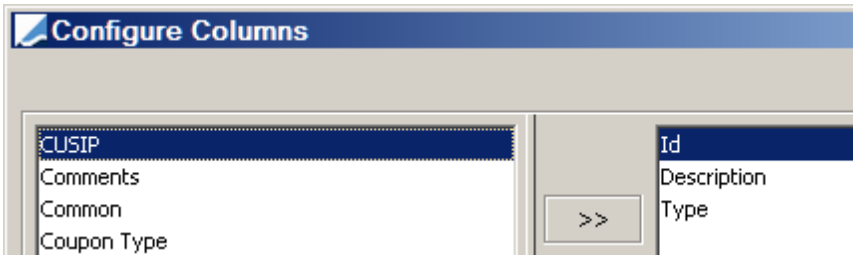
Select the new domain from the list to add domain values, if desired.



When creating a bond, you can use STATUS to define a status to make use of Trade workflow rules. This field is not mandatory.

Any product code whose definition includes Searchable can be accessed in the Product Chooser window when performing a bond query. From the Calypso Navigator, navigate to **Configuration > Fixed Income > Bond Product Definition**, and click **Load** on the bottom of the window.

With the Product Chooser open, select Bond, click **Query**, then right-click in the spreadsheet to access the context menu. Select Configure Columns to open the Configure Columns window. Add or remove fields as desired, then click **OK** to save.

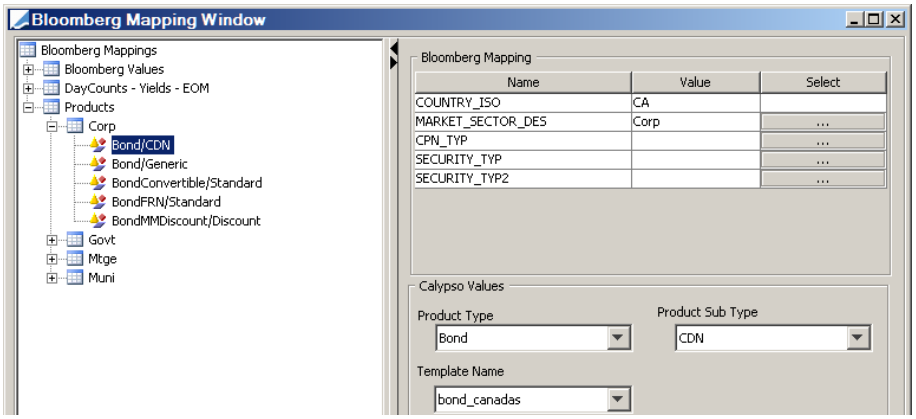


3.2.12 Product Code Mapping (Subtypes)

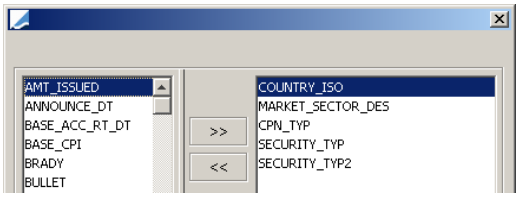
The Product Mapping screen automatically defines the Calypso subtypes for a product based on Bloomberg criteria.

Any field imported from Bloomberg can be used to define that mapping. The most commonly used fields are:

- MARKET_SEC_DES
- SECURITY_TYP
- CPN_TYP
- SECURITY_TYP2



To choose which Bloomberg fields to evaluate during the mapping process, right-click on the Bloomberg Mapping table to access the Context Menu and then click Configure Rows to open the field selector:



Add fields as necessary to identify each desired subtype and Bond Template. The following table provides a list of suggested subtypes:

Bloomberg Product	Bloomberg Fields	Values	Calypso Values
Bond/Corp	MARKET_SECTOR_DES	Corp	Product Type: Bond Product Sub Type: Corp Template Name: bond_generic
Bond/Corp	MARKET_SECTOR_DES CRCNY	CORP USD	Product Type: Bond Product Sub Type: Corp Template Name: bond_dtc

Bloomberg Product	Bloomberg Fields	Values	Calypso Values
Bond/Corp	MARKET_SECTOR_DES CRCNY DELIVERY_TYP	CORP USD Y	Product Type: Bond Product Sub Type: Corp Template Name: bond_dtc_phy
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP INDUSTRY_GROUP	Govt CANADIAN Regional(state/provnc)|Sovereign	Product Type: Bond Product Sub Type: Foreign Gov Non-USD Template Name: bond
Bond/Govt	MARKET_SECTOR_DES CRCNY INDUSTRY_SECTOR	Govt EUR|GBP|JPY|DEM|ESP|FRF|SKR|ITL Government	Product Type: Bond Product Sub Type: Foreign Gov Non-USD Template Name: bond
Bond/Govt	MARKET_SECTOR_DES CRCNY INDUSTRY_GROUP	Govt USD Regional(state/provnc)|Sovereign	Product Type: Bond Product Sub Type: Foreign Gov USD Template Name: bond
Bond/Govt	MARKET_SECTOR_DES CRCNY DTC_ELIGIBLE INDUSTRY_GROUP	Govt USD Y Regional(state/provnc)|Sovereign	Product Type: Bond Product Sub Type: Foreign Gov USD Template Name: bond_dtc
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP CRCNY ISSUER_INDUSTRY	Govt US DOMESTIC|GLOBAL|DOMESTIC|MTN USD GOVT AGENCY	Product Type: Bond Product Sub Type: GOV-AGCY Template Name: bond_fed
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP CRCNY INDUSTRY_INDUSTRY	Govt US DOMESTIC|GLOBAL|DOMESTIC|MTN USD GOVT AGENCY	Product Type: Bond Product Sub Type: GOV-AGCY Template Name: bond_dtc_fed

Bloomberg Product	Bloomberg Fields	Values	Calypso Values
	DTC_ELIGIBLE	Y	
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP TICKER SECURITY_TYP2 COUNTRY_ISO	Govt US GOVERNMENT T Bond US	Product Type: Bond Product Sub Type: GOV-BND Template Name: bond_fed
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP TICKER SECURITY_TYP2 COUNTRY_ISO DTC_ELIGIBLE	Govt US GOVERNMENT T Bond US Y	Product Type: Bond Product Sub Type: GOV-BND Template Name: bond_dtc_fed
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP SECURITY_TYP2 COUNTRY_ISO	Govt US GOVERNMENT Note US	Product Type: Bond Product Sub Type: GOV-NTE Template Name: bond_fed
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP SECURITY_TYP2 COUNTRY_ISO DTC_ELIGIBLE	Govt US GOVERNMENT Note US Y	Product Type: Bond Product Sub Type: GOV-NTE Template Name: bond_dtc_fed
Bond/Govt	MARKET_SECTOR_DES TICKER SECURITY_TYP2 INDUSTRY_GROUP	Govt S|SP|SPX|SPY|SII|BPRN|BCAL Bond|Note Sovereign	Product Type: Bond Product Sub Type: GOV-STRIP Template Name: bond_fed
Bond/Govt	MARKET_SECTOR_DES TICKER	Govt S|SP|SPX|SPY|SII|BPRN|BCAL	Product Type: Bond Product Sub Type: GOV-STRIP

Bloomberg Product	Bloomberg Fields	Values	Calypso Values
	SECURITY_TYP2 INDUSTRY_GROUP DTC_ELIGIBLE	Bond|Note Sovereign Y	Template Name: bond_dtc_fed
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP COUNTRY_ISO CRCNY TICKER	Govt US GOVERNMENT US USD TII|GTII|WITII|XITII	Product Type: Bond Product Sub Type: GOV-TIP Template Name: bond_fed
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP COUNTRY_ISO CRCNY TICKER SECURITY_TYP2	Govt US GOVERNMENT US USD TII|GTII|WITII|XITII Bond	Product Type: Bond Product Sub Type: GOV-TIP-BND Template Name: bond_fed
Bond/Govt	MARKET_SECTOR_DES SECURITY_TYP COUNTRY_ISO CRCNY TICKER SECURITY_TYP2	Govt US GOVERNMENT US USD TII|GTII|WITII|XITII Note	Product Type: Bond Product Sub Type: GOV-TIP-NTE Template Name: bond_fed
BondAssetBacked/Govt	MARKET_SECTOR_DES SECURITY_TYP NAME CRCNY TICKER	Govt US DOMESTIC|GLOBAL|DOMESTIC MTN SMALL BUSINESS ADMIN USD GSBA	Product Type: BondAssetBacked Product Sub Type: GOV-AGCY Template Name: bondassetbacked_dtc_phy
BondBrady/Govt	MARKET_SECTOR_DES BRADY	Govt Y	Product Type: BondBrady Product Sub Type: Brady

Bloomberg Product	Bloomberg Fields	Values	Calypso Values
			Template Name: bondbrady_fed
BondBrady/Govt	MARKET_SECTOR_DES BRADY DTC_ELIGIBLE	Govt Y Y	Product Type: BondBrady Product Sub Type: Brady Template Name: bondbrady_dtc_fed
BondMMDiscount/ Govt	MARKET_SECTOR_DES CALC_TYP	Govt 5	Product Type: BondMMDiscount Product Sub Type: T-Bill Template Name: M-Mkt T-Bills
BondAssetBacked/ Mtge	MARKET_SECTOR_DES SECURITY_TYP2	Mtge ABS	Product Type: BondAssetBacked Product Sub Type: ABS Template Name: bondassetbacked_dtc
BondAssetBacked/ Mtge	MARKET_SECTOR_DES SECURITY_TYP SECURITY_TYP2	Mtge Canadian Pool	Product Type: BondAssetBacked Product Sub Type: CDN-MBS Template Name: bondassetbacked_cdn
BondAssetBacked/ Mtge	MARKET_SECTOR_DES SECURITY_TYP2	Mtge CMO	Product Type: BondAssetBacked Product Sub Type: CMO Template Name: bondassetbacked_fed
BondAssetBacked/ Mtge	DELIVERY_TYP MARKET_SECTOR_DES SECURITY_TYP2	DTC Mtge CMO	Product Type: BondAssetBacked Product Sub Type: CMO Template Name: bondassetbacked_fed_dtc
BondAssetBacked/ Mtge	MARKET_SECTOR_DES SECURITY_TYP SECURITY_TYP2	Mtge Agncy CMO Z|Agncy CMO PO|Agncy CMO Other|Agncy	Product Type: BondAssetBacked Product Sub Type: CMO-ACGY

Bloomberg Product	Bloomberg Fields	Values	Calypso Values
		CMO IO|Agncy CMO INV|Agncy CMO FLT CMO	Template Name: bondassetbacked_fed
BondAssetBacked/ Mtge	DELIVERY_TYP MARKET_SECTOR_DES SECURITY_TYP SECURITY_TYP2	DTC Mtge Agncy CMO Z|Agncy CMO PO|Agncy CMO Other|Agncy CMO IO|Agncy CMO INV|Agncy CMO FLT CMO	Product Type: BondAssetBacked Product Sub Type: CMO-ACGY Template Name: bondassetback
BondAssetBacked/ Mtge	MARKET_SECTOR_DES CRNCY SECURITY_TYP2	Mtge USD Pool	Product Type: BondAssetBacked Product Sub Type: GOV-ACGY Template Name: bondassetback
BondAssetBacked/ Mtge	MARKET_SECTOR_DES SECURITY_TYP CRNCY SECURITY_TYP2	Mtge SBA POOL USD Pool	Product Type: BondAssetBacked Product Sub Type: GOV-ACGY Template Name: bondassetback
BondAssetBacked/ Mtge	MARKET_SECTOR_DES CRNCY SECURITY_TYP2 INDUSTRY_GROUP	Mtge USD Pool|Whole Loan WL Collateral CMO	Product Type: BondAssetBacked Product Sub Type: MBS Template Name: bondassetback
BondAssetBacked/ Mtge	MARKET_SECTOR_DES CRNCY SECURITY_TYP2 INDUSTRY_GROUP	Mtge USD Pool|Whole Loan Agency Collateral CMO	Product Type: BondAssetBacked Product Sub Type: MBS Template Name: bondassetback
BondAssetBacked/ Mtge	MARKET_SECTOR_DES CRNCY	Muni USD	Product Type: Bond Product Sub Type: MUNI

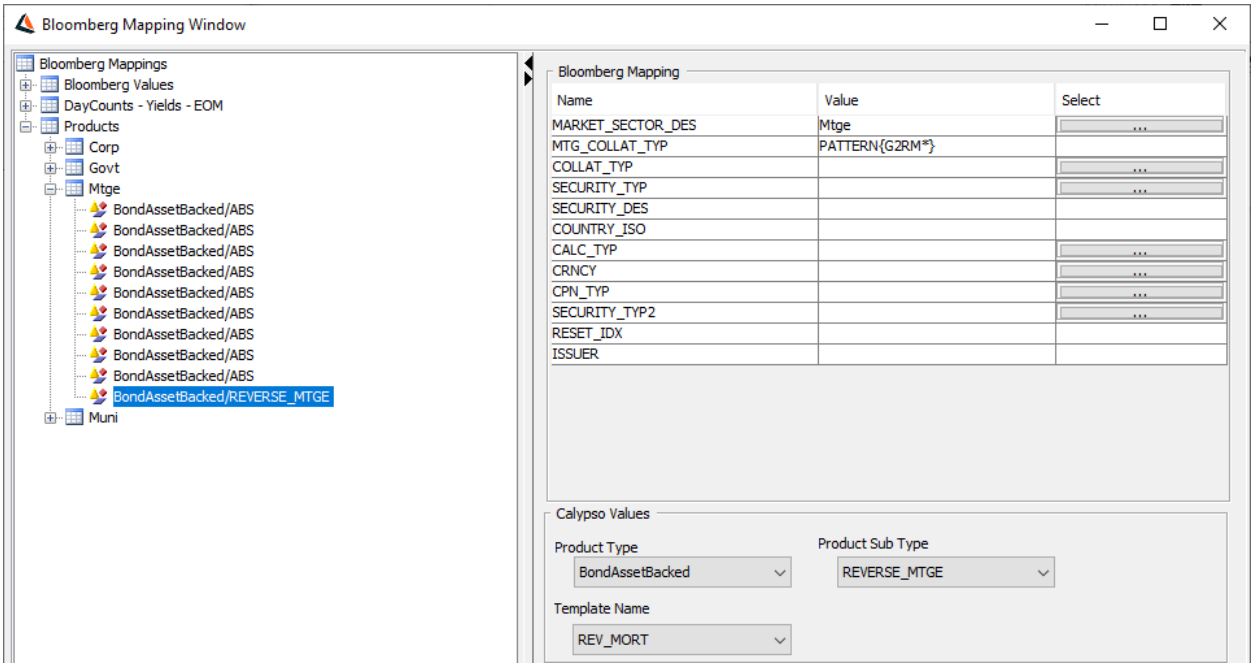
Bloomberg Product	Bloomberg Fields	Values	Calypso Values
			Template Name: bond_phy_mun
BondAssetBacked/ Mtge	MARKET_SECTOR_DES CRNCY DTC_ELIGIBLE	Muni USD Y	Product Type: Bond Product Sub Type: MUNI Template Name: bond_dtc_muni
BondMMDiscount/ M-Mkt	MARKET_SECTOR_DES CALC_TYP	M-Mkt 6|4	Product Type: BondMMDiscount Product Sub Type: Discount Template Name: M-Mkt Discount

Product Code Wildcard Mapping

Fields used in Product Code mapping support the single quantifier of X* for purposes of wildcard mapping. Examples include:

Expression	Description	Example	Match	No Match
PATTERN{'x'*}	Ending Wildcard	PATTERN{G2RM*}	G2RM, G2RM 7.3, G2RM 6.9	G1RM, FNARM, G2SF 3
PATTERN{*'x'}	Leading wildcard	PATTERN{*RM}	G2RM	G2RM 7.3, G2RM 6.9
PATTERN{*'x'*}	Contains wildcard	PATTERN{*RM*}	G2RM, G2RM 7.3, G2RM 6.9, RMBS 1.9	G2SF 3
PATTERN {'x'*} | {'x'*}	Or expression will match either case	PATTERN{G2RM*} | PATTERN{G2SF*}	G2RM, G2RM 7.3, G2RM 6.9, G2SF 3	G1RM

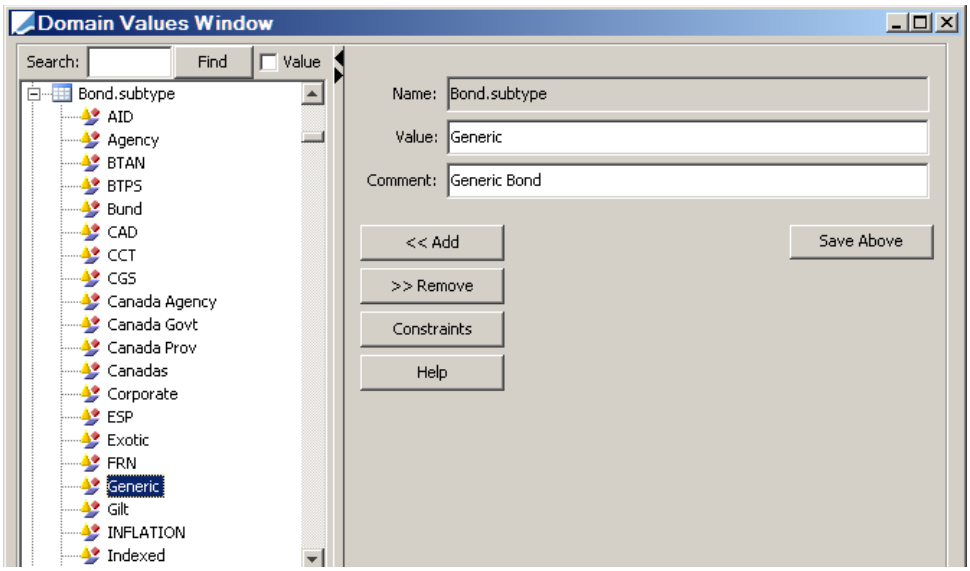
Pattern class mapping can be utilized to map a single template to a wider range identifier using the wildcard:

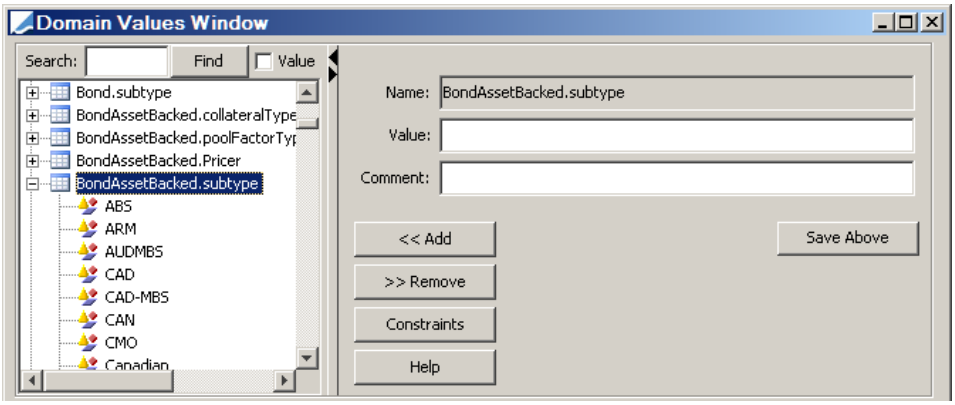


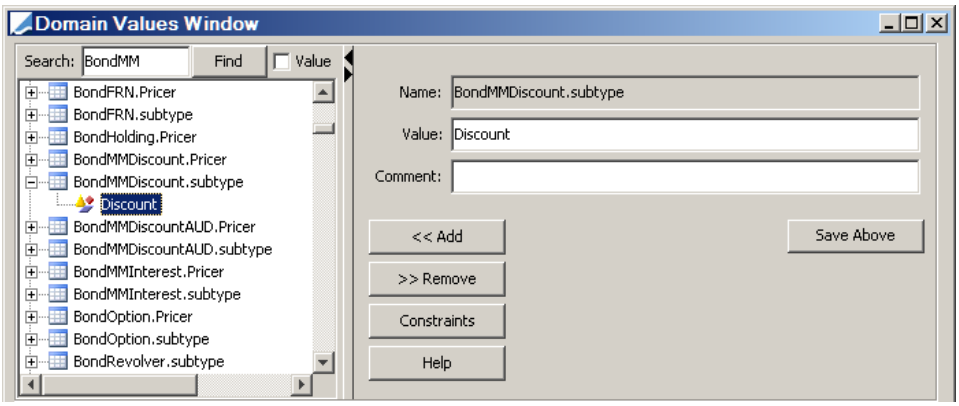
3.2.13 Defining Bond Subtype Classifications in Calypso

The Bond subtypes must be defined in the domain “Bond.subtype.” Each organization must define its own subtypes grouping. Below are examples of common subtypes.

The Generic subtype is pre-defined and captures unmapped bonds.







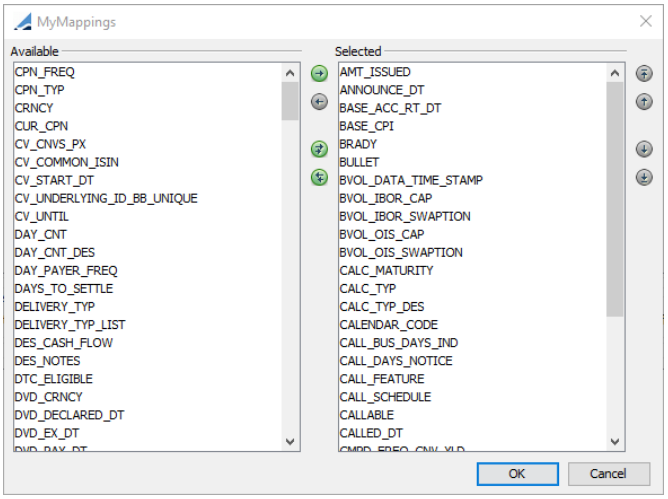
In addition, define subtypes (e.g., Generic, Standard, etc.) for the following bonds:

- BondBrady.subtype
- BondCLN.subtype
- BondFRN.subtype

3.2.14 Custom Column Request List

You can specify your own custom list of columns to be requested.

Choose **Utilities > Bloomberg My Mapping** to open the My Mappings window.

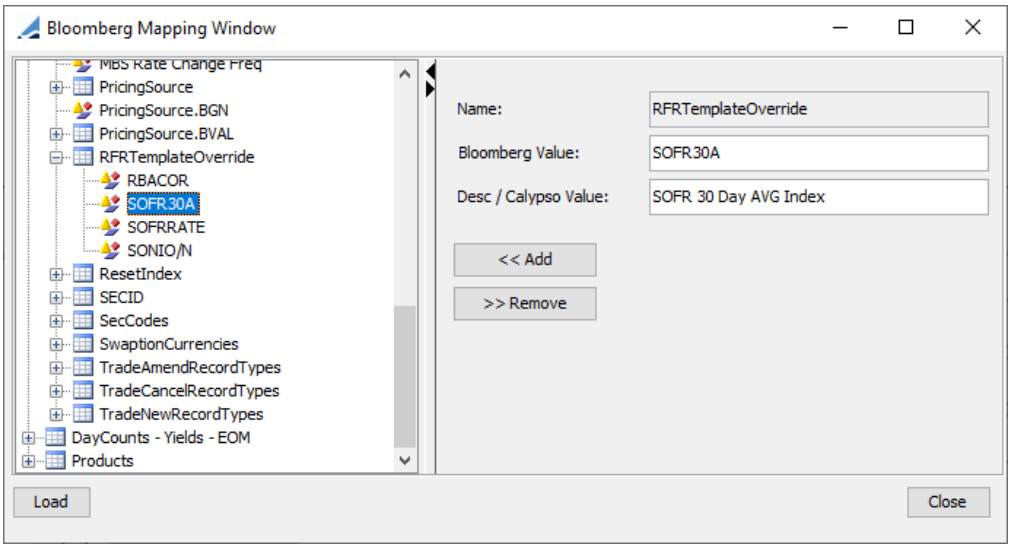


Only the columns added on the right will be requested. These columns will not be overwritten by running Execute SQL.

3.2.15 RFR Template Override

In most cases, Templates are used to provide default data that Bloomberg does not provide. But in some conditions Templates may be needed to override the incoming data sent by Bloomberg. This can be common for a newer product where the data model is evolving such as the LIBOR Replacement RFR Bond Market.

The Bloomberg Reset Index Value must be defined in this RFR Template Override to allow Template override. The Calypso Value only needs to be a descriptor not the actual Calypso Value.



[NOTE: Items set for this mapping only override the incoming Bloomberg value, each Reset Index still needs to be defined in the Reset (Reference) Index Mapping.]

3.2.16 RFR Flipper Bonds

This only applies to Fixed to Floating flipper bonds. The history of the Flipper is maintained only when the existing Flipper is in LIBOR flipper and the user imports an RFR flipper. The system performs the following actions:

Existing Flipper	Imported Flipper	Action
LIBOR	LIBOR	Remove existing flipper and add imported Flipper
LIBOR	RFR	Retain existing Flipper and add imported Flipper
RFR	RFR	Remove existing flipper and add the imported Flipper
RFR	LIBOR	UnsupportedException is generated "Unsupported import- existing bond has RFR flipper index but import has LIBOR".

3.3 Using Bloomberg Connect

Products can be imported one at a time, multiply, or in bulk using an import file that contains a list of tickers.

3.3.1 Single or Multiple Requests

Prior to requesting a Bloomberg file, you need to start the Bloomberg engine, which communicates with Bloomberg (i.e., sending the Request file and retrieving the Result file).

The following characters are not used in the Value field:

- : (Colon)
- * (Asterisk)
- ? (Question Mark)
- < (Left Angle Bracket)
- > (Right Angle Bracket)
- \ (Reverse Solidus)
- | (Bar)
- " (Double Quote)

The Bloomberg engine can be started from the Engine Manager in Web Admin.

▶ Please refer to Calypso Web Admin documentation for complete details.

3.3.2 Requesting an Individual Product

» Select a Security Code or Market Sector.

» Enter a Value that identifies the security. Click **Add**.

» Click **Submit Request**.

3.3.3 Requesting Multiple Products

There are two methods to enter requests for multiple products: By manually adding multiple securities, or by using the Add From File functionality.

Manual Method

» Select a Security Code or Market Sector.

» Enter a Value that identifies the security. Click **Add**.

» Repeat until you have added the desired securities.

» Click **Submit Request**.

Add From File Method

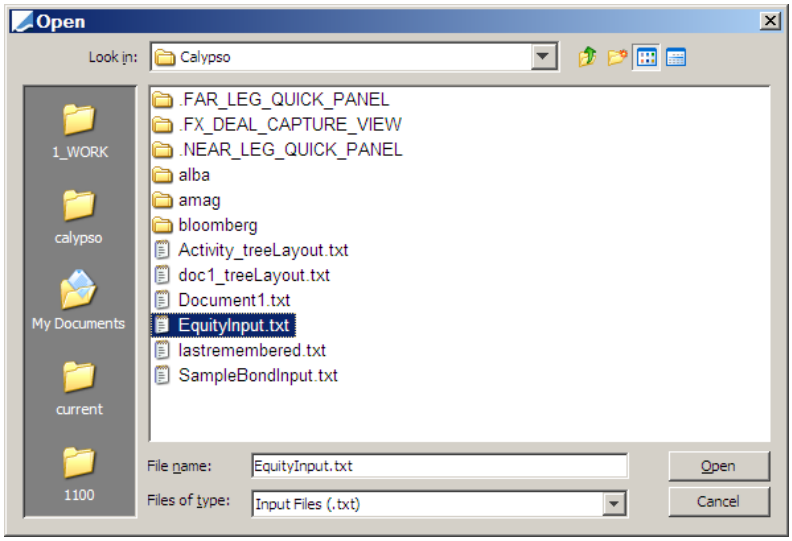
» To add products in bluk, enter them in a file having the following format:

```
# Note - Users must provide identifiers with Security
# Code and/or Market Sector. If all of the identifiers have
# the same Security Code and/or Market Sector then the value
# for Security Code and/or Market Sector need only be
# specified once. Lines beginning with # or ! are comments.
#
#
# Start of Data
Market Sector=Equity
Product Code=

#Column heading
# Identifier SecurityCode MarketSector
GM
C
IBM
HBC
MS
WFC
```

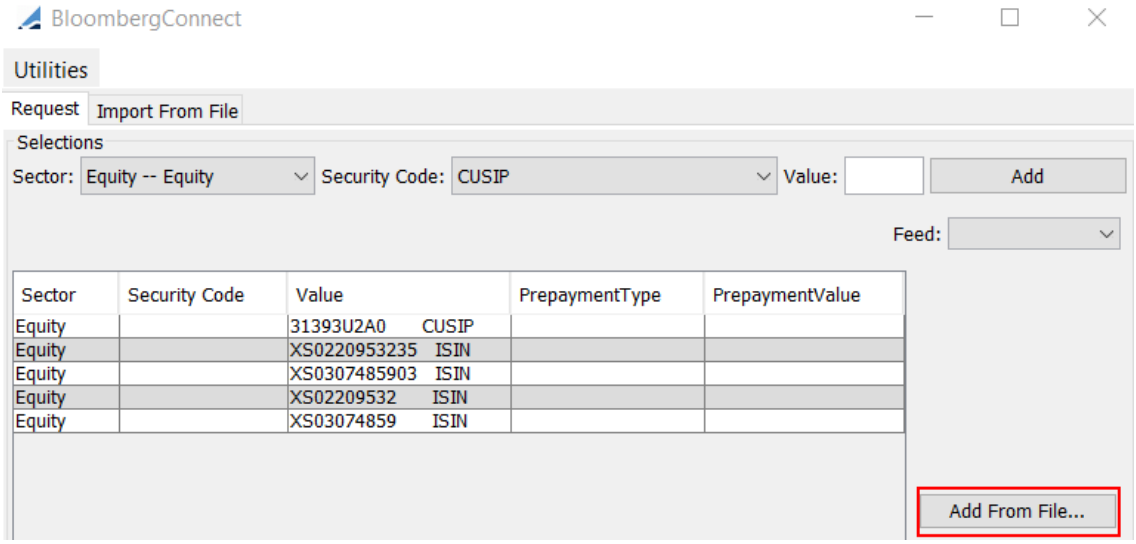
The example file shown above requests six products whose Market Sector is Equity. Therefore, only the product ID is required for each entry. The example below shows another request for six products. However, in this example, the Security codes are not identical and must be given:

```
#
# Start of Data
Market Sector=
Product Code=

#Column heading
# Identifier    SecurityCode    MarketSector
31393u2a0       CUSIP
XS0220953235    ISIN
XS0307485903    ISIN
XS02209532       ISIN
XS03074859       ISIN
```

» Click **Add From File** to open the file browser:



» Select the file containing the desired products, then click **Open** to populate the Selections table:



3.3.4 Import From File

» Select a file.

» Click **Import** to begin the import process. The Bloomberg Connect log displays the created products as shown below.

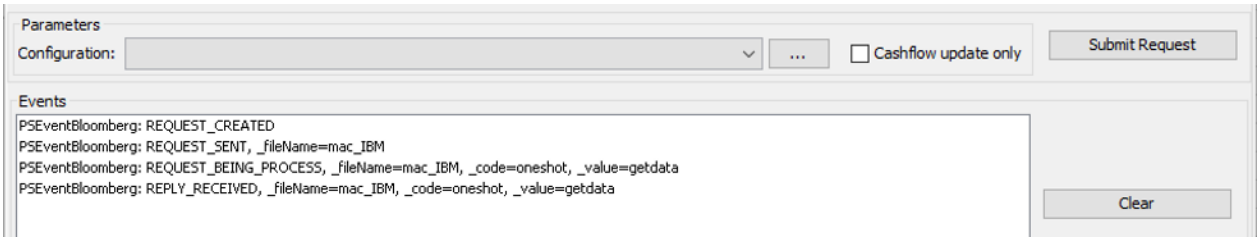
The format of the file must be consistent with that generated in the individual requests.

Import from File is generally used for migration. The file is manually requested directly through the Bloomberg's "Bloomberg Data License Request Builder Window."

3.3.5 Bloomberg Connect Response

Bloomberg Connect displays four messages while processing your request:

- Request_CREATED — Your request file has been created.
- Request_SENT — Your request file was transmitted to Bloomberg.
- Request_BEING_PROCESS — Bloomberg has acknowledged the request and is gathering data.
- Reply_RECEIVED — Calypso has received the Bloomberg response file.



The request file is placed in the location specified by BLOOMBERG_LOCAL_DIR.

When the Reply_RECEIVED Message is displayed, the application has saved the security in your database.

The events are generated by the Bloomberg engine. The log of the Bloomberg engine gives you event status information.

The Task Station will provide information about each requested security, such as whether the product was found on Bloomberg, which curves were created (if any). You can monitor the result of this activity in the Task Station.

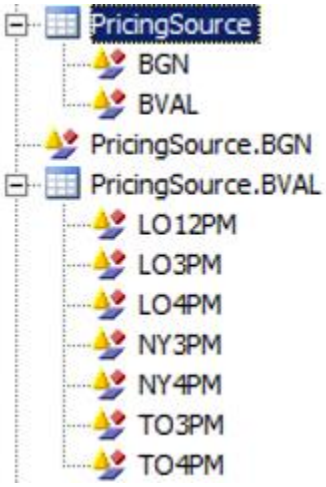
3.4 Source-Specific Pricing

Clients can request source-specific pricing information using the PRICING_SOURCE entry in the header of their Request file. If pricing information from a specific source is not available, Bloomberg returns the default pricing information for the requested securities unless **Exclusive Pricing Source** is specified or the EXCLUSIVE_PRICING_SRC header entry is present.

Entries for **Pricing Source** are populated from PricingSource entries on the Bloomberg Mapping window. The **Snapshot** times are populated from the **Bloomberg Values** specified by entries for each `PricingSource.`*`SOURCENAME`* domain value (example PricingSource.BVAL).

Calypso is pre-configured with the BVAL and BGN PricingSources. The Bloomberg Value entries under each `PricingSource.`*`SOURCENAME`* specify the available snapshot times used to populate the **Snapshot** field on Bloomberg Update.

The following image shows the out-of-the-box entries for BVAL:



3.4.1 Manually Request Source-Specific Pricing

To request pricing from a specific source, add `PRICING_SOURCE=`*`source_name`* to the Request file header. For example, `PRICING_SOURCE=MLIX`.

To request snapshot pricing from a source supporting BVAL data, add `PRICING_SOURCE=source_name:source_time` to the Request file header. For example, `PRICING_SOURCE=BVAL:NY3PM`.

If pricing is not available from a specified source, then data from the default pricing source is provided. To restrict the delivered pricing to the specified source, add the EXCLUSIVE_PRICING_SRC header to the Request file.

3.4.2 Using Bloomberg Update to Request Source-Specific Pricing

Using the Quote Template for **getdata**, **gethistory**, or **getsnap** programs, the Bloomberg Update window displays the **Exclusive Pricing Source** button, and the **Pricing Source** and **Snapshot** dropdown selectors.

To request a specific source, choose a source from the **Pricing Source** dropdown selector and a **Snapshot** time (if the source supports BVAL data). If pricing is not available from a specified source, then data from the default pricing source is provided. To restrict the delivered pricing to the specified source, select **Exclusive Pricing Source** (adds the EXCLUSIVE_PRICING_SRC header).

When specifying a **Pricing Source**, Calypso adds your selections to the Request file as the PRICING_SOURCE header entry (see Manually Request Source-Specific Pricing for PRICING_SOURCE examples).

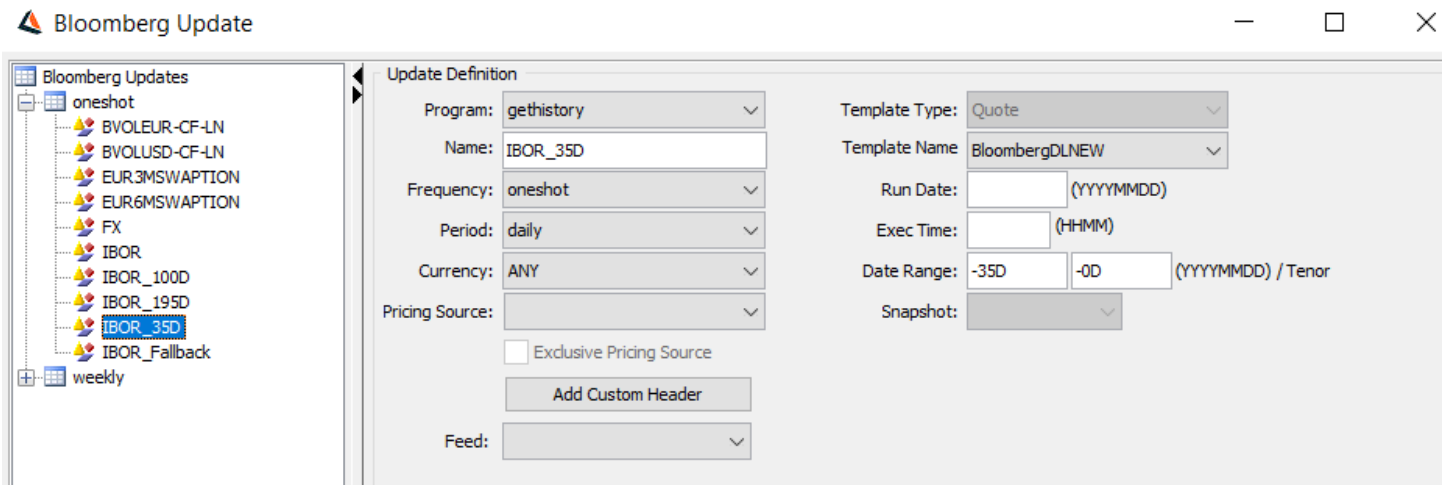
4 Bloomberg Update Window

Using the Bloomberg Update window, you can define an Update Template to use with one-shot requests or requests made with scheduled tasks.

For bonds, one of the following identifiers is required: ID_CUSIP, ID_ISIN, or ID_BB.

For equities, one of the following identifiers is required: ID_CUSIP, ID_ISIN, ID_BB, TICKER_AND_EXCH_CODE, or TICKER.

From the Bloomberg Connect window, choose **Utilities > Bloomberg Update** to open the Bloomberg Update window.



» You can click **Load** to load templates that are already defined in the Bloomberg Updates area. Then select a template to view its details.

» To create or modify a template, enter the fields described below as needed, and click **Save** to save your changes.

Fields Details

Item	Description
Program	Select from the following Bloomberg Requests: • **getdata** - Retrieves Bloomberg data for requested products. • **gethistory** - Retrieves historical data for requested products. • **getactions** - Retrieves Corporate Actions for requested products. • **getsnap** – Retrieves a Quotes snapshot for requested products. • **cancel** - Cancels a scheduled job by name.
Name	The name of this update template.
Frequency	The nominal frequency of use for this update template. Choose from:

Item	Description
	• adhoc - Used for one-off requests (for master data accounts only). • oneshot - Used for one-off requests (for non-master data accounts), or scheduled requests for master data accounts (should be sent 15 minutes prior to processing). • daily - Runs every day • weekly - Runs once a week • monthly - Runs once a month • weekday - Runs each working day (by locale) • weekend - Runs each day of the weekend (by locale)
Add Custom Header	To add custom headers. ▶ See Custom Headers for details.
Feed	You can select a feed config if you are using multiple user accounts. Otherwise, BLOOMBERG_STP_USER is used. ▶ See Feed Configuration for details.
Show Bond Prepay Detail Prepay Type Prepay Speed Edit Prepayment	To override the prepayment details. ▶ See Bond MBS External Cash Flows for details. **getdata for Bond only.**
Template Type	The product type that this update template requests. For **Getdata** and **Getactions**: • Bond • Equity • Equity Index • Quote For **Gethistory** and **Getsnap**: • Quote
Template Name	The name of the product template used with this update template. Click **...** to open the template selected in **Template Name** for editing, or to open a blank Selected Template window where the user can create a new Product Template. **Available only for Bond and Equity template types.**
Run Date	Enter a date for this update to run.
Exec Time	The time to execute this update template when run as a scheduled task. Also used by the Getactions, Getdata, Gethistory, and Getsnap programs as SNAPTIME or TIME header options.

Item	Description
Columns	The list of Columns to retrieve with this update template. Right click the column header and click on **Configure Update Columns** to launch the Update Columns Selector.
Period	Choose from: • Daily • Weekly • Monthly • Quarterly • Yearly **gethistory only.**
Currency	Choose from Any to retrieve available data for all currencies, or choose a specific currency. **gethistory only.**
Actions	Select the type of corporate action data to retrieve: • All • Distributions • Capital Change • Corporate Events • Stock Split • Cash Dividend • Stock Dividend • Merger • Spin-off **getactions only. Default = All.**
Action Date	Select the Action Date to use: • Effective Date • Entry Date • Both **getactions only. Default = Effective.**
Date Range	Enter the starting and ending date range for data retrieval. **gethistory and getactions only.** The **Date Range** field in the Bloomberg Update window provides user to enter generic tenors in the date range. For example, 35D to 0D, 100D to 0D, 195D to 0D
Delay Limit	Requires Bloomberg to produce reply file within the specified number of minutes; securities with longer embargoes are not included in the response and reply files.

Item	Description
	getsnap only.
Exclusive Pricing Source	Select this option to require Bloomberg to return either source-specific pricing information or BVAL pricing information. Selecting **Exclusive Pricing Source** enables the **Pricing Source** and **Snapshot** dropdown selectors, which are used to select pricing sources and snapshot times. Selecting **Exclusive Pricing Source** also causes Calypso to add the PRICING_SOURCE and EXCLUSIVE_PRICING_SRC (always used with PRICING_SOURCE) headers to the Request file. **getdata, gethistory and getsnap only.**
Pricing Source	The **Snapshot** dropdown selector is enabled when by selecting **Exclusive Pricing Source**. Select the pricing source for this request. **getdata, gethistory and getsnap only.**
Snapshot	The **Snapshot** dropdown selector is enabled when by selecting **Exclusive Pricing Source**. Select the source/time for your BVAL/BGN pricing. By default, Calypso provides the following options out of the box: • NY3PM • NY4PM • LO3PM • LO4PM • LO12PM • TO3PM • TO4PM (NY at 3 and 4 PM, London at 3, 4, and 12PM, and Tokyo at 3 and 4 PM.) Additional snapshot times are determined by the Bloomberg Values specified for PricingSource.SOURCENAME. **getdata, gethistory and getsnap only.**

Cancelling Periodic Requests

You can use the Cancel program to remove (i.e., cancel) periodic (daily, weekly, etc.) requests. Cancel does not work with **oneshots**.

4.1 Terminal User Properties

The request files for all existing programs include the optional Terminal User Properties, if the user has set them in the environment properties. If you do not wish to send any terminal user information, simply unset the properties.

[NOTE: You may need to supply some or all of these properties to access different terminal user functionality in Bloomberg.]

The following environment properties support terminal user designation.

Field	Environment Property
SN	BLOOMBERG_SN
WS	BLOOMBERG_WS
USERNUMBER	BLOOMBERG_USERNUMBER

4.2 Server Timezone Property

This system environment property is set by the administrator in `calypso.system.properites.env_name`. BLOOMBERG_SERVERTZ is used by the **Getsnap** program as the SNAPTIME header option and by the **Getactions**, **Getdata**, and **Gethistory** programs as the TIME header option.

The application converts the local Exec Time from the Bloomberg Update window to the Data License Server timezone specified by the BLOOMBERG_SERVERTZ environment property.

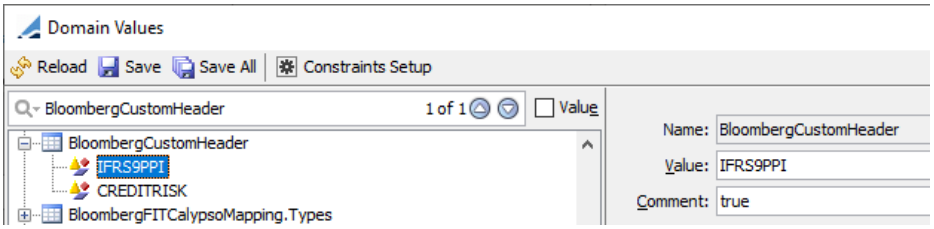
The converted time is used as either the SNAPTIME or TIME sent in the request file. SNAPTIME is the time that the Bloomberg Data License Server will take the pricing snapshot. TIME is the time that the Bloomberg Data License Server will pull the requested information for **Getactions**, **Getdata**, or **Gethistory**.

If BLOOMBERG_SERVERTZ is not set, the application sets SNAPTIME or TIME equal to the Exec Time.

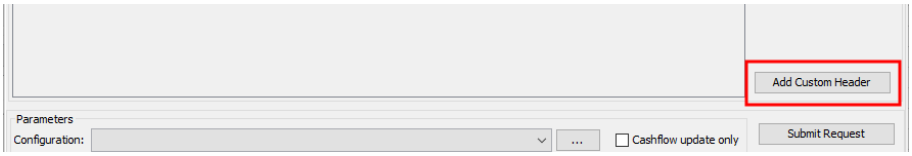
5 Custom Headers

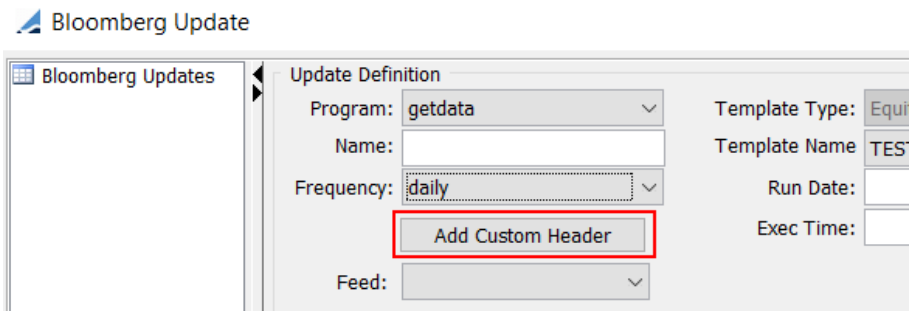
Custom headers allow supporting additional properties.

Custom headers can be added in the domain “BloombergCustomHeader”.

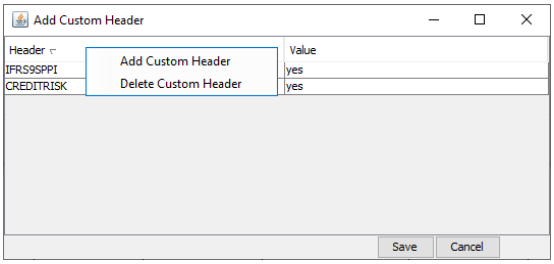


You can click **Add Custom Header** from the Bloomberg Connect window or the Bloomberg Update window.





It opens the Add Custom Header window.



- Right-click the Header heading and select **Add Custom Header**.
- Add header and a value as needed.
- Repeat as needed.

When done from the Bloomberg Connect Window, these headers are transient and not stored in the database.

When done from the Bloomberg Update Window, these headers are stored in the database with respect to the corresponding update.

6 Equity Product

6.1 Equity Identifier Lookup Priority

Equities are uniquely identified by one or more Bloomberg identifiers: ID_CUSIP, ID_ISIN, ID_BB, TICKER_AND_EXCH_CODE, and TICKER. Calypso stores these values when present.

When Calypso processes a request file, it looks for an Equity using each of the identifiers in this order: ID_CUSIP, ID_ISIN, ID_BB, and TICKER_AND_EXCH_CODE, and TICKER.

TICKER_AND_EXCH_CODE is mandatory, irrespective of ID_BB / ID_CUSIP / ID_ISIN / TICKER.

If the equity already exists, it will not be renamed.

6.2 Equity Naming Convention

Calypso uses the value of the Bloomberg TICKER_AND_EXCH_CODE column as the default equity name when populating the TICKER_UNIQUE field. You must use TICKER_AND_EXCH_CODE when loading equities. Calypso will populate this column when a new equity is retrieved and when updating existing equities.

For example, for IBM, the equity name is “Equity.IBM US.”

You may request a product using TICKER or TICKER_UNIQUE. When using TICKER_UNIQUE, you must request the equity using the entire name (e.g., IBM US). When using TICKER (e.g., IBM), because TICKER is not unique and because a security might not use TICKER, Bloomberg may return incorrect, multiple, or zero records.

Scheduled Task queries always reference TICKER_UNIQUE to ensure that the proper security is returned.

6.3 GBp vs GBP Dividend Amounts

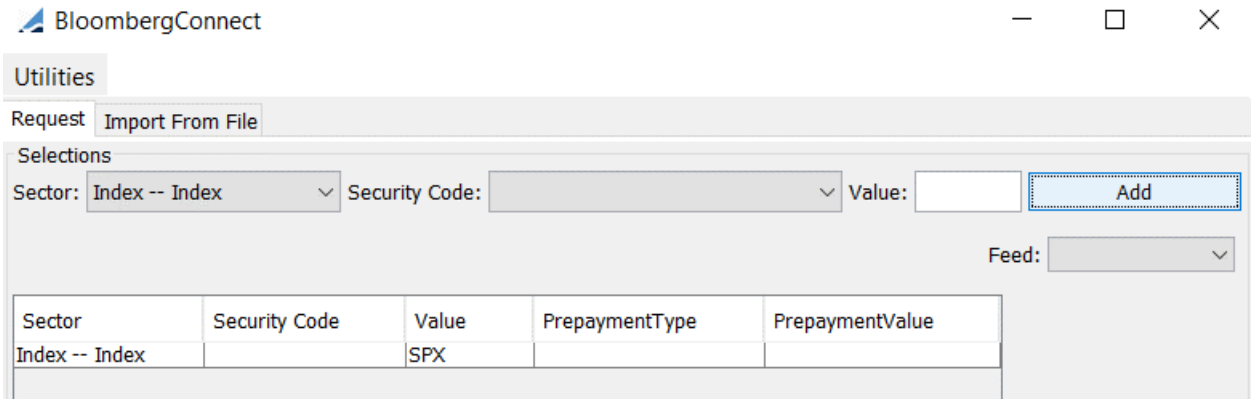
Certain equities report their dividends in GBp (Pence). When the application receives a Dividend Currency of “GBp,” Calypso now divides the dividend amount by 100 and reports the price in GBP.

7 Equity Index Product

When requesting an Equity Index, the application will create (or update) the product, create the Volatility Surface, and perform a Dividend Yield mapping.

7.1 Equity Index Identifier Lookup Priority

Calypso performs Equity Index lookup using the Market Sector and Ticker. For example, a request for the S&P 500 INDEX (SPX) will appear as shown below.



7.2 Equity Index Naming Convention

Equity Index names follow the same convention as Equities.

7.3 Equity Index Update Results

From the information returned by Bloomberg, populates the following fields for an Equity Index:

Field	Environment Property	Description
Name	TICKER, then SECURITY_DES then ID_BB	Equity Index names follow the same convention as Equities.
Currency	CRNCY	
Country	COUNTRY	The country of the Index.
Publish Holiday	Derived	The Holiday Calendar of the Currency.
Publish Frequency		Calypso populates this field with “DLY.”
QuoteType	“Price”	

Field	Environment Property	Description
Index Type	“Equity”	All Indexes are presumed Equity.
Description	NAME	The Index’s long name.
DateRoll		Calypso populates this field with “FOLLOWING”.
CODES	TICKER	
BB_UNIQUE_ID	Ticker	CUSIP and ISIN are not available.
Issuer		
Basket		Not appropriate for initial creation.

[NOTE: Calypso only updates those Equity Index fields that are mapped.]

7.4 Equity Index Constituents

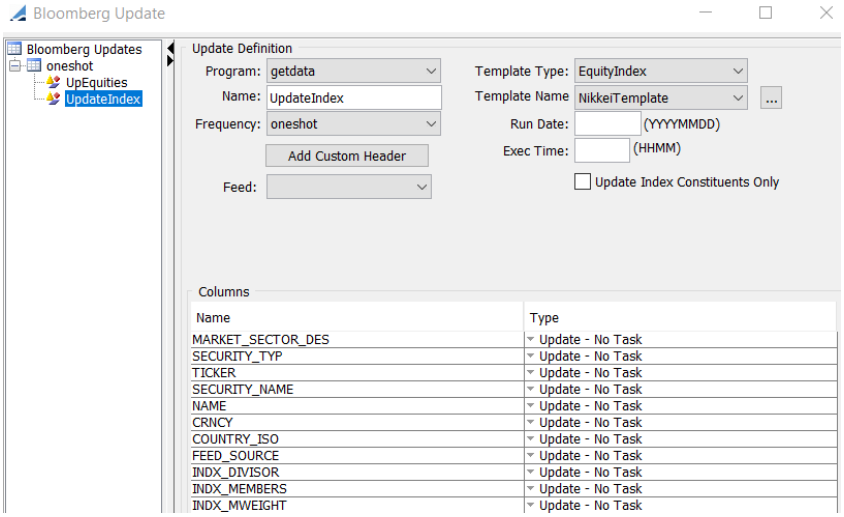
To import Equity Index constituents, you need to set the environment property BLOOMBERG_CREATE_INDEX_CONSTITUENTS=true, otherwise, only the Equity Index Definition will be imported.

You need to run the BLOOMBERG_UPDATE scheduled task twice: first to create / update the equity index with dummy assets, then to import the constituents.

7.4.1 Equity Index Definitions

Make sure that you have created an Equity Report template.

Create a Bloomberg Update definition with “Update Index Constituents Only” not checked:



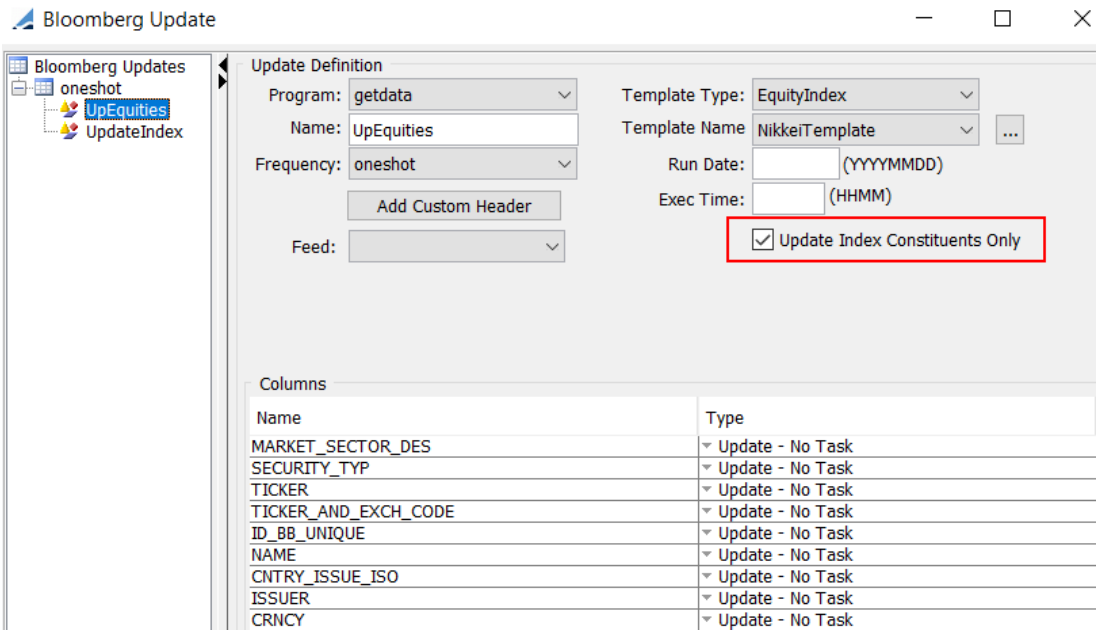
Run the scheduled task BLOOMBERG_UPDATE to create / update the Equity Indices.

Attribute	Value
Action	1 - Send Request for Updates
DIFFFLAG	
Update Names	
Input Dir	
Input Files	UpdateIndex

Attribute	Value
Action	2 - Process Updates Received
DIFFFLAG	
Update Names	
Input Dir	
Input Files	UpdateIndex

7.4.2 Constituents

Create a Bloomberg Update definition with “Update Index Constituents Only” checked:



Run the scheduled task BLOOMBERG_UPDATE to import the constituents:

Attribute	Value
Action	1 - Send Request for Updates
DIFFFLAG	
Update Names	
Input Dir	
Input Files	UpdEquities

Attribute	Value
Action	2 - Process Updates Received
DIFFFLAG	
Update Names	
Input Dir	
Input Files	UpdEquities

8 Bond Product

8.1 Bond Notes

8.1.1 When Updating Bond Definitions

To update the issuer information, then you must also include the ISSUER and TICKER fields in the Bloomberg Update definition.

To update the security, but not the issuer information, use either ISSUER or TICKER, but not both. Issuer information is only updated if both are present.

8.1.2 When Creating Bond Definitions

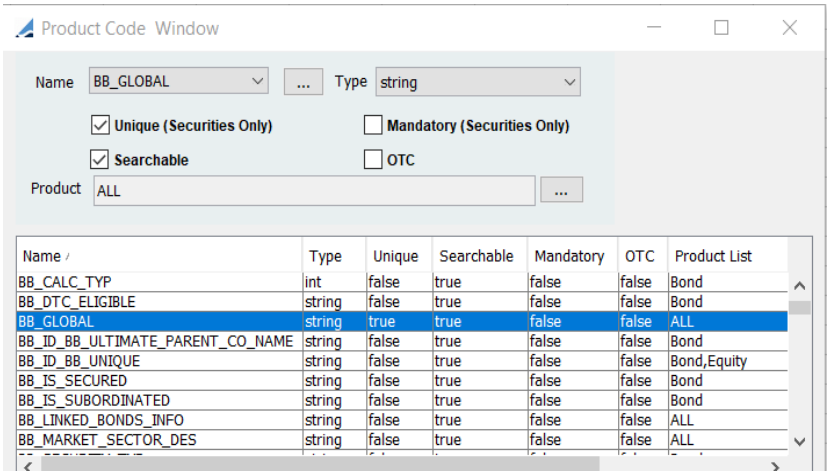
To create Bonds, ensure that the ISSUER and TICKER fields are included in the requested fields, by default these fields are included unless explicitly removed from the list of COLUMNS. The list of columns can be viewed on the Bloomberg Mapping window's Bloomberg Values Columns.

8.1.3 Unique Identifiers

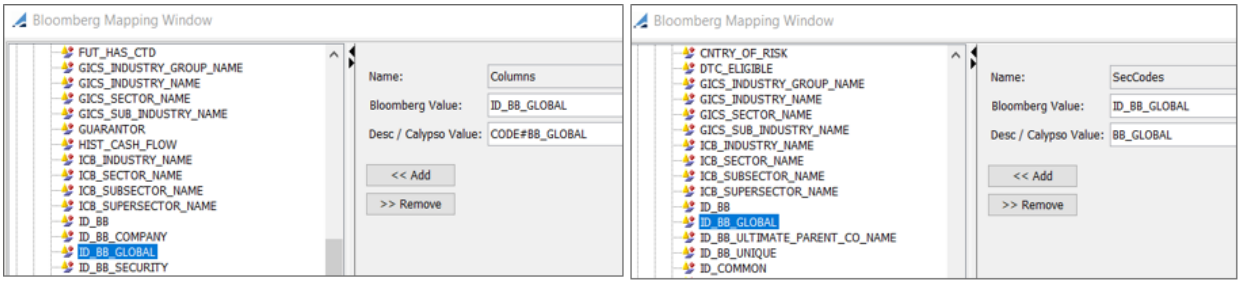
At least one of the following unique identifiers must be given for a Bloomberg bond to be able to be saved:

- CUSIP
- ISIN
- BB
- TICKER_UNIQUE
- ID_BB_GLOBAL

Note that the BB_GLOBAL product code also needs to be created manually as it is the Calypso value to which the Bloomberg value is mapped.



Name	Type	Unique	Searchable	Mandatory	OTC	Product List
BB_CALC_TYP	int	false	true	false	false	Bond
BB_DTC_ELIGIBLE	string	false	true	false	false	Bond
BB_GLOBAL	string	true	true	false	false	ALL
BB_ID_BB_ULTIMATE_PARENT_CO_NAME	string	false	true	false	false	Bond
BB_ID_BB_UNIQUE	string	false	true	false	false	Bond,Equity
BB_IS_SECURED	string	false	true	false	false	Bond
BB_IS_SUBORDINATED	string	false	true	false	false	Bond
BB_LINKED_BONDS_INFO	string	false	true	false	false	ALL
BB_MARKET_SECTOR_DES	string	false	true	false	false	ALL



8.1.4 Sink Schedules

When requesting the SINKABLE field, if the returned value is Y, Calypso will create a Sink Schedule for most bonds. Calypso does not create a sink schedule for Small Business Administration (ticker GSBA) bonds.

For municipal bonds, Calypso will create a Sink Schedules when the redemption method is Pro Rata or when SINKABLE is Y.

8.2 Bond Naming Convention

By default, Calypso creates bond names from Bloomberg using either SECURITY_DES, TICKER, or ID_BB_UNIQUE, if available, in that order.

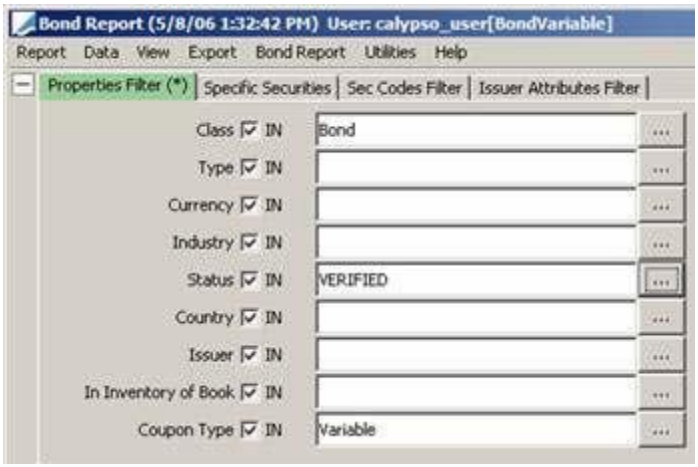
For instances where SECURITY_DES is not unique (e.g., Series bonds), it is possible to use Bloomberg mapping to create the bond name using different fields.

8.3 Setting a Template

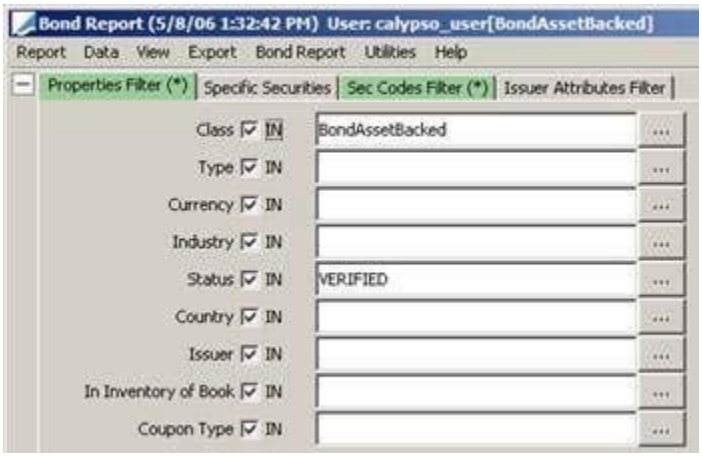
Several criteria can be used to isolate the population of securities to be updated.

From the Bloomberg Update window, you can edit an existing template or create a new one. To edit an existing template, select the Template Type and Template Name, then click the ellipse to launch the Selected Template window. To create a new template, select a **Template Type** and then click the ellipse.

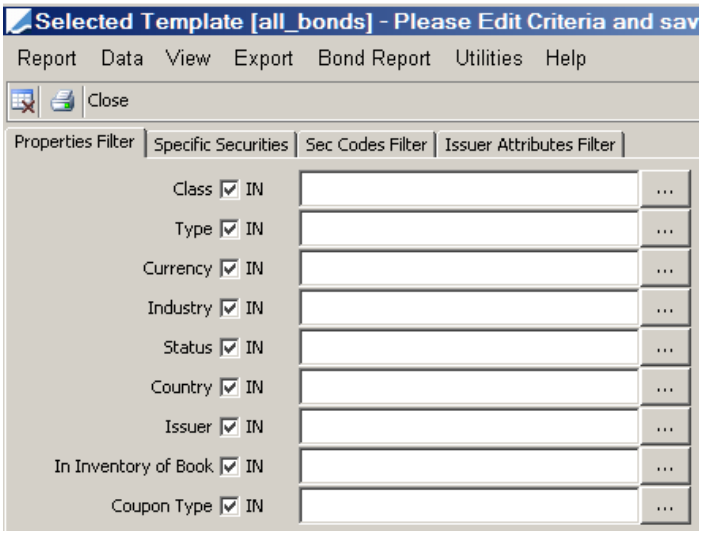
- Variables bonds



- Mortgage and Bond Asset Backed



- All Bonds



8.4 Defining Bond Updates

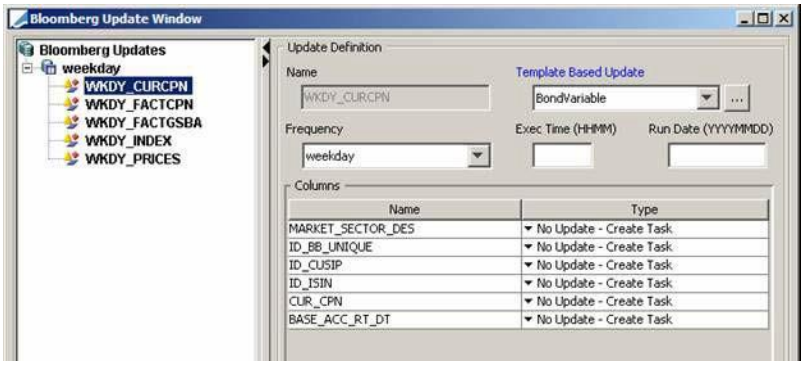
8.4.1 Variable Coupon

BLOOMBERG_VAR_COUPON_SCHEDULE, which must be TRUE to accept updates.

- Applicable Market Sectors: Govt, Corp, Muni.
- Applicable to Floaters (i.e., RESET_IDX not null).

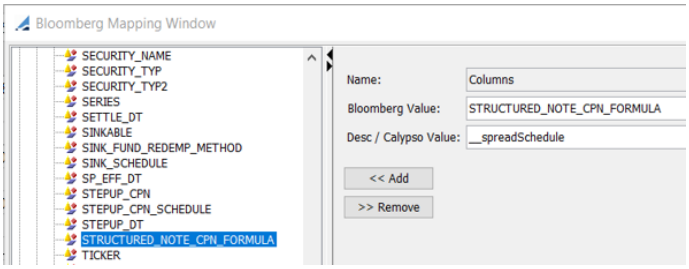
During creation, the coupon history for Floaters and Variable Schedule for Govt, Corp, Muni use the FLOATER_ACC_SCHEDULE field. This is not applicable to Mtge.

For the updates, the fields CUR_CPN and BASE_ACC_RT_DT provide the most current data once the index resets.

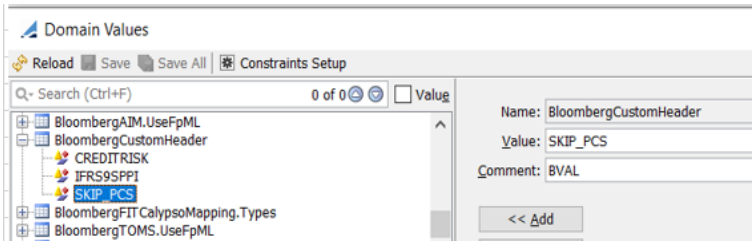


8.4.2 Variable Schedules

The field STRUCTURED_NOTE_CPN_FORMULA is used to get the coupon formula for variable spread bonds.

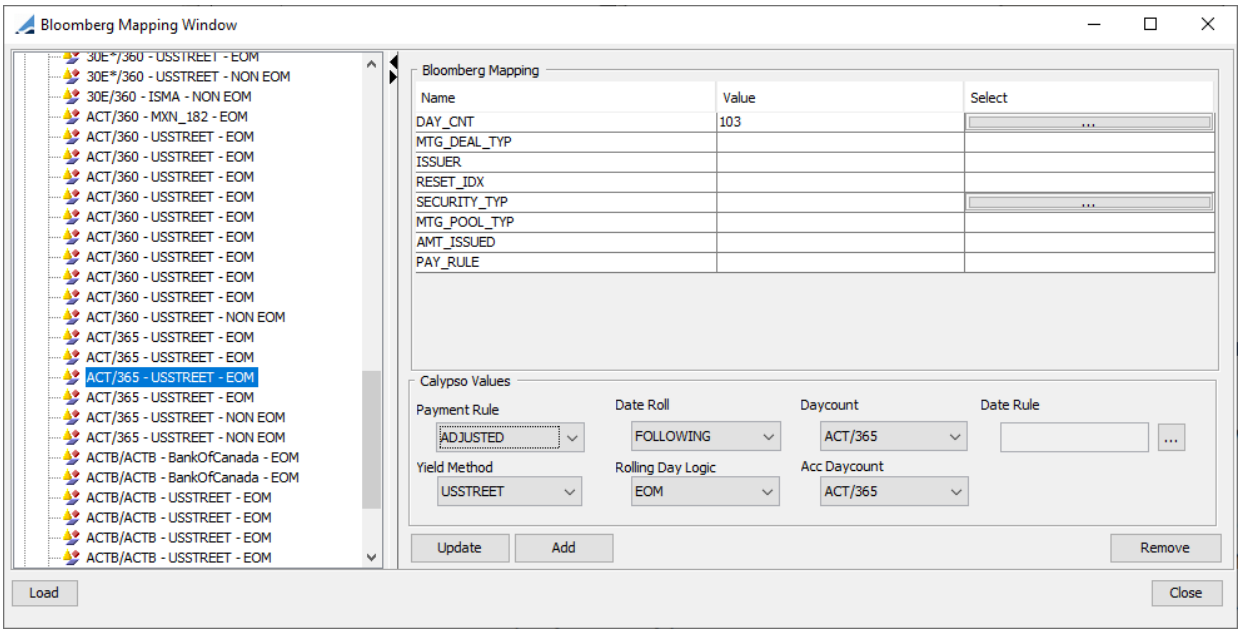


In order to get data on this field you need to add the header SKIP_PCS=BVAL.



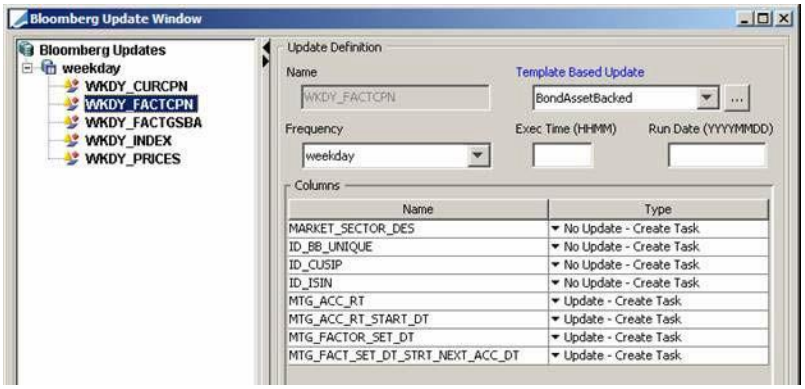
In some cases Variable Spread dates from Bloomberg will be unadjusted when the Payment Rule is adjusted. This incorrectly creates Spread Period dates that don't coincide with Coupon Period dates. Variable Spread dates will

automatically adjust to align with the Coupon Period dates to correct error condition cases (e.g. daily compounding).



▶ See Custom Headers for more details.

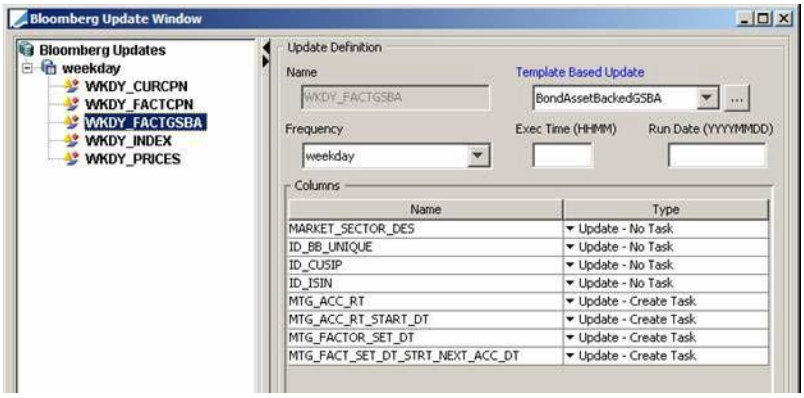
8.4.3 Pool Factors Mtge

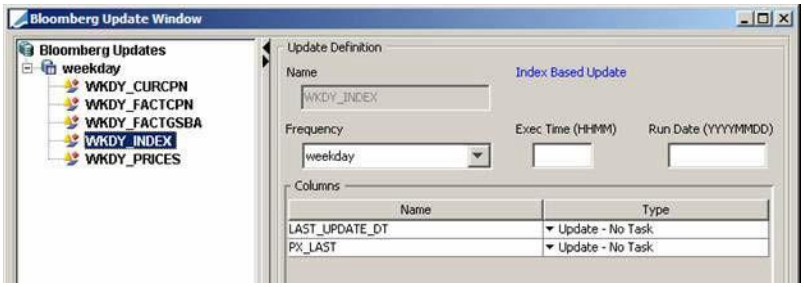


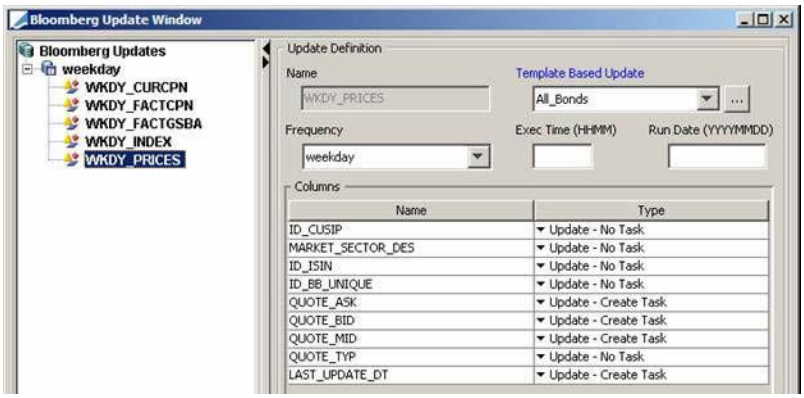
8.4.4 Pool Factors GSBA

GSBAs are Market_Sector_Des=Govt.

To capture the pool factors based on Mtge field, you must modify the file by specifying Market sector “Mtge” after each CUSIP

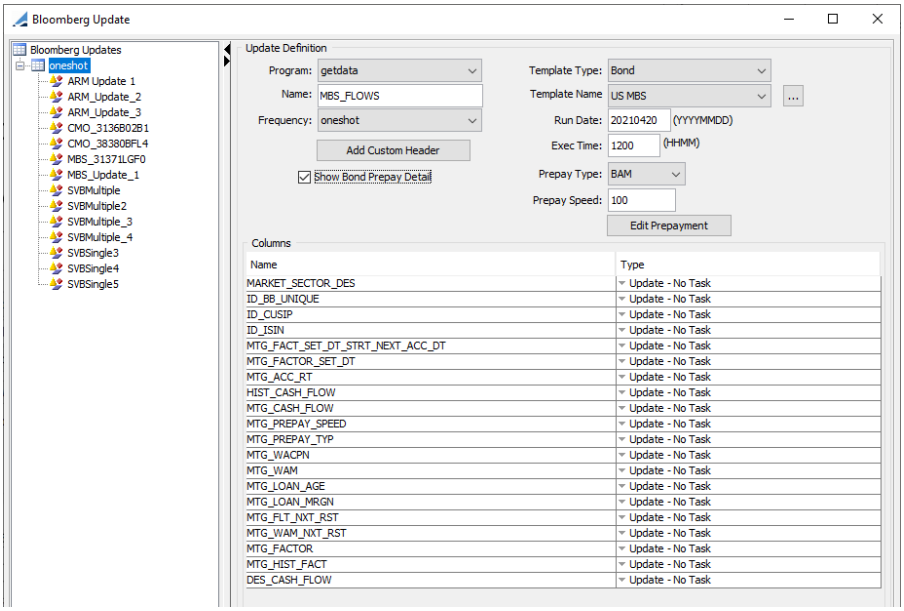






8.4.5 Bond MBS External Cash Flows

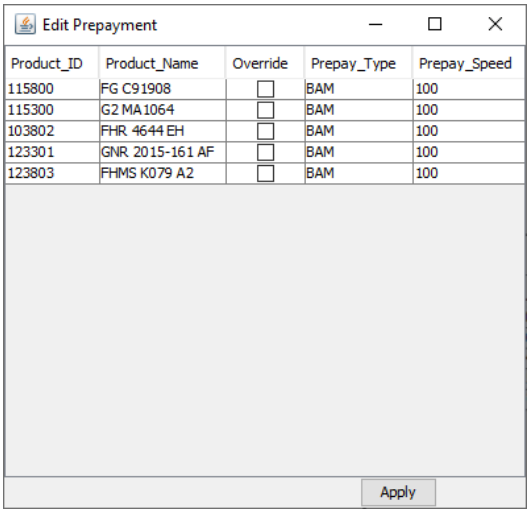
Bloomberg Update includes Prepayment Type and Prepayment Speed for External Cash Flow updates.



- Check Show Bond Prepay Detail to activate Prepay Type, Prepay Speed and Edit Prepayment fields.
- Select Prepay Type from the drop-down menu.
- Enter a Prepay Speed.

  Note that BAM only supports 100 from Bloomberg.
- Enter MTG_CASH_FLOW, HIST_CASH_FLOW, MTG_PREPAY_TYP and MTG_PREPAY_SPEED in the column section.

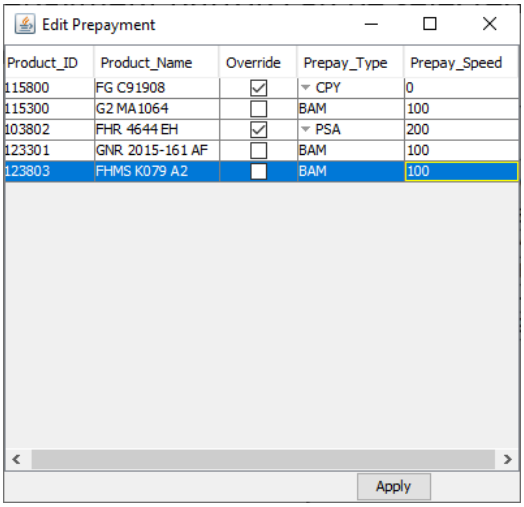
The **Edit Prepayment** button can be selected to override the default Prepayment Type and Prepayment Speed on an individual trade.



- Check “Show Bond Prepay Detail” to activate the Prepay Type, Prepay Speed, and **Edit Prepayment** fields.
- Select Prepay Type from the drop-down menu.

» Enter a Prepay Speed.

» Hit **Apply**.



» Save your changes on the Bloomberg Update Definition screen.

8.5 Scheduled Tasks for Bonds

8.5.1 BLOOMBERG_UPDATE Scheduled Task

The BLOOMBERG_UPDATE schedule task, having the following attribute configuration, sends a request file for all Updates defined in the Bloomberg Update Window.

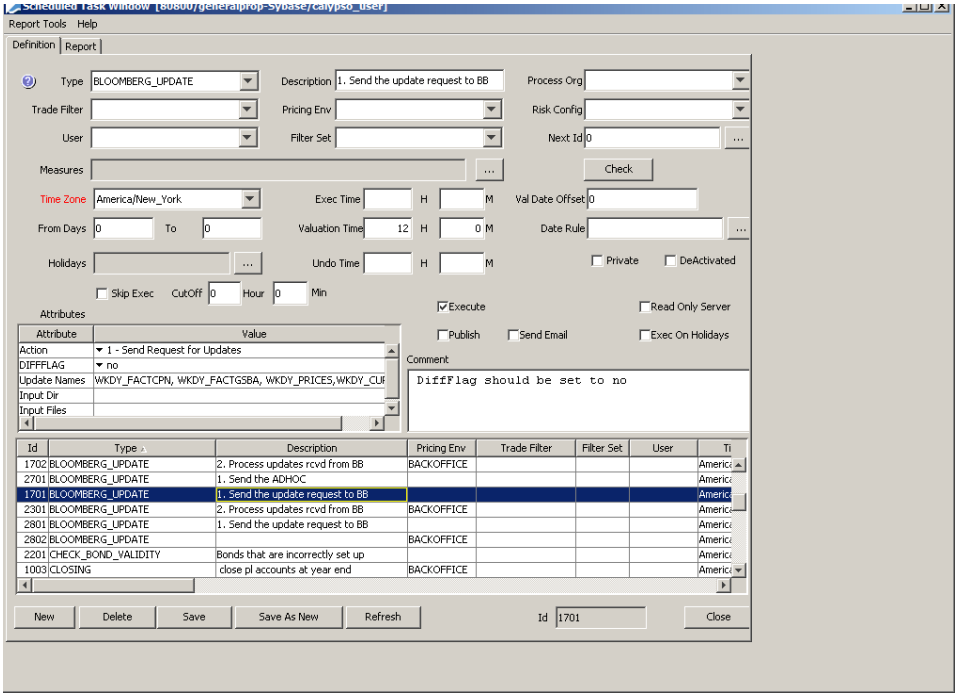
This request is generally sent at the end of the business day. DiffFlag can have one of three values:

- No
- Changes
- Empty

If DiffFlag=no, the user must specify the Update Names (e.g., update request filename) that the DiffFlag should apply to. The Name field (of the Update Definition) in Bloomberg Connect's Bloomberg Update Window holds the filename. If multiple update names are specified, separate each name by a comma.

When Update Request files are created, only the Update Names specified by the user have a “DiffFlag=no” record. All other update request files have a “DiffFlag=changes” record.

If the value of DiffFlag is anything other than “no”, the update request files will have a “DiffFlag=changes” record.

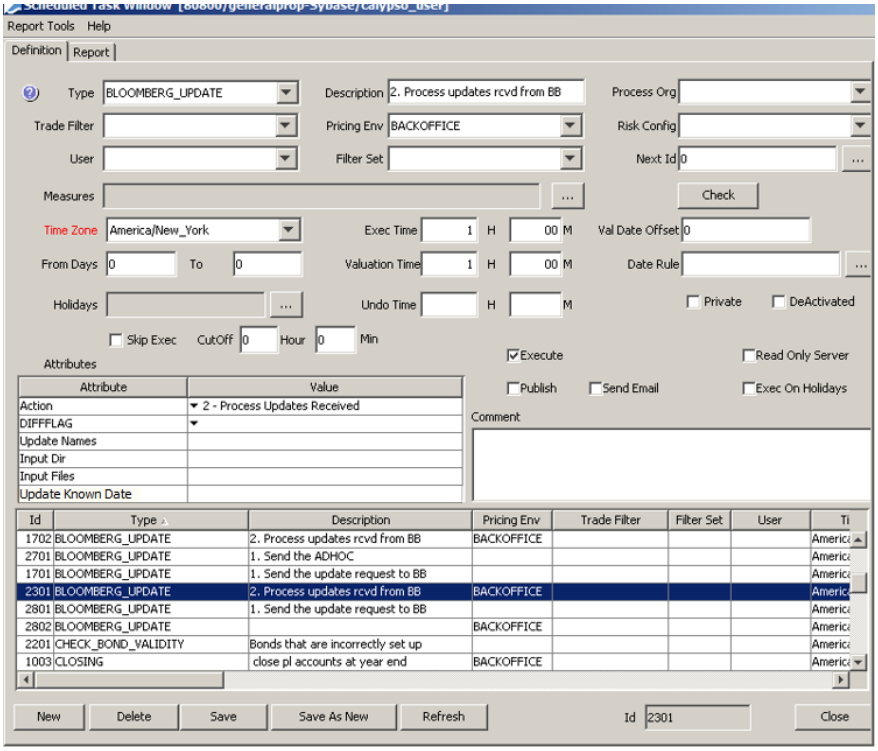


The BLOOMBERG_UPDATE scheduled task, with the following attribute configuration, automatically retrieves all the *.out files for all defined Updates.

The application attempts to match the names defined in the Update Definition window with the files on the Bloomberg FTP. Matching files are then downloaded.

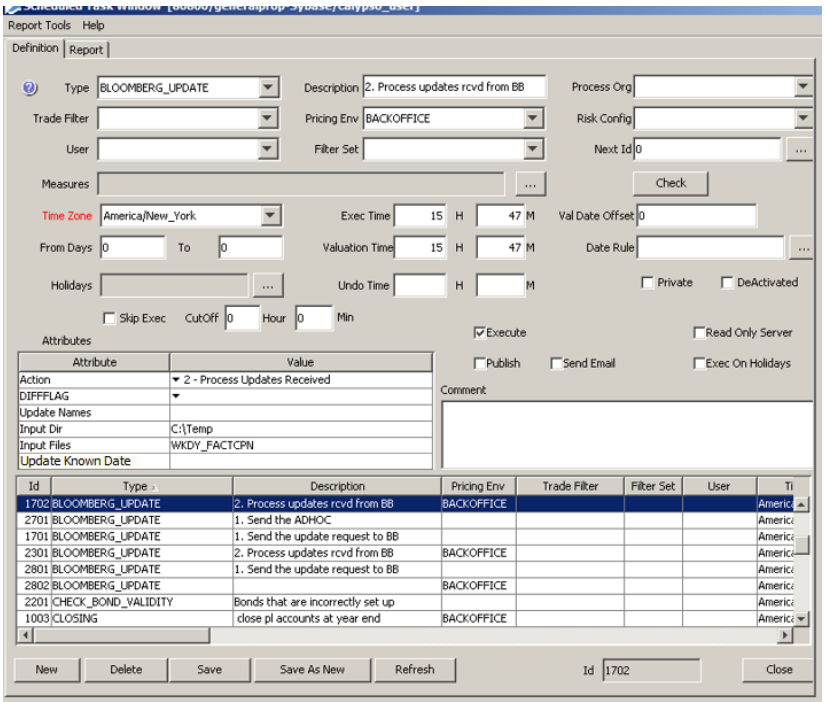
Once the Bloomberg Update task is complete, any downloaded updates are applied to the Bond. The application will only update those fields that the user requested using the Bloomberg Update window.

The Task Station then displays two types of tasks. One informs the user which Product ID was updated, and the second provides the data that was altered or added.



8.5.2 Reprocessing Files in BLOOMBERG_UPDATE

It is possible to reprocess an update file once it has been imported from the FTP site. Enter the file name(s) in Input Files and their containing directory in Input Dir.

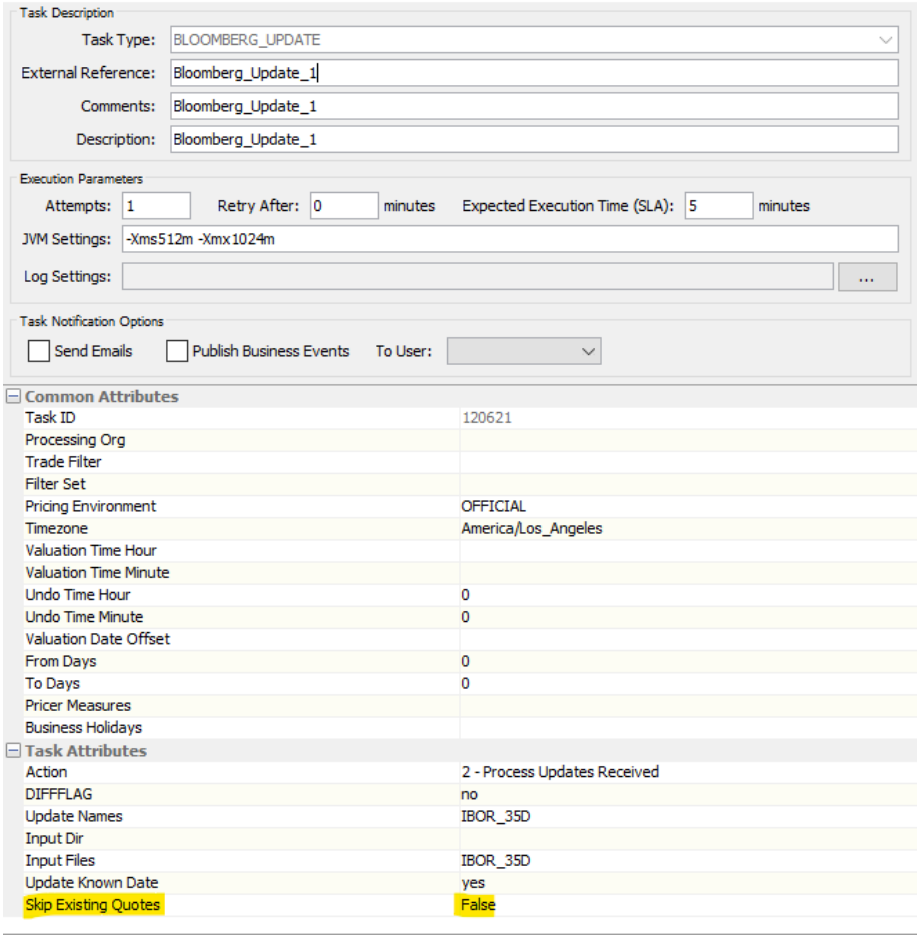


8.5.1 BLOOMBERG_UPDATE ST with a new attribute called “Skip Existing Quotes”

Added a new attribute called as **“Skip Existing Quotes”** to the “BLOOMBERG_UPDATE” Schedule Task. This will ensure that the Entered Date for the fallback quotes are not being constantly updated due to the fact that we will be importing the same quotes day after day based on the date range.

User should use the BLOOMBERG_UPDATE ST where the user uses a Task Attributes Action field “2-Process Updates Received”. Here we have a new field known as Skip Existing Quotes as true/false.

If the Skip Existing Quotes is “True” then the ST should skip saving of quotes which had been already persisted in the database. The default value for Skip Existing Quotes will be False. If the attribute is true then the ST will not update any existing quote data set that is already saved, even if the quote feed is resending this data. If the Skip Existing Quotes is flipped to “False” then the ST will update the existing quotes and overwrite it.

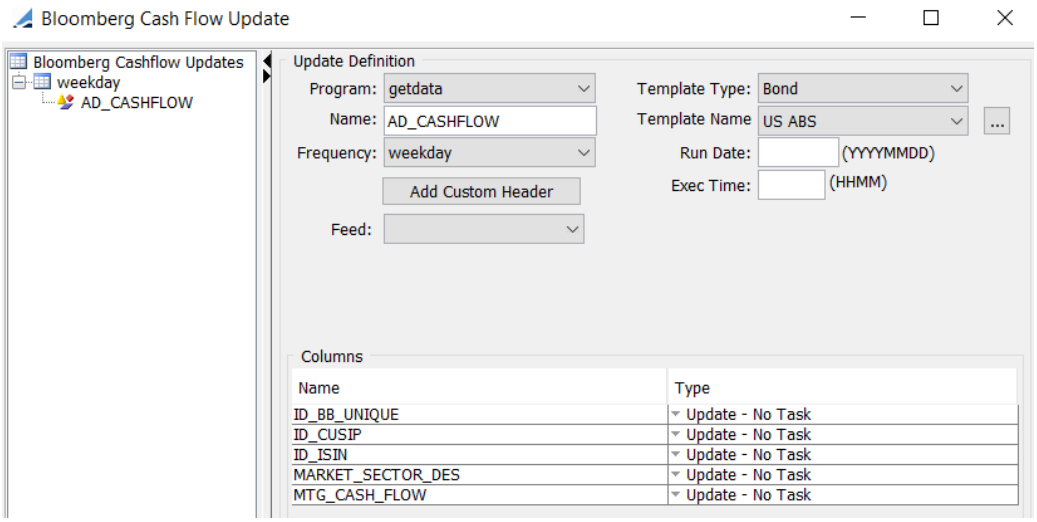


8.5.2 Cash Flow Ad-hoc Updates

You must periodically update the BondAssetBacked cashflows through a bulk request. The normal update process from Bloomberg does not update ad-hoc cashflows.

Defining the Update

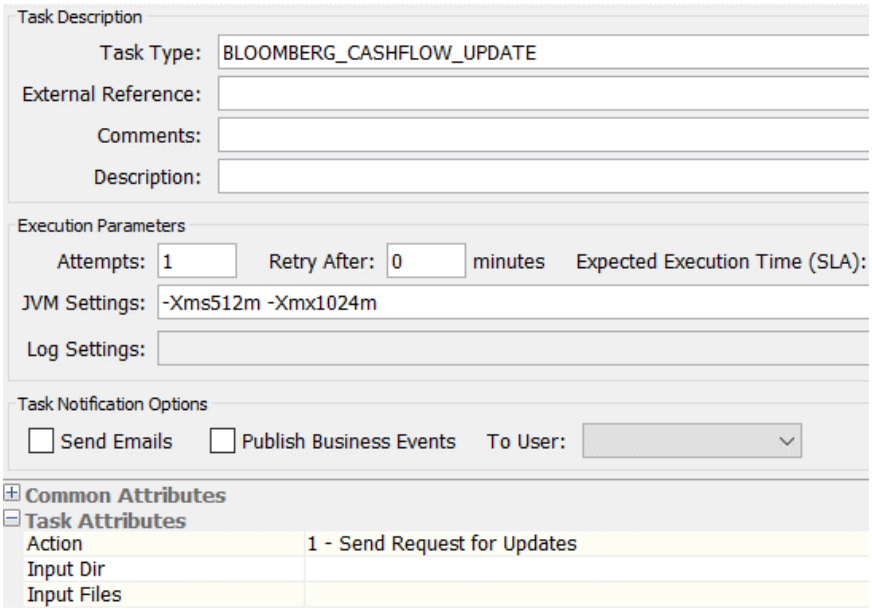
In **Bloomberg Connect > Utilities > Bloomberg Cash Flow Update Status**, define the following update:



BLOOMBERG_CASHFLOW_UPDATE Scheduled Task

Add BLOOMBERG_CASHFLOW_UPDATE to the “scheduledTask” domain.

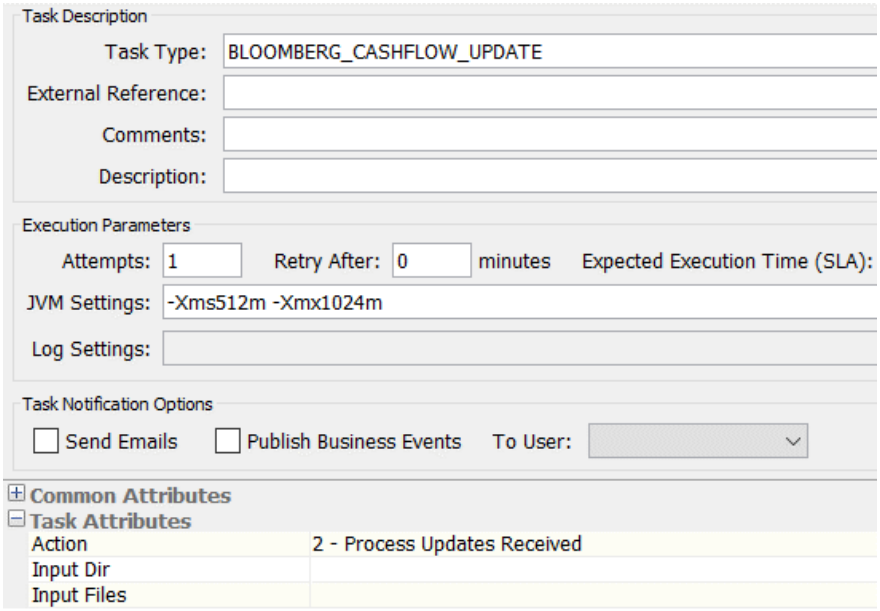
Step 1 - Send Request for Updates



The Scheduled Task application creates the file “zzh_AD_CASHFLOW.req,” which looks similar to the following “one-shot” request:

```
START-OF-FILE
# Calypso Request File (Generated: 6/21/06 2:22:43.222 PM CEST)
# Request Header REPORT=yes PROGRAMFLAG=oneshot FIRMNAME=dl******
REPLYFILENAME=zzh_ADHOC.out.enc HISTORICAL=yes
DERIVED=yes SECMASTER=yes
PROGRAMNAME=getdata DATEFORMAT=mmddyyyy

# Request Fields START-OF-FIELDS ID_CUSIP
ID_ISIN MARKET_SECTOR_DES MTG_CASH_FLOW ID_BB_UNIQUE
END-OF-FIELDS

# Request Data START-OF-DATA
BCC0CF6Y3|CUSIP|1|SETTLE_DT|19720101| END-OF-DATA
END-OF-FILE
```

Step 2 - Process Updates Received



The cyh_AD_CASHFLOW.out received automatically updates the products.

8.5.3 BLOOMBERG_CHECK_EXT_FLOWS Scheduled Task

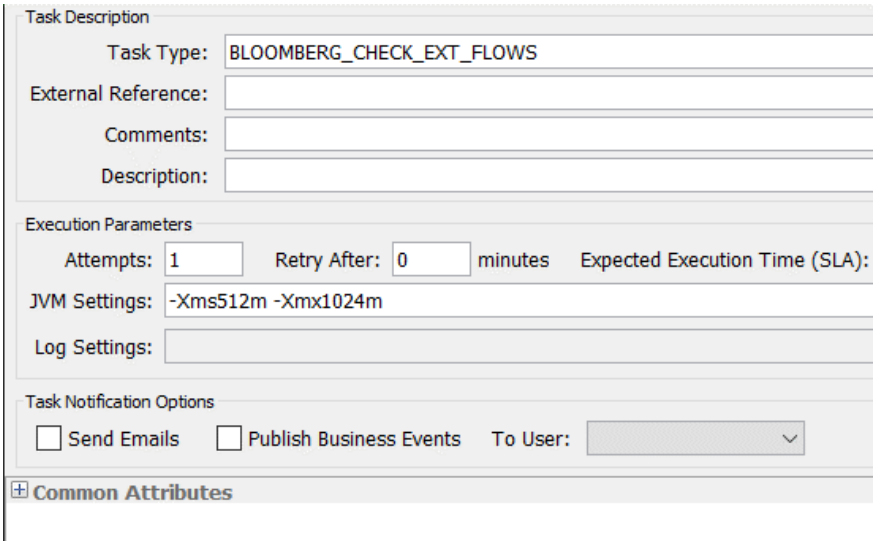
For FAS91, Calypso must import the external cashflows from Bloomberg.

The scheduled task publishes exceptions for all BondAssetBacked bonds to mention the last update time for any bonds that actually have an external cashflow. The goal is to identify missing cashflows and to determine which cashflows are not being updated.

On the Task Station, it generates:

- A BLOOMBERG_INFORMATION item for each ABS bond that has external flows (and when the flows were last downloaded).
- A BLOOMBERG_EXCEPTION item for each ABS bond that does not have an external flow.

Add BLOOMBERG_CHECK_EXT_FLOWS to the domain “scheduledTask”.

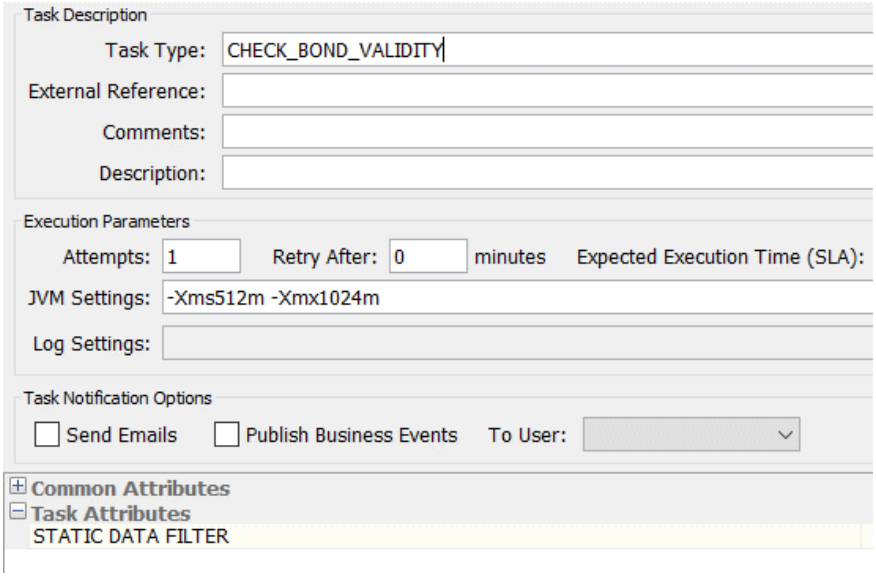


8.5.4 CHECK_BOND_VALIDITY Scheduled Task

This schedule task has a single attribute, a static data filter.

When the scheduled task runs, Calypso queries for bonds that match the static data filter and runs the “validate” logic on them (this is the same validation logic that runs when saving the bond).

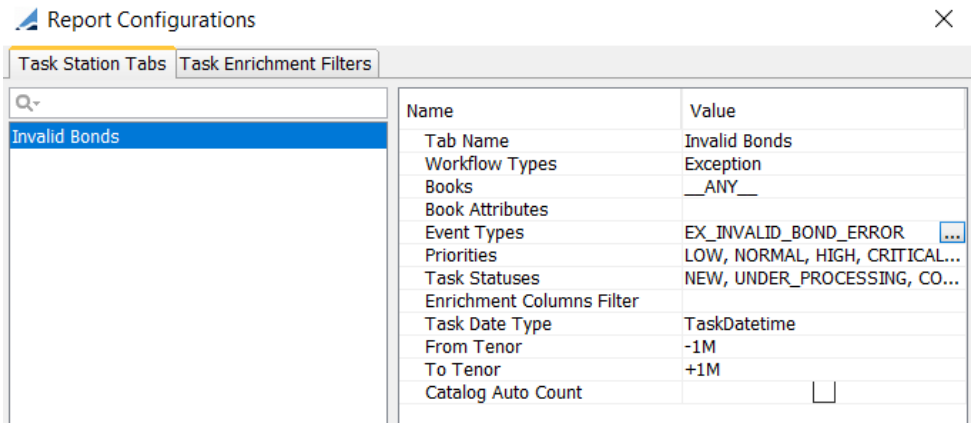
If any bond fails the validation, Calypso raises a task to the Task Station that records both the bond and the error message.



To configure the Task Station for CHECK_BOND_VALIDITY:

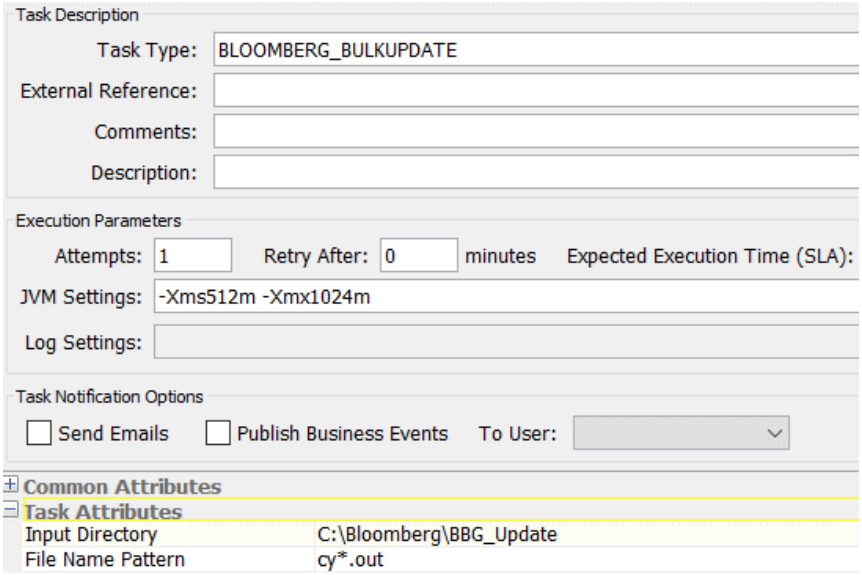
Add INVALID_BOND_ERROR to the domain “exceptionType”.

Add an “Invalid Bonds” report to the Task Station:



8.5.5 BLOOMBERG_BULKUPDATE Scheduled Task

This scheduled task is used to upload multiple Bloomberg out files that are present in the specified directory. We can also provide a filter using wildcard character (*) to upload specific out files that matches the filer in the directory.



Task Attributes:

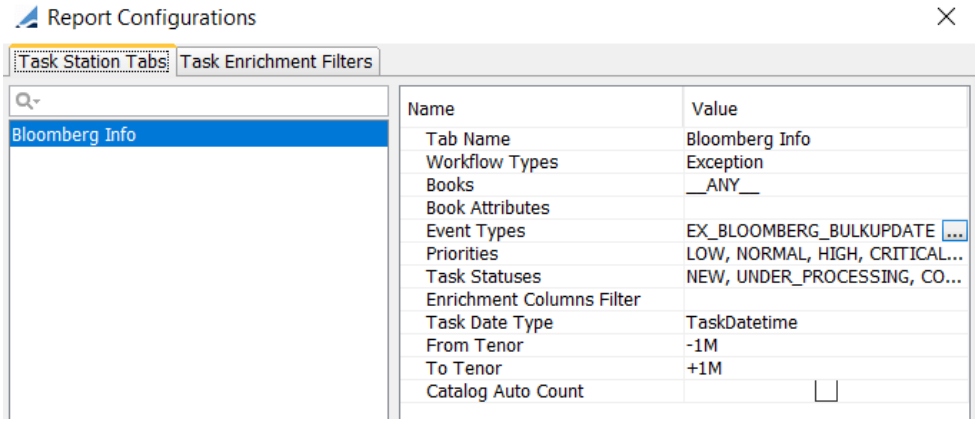
- Input Directory (Mandatory): We need to specify the full path of the directory that contains the out files. This field cannot be empty. A warning message will be displayed and will now allow creating the scheduled task if the field is empty.
- File Name Pattern (Optional): We can provide a filter to upload only specific set of out files from the directory. We can achieve this by specifying the file search pattern using wild card character (*). Since this field is optional, if we did not specify any value in this field then all out files in the specified directory will be uploaded.

  Sample search patterns: 'cyc_HYG_UP.out' this file will be picked by following any of patterns.

  - *.out
  - *UP.out
  - ccy_HYG*.out
  - ccy*UP.out
  - ccy*HYG*UP.out

You may add BLOOMBERG_BULKUPDATE to the domain “scheduledTask” if it is not available for selection, and to the domain “exceptionType” to monitor exceptions on that scheduled task.

You also need to add EX_BLOOMBERG_BULKUPDATE to the domain “eventType”.



8.6 MBS External Cash Flows

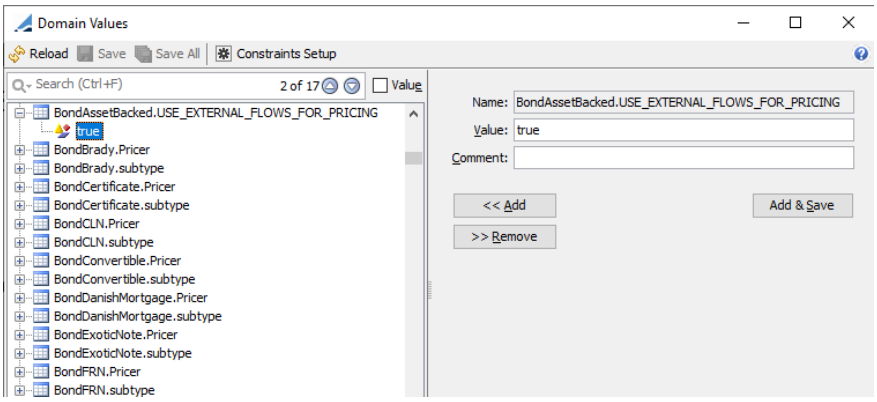
Calypso can create or update the Bond Cash Flows to use Bloomberg Cash Flows. Bloomberg Cash Flows include several Prepayment Types including PSA, CPR, BAM, CPY and CPJ.

▶ See ABS Panel for details on the prepayment types.

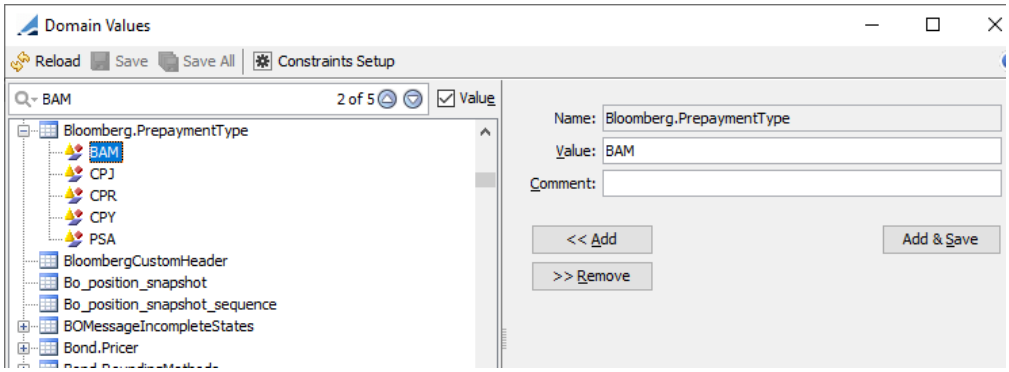
[NOTE: Bloomberg may require an upgrade license to Calculation Services to use some of the Prepayment models including BAM.]

8.6.1 Configuration

To enable the External Cash Flows functionality the domain "BondAssetBacked.USE_EXTERNAL_FLOWS_FOR_PRICING" must be set to true.



To add Prepayment Types to the available options in Bloomberg Connect they need to be added to the domain "Bloomberg.PrepaymentType".



In addition, the same types must be added to domain “ABS.PrepayTypes” to display properly in Calypso.

Important Note: When setting the Domain “BondAssetBacked.USE_EXTERNAL_FLOWS_FOR_PRICING” to TRUE it is highly recommended to request MBS Factors (MTG_HIST_FACTOR or MTG_FACTOR_SET_DT) and Cash Flows (MTG_CASHFLOW and HIST_CASH_FLOW) in the same request.

8.6.2 Requesting MBS Bonds using External Cash Flows

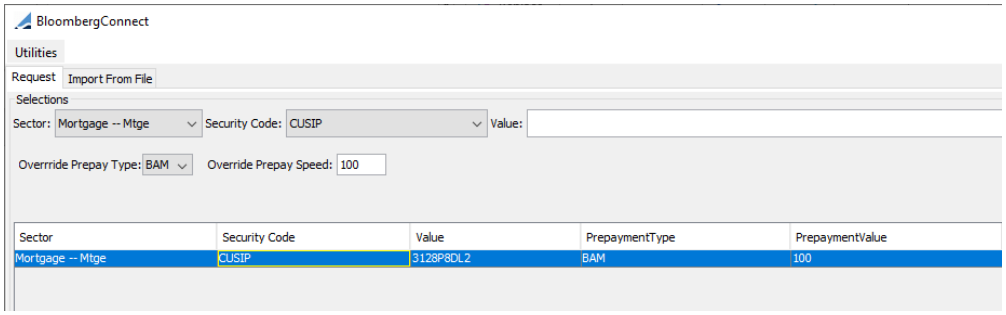
To request the default Prepayment Type and Speed (see Requesting an Individual Product):

- Select the Security Code.
- Enter a Value that identifies the security. Click **Add**.
- Click **Submit Request**.

To request a Prepayment Type and Speed other than the default (e.g. BAM 100):

- Select the Sector – Mortgage – MTGE. This activates the Override Prepay Type and Override Prepay Speed fields.
- Select the Security Code.
- Enter a Value that identifies the security.
- Enter an Override Prepay Type from the drop-down menu.
- Enter an Override Prepay Speed. Click **Add**.

  Note: BAM only supports 100 from Bloomberg.
- Click **Submit Request**.



[NOTE: When requesting MBS bonds that have adjusted period schedules and RFR-based indexes, the current period will adjust as per the adjustment rule.]

8.6.3 Requesting Multiple Bonds using External Cash Flows

Multiple Bonds can be requested manually adding multiple bonds and selecting Prepay Type and Prepay Speed per each security. In addition, multiple Bonds can be selected by using the Add From File functionality.

```
#
# Start of Data
Market Sector=Mtge
Product Code=CUSIP

#Column heading
#Identifier   SecurityCode   MarketSector  PrepayType   PrepaySpeed
3137BUPH5                       BAM     100
```

9 Known Dividends

Bloomberg provides Last Known Dividend data for Equities and Daily Dividend information for Equity Indexes.

9.1 Calypso Last Known Dividend Processing

Calypso will create new dividends when necessary and create a Cash Dividend Corporate Action record, as well.

Calypso processes the following fields:

Bloomberg Field	Description
DVD_CRNCY	Dividend currency
EQY_DVD_SH_LAST	Dividend amount
EQY_DVD_FREQ	Dividend Frequency
DVD_DECLARED_DT	Dividend Declared Date
DVD_RECORD_DT	Dividend Record Date
DVD_PAY_DT	Dividend Payment Date
DVD_EX_DT	Dividend Ex Date

9.2 Obtaining and Processing Daily Dividends

For an Equity Index, include the EX_DVD and DVD_EX_DT fields to request Daily Dividends. The information returned is:

- Ex Date
- Dividend Date

Additionally, when the user requests Daily Dividends through the Bloomberg Update, Calypso includes the Index Divisor and the Index Member Weights in the request. This information is used to update basket information, if any.

10 Cheapest To Deliver Data

It is possible to import cheapest to deliver data for future contracts from Bloomberg Data License.

In order for this functionality to work, future contracts need to be setup in Calypso with BB_TICKER_EXCHANGE product code set to the Bloomberg future contract's name. Also, the deliverable bonds need to exist in Calypso. If they do not exist, they need to be imported from Bloomberg before using this functionality. Bonds need to have the ISIN or CUSIP product code set so they can be looked up as CTD.

The following Bloomberg fields are supported for CTD data.

Mandatory Bloomberg Fields

- TICKER
- MARKET_SECTOR_DES
- FUT_HAS_CTD
- FUT_CTD
- FUT_CTD_CUSIP
- FUT_CTD_ISIN
- FUT_CTD_TICKER
- FUT_CNVS_FACTOR

Optional Bloomberg Fields

- FUT_DLVRBLE_BNDS_BB_UNIQUE
- FUT_DLVRBLE_BNDS_CUSIPS
- FUT_DLVRBLE_BNDS_ISINS
- FUT_CTD_PX

If optional fields are not requested, only the CTD will be set on existing future contracts if the list of deliverable bonds contains CTD bonds, otherwise an error task will be created.

If FUT_DLVRBLE_BNDS_ISINS, FUT_DLVRBLE_BNDS_CUSIPS and/or FUT_DLVRBLE_BNDS_BB_UNIQUE are requested, a new list of deliverable bonds will be created if all bonds exist in Calypso otherwise an error task will be created. After creating a new list, the CTD will be set from this list.

If FUT_CTD_PX is requested, a new quote will be created in Calypso for CTD bonds with last value.

11 Corporate Actions

Bloomberg supports a subset of Corporate Actions. Some of these Corporate Actions (CAs) affect a specific security and some only the issuer. Many CAs imported by Calypso have no economic, security, or position impact.

For more complete corporate actions support, it is recommended to import SWIFT messages MT564-MT568 instead. Please refer to Calypso Corporate Actions documentation for details.

11.1 Overview

Action Mnemonics are used to request supported individual action types. All corporate action messages contain an Action ID, which is a Bloomberg-assigned, unique identifier.

All Corporate Action messages have an internal status flag that marks them as New, Updated, or Deactivated, N, U, and D, respectively.

Calypso's internal processing uses the Action ID and the status flag to determine the action to take with the message.

All other CA types reported by Bloomberg are imported into Calypso as “Referential/Informational.” Such CAs require no further processing action within Calypso.

Calypso fully supports the following Corporate Actions from Bloomberg:

- Stock Split
- Cash Dividend
- Stock Dividend
- Spinoff
- Merger

Bloomberg Corporate Actions — Bold == Supported

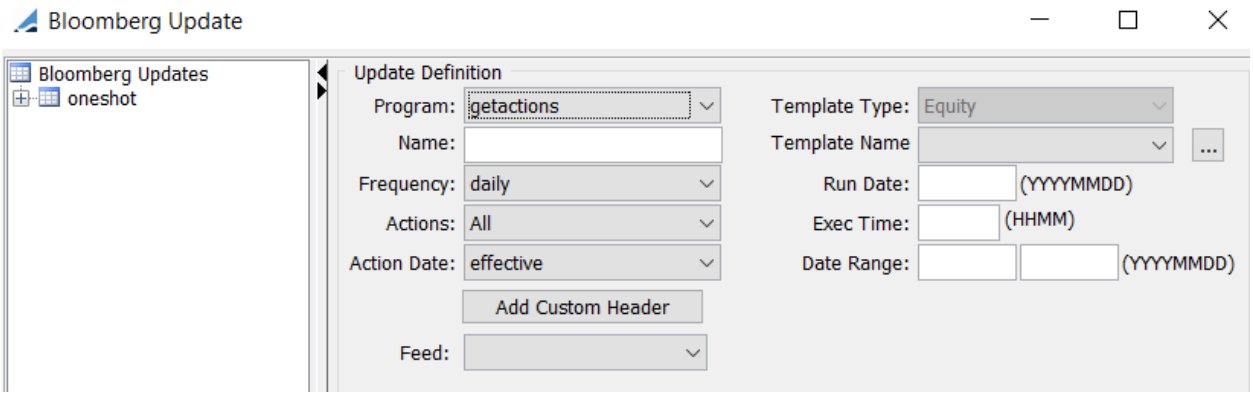
BBG CA Name	Type (CE, CC, or D)	Issuer (C) or Security (S)	Action Mnemonic	Calypso Model	Calypso Subtype
Name Change	CE	C	CHG_NAME	Referential	Informational
Listing	CE	S	LIST	Referential	Informational
Domicile Change	CE	C	CHG_DOM	Referential	Informational
Variable Interest Reset	CE	S	VAR_INT_RST	Referential	Informational
State of Incorporation Change	CE	C	CHG_STATE	Referential	Informational

BBG CA Name	Type (CE, CC, or D)	Issuer (C) or Security (S)	Action Mnemonic	Calypso Model	Calypso Subtype
Voting Rights Change	CE	S	CHG_VOTE	Referential	Informational
Round Lot Change	CE	S	CHG_RLOT	Referential	Informational
Currency Quotation Change	CE	S	CRNCY_QT_CHNG	Referential	Informational
Ticker Symbol Change	CE	S	CHG_TKR	Referential	Informational
Reconvention	CE	S	RECONVENTION	Referential	Informational
ID Number Change	CE	S	CHG_ID	Referential	Informational
Redenomination	CE	S	REDOMINATION	Referential	Informational
Delisting	CE	S	DELIST	Referential	Informational
Shareholder Meeting	CE	C	SH_HOLDER_MEET	Referential	Informational
Change in Listing	CE	S	CHG_LIST	Referential	Informational
Merger	**CC**	**C**	**MERG**	**MERGER**	**MERGER**
Installment Call - Partial Pay	CC	S	PARTIAL_PAY	Referential	Informational
Spin-off	**CC**	**C**	**SPIN**	**SPINOFF**	**SPINOFF**
Reclassification	CC	S	RECLASS	Referential	Informational
Bankruptcy Filing	CC	C	BANCR	Referential	Informational
Debt Repurchase/Tender	CC	S	DBT_REP	Referential	Informational
Stock Buyback	CC	C	STOCK_BUY	Referential	Informational
Debt Redemption/Put	CC	S	DBT_RDMP_PUT	Referential	Informational
Equity Offering	CC	S	EQY_OFFER	Referential	Informational
Exchange Offers	CC	S	EXCH_OFFER	Referential	Informational

BBG CA Name	Type (CE, CC, or D)	Issuer (C) or Security (S)	Action Mnemonic	Calypso Model	Calypso Subtype
Debt Redemption Call	CC	S	DBT_RDMP_CALL	Referential	Informational
Variable Principle Redemption	CC	S	VAR_PR_RDMP	Referential	Informational
Debt Offering/Increase	CC	S	DBT_OFFER_INC	Referential	Informational
Pay in Kind	CC	S	PAY_IN_KIND	Referential	Informational
Debt Offering/New	CC	S	DBT_OFFER_NEW	Referential	Informational
Rights Offering	CC	S	RIGHTS_OFFER	Referential	Informational
Par Value Change	CC	C	CHG_PAR	Referential	Informational
Conversion Price Refix	CC	S	CONV_PX_RFIX	Referential	Informational
Debt Redemption Sinker	CC	S	DBT_RDMP_SINK	Referential	Informational
Exercise Terms Refix	CC	S	EX_PX_RFIX	Referential	Informational
Acquisition	CC	C	ACQUIS	Referential	Informational
Funged Issues	CC	S	FUNG_ISS	Referential	Informational
Divestiture	CC	C	DIVEST	Referential	Informational
Extendible Issues	CC	S	EXTEN_ISS	Referential	Informational
Cash Dividend S	D	S	DVD_CASH	CASH	DIVIDEND
Stock Dividend S	D	S	DVD_STOCK	ACCRUAL	STOCK_DIV
Stock Split S	D	S	STOCK_SPLT	TRANSFORMATION	SPLIT

11.2 Obtaining Corporate Actions

To obtain corporate actions, first open the Bloomberg Update window from Bloomberg Connect.



Corporate Actions are retrieved using the **getactions** program.

When the **getactions** program is selected, the following become available:

- Actions — Choose the type of CA you wish to retrieve, or leave the default setting of All to retrieve all corporate actions.
- Date Range — An inclusive range of days to retrieve CAs. The limit set by Bloomberg is seven days before the Run date (typically, today). When Frequency is oneshot, Date Range is mandatory. getactions will return a single day if Date Range is left blank (except for oneshot requests).
- Action Date — The date on which the CA occurs.

11.3 Corporate Action Workflow

11.3.1 Scheduled Tasks

Bloomberg enters and updates Corporate Actions daily. To ensure that your data is current, Calypso recommends that you create a Scheduled Task to request CAs each day.

Your CA Scheduled Task should:

- Gather the Equities whose CAs should be requested.
- Request all CAs that have been entered updated or deleted for a given day.

Monitor the Task Station for exceptions and process them as required.

11.3.2 Calypso Corporate Actions Processing

Calypso CA processing follows these steps:

- Process any unsupported CA types as Referential/Informational CA Records. The application stores a maximum of 255 characters from the beginning of the raw CA message in the Comments field, which will include the Bloomberg CA Type and the remaining fields delimited by the bar character (|). Calypso also accepts and processes updates to Referential/Informational CA messages.

- Process CA messages for supported types using the following logic:

Bloomberg Status Flag	Action ID Exists?	Current Record Status is:	Process Date is	Processing Result
D	No	N/A	N/A	Ignore CA Message
D	Yes	Active	LT Existing Ex Date	Deactivate CA record
D	Yes	N/A	GE Existing Ex Date	Ignore CA Message
N or U	Yes or No	N/A	LT Existing Ex Date	Create CA record
N or U	Yes or No	Active	LT Existing Ex Date	Create CA record
N or U	Yes or No	Active	GE Existing Ex Date	Ignore CA Message

[NOTE: Under no circumstance are existing CA records modified on or after the Ex Date that currently exists in the CA record or when the CA record is Deactivated.]

11.4 CA Record Types

11.4.1 Common Fields

The following fields in the Corporate Action window are typically populated in all messages:

Field	Description	Mapping
Product	The Security ID of the product this CA is associated with.	<Identifier>
To product	Used in the case of a Spinoff or Merger when another product is involved. This field will contain the Security ID of the new product.	
Model	This field, with the SubType field, drives the identification of the CA. The mapping of these fields is given in the Bloomberg CA summary table.	
SubType	See Model.	
Ratio From	The number of old shares. Used in Stock Splits and Spinoffs. (Transformational CAs).	
Ratio To	The number of new Shares. See above.	
Rounding	Used to determine how to treat fractional amounts due to odd splits and other CAs.	

Field	Description	Mapping
Record Date	The Record Date.	
Payment Date	The date on which the company considers holders of the security as being entitled to the payout.	
Ex-Date	Critical Field. The day to adjust the positions in this product.	
Amount	An amount to pay.	
Other Amount	An additional amount to pay.	
Currency	The currency of the Amount.	
Comment	Text field.	

11.4.2 Referential/Informational

Calypso only stores the following fields for Referential/Informational CA Message:

Calypso Field	Value
Product	The Security ID (SecID).
Model	REFERENTIAL
Sub-type	INFORMATIONAL
Deactivated	True or False.
Comments	Formatted text of the message in the following format: <Type>,<Flag>,<Fields> Fields <return> <Fields specific to CA> **[NOTE: The CA Message is truncated to 255 characters.]**
Record Date	Effective Date
Ex Date	Effective Date
Pay Date	Effective Date + 1

11.4.3 Stock Split

A stock split occurs when a company alters the number of its outstanding shares without changing the total market value of those shares. After a stock split or reverse stock split (i.e., a consolidation) becomes effective, the price of the shares is proportionately adjusted.

The following table summarizes the Calypso CA record fields and Bloomberg fields that are specific to Stock Splits:

Calypso Field	Value	Bloomberg Field/Notes
Product	Security ID	
To product	Blank	Not applicable to Stock Split.
Model	TRANSFORMATION	N/A
SubType	SPLIT	N/A
Ratio From	The split ratio.	CP_TERMS is parsed to obtain these fields. E.g., a split could have the values **Ratio From** 2, **Ratio To** 3. A consolidation could be the reverse.
Ratio To		
Rounding	How share rounding is applied to this stock split.	CP_SHARE_FRACTIONAL. Rounding will have one of the following values: • Unknown • Cash in Lieu • Round Up • Round Down • Fractional Shares • Natural Rounding • Round to nearest half share • N.A.
Record Date	The date on which the company considers holders of the security as being entitled to the payout.	CP_RECORD_DT
Payment Date	Effective Date.	CP_PAYMENT_DT is not used here.
Ex-Date	Effective Date	If the Effective Date is N.A., then **ExDate** is blank.
Amount	Blank	
Other Amount	Blank	
Currency	Blank	
Comments	Free text	CP_NOTES. If N.A., then **Comments** is empty.
Record Date Inclusive	True	Always set to true.

11.4.4 Cash Dividend

[NOTE: The Effective Date for cash dividends is the Ex-Dividend date, i.e., the first date the security trades without entitlement to the current dividend.]

A Cash Dividend occurs when a company makes a cash distribution to shareholders. The following table the typical fields in a Cash Dividend:

Calypso Field	Value	Bloomberg Field/Notes
Product	Security ID	
To product	Blank	N/A
Model	CASH	
SubType	DIVIDEND	
Ratio From	Blank	Not applicable for Cash Dividends.
Ratio To	Blank	Not applicable for Cash Dividends.
Rounding	Blank	Not applicable for Cash Dividends.
Record Date	The date on which the company considers holders of the security as being entitled to the payout.	CP_RECORD_DT
Payment Date	Payment Date	CP_PAY_DT
Ex-Date	Effective Date	Blank if Effective Date is N.A.
Amount	The amount of the Cash Dividend.	CP_NET_AMT See **Currency** for processing notes.
Other Amount	Blank	Not applicable for Cash Dividends.
Currency	The currency of the dividend amount.	CP_DVD_CRNCY Note: When a currency received from Bloomberg ends in “p” (e.g., GBp), the amount is divided by 100.
Comment		CP_NOTES If N.A., then **Comments** is empty.
Record Date Inclusive	True	Always set to true.

Calypso Dividend Processing

When Calypso creates a CA record, a row in the Realized Income table on the Equity Window's Dividend tab is also created. The CA ID column in the Dividend row points back to the Corporate Action ID received from Bloomberg.

Dividend Attribute	Value
Declared Date	Identical to the Corporate Action.
Record Date	Identical to the Corporate Action.
Ex-Date	Identical to the Corporate Action.
Amount	Identical to the Corporate Action.
Adj. Amount	Blank
Type	Type of Dividend: • Regular • Special • Final • Interim
Franking %	CP_FRANKED_AMT Percentage of Franking Credit.
Dividend ID	Generated when you the dividend is applied.
CA ID	The CA ID.

11.4.5 Stock Dividend

A Stock Dividend occurs when a company makes a distribution of Stock to shareholders. The following table the typical fields in a Cash Dividend:

Calypso Field	Value	Bloomberg Field/Notes
Product	Security ID	
To product	Blank	N/A
Model	ACCRUAL	
SubType	STOCK_DIV	
Ratio From	100	Always 100.
Ratio To	n	CP_AMT

Calypso Field	Value	Bloomberg Field/Notes
		The number of shares distributed for each 100 shares held by the shareholder.
Rounding	Blank	Not applicable for Stock Dividends.
Record Date	The date on which the company considers holders of the security as being entitled to the payout.	CP_RECORD_DT
Payment Date	Payment Date	CP_PAY_DT
Ex-Date	Effective Date	Blank if the Effective Date is N.A.
Amount	The amount of the Cash Dividend.	CP_NET_AMT See Currency for processing notes.
Other Amount	Blank	Not applicable for Stock Dividends.
Currency	Blank	Not applicable for Stock Dividends.
Comment		CP_NOTES If N.A., then **Comments** is empty.
Record Date Inclusive	True	Always set to true.

11.4.6 Spin-off

A spin-off occurs when a company makes a proportionate free distribution of shares, in a unit or other company, to its current shareholders.

Calypso Field	Value	Bloomberg Field/Notes
Product	Security ID	
To product	Blank or Security ID	CP_TKR This field is used only if the spunoff Equity exists in the database with a TICKER_AND_EXCH_CODE identical to CP_TKR. If such a product does not exist, then the field is blank and the record is marked Deactivated.
Model	SPINOFF	
SubType	SPINOFF	
Ratio From	n	CP_TERMS is parsed to obtain these fields. E.g., a spinoff could have the values **Ratio From** 2,

Calypso Field	Value	Bloomberg Field/Notes
		Ratio To 3, meaning for every two shares of the **Product**, distribute 3 shares of the **To product**.
Ratio To	n	
Rounding	How share rounding is applied to this spinoff.	CP_SHARE_FRACTIONAL. Rounding will have one of the following values: • Unknown • Cash in Lieu • Round Up • Round Down • Fractional Shares • Natural Rounding • Round to nearest half share • N.A.
Record Date	The date on which the company considers holders of the security as being entitled to the payout.	CP_RECORD_DT
Payment Date	The Effective Date	CP_PAY_DT
Ex-Date	Effective Date	Blank if the Effective Date is N.A.
Amount	Blank	Not applicable for Stock Dividends.
Other Amount	Blank	Not applicable for Stock Dividends.
Currency	Blank	Not applicable for Stock Dividends.
Comment		CP_NOTES If N.A., then **Comments** is empty.
Record Date Inclusive	True	Always set to true.

Calypso Spinoff Processing

A spun-off Equity must exist in the Calypso database for processing to occur on the Ex-Date. The client must add the Equity manually at any time until midnight on Ex-Date - 1 for automatic processing CA to occur.

Workflow for a Spin-Off

Follow normal CA processing. If the Process Date is GE to the Ex-Date and it is an update, then do not apply.

Look up the Spun off stock by CP_TKR. If it does not exist, then add the CA in a Deactivated state and without a To Product. If the Spun off stock exists, then add the CA in a “Activated” state with a To Product.

Ensure the Comment field holds Spinoff Fields using formatting for “Informational” CA's.

Example

- Jan-01-2010: The Spinoff is announced. The Spun-Off stock is not in Calypso database. Calypso add the Spin-off CA record to the database in the Deactivated state.
- Jan-02-2019: The Client manually adds the Stock and activates the Spin-Off.
- Jan-04-2010: A Spinoff update is received. The Spinoff is updated and the corporate action remains activated because the Spun off product exists.

When a Spin-off for an unknown product occurs, Bloomberg Connect generates an exception to the Task station stating:

```
"Spinoff: Spun off Stock does not exist in Calypso for ID <BBG ID>, Stock
<Ticker to Stock> , Ex-Date <Eff Date>, Spun off Stock <CP_TKR>. Please add this stock and activate CA.
```

11.4.7 Merger

A merger is an agreement between two or more companies to merge together and form one entity (company).

Calypso Field	Value	Bloomberg Field/Notes
Product	Security ID	
To product	Blank	
Model	MERGER	
SubType	MERGER	
Ratio From Ratio To	n n	CP_TERMS is parsed to obtain these fields. E.g., a merger could have the values **Ratio From** 2, **Ratio To** 3, meaning for every two shares of the Product, distribute 3 shares of the surviving company.
Rounding	How share rounding is applied to this spinoff.	CP_SHARE_FRACTIONAL. Rounding will have one of the following values: • Unknown • Cash in Lieu • Round Up • Round Down • Fractional Shares • Natural Rounding • Round to nearest half share

Calypso Field	Value	Bloomberg Field/Notes
		• N.A.
Record Date	The date on which the company considers holders of the security as being entitled to the payout.	CP_RECORD_DT
Payment Date	The Effective Date	CP_PAY_DT
Ex-Date	Effective Date	Blank if the Effective Date is N.A.
Amount	Blank	Not applicable for Stock Dividends.
Other Amount	Blank	Not applicable for Stock Dividends.
Currency	Blank	Not applicable for Stock Dividends.
Comment		CP_NOTES If N.A., then **Comments** is empty.
Record Date Inclusive	True	Always set to true.

Processing Mergers

A Merger can be of the form:

- Company A merges with Company B to be Company C.
- Company A and Company B merges to be Company C.

It is assumed that when two Companies become a third company, Bloomberg will send two merger notifications, one for each company.

Because a new company would not be in the database, it must be manually added.

Merger Workflow

The following Workflow requires the client to create the Merger stock.

- Follow normal CA processing. If the Process Date >= Ex-Date and it is an update then do not apply.
- Add the CA in a Deactivated state and without a To Product. Bloomberg Connect sends an exception should be sent to the Task station stating:

```
"Merger: Merger requires adding Merged stock for Calypso for ID <BBG ID>, Stock <Ticker to Stock> , Ex-Date <Eff Date>, CA ID <Calypso CAID>. Please add this stock and activate CA.
```

12 Bloomberg Trade Integration

Bloomberg Trade integration retrieves the trades through a TCP/IP stream coming from the Bloomberg Mainframes to a server located at each client site. It uses the TCP/IP stream to check for ACKs and NAKs, to ensure that the information made it safely to Calypso. The Gateway uses TCP/IP to connect to one or more servers as a client.

Calypso supports Bonds Buy/Sell (Trader Ticket *Journal tickets are not supported).

12.1 Setup

12.1.1 Starting the Import Message Engine

You need to add the Bloomberg Import Message engine to the Engine Manager in Web Admin if not already available.

Create a new engine called BBGTradeImportMessageEngine with class `com.calypso.engine.advice.ImportMessageEngine`.

The "config" engine parameter is config = BloombergTrade

The BloombergTrade configuration retrieves information from the "`calypso_bloombergtrade_config.properties`" property file. Its content is described below. The Import Message engine MUST be configured with that configuration.

The Bloomberg Trade Import Message engine can be started from the Engine Manager in Web Admin.

▶ Please refer to Calypso Web Admin documentation for complete details.

12.1.2 Setting Bloomberg Properties

The following variables are specified in the "`calypso_bloombergtrade_config.properties`" file located in "`<calypso home>/client/resources`":

- IS_USING_HEADER = False — Default. There is no header.
- IS_USING_TRAILER = False — Default. There is no trailer.
- IS_EXPECTING_ACK = True — Acknowledge the Bloomberg trade only if it has been successfully processed in Calypso. If not acknowledged, the Bloomberg trade is re-delivered.
- SAVE_TRADE_IN_FILE_PATH = /home/calypsodev/tmp_dir/.../BloombergTrades.txt
- Specifies the file where Bloomberg trades are saved. The file is reset when the Import Message engine is restarted.
- PORT = XXXX
- Replace XXXX with the TCP/IP port to listen on and receive the Bloomberg trade. Mandatory.
- FIELD_DEFINITION_PATH = `/home/calypsodev/tmp_dir/…/`BloombergTradeFields`.txt`
- A Bloomberg file containing all the fields that will be transmitted by the Bloomberg Trade feed. Mandatory.

Copy the file "<calypso home>/client/resources/calypso_bloombergtrade_config.properties" to "<calypso home>/ tools/calypso-templates/resources".

You will then need to deploy the files to your applications servers.

▶ Please refer to the Calypso Installation Guide for details.

Set the following environment properties as applicable using the User Env application:

- BLOOMBERG_DUMMY_BONDCUSIP=BLOOMBERG
- Identifies the default bond product to use if the product cannot be found via CUSIP, ISIN, or BB (Bloomberg Unique Identifier). If not specified, and a product cannot be identified, an exception is thrown and the Bloomberg trade is not processed. Mandatory.
- BLOOMBERG_DUMMY_CPTY=BLOOMBERG
- Identifies the default counterparty for the Calypso trade. If not specified, and a counterparty cannot be identified, an exception is thrown and the Bloomberg trade is not processed. Mandatory.
- BLOOMBERG_DUMMY_BOOK=BLOOMBERG
- Identifies the default book for the Calypso trade. If not specified, and a book cannot be identified, an exception is thrown and the Bloomberg trade is not processed. Mandatory.

12.1.3 Defining Trade Keywords

Trade Keywords are the defaults that map to Bloomberg Fields obtained from Bloomberg Trade file. Users modify the Trade Keywords as desired using SQL.

Define the following Trade Keywords:

Trade Keyword	Description
BB_ACCRUAL	Bloomberg accrual amount
BB_BONDFACTOR	
BB_COUPON	
BB_PRINCIPAL_AMOUNT	Bloomberg nominal amount
BB_RECORD_TYPE	Identifies the type of transaction (see below)
BB_SEC_IDENTIFIER	Identifies the security code
BB_SEC_IDENTIFIER_FLAG	Identifies the security code type (see below)
BB_TRANSACTION	Bloomberg ticket number
BB_TRANSACTION_ORIGIN	Bloomberg original ticket number
BB_YIELD	Bloomberg Trade yield amount

Trade Keyword	Description
tradeScheme	Identifies the front office system (in this case Bloomberg)

12.1.4 Record Types

Supported Record Types:

Number	Record Type	Description
2	TT	Trader ticket/portfolio allocation from block transaction
6	CTT	Corrected trader ticket
102	XTT	Cancelled trader ticket
202	PCT	Past Date Corrected Trade ticket (to be delivered in patch 09)
302	PXT	Past Date Cancelled Trade Ticket (to be delivered in patch 09)

Identifier Flags

ID	Description
-1	SEC ID NOT AVAILABLE
0	UNKNOWN or USER DEFINED
1	CUSIP WITH CHECK DIGIT **
2	SEDOL2
3	CEDEL
4	AIBD
5	EURO CLEAR NUMBER
6	WPK
7	RGA
8	ISIN
9	EUROCLEAR/CEDEL COMMON CODE
10	VALOREN

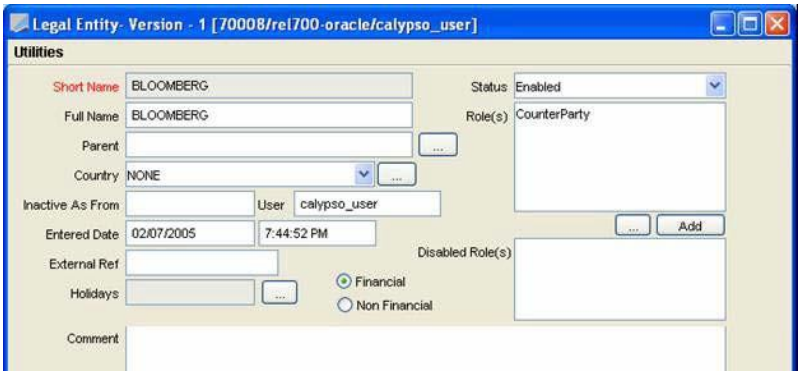
ID	Description
11	BELGIAN
12	DUTCH
13	DANISH
14	AUSTRIAN
15	LUXEMBOURG
16	MISC. DOMESTIC
17	NORWAY
18	JAPAN
19	SPAIN
20	ITALY
21	SWEDEN
22	JAPANESE COMPANY NUMBER
23	FRENCH
24	CINS
25	SEDOL1
26	SINGAPORE
27	BELGIAN LOAN
28	U.K. EPIC
29	HONG KONG
30	BLOOMBERG IDENTIFIER

12.1.5 Mapping Counterparties

Define a Default Counterparty

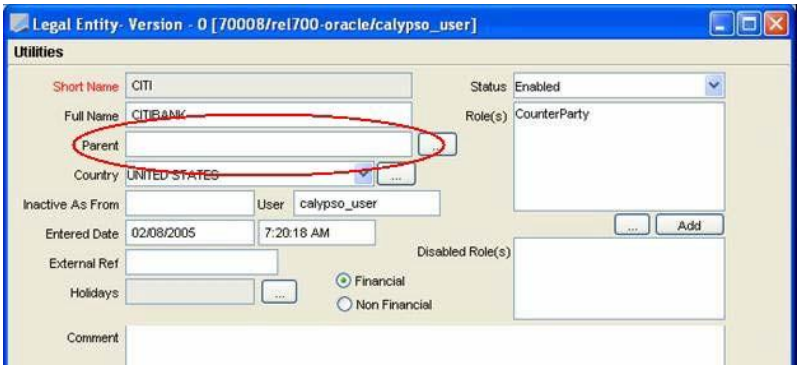
The default counterparty is normally automatically created by the database script.

Define a Default Legal Entity with the role, Counterparty, to use when a match is not found between Bloomberg and Calypso.



To establish a mapping on the counterparty, Calypso first attempts to match the **Bloomberg Broker** to the Calypso Legal Entity using the **short name**.

Mapping the Counterparty using the Legal Entity Short Name



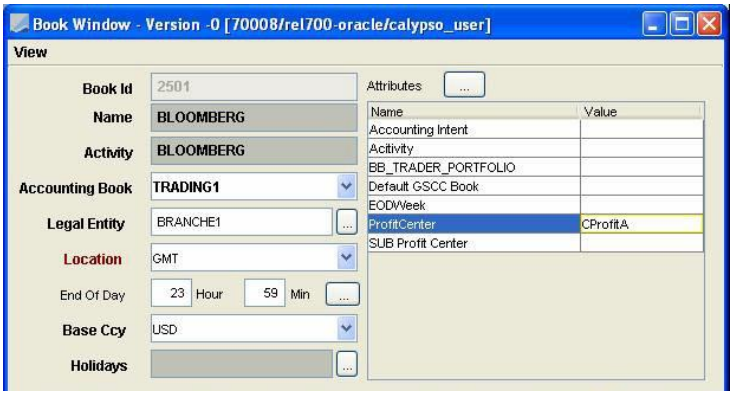
Mapping Counterparties Using the BB_ACCOUNT_SHORT_NAME Legal Entity Attribute

Alternatively, the mapping can be done by populating the Calypso **Legal Entity Attribute** with the corresponding **Account** short name from Bloomberg.

12.1.6 Mapping the Book

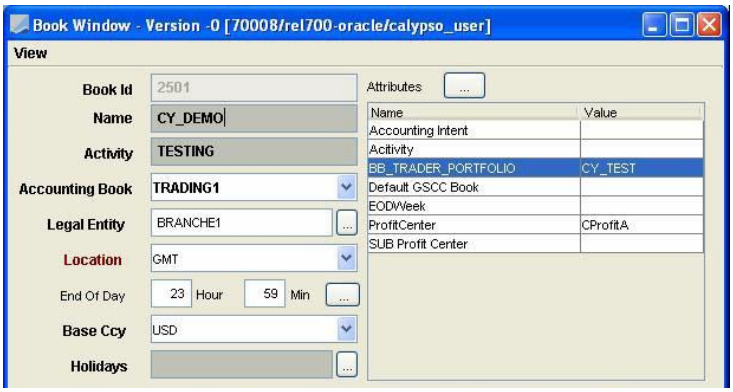
Defining the Default Book

The Default Book is used when a matching book is not found between Bloomberg and Calypso.



Mapping the Book Using the Book Name

To establish a Book mapping, Calypso first attempts to map the Bloomberg Trader Portfolio to the Calypso Short Name:

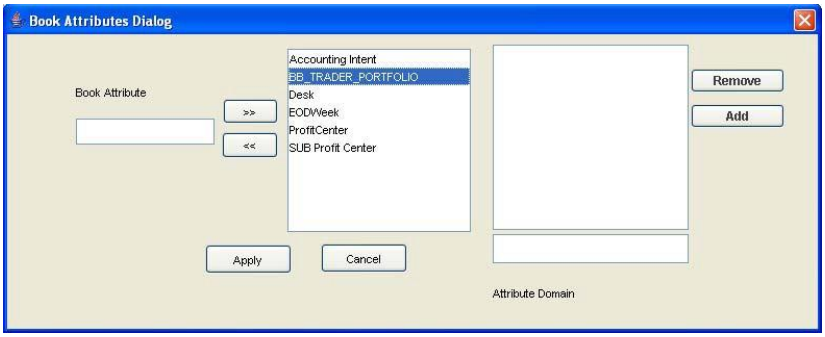


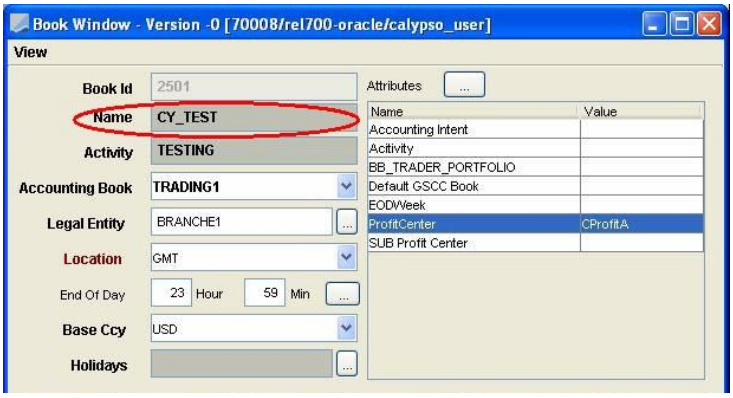
Mapping the Book Using a Book Attribute: BB_TRADER_PORTFOLIO

Alternatively, you can define a new Book attribute type BB_TRADER_PORTFOLIO.

This attribute can be used to map the value in Bloomberg to a book in Calypso.

If a mapping is not found, the system uses the default specified in the properties:

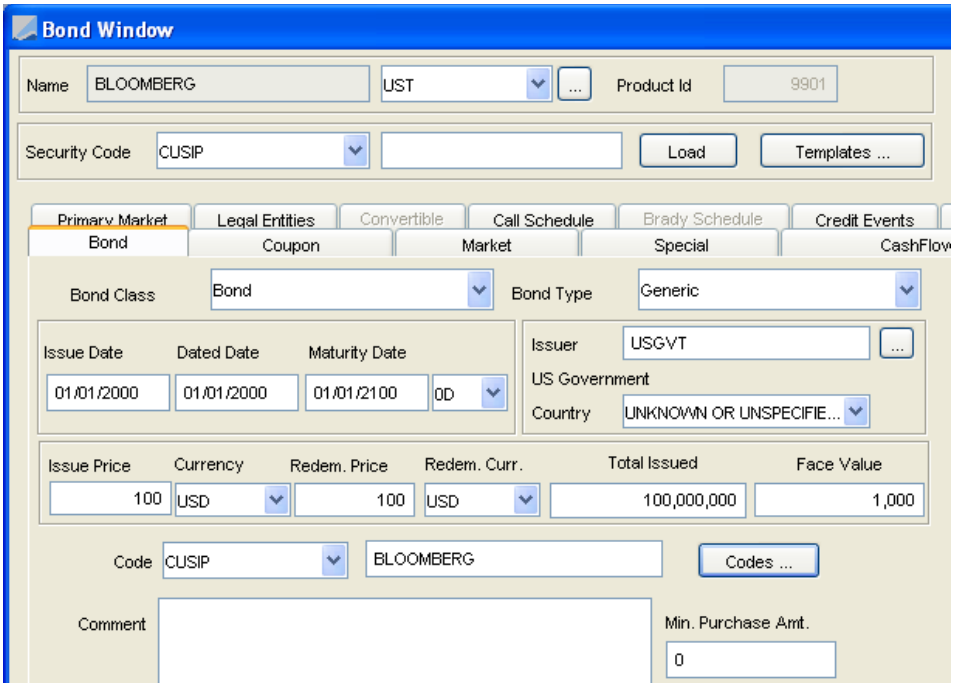


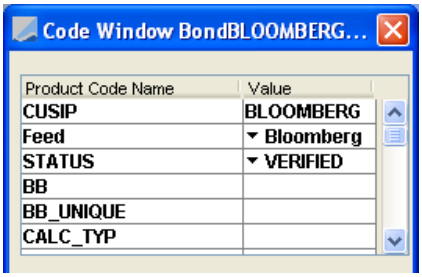


12.1.7 Create Default Values

Create a dummy bond as defined in the BLOOMBERG_DUMMY_BONDCUSIP property.

The dummy bond is used when the security code provided by Bloomberg is not found in the Calypso s (i.e., CUSIP, ISIN, BB_UNIQUE):





12.1.8 Trade Workflow

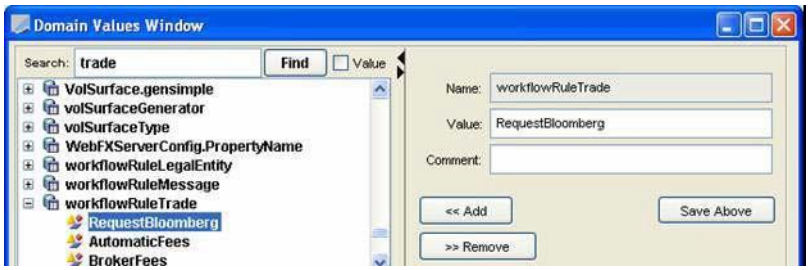
The “RequestBloomberg” rule sends a security creation request directly to the DataLicense.

If the Security Code on the trade equals the code defined in the Calypso BLOOMBERG_DUMMY_BONDCUSIP environment variable, a request is sent to the DataLicense for the “real” security. The real security is identified by trade keywords specified by the user. By default, they are BB_SEC_IDENTIFIER and BB_SEC_IDENTIFIER_FLAG.

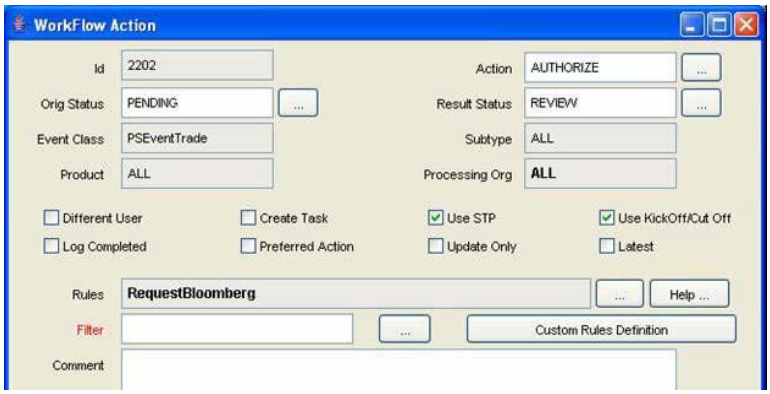
Upon reception of the .out file from the DataLicense the security is created.

The dummy bond used to save the trade is then replaced by the newly created bond.

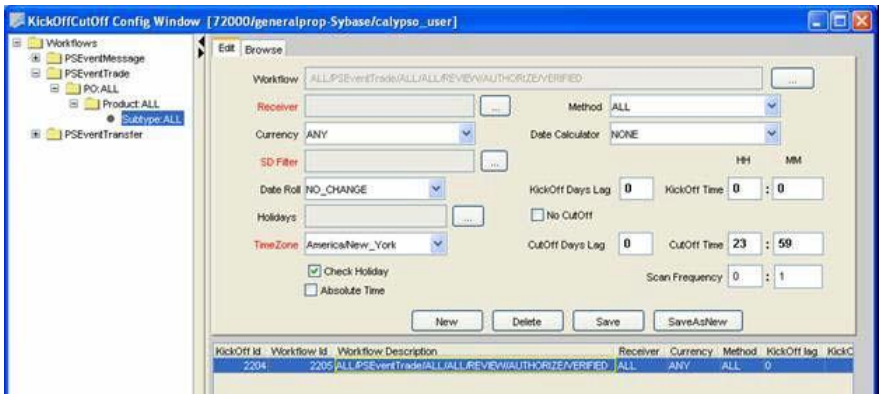
» Add the RequestBloomberg rule to the “workflowRuleTrade” domain:



» Add the rule RequestBloomberg to your trade workflow, i.e.:



» Add the Kickoff so that rule RequestBloomberg is scanned every 1 minute. When adding a Kickoff (use kickoff/cut off) to the Pending\Authorize\Review Transition, you must also add the CheckKickOff trade rule.



» Configuring the Task Station

Add the following exception types to the domain “exceptionType”:

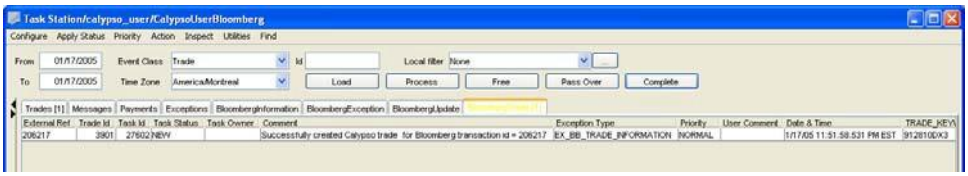
- BB_TRADE_EXCEPTION
- BB_TRADE_INFORMATION

Configure the Task Station accordingly:

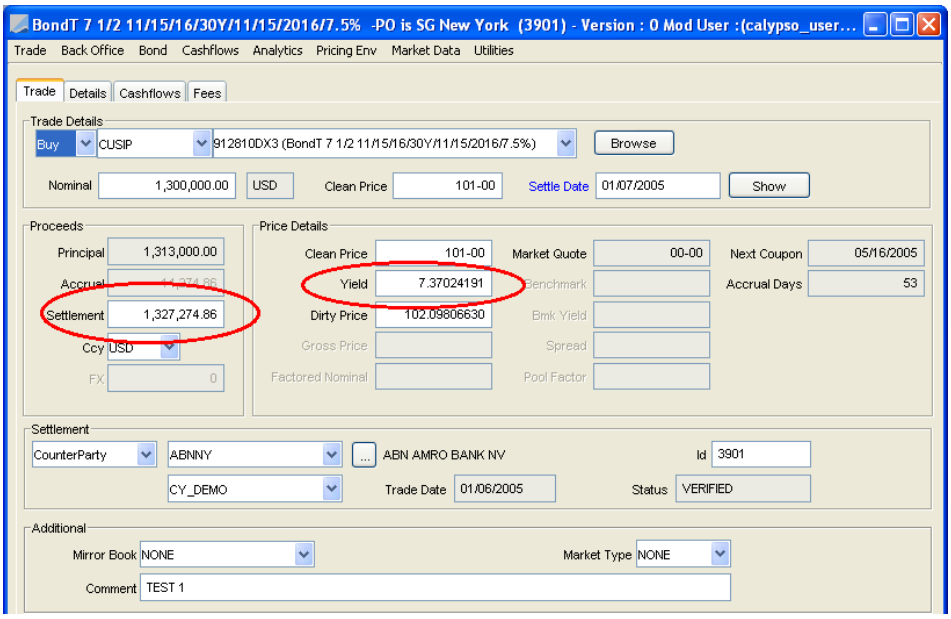
12.2 Example — New Trade: US Treasury Note

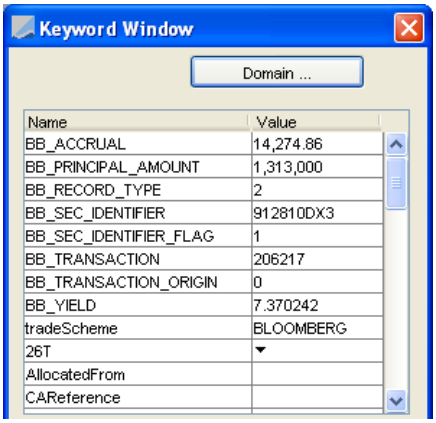
Trade:

- BUY
- TRADE DATE = 20050106
- SETTLE DATE = 20050107
- PRICE = 101
- CTP = ABN AMRO
- BB BOOK = CY_TEST
- CUSIP = 912810DX3 T 7 1/2 11/15/16

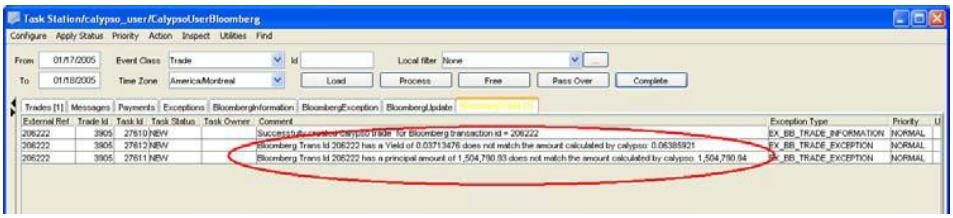


No exceptions were generated for this trade which means that the Settlement Amounts and the Yield comparison between Bloomberg and Calypso matched.





If a mismatch is found on a received trade's Settlement Amount or Yield, the following exception messages are displayed on the Task Station:



13 Bloomberg/Calypso Data Mapping Reference

Use the tables in this section as a reference while you setup the Bloomberg/Calypso mapping for Bond products.

13.1 Bond Tab

The **Exception** column provides the behavior when the Bloomberg value is missing.

The **Default** column provides the default value if the Bloomberg value is missing.

For all these fields, on the creation of the security, an exception is created if the column is not in the .out file, the template value will therefore be used (this should never happen though).

When modifying an existing security, no exception is generated if a column is missing.

Calypso Field	Exception if Empty?	Default Value	Bloomberg Fields
_amortSchedule	No	N.A.	SINK_SCHEDULE, FACTOR_SCHEDULE
_couponSchedule	No	N.A.	STEPUP_CPN, STEPUP_CPN_SCHEDULE, STEPUP_DT, MULTI_CPN_SCHEDULE
_poolFactorSchedule	No	N.A.	FLOATER_ACC_SCHEDULE, MTG_HIST_FACT
_schedule	No	N.A.	PUT_SCHEDULE, CALL_SCHEDULE
_accrualDaycount	Yes	ACT/360	DAY_CNT
_announceDate	No	N.A.	ANNOUNCE_DT
_ask	No	N.A.	QUOTE_ASK, PX_ASK, QUOTE_PRIOR_ASK
_bid	No	N.A.	PX_BID, QUOTE_PRIOR_BID, QUOTE_BID
_callDate	No	N.A.	CALLED_DT
_capStrike	No	N.A.	CPN_CAP, MTG_LIFE_CAP
_close	No	N.A.	QUOTE_PRIOR_MID, MTG_PREPAY_SPEED, QUOTE_MID, PX_LAST
_collateralType	No	N.A.	COLLAT_TYP, INDUSTRY_GROUP
_comment	No	N.A.	DES_NOTES

Calypso Field	Exception if Empty?	Default Value	Bloomberg Fields
_compoundFrequency	No	None	CMPD_FREQ_CNV_YLD, REFIX_FREQ
_compoundMethod	No	NoCompound	CMPD_FREQ_CNV_YLD
_country	Yes	No	COUNTRY_ISO, CNTRY_ISSUE_ISO
_coupon	No	N.A.	CPN
_couponCurrency	No	CRNCY Column	CPN_CRNCY
_couponFrequency	If no ZC, only	SA	CPN_FREQ
_couponOffset	No	N.A.	MTG_PAY_DELAY
_couponPeriodRule	Yes	UNADJUSTED	FLT_CPN_CONVENTION, DAY_CNT
_currency	No	N.A.	CRNCY
_date	No	N.A.	LAST_UPDATE_DT, PX_DT_1D
_datedDate	No	ISSUE_DT Column if INT_ACC_DT Empty	INT_ACC_DT, ISSUE_DT
_dateRoll	Yes	FOLLOWING	DAY_CNT
_daycount	Yes	ACT/360	DAY_CNT
_exdividendDays	Only for Non Mtge	0	EX_DIV_DAYS
_faceValue	(second column must stay empty)	1000	PAR_AMT
_firstCouponDate	No	N.A.	FIRST_CPN_DT
_floaterB	No	N.A.	MTG_LIFE_FLOOR, CPN_CAP, MTG_LIFE_CAP, CPN_FLOOR
_floorStrike	No	N.A.	MTG_LIFE_FLOOR, CPN_FLOOR

Calypso Field	Exception if Empty?	Default Value	Bloomberg Fields
_holidays	Yes	Currency Holidays	CALENDAR_CODE
_issueDate	No	N.A.	ISSUE_DT
_issuePrice	Yes	100	ISSUE_PX
_issuerId	Yes	BLOOMBERG	ISSUER
_maturityDate	No	N.A.	MATURITY
_maturityTenor	No	N.A.	MATURITY, ISSUE_DATE
_minPurchaseAmt	No	N.A.	MIN_INCREMENT
_name	No	N.A.	TICKER, SECURITY_DES
_optionType	No	N.A.	MTG_LIFE_FLOOR, CPN_CAP, MTG_LIFE_CAP, CPN_FLOOR
_penultimateCouponDate	No	N.A.	PENULTIMATE_CPN_DT
_poolFactorType	No	N.A.	SECURITY_TYP2
_quoteType	No	N.A.	PX_DIRTY_CLEAN, QUOTE_TYP
_rateIndex	No	N.A.	RESET_IDX
_rateIndexSpread	No	N.A.	FLT_SPREAD
_redemCurrency	No	CRNCY Column	REDEMP_CRNCY
_redemptionPrice	Yes	100	REDEMP_VAL
_rollingDay	No	N.A.	MTG_ACC_RT_START_DT, CPN_ASOF_DT, DAY_CNT
_tickSize	Yes	100	QT_SPEC
_totalIssued	Yes	1000000	MUNI_ISSUE_SIZE, AMT_ISSUED, MUNI_MTY_SIZE, PAR_AMT
_withholdingTax	No	0	WITHHOLDING_TAX
_yieldMethod	Yes	ISMA	DAY_CNT, MTG_PREPAY_TYP

Calypso Field	Exception if Empty?	Default Value	Bloomberg Fields
CODE#BB_UNIQUE	No	N.A.	ID_BB_UNIQUE
CODE#CUSIP	No	N.A.	ID_CUSIP
CODE#ISIN	No	N.A.	ID_ISIN
CODE#DTC	No	N.A.	DTC_ELIGIBLE

Bond Class and Subtype

The basic information is contained in the following fields, however additional logic is required as the mapping may differ by bond market sector. The mapping is therefore not 1:1.

Calypso Field	Bloomberg Field	Comments
Issue Date	ISSUE_DT	
Dated Date	SETTLE_DT	
Maturity Date	MATURITY	
Issuer	Issuer	The issuer information is created or mapped using the <NAME> or <TICKER>.
Country	CNTRY_ISSUE_ISO	This is the Standard ISO codification on two characters. Map the two ISO characters against the Calypso country name. **[NOTE: BLOOMBERG uses non-standard ISO codes (i.e., SNAT).]** Define ZZ code in the Bond Template UNKNOWN OR UNSPECIFIED COUNTRY.
Issue Price	ISSUE_PX	
Currency	CRNCY	
Redem. Price	REDEMP_VAL	
Redem Curr	REDEMP_CRNCY	RULE if no values are provided use CRNCY.
Total Issued	AMT_ISSUED	RULE For Govt and Corp only.
	MUNI_MTY_SIZE	RULE For Muni type only.

Calypso Field	Bloomberg Field	Comments
Face Value	PAR_AMT	RULE Override this value and replacing it by '1'. Allow a parameter to override the value provided by this field and to change it to 1.
Codes	TICKER	See Bloomberg Mapping values for all sec codes.
	ID_ISIN	See Bloomberg Mapping values for all sec codes.
	ID_CUSIP	See Bloomberg Mapping values for all sec codes.
	ID_BB	See Bloomberg Mapping values for all sec codes.
Min Purchase Amount	MIN_INCREMENT For mtg: MTG_MIN_ACREMENT	This value is not currently used on the Bond Definition window but internal rules could be developed on the Trade window.

13.2 Coupon Panel

Coupon Data

Calypso Field	Bloomberg Field	Comments
Fixed Rate	CPN_TYPE	FIXED: FIXED, FIXED, OID, ZERO COUPON, NONE. FLOATING: ADJUSTABLE, DEFAULTED, FLOATING INTER APPRECI, STEP CPN, VARIABLE.
Floating Rate		
Rate	CPN	
Daycount	DAY_CNT_DES	RULE
Ccy	CPN_CRNCY	RULE if no values are provided use CRNCY.
Holidays	CALENDAR_CODE Corp Bonds MARKET_SECTOR_DESC=Corp FLT_PAY_FLOAT_CALENDAR Mortgage Backed Bonds MARKET_SECTOR_DESC=Mtge	Mapping If unmapped, will populate based on the combination of the holiday calendars from the Currency Default and Country Code.

Calypso Field	Bloomberg Field	Comments
	MTG_CALENDAR_CODE	
Roll Date		No mapping field in Bloomberg. No Default Value.
Payment Lag		Mapping
Payment Rule		RULE
Date Roll		RULE
Frequency	CPN_FREQ	RULE If ZERO_CPN = Y Then Frequency ZC Else FREQUENCY CPN_FREQ ANNUAL 1 SEMI_ANNUAL 2 QUARTERLY 4 BMONTHLY 6 mapping 12
Coupon Digits	5	No mapping field in Bloomberg. Set Parameter.
Acc Daycount		RULE
Stub Start	FIRST_CPN_DT	
Stub End		No mapping field in Bloomberg.
Reset Frequency		No mapping field in Bloomberg.
Reset Holidays	Corp Bonds MARKET_SECTOR_DESC=Corp FLT_REFIX_HOLIDAY_CDR Mortgage Backed Bonds MARKET_SECTOR_DESC=Mtge RATEDET_CALENDAR	If unmapped, will populate based on Rate Index Definition Reset Hol field.

13.3 Market Panel

Calypso Field	Bloomberg Field	Comments
Settle Days		template
Accrual Days	3	template
Ex-Dividend	0	
Bus		
Accrual Dig.	8	template
Nearest, UP, Down	Nearest	template
Price Dec	8	template
Yield Dec.	8	template
Announce Date	ANNOUNCE_DT	
Auction Date		No mapping field in Bloomberg.
Default Date		No mapping field in Bloomberg.
Tick Size	QT_SPEC	Ensure all the required values are defined in Domain Value > Tick Size • 8 • 16 • 32 • 64 • 100 • 128 • 200 • 256 • 512
Yield Method		ISMA MM_ACT360 MM_ACT365 USSSTREET PSA CPR
Quote type		QUOTE_TYP2Discount Quoted QUOTE_TYP1Price Quoted QUOTE_TYP3Yield Quoted
Withholding Tax	WITHHOLDING_TAX	
Issue Paying Agent		No mapping field in Bloomberg.

Calypso Field	Bloomberg Field	Comments
Calculator Agent		No mapping field in Bloomberg.
Trustee		No mapping field in Bloomberg.
Benchmark		No mapping field in Bloomberg.
Commission Paid		No mapping field in Bloomberg.

13.3.1 ABS Panel

Calypso Field	Bloomberg Field	Comments
Coupon	MTG_HIST_CPN	

For Mortgage Backed Securities, Bloomberg has the following codes:

- MTG_PREPAY_TYP — Prepayment Type Values = ABS PSA CPR CPJ CPY BAM
- MPR — Monthly Payment Rate. Principal plus finance charges plus fees collected divided by the current month's beginning pool principal balance. Applies to Credit card securities.
- CPJ — "CPJ" is Bloomberg's prepayment rate notation which is exactly like CPR, except that it also incorporates DLJ's Project Loan Default (PLD) model for involuntary prepayments — similar to defaults with 100% recovery. This concept is most commonly used within CMBS (Commercial MBS) structures.

  For example, 10 CPJ is 10% CPR for voluntary prepayments plus 100% of the base PLD curve rate for involuntary prepayments.
- CPY — "CPY" is Bloomberg's prepayment rate notation which is exactly like CPR, except that prepayments are assumed to be 0% until the expiration of yield maintenance provisions. This concept is most commonly used within CMBS (Commercial MBS) structures. For example, 10 CPY is 0% CPR followed by 10%.
- ABS — ABS (Absolute Prepayment Rate). The standard measure of prepayments for automobile loan backed securities. ABS calculates prepayments as the percent of original dollar balance of receivables.
- BAM — "BAM" is Bloomberg Agency Model. This model projects the prepayment behavior of loans backing agency pools. The model uses "base" models for the most common types of loans and sub types of the "base" model for smaller loan programs. The model produces a vector of prepayment rates (CPRs SMMs) based on collateral characteristics and market environment. BAM is commonly used for agency Pools and CMOs.

13.3.2 Equity Mapping

Bloomberg Field	Calypso Value
NAME	Corporate Name
CNTRY_ISSUE_ISO	Country
ISSUER	ISSUER

Bloomberg Field	Calypso Value
INDUSTRY_SECTOR	Issuer LE INDUSTRY attribute
CRNCY	Currency and Quote Type
CPN_CRNCY	
REDEMP_CRNCY	
ID_MIC_PRIM_EXCH	Exchange
EQY_PRIM_EXCH_SHRT	
EXCH_CODE	
EQY_SH_OUT_ACTUAL	Total Issued
TOT_SHRHLDR_EQY	
DVD_CRNCY	Dividend currency
EQY_DVD_SH_LAST	Dividend amount
EQY_DVD_FREQ	Dividend Frequency
DVD_DECLARED_DT	Dividend Declared Date
DVD_RECORD_DT	Dividend Record Date
DVD_PAY_DT	Dividend Payment Date
DVD_EX_DT	Dividend Ex Date
DES_NOTES	Comment
PX_TRADE_LOT_SIZE	Trading Size
SECURITY_TYP2	Sub Type
QT_SPEC	_tickSize
QUOTE_ASK	Ask Quote
QUOTE_BID	Bid Quote
PX_OPEN	Open Quote
PX_LOW	Low Quote

Bloomberg Field	Calypso Value
PX_HIGH	High Quote
PX_LAST	Last Quote
PRIOR_CLOSE_MID	Close Quote