



# Nasdaq Calypso

## Bloomberg SEF Interface Integration Guide

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Approved

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## Document History

Revision	Published	Summary of Changes
1.0	May 2016	First edition for version 1.5.0.
2.0	March 2017	Second edition – Updated supported details.

**This document describes how to integrate Calypso with Bloomberg-SEF Interface.**

**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.

**NOTE:** The Bloomberg-SEF interface is distributed as part of the Bloomberg-FIT module, which may support other Bloomberg interfaces that must be licensed separately.

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

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# Introduction

The Bloomberg-SEF interface allows an End User Firm (Buy-Side) to import trades which have been booked through the Bloomberg Terminal using Bloomberg's SEF workflow.

The Calypso Bloomberg-SEF integration connects to Bloomberg using a FIX interface. Once the connectivity is setup, a trader can book a trade through the Bloomberg Terminal, and Bloomberg will send that as a FIX message to the Calypso Bloomberg interface. The message will then flow through the configured Calypso workflows which route the message through the appropriate stages to create a Calypso trade. Additional clearing lifecycle messages will also be sent over the FIX connection, and the appropriate lifecycle actions will be applied to the Calypso trade.

This document describes the configuration required to setup the workflows, etc. for the Bloomberg-SEF interface to run successfully.

## 1.1 Supported Features

### *FIX Sessions*

Calypso's Bloomberg-SEF integration supports following fix sessions:

- Single Asset Protocol
- Multi Asset Protocol (MAP)

### *Workflows*

Calypso's Bloomberg-SEF Order integration supports trade messages for the following Clearing workflows:

- Pre-Allocation
- Bunched Order

### *Product Types*

The Bloomberg-SEF interface supports the following Bloomberg trade types:

- IR (Vanilla, IMM, OIS, Basis). These are all captured in Calypso as IRS trades.
- Derivatives (CDSIndex)
- Fixed Income Trade (Bond)

### *FIX Messages*

The interface supports the following Bloomberg messages for the Clearing workflow (i.e. these message types can be consumed by Calypso):

- Execution Report (Trade): Once the trade is executed within the Bloomberg Terminal and the Dealer accepts, Bloomberg will send a message over the FIX interface. A Bilateral trade will be created in Calypso to represent the trade between the two parties (Dealer vs. Buy-Side), with the Calypso user's party as the PO.
- Execution Report (Cleared): When the CCP confirms the trade has been cleared, Bloomberg will send an additional FIX execution message. Within Calypso, the original Bilateral trade will be Novated to the CCP as counterparty. The Bilateral will be terminated and a new Cleared trade created.
- Execution Report (Rejected): If the CCP rejects the trade for any reason, the Bilateral trade will be cancelled.
- Allocation Report: If the trade is allocated, Bloomberg will send a FIX confirmation message. Within Calypso, the original block trade will be an allocated and its respective allocated fund trade will be created.

## 1.2 Not Supported

### *Workflows*

- Bilateral

# Setup

For setup and configuration related information such as legal entities, booking mapping, and engine configuration, please refer to Calypso Bloomberg-FIT Integration Guide (Generic).

## 2.1 Book Mapping

When importing product-based trade types into Calypso, mappings must be setup so that the Bloomberg interface can match the incoming product details to objects contained within the client’s instance of Calypso. The sections below outline the various mappings required for the different trade types supported by the Bloomberg interface.

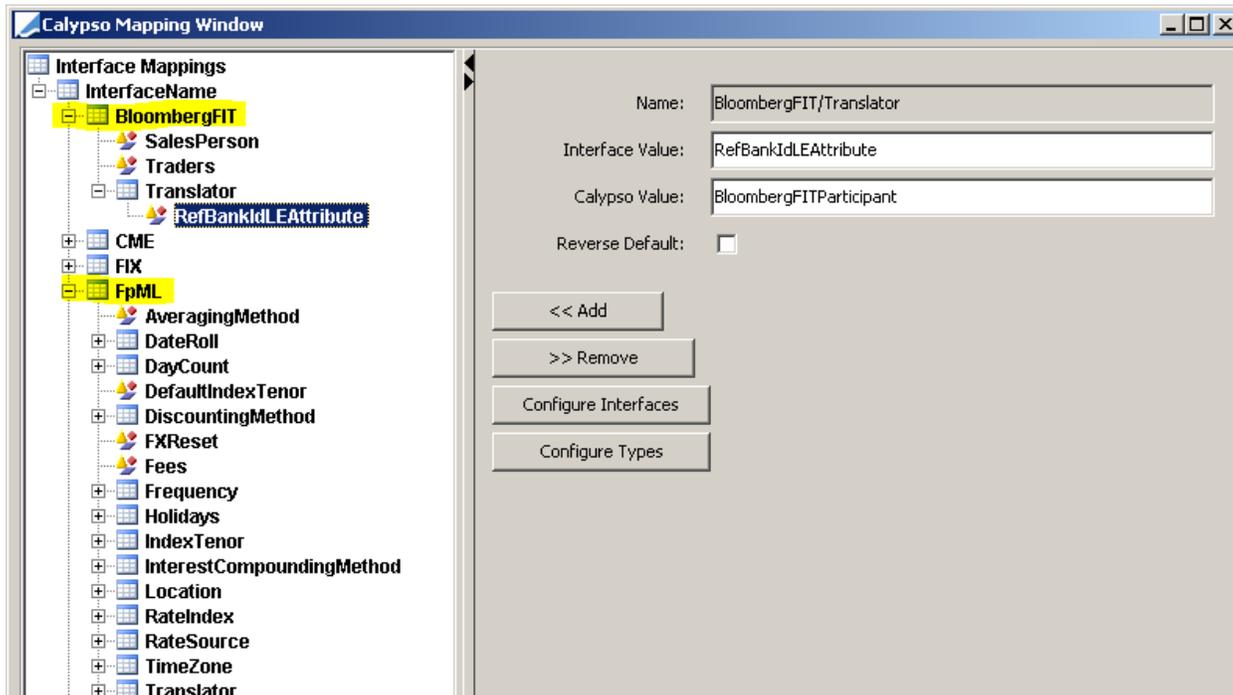
## 2.2 Calypso Mapping Window

▶ Please refer to the Calypso Data Uploader Integration Guide on how to add the Calypso Mapping Window to your Calypso Navigator.

The Calypso Mapping Window is required to map the Bloomberg values used in the incoming messages to the Calypso values.

The Bloomberg interface uses the DataUploader FpML framework; therefore most of the mapping can be done under the ‘FpML’ mapping interface, which allows it to be shared across other interfaces that make use of the FpML framework.

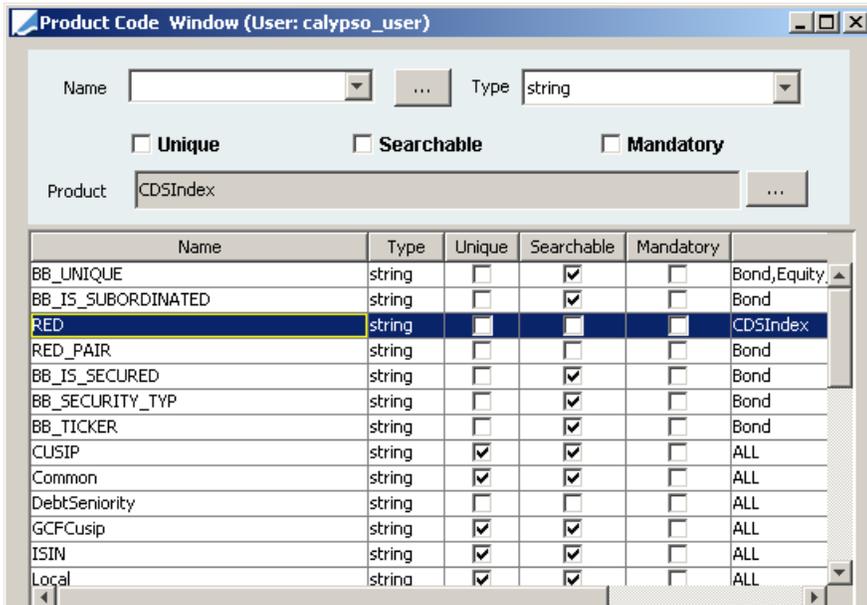
Some standard mappings are already provided for you out-of-the-box, such as DayCount and Frequency.



## 2.3 CDS Index Mapping

When importing CDS Index trades, the BloombergFIT module needs a way to map the incoming CDS Index key with the corresponding CDS Index Definition in Calypso. To accomplish this, it uses the Product Code in Calypso.

The BloombergFIT module is able to map the incoming index to the Calypso index using the 'RED' code. Please ensure that this code is setup as a valid Product Code type for CDSIndex using the Product Code window under Configuration > Product > Code.



Then for each index you intend to receive messages for, you will need to populate the 'RED' Product Code value. Below is a screenshot of the code being set on a fictitious index called 'ICE Index EM 14V1-5Y'.

The screenshot shows a window titled "ID:12800 Desc:ICE Index EM 14V1-5Y.Dec.2015 (User: calypso\_user)". The "Name" field is "ICE Index EM 14V1-5Y". The "Series" dropdown is set to "RED". The "SecCode" field is "2I65BZAN2". Other fields include "Issuer: GOVT. OF USA", "Reference Portfolio: TestBasket", "Notional: 25,000,000", "Current Factor: 1.00000", "Quote Type: Spread", "Start Date: 09/20/2010", "Maturity Date: 12/20/2015", "5Y", "Annex Date", "USD", "Fixed", "0.000000", "bp", "Pmt: QTR", "FOLLOWING", "R Day", "30/360", "NYC", "Credit Event: BANKRUPTCY,FAILURE TO PAY,RESTRUCTURING", "Settlement: CASH", "NO\_ACCRUAL", "Status: ENABLED", "Settlement Lag: 1 Bus", "Settle Fee Offset: 3 Bus", "Maturity Date Inclusive", "Default Event Settle Lag: 30 Cal". A red oval highlights the "RED" dropdown and the "2I65BZAN2" text.

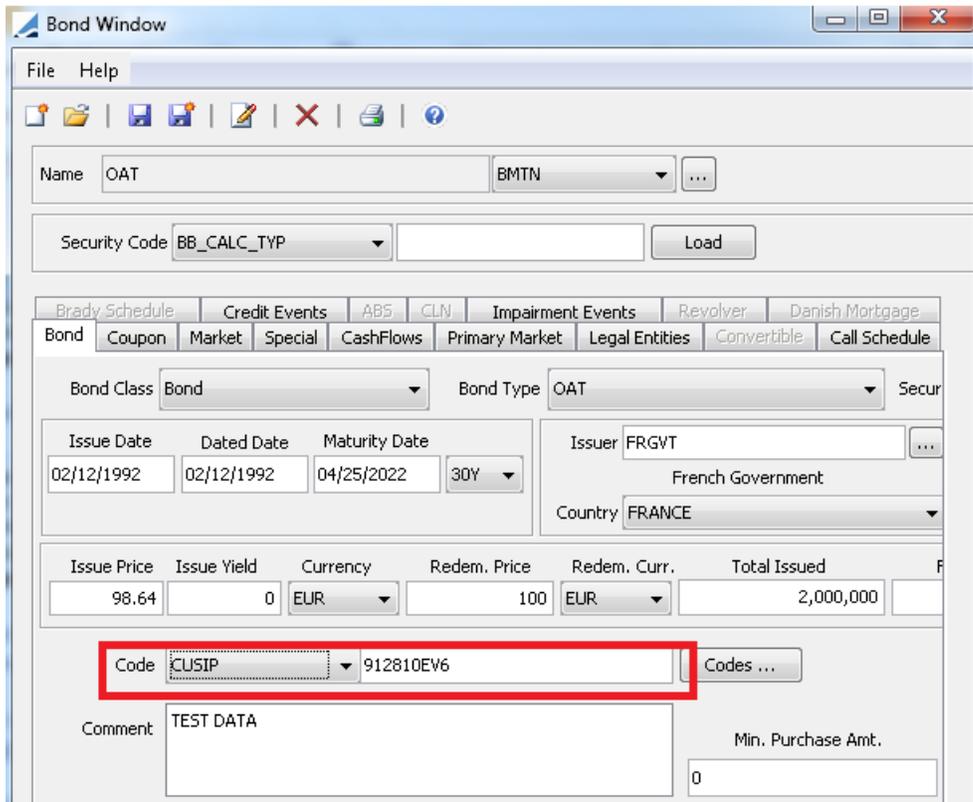
Once the code type and value are identified, the module will search for a corresponding index definition with the matching code type/value combination and the same Maturity Date as the trade. If found, the module will create the trade using that index as the underlying. Otherwise it will create an error message in the Task Station clearly identifying the code type, code value, and maturity date it tried to lookup.

## 2.4 Bond Mapping

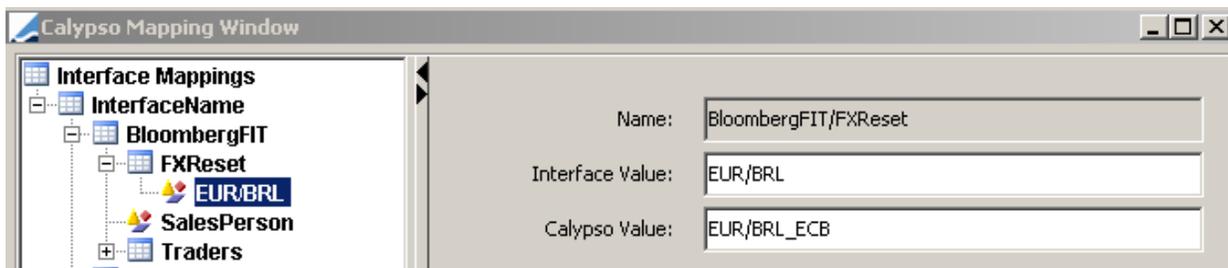
When importing Fixed Income-Bond trades, the BloombergFIT module needs a way to map the incoming Bond key with the corresponding Bond Definition in Calypso. To accomplish this, it uses the Product Code in Calypso.

The BloombergFIT module is able to map the incoming bond to the Calypso Bond using the 'CUSIP' or 'ISIN' code. Please ensure that this code is setup as a valid Product Code type for Bond using the Product Code window under Configuration > Product >Code (as mentioned above).

Then for each Bond you intend to receive messages for, you will need to populate the 'CUSIP' or 'ISIN' Product Code value. Below is a screenshot of the code being set on a fictitious bond called 'OAT' Bond.



Once the code type and value are identified, the module will search for a corresponding bond definition with the matching code type/value combination. If found, the module will create the trade using that bond as the underlying. Otherwise it will create an error message in the Task Station clearly identifying the code type, code value it tried to.



## 2.5 Trade Workflow

This section describes the Bloomberg-SEF interface trade workflow. It is important to understand these details so that the Calypso Trade Workflow can be customized accordingly. Please read & follow all setup instructions carefully to ensure a successful installation.

**[NOTE: Only the Bunched-Order clearing workflow is described here as it is the only workflow currently supported by the Bloomberg interface.]**

## 2.5.1 Clearing Workflow Overview

**[NOTE: This sub-section contains a brief overview of the Bloomberg-SEF platform clearing workflow and how the Calypso Bloomberg-SEF integration interacts with it. For further details on the Bloomberg-SEF flow, please consult with Bloomberg support.]**

Within the Bloomberg Terminal, the trader will setup a trade with a CCP and Block FCM, request a Check Certainty, choose a specific Dealer price, and finally execute the trade.

For a simple bunched-order clearing workflow, once the trade is executed from the Bloomberg Terminal, the Bloomberg platform will send a FIX message to both the Dealer and End User Firm (Buy-Side). At that point, the Calypso Bloomberg-SEF integration will process the FIX message and create a corresponding Bilateral trade in Calypso between the Dealer and Client.

The Bloomberg platform will also send a message to the CCP to affirm or reject the trade for clearing. Once the CCP responds, the Bloomberg platform will send a FIX message to both the Dealer and Client with the CCP's acceptance or rejection of the trade. Again, the Calypso Bloomberg-SEF integration will process the FIX message and update the Bilateral trade accordingly:

- If the CCP has accepted the trade, the Bilateral will be novated to the CCP as Counterparty. This will terminate the Bilateral trade in Calypso and create a new trade between the Client and the CCP for the cleared trade.
- If, however, the CCP rejects the trade, the Bilateral trade will be cancelled in Calypso with the rejection reason set as a keyword on the trade.

Additional keywords are added to the trade after each message is received to indicate Bloomberg status details, as well as clearing details such as the CCP, Clearing Broker, and Bilateral/Cleared USIs.

Note that the trade external reference will be formulated as:

BFIT\_<PO Shortname>\_<Bloomberg Trade Id>

## 2.5.2 Calypso Trade Workflow Setup

To support all the transitions required by the Bloomberg workflow, the trade workflow setup for processing Bloomberg trades must support the following transitions:

- NEW (for creation of new trades)
- CANCEL (if a trade is rejected by the CCP)
- TERMINATE (when the bilateral is novated after clearing)
- ALLOCATE (for trade allocations)

## 2.5.3 Clearing Novation Requirements

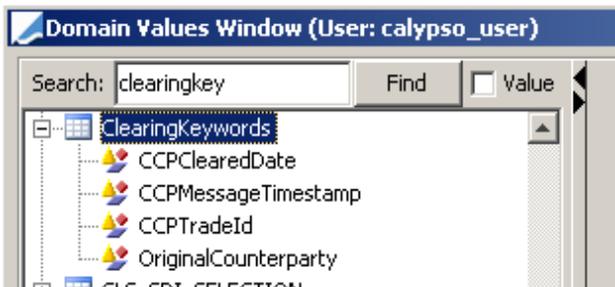
### *Message Rule*

By default, the Calypso Novation API will keep the same external reference on both the original trade and the new cleared trade. This will cause an issue if updates are received from Bloomberg for the trade. To avoid this, you

**must** add the UpdateTermination trade rule to the TERMINATE transition in your trade workflow for Bloomberg trades, so that the bilateral's external reference gets updated.

### ClearingKeywords Domain

In addition, the Calypso Novation API will keep all the same keywords on both the original and cleared trades. In some cases, clients will want to remove certain clearing-specific keywords from the terminated bilateral trade. This can be controlled using the ClearingKeywords domain. Any keywords added to this domain will be removed from the bilateral trade when it is Novated.



**[NOTE: This domain is added and pre-populated for you by the DataUploader and Bloomberg schema installation scripts. Please review it as part of the Bloomberg module setup.]**

### Fees

By default, the Calypso Novation API will keep the trade fees on the original bilateral trade. If you wish to have the fees moved from the bilateral to the cleared trade, please add the fee name to the propagateFees domain. (Please ensure that you restart the Calypso Auth Server, Event Server, and Data Server after this change.)



If you have mapped the default fee name (eg. UPFRONT\_FEE) using the Calypso Mapping Window, please ensure that you specify the new fee name in the propagateFees domain.

**[NOTE: This will only affect fees with a date after the Clearing Novation date. Also, the fees will remain on the original trade, but the Transfers will be cancelled by the Transfer Engine.]**

## 2.5.4 Allocation Requirements

This section describes how allocations are handled for Pre-Allocation and Bunched-Order supported by the Bloomberg module, and how each are handled.

In case of Pre-Allocation in Bloomberg, the allocation needs to be performed before submitting it to CCP, after that the trade is cleared. The corresponding trade life cycle will be executed in Calypso for Pre-Allocation:

Bloomberg Business	Calypso Action
Book a block trade with allocations	Calypso receives two messages: MsgType '8': New trade is created MsgType 'J': Trade is allocated
Trade is received by CCP	Calypso receives message with MsgType as 'AK' and confirmation status (665=1) as received The block trade keywords are updated
Trade is cleared by CCP	Calypso receives message (MsgType as 'AK' and confirmation status (665=4) Trade is novated
Trade is rejected by CCP	Calypso receives message (MsgType as 'AK' and confirmation status (665=5) Trade is canceled

**\*AK message received for each allocated fund trade.**

Whereas in case of Bunched-Order in Bloomberg, the allocation can only be performed once the trade is submitted and cleared by CCP. The corresponding trade life cycle will be executed in Calypso for Bunched-Order:

Bloomberg Business	Calypso Action
Book a block trade	Calypso receives a message with MsgType '8': New trade is created
Trade is received by CCP	Calypso receives message with MsgType as 'AK' and confirmation status (665=1) as received The block trade keywords are updated
Trade is cleared by CCP	Calypso receives message (MsgType as 'AK' and confirmation status (665=4) Trade is novated
Allocate a trade	Calypso receives a message with MsgType as 'J': Trade is allocated
Trade is received by CCP	Calypso receives message with MsgType as 'AK' and confirmation status (665=1) as received The block trade keywords are updated

Bloomberg Business	Calypso Action
Trade is cleared by CCP	Calypso receives message (MsgType as 'AK' and confirmation status (665=4) Trade is novated
Trade is rejected by CCP	Calypso receives message (MsgType as 'AK' and confirmation status (665=5) Trade is canceled

\*AK message received for each allocated fund trade

### Message Rule

By default, the Calypso Allocation API will keep the same external reference on the original trade and the generated new allocated fund trade. This will cause an issue if updates are received from Bloomberg for the trade. To avoid this, you **must** add the **UpdateAllocationChild** trade rule to **all** the ALLOCATE transition leading to Allocated status in your trade workflow for Bloomberg trades, so that the fund trade external reference gets updated.

## 2.5.5 Workflow Keywords

Throughout a trade's lifecycle, trade status keywords will be updated on the trade to reflect its approval state. These keywords can be used together with Static Data Filters to move the trade through any custom workflow / status you create in Calypso.

The pertinent keywords are described below:

- **PlatformStatus:** This keyword reflects the status of the trade from the Bloomberg platform's perspective. The trade will initially be created with a status value of 'Filled', and then 'Confirmed' or 'Rejected' depending on whether the CCP clears or rejects the trade.
- **CCPStatus:** Valid values are either Cleared or Rejected.