Nasdaq Calypso

Clearing Setup Guide

Version 17 - Version 18

Revision 26.0
March 2025
Approved

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Private and Confidential

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Document History

Revision	Published	Summary of Changes
1.0	November 2018	Edition for version 8.0.1 of Clearing Member Module.
2.0	May 2019	Added HKEX specific processing.
3.0	November 2019	For version 8.4.1 of Clearing Member Module.
4.0	April 2020	For version 8.6.1 of Clearing Member Module.
5.0	June 2020	For version 8.6.6 of Clearing Member Module.
6.0	July 2020	For version 8.6.8 of Clearing Member Module.
7.0	September 2020	For version 8.7.2 of Clearing Member Module.
8.0	February 2021	For version 8.10.0 of Clearing Member Module.
9.0	April 2021	For version 8.12.1 of Clearing Member Module.
10.0	June 2021	For version 8.15.0 of Clearing Member Module – Added support for LCH Repoclear.
11.0	August 2021	For version 8.16.0 of Clearing Member Module.
12.0	October 2021	For version 8.19.1 of Clearing Member Module – Added CCP Fees import.
13.0	November 2021	The Clearing Module no longer has its own version number. It is an internal module.
14.0	December 2021	For 16.1 December 2021 MR.
15.0	January 2022	For 17 February 2022 MR.

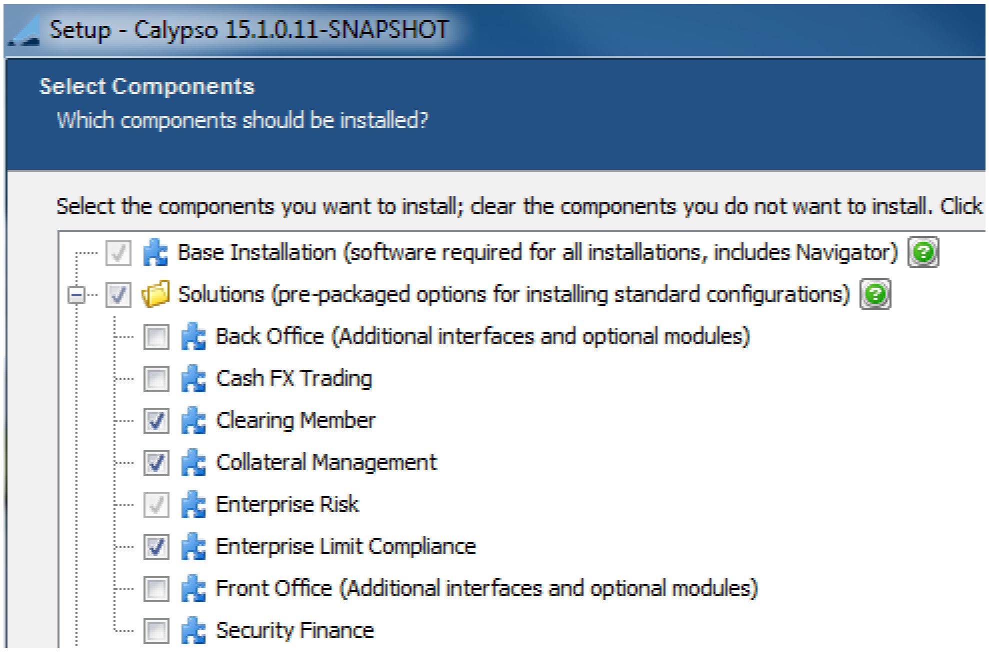
Revision	Published	Summary of Changes
16.0	March 2022	Added CRCC EOD Clearing Process.
17.0	May 2022	For 17 May 2022 MR, 17 June 2022 MR.
18.0	July 2022	For 17 August 2022 MR, 16.1 July 2022 MR.
19.0	August 2022	For 17 September 2022 MR, 16.1 August 2022 MR.
20.0	December 2022	Updates for monthly release.
21.0	February 2023	Added CRCC clearing.
22.0	March 2023	ICE CDS EOD reports changes, added import of Report 22a.
23.0	April 2024	LCH Swap Agent Bilateral Trade Support added and enhanced.
24.0	September 2024	Billing Setup and Billing Scheduled Task Setup sections updated
25.0	January 2025	Updates for monthly release - Changes to Eurex Haircut import, the CLEARING_IMPORT_HAIRCUT scheduled task and EUREX/CLEARING_IMPORT_HAIRCUT mapping are no longer used
26.0	March 2025	LCHSAL Settlement Liquidity Amount (SLA) Cashflow Support

This document describes the setup of Calypso to process clearing activity for clearing members on their behalf or on behalf of their clients.

Table of Contents

1 Installation

The components of the Clearing Member module are installed as part of the Calypso Installer when you select the "Clearing Member" solution:



- Enterprise Risk
- Enterprise Limit Compliance (optional) – Limits are checked once the trades are in Calypso.
- Collateral Management (optional) – Allocation of margin calls (initial margins and variation margins).
- Exchange Feed – Direct connection with the CCP through IBM MQ Series to transmit / receive trades and messages.
- Data Uploader – Upload of trades and messages received by the Exchange Feed into Calypso.
- CMF OTC Clearing – Back office processing – Once the trades are validated/rejected in Calypso, a consent/reject message is sent to the CCP so that the trades can be cleared – Import of initial margins, variation margins, market data, fees, etc. – Generation of client statements.
- Margin Engine (optional) – Computation of initial margins and variation margins.

Margin Calculators

(If using Margin Engine only)

In the "Common Third Party Libraries & Extension" window, add the Margin Calculator JARs. There is a JAR for each type of report: TYPED, TYPEE, TYPEH, TYPEJ:

- `calypso-margin-calculation-typed-service-x.x.x.jar` – CME Swap (HistSim and OTCMargin reports)
- `calypso-margin-calculation-typee-service-x.x.x.jar` - COMDER

- `calypso-margin-calculation-typeh-service-x.x.x.jar` - LCH
- `Calypso-margin-calculation-typej-service-x.x.x.jar` – EUREX IM

Please contact Calypso Product Support for obtaining these JARS.

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

If you are installing a CUP (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 data files will be already loaded.

▶ Please refer to Calypso Collateral Management release notes for upgrade information, if any.

OTC Clearing and ETD clearing

You can use the system for OTC Clearing only, ETD Clearing only, or both.

If the system is used for OTC Clearing, you need to set the following domain value in domain “ProcessingConfig”:

Value = OTCClearing.IsActive, Comment = true

This allows setting the CCPOriginCode in the Account attributes.

▶ For information on installing and setting up ETD Clearing, please refer to Calypso ETD Clearing documentation.

If the system is used for ETD clearing, you need to set the following domain value in domain “ProcessingConfig”:

Value = ETDClearing.IsActive, Comment = true

This activates additional fields in the Fee Definition and Account Definition.

2 Overview

Calypso's OTC derivatives clearing member solution combines Calypso's Back Office, Connectivity, Collateral and ERS Limits functionality to offer a complete solution for entities offering OTC clearing services to their internal trading desks as well as to external clients. The primary activities that the clearing member will be relying on Calypso for are:

- The use of connectivity and STP workflow to automatically accept or reject trades submitted for clearing by their customers,
- Management of cash and collateral related to the clearing activities, and
- Generating client statements for their customers to summarize the day's activity.

In order to support these activities, Calypso provides interfaces to Central Counterparties (CCPs) to allow the creation of trades to start them on their process to becoming a cleared trade in the client's account. These trades will flow into the system in real-time throughout the day. At the end of the day the CCPs will summarize all of the information about the trades, risk and positions related to each account managed by that clearing member, and Calypso provides the facility to run schedule tasks which import and process that information. The processing results in the generation of Calypso trade objects which will facilitate the settlement of cashflows and the management of Initial Margin Requirements.

The Collateral Management module will then take over to manage any Margin Calls resulting from the day's activity for each account. This includes not only cashflows related to the cleared trades, but payments made to or from each clearing account as part of routine business.

The end of day (EOD) processing will also save pricing marks for each trade based on the CCP's valuation, and will generate market data, such as curves and quotes, which can be used to value the positions using Calypso's native pricers. Again, all of this information is sourced from the EOD reports provided to the clearing member by the CCP.

As a last step, Calypso will aggregate all of the information stored in the system from the activity of each account, and generate a client statement which will be sent to the account holders as a record of their activity.

2.1 CCP and Service Coverage

Calypso's OTC derivatives clearing member solution includes "out-of-the-box" support for connectivity and integration with the following central counterparties:

- LCH SwapClear, SwapClear US, ForecClear, RepoClear integration:
  - Trade connectivity via SwapClear / ForexClear / RepoClear interface
  - Creation of mirrored trades enriched with keywords and fees
  - Import of EOD Reports for Market Data and Processing
  - Initial Margin calculation
- CME Clearing House and CME Clearing Europe integration:
  - Trade connectivity via MQ
  - Creation of mirrored trades enriched with keywords and fees

  - Import of EOD Reports for Market Data and Processing
  - Initial Margin calculation
- HKEX OTC Clearing
  - Trade connectivity
  - Creation of mirrored trades enriched with keywords and fees
  - Import of EOD Reports for Market Data and Processing
  - Initial Margin calculation
- Processing of EOD Report in CDML format (Clearing Data Markup Language) for any CCP.

Note: Calypso does not provide exchange translators to the CDML format out-of-the-box.

The concept provides a specification for the content and format of two file types, Trade Valuation and Initial Margin, into which the EOD Reports published by each CCP can be converted based on the business logic of their reports. This translation can be executed by a customer built translator, or any alternate method that our users want to employ.

Calypso's coverage for the services offered by the CCPs above is:

- LCH SwapClear and SwapClear US:
- All eligible products.
  - Interest Rate Swaps: Vanilla, Basis, OIS, Zero Coupon, Variable Notional
  - FRAs
- LCH ForexClear: NDF, FX Option, FX Spot, FX Forward
- LCH RepoClear: UK government Repo and UK Gilt Repo
- LCH SA RepoClear: EUR Repo
- CME Clearing House:
- All eligible IRS products.
  - Interest Rate Swaps: Vanilla, OIS, Zero Coupon, Single currency basis swaps
  - FRAs
- FX NDFs
- CME Clearing Europe:
- All eligible IRS products.
  - Interest Rate Swaps: Vanilla
  - FRAs
- HKEX OTC Clearing
- Interest Rate Swaps, Non-Deliverable Swaps and Cross-Currency Swaps

Similar levels of support for other CCPs and services will be added as they become operational.

2.2 Intraday Processing

The trades are imported in real-time from the CCP. For each trade captured on the affirmation platform, two mirrored trades are created in Calypso:

- One to reflect the clearing member position at the CCP.
- One to reflect the client / house position at the clearing member.

The trades navigate the Calypso workflow based on their clearing status (cleared, rejected, request), using straight-through processing and exceptions monitoring. Once the trades are cleared, they update the accounts positions. Intraday commissions and periodic fees are computed on the trades.

The system allows generating intraday margin call trades as margin calls are made by LCH.

The system also supports CCP limit checks for pre-clearing.

2.3 EOD Processing

The key aspects of the EOD processing are as follows:

- Monitoring of house and client accounts
- Import and processing of CCP EOD files.
- Management of settlement activity flowing from this processing
- Generation of Market Data based on EOD files.
- Storage of trade level valuations based on Marks in EOD files.
- Collateral Management process
- Regulatory reporting: Client Statements, CFTC Minimum Net Capital Requirement report, Sequestration Fund Requirement report, Collateral Value report (LSOC regulation)

At EOD, a number of files are imported from the CCP to update the client / house positions with the cashflows that are to be passed from the CCP to the clearing member, and ultimately to the Client or House entity. These cashflows include the PAI, Coupons, Fees, and Variation Margin.

Initial margin (IM) requirements are imported from EOD files into the system and stored as pricer measures on Collateral Exposure trades, based on Margin Call Contracts configurations. There is one Collateral Exposure trade per Margin Call Contract and currency. Through the Collateral Management process, Calypso generates Margin Call trades to transfer cash or collateral securities into and out of the client's accounts in order to maintain sufficient collateralization of their cleared positions. They are reported on the client statement, and based on the client's request, the margin calls can then be settled, paid in a different currency, or substituted to collateral securities.

Variation margins (VM) are represented by the cash positions of the cash client / house accounts. Margin calls to the variation margin requirements are computed through the Collateral Management process in cash and occur when there is a negative balance in the client's cash account.

2.3.1 Clearing Member Positions at the CCP

For house activity, there is one Margin Call Contract per CCP and product type that handles IM between the clearing member and the CCP.

For client activity, there is one Margin Call Contract per CCP and product type that handles IM between the clearing member and the CCP.

The initial margins can be stored in the base currency of the Margin Call Contract, or in the native currency. Margin calls are computed in the corresponding currency, and can be substituted to collateral securities.

There is no variation margin requirement between the clearing member and the CCP.

2.3.2 Client Positions at the Clearing Member

Initial Margin

There is one IM Margin Call Contract per Client, CCP and product type.

The initial margins can be stored in the base currency of the Margin Call Contract, or in the native currency. Margin calls are computed in the corresponding currency and can be substituted to collateral securities.

Variation Margin

The system supports storing variation margins in multiple currencies, or in a single currency, based on the client's choice.

- Multi-currency scenario – There is one VM Margin Call Contract per Client and per currency (regardless of CCP and product type).
- In this case, there is one variation margin per currency, and the margin calls are computed per currency.
- Single-currency scenario – There is one VM Margin Call Contract per Client.
- In this case, all variation margins are converted to the base currency of the Margin Call Contract. There is one variation margin in base currency, and the margin calls are computed in base currency.

The various scenarios, and their impact of the Collateral Management process and the client statement, are described in the Calypso Clearing Member User Guide.

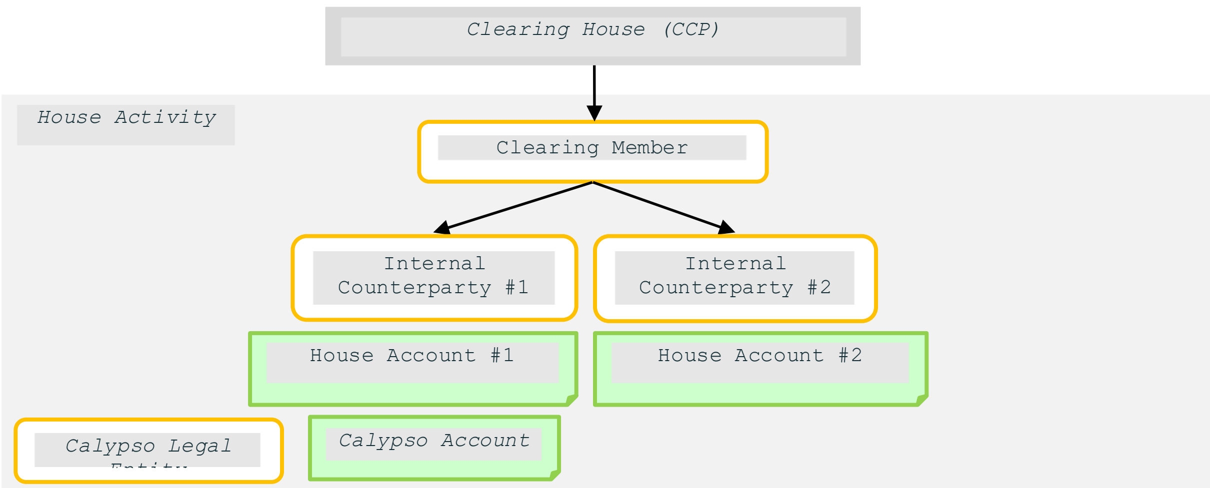
2.4 Account Definition

The clearing member module supports the following types of accounts:

- House accounts for clearing member house activity.
- Individual segregated client accounts (ISA) for individual client activity
- Omnibus segregated client accounts (OSA) for clients that provide clearing activity for their own individual clients.

2.4.1 House Accounts

House accounts are created to monitor the clearing member's trading activity and differ from client accounts primarily in the way that they are treated by the CCP and Regulators.



Each house account is represented by an internal counterparty, which is a legal entity of the trading group within the same corporate structure, and a set of Calypso accounts.

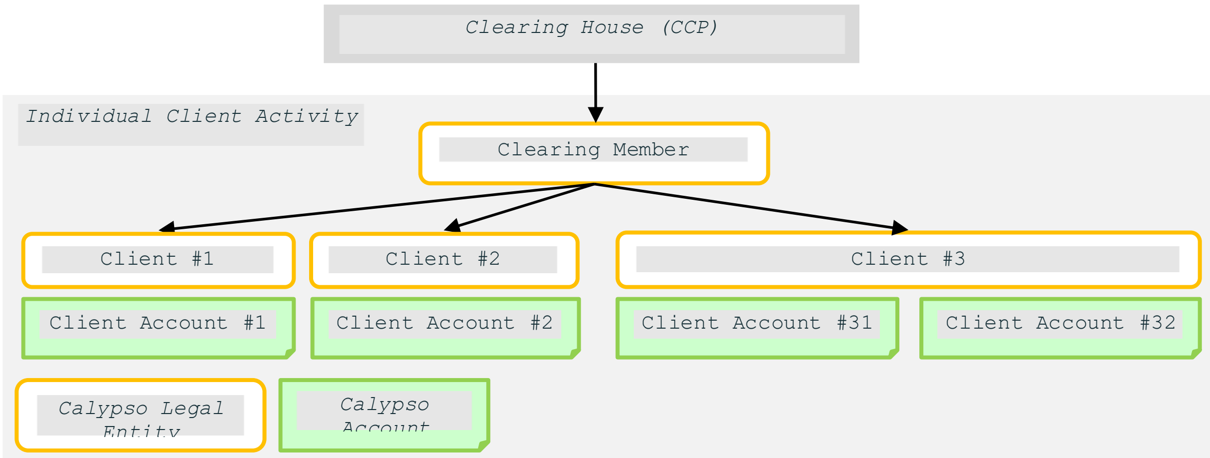
Trades are entered at the Internal Counterparty level, in the House book.

VM, PAI, Coupons, Upfront Payments, etc. are calculated by the CCP at trade level - They are reported and accounted in Calypso at the House Account level.

IM is calculated at the Internal Counterparty level.

- IM is settled between the CCP and the Clearing Member at the Clearing Member level across all house accounts
- IM is settled between the Clearing Member and the Internal Counterparty at the Internal Counterparty level

2.4.2 Individual Client Accounts



Each client account is represented by an external counterparty, and a set of Calypso accounts. An individual client may have multiple unique accounts. Each account is managed independently at the CCP.

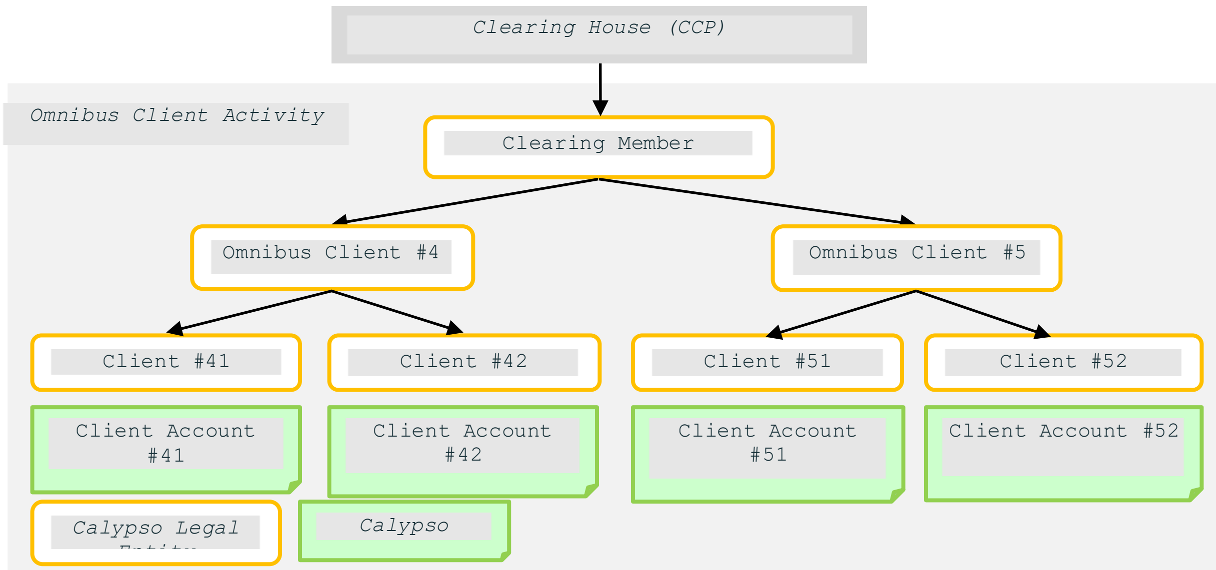
Trades are entered at the Client level, in the Client book.

VM, PAI, Coupons, Upfront Payments, etc. are calculated by the CCP at trade level - They are reported and accounted in Calypso at the Client Account level.

IM is calculated at the Client level.

- IM is settled between the CCP and the Clearing Member at the Clearing Member level across all client accounts
- IM is settled between the Clearing Member and the Client at the Client level

2.4.3 Omnibus Client Accounts



The omnibus client provides clearing activity for its own individual clients.

Each omnibus client is represented by an external counterparty. Each individual client is represented by an external counterparty, which parent is the omnibus client, and a set of Calypso accounts.

Trades are entered at the Client level, in the Client book.

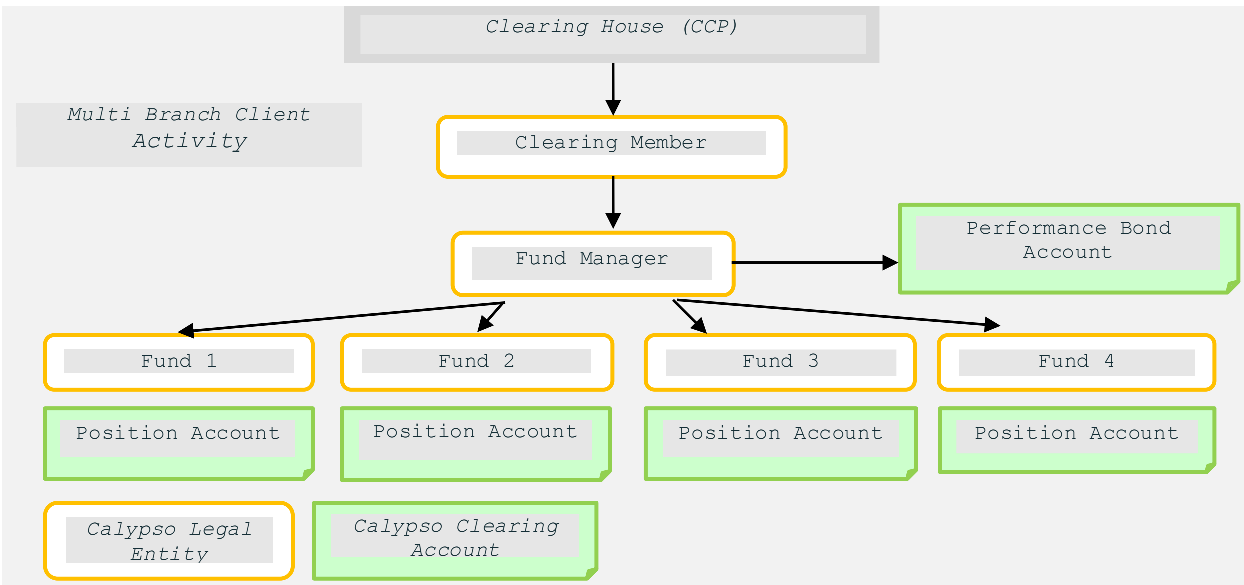
VM, PAI, Coupons, Upfront Payments, etc. are calculated by the CCP at trade level - They are reported and accounted in Calypso at the Client Account level.

IM is calculated at the Omnibus Client level.

- IM is settled between the CCP and the Clearing Member at the Clearing Member level.
- IM is settled between the Clearing Member and the Omnibus Client at the Omnibus Client level.

2.4.4 Multi Branch Account Structure

Generally, Fund manager opens multi branch account wherein trades are cleared in individual position account and VM and cash flows are calculated and reported at individual position account level and IM is calculated across all portfolio (position accounts) i.e. performance bond account level. So in clearing system user will need to define clearing account for both position and performance bond account level. Individual Funds (Legal Entity) will have parent entity as fund manager. As per example given above 5 Client statement will be generated i.e. fund manager (for IM) and individual funds level (for VM), also AMC will be calculated at parent entity level by considering total equity of all underlying clients.



2.4.5 Custodial Segregation Account Structure

Custodial Segregation is an extension to Individual Segregation Account. LCH.Clearnet has developed the Custodial Segregation (CustodialSeg) account (CSA) model in combination with end users of OTC derivatives (collectively, the ‘Buy-side’), Clearing Members, Custodians and Central Securities Depositories to provide additional protection for the Buy-side beyond the requirements of EMIR 39.3 (Individual Segregated Account).

The CustodialSeg account segregates the Buy-side client’s positions from those of all other clients, as well segregating the assets allocated for collateral, which remain under the beneficial ownership of the client. The account can be operated by the client’s nominated custodian and minimizes transit risk associated with moving securities to and from SwapClear via the clearing member. In a clearing broker default, LCH.Clearnet cannot draw on the client’s allocated assets to meet losses of any other clients and both positions and collateral can port to another clearing broker of the client’s choice.

In order to maintain Clearing Member controls as may be considered towards a security financial collateral arrangement LCH.Clearnet has devised the model involving both pre-defined controls (e.g. affirmation type and eligibility sets) and event specific controls (e.g. manual affirmation of transaction amount and booking of transaction amount to the Clearing Member books).

LCH.Clearnet has enhanced the existing SWIFT MX Message Service for the purpose of Clearing Members who are seeking to automate event specific controls. As such LCH.Clearnet offers, with the SWIFT MX Message service, the ability for Members receive automated notification or client instructions directly into their own systems from CMS and the ability to Affirm or Reject these instructions without the need to sight verify and authorize the instruction manually in the CMS GUI. An accepted instruction from this service will continue its lifecycle in CMS as normal, starting from an initial status of 'Instructed'.

The service will permit a Member to receive and affirm or reject the following Collateral Proposals from the client in a single message: Triparty Collateral (Lodge, Amend and Close).

This entails:

- Support SIFWT MX colr.007 inbound to LCH, colr.008 and colr.006 LCH outbound messages in Back Office Module
- We need to generate Margin Call Trades facing to client and CCP for client of type CSA in clearing module.

The scope of this feature is limited to NON-CASH COLLATERAL for LCH-IRD

FCM receives MT558 once they respond to original request sent by LCH on receipts of collateral allocation request from client through Custodian. MT 558 is sent for different status such as matched and settled collateral allocation by LCH.

FCM receives MT569 statement approximately 13 times a day only for CSA accounts with non-cash collateral nominal holding, market price.

According to LCH they do not send MT558 for substitution hence we cannot use this message for generation of Margin Call Trade.

The use of the MT535 messages provides Statement of Holding reports, sent daily for end of the prior day, allowing members to reconcile positions and valuations utilized for cover by the Clearing House. This information remains available within the CMS GUI.

Additionally, Members may request that LCH.Clearnet send the Statement of Holdings (MT535) messages for specific Individually Segregated Accounts (ISAs) directly to a third party such as the underlying Client, Asset Manager or Custodian acting on behalf of the Client

For Clearing Members who offer Custodial Seg accounts the MT569 Triparty Collateral and Exposure Statement, sent either intraday or end of day for the current business day, allows members to reconcile positions and valuations utilized for cover by the Clearing House in respect to securities pledged directly by clients. Clearing Member may also wish to receive status updates in respect to Custodial Seg triparty transaction activity intraday through the utilization of the MT558 Triparty Collateral Status and Processing Advice. Both sets of information remain available within the CMS GUI.

1. Custodial Seg is only supported for clients who choose ISA or Multi Branch ISA account structure
2. Import MT569 which will be sent by LCH periodically, store it as BO message object
3. Import Collateral quantity from Block C1a1A from 36B tag
4. C1a1A block can be repetitive

5. Few FCM would end up creating Margin Call trade in actual BPD by looking at C1a1 block, so we will manage this through ST attribute to signify whether to look for actual bond based on ISIN based on tag 35R or dummy bond based on transaction currency mentioned in 19A of C1a block.
6. Import Position Account ID from 95R::PTYB/LCHL/ which will give us IM Margin Call Contract ID, however it is MUST for SCM to make this specific request to LCH to populate Account ID in 95R while on boarding client.
7. Import Party mnemonic from 97B::SAFE which will be FirmID defined at PO LE attribute

Following are details on MT569 message blocks:

A - General Block

B – Overall Summary

C – Summary of Exposure Type

D – Network Validation Rule

Block C is further bifurcated into C1, C1a, C1a1

C1a1A provides information of non-cash collateral quantity and price

Name	Type / Code	Calypso Mapping
23G Function of the Message	4!c[/4!c]	
98a Date/Time	[0..1]	
22a Indicator	[1..*]	
Collateral Parties (A1)	COLLPRTY	
16R Start of Block	COLLPRTY	
95a Party	[1..1]	
Party A [PTYA]	[1..1]	
Party A's client [CLPA]	[1..1]	
Triparty Agent [TRAG]	[1..1]	
97a Account	[0..1]	
Safekeeping Account [SAFE]	[0..1]	
97A	:4!c//35x	
Qualifier	:4!c/	
Account Number	/35x	
97B	:4!c/[8c]/4!c/35x	
Qualifier	:4!c/	
Data Source Scheme	[8c]	First 3 character for CCP short name
Account Type Code	/4!c/	PO attribute - search in LCHFirmId, CMEFirmId and EurexFirmId
Account Number	35x	
16S End of Block	COLLPRTY	
Linkages (A2)	LINK	
16R Start of Block	LINK	
13a Number Identification	[0..1]	
Linked Message [LINK]	[0..1]	
20C Reference	[1..1]	
Related Message Reference [RELA]	:4!c//16x	
Previous Message Reference [PREV]	:4!c//16x	
16S End of Block	LINK	
16S End of Block	GENL	
Overall Summary (B)	SUMM	
Summary by Exposure Type (C)	SUME	
16R Start of Block	SUME	
22a Indicator	[1..*]	
19A Amount	[1..*]	
92A Rate	:4!c//[N]15d	
25D Status	:4!c/[8c]/4!c	
Summary by Counterparty (C1)	SUMC	
16R Start of Block	SUMC	
13B Number	[0..*]	
95a Party	[1..*]	

Party B [PTYB]	[1..1]	
95P	:4!c//4!a2!a2!c[3!c]	
95Q	:4!c//4*35x	
95R	:4!c/8c/34x	Margin Call Contract PO: Based on Account Type Code Mapping to LE Margin Type: IM
Qualifier	:4!c/	
Data Source Scheme	8c/	
Proprietary Code	34x	
Triparty Agent [TRAG]	[0..1]	
19A Amount	[1..*]	
92A Rate	:4!c//[N]15d	
25D Status	:4!c/[8c]/4!c	
Transaction Details (C1a)	TRANSDET	
16R Start of Block	TRANSDET	
20C Reference	[1..*]	
98a Date/Time	[1..*]	
Closing Date/Time [TERM]	[1..1]	
98A	:4!c//YYYYMMDD	
Qualifier	:4!c/	
Date	/YYYYMMDD	Margin Call Trade and Value Date
98B	:4!c/[8c]/4!c	
Qualifier	:4!c/	
Data Source Scheme	[8c]	
Date Code	/4!c	
Open Ended	OPEN	
98C	:4!c//YYYYMMDDHHMMSS	
Qualifier	:4!c/	
Date	/YYYYMMDD	
Time	HHMMSS	
Execution Requested Date/Time [EXRQ]	[1..1]	
98A	:4!c//YYYYMMDD	
Qualifier	:4!c/	
Date	/YYYYMMDD	
98B	:4!c/[8c]/4!c	
Qualifier	:4!c/	
Data Source Scheme	[8c]	
Date Code	/4!c	
Open Ended	OPEN	
98C	:4!c//YYYYMMDDHHMMSS	
Qualifier	:4!c/	
Date	/YYYYMMDD	
Time	HHMMSS	
19A Amount	[1..*]	

Name	Mult	Annotation Field Name (<<LCH.CMS.Mapping>>)	Annotation Page Name (<<LCH.CMS.Mapping>>)	Change Filter	Min Mand	Prefix	Suffix	Field Network Validated Rules
35B Identification of Financial Instrument	[1..1]	ISIN	Triparty Allocations	Yes				At least Identification of a Security (Subfield 1) or Description of Security (Subfield 2) must be present; both may be present (Error code(s): T17). ISIN is used at the beginning of Identification of Security (Subfield 1) and must be composed of
36B Quantity of Financial Instrument	[1..1]	Quantity of Quantity of Securities Valued	Triparty Allocations	Yes				The integer part of Quantity must contain at least one digit. The decimal comma is mandatory and is included in the maximum length (Error code(s): T40, T43).
95a Party	[0..1]			Yes				Identifier Code must be a registered BIC (Error code(s): T27, T28, T29, T45). Proprietary code (Format Option R) and Name and Address (Format Option Q) must not start or end with a slash '/' and must not contain two consecutive slashes '//'. For field formats with more than 1 line, the rule applies for each line (Error code(s): T26).
97a Account	[0..1]			Yes				
25D Status	[0..1]			Yes				
11A Currency	[0..1]	Currency of the Denomination	Triparty Allocations	Yes				Currency Code must be a valid ISO 4217 currency code (Error code(s): T52).
90a Price	[0..1]	Market Price	Triparty Allocations	Yes				Currency Code must be a valid ISO 4217 currency code (Error code(s): T52). The integer part of Price must contain at least one digit. A decimal comma ',' is mandatory and is included in the maximum length (Error code(s): T40, T43).

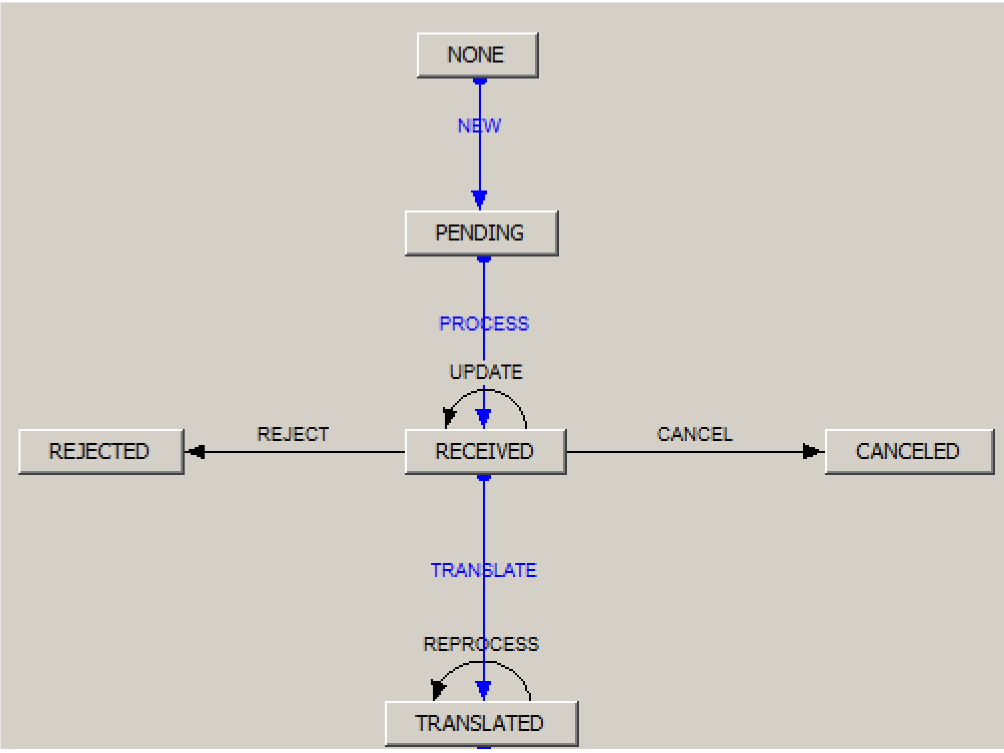
Custodial Segregation Setup Requirements:

Set environment property CLEARING_TRIPARTY_ALLOCATION=true.

Create PO attribute ClearingDummyCustSegBond=True/False, default value is “True”,

- True = create margin call in dummy bond
- False = create margin call in underlying ISIN

Create new workflow called “INCOMINGCUSTSEG” to transition MT569 message object



Orig Status	Action	Result Status	STP	WF Rule
NONE	NEW	PENDING		
PENDING	PROCESS	RECEIVED	Yes	
RECEIVED	TRANSLATE	TRANSLATED	Yes	TranslateSwiftToMarginCall
TRANSLATED	REPROCESS	TRANSLATED		TranslateSwiftToMarginCall
RECEIVED	CANCEL	CANCELED		
RECEIVED	REJECT	REJECTED		

Import MT569 using Import engine

Translate following fields from message to retrieve existing actual security position (if any) and to create Margin Call for the differences facing to LCH and Client. This processing should be done in TranslateSwiftToMarginCall WF rule on Message transition (workflow) so that if the need be user can reprocess stored MT569 message:

Block	Tag	Sample	Type/Code	Location	Description/Mapping	Acronym
A1	97B	{1:F01 LCHLGB2LXXX	[8c]	Biccode	Retrieve CCP (LE short name) info using LE	CCPSAFE

Block	Tag	Sample	Type/Code	Location	Description/Mapping	Acronym
		0000000000}			Contact (Contact Type="SWIFT") where SWIFT code (initial 8 characters) matched with sender information. We need CCP for IM MCC Mapping through mccAdditionalField.CCP additional info.	
A1	97B	97B::SAFE/LCHL/MNEM/AAA	/4!c/	LCH 3 character value after MNEM first front slash "/"	Mnemonic info for PO mapping through PO LE Attribute LCHFirmId	$FIRMID_{MNEM}$
A1	98E	:98E::PREP//20150625172856/+0100	:4!c//yyyyMMDDHHMMSS[,3n][/[N]HH[MM]]	first 8 characters which are in yyyyMMDD format post two front slash	Retrieve date for transaction and value date of non-cash collateral	$DATE_{VALN}$
C1	95R	:95R::PTYB/LCHL/GIG128DISA	:4!c/8c/34x	Characters from LCHL/ i.e. second front slash "/"	Map it to CCP_SEGREGATION_ACCOUNT of IM MCC (client facing) additional info attribute post "-" hyphen (This value is matching to Account Column to 85)	$CCPREF_{PTYB}$
C1a	20C	:20C::CLTR//CSI000003	:4!c//16x	Characters from two front slash	Retrieve CLTR i.e. unique collateral transaction reference to store on MC trade keyword	EXTREF
C1a1A	35B	:35B: ISIN GB00B00NY175	[ISIN1!e12!c] [4*35x]	entification of Financial Instrument	ISIN of underlying instrument	ISIN
C1a1A	36B	:36B::SECV//FAMT/**31326854**,	:4!c//4!c/15d	Quantity of Financial Instrument	Quantity of underlying bond	QTY
C1a1A	11A	:11A::DENO//**GBP**	:4!c//3!a	DENO	Currency of the Denomination	CURR

Block	Tag	Sample	Type/Code	Location	Description/Mapping	Acronym
C1a1A	90a	:90A::MRKT//PRCT/**134,496584**	A, B	Market Price	Market Price of underlying bond. **If system does not found Market Price then system should consider closing quotes from quoteset of user default**	MRKT

To create margin call trade we need to retrieve following information, in case we can not find required data then system should generate task exception for EX_CLEARING_CUSTSEG event type

Mapping Information	Source	Filters	Validation	Exception Comment	Acronym
Missing Non Cash Collateral	Bond Product Definition	PRODUCT_CODE.ISIN = ISIN from 35B	If we could not retrieve bond product definition for this combination then system should generate exception	Missing Bond Product Definition for ISIN <ISIN>	ISIN
Client Facing IM MCC	Margin Call Contract	1. Processing Org : PO LE based on LCHFirmID 2. CCP_REFERENCE : Value form *CCPSegregationAccount (additional info from retrieved client facing IM MCC) post hyphen "-" value 3. MARGIN_TYPE : "IM"	If we could not retrieve IM MCC for above combination then system should generate exception in task station saying "No IM MCC available for <Client for 95R> filter information Processing Org=<value>, CCP_REFERENCE=<value> and MARGIN_TYPE=<value>"	Missing <CCP Short Name based on Tag1 Sender Biccode> IM MCC (facing to client) for Custodial Seg Processing for account mentioned next to <95R> belongs to PO mentioned next to <97B>	MCC_{CLIENT}
CCP Facing IM MCC	Margin Call Contract	1. Processing Org : PO LE based on LCHFirmID 2. CCP_REFERENCE : ClientAccountId from 95R 3. MARGIN_TYPE : "IM" 4. LE : Value from 97B	If we could not retrieve IM MCC for above combination then system should generate exception in task station saying "No IM MCC available facing to <CCP from 97B> for filter information Processing Org=<value>, CCP_REFERENCE=<value>, MARGIN_TYPE=<value> and LE = <value>"	Missing <CCP Short Name based on Tag1 Sender Biccode> IM MCC (facing to CCP) for Custodial Seg Processing for account mentioned next to <95R> belongs to PO mentioned next to <97B>	MCC_{CCP}

CCPSegregationAccount: IM MCC additional info attribute is recently introduced as part of SOD requirement.

The purpose of adding CCPSegregationAccount additional info MCC attribute is to retrieve CCP facing contract and do 1 to many link based on type of account structures i.e. omnibus or individual segregated.

For information see below 86c:

CobDate	TradeMarginRun	MbrMnemonic	Account	ClientAccountId	ReportingCCY	ConversionExchangeRate	InitialMargin
7/30/2015	15231	HSW	ADOPT1DISA	GIG009	GBP	1	0
7/30/2015	15231	HSW	C	GIG010	GBP	1	-26410845.58
7/30/2015	15231	HSW	GIG019DISA	GIG019	GBP	1	0
7/30/2015	15231	HSW	**GIG102DISA**	**GIG102**	GBP	1	0
7/30/2015	15231	HSW	GIG126DISA	GIG126	GBP	1	0
7/30/2015	15231	HSW	GIG127DISA	GIG127	GBP	1	0
7/30/2015	15231	HSW	GIG128DISA	GIG128	GBP	1	0
7/30/2015	15231	HSW	GIG129DISA	GIG129	GBP	1	0
7/30/2015	15231	HSW	**ADOPT1NOSA**	**HSWGIGANOSA1**	GBP	1	-7244260.29
7/30/2015	15231	HSW	C	NETBBAYAMHSW	GBP	1	-6517277.13

MCC IM -> Client facing would have CCP_REFERENCE=HSWGIGANOSA1

MCC IM -> LCH facing would have CCP_REFERENCE=ADOPT1NOSA

Rep19 will show following information:

MCC IM -> Client facing would have ACCOUNT=O083/SWP-ADOPT1NOSA

A	B	C	D	E	F	G
Cobdate	Scmmn	Scmnar	Account	Curren	Cashcovbalamt	Cashcovbaltot
7/31/2015 0:00	HSW	HSBC BAN	O083/SWP-ADOPT1NOSA	GBP	50157904857	50157904857
7/31/2015 0:00	HSW	HSBC BAN	O083/SWP-ADOPT1NOSA	GBP	50157904857	50157904857
7/31/2015 0:00	HSW	HSBC BAN	O083/SWP-ADOPT1NOSA	GBP	50157904857	50157904857
7/31/2015 0:00	HSW	HSBC BAN	O083/SWP-ADOPT1NOSA	GBP	50157904857	50157904857
7/31/2015 0:00	HSW	HSBC BAN	S081/SWP-ADOPT1DISA	GBP	50162188212	50162188212
7/31/2015 0:00	HSW	HSBC BAN	S081/SWP-ADOPT1DISA	GBP	50162188212	50162188212

Doc No - REP00019 **LCH.Clearnet Limited** **Report Last Refreshed:**

Overnight Cover Distribution

Date	31/07/2015			
Member	HSW	HSBC BANK PLC		
Account	O083/SWP-ADOPT1NOSA			
Currency	GBP			
Cash Cover Balance :	CREDIT		50,157,904,857.08	50,157,904,857.08
Comm Group:	LIABILITY:		-7,244,260.29	
SWP GBP	US T Bonds	(USD)	7,244,260.29	
Liability Shortage GBP				0.00
				0.00
Total Net Shortage of GBP				0.00
<u>Overall Unutilised</u>			<u>Amount</u>	<u>Total</u>
	Bonds	(USD)	48,211,803,113.77	28,420,638,904.33
	Other Cash	(GBP)	50,157,904,857.08	50,157,904,857.08

Use following filters to calculate Margin Call Non-Cash Positions for IM:

Filter Criteria	Source	Default Value
Position Type		ACTUAL
Underlying Type		“Security”
ProcessingOrg	PO based on 97B MNEM	N/A
Valuation Date	Date based on 98A VALN	N/A
Collateral Context	PO Attribute EODCollateralContext	N/A
Additional Info CCP	CCP based on 97B SAFE	N/A
Additional Info MARGIN_TYPE		IM
PRODUCT_CODE.CLEARING_DUMMY_CUST_SEG		True

Filter Client Facing IM MCC: Calculate Sum(Value) by Currency and CCP_REFERENCE henceforth referred as $COLVAL_{CLIENT}$

Filter Criteria	Source	Default Value
Additional Info CCP_REFERENCE	CCP Reference Based on 95R facing to Client	N/A

Filter CCP Facing IM MCC: Calculate Sum(Value) by Currency, CCP_REFERENCE and CCP henceforth referred as $COLVAL_{CCP}$

Filter Criteria	Source	Default Value
Additional Info CCP_REFERENCE	Value from ACCOUNT attribute post hyphen on IM MCC facing to client	N/A

Following fields are considered for generating Non Cash Collateral margin call trade facing to Client:

Column	Sample Data	Description
Action	NEW	“NEW”
ExternalRefId		
CounterPartyRole	Client	Orderer Role from MCCCLIENT, If not set then it should be blank

Column	Sample Data	Description
Counterparty	CPTY_1	Client based on CCPREFPTYB
OrdererRole	CounterParty	Set as "CounterParty" if Orderer Role is set on MCCCLIENT else it should be blank
ProcessingOrg	CPTY_1	Set as CCPSAFE if Orderer Role is set on MCCCLIENT else set as PO of FIRMIDMNEM
TransferType	SECURITY	"SECURITY"
TradeCurrency	GBP	CURR, From 11A tag if not available then from Underlying Bond Currency as per ISIN from 35B
Quantity	4555	36B SECV
TradeDate	20150706	DATEVALN
SettlementDate	20150706	DATEVALN
TradeBook	PO1_CLIENT_CLEARING@CMF	Book from MCCCLIENT
SalesPerson	NONE	“NONE”
ProductType	MarginCall	“MarginCall”
TradeDirection	Pay	‘Pay’ if Quantity is Negative. ‘Receive’ if Quantity is positive. DO NOT generate any margin call if quantity=0
CollateralType	SECURITY	"SECURITY"
ContractId	1601	Contract ID of MCCCLIENT
SecCode	ISIN	ISIN
SecCodeValue	US3620ABHW95	ISIN
Price	99	PRICE from 90a tag, if not available then from closing quite of quoteset of user deafault
Keyword.CCP	LCH	CCPSAFE
Keyword.CCPSettlementType	ITD_CS	“ITD_CS”
Keyword.CCPAccountReference	LCHTEST88	CCP_REFERENCE Additional Info from MCCCLIENT

Column	Sample Data	Description
Keyword. CustSegISIN	ISIN number	ISIN from security code of Bond
Nominal		Calculated Value using collateral API, Qty * Face Value from Bond Product Definition
Accrual		Calculated Value using collateral API, based on IM MCC attribute USE_RAW_PRICE=True/False, Last coupon date - current date based on day count factor

Following fields are considered for generating Non Cash Collateral margin call trade facing to CCP:

Column	Sample Data	Description
Action	NEW	“NEW”
ExternalRefId		
CounterPartyRole	Client	Orderer Role from MCCCCP, If not set then it should be blank
Counterparty	LCH	Client based on CCPSAFE
OrdererRole	CounterParty	Set as "CounterParty" if Orderer Role is set on MCCCCP else it should be blank
ProcessingOrg	LCH	Set as CCPSAFE if Orderer Role is set on MCCCCP else set as PO of FIRMIDMNEM
TransferType	SECURITY	"SECURITY"
TradeCurrency	GBP	CURR,From 11A tag if not available then from Underlying Bond Currency as per ISIN from 35B
Quantity	4555	36B SECV
TradeDate	20150706	DATEVALN
SettlementDate	20150706	DATEVALN
TradeBook	PO1_CLIENT_CLEARING@CMF	Book from MCCCCP
SalesPerson	NONE	“NONE”

Column	Sample Data	Description
ProductType	MarginCall	“MarginCall”
TradeDirection	Pay	‘Receive’ if Quantity is Negative. ‘Pay’ if Quantity is positive. DO NOT generate any margin call if quantity=0
CollateralType	SECURITY	"SECURITY"
ContractId	1601	Contract ID of MCCCCP
SecCode	ISIN	ISIN
SecCodeValue	US3620ABHW95	ISIN
Price	99	PRICE from 90a tag, if not available then from closing quite of quoteset of user deafault
Keyword.CCP	LCH	CCPSAFE
Keyword.CCPSettlementType	ITD_CS	“ITD_CS”
Keyword.CCPAccountReference	LCHTEST88	CCP_REFERENCE Additional Info from MCCCCP
Keyword. CustSegISIN	ISIN number	ISIN from security code of Bond
Nominal		Calculated Value using collateral API, Qty * Face Value from Bond Product Definition
Accrual		Calculated Value using collateral API, based on IM MCC attribute USE_RAW_PRICE=True/False, Last coupon date - current date based on day count factor

Following are the scenarios for direction based on signs of Quantity:

Scenario1: Posted Collateral More than MT569			
Source	Client	CCP	Currency
MT569	5000	5000	GBP
MCP	10000	-10,000	GBP

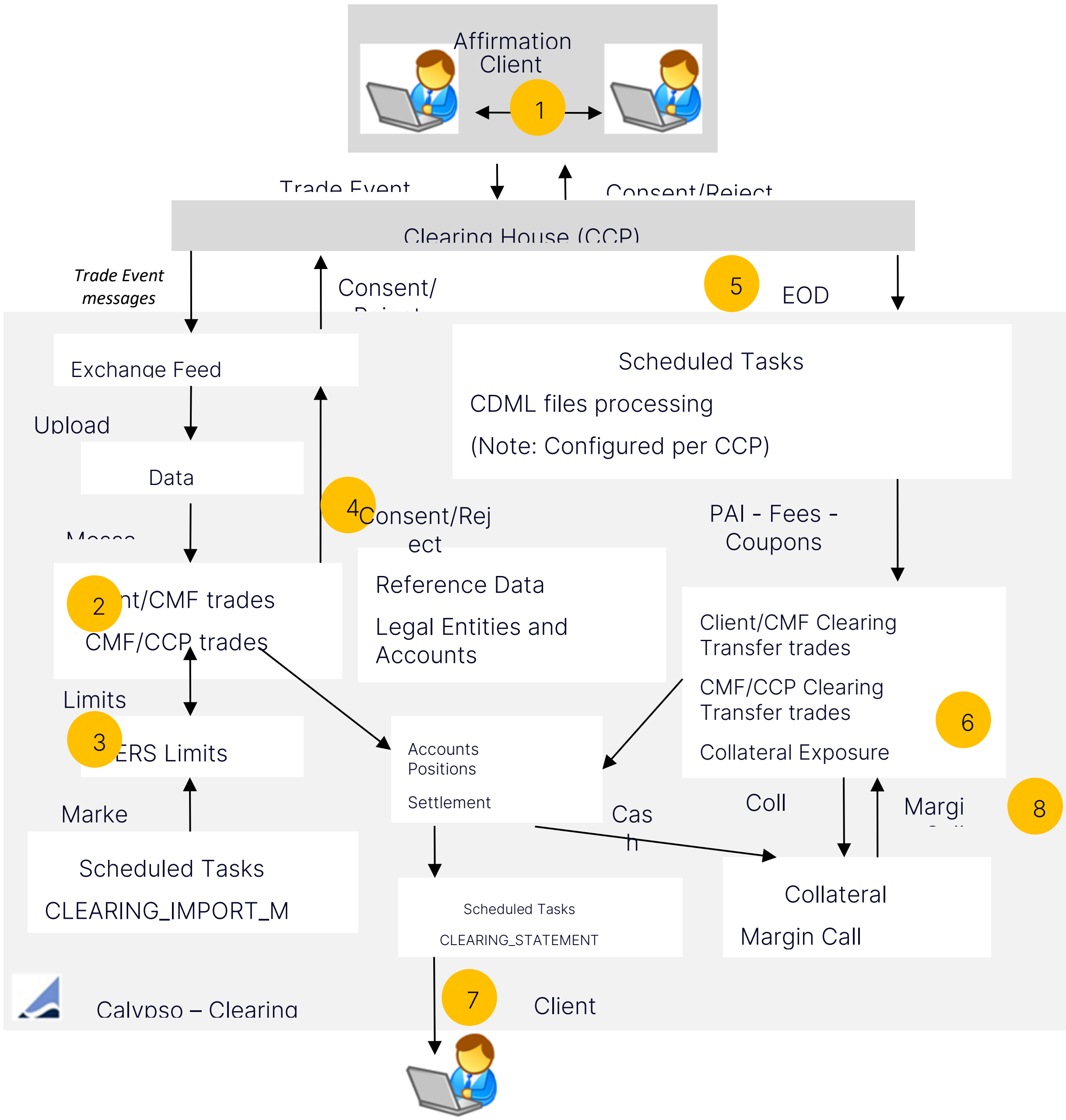
Scenario1: Posted Collateral More than MT569			
Movement	-5000	5000	GBP
Direction	Pay	Receive	

Scenario2: Posted Collateral less than MT569			
Source	Client	CCP	Currency
MT569	5000	5000	GBP
MCP	2000	-2000	GBP
Movement	3000	-3000	GBP
Direction	Receive	Pay	

Scenario3: No Collateral Available to compare against MT569			
Source	Client	CCP	Currency
MT569	5000	5000	GBP
MCP	0	0	GBP
Movement	5000	-5000	GBP
Direction	Receive	Pay	

Scenario4: MCP Value matching with MT569 Post haircut amount			
Source	Client	CCP	Currency
MT569	5000	5000	GBP
MCP	5000	-5000	GBP
Movement	0	0	GBP
Direction	No Call	No Call	

2.5 Clearing Solution Flow



Steps Details

1	Client trades are captured in the Affirmation Platform and routed to Calypso through the CCP and Calypso Exchange Feed using Trade Event messages. The Calypso Exchange Feed transforms the messages into Upload Documents and triggers the Calypso Data Uploader.
2	The Calypso Data Uploader creates mirrored trades in Calypso to reflect the clearing member position at the CCP, and the client position at the clearing member.
3	Limits are checked on the trades using ERS Limits.
4	Once the trades are validated/rejected in Calypso, a consent/reject message is sent to the CCP so that the trades can be cleared or rejected back to the executing broker. Once the trades are cleared, they update the accounts positions. Intraday commissions are computed on the trades. Periodic fees, rebates, and maintenance fees are invoiced to the clients.
5	EOD – The CCP files are imported into Calypso using scheduled tasks.
6	The scheduled tasks perform the following: • CDML files processing - You first need to store the files into the system using the scheduled task CLEARING_TRANSLATE_TO_CDML. Then you can process the files using the scheduled task CLEARING_PROCESS_FROM_CDML. The scheduled task CLEARING_PROCESS_FROM_CDML consumes the imported tradeValuationReport and initialMarginRreport CDML reports. A set of scheduled tasks allow importing market data: - CLEARING_IMPORT_MARKET_DATA - CLEARING_IMPORT_SCENARIO_SHIFTS COLLATERAL_MANAGEMENT computes cash margin calls on initial margins and variation margins. • ERS_ANALYSIS kicks off the calculation and storage of the limit's usage and availability.
7	Generation of the client statements using the scheduled task CLEARING_STATEMENT.
8	Once the client receives the client statement, the client decides how to meet the margin calls computed by the COLLATERAL_MANAGEMENT scheduled task: in cash, securities, or both. The margin calls are modified accordingly using the Collateral Manager and are settled as applicable.

3 Before you Begin

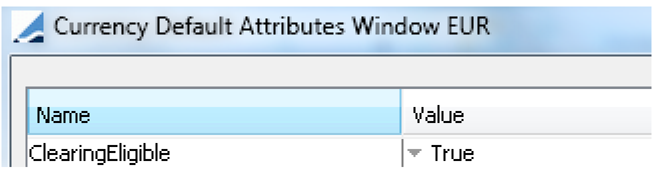
Before you begin, you need to define the following reference data.

3.1 Eligible Currencies

If you want to generate the Sequestered Report by currency, you need to define the eligible currencies for clearing.

The eligible currencies are defined using Configuration > Definitions > Currency Defaults from the Calypso Navigator.

Click **Attributes** and set the attribute Clearing Eligible = True.



3.2 Pricing Environments

You need to create the following pricing environments, pricer configurations, quotes sets, and pricing parameter sets.

Pricing Env	FROMDB	CME_IM	CME_VM	LCH_IM	LCH_VM
Pricer Config	FROMDB	CME_IM	CME_VM	LCH_IM	LCH_VM
Quote Set	FROMDB	CME_IMReplication	default	LCH_IMReplication	default
Pricing Parameter Set	FROMDB	CME	CME	LCH	LCH

The pricing environment FROMDB is used for back-office activities, and CME_IM, CME_VM, LCH_IM, LCH_VM are used for ERS activities.

All pricing parameter sets listed above should have:

- USE_MARKS = true
- ADJUST_FX_RATE = false
- Pricing Parameter Set FROMDB: ZD_PRICING = false

Pricer configurations CME_IM, CME_VM, LCH_IM, LCH_VM:

- Swap product = PricerSwap

- FRA product = PricerFRA

> **[NOTE: The quote sets CME_IMReplication and LCH_IMReplication must be defined in the Data Mapping window for InterfaceName = CME/QuoteSet or LCH/QuoteSet, and Interface Value = IMReplication – See** Market Data **for details]**

Pricer configuration FROMDB:

- Swap product = PricerFromDB
- FRA product = PricerFromDB
- FXNDF product = PricerClearingFromMarks (same as PricerFromDB, but it always uses the settlement ccy of a trade for loading marks).
- ClearingTransfer product = PricerFromDB
- CollateralExposure product = PricerCollateralExposure
- MarginCall = PricerFromDB

The pricing environment names in this documentation are only suggestions. Please feel free to assign names according to your business needs.

3.3 Pricer Measures

Make sure that the following pricer measures are defined:

- CS_COUPON – ID = 2007 – Class Name = `tk.pricer.PricerMeasureClearingFromDB`

CS_NPV_ADJUSTED – ID = 2012 – Class Name = `tk.pricer.PricerMeasureClearingFromDB`

CS_NPV_REV – ID = 2011 – Class Name = `tk.pricer.PricerMeasureClearingFromDB`

CS_PAI – ID = 2009 – Class Name = `tk.pricer.PricerMeasureClearingFromDB`

CS_UPFRONT_FEE – ID = 2008 – Class Name = `tk.pricer.PricerMeasureClearingFromDB`

CS_VARIATION – ID = 2010 – Class Name = `tk.pricer.PricerMeasureClearingFromDB`

3.4 Data Uploader Setup

3.4.1 MQ Series Setup

Please refer to Calypso Data Uploader documentation for details.

3.4.2 Incoming Messages Setup

The Data Uploader creates GATEWAYMSG incoming messages into Calypso, and creates the trades.

By default, the system sets the message sender to CLIENT and the message RECEIVER to CALYPSO. If these entities do not exist as Legal Entities, the system will create them.

You can change those values as needed in the file "`<calypso home>/client/resources/gatewayservice.properties`".

Rename "`<calypso home>/client/resources/gatewayservice.properties.sample`" to "`<calypso home>/client/resources/gatewayservice.properties`" and modify as needed.

```
GatewayServiceClientName=CLIENT
GatwayServiceHostName=CALYPSO
```

Message Workflow

You need to define a message workflow to handle these messages.

- EventClass: PSEventMessage
- Subtype: GATEWAYMSG
- Product: ALL

Orig Status	Action	Resulting Status	Different User	Use STP	Priority	Log	Subtype	Product Type	Rules
NONE	NEW	PENDING_VALID	☐	☑	0	☐	GATEWAYMSG	ALL	
PENDING_TRADE	CANCEL	CANCELED	☐	☐	0	☐	GATEWAYMSG	ALL	CancelCleanUp
PENDING_TRADE	LOAD	COMPLETED	☐	☑	0	☐	GATEWAYMSG	ALL	CheckLink,Loader
PENDING_TRADE	REPROCESS	PENDING_TRADE	☐	☐	0	☐	GATEWAYMSG	ALL	ReMap
PENDING_VALID	CANCEL	CANCELED	☐	☐	0	☐	GATEWAYMSG	ALL	CancelCleanUp
PENDING_VALID	REPROCESS	PENDING_VALID	☐	☐	0	☐	GATEWAYMSG	ALL	ReMap
PENDING_VALID	VALIDATE	PENDING_TRADE	☐	☑	0	☐	GATEWAYMSG	ALL	CheckLink,Validate

[NOTE: Any status code change to this workflow needs to be recorded in the file "`[calypso home>/client/resources/gatewayservice.properties`"]

```
# Gives list of BO Messages states that are used to link pending messages

# These messages are blocked messages due to some validation error.

BOMessageIncompleteStates=PENDING_VALID,PENDING_TRADE,BACKLOAD
```

3.4.3 Trade Workflows

Note: the trade workflows are set per processing organization.

The PO is the clearing member. For example, PO = CGM LLC.

3.4.3.1 ALL Product Types

Product Type = ALL

Orig Status	Action	Resulting Status	Use STP	Rules / Filter	Create Task
CLEARED	AMEND	VERIFIED	true	**Rule** AutomaticFees **Filter** CCPStatus-NOT-ALLEGED	true
CLEARED	UPDATE	CLEARED	false	**Rule** AutomaticFees	true
CLEARED	TERMINATE	TERMINATED	false	**Rule** AutomaticFees,UpdateTermination	false
CLEARED	ENRICH	VERIFIED	false	**Rule** AutomaticFees,CheckSDI **Filter** Cleared_On_OR_Before_Today	true
CONSENT GRANTED	UPDATE	CONSENT GRANTED	false		true
CONSENT GRANTED	ACCEPT	CREDIT_CONSENTED	false		true
CONSENT GRANTED	REFUSE	REJECTED	false		true
CONSENT GRANTED	STP-ACCEPT	CREDIT_CONSENTED	true		true
CONSENT REJECTED	REFUSE	REJECTED	false		true
CONSENT REJECTED	REJECT	REJECTED	false		true
CONSENT REJECTED	UPDATE	CONSENT REJECTED	false		false
CREDIT_CONSENTED	TERMINATE	TERMINATED	false	**Rule** UpdateTermination	false
CREDIT_CONSENTED	UPDATE	CREDIT_CONSENTED	false		false
CREDIT_CONSENTED	AMEND	CREDIT_CONSENTED	false		false

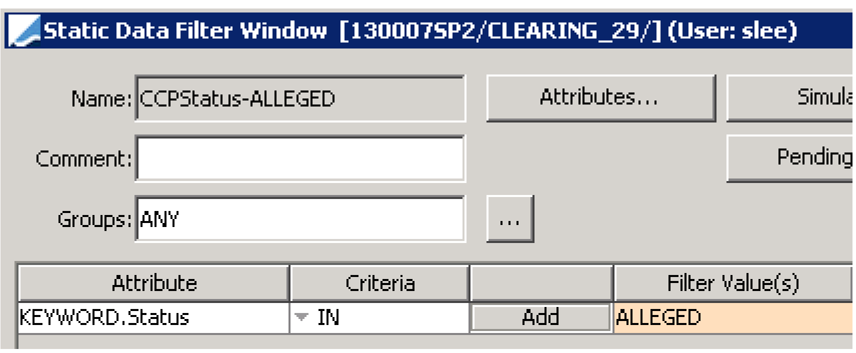
Orig Status	Action	Resulting Status	Use STP	Rules / Filter	Create Task
CREDIT_CONSENTED	REFUSE	REJECTED	false	**Filter** CCPStatus-NOT-CLEARED	false
CREDIT_CONSENTED	ACK	CLEARED	true	**Filter** CCPStatus-CLEARED	true
CREDIT_CONSENTED	CLEAR	CLEARED	false	**Rule** AutomaticFees	true
LIMIT_CHECK	ACCEPT	REQUIRES_CONSENT	false		false
LIMIT_CHECK	UNDO	PENDING	false		false
LIMIT_CHECK	CHECK_LIMIT	REQUIRES_CONSENT	true	**Filter** Limit-WhatIfCheckErrorN	true
LIMIT_CHECK	CANCEL	CANCELED	false		false
LIMIT_FAILED	REJECT	CONSENT REJECTED	false		true
LIMIT_FAILED	UPDATE	LIMIT_FAILED	false		false
LIMIT_FAILED	AMEND	LIMIT_FAILED	false		true
LIMIT_FAILED	RECHECK_LIMIT	PENDING	false		true
LIMIT_FAILED	ACCEPT	CONSENT GRANTED	false		true
LIMIT_FAILED	REFUSE	REJECTED	false		false
NONE	NEW	CLEARED	false	**Rule** AutomaticFees,ClearingLimitPortfolio **Filter** CCPStatus-NOT-ALLEGED	false
NONE	NEW	PENDING	false	**Rule** AutomaticFees,ClearingLimitPortfolio **Filter** CCPStatus-ALLEGED	false

Orig Status	Action	Resulting Status	Use STP	Rules / Filter	Create Task
PENDING	AMEND	VERIFIED	false	**Rule** CheckWhatIfLimits	true
PENDING	ACCEPT	CONSENT GRANTED	true		false
PENDING	WHATIF	LIMIT_CHECK	false	**Rule** CheckWhatIfLimits	true
REJECTED	UPDATE	REJECTED	false		false
REQUIRES_CONSENT	REJECT	CONSENT REJECTED	false		true
REQUIRES_CONSENT	STP-REJECT	LIMIT_FAILED	true	**Filter** Limit-WhatIFCheckPassN	true
REQUIRES_CONSENT	REJECT	LIMIT_FAILED	false	**Filter** Limit-IsViolated	true
REQUIRES_CONSENT	UPDATE	REQUIRES_CONSENT	false		true
REQUIRES_CONSENT	STP-ACCEPT	CONSENT GRANTED	true	**Filter** Limit-WhatIfCheckPass	true
REQUIRES_CONSENT	ACCEPT	CONSENT GRANTED	false		false
REQUIRES_CONSENT	REFUSE	REJECTED	false		true
TERMINATED	AMEND	TERMINATED	false	**Rule** AutomaticFees	false
TERMINATED	UPDATE	TERMINATED	false		false
VERIFIED	CANCEL	CANCELED	false		false
VERIFIED	TERMINATE	TERMINATED	false	**Rule** AutomaticFees,UpdateTermination	true
VERIFIED	MATURE	MATURED	false		false

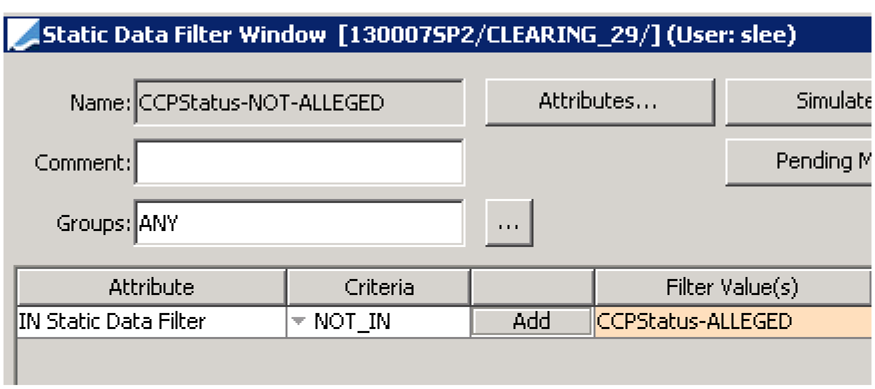
Orig Status	Action	Resulting Status	Use STP	Rules / Filter	Create Task
VERIFIED	UPDATE	VERIFIED	false		true
VERIFIED	AMEND	VERIFIED	false	**Rule** AutomaticFees	false
VERIFIED	ACCEPT	CONSENT GRANTED	false		true
VERIFIED	REJECT	REJECTED	false		true

[NOTE: The transitions CREDIT_CONSENTED – ACK – CLEARED and LIMIT_CHECK – CHECK_LIMIT - REQUIRES_CONSENT must have “Generate Intermediate Event” checked to force the generation of a trade event so that the messages can be generated]

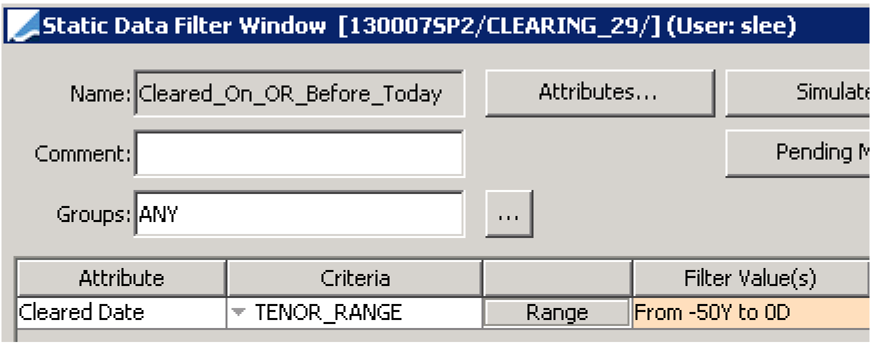
Filter CCPStatus-ALLEGED



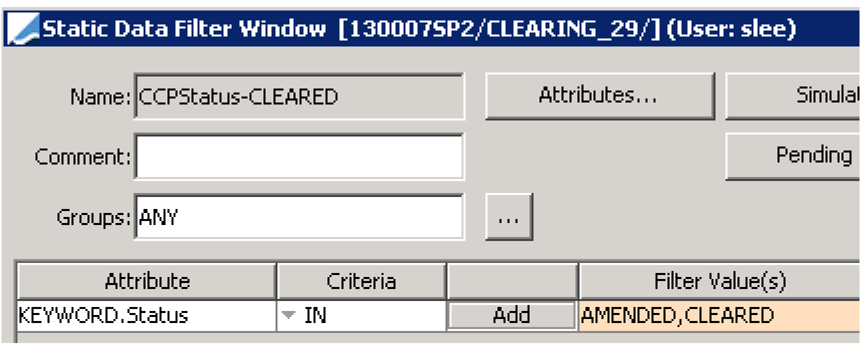
Filter CCPStatus-NOT-ALLEGED



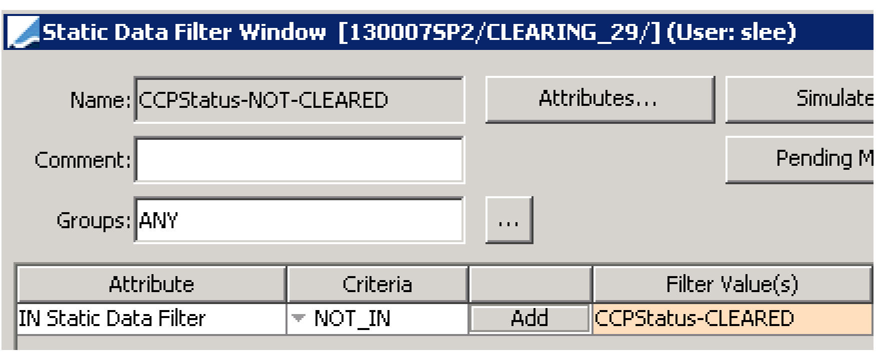
Filter Cleared_On_OR_Before_Today



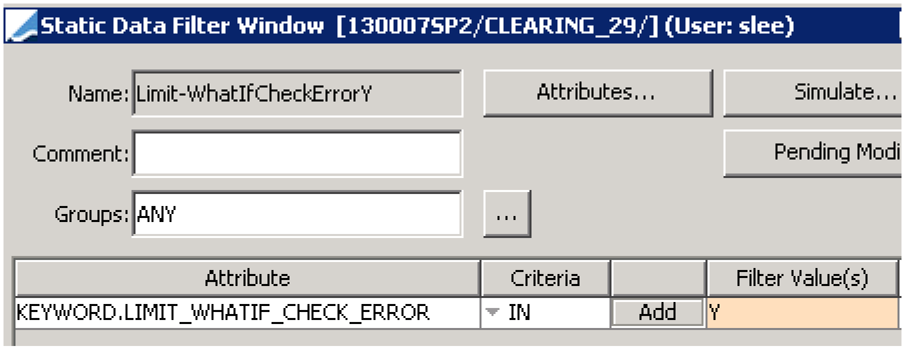
Filter CCPStatus-CLEARED



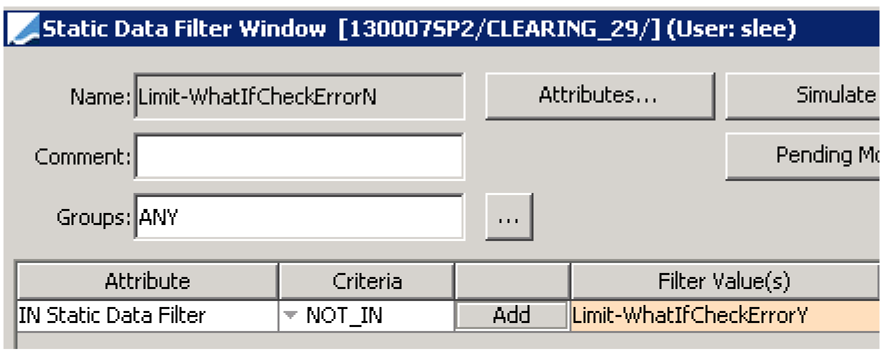
Filter CCPStatus-NOT-CLEARED



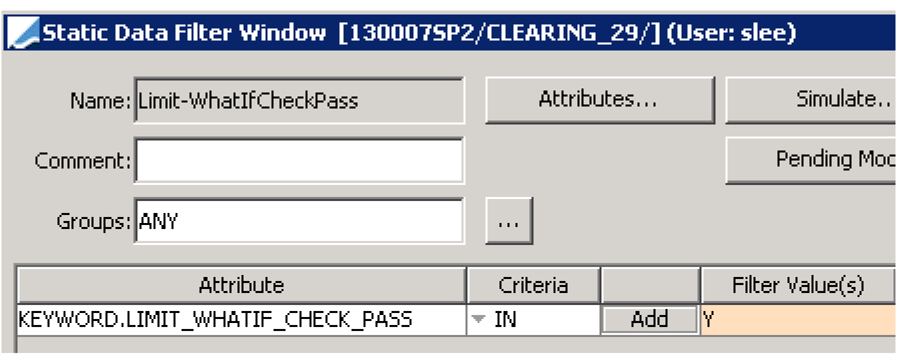
Filter Limit-WhatIfCheckErrorY



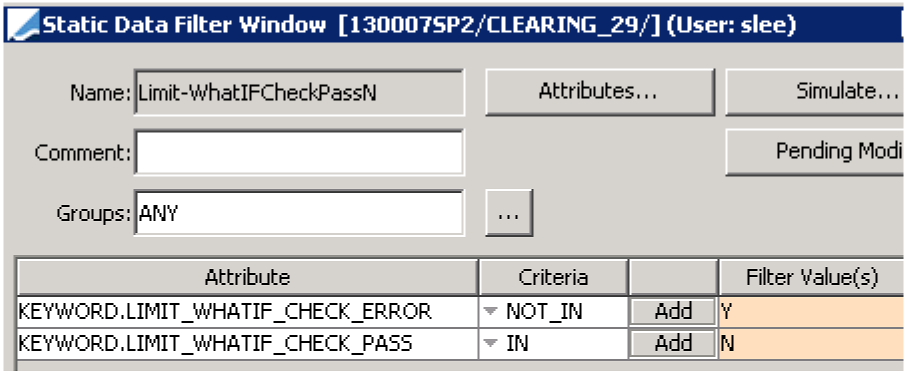
Filter Limit-WhatIfCheckErrorN



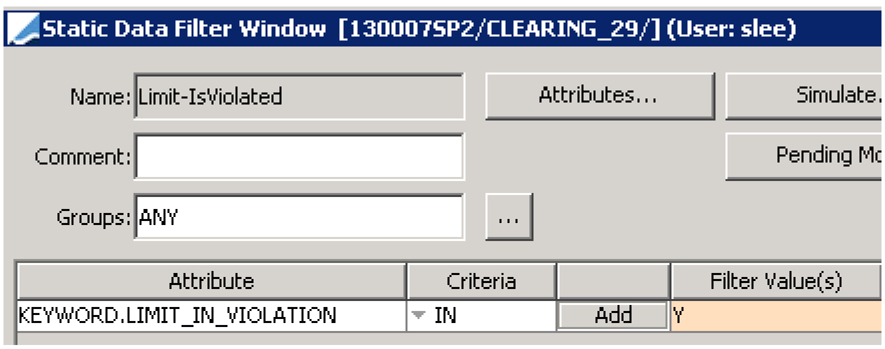
Filter Limit-WhatIFCheckPass



Filter Limit-WhatIFCheckPassN



Filter Limit-IsViolated



3.4.3.2 Clearing Transfer

Orig Status	Action	Resulting Status	STP	Product Type	Rules
CANCELED	AMEND	CANCELED	false	ClearingTransfer	
NONE	NEW	PENDING	false	ClearingTransfer	
PENDING	AUTHORIZE	VERIFIED	true	ClearingTransfer	CheckSDI
PENDING	CANCEL	CANCELED	false	ClearingTransfer	
VERIFIED	AMEND	VERIFIED	false	ClearingTransfer	
VERIFIED	CANCEL	CANCELED	false	ClearingTransfer	

3.4.3.3 Collateral Exposure

Orig Status	Action	Resulting Status	Use STP	Product Type	Rules	Create Task
NONE	NEW	VERIFIED	false	CollateralExposure		false
VERIFIED	CANCEL	CANCELED	false	CollateralExposure		false
VERIFIED	AMEND	VERIFIED	false	CollateralExposure		false

3.4.3.4 Interest Bearing

Orig Status	Action	Resulting Status	Use STP	Product Type	Rules	Create Task	Gen Int. Event
CLEARED	AMEND	VERIFIED	false	InterestBearing		false	true
NONE	NEW	VERIFIED	true	InterestBearing		false	true
VERIFIED	AMEND	VERIFIED	false	InterestBearing		false	true
VERIFIED	CANCEL	CANCELED	false	InterestBearing		false	true

3.4.3.5 Margin Call

Orig Status	Action	Resulting Status	Use STP	Product Type	Rules	Create Task
NONE	NEW	PENDING	false	MarginCall	UpdateClearingMarginCallKeywords	true
PENDING	AUTHORIZE	VERIFIED	true	MarginCall	CheckSDI	true
VERIFIED	AMEND	VERIFIED	false	MarginCall		true
VERIFIED	CANCEL	CANCELED	false	MarginCall		true

The rule UpdateClearingMarginCallKeywords allows propagating the fields defined in the domain "Clearing.MCC.propagateFields", from the margin call contract additional info to the margin call trades.

If the domain "Clearing.MCC.propagateFields" is empty, the fields CCP, CCP_ORIGIN_CODE, MARGIN_TYPE and PRODUCT_TYPE is propagated by default.

3.4.4 Calypso Engines

The Import Message engine and Sender engine use "`<calypso home>/client/resources/calypso_uploader_config.properties`" to connect to the input and output queues of MQ Series.

You should run these engines after the full clearing member setup is completed (legal entities, message configuration, etc.).

The Import Message engine and the Sender engine are configured in the Engine Manager of Web Admin: event subscription and engine parameters.
You may need to add these engines if they are not available for configuration:

- For the Import Message engine, create a new engine called UploaderImportMessageEngine, with class name `com.calypso.tk.engine.UploadImportMessageEngine`

  Engine parameter `config=Uploader`

- For the Sender engine, create a new engine called UploaderSenderEngine, with class name `com.calypso.engine.advice.SenderEngine`

The Import Message engine and the Sender engine can be started from the Engine Manager in Web Admin.

Please refer to Calypso Web Admin documentation for complete details.

The Import Message engine is now listening to messages from the MQ input queue.

The Sender engine is now sending messages to the MQ output queue.

If you want to run another Import Message engine with “-config LCH_1” for example, you would need to:

- Create the following classes:
  - LCH_1Message.java
  - LCH_1MessageHandler.java
  - LCH_1IEAdapter.java
  - LCH_1IEAdapterConfig.java

  Contact Calypso Support for sample classes.
- Create a file `LCH_1bridge_config.properties` with the appropriate MQ connection information.

If the details in `LCHbridgeservice.properties` cannot be used for this second queue, you need to create `LCH_1bridgeservice.properties`.

Then you need to add an entry for the LCH_1 Import Message engine to “`<calypso home>/deploy/EngineStartupConfig.properties`” as described above.

Note: The queue *must* have the LCH (or CME) prefix for this process to work.

3.4.5 Task Station Configuration

You can view EX_GATEWAY exceptions in the Task Station for exceptions related to the integration of GATEWAYMSG messages.

You can also view GATEWAYMSG messages using <status code>_GATEWAYMSG.

3.5 Exchange Feed Setup

3.5.1 Property Files

The Exchange Feed module requires the configuration of the following property files:

- `<calypso home>/client/resources/CMEbridgeservice.properties` and `<calypso home>/client/resources/LCHbridgeservice.properties`
- `<calypso home>/client/resources/ErrorCodeBundleExchangeFeed.properties`
- `<calypso home>/client/resources/Core.DataServer.serviceconfig.xml`
- `<calypso home>/client/resources/CMEbridge_config.properties` and `<calypso home>/client/resources/LCHbridge_config.properties`

3.5.1.1 “CMEbridgeservice.properties” and “LCHbridgeservice.properties”

You need to set the following properties:

- bridge.counterparty.attribute.identifier - Counterparty attribute that stores the counterparty.
- bridge.book.attribute.identifier – Book attribute that stores the book.
- BridgeMessageDefaultSender – Default message sender = CME or LCH
- BridgeMessageDefaultReceiver – Default message receiver (clearing member PO)
- <MESSAGE_TYPE>_<PRODUCT>_BRIDGE_XSLT - To override default product specific XSLT invoked within TransformBridgeMessageRule (optional)
- <MESSAGE_TYPE>_<PRODUCT>_BRIDGE_XSLT_CLASS – To override default product XSLT java class used for transformation invoked within TransformBridgeMessageRule (optional)
- file.bridge.log.directory -Directory for all original messages for logging purpose.
- ThreadPoolSize - Number of threads
- ValidatorFiles – Set of XSLT files which are used to validate if the incoming message can be handled by the engine.

Sample “`CMEbridgeservice.properties`”

```
REQUESTCONSENT_SWAP_BRIDGE_XSLT=
CLEARINGCONFIRMED_SWAP_BRIDGE_XSLT=
REQUESTCONSENT_SWAP_BRIDGE_XSLT_CLASS=
CLEARINGCONFIRMED_SWAP_BRIDGE_XSLT_CLASS=
bridge.counterparty.attribute.identifier=CME_CPTY
bridge.book.attribute.identifier=CME_ACCOUNT
file.bridge.log.directory=/mnt/presales/logs/clearing/cme
BridgeMessageDefaultSender=CME
BridgeMessageDefaultReceiver=CGM LLC
ThreadPoolSize=5
ValidatorFiles=exchange_feed_cme_clearing_confirmed_check_fpml5.0.xslt,exchange_feed_cme_request_co
nsent_check_fpml5.0.xslt,exchange_feed_cme_clearing_refused_check_fpml5.0.xslt
```

3.5.1.2 “ErrorCodeBundleExchangeFeed.properties”

This file is used to define Exchange Feed module specific exception IDs and message content mapping.

Note: This is an extension of “ErrorCodeBundle.properties”. The system requires both property files.

This file contains the following information:

```
#Exchange Feed Msg override datauploader
EF_10014=Channel is not running
EF_10015=Cannot parse file
EF_10016=Cannot read file
EF_10017=Cannot find gateway message with linked ID
EF_10018=Invalid trade id in gateway message
EF_10019=Cannot find trade
```

```
EF_10020=Missing values from clearing status
EF_10021=More than 1 trade found for external reference
EF_10022=No Previous BridgeMessage Found
EF_10023=Trade Not Found
EF_10024=Invalid Interest Compounding Method
EF_10025=Invalid Interest Compounding Frequency
EF_10026=No prefered FX Rate definition found
EF_10027=Trade Source not found in Trade Keyword
EF_10028=Domain value not found
EF_10029=No Trade found with Correlation ID provided
#Error Types
EF_23000=MQ Exception
EF_21002=Miss Data for Transform

#Exchange Feed Error Msg
EF_50001=Invalid FPML Message
EF_50002=Folder Not Exist
EF_50003=ExchangeFeedBridgeEngine is not registered
EF_50004=Missing FeedConfigType in message
EF_50005=Message Handling failure

#Exchange Feed Field
EF_00001=External Reference
```

3.5.1.3 “Core.DataServer.serviceconfig.xml”

Add the following lines to register the RMI Server in the Data Server:

```
<bean id=”baseDataUploadServer” class=”com.calypso.tk.service.DataUploadServerImpl”>
</bean>
<bean id=”rmiBaseDataUploadServer” parent=”rmiServiceExporter”>
   <property name=”service” ref=”baseDataUploadServer” />
   <meta key=”serviceInterface” value=”com.calypso.tk.service.RemoteDataUpload” />
</bean>
```

3.5.1.4 “CMEbridge_config.properties” and “LCHbridge_config.properties”

These files are required by MQ Series as a channel for incoming and outgoing messages.

The Import Message engine reads the data from the file to establish connection to the MQ to retrieve/send data from/to the queue.

- jms.modetypeclass - Factory class in the JNDI service provider
- jms.url – JNDI directory where the MQ binding files reside
- jms.queue.connectionFactory – JMS Connection factory name is set under the MQ server setup
- jms.channels - MQ channel to be monitored
- monitor.frequency - Monitoring intervals
- input.queue.name – JMS Queue name is bound to the MQ queue for incoming messages from

- output.queue.name – JMS Queue name is bound to the MQ queue for outgoing messages

Sample "`CMEbridge_config.properties`"

```
# JMS properties file
#
jms.modetypeclass=com.sun.jndi.fscontext.RefFSContextFactory
jms.url=file:/c:/calypso/software/JNDI-Directory
jms.queue.connectionFactory=CME_MATCHING.CF
#indicate that messages will be sent to a JMS WebSphere MQ client
jms.sender.queue.targetClient=MQJMS_CLIENT_NONJMS_MQ
jms.receiver.queue.targetClient=MQJMS_CLIENT_NONJMS_MQ
jms.channels=TO.CALYPSO, CME.TO.CALYPSO2
# monitor for the queue channel listed above, in terms of second
monitor.frequency = 60

input.queue.name=JQUEUE.CME.CALYPSO
JQUEUE.CME.CALYPSO.queue.ackType=auto
JQUEUE.CME.CALYPSO.queue.persist=false
JQUEUE.CME.CALYPSO.queue.transacted=false

output.queue.name=JQUEUE.CALYPSO.CME
JQUEUE.CALYPSO.CME.queue.ackType=auto
JQUEUE.CALYPSO.CME.queue.persist=false
JQUEUE.CALYPSO.CME.queue.transacted=false
```

Sample "`LCHbridge_config.properties`"

```
# JMS properties file
#
jms.modetypeclass=com.sun.jndi.fscontext.RefFSContextFactory
jms.url=file:/c:/calypso/software/JNDI-Directory
jms.queue.connectionFactory=LCH_MATCHING.CF
monitor.frequency = 60

input.queue.name=JQUEUE.LCH.CALYPSO
JQUEUE.LCH.CALYPSO.queue.ackType=auto
JQUEUE.LCH.CALYPSO.queue.persist=false
JQUEUE.LCH.CALYPSO.queue.transacted=false

output.queue.name=JQUEUE.CALYPSO.LCH
JQUEUE.CALYPSO.LCH.queue.ackType=auto
JQUEUE.CALYPSO.LCH.queue.persist=false
JQUEUE.CALYPSO.LCH.queue.transacted=false
```

3.5.2 Exchange Feed Bridge Engine Registration

The ExchangeFeedBridge 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 ExchangeFeedBridgeEngine, with class name `com.calypso.tk.engine.ExchangeFeedBridgeEngine`.

3.5.3 Incoming Messages Setup

The Exchange Feed processes CONSENT messages and BRIDGEMSG messages. It transforms BRIDGEMSG messages into Calypso Upload Document objects through the TransformBridge rule. The Exchange Feed Bridge engine generates the GATEWAYMSG messages that trigger the Data Uploader to create trades in Calypso based on the Calypso Upload Document objects.

3.5.3.1 BRIDGEMSG Message Workflow

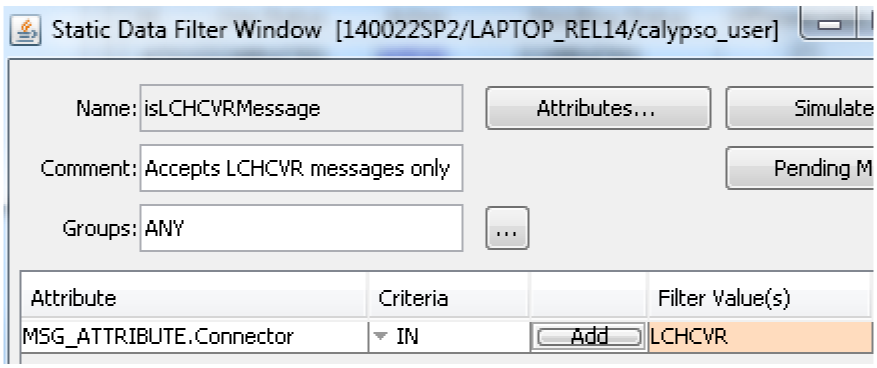
This workflow can be imported using the file "`<calypso home>/client/resources/workflow/BRIDGEMSG.wf`".

If you are clearing with LCH, this workflow should be imported using the file "`<calypso home>/client/resources/BRIDGEMSG_FOR_CVR.wf`" instead. It adds the transition highlighted below for managing incoming collateralAllocation messages.

Orig Status	Action	Resulting Status	STP	Rules	Comments
COMPLETED	REDO	PENDING	false	RedoBridge	
COMPLETED	AMEND	COMPLETED	false		
NONE	NEW	PENDING	false		
PENDING	TRANSFORM	TRANSFORMED	true	TransformBridge	Swap_BRIDGE_XSLT= SWAP_DEFAULT.xslt
PENDING	LOAD	COMPLETED	false	TransformBridge	Swap_BRIDGE_XSLT= SWAP_DEFAULT.xslt
PENDING	CANCEL	CANCELED	false		
PENDING	MATCH	COMPLETED	true	MatchCollateralAllocationResponse Filter: isLCHCVRMessage	

Orig Status	Action	Resulting Status	STP	Rules	Comments
TRANSFORMED	REDO	PENDING	false	RedoBridge	
TRANSFORMED	LOAD	COMPLETED	false	MergeTradeId	
TRANSFORMED	CANCEL	CANCELED	false		

Static data filter “isLCHCVRMessage”:



3.5.3.2 CONSENT Message Workflow

This workflow can be imported using the file "`<calypso home>/client/resources/workflow/CONSENT.wf`".

Orig Status	Action	Resulting Status	STP	Message Type	Rules
NONE	NEW	PENDING	false	CONSENT	
PENDING	AUTHORIZE	TO_BE_SENT	true	CONSENT	CheckContact
TO_BE_SENT	SEND	SENT	true	CONSENT	

3.5.4 Task Station Configuration

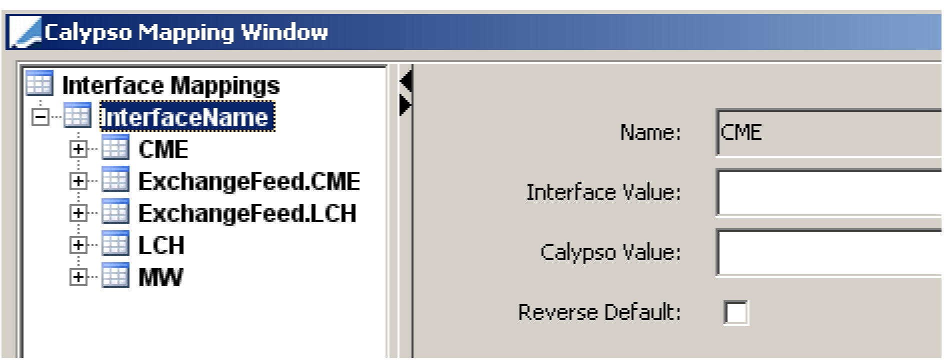
You can view EX_BRIDGE exceptions in the Task Station for exceptions related to the integration of BRIDGE messages.

You can also view BRIDGEMSG messages using <status code>_BRIDGEMSG.

3.5.5 Data Mapping

Add the Calypso Mapping Window to the Calypso menu (menu action `mapping.CalypsoMappingWindow`), so that you can define mapping values between the CCPs and Calypso.

Mapping values are provided out-of-the-box, and need to be reviewed / validated for the interface names "CME", "ExchangeFeed.CME", "ExchangeFeed.LCH", and "LCH".



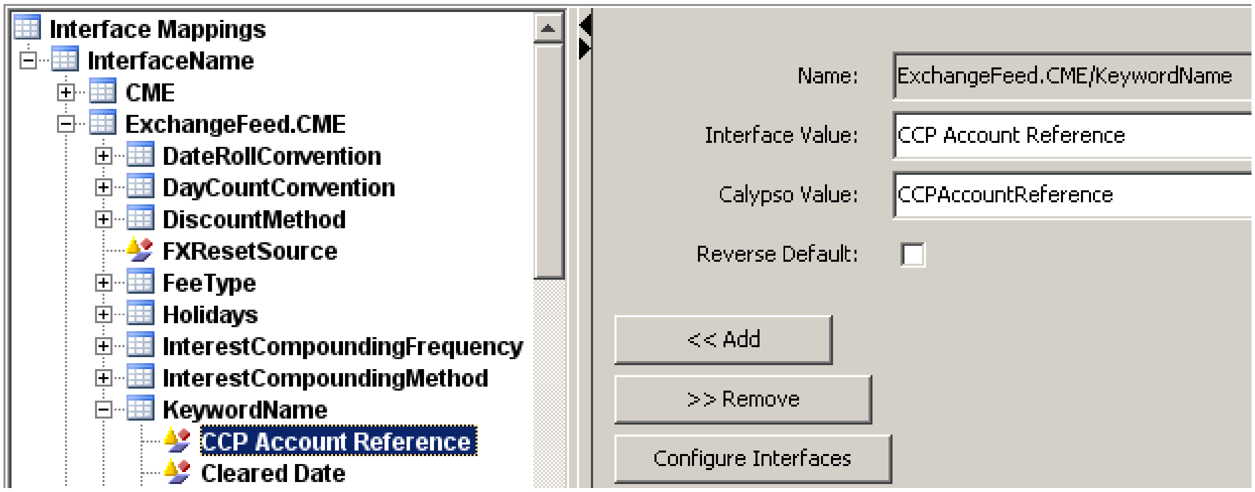
To audit changes to the Data Mapping, add CalypsoMapping to the domain "classAuditMode".

Note: Make sure that the overnight reference indices defined in Calypso (EONIA, FEDFUNDS, etc.) have the reference index attribute IndexCalculator = OISNew.

3.5.5.1 Trade Keywords

A set of trade keywords allow standardizing the Clearing solution.

It is possible to map a keyword name/value to another one by setting the mapping through the Calypso Mapping Window.



Clearing Keywords

Trade Keywords	Description
CCP	Clearing house: CME, LCH, etc. Short name of the clearing house legal entity.
CCPAccountReference	Clearing house account name - SDI selection is based on this trade keyword, which value must match the “ExternalName” of the Calypso client/house account.
CCPBlockTradeID	Block trade ID.
CCPClearedDate	Date that the trade is processed by the clearing house.
CCPCollateralPolicy	Collateral Policy that overrides the collateral policy of the Margin Call Agreement associated with the trade. Collateral policies are defined in the domain "CollateralPolicy". They are used to select discount curves through the Pricer Configuration provided the pricing parameter COLLATERALIZED_PRICING is set to On.
CCPFirmReference	Clearing Member Firm identifier.
CCPMessageTimestamp	Message timestamp.
CCPOriginCode	Set to either HOUSE or CLIENT to reflect house activity or client activity.
CCPTradeID	Trade ID assigned by the clearing house. It is also set on the trade’s External Reference.

Trade Keywords	Description
ClearingConfirmedCorrelationID	LCH trade confirmation number.
ClearingConfirmedIncomingMessageID	LCH message confirmation number.
ClearingConfirmedSentBy	LCH confirmation sender reference.
ClearingConfirmedSentTo	LCH confirmation receiver reference.
client_trade_id	Trade ID provided by the client.
CMFAccountReference	Set by the system when a trade is created: ID of the Calypso clearing account.
IS_CLIENT	Set to “false” for HOUSE trades and clearing member mirror trades. Set to true for client mirror trades.
LIMIT_WHATIF_CHECK_PASS	Y if the limits check passed, or N otherwise.
LIMIT_WHATIF_LIMIT_MAX	Limit amount.
LIMIT_WHATIF_PORTFOLIO	ERS Limits portfolio.
LIMIT_WHATIF_RISK_USAGE	Trade amount contributing to the limit check.
PlatformTradeID	Trade ID assigned by the platform where the trade is captured (Markitwire for example).
Status	Trade status at the clearing house.
TradeSource	Platform where the trade is captured (Markitwire for example).
USUPrefix	Unique swap identifier - CFTC namespace.
USIValue	Unique swap identifier – trade ID.

3.5.5.2 Mirror Keywords

The following trade keywords need to be propagated on the mirror trades.

They need to be added to the domain “MirrorKeywords”: CCP, CCPAccountReference, CCPClearedDate, CCPOriginCode, CCPSettlementType, CCPTradeID, LIMIT_WHATIF_CHECK_ERROR, LIMIT_WHATIF_CHECK_ERROR_MSG, LIMIT_WHATIF_CHECK_PASS, LIMIT_WHATIF_LIMIT_MAX, LIMIT_WHATIF_PORTFOLIO, LIMIT_WHATIF_RISK_USAGE, PlatformTradeID, RelatedProductType, Status, USIPrefix, USIValue.

Examples:

- MirrorKeywords
  - CCP
  - CCPAccountReference
  - CCPClearedDate
  - CCPOriginCode
  - CCPSettlementType
  - CCPTradeID
  - RelatedProductType
  - USIPrefix
  - USIValue

3.5.5.3 Trade Templates

Trade templates are required to populate missing information from the incoming messages.

You can create trade templates from the Trade windows using “Save As Template” from the product specific menu.

In the Calypso Mapping Window, you can set the trade template for a given product type.

Select the InterfaceName “ExchangeFeed.CME” and add a TradeTemplate:

- Interface Value = product type (Example “InterestRateSwap”)
- Calypso Value = trade template (Example “USD3L1”)

Name:	ExchangeFeed.CME/TradeTemplate
Interface Value:	InterestRateSwap
Calypso Value:	USD3L1

Repeat for more product types as needed, and for the InterfaceName “ExchangeFeed.LCH” as needed.

Name:	ExchangeFeed.LCH/TradeTemplate
Interface Value:	InterestRateSwap
Calypso Value:	USD3L1

3.6 Clearing Member Setup

The following files are available under “‟`<calypso home>/client/resources/config/`”:

- `clearingconnection.properties.sample`
- `clearing.properties.sample`
- `clearing.reportPaths.properties.sample`
- `CustomClearingReports.xml.sample`
- `clearingServiceCodes.properties.sample`

These files are optional – They are used to override out-of-the-box properties, see below for usage.

3.6.1.1 “clearingconnection.properties”

Rename “`clearingconnection.properties.sample`” to “`clearingconnection.properties`”, and modify as needed.

This file contains connection information to the CCP.

```
# Key format is
#
# <CCP short name>.<Firm ID (PO LE attribute)>.<key>
#
# URI format must include protocol, host and port (where applicable)
#
# For public key SFTP authentication, keyPassphrase is optional. Key
# path can be an absolute filesystem path, or a resource path within
# the classpath. Filesystem paths take precedence

CME.4Q0.URI=sftp://sftpng.cmegroup.com:22
CME.4Q0.user=<user>
CME.4Q0.password=<password>

LCH.CC1.URI=sftp://195.246.228.9:6020
LCH.CC1.user=<user>
LCH.CC1.key=<path to CC1 key>

LCH.CC2.URI=sftp://195.246.228.9:6020
LCH.CC2.user=<user>
LCH.CC2.key=<path to CC2 key>
LCH.CC2.keyPassphrase=<CC2 key passphrase>
```

Firm Id

They are stored in the attributes of the clearing member processing org: “<CCP><Clearing Service>FirmId”, for example “CMEIRDFirmId”.

If no such legal entity attribute is found, the system will look for the legal entity attribute “<CCP>FirmId”, for example “CMEFirmId”.

In this example, the CMEFirmId is “4Q0” – This is a test environment for Calypso – You need to replace it with your own firm ID.

In this example, the LCHFirmId for LCH US is CC1, and the LCHFirmId for LCH UK is CC2 – There are test environments for Calypso – You need to replace them with your own environments.

URI

Then set the values for the parameters URI.

In this example, "sftp://sftpng.cmegroup.com:22" is a test environment for Calypso – You need to replace it with your own environment.

The following types of URI are currently supported: HTTP/S, SFTP, FTPS, FTP and local file system.

Examples of local file system:

```
CME.4Q0.URI=file://C:/CLEARING/Data/CME
LCH.CC1.URI=file://C://CLEARING//Data//LCH
```

User / Password or User / Key

Then set the values for the parameters user/password, or user/key/keyPassphrase.

If you set both user/password, and user/key/keyPassphrase for a given URI, user/key/keyPassphrase will be used for authentication.

keyPassphrase is optional – It is only needed if the key is protected.

3.6.1.2 "clearing.properties"

This file is used to override default properties as needed.

If you want to override the default properties, rename "`clearing. properties.sample`" to "`clearing. properties`".

clearing.import.folder

The default import folder is "`<user home>\Calypso\clearing\`" on the server where the Scheduler engine is running, and for the user running the Scheduler engine.

If you want to override the default import folder, rename "`clearing.properties.sample`" to "`clearing.properties`" and set the import folder "`clearing.import.folder`".

```
#
# Clearing configuration properties
#

# Import data base folder. If not defined, it will
# default to $calypso_user_home/clearing, were $calypso_user_home
# is the running user's Calypso home (-userhome arg)
#
#clearing.import.folder=/home/clearing/Calypso/clearing
clearing.import.folder=X:\\shared\\Calypso\\clearing
```

clearing.custom.packages

You can set custom packages as needed using the property `clearing.custom.packages`.

Example:

```
clearing.custom.packages=pkg1,pkg2,...,pkgN
```

where pkgN is the custom packages to add, for example:

```
clearing.custom.packages=com.customer.package1,com.customer.package2
```

If the property `clearing.custom.packages` does not contain the package “com.calypso.clearing”, it will be added at the end of the list.

If the property `clearing.custom.packages` contains the package “com.calypso.clearing”, its order in the list will be respected.

clearing.import.lchFirmIdPathSuffix

By default, when clearing members access their LCH environment, the “LCH<Clearing Service>FirmId” is used to identify the path to the CCP files. If such attribute is not present, it is the attribute “LCHFirmId”.

If the clearing members want to access their test environment at LCH instead, the path to the CCP files is identified by the “LCH<Clearing Service>FirmId” / “LCHFirmID” with the suffix “(mbr)”.

This property allows setting the suffix to access the test environment.

Example:

```
clearing.import.lchFirmIdPathSuffix=(mbr)
```

clearing.import.lch.swapClearFolderSuffix

By default, the CCP files are stored in the SwapClear folder but LCH could setup another folder for testing purposes.

The other folder can be accessed using the folder suffix defined in this property.

The folder will become “Swap Clear <folder suffix>”.

Example:

```
clearing.import.lch.swapClearFolderSuffix=\ Member Test Refresh
```

The folder `/<mnemonic>/SwapClear/` will be transformed to `/<mnemonic>/SwapClear Member Test Refresh/`.

clearing.import.cme.UATNRSuffix

If defined, the value of this property will be added in front of all CSV and XML file extensions.

Example:

```
clearing.import.cme.UATNRSuffix=.nr
```

The suffix will be added as follows: "`/cme/ftp/PUB/IRS/IRSDFR_LIBOR1M_${date}.nr.csv`".

3.6.1.3 "clearing.reportPaths.properties"

This file is used to override report paths. It contains the default report paths for reference. You can override as needed.

If you want to override the default report paths, rename "`clearing.reportPaths.properties.sample`" to "`clearing.reportPaths.properties`".

```
#
# Report paths overrides
#
# Paths defined in this properties file will override those loaded from the
# OOTB configuration and CustomClearingReports.xml. Only paths can be
# overridden here, no other report attribute will be modified. Refer to
# Clearing documentation for more information.
#
# The following syntaxes are accepted
#
#  <reportBeanName>=<new report path>
#  <CCP>.<reportName>=<new report path>
#
# where
#
#  reportBeanName : report bean name, with bean as in Spring bean. See
#                   CustomClearingReports.xml for more info
#
```

Example:

```
CME.CMEPAAQuote = /cme/ftp/PUB/IRS/cme.paa.rate.{date}.csv
```

The following placeholders are supported:

- ${date}: Valuation date. Formatting depends on CCP.
- ${firmId}: Firm ID, as defined in the legal entity attributes "<CCP><Clearing Service>FirmId" or "<CCP>FirmId" if not present.

- ${lchDynamicDateFolder}: Only for LCH. It is based on the value of the legal entity attribute "LCHRemoteFolderStructure":
  - If it is set to "Dynamic", then ${lchDynamicDateFolder} is the formatted valuation date, plus a final forward slash (/). Only for LCH and for Dynamic folders, as defined in the legal entity attribute "LCHRemoteFolderStructure".
  - If it is set to "Static" then ${lchDynamicDateFolder} is an empty string.

You can also use this file to handle individual Zip files: You need to override the report path by adding one of the following suffixes:

- zip
- gz

Example:

```
LCH.HistoricIndexRates = /Public(mbr)/SwapClear/Trade/${date}_REP00003 - Historic Index Rates_ 1.TXT.zip
```

Additional capability – The following syntax is also supported:

```
${key=value?expandedValue}
```

For example:

```
${firmId=CC2?.zip}
```

meaning:

- If firmId is CC2, then the ".zip" suffix is added.
- If not, nothing is added.

Example:

```
LCH.CashSettlementReport = /${firmId}/SwapClear/${lchDynamicDateFolder}${date}_REP00016c - OTC Portfolio Cash
Settlement (Client)_ 1.TXT${firmId=CC2?.zip}
```

3.6.1.4 "CustomClearingReports.xml"

This file is used to override default reports and market data.

If you want to override the default reports and market data, rename "`CustomClearingReports.xml.sample`" to "`CustomClearingReports.xml`".

> **[NOTE: The report configuration is done using Spring]**

Adding a new report: For example, we need to add a new CME DFR curve, IRSDFRCurve_AONIA. The way to do it is to add the following XML to the file "`CustomClearingReports.xml`":

```
<bean id="IRSDFRCurve_AONIA" class="com.calypso.tk.clearing.external.report.CMEReport">
   <property name="name" value="IRSDFRCurve_AONIA" />
   <property name="CCP" value="CME" />
   <property name="displayName" value="IRS DFR Curve - AONIA" />
   <property name="type" value="MARKET_DATA" />
   <property name="path" value="/cme/ftp/PUB/IRS/IRSDFR_AONIA_${date}.nr.csv" />
   <property name="XSLResourcePath" value="stylesheet/cme/CME_DFR.xslt" />
   <property name="defaultFormat" value="CSV" />
   <property name="attributes">
      <map>
         <entry key="marketDataType">
            <util:constant static-field="com.calypso.tk.clearing.external.report.MarketDataType.CURVES" />
         </entry>
      </map>
   </property>
   <property name="plugins">
      <list>
         <ref bean="cmeCurveProcessorPlugin" />
      </list>
   </property>
</bean>
```

Description of each property:

- name (mandatory) : Name of the report. Along with the CCP, it fully identifies a report.
- CCP (mandatory).
- displayName (optional) : Will default to the name.
- type (mandatory) : We currently support 2 types of reports:
  - EOD_REPORT : reports used in BO processing (e.g.: margin)
  - MARKET_DATA
- path (mandatory) : Remote path of the report. Note the ${date} placeholder: some variables can be used, always enclosed in ${}
  - date : valuation date
  - firmId : e.g. 4Q0 or CC1 in our case. Taken from the PO LE attributes “<CCP><Clearing Service>FirmId” or “<CCP>FirmId” if not present
- XSLResourcePath (mandatory): CLASSPATH path of the XSLT style sheet to process the report
- defaultFormat (optional) : Raw report format. 3 types currently supported
  - XML

  - CSV (Comma Separated Values) (e.g.: used in CME)
  - TSV (Tab Separated Values) (e.g.: used in LCH)
- **attributes** (optional)
  - **marketDataType**: within market data type we support several subtypes. The marketDataType is important, because, OOB, the report groups that used to be defined in the clearingmarketdata.properties files are now dynamically built by grouping reports that have the same marketDataType. E.g.: all reports with marketDataType=com.calypso.tk.clearing.external.report.MarketDataType.CURVES will form the OOB group "Curves". The supported types are
    - com.calypso.tk.clearing.external.report.MarketDataType.CURVES ("Curves" group)
    - com.calypso.tk.clearing.external.report.MarketDataType.QUOTES ("Quotes" group)
    - com.calypso.tk.clearing.external.report.MarketDataType.RATE_RESET ("Rate Resets" group)
    - com.calypso.tk.clearing.external.report.MarketDataType.HOLIDAYS ("Holidays" group)
- **plugins** (optional)

For the specific case of CME DFR curves, there is an easier way to add a new one: this would be an equivalent definition:

```
<bean name="IRSDFRCurve_AONIA" parent="parentDFRCMEReport">
   <property name="path" value="/cme/ftp/PUB/IRS/IRSDFR_AONIA_${date}.nr.csv" />
</bean>
```

Note the parent=parentDFRCMEReport : that will complete the rest of the configuration.

Modifying the OOB market data groups: For example, you do not want to download all the OOB curves, but only 2 of them: IRSDFRCurve_AONIA and IRSDFRCurve_TONAR. You can add the following XML to "`CustomClearingReports.xml`":

```
<bean name="curvesGroupBean" class="com.calypso.tk.clearing.external.report.ReportInfoGroup">
   <property name="name" value="Curves" />
   <property name="reportNames">
      <set>
         <value>IRSDFRCurve_AONIA</value>
         <value>IRSDFRCurve_TONAR</value>
      </set>
   </property>
</bean>
```

The property name=Curves will make the OOB Curves group to be ignored, and the new one will contain only those 2 reports. Needless to say, the report names must point to existing report: if you add names of unknown reports, they will be ignored.

3.6.1.5 “clearingServiceCodes.properties”

This file is used to override default service codes. Service codes are used in the scheduled task CLEARING_EXPORT_CVR_WORKSHEET to determine the file name.

```
#
# Clearing Service Codes
#
# Arbitrary codes that identify Clearing Services. Initially, a clearing service
# would identify a product, or family of products (product type) that are usually
# margined together, although in the future this definition could change
#
# Current supported syntax is
#
#   < CCP short name>.<Product type>=<Service Code>
#
# Uncomment and redefine, if needed
#
#CME.IRD=01
#CME.NDF=02
#LCH.IRD=03
```

3.7 Collateral Setup

3.7.1 Collateral Workflow

The Collateral workflow provided out-of-the box by the Collateral module must be modified as follows.

All the transitions from NONE to EXECUTED should be STP.

Orig Status	Action	Resulting Status	Use STP	Rules
ALLOCATED	VALIDATE	VALIDATED	true	
EXECUTED	AMEND	EXECUTED	false	
EXECUTED	SUBSTITUTE	EXECUTED	false	Execute
EXPOSURE_AGREED	ALLOCATE	ALLOCATED	true	
NONE	NEW	PRICING	true	
PRICED_NO_CALL	AGREE_EXPOSURE	EXPOSURE_AGREED	false	

Orig Status	Action	Resulting Status	Use STP	Rules
PRICED_PAY	AGREE_EXPOSURE	EXPOSURE_AGREED	true	AutoAdjust
PRICED_RECEIVE	AGREE_EXPOSURE	EXPOSURE_AGREED	true	AutoAdjust
PRICING	PRICE	PRICED_NO_CALL	true	CheckNoCall
PRICING	PRICE	PRICED_PAY	true	CheckPay
PRICING	PRICE	PRICED_RECEIVE	true	CheckReceive
VALIDATED	EXECUTE	EXECUTED	true	Execute

3.7.2 Buffer Functionality

The multi-buffer functionality is only enabled if the domain “Collateral.Multiplier” contains the value “Buffer”.

3.8 ERS Limits Setup

Please refer to the Calypso ERS Limits Installation Guide for details.

3.9 All Property Files and Resource Files

All resource files and property files need to be copied 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 on deploying resource files.

4 Legal Entities and Accounts Setup

Notes

Note: Legal entities must be defined to identify the clearing house, the clearing member (processing org), and the clients. They should all have at least one contact.

When defining legal entities, accounts, and books, several attributes will be set as well. Please remember that attributes and their values are case sensitive.

4.1 Defining Books

The book in Calypso is used to store trades.

When trades are imported into the system, and trades are created because of the EOD processes, the books are set according to the following logic. This applies to cleared trades, clearing transfer trades, margin call trades and collateral exposure trades.

You have two options to define books:

- Option 1 - Define books at the clearing account level (CCP facing trades and client / house facing trades are in the same book for a given clearing account)
- Option 2 - Define books at the legal entity level (CCP facing trades and client / house facing trades are in different books for a given clearing account)

Option 1 has priority over Option 2 if both options are configured. In other words, books defined at the legal entity level will be ignored if a book is defined at the clearing account level.

[NOTE: If you choose Option 1, it has to apply to ALL clearing accounts. If you choose Option 2, it has to apply to ALL legal entities – It is not recommended to have a mix of both options]

4.1.1 Option 1 – A Book per Clearing Account

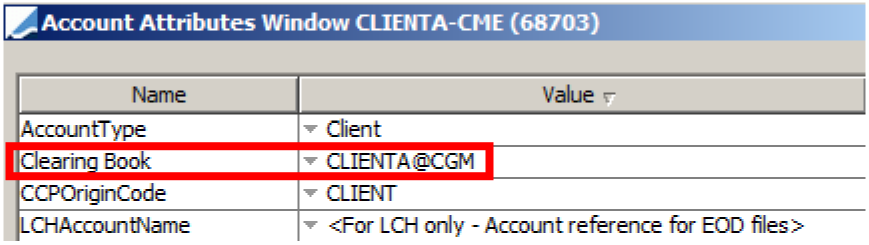
You define a book at the clearing account level.

This book contains for a given clearing account, the CCP facing trades and the client / house facing trades. So basically, this book always has a flat position.

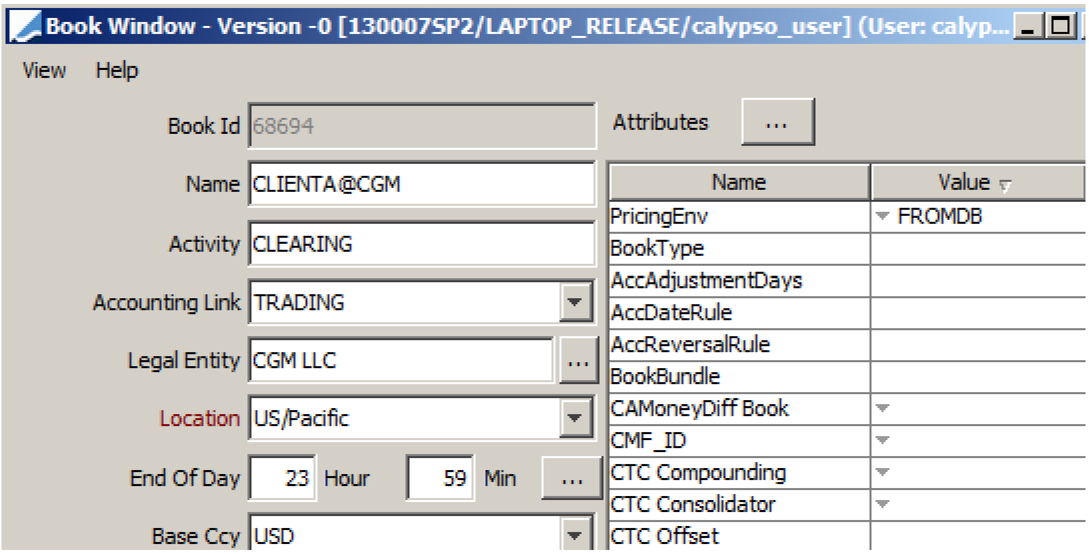
4.1.1.1 Sample Clearing Account Book

The clearing account book is set on the account attributes of BOTH the CCP Facing Clearing Account and the Client Facing Clearing Account.

[NOTE: This is the same setup, whether the clearing account is a client clearing account or a house clearing account]



From the Calypso Navigator, navigate to Configuration > Books & Bundles > Trading Book to define books.



It is not requires to set any book attribute.

4.1.2 Option 2 – A Book per Legal Entity

For the clearing member, you need to have a book to store the trades related to the house activity, and a book to store the trades related to the client activity. When trades are imported, the book will be assigned in the following order of priority:

- The book set at the Clearing House level, if any.

Note: You can only set the book at the CCP level if you have defined only one clearing member in your system.

- The book set at the clearing member level, if any.
- The book set in the User Defaults.

For the clients, you can have a book per client, or a book across multiple clients. This choice should mostly be driven by P&L reporting requirements, since the P&L is computed at the book level. When trades are imported, the book will be assigned in the following order of priority:

- The book set at the client level, if any.
- The book set in the User Defaults.

4.1.2.1 Sample Clearing Member Books

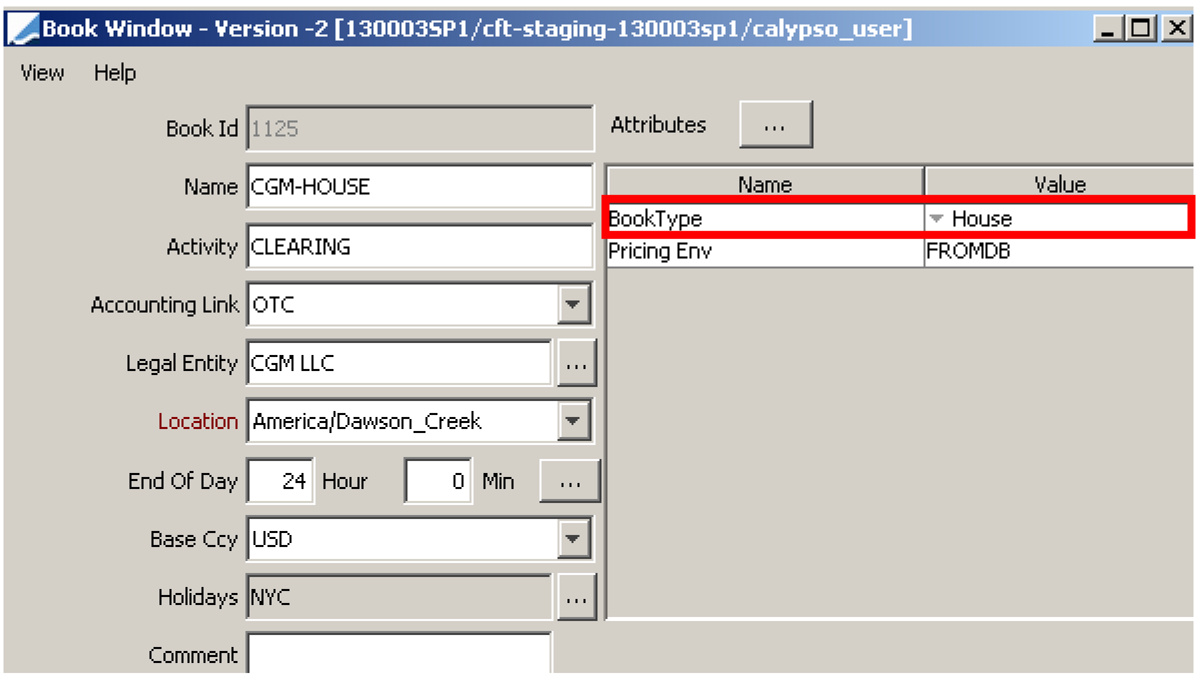
The clearing member books are set on the clearing house OR the clearing member attributes.

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
1110	ALL	CGM LLC	ALL	Minimum Other Requirement	-200
1109	ALL	CGM LLC	ALL	Minimum CFTC Requirement	5000000.2
1602	ALL	CGM LLC	ALL	LCHFirmId	CC1
1107	ALL	CGM LLC	ALL	House Clearing Book	CGM-HOUSE
1108	ALL	CGM LLC	ALL	Client Clearing Book	CGM-CLIENT
1106	ALL	CGM LLC	ALL	CMF_ID	000
1601	ALL	CGM LLC	ALL	CMEFirmId	843

Clearing Member House Clearing Book

The clearing member House Clearing book holds trades for the clearing member’s house trades.

From the Calypso Navigator, navigate to Configuration > Books & Bundles > Trading Book to define books.



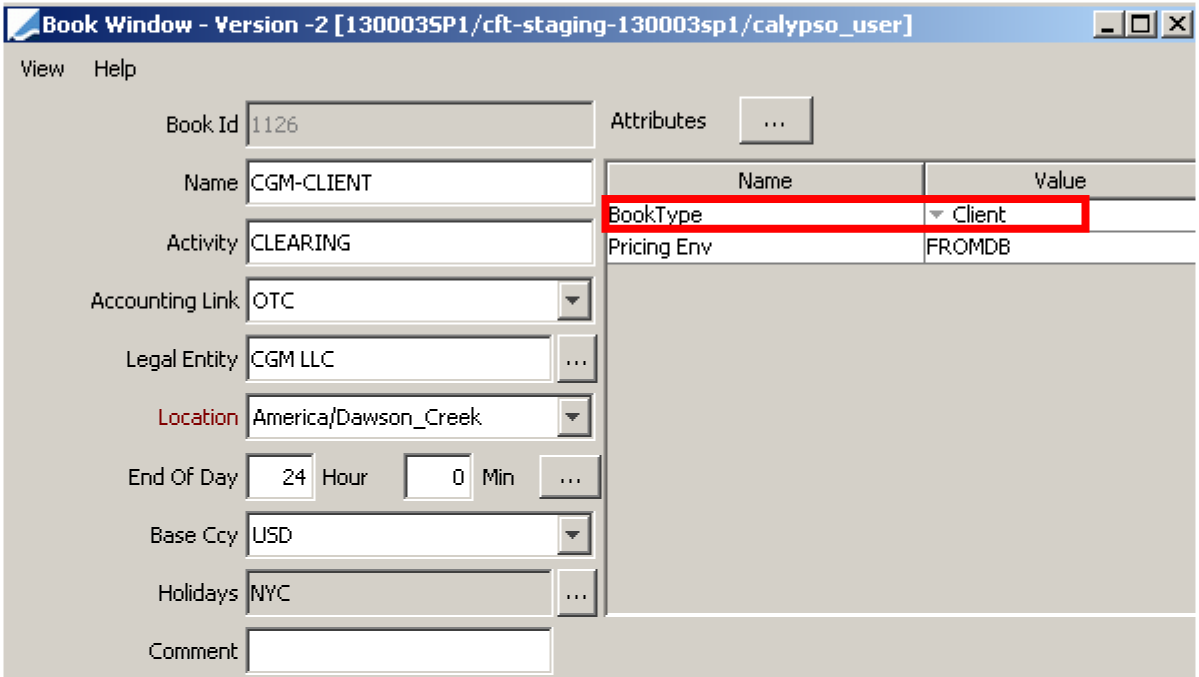
Set the following book attributes:

- OPTIONAL - BookType = House (optional attribute to identify House activity in filters)

Clearing Member Client Clearing Book

The clearing member Client Clearing book holds the mirror trades of the clearing member’s clients at the clearing house.

From the Calypso Navigator, navigate to Configuration > Books & Bundles > Trading Book to define books.



Set the following book attributes:

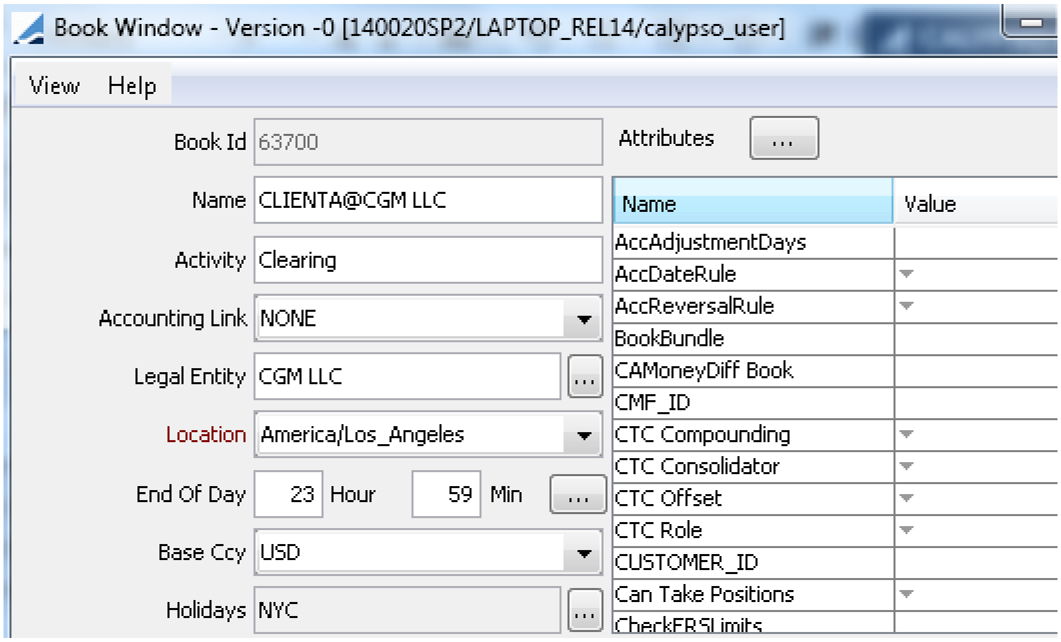
- OPTIONAL - BookType = Client (optional attribute to identify House activity in filters)

4.1.2.2 Sample Client Book

A book should be defined for client trades at the clearing member. It can be a dedicated book, or a book shared across multiple clients.

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
63697	CGM LLC	CLIENTA	ALL	Clearing Book	CLIENTA@CGM LLC
63698	CGM LLC	CLIENTA	ALL	ClearingReportingCurrency	USD

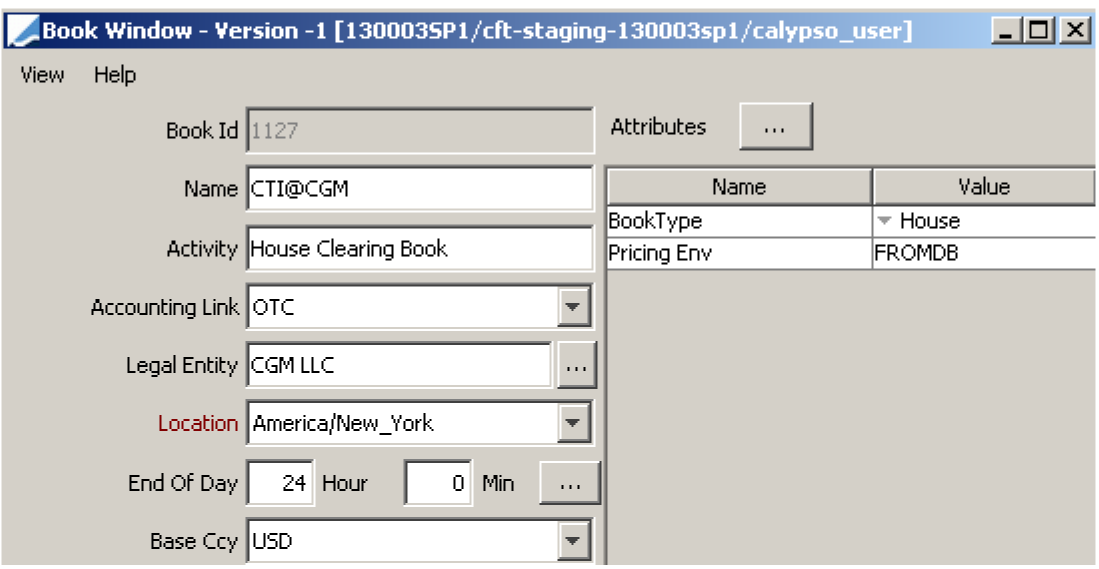
From the Calypso Navigator, navigate to Configuration > Books & Bundles > Trading Book to define books.



It is not required to set any book attribute.

4.1.2.3 Sample Internal Counterparty Book

From the Calypso Navigator, navigate to Configuration > Books & Bundles > Trading Book to define books.



It is not required to set any book attribute.

- OPTIONAL - BookType = House (optional attribute to identify House activity in filters)
- Pricing Env = <Pricing environment name>

4.2 Defining the Clearing Houses (CCPs)

A clearing house only requires the definition of a legal entity and its contact information.

From the Calypso Navigator, navigate to Configuration > Legal Data > Entities to define legal entities.

Each clearing house must be defined with at least the following roles: “CCP, “Agent” and “CounterParty”.

[NOTE: The Client role is also required if you plan to define Variation Margin contracts for CCP facing contracts – Optional – See Clearing Member Contracts – CCP Facing Contracts **for details]**

Trade Classification

You can set the legal entity attribute VMClassification to CTM (Collateralized-To-Market) or STM (Settled-To-Market). The trade keyword VMClassification will default to that value when importing EOD files to generate Clearing Transfer trades. If it is not set, the value will be retrieved from the import files, and if there is no value in the import files, it will default to STM.

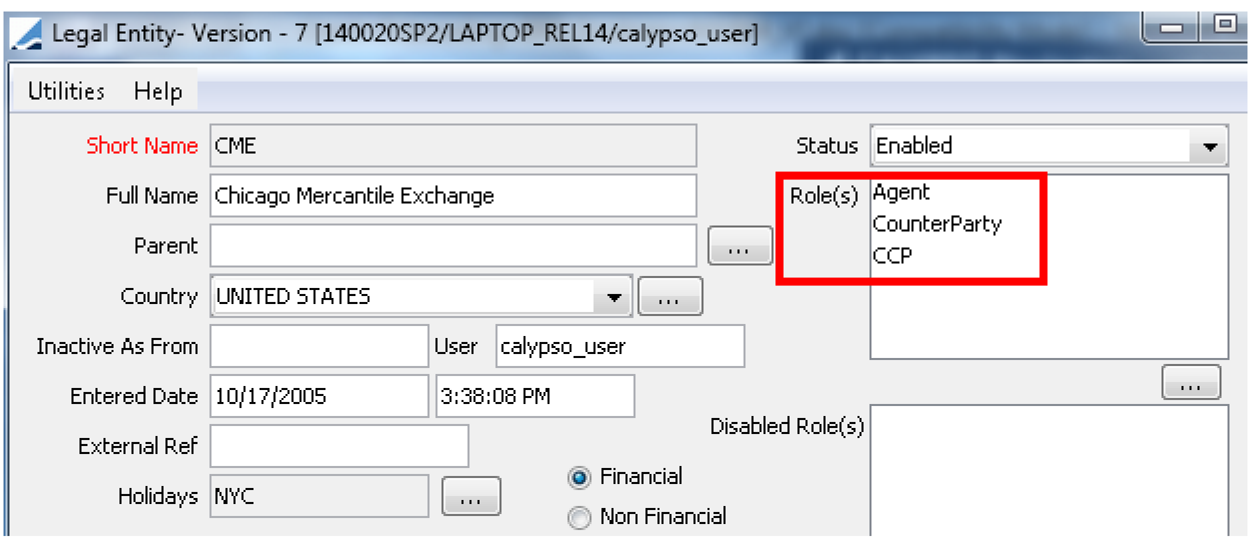
Recommended setup per CCP:

- CME: VMClassification legal entity attribute = STM
- LCH: VMClassification legal entity attribute = Not set (it will be retrieved from report 91).
- For the other CCPs, do not set the VMClassification legal entity attribute - It will default to STM.

You can setup an MCC contract for each trade classification using the attribute VM_CLASSIFICATION, set to CTM or STM.

This applies to both Client and CCP facing Clearing Transfer trades.

4.2.1.1 CME



Click **Contact** to define at least one contact.

Click **Attributes** to set the following legal entity attributes:

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
1002	ALL	CME	ALL	CME_CPTY	CME
1003	ALL	CME	ALL	Client Clearing Book	CGM-CME-CLIENT
1004	ALL	CME	ALL	House Clearing Book	CGM-CME-HOUSE
1005	ALL	CME	ALL	SwapswireParticipant	XCMEUS4FXXX

- OPTIONAL - “Client Clearing Book” = <Book name for the Clearing Member’s client trades>

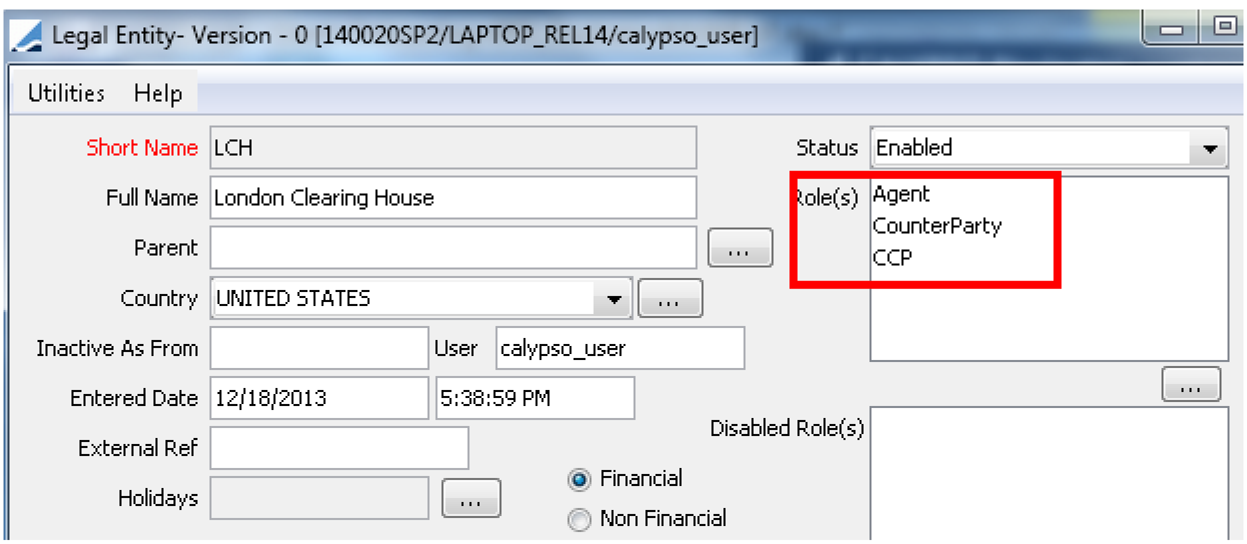
▶ See Defining Books for details – The book can be defined at the Clearing Member or Clearing Account level instead.

- OPTIONAL - “House Clearing Book” = <Book name for the Clearing Member’s house trades>

▶ See Defining Books for details – The book can be defined at the Clearing Member or Clearing Account level instead.

- “CME_CPTY” = CME

4.2.1.2 LCH



Click **Contact** to define at least one contact.

Click **Attributes** to set the following legal entity attributes:

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
1007	ALL	LCH	ALL	SwapswireParticipant	CALYPSOXXX
1010	ALL	LCH	ALL	LCH_CPTY	LCH
1008	ALL	LCH	ALL	House Clearing Book	CGM-HOUSE
1009	ALL	LCH	ALL	Client Clearing Book	CGM-CLIENT

- OPTIONAL - “Client Clearing Book” = <Book name for the Clearing Member’s client trades>

▶ See Defining Books for details – The book can be defined at the Clearing Member or Clearing Account level instead.

- OPTIONAL - "House Clearing Book" = <Book name for the Clearing Member's house trades>

▶ See Defining Books for details – The book can be defined at the Clearing Member or Clearing Account level instead.

- "LCH_CPTY" = LCH

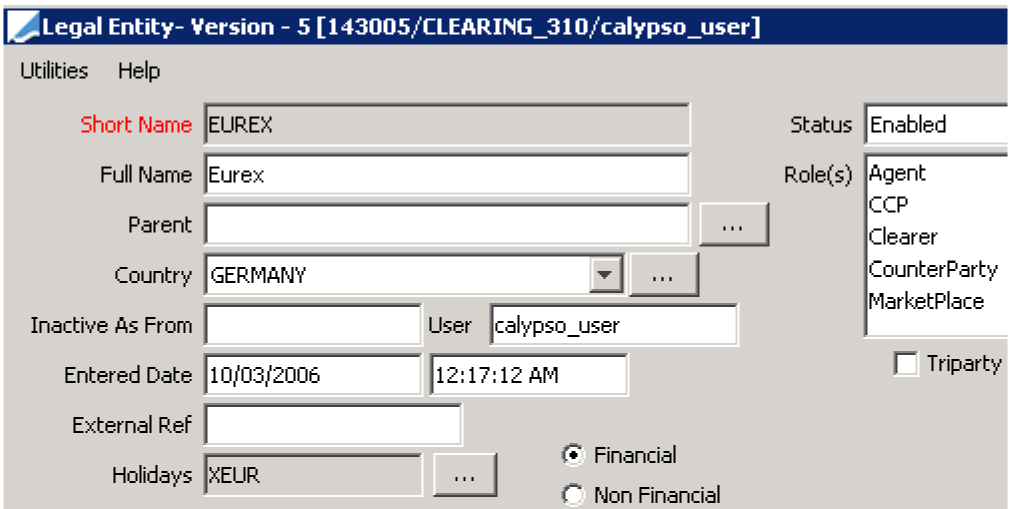
You can set a CCP by product type using the following mapping:

Interface Name = LCH/CCP

Interface Value - <product type> (example: CDS, IRD, FX)

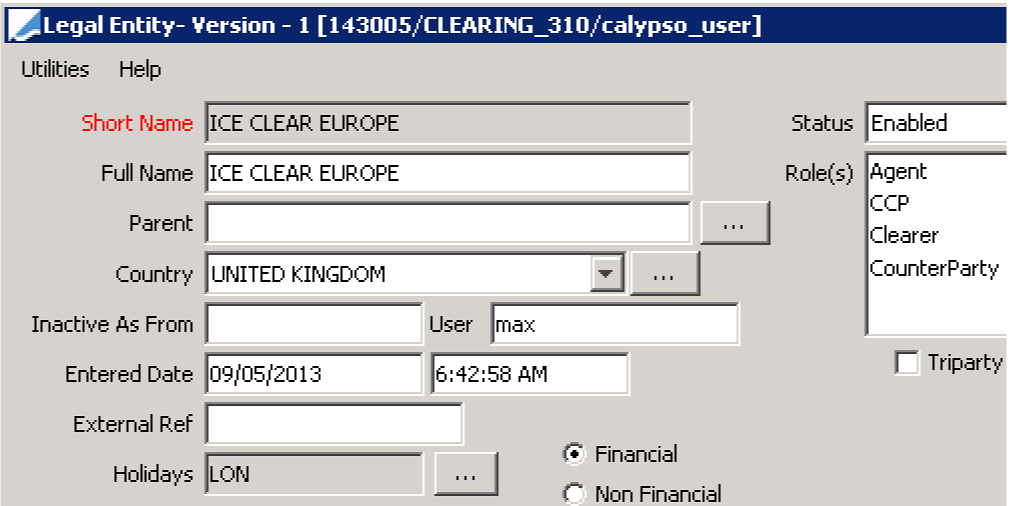
Calypso Value = <CCP legal entity> (example: LCHSA, LCH, FXCLEAR) – This is mapped to the CCP legal entity attribute LCH_CPTY and account attribute CCP_Account_Reference.

4.2.1.3 EUREX



Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
271696	ALL	EUREX	ALL	ClearingHouse	EUREX
287698	ALL	EUREX	ALL	EurexParticipant	ANONYMOUS

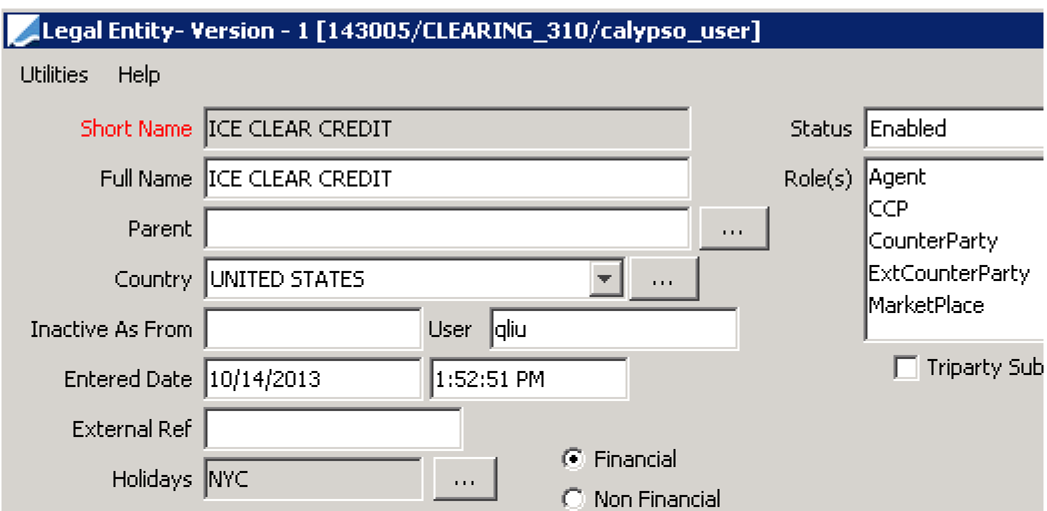
4.2.1.4 ICE CLEAR EUROPE



Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
145698	ALL	ICE CLEAR EUROPE	ALL	Client Clearing Book	CALYPUK-C
145699	ALL	ICE CLEAR EUROPE	ALL	House Clearing Book	CALYPUK-H
145700	ALL	ICE CLEAR EUROPE	ALL	ICELinkParticipant	iceclear

Books are optional.

4.2.1.5 ICE CLEAR CREDIT



Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
255197	ALL	ICE CLEAR CREDIT	ALL	ICELinkParticipant	icetrust
255198	ALL	ICE CLEAR CREDIT	ALL	Client Clearing Book	CALYPUS-C
255199	ALL	ICE CLEAR CREDIT	ALL	House Clearing Book	CALYPUS-H

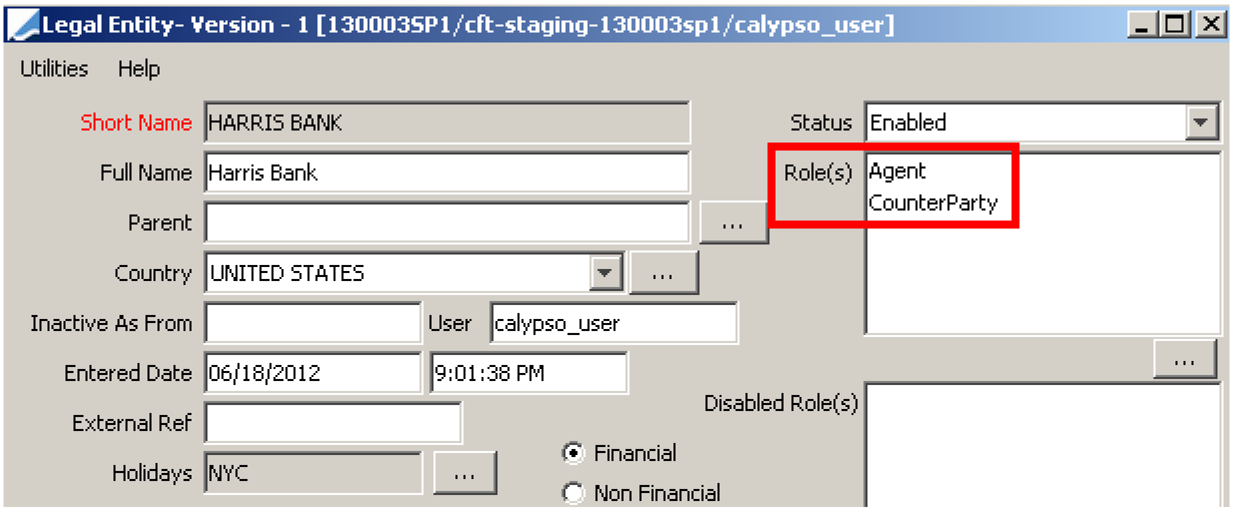
Books are optional.

4.3 Defining the Agent Bank

The agent bank for all clearing activity is HARRIS BANK.

It should be defined with the following roles: “Agent” and CounterParty”.

From the Calypso Navigator, navigate to Configuration > Legal Data > Entities to define legal entities.



Click **Contact** to define at least one contact.

4.4 Defining the Clearing Member

4.4.1.1 Clearing Member Setup Requirements

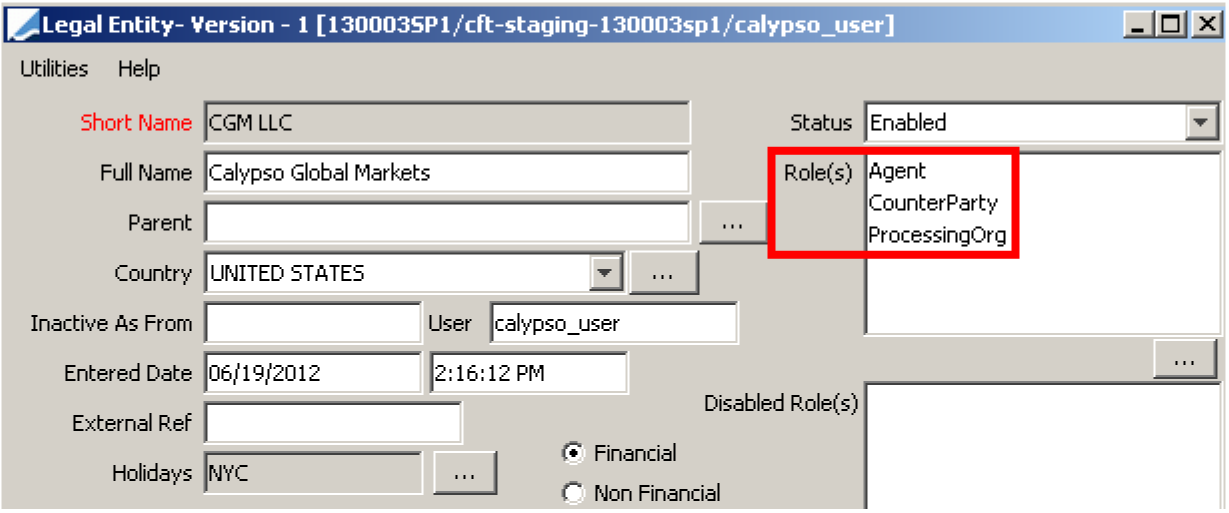
A clearing member requires the following settings:

- A clearing member legal entity
- OPTIONAL - A House book to represent CCP-facing house activity.
- OPTIONAL - A Client Book to represent CCP-facing client activity.
- A Nostro account for each currency that represents the cash position of the clearing member at the agent.
- A Dummy Client account at the clearing member for payments between the clearing member and the client.

4.4.2 Clearing Member Legal Entity

The clearing member should be defined with at least the following roles: “ProcessingOrg”, “Agent”, “CounterParty”.

From the Calypso Navigator, navigate to Configuration > Legal Data > Entities to define legal entities.



Click **Contact** to define at least one contact.

Click **Attributes** to set the following legal entity attributes:

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
67684	ALL	CGM LLC	ALL	CMEFirmId	843
73681	ALL	CGM LLC	ALL	CMEProcessingOrgId	843
81681	ALL	CGM LLC	ALL	Clearing Business Calendar	CCP
67690	ALL	CGM LLC	ALL	Client Clearing Book	CGM-CLIENT
67689	ALL	CGM LLC	ALL	House Clearing Book	CGM-HOUSE
67683	ALL	CGM LLC	ALL	LCHFirmId	CC1
74682	ALL	CGM LLC	ALL	Minimum CFTC Requirement	5000000.2
74683	ALL	CGM LLC	ALL	Minimum Other Requirement	-200

- OPTIONAL - "House Clearing Book" = <Book name for house trades>

▶ See Defining Books for details – The book can be defined at the Clearing House or Clearing Account level instead.

- OPTIONAL - "Client Clearing Book" = <Book name for client trades>

▶ See Defining Books for details – The book can be defined at the Clearing House or Clearing Account level instead.

- "<CCP><Clearing Service>FirmId" = <ID given by CCP to identify the clearing member>

For example: CMEIRDFirmId, CMENDFFirmId, LCHIRDFirmId - You need one FirmId for each CCP and each clearing service that you use.

Clearing services are defined in the domain "mccAdditionalField.PRODUCT_TYPE".

If you do not need to specify the FirmId by clearing service, you can use the attribute <CCP>FirmId instead.

For example: CMEFirmId, LCHFirmId.

- OPTIONAL – "<CCP>CVRSenderCode" = <ID given by the CCP to identify the Collateral Valuation Report (CVR) sender>

- If it is populated, it will be used to identify the CVR sender, otherwise the legal entity attribute “<CCP><Clearing Service>FirmId” or “<CCP>FirmId” will be used.
- “LCHRemoteFolderStructure” = <LCH folder option: Select “Static” or “Dynamic”>

LCH offers two folder options for storing the EOD files: “Static” stores all reports under the SwapClear folder, and “Dynamic” stores the reports per date folder under the SwapClear folder.

- “Minimum CFTC Requirement” - Used for regulatory reporting

▶ Refer to the Calypso Clearimg Member User Guide for information on regulatory reporting.

- “Minimum Other Requirement” - Used for regulatory reporting

▶ Refer to the Calypso Clearimg Member User Guide for information on regulatory reporting.

- OPTIONAL – “Clearing Business Calendar” = <Holiday calendar>

Used to represent the calendar on which the clearing member will run EOD processes and generate statements for the clients. If any CCP is open, the clearing member will be running EOD processes.

If this attribute is not set, the calendar specified in the clearing member definition is used instead.

▶ Refer to the Calypso Clearimg Member User Guide for details.

4.4.3 Clearing Member Accounts

4.4.3.1 Clearing Member - Nostro Account @ Agent

Cash accounts of the clearing member at the settlement bank (agent) for cash settlement and margin call trades.

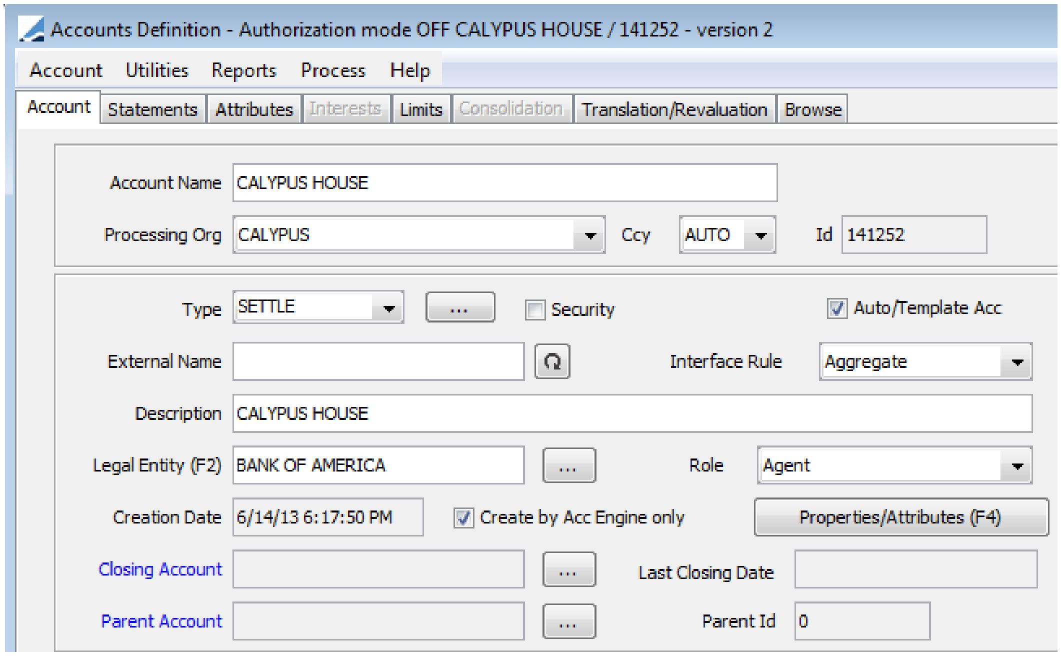
You need one nostro account for the House account and another one for Client segregated accounts.

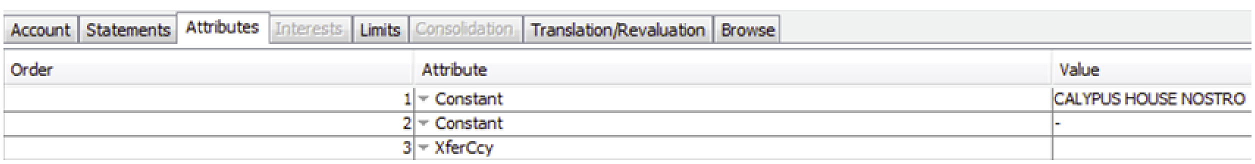
From the Calypso Navigator, navigate to Configuration > Accounting > Accounts to define accounts.

Define an automatic SETTLE account with:

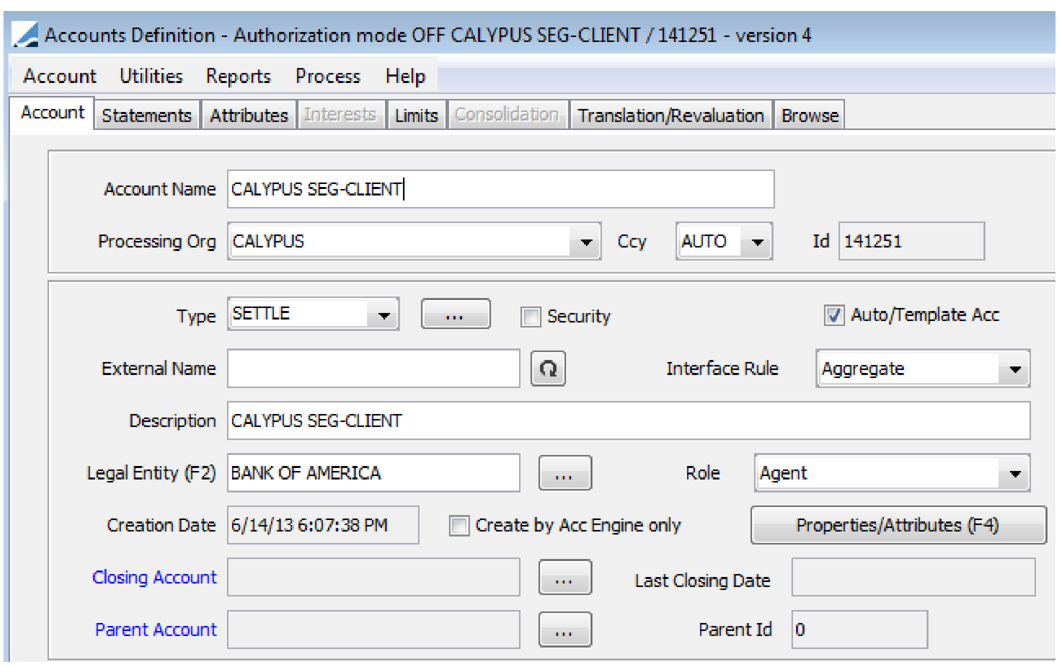
- Processing Org = <Clearing member name>
- Legal Entity = <Agent name>
- Role = Agent

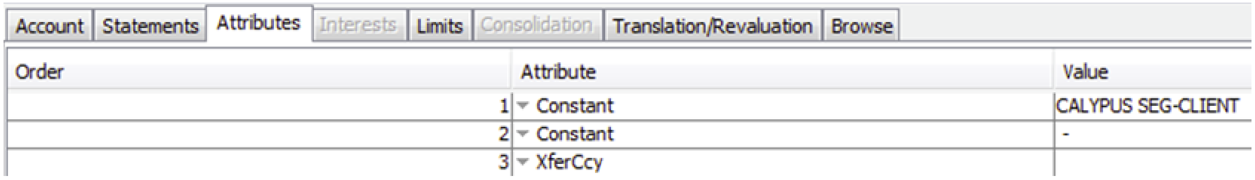
Example of House Nostro Account.





Example of Client Segregated Nostro Account.



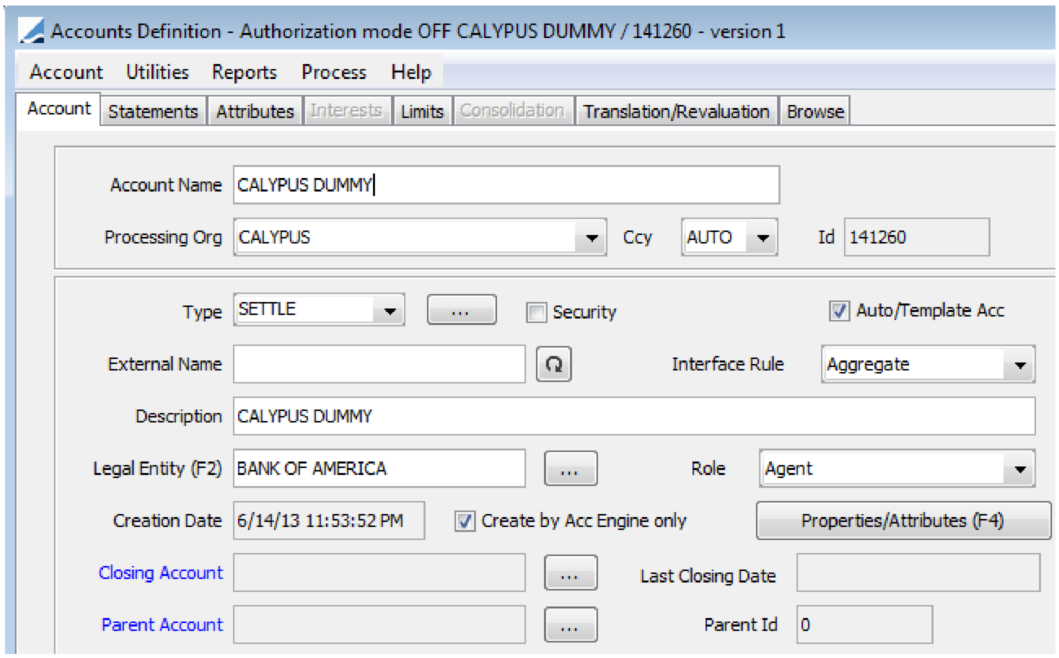


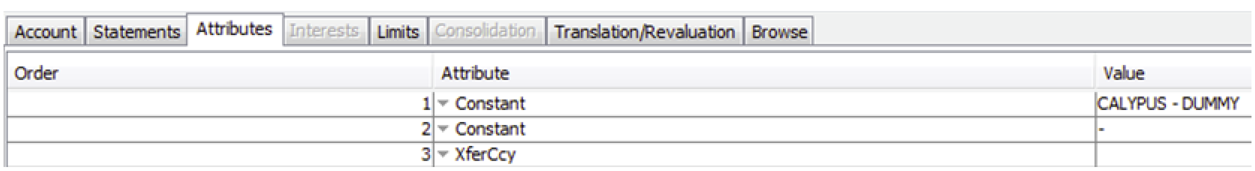
Click **Properties/Attributes (F4)** to set account attributes as needed.

- Attribute “SequesteredAccount” = Bank

4.4.3.2 Clearing Member – Nostro Dummy Account @ Agent

This account will be used for swap interest.





4.5 On-Boarding an Individual Client/Affiliate

4.5.1.1 Client Setup Requirements

On-boarding a client requires the following settings:

- A Client legal entity.
- A book that contains client trades (defined at Client legal entity level or Client Account level)
- A Position account at the clearing house for each CCP / service (e.g. CME/NDF).

- A pair of Clearing accounts at the clearing member for each CCP/ service. One account configured with the client's LE and a second one, also known as mirror account where the Legal Entity is the CCP.

Both accounts are linked through the Description field that contains the account id of the other account.

Both accounts must contain the CCP position account Id in the External Name field.

- Internal Cash accounts for each currency.
- Dummy accounts for each currency.

Summary of Clearing A/C Identification

- Case where multiple accounts are created, one for each product type, but they have the same Position Account ID

By adding the account attributes CCP_Account_Reference and Product_Account_Reference on the Clearing accounts, the system matches the account with the trade keywords CCP and RelatedProductType in addition to the Position Account ID (Account External Name).

- Case where multiple accounts are created, one for each CCP (PO), but they have the same Position Account ID

The SentTo tag is compared to the PO attribute BICCODE and the system matches the account with the corresponding PO in addition to the Position Account ID (Account External Name).

- Otherwise, the system matches the account with the Position Account ID (Account External Name).

It is recommended to use the Onboarding Manager as it creates all the required data at once, including the settlement and delivery instructions and the margin call contracts.

▶ See Settlement and Delivery Instructions for details on SDI setup requirements.

▶ See Margin Calls Setup for details on Margin Call Contracts setup requirements.

4.5.2 Onboarding Manager

You need to add a menu item for the Onboarding Manager for menu action `onboarding.OnboardingWindow`.

It brings up the Clearing Client Onboarding window. It allows defining a client based on a client template, previewing the data that will be created, and saving the required data: legal entity, book, accounts, interest bearing configurations, settlement and delivery instructions, and margin call contracts.

4.5.2.1 Access Permissions

The following access permission functions apply to the Onboarding Manager.

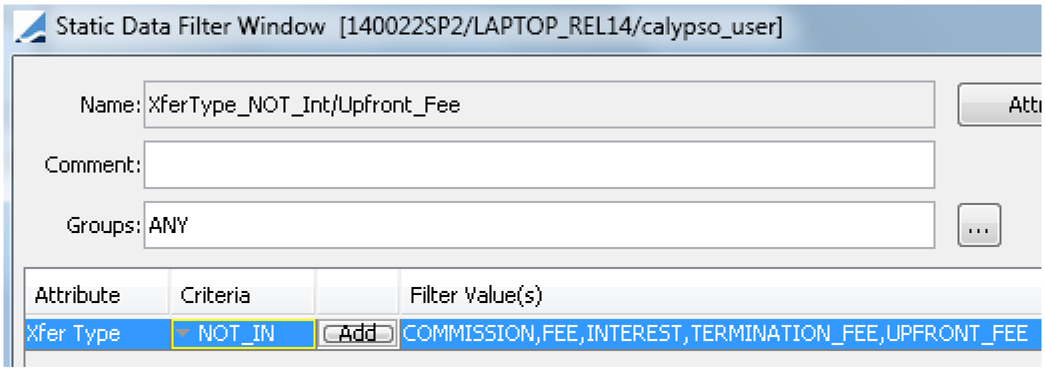
- CreateModifyOnboardingTemplate – Permission to save, Save as new, and delete onboarding templates.
- CreateOnboardingObjects – Permission to save onboarding templates, but not save as new.
- ModifyOnboardingTemplate – Permission to save the objects generated by the onboarding tool.
- AuthorizeOnboardingCreation – Permission to authorize client onboarding data in Authorization mode.

You can also assign read-write access or read-only access to onboarding templates under the “Onboarding Templates” category in the Groups panel of the Access Permissions window.

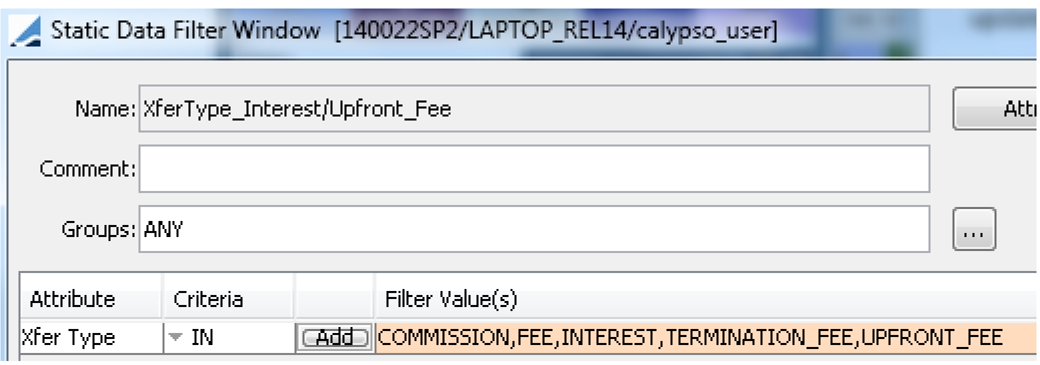
4.5.2.2 Static Data Filters

You need to create static data filters for the transfer types.

Sample XferType_NOT_Int/Upfront_Fee



Sample XferType_Interest/Upfront_Fee



4.5.2.3 Margin Call Contract Type

In order to populate the contract type properly, you need to add the following values to the domain “legalAgreementType”:

- Client – This value will be set as the Contract Type for client facing margin call contracts.
- Client@<CCP>, such as Client@CME and Client@LCH – This value will be set as the Contract Type for CCP facing margin call contracts.

4.5.2.4 Client Template

A template is provided out-of-the-box “CLIENT_default”. It contains the basic required data. They are described below.

You can choose Manage Templates > Configure to save the out-of-the-box template as a new template, in order to modify it.

You can add values for the following types of information:

- Legal Entity Roles
- Legal Entity Attributes
- Book Attributes
- Account Properties
- Account Attributes for Auto Accounts

Choose File > Save or File > Save As New to save your changes if any.

Default Client Template Values

Fields		Default Value
Processing Org		<not set>
Legal Entity	Roles Financial Status Country Holidays	Client, CounterParty, Statement Recipient true Disabled <not set> <not set>
Legal Entity Attributes	ClearingReportingCurrency	<not set>
Clearing Book	Book Name Activity Accounting Link Processing Org Location End of Day Base Ccy Holidays Comment	<ClientName>@<POName> Clearing <not set> <not set> <not set> <not set> <not set> <not set> <not set>
Book Attributes	Pricing Env BookType	FROMDB Client
Book Permissions	Currency Currency Pair Product	[__ALL__] [__ALL__] [__ALL__]

Fields		Default Value
Clearing Account	Account Name	<ClientName>@FCM_<POName>_<CCPName><ServiceName>
	Processing Org	<not set>
	Call Account	false
	Type	SETTLE
	Security	false
	Currency	AUTO
	Auto/Template Acc	true
	Interface Rule	Aggregate
	Role	CounterParty
	Create by Acc Only	true
	Balance	true
	Frequency	DLY
	Day	1
	Rule	<not set>
	Roll	END_MONTH
	Billing	true
	Interest Bearing	false
Clearing Account Properties	Clearing Book	<ClientName>@<POName>
	Description	Clearing
	ClearingCashAccount	false
	CCPOriginCode	CLIENT
	AccountType	Client
Clearing Account Attributes	Auto account attributes	<not set>
Clearing Mirror Account	Account Name	<ClientName>@CCP_<POName>_<CCPName><ServiceName>
	Processing Org	<not set>
	Call Account	false
	Type	SETTLE
	Security	false
	Currency	AUTO
	Auto/Template Acc	true

Fields		Default Value
	Interface Rule	Aggregate
	Role	Agent
	Create by Acc Engine Only	true
	Balance	true
	Frequency	DLY
	Day	1
	Rule	<not set>
	Roll	END_MONTH
	Billing	true
	Interest Bearing	false
Clearing Mirror Account Properties	Clearing Book	<ClientName>@<POName>
	Description	Clearing
	ClearingCashAccount	false
	CCPOriginCode	CLIENT
	AccountType	Client
Clearing Mirror Account Attributes	Auto account attributes	<not set>
Cash Account	Account Name	<ClientName>_<Currency>_CASH@<POName>
	Processing Org	<not set>
	Call Account	false
	Type	SETTLE
	Security	false
	Currency	AUTO
	Auto/Template Acc	true
	Interface Rule	Aggregate
	Description	<not set>
	Role	CounterParty
	Create by Acc Only	false
	Balance	true
	Frequency	DLY
	Day	1

Fields		Default Value
	Rule	<not set>
	Roll	END_MONTH
	Billing	false
	Interest Bearing	true
Cash Account Interest Bearing	Interest Config	<not set>
	Interests Valid From	<not set>
	Interest Valid To	<not set>
	Interests Type	<not set>
	Interests Penalty	false
Cash Account Properites	Description	Cash
	ClearingCashAccount	true
	CCPOriginCode	CLIENT
	AccountType	Client
Cash Account Attributes	Auto account attributes	<not set>
Direct SDI	Role	CounterParty
	Currency	ANY
	Pay/Receive	BOTH
	Cash/Security	BOTH
	Contact	Default
	Processing Org	ALL
	Products	ANY
	SD Filter	<not set> Recommended: XferType_NOT_Int/Upfront_Fee
	Preferred	true
	Priority	0
	Method	Direct
	Trade Counterparty	ALL
	Is Direct	true
	DDA	<ClientName>_AUTO_CASH@<POName>
Internal SDI	Role	CounterParty
	Currency	ANY

Fields		Default Value
	Pay/Receive	BOTH
	Cash/Security	BOTH
	Contact	Default
	Processing Org	ALL
	Products	G.Clearing Products
	SD Filter	<not set> Recommended: XferType_Interest/Upfront_Fee
	Preferred	true
	Priority	0
	Method	Internal
	Trade Counterparty	ALL
	Is Direct	false
	G/L Account	<not set>
	DDA	<not set>
	A/C	Dummy Account
	Agent	<not set>
	Agent Contact	Default
	Agent Identifier	<not set>
	Sub-Account	<not set>
	Msg To Agent	<not set>
VM	Margining Scenario	Single_Ccy – See below for details.
	Legal Entity Role	Client
	Has Clearing Service	<not set> – See below for details.
	Currencies	[ANY]
	Start Date	<not set>
	EOD Pricing Environment	<not set>
	ITD Pricing Environment	<not set>
	Position Type	THEORETICAL
	Position Date	POSITION_DATE_DEFAULT
	Method	Standard
	Currency	<not set>
	Cash	0
	Book	<ClientName>@<POName>

Fields		Default Value
	Base Currency	USD
	Currency	<not set>
	Adjustment Currency	<not set>
IM	Margining Scenario	OSA – See below for details.
	Legal Entity Role	Client
	Collateral Type	BOTH
	Start Date	<not set>
	EOD Pricing Environment	<not set>
	ITD Pricing Environment	<not set>
	Position Type	THEORETICAL
	Position Date	POSITION_DATE_DEFAULT
	Method	Standard
	Currency	<not set>
	Cash	0
	ANY	0
	Corporate	0
	Government	0
	Tbill	0
	Book	<ClientName>@<POName>
	Base Currency	<not set>

[NOTE: If the user does not select a contact in the SDI section of the template, the user will need to define a contact in the Client Information Panel. If there is a list of two or more contacts in the Client Information Panel, the first contact in the list is used as the default contact for all SDIs]

VM Contract – Margining Scenario

You can select the following scenarios:

- Single_Ccy - There is one VM Margin Call Contract per Client.
- Multi_Ccy - There is one VM Margin Call Contract per Client and per currency (regardless of CCP and product type).
- Hybrid – You may have multiple VM Margin Call Contracts per Client and per currency on an ad-hoc basis. The currencies that are not selected all belong to the same VM Margin Call Contract.

VM Contract – Has Clearing Service

If “Has Clearing Service” is checked, and only one clearing service is selected for the client, the clearing service details are set in the CCP and Product Type additional info on the VM contract.

These fields have to be manually populated on the VM contract otherwise.

IM Contract - Margining Scenario

You can select the following scenarios:

- OSA - There is one Margin Call Contract per CCP and product type that handles initial margins for all clients for CCP facing contracts. If this contract already exists, it is not created again when a new client is added.
- ISA - For SwapClear Members of LCH, it is also possible to have one Margin Call Contract per CCP, client, and product type that handles initial margins for CCP facing contracts.

▶ See Margin Calls Setup for complete details on Margin Call Contracts setup requirements.

4.5.2.5 Authorization Mode

You can enable the Authorization mode for the Onboarding Manager.

Add “ClientOnboardingData” to the domain “classAuthMode”. If the Authorization mode is enabled, new and modified client data will have to be authorized before being available.

You can authorize the data in the Onboarding Manager using **File > Load Pending Modifications**. Accept or reject the data as applicable. This is an all-or-nothing authorization.

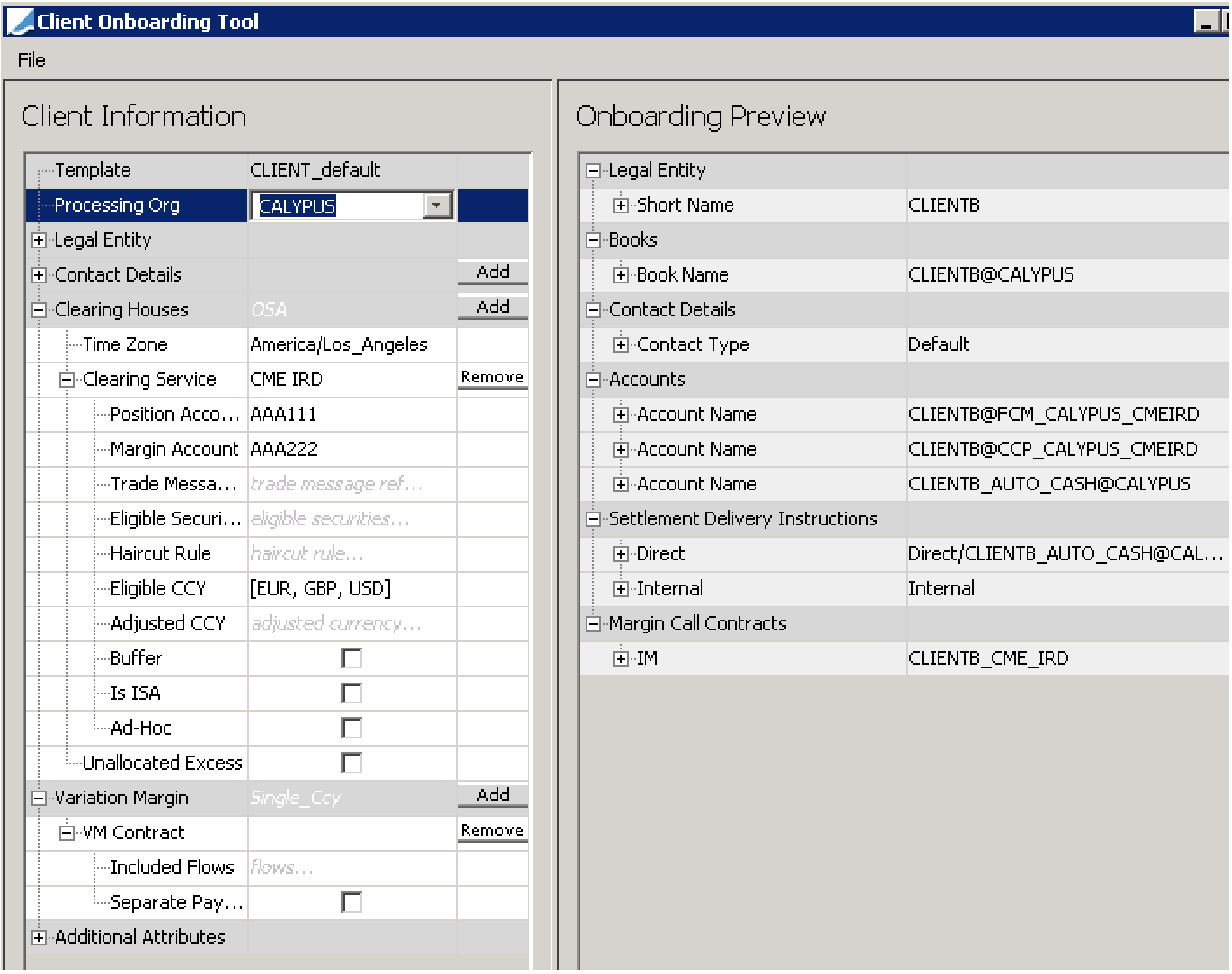
4.5.2.6 Client Onboarding

Select a client template, and fill in the client information described below.

You can add more values for the following types of information, as needed:

- Contacts
- Clearing Houses
- Legal Entity Attributes
- Book Attributes
- Account Properties
- Account Attributes for Auto Accounts

The Onboarding Preview displays all the data that will be created.



Then click **Save Client** if you are satisfied with the results. A summary of the results will be displayed.

Fields Details

Fields		Description
Template		Select a client template. See “Client Template” for details.
Processing Org		Select the clearing member. ▶ See Defining the Clearing Member for details.
Legal Entity	Short Name Full Name Parent LE External Reference Country	Enter the client short name. Enter the client full name. Select a parent as needed (optional). Enter a client external reference as needed (optional). Select the country.

Fields		Description
	Holidays Location End of Day Reporting Currency	Select the holiday calendars. Select the location timezone. Enter the EOD time. It must be an integer between 0 and 2359. Select the currency used to convert amounts for the Total column in the client statement.
Contact Details	Contact Type Role Product Type Processing Org Last Name First Name Title Address Line 1 Address Line 2 Address Line 3 City State Zip Code Country Phone Fax Email Swift	Select the contact type, and define the contact details.
Clearing Houses	Time Zone Clearing Service Position Account Margin Account	Select the timezone. Click to select a service used by the client. A service is a combination of the CCPs defined in domain "mccAdditionalField.CCP" and the product types defined in domain "mccAdditionalField.PRODUCT_TYPE" Enter the account reference at the Clearing House (position account). NOTE: For LCH it is the account reference for trades only. Enter the margin account at the Clearing House for EOD files. It corresponds to the following columns of the EOD files:

Fields		Description
	Segregated Account Trade Message Ref Eligible Securities Haircut Rule Eligible CCY Adjusted CCY	• CME IRSMR3 report – Column "A/C ID" • CME Margin Summary report – Column "PBA" • LCH Report86c report – Column "ClientAccountID" Segregated account for SOD pass-through function – Column Account of REP00019 report. Multiple positions accounts may share the same margin account. For LCH only, enter the account reference at the Clearing House for Cash Settlement trades. Select the static data filter that determines eligible securities. Select the haircut rule if any. Select the eligible currencies. Select the adjustment currency.
	Buffer	Check to define a buffer to apply to the initial margin. You can enter a contractual multiplier and/or a contractual amount, and a discretionary multiplier and/or a discretionary amount.
	Is ISA Book CCP Margin Account Ad-Hoc Valuation Date Frequency	Check for ISA accounts (individual client activity), or clear for ISO (clearing activity for their own individual clients). For ISA accounts, select the client activity book. Enter the account reference of the CCP facing IM margin call contracts for ISA structures. Check for intraday margin calls. Select the valuation frequency and valuation date time.
	Unallocated Excess	The system allows maintaining additional collaterals held at the clearing member by a given client, but not posted at the CCP, in a specific margin call contract. Check to create an additional margin call contract, and enter the details of the contract.
Variation Margin	Currencies Underlying Currencies Included Flows Separate Payment	For Multi_Ccy, select the currencies. For Hybrid, select the currencies that follow the multi-currency scenario. The non-selected currencies apply the single-currency scenario. Select the flow types associated with the contract, or leave blank for ALL. Check to add "Separate Settlements" sections to the Client Statement.

Fields		Description
Additional Attributes	LE Attributes Book Attributes Account Properties Clearing Account Properties Cash	Add attributes as needed.

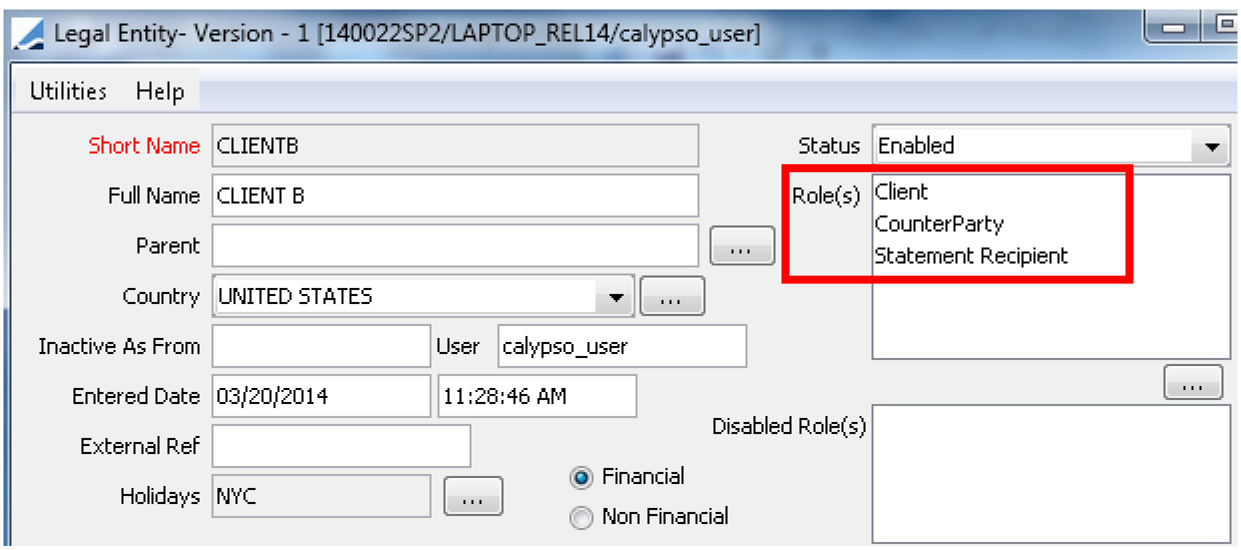
4.5.3 Client Legal Entity

[NOTE: These are created by the Onboarding Manager]

Each client should be defined with the following roles:

- "CounterParty" for the trades
- A role for the payment of margin call trades – We are using the role "Client" in this setup. It can also be "ExtCounterParty".
- "Statement Recipient" to generate client statements

From the Calypso Navigator, navigate to Configuration > Legal Data > Entities to define legal entities.



[NOTE: The client legal entity is created in status Disabled by default. You need to enable it in order to use it]

Click **Contact** to define at least one contact.

Click **Attributes** to set the following legal entity attributes:

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
67199	CGM LLC	CLIENTB	ALL	ClearingReportingCurrency	USD

- OPTIONAL - “Clearing Book” = <Client book name>

▶ See Defining Books for details – The book is defined by default at the Clearing Account level instead.

- “ClearingReportingCurrency” = <Currency used to convert amounts for the Total column in the client statement>
- Attribute for LSOC CVR Static Data report: CFTCID (Required - CFTC Reportable Number), LEID (Optional - US LEI of the client), OfficeCode (Optional) and CustAccountType (Optional - H for hedger, M for member, O for omnibus, or S for speculator).

▶ Refer to the Calypso Clearing Member User Guide for information on the LSOC CVR Static Data report.

4.5.4 Client Accounts

[NOTE: These are created by the Onboarding Manager]

4.5.4.1 Client Facing Clearing Account

Mirror account of the CCP Facing Clearing Account.

You need a client account at the clearing member for each clearing house: position of the client at the clearing member per clearing house.

[NOTE: If the client has multiple accounts at the clearing house, you need to create an account for each client, for each clearing house, and for each account]

From the Calypso Navigator, navigate to Configuration > Accounting > Accounts to define accounts.

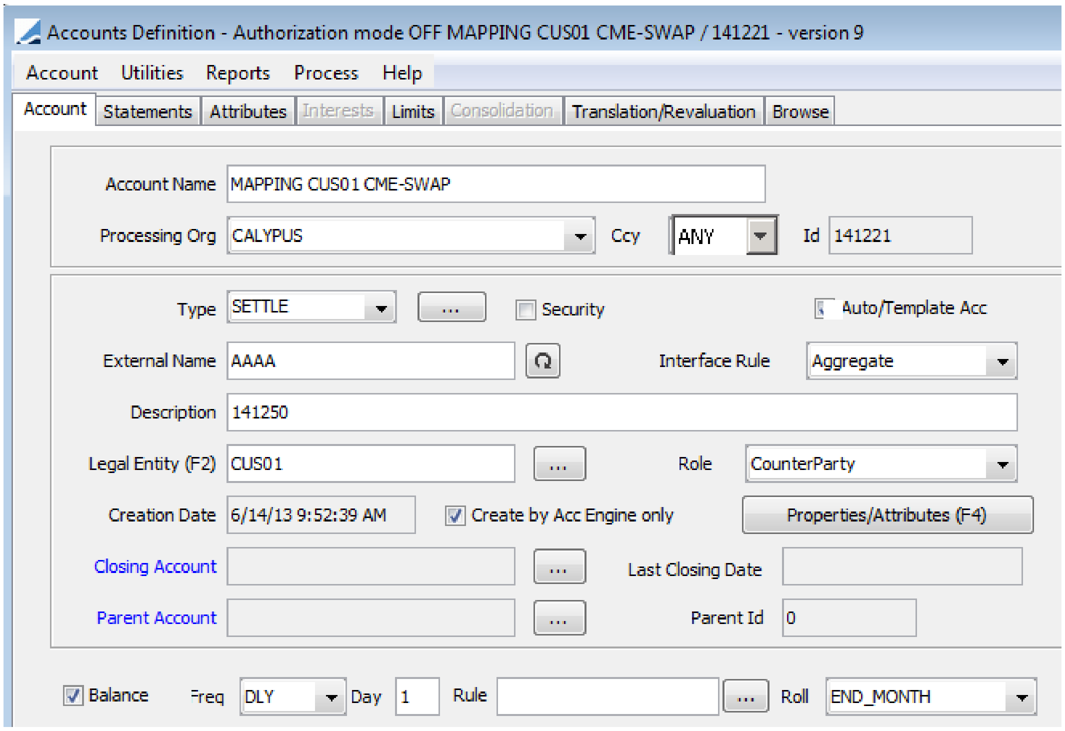
Define a SETTLE account with:

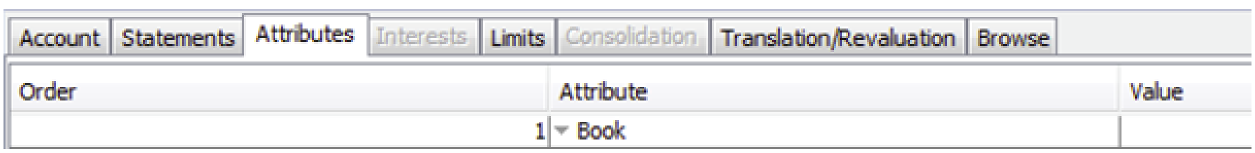
- Processing Org = <Clearing member name>
- LegalEntity = <Client/Affiliate name>
- Role = CounterParty
- Description = <ID of the CCP Facing Clearing Account>
- External Name = <Account reference at Clearing House (position account)>

NOTE: For LCH and HKEX it is the account reference for trades only.

- Create by Acc Engine only = Checked

Example for “MAPPING CUS01 CME-SWAP” – Repeat for each CCP/service and for each client.

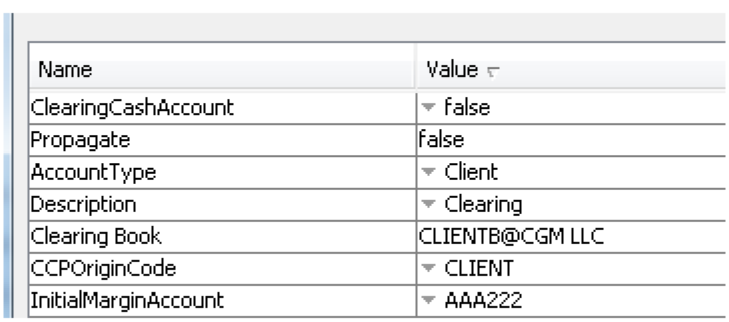




It is likely that maintenance fees will be charged to the account. The “Billing” checkbox should be checked in order to compute maintenance fees on the account.

▶ See Clearing Fees for details.

Click **Properties/Attributes (F4)** to set the account attributes.



Name	Value
ClearingCashAccount	false
Propagate	false
AccountType	Client
Description	Clearing
Clearing Book	CLIENTB@CGM LLC
CCPOriginCode	CLIENT
InitialMarginAccount	AAA222

- Attribute “CCPOriginCode” = CLIENT
- Attribute “InitialMarginAccount” = <Margin account at Clearing House for EOD files>

It corresponds to the following columns of the EOD files:

- CME IRSMR3 report – Column “A/C ID”
- CME Margin Summary report – Column “PBA”
- LCH Report86c report – Column “ClientAccountID”

Multiple positions accounts may share the same margin account.

- OPTIONAL – Attribute “Clearing Book” = <Clearing Account book name> - It is set by the Onboarding Manager by default.

▶ See Defining Books for details – The book can be defined at the Client / Clearing Member level instead.

- For LCH, attribute “LCHAccountName” = <Account reference at Clearing House for Cash Settlement trades>
- For HKEX, attribute “HKEXAccountName” = <Account reference at Clearing House for Cash Settlement trades>
- OPTIONAL – Attribute “CCPAccountStructure” = ISA – To allow the generation of the Condensed Account Clearing Statement.

4.5.4.2 CCP Facing Clearing Account

Mirror account of the Client Facing Clearing Account

Position of the client at the clearing house. You need one account for each client and for each clearing house.

[NOTE: If the client has multiple accounts at the clearing house, you need to create an account for each client, for each clearing house, and for each account]

From the Calypso Navigator, navigate to Configuration > Accounting > Accounts to define accounts.

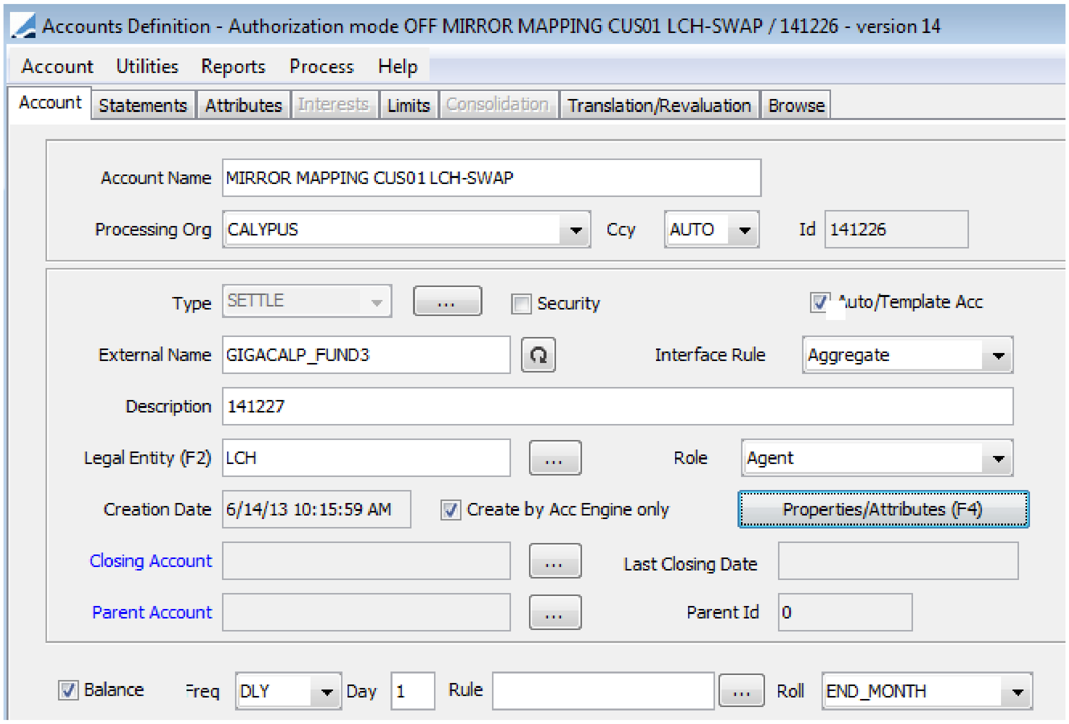
Define a SETTLE account with:

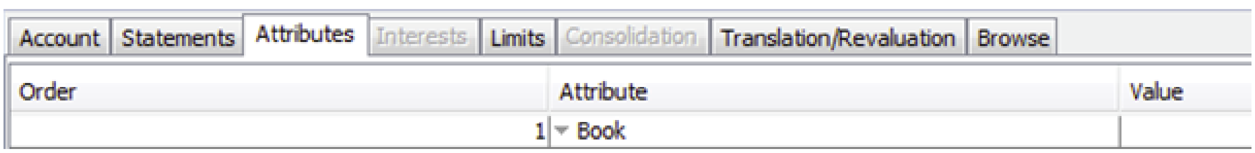
- Processing Org = <Clearing member name>
- LegalEntity = <Clearing house name>
- Role = Agent
- Description = <ID of the Client Facing Clearing Account>
- External Name = <Account reference at Clearing House (position account)>

[NOTE: For LCH and HKEX it is the account reference for trades only.

- Create by Acc Engine only = Checked

Example for “MIRROR MAPPING CUS01 LCH-SWAP” – Repeat for each CCP/service and for each client.

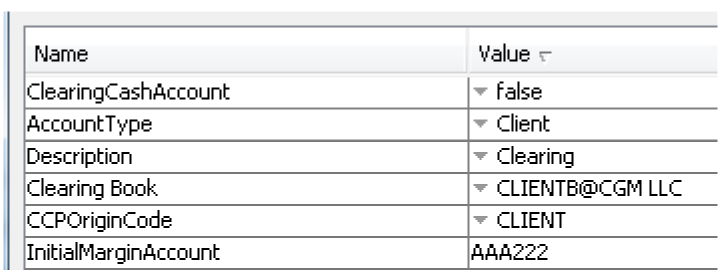




It is likely that maintenance fees will be charged to the account. The “Billing” checkbox should be checked in order to compute maintenance fees on the account.

- See Clearing Fees for details.

Click **Properties/Attributes (F4)** to set the account attributes.



- OPTIONAL – Attribute “Clearing Book” = <Clearing Account book name> - It is set by the Onboarding Manager by default.
- See Defining Books for details – The book can be defined at the Client / Clearing Member level instead.
- Attribute “CCPOriginCode” = CLIENT
- Attribute “InitialMarginAccount” – <Margin account at Clearing House for EOD files>

It corresponds to the following columns of the EOD files:

- CME IRSMR3 report – Column “A/C ID”
- CME Margin Summary report – Column “PBA”
- LCH Report86c report – Column “ClientAccountID”

Multiple positions accounts may share the same margin account.

- For LCH, attribute “LCHAccountName” = <Account reference at Clearing House for Cash Settlement trades>
- For HKEX, attribute “HKEXAccountName” = <Account reference at Clearing House for Cash Settlement trades>

4.5.4.3 Client Cash Accounts

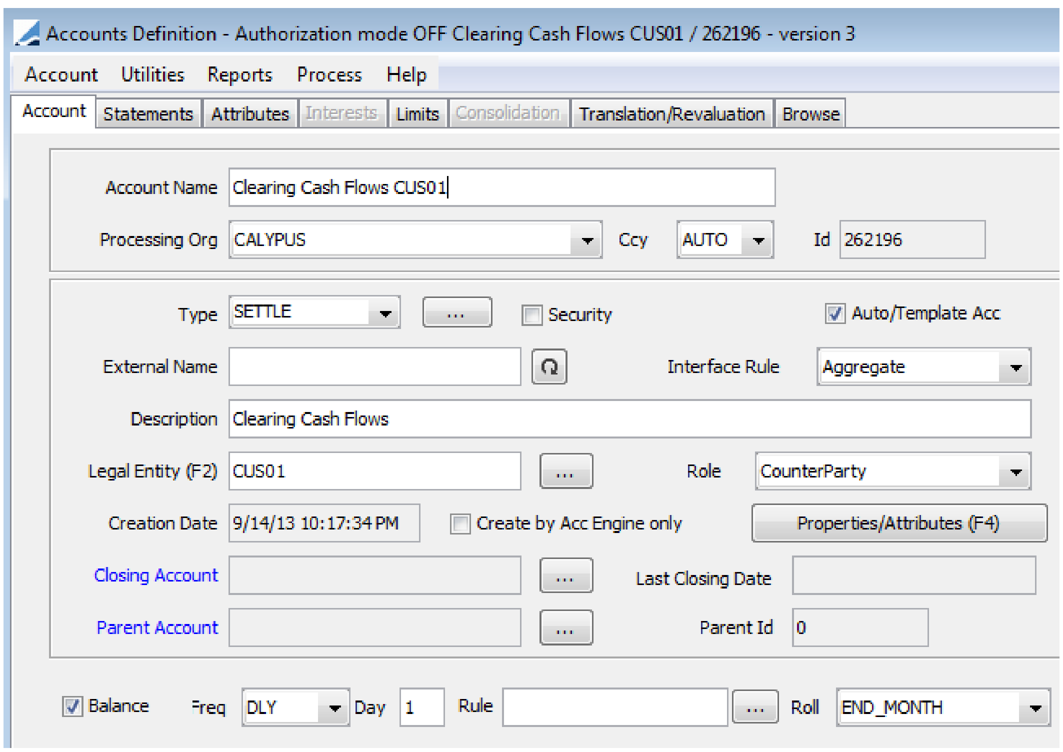
You need a cash account for each client.

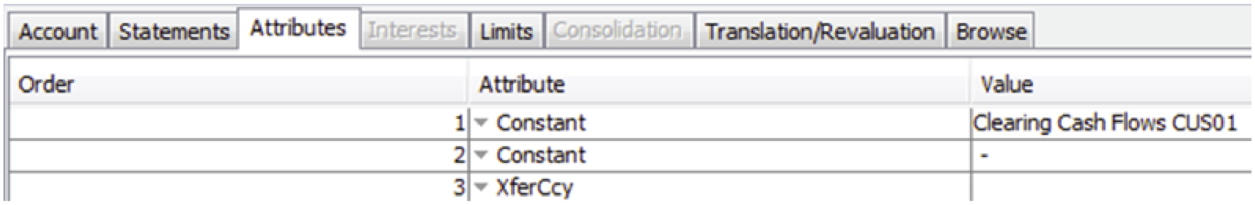
From the Calypso Navigator, navigate to Configuration > Accounting > Accounts to define accounts.

Define an automatic SETTLE accounts with:

- Processing Org = <Clearing member name>
- LegalEntity = <Client/Affiliate name>
- Role = CounterParty

Example for “Clearing Cash Flows CUS01” - Repeat for each client.

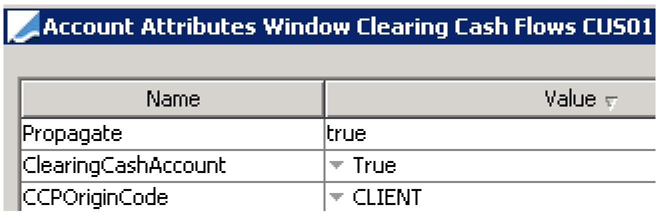




It is likely that interest will be paid on the account. The “Interest Bearing” checkbox should be checked in order to compute interest on the account balance.

- Please refer to Calypso Cash Management documentation for details on setting up interest bearing.

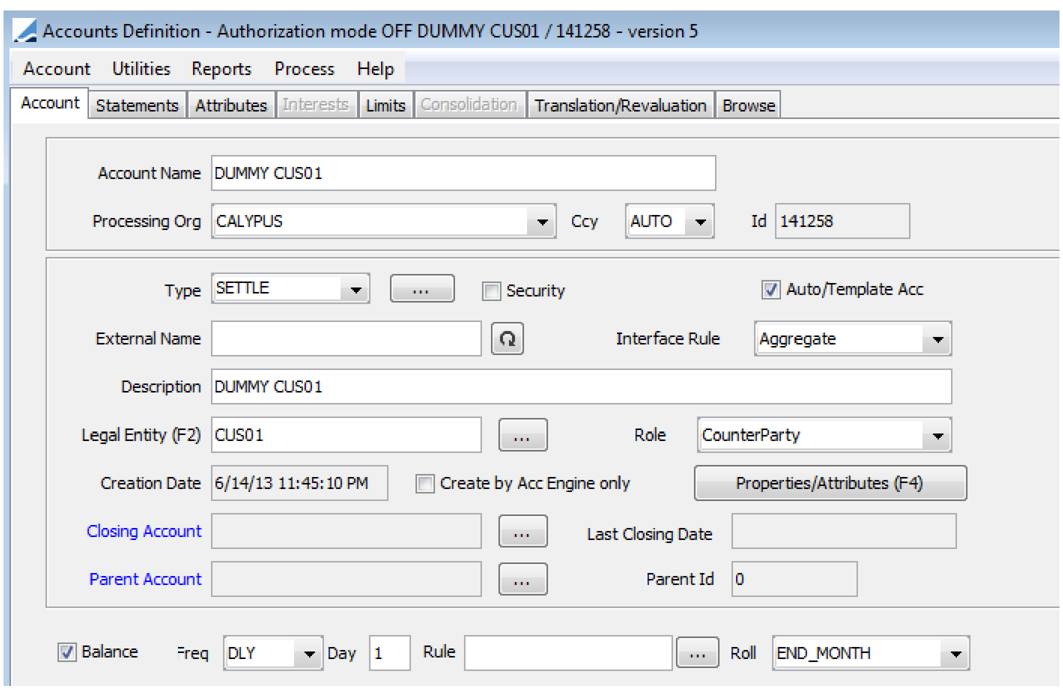
Click **Properties/Attributes (F4)** to set the account attributes.



- Attribute “CCPOriginCode” = CLIENT
- Attribute “ClearingCashAccount” = True
- Propagate = true to propagate the attributes to the child accounts

4.5.4.4 Client - Cash DUMMY Account @ the Clearing Member

This account is used for interests that are not settled.



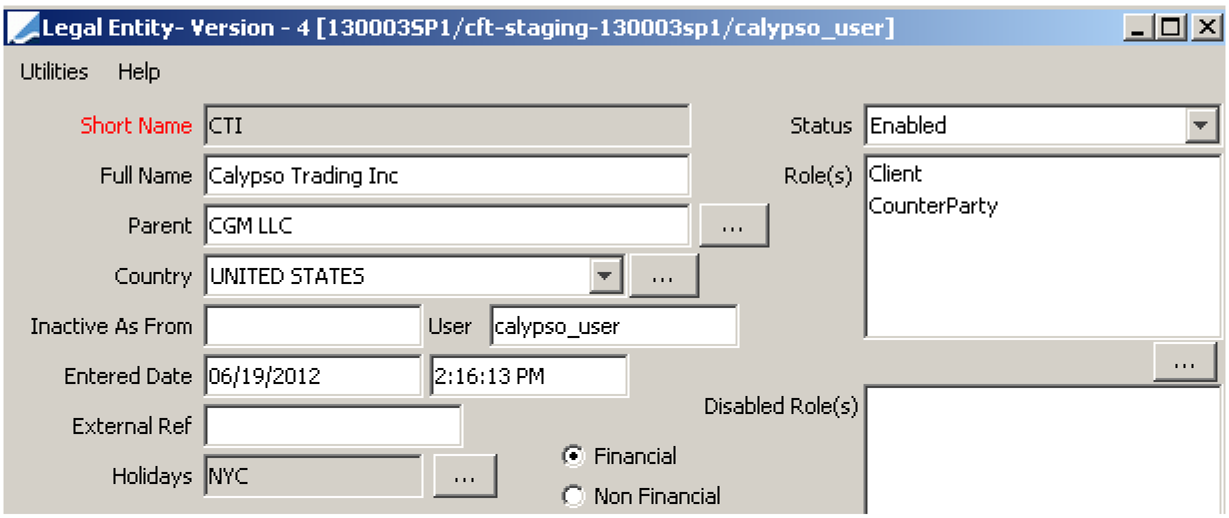
Account | Statements | Attributes | Interests | Limits | Consolidation | Translation/Revaluation | Browse

Order	Attribute	Value
1	Constant	DUMMY CUS01

4.6 Defining an Internal Counterparty

One or multiple internal counterparties are required for capturing house trades.

Sample internal counterparty:



You also need to add the role “Statement Recipient” if you want to generate client statements.

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
1114	ALL	CTI	ALL	Clearing Book	CTI@CGM

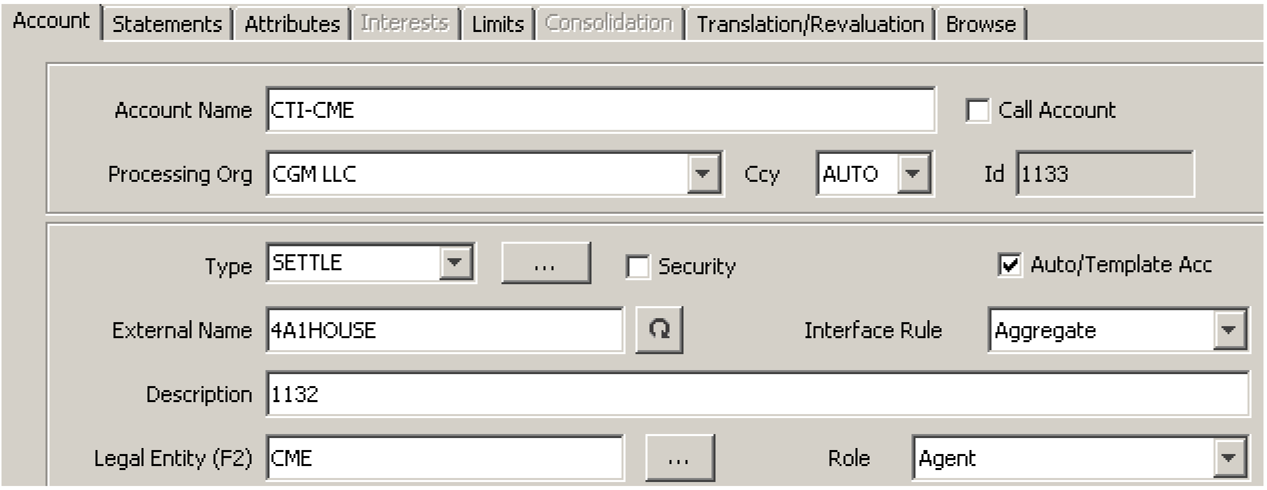
The setup is the same as an individual client with the following differences:

- Clearing Book = <Internal Counterparty book name>
- See Defining Books for details – The book can be defined at the Clearing Account level instead.
- OPTIONAL - Book attribute BookType = House (optional attribute to identify House activity in filters)

Internal Counterparty clearing accounts: CCP Facing Clearing Account and Client Facing Clearing Account

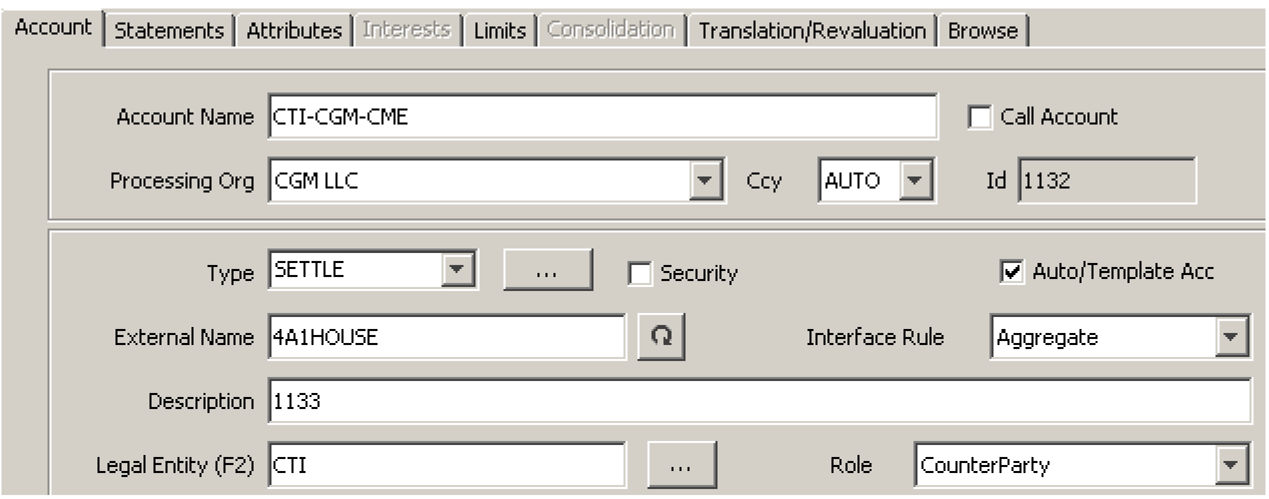
- Account attribute CCPOriginCode = HOUSE
- OPTIONAL – Account attribute Clearing Book = <Clearing Account book name>
- See Defining Books for details – The book can be defined at the Internal Counterparty / Clearing Member level instead.

Sample CCP Facing Clearing Account:



Name	Value
AccountType	House
CCPOriginCode	HOUSE
InitialMarginAccount	4A1HOUSE

Sample Client Facing Clearing Account @ Clearing Member:



Name	Value
AccountType	House
CCPOriginCode	HOUSE
InitialMarginAccount	4A1HOUSE

Internal Counterparty cash account @ Clearing Member: same as Client cash account @ Clearing Member with:

- LegalEntity = <Internal Counterparty name>
- Attribute CCPOriginCode = HOUSE

4.7 On-Boarding an Omnibus Client

4.7.1.1 Omnibus Client Setup Requirements

On-boarding an omnibus client requires the following settings:

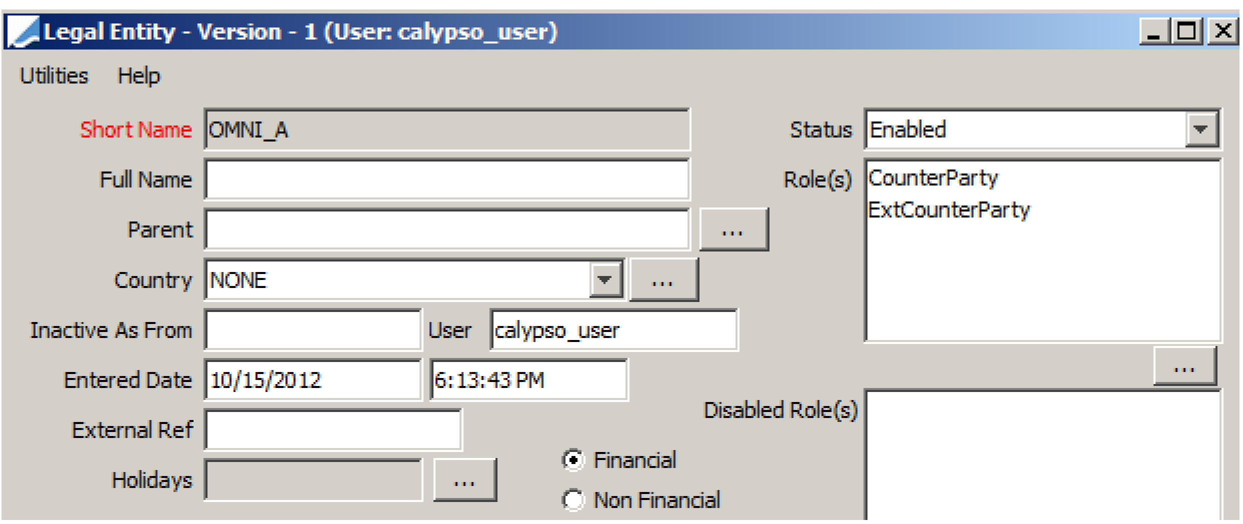
- An Omnibus Client legal entity
- Child Client legal entities
- OPTIONAL - A book that contains client trades (dedicated book, or shared book across multiple clients)
- A Client Clearing account at the clearing house for each clearing house. This account is linked to the Client Clearing account at the clearing member through the account description.
- A Client Clearing account at the clearing member for each clearing house. This account is linked to the Client Clearing account at the clearing house through the account description.
- A Client Cash account for each currency.

4.7.2 Omnibus Client Legal Entity

Each omnibus client should be defined with the role “CounterParty” for the trades, and the role “Client” for the payment of margin call trades.

You also need to add the role “Statement Recipient” if you want to generate client statements.

From the Calypso Navigator, navigate to Configuration > Legal Data > Entities to define legal entities.



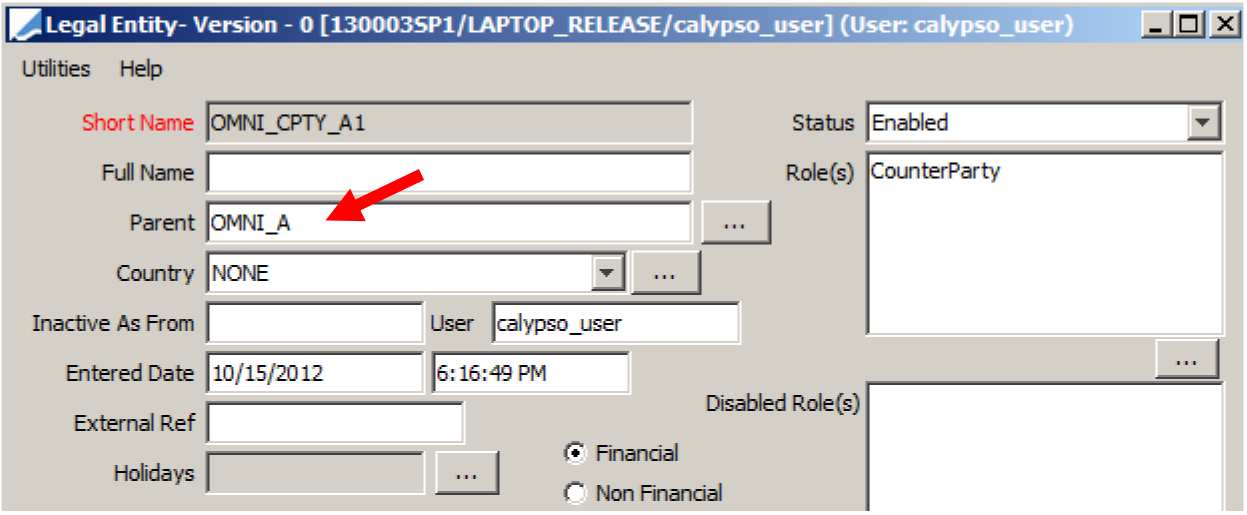
Click **Contact** to define at least one contact.

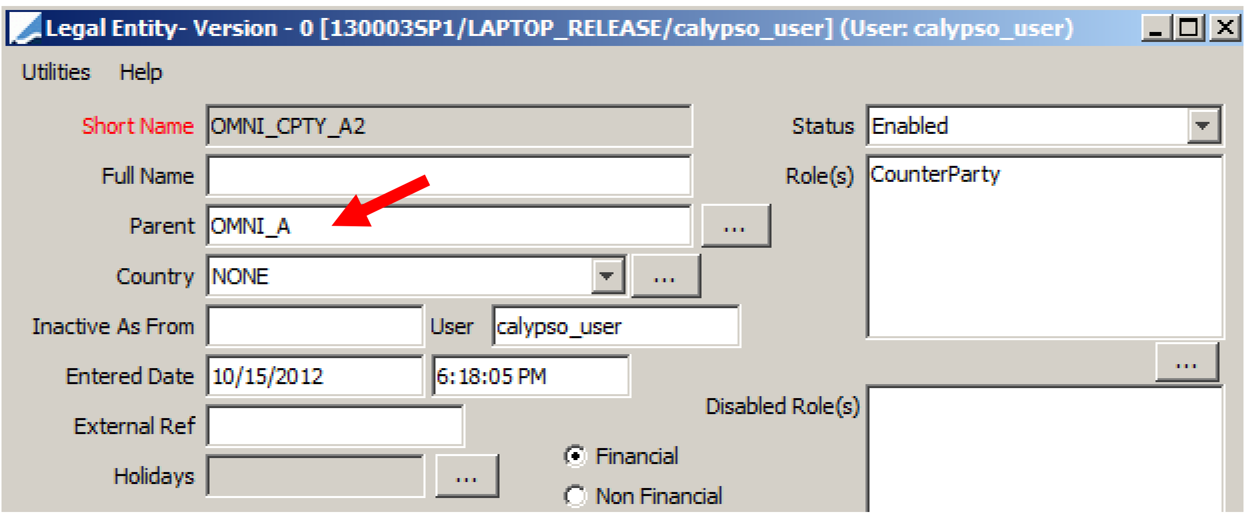
4.7.3 Child Client Legal Entities

Each child client should be defined with the role “CounterParty” for the trades, and have the omnibus client as a parent.

You also need to add the role “Statement Recipient” if you want to generate client statements.

From the Calypso Navigator, navigate to Configuration > Legal Data > Entities to define legal entities.





Click **Contact** to define at least one contact.

Click **Attributes** to set the following legal entity attributes:

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
66684	ALL	OMNI_CPTY_A2	ALL	Clearing Book	OMNI_A2
66685	ALL	OMNI_CPTY_A2	ALL	ClearingReportingCurrency	USD

- OPTIONAL - “Clearing Book” = <Client book name>
- See Defining Books for details – The book can be defined at the Clearing Account level instead.
- “ClearingReportingCurrency” = <Currency used to convert amounts for the Total column in the Client Statement>

4.7.4 Omnibus Accounts

4.7.4.1 Child CCP Facing Clearing Account

The clearing account is at the Child Client level. Position of the client at the clearing house. You need one account for each client and for each clearing house.

Mirror account of the Child Client Facing Clearing Account.

It is the same as an individual client clearing account with:

- LegalEntity = <Child client name>

▶ See CCP Facing Clearing Account for setup details.

4.7.4.2 Child Client Facing Clearing Account

Mirror account of the Child Client Facing Clearing Account.

You need a child client account at the clearing member for each clearing house: position of the client at the clearing member per clearing house.

It is the same as an individual client clearing account with:

- LegalEntity = <Child client name>

▶ See Client Facing Clearing Account for setup details.

4.7.4.3 Child Client Cash Accounts

You need a cash account for each child client and for each currency.

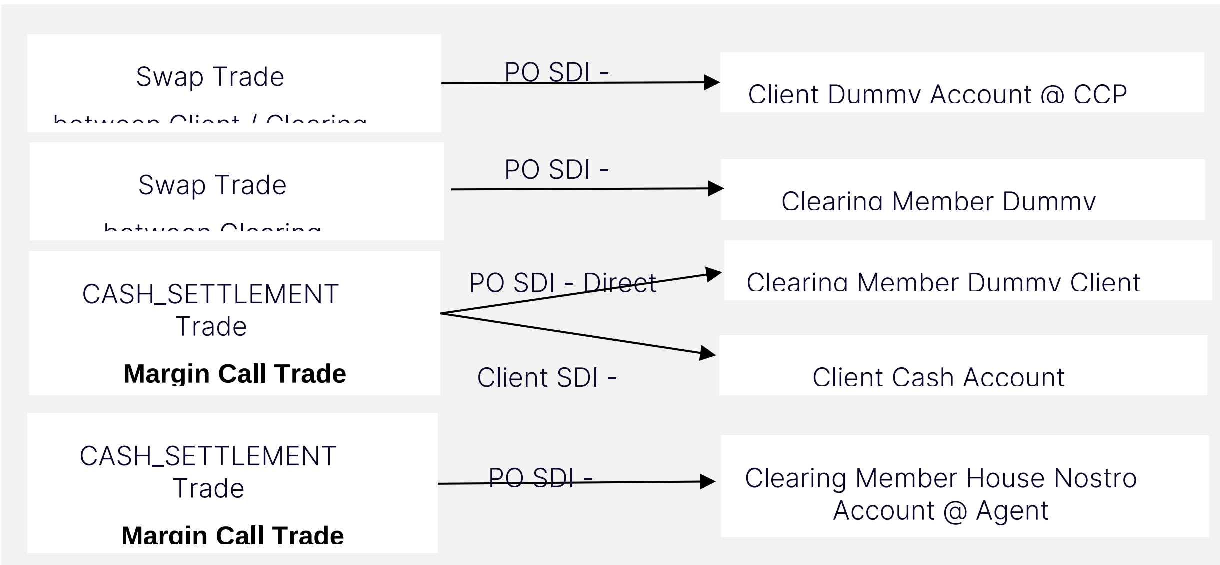
It is the same as an individual client cash account with LegalEntity = Child Client name

▶ See Client Cash Accounts for setup details.

5 Settlement and Delivery Instructions

The settlement and delivery instructions (SDIs) drive the trade transfers to the Calypso accounts.

Sample SDIs flow for house activity and individual client activity (this diagram only shows the SDIs that impact Calypso accounts).



From the Calypso Navigator, navigate to Configuration > Settlements > Delivery Instructions to define SDIs.

5.1 CCP Settlement Instructions

Beneficiary = CME

Role = CounterParty

List of settlement instructions – Sample setup is provided below.

SDI Name	Method	Agent	Currencies	Products	GL Account	SD Filter
SWIFT/HARRIS BANK/Harris Bank	SWIFT	HARRIS BANK	ANY	ANY		
Internal/CME/Internal SDI for trading activity	Internal	CME	ANY	G.ClearingProducts		XferType_Interest/Upfront_Fee

SDI Name - Description	Method	Agent	CCY	Product	Calypso Account
Internal/CME/Internal SDI for trading activity	Internal	CME	ANY	G.ClearingProducts	N/A
SWIFT/HARRIS BANK/ HARRIS BANK Cash payments between clearing member and CCP.	SWIFT	HARRIS BANK	ANY	ANY	N/A

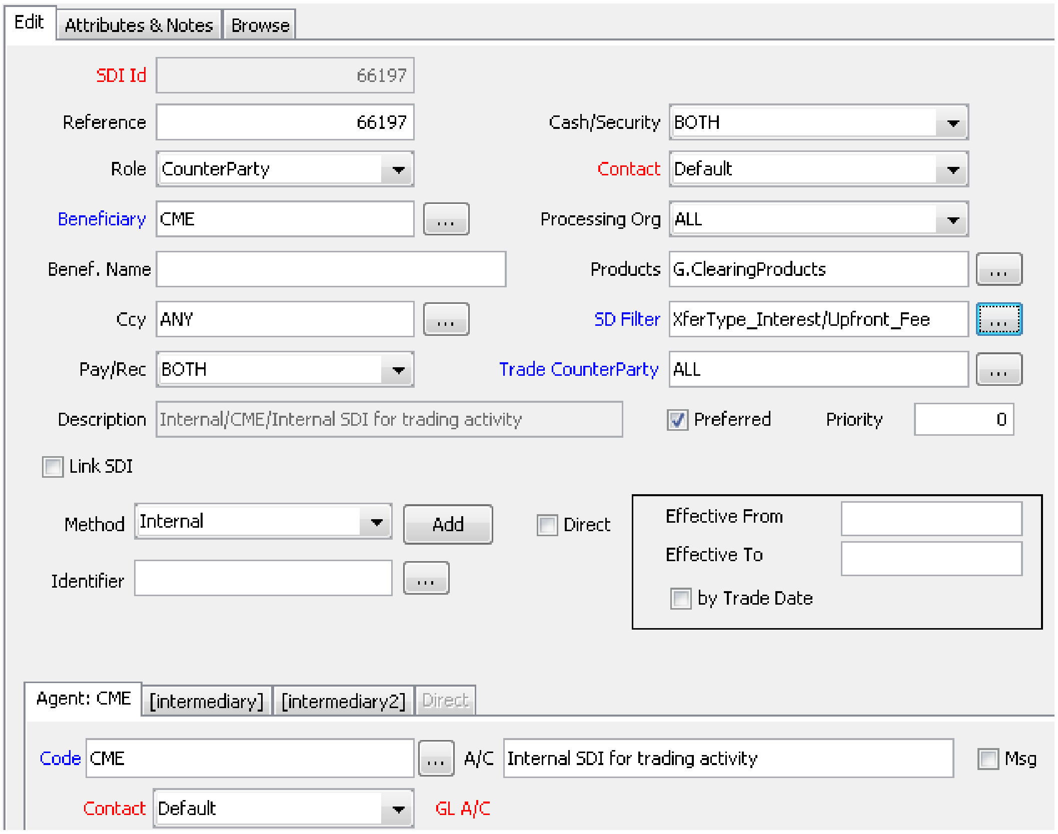
Beneficiary = LCH

Role = CounterParty

List of settlement instructions – Same as CME settlement instructions.

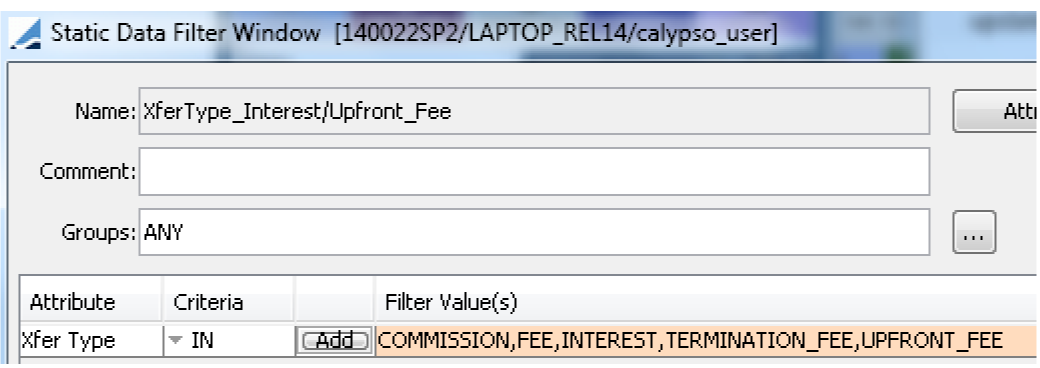
SDI Name - Description	Method	Agent	CCY	Product	Calypso Account
Internal/LCH/Internal SDI for trading activity	Internal	LCH	ANY	G.ClearingProducts	N/A
SWIFT/HARRIS BANK/HARRIS BANK Cash payments between clearing member and CCP.	SWIFT	HARRIS BANK	ANY	N/A	N/A

5.1.1 CCP - Sample "Internal/CME/Internal SDI for trading" Settlement Instructions



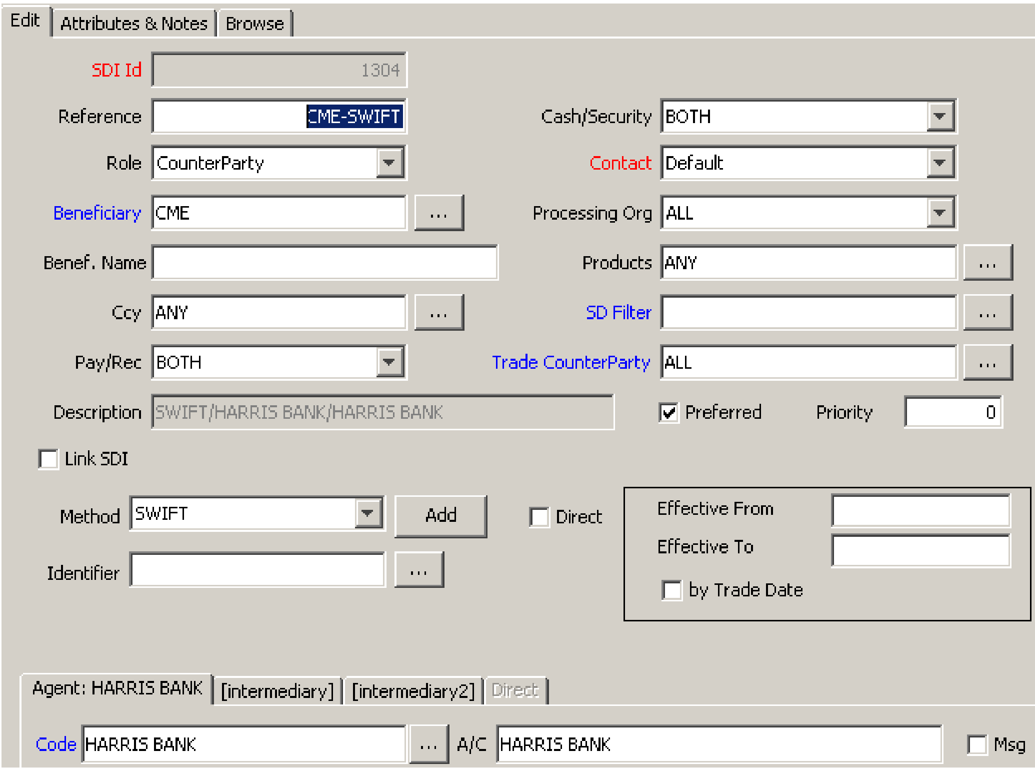
This SDI does not impact any account in Calypso.

Static data filter XferType_Interest/Upfront_Fee



5.1.2 CCP - Sample “SWIFT/HARRIS BANK/HARRIS BANK” Settlement Instructions

Cash payments between the clearing member and the CCP.



This SDI does not impact any account in Calypso.

5.2 EMIR Segregated Accounts

For SwapClear Members of LCH, clients can choose to hold deposits of collateral that cover Initial Margin requirements into separate accounts.

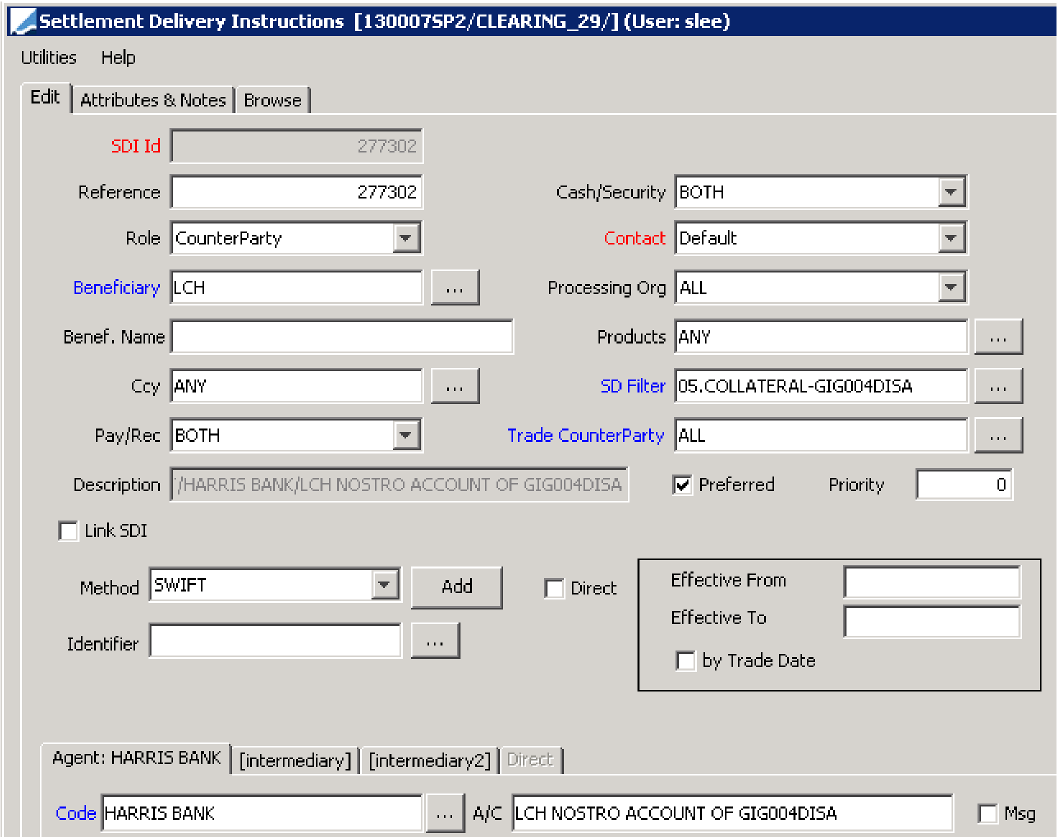
5.2.1 Margin Call Contracts

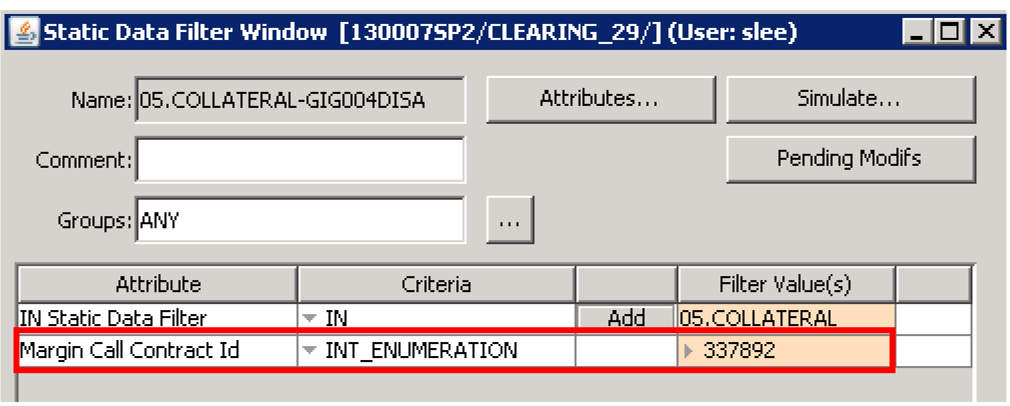
In order to allow this, the individual CCP-facing IM contracts must be created for each client who wants a separate account (each unique EMIR Account). On this IM contact, the CCP_REFERENCE must be set to the LCH client’s sub-account number instead of “C”. The LCH client’s sub-account number can be found in the “Account” column of LCH Report86c report, or Report 33a for intraday margins. The CCP_REFERENCE must match the Account value in this report in order to import the Initial Margin from that row of the report.

- See Clearing Member Contracts – CCP Facing Contracts for details.

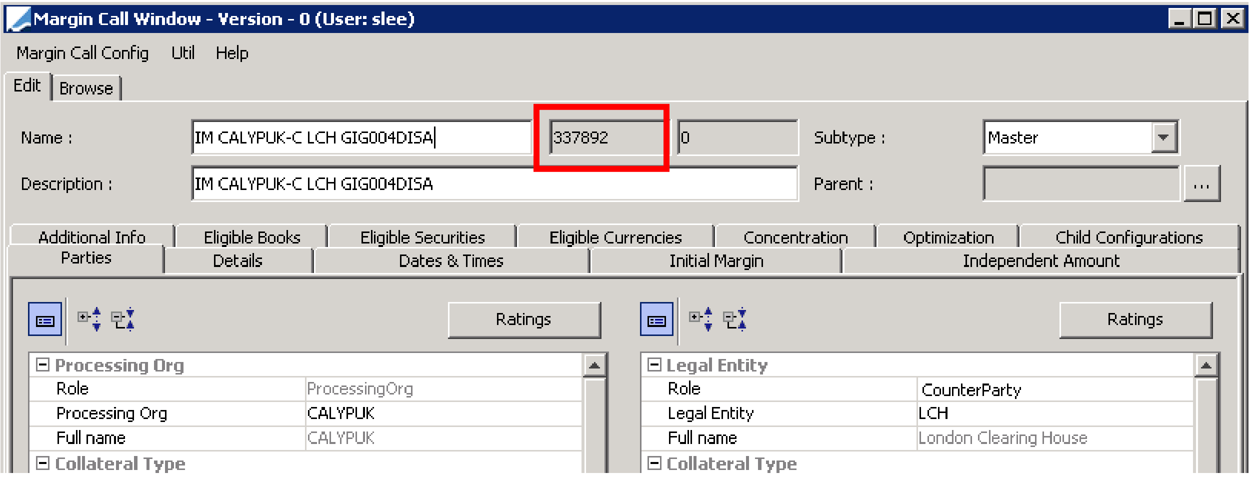
5.2.2 CCP Settlement Instructions

CCP settlement instructions must be added to populate the separate account. One for each client.





The attribute "Margin Call Contract Id" in the Static Data Filter is the CCP-facing IM contract created for the client where the CCP_REFERENCE is set to the LCH client's sub account ("Account" column of LCH Report86c).



Others	
CCP	LCH
CCP_ORIGIN_CODE	CLIENT
CCP_REFERENCE	GIG004DISA

5.3 Clearing Member Settlement Instructions

Beneficiary = <Clearing Member name>

Role = ProcessingOrg

List of settlement instructions – Sample setup is provided below.

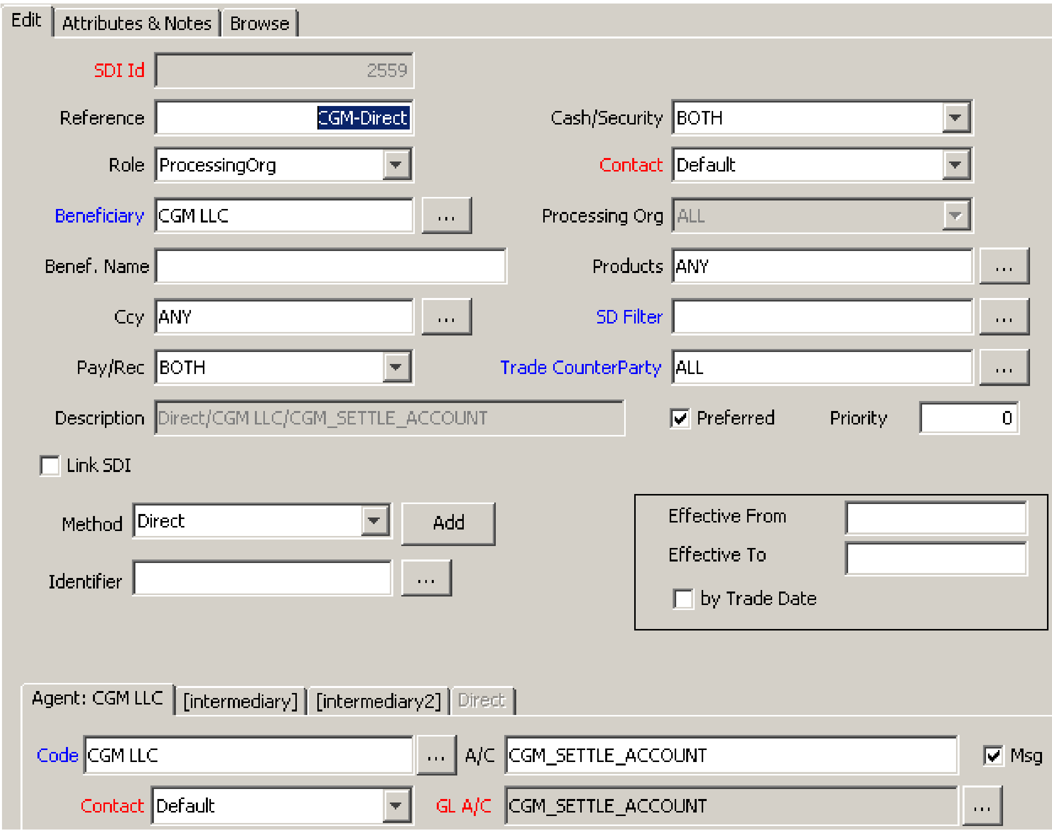
SDI Name	Method	Agent	Currencies	Products	GL Account	SD Filter
Direct/CGM LLC/CGM_SETTLE_ACCOUNT	Direct	CGM LLC	ANY	ANY	CGM_SETTLE_ACCOUNT	
Internal/CME/Dummy Account	Internal	CME	ANY	G.ClearingProducts	CGM-CLIENT	XferType_Interest/Upfront_Fee
SWIFT/HARRIS BANK/CGM-USD-NOSTRO-CLIENT	SWIFT	HARRIS BANK	USD	ANY	CGM-USD-NOSTRO-CLIENT	SDI_ClientTrades
SWIFT/HARRIS BANK/CGM-USD-NOSTRO-HOUSE	SWIFT	HARRIS BANK	USD	ANY	CGM-USD-NOSTRO-HOUSE	SDI_HouseTrades

SDI Name - Description	Method	Agent	CCY	Product	Calypso Account
Direct/Clearing Member/Dummy Client Account CASH_SETTLEMENT trades between clearing member and client.	Direct	Clearing Member	ANY	ANY	Dummy Client Account
Internal/CME/Dummy Account for Swaps/FRAs/FXNDFs Internal/LCH/Dummy Account for Swaps/FRAs Trades between clearing member and CCP.	Internal	CME LCH	ANY	Swap, FRA, FXNDF	Dummy Account @CME Dummy Account @LCH

SDI Name - Description	Method	Agent	CCY	Product	Calypso Account
[NOTE: Repeat for each CCP]					
SWIFT/HARRIS BANK/Clearing Member HOUSE NOSTRO USD Cash payments between clearing member and CCP for house trades. **[NOTE: Repeat for each currency]**	SWIFT	HARRIS BANK	USD	ANY	Clearing Member HOUSE NOSTRO USD
SWIFT/HARRIS BANK/Clearing Member CLIENT NOSTRO USD Cash payments between clearing member and CCP for client trades. **[NOTE: Repeat for each currency]**	SWIFT	HARRIS BANK	USD	ANY	Clearing Member CLIENT NOSTRO USD

5.3.1 Clearing Member - Sample "Direct/Clearing Member/Dummy Client Account" Settlement Instructions

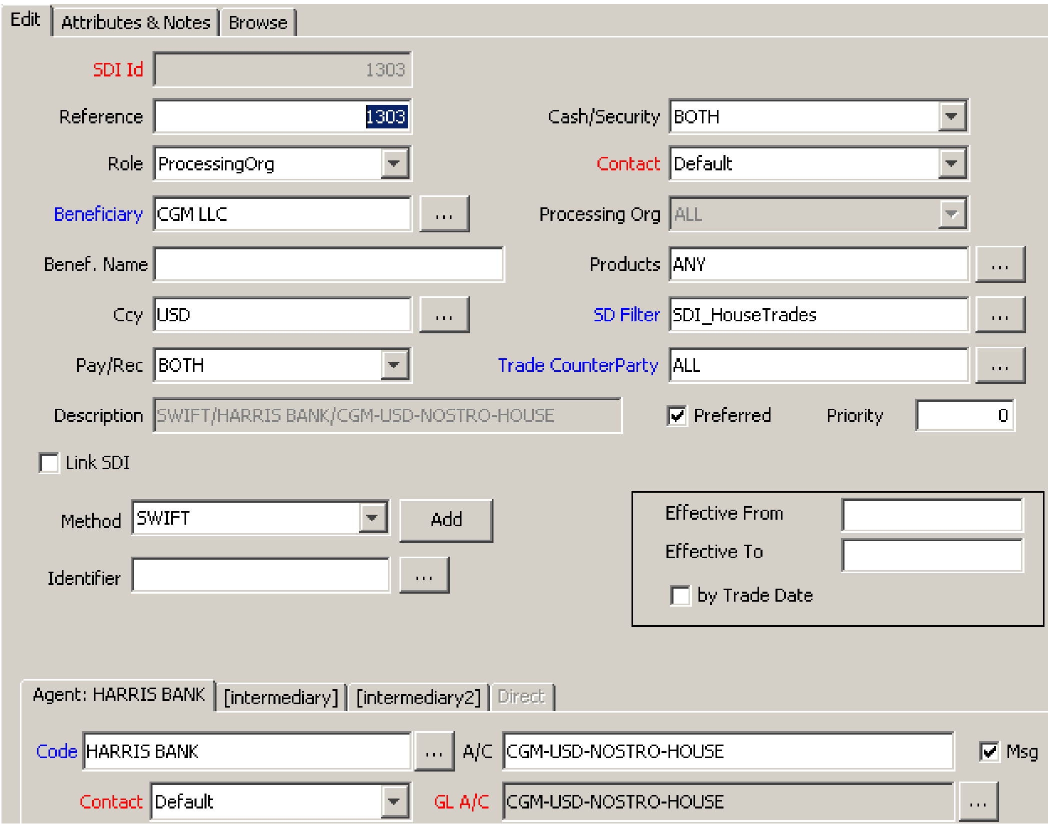
CASH_SETTLEMENT trades and margin call trades between the clearing member and the client.



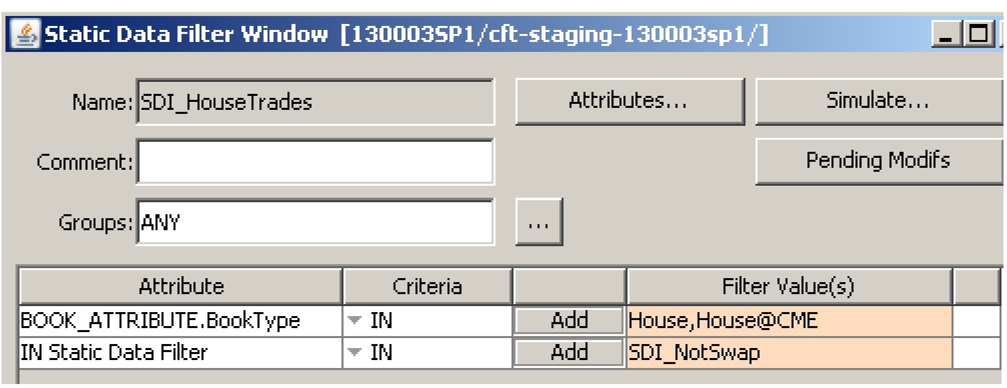
5.3.2 Clearing Member - Sample "SWIFT/HARRIS BANK/Clearing Member HOUSE NOSTRO USD" Settlement Instructions

House CASH_SETTLEMENT trades and margin call trades between the clearing member and the CCP.

Sample for USD - Repeat for each currency.



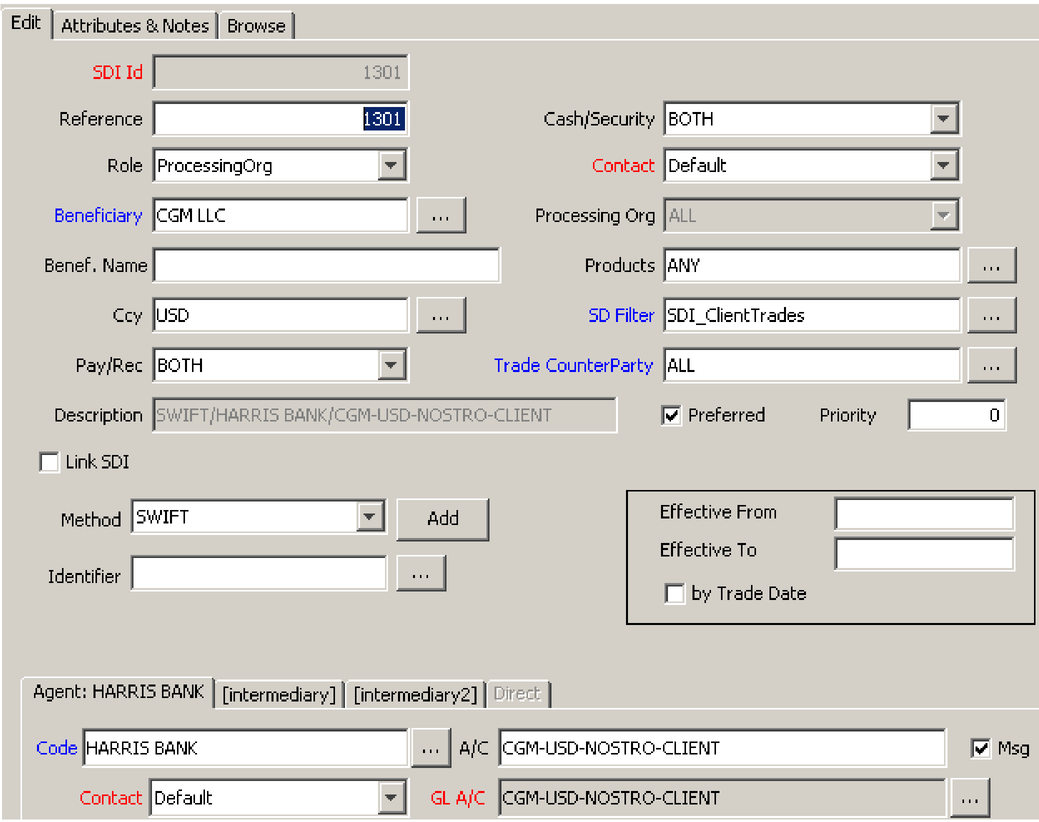
Static data filter to filter house trades:



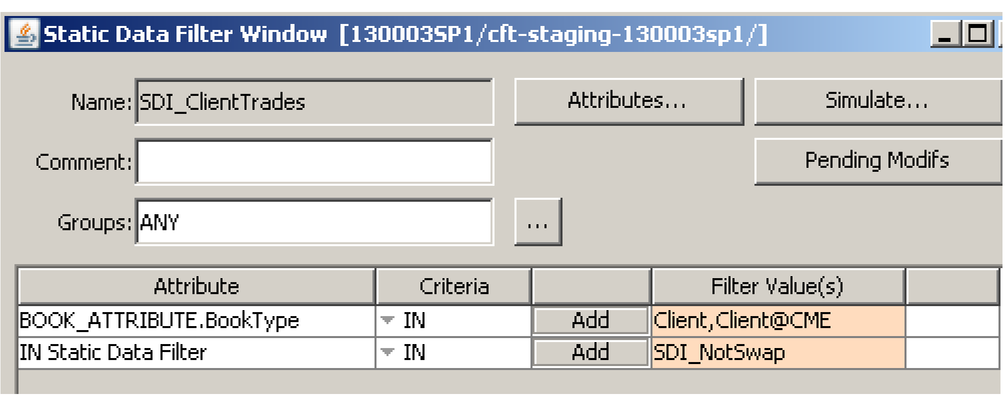
5.3.3 Clearing Member - Sample “SWIFT/HARRIS BANK/Clearing Member CLIENT NOSTRO USD” Settlement Instructions

Client CASH_SETTLEMENT trades and margin call trades between the clearing member and the client.

Sample for USD - Repeat for each currency.



Static data filter to filter client trades:

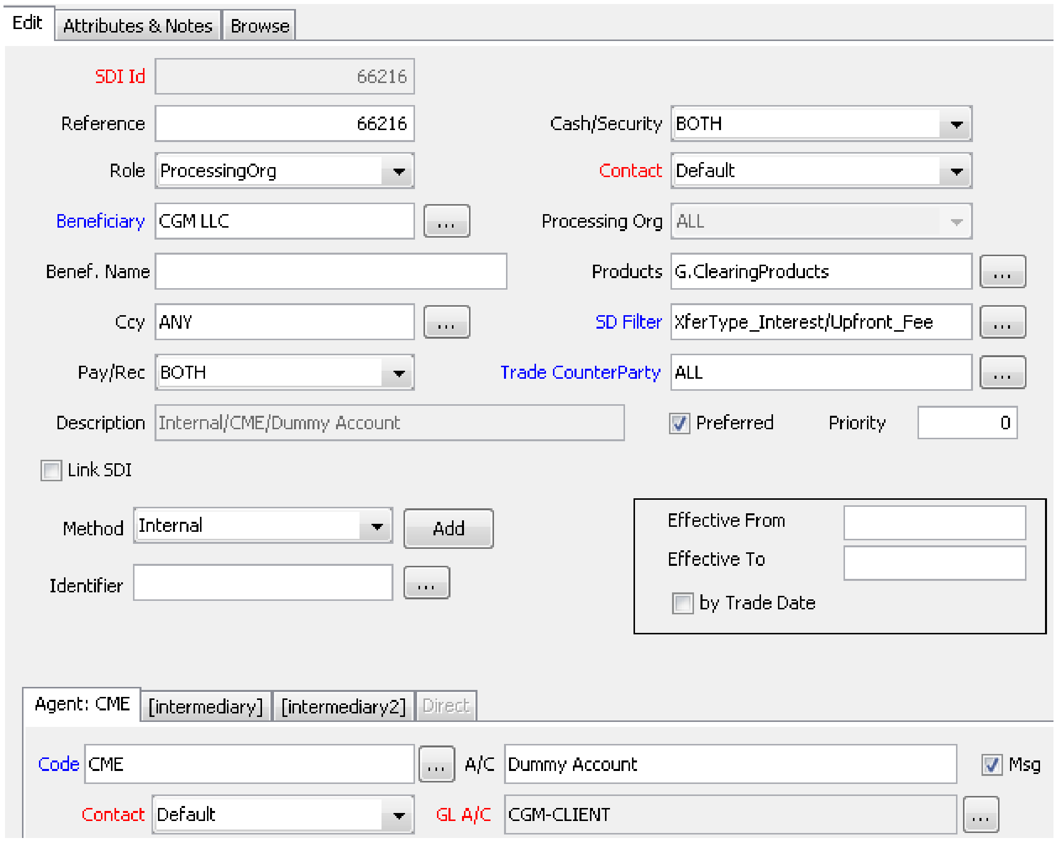


5.3.4 Clearing Member – Sample "Internal/CME/Dummy Account for Swap SDI" Settlement Instructions

It can also be used for FRAs and FXNDFs as needed.

Trades between the clearing member and the CCP.

Example for CME - Repeat for each CCP.



Same static data filter as for CCP Settlement Instructions.

5.4 Individual Client Settlement Instructions

Beneficiary = <Client name>

Currencies = ANY

List of settlement instructions – Sample setup is provided below.

SDI Name	Method	Agent	Currencies	Products	GL Account	SD Filter
Direct/CLIENT_1_AUTO_CASH@CGM LLC	Direct		ANY	ANY	CLIENT_1_AUTO_CASH@CGM LLC	XferType_NOT_Int/Upfront_Fee
Internal/CME/Dummy Account	Internal	CME	ANY	G.Clearing Products		XferType_Interest/Upfront_Fee

Role = CounterParty

[NOTE: These are created by the Onboarding Manager]

SDI Name - Description	Method	Agent	Currencies	Products	Calypso Account
Direct/Client Cash Account CASH_SETTLEMENT trades between clearing member and client. Margin call trades between clearing member and client. **[NOTE: Repeat for each client]**	Direct	N/A	ANY	ANY	Client Cash Account
Internal/CME/Dummy Account Internal/LCH/Dummy Account Trades between clearing member and client. **[NOTE: Repeat for each CCP]** **[NOTE: Repeat for each client]**	Internal	CME LCH	ANY	G.Clearing Products	N/A

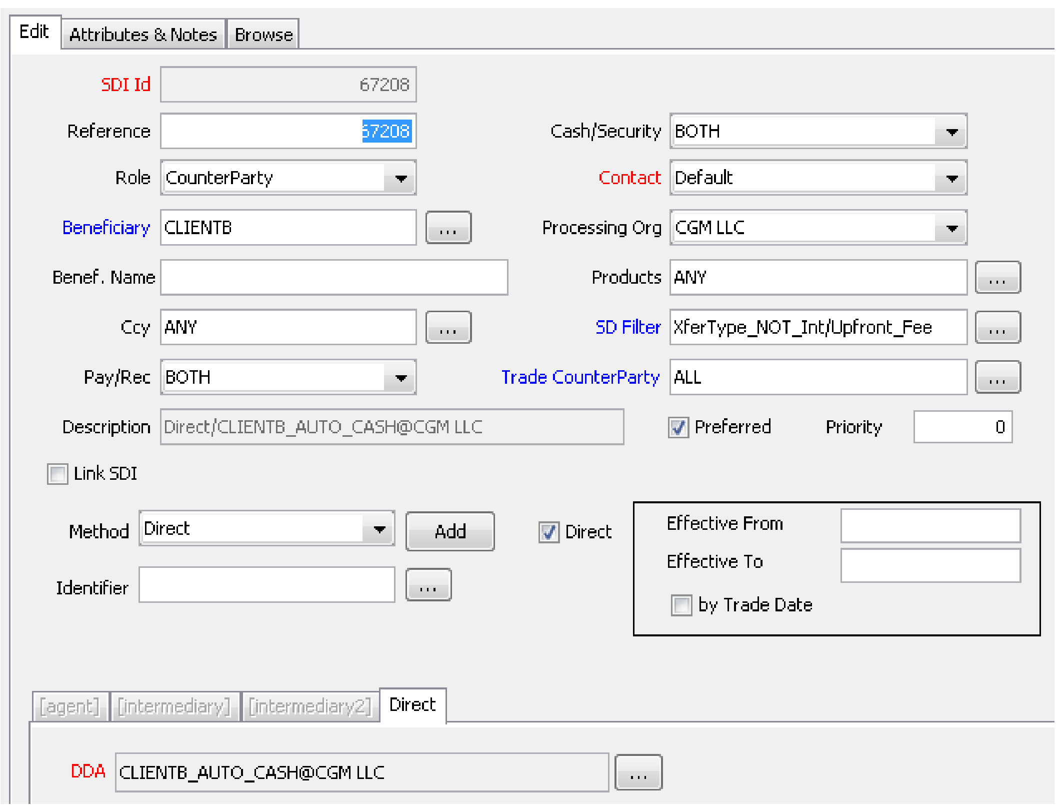
Role = Client

SDI Name - Description	Method	Agent	Currencies	Products	Calypso Account
SWIFT/HARRIS BANK/Client Margin call trades (external nostro instructions). **[NOTE: Repeat for each client]**	SWIFT	HARRIS BANK	ANY	ANY	N/A

5.4.1 Individual Client - Sample “Direct/Client CASH USD” Settlement Instructions

CASH_SETTLEMENT trades and margin call trades between the clearing member and the client - Direct SDI, with DDA = Client Cash Account @ Clearing Member.

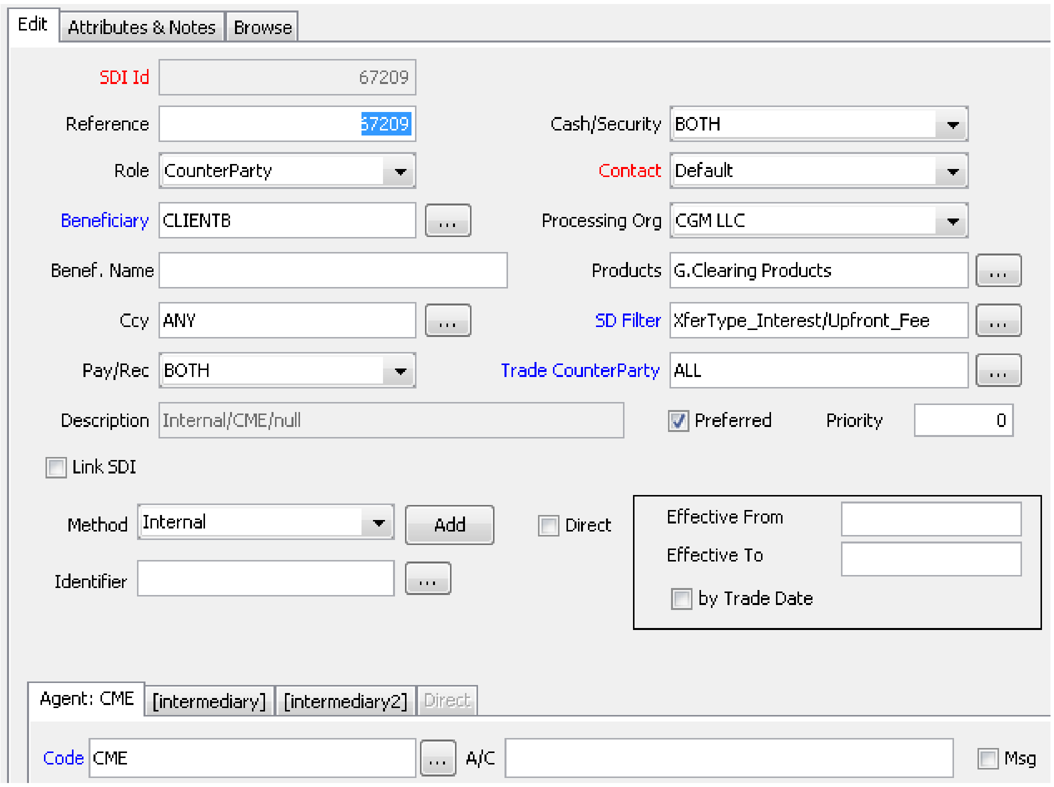
Example for USD – Repeat for each client – Repeat for each currency.



5.4.2 Individual Client - Sample “Internal/CME/Dummy Account” Settlement Instructions

Trades between the clearing member and the client.

Example for CME – Repeat for each CCP – Repeat for each client.



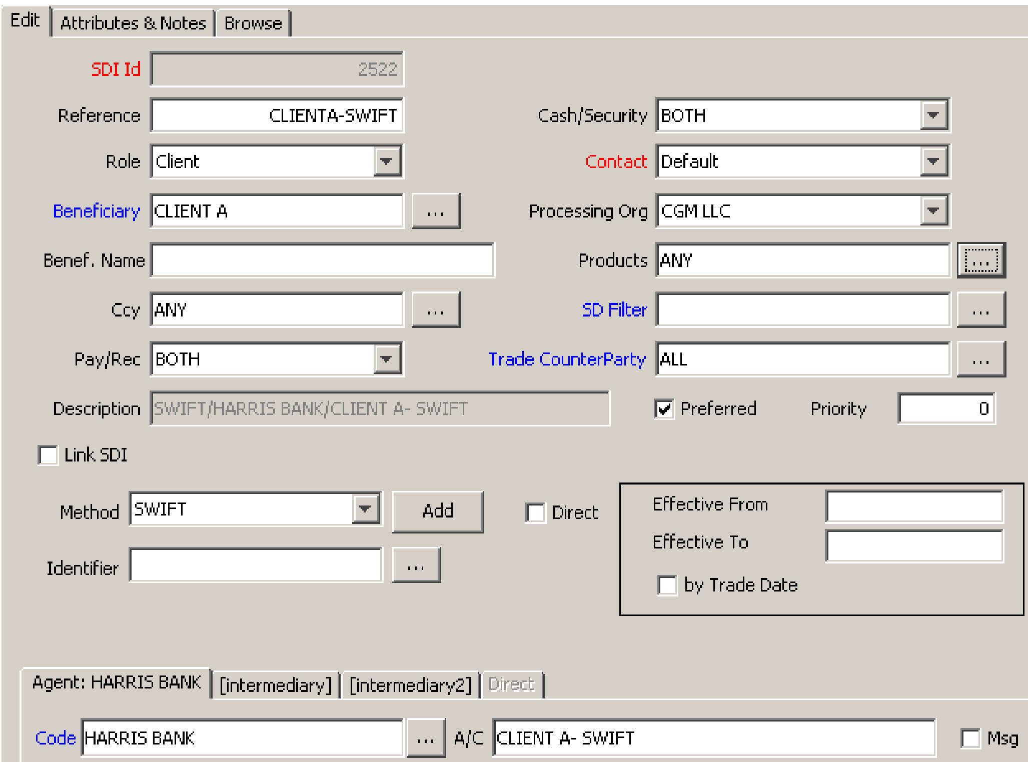
This SDI does not impact any account in Calypso.

5.4.3 Individual Client - Sample “SWIFT/HARRIS BANK/Client” Settlement Instructions

Client external Nostro instructions for margin call trades.

The Nostro instructions are defined for the client with role “Client”.

Example for Client A – Repeat for each client.



This SDI does not impact any Calypso account.

5.5 Omnibus Client Settlement Instructions

Beneficiary = <Child Client name>

Role = CounterParty

SDI Name - Description	Method	Agent	Currencies	Products	Calypso Account
Internal/CME/CME Internal/LCH/LCH Trades between clearing member and child client. **[NOTE: Repeat for each CCP]** **[NOTE: Repeat for each client]**	Internal	CME LCH	ANY	Swap, FRA, FXNDF	N/A

Beneficiary = <Omnibus Client name>

Role = CounterParty

SDI Name - Description	Method	Agent	Currencies	Products	Calypso Account
Direct/Omnibus Client CASH USD CASH_SETTLEMENT trades between clearing member and child client. Margin call trades between clearing member and omnibus client. **[NOTE: Repeat for each currency]** **[NOTE: Repeat for each client]**	Direct	N/A	USD	ANY	Omnibus Client Cash USD

[NOTE: In order for the above SDIs to be selected for CASH_SETTLEMENT trades with the child client, and margin call trades with the omnibus client, the environment property LOOK_PARENT_SDI must be set to True]

Beneficiary = <Omnibus Client name>

Role = Client

SDI Name - Description	Method	Agent	Currencies	Products	Calypso Account
SWIFT/HARRIS BANK/Omnibus Client Margin call trades (external nostro instructions). **[NOTE: Repeat for each client]**	SWIFT	HARRIS BANK	ANY	ANY	N/A

6 Margin Calls Setup

Margin calls are handled through the Collateral Management module, which allows allocating margin calls on initial margins and variation margins.

Initial margins (IM) are imported into the system as Collateral Exposure trades, based on Margin Call Contracts configurations. For clearing member contracts (CCP-facing contracts), there is one Collateral Exposure trade per Margin Call Contract and per client. For client contracts, there is one Collateral Exposure trade per Margin Call Contract.

Variation margins (VM) are represented by the cash positions of the client cash accounts.

Margin calls on initial margins and variation margins are computed in cash by the COLLATERAL_MANAGEMENT scheduled task, and are reported on the client statements. The clients can choose how to meet the margin calls: in cash, securities, or both.

6.1 Haircut Rules

You can define haircut rules for foreign currencies and securities as specified by the CCP rules prior to defining margin call contracts.

From the Calypso Navigator, navigate to Fees, Haircuts, & Margin Calls > Haircut Rule to define haircut rules – Help is available from that window.

6.2 CCP Facing Contracts

Initial Margin

The clearing member contracts are used to store the initial margin on the positions of the clearing member at the CCP.

Initial margin requirements being segregated for house and client activity, it is required to define margin call contracts for each Clearing Member/CCP/activity combination.

- For house activity, there is one Margin Call Contract per CCP and product type that handles initial margins.
- For client activity we model as many ccp-facing margin contracts as segregation levels (e.g. omnibus accounts, individual segregated accounts, etc.).

For SwapClear Members of LCH, it is also possible to have one Margin Call Contract per CCP, client, and product type that handles initial margins. The client can decide whether to have segregated accounts or not.

The initial margins can be stored in the base currency of the Margin Call Contract, or in the native currency. Margin calls are computed in the corresponding currency, and can be substituted to collateral securities.

The actual margin calls are represented by margin call trades.

From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Margin Call to define margin call contracts.

Variation Margin

By default, there is no need to define variation margin contract as the variation margin is automatically settled in cash with the CCP. However, you can also setup variation margin contracts with the CCP in order to use the Collateral Manager to generate margin call trades, and allocate the margin calls in cash or security. These variation margin contracts should be defined in the same manner as the client variation margin contracts with or without breakdown of Variation Margin Components.

A sample setup is provided below.

6.2.1 CCP Facing - Initial Margin Contracts

On these contracts, the legal entity configured in the contract is the CCP. These contracts are meant to represent the margin requirements between the clearing member and the CCP. There are two types of ccp-facing contracts:

- House CCP-Facing
- Client CCP-Facing

The House CCP-Facing contract will represent the margin requirements for the house activity.

The number of Client CCP-Facing contracts is driven by the different types of segregation of the customers: e.g. Omnibus accounts, ISA accounts.

Example

A Clearing Member (represented by the PO in Calypso) has the following clients:

Undisclosed Customers:

Client1 and Client2

Disclosed Clients

CUS01 and CUS02 (both clients benefit from the full segregation e.g. ISA accounts)

We would model the IM margin call Client CCP-Facing in Calypso as follows:

- One contract representing the Omnibus Account (including Client1 and Client2)
- One contract representing customer CU01
- One contract representing CUS02

Sample of House/Client CCP-Facing Contract:

Tab: Fields	Client Activity	House Activity
Parties: Processing Org	<Clearing Member>	<Clearing Member>
Parties: Legal Entity	<CCP>	<CCP>
Parties: Legal Entity Role	Counterparty	Counterparty
Details: Products	CollateralExposure	CollateralExposure
Details: Currency	<Cleared Currencies>	<Cleared Currencies>
Details: End of Day Pricing Environment	<Your pricing environment>	<Your pricing environment>
Details: Intraday Pricing Environment	<Your pricing environment>	<Your pricing environment>
Details: Contract Type	Client@[CCP]	House@[CCP]
Details: Haircut	<haircut rule>	<haircut rule>
Dates & Time: Valuation Time Zone	Same as pricing environment time zone	Same as pricing environment time zone
Dates & Time: Valuation Date Frequency	<rule for valuation date frequency>	<rule for valuation date frequency>
Dates & Time: Valuation Time Offset	<rule for valuation time offset>	<rule for valuation time offset>
Initial Margin: Initial Margin option	Checked	Checked
Additional Info: CCP	<CCP>	<CCP>
Additional Info: CCP_REFERENCE	CLIENT (Omnibus Accounts) or ISA Account	HOUSE
Additional Info: PRODUCT_TYPE	This is also known as the clearing service. Values are configured in the domain <mccAdditionalField.PRODUCT_TYPE	This is also known as the clearing service. Values are configured in the domain <mccAdditionalField.PRODUCT_TYPE
Additional Info: MARGIN_TYPE	IM	IM
ELIGIBILITY Eligible Book -> Set Default Book	Checked	Checked

Tab: Fields	Client Activity	House Activity
ELIGIBILITY Eligible Book -> Books	<Clearing member Client Book>	<Clearing member House Book>
ELIGIBILITY Eligible Securities	Add one or more bond filters	Add one or more bond filters
ELIGIBILITY Eligible Currencies	<base currency> <list of eligible collateral currencies>	<base currency> <list of eligible collateral currencies>

Parties: Legal Entity

This is the Clearing House.

Details: Contract Type

This is useful in the case the user needs to filter the margin contracts per CCP AND [client or house].

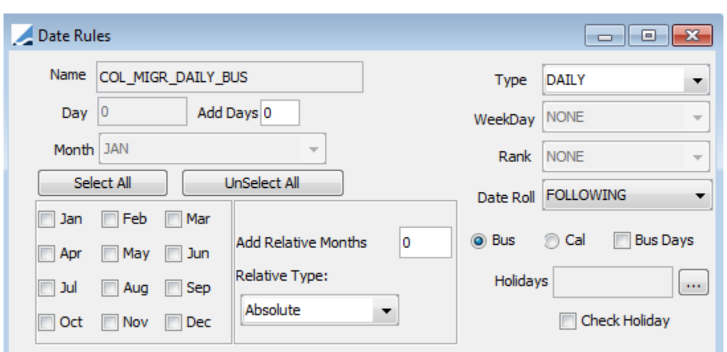
The recommended format is: Client/House>@<CCP>

Examples:

- Client@CME
- House@LCH, etc.

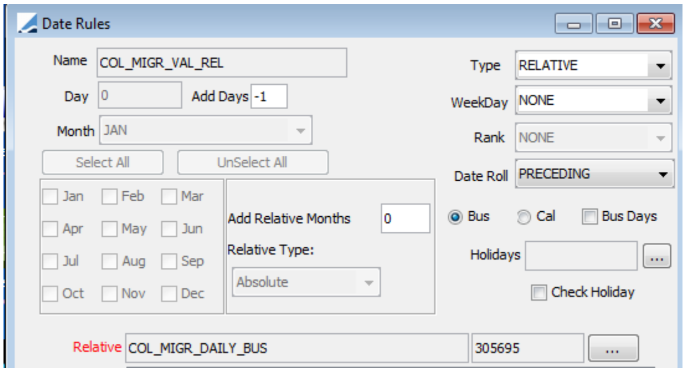
Dates & Time: Valuation Date Frequency

Recommended rule:

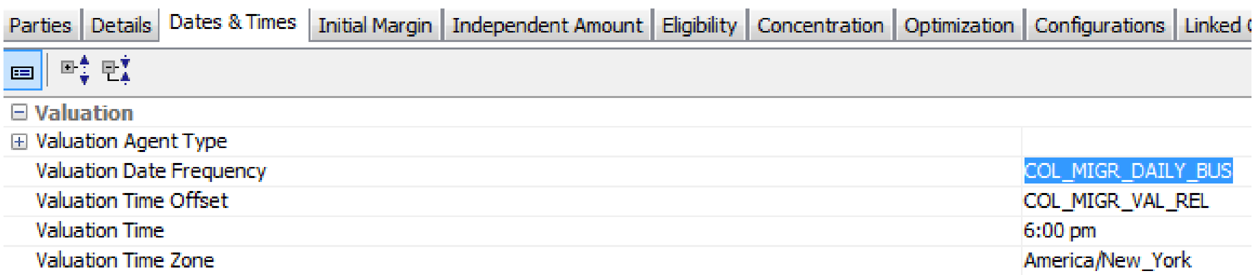


Dates & Time: Valuation Time Offset

Recommended rule:



Example:



<u>Additional Info: CCP_REFERENCE</u>

By default we configure CLIENT or HOUSE as needed but for European CCPs, clients that benefit from full segregation (ISA accounts) must be represented individually in a ccp-facing margin call contracts or through their position accounts.

Examples for Pre-CDML: LCH

Configure this field with values from the column “Account” in the report RPT86c/Report 33a)

Examples for Post CDML (any CCP)

Configure this field from the value in the element <segregationAccount> of the initialMargin CDML report.

Summary of supported Clearing Houses

CCP	CCP EOD File	Field/Element
CME	IRSMR3 report.	Pre-CDML Column “A/C ID” Post-CDML <segregationAccount>
LCH	Report86c (Client Report 86 (house) Report 33a	Pre-CDML Column “Account” Post-CDML <segregationAccount>
EUREX	RPTCC204 If CC204 is available, the system processes the CC204 report, otherwise it looks for CC050. CC204 shows IM for OTC products only, whereas CC050 provides IM number for OTC and Listed products, and considers cross margined numbers.	//RC/rptSubHdr/membId CDML <segregationAccount>
ICE	Client Gross Margin Report	Client Legal Entity Account CDML <segregationAccount>

Additional Info: PRODUCT_TYPE

The values of this field must be configured in the domain mccAdditionalField.PRODUCT_TYPE

Examples: IRD, NDF, etc.

Additional Info: MARGIN_TYPE

The values (IM or VM) are configured in the domain mccAdditionalField.MARGIN_TYPE

Choose IM.

Additional Info: LCH_VM_HOLIDAY

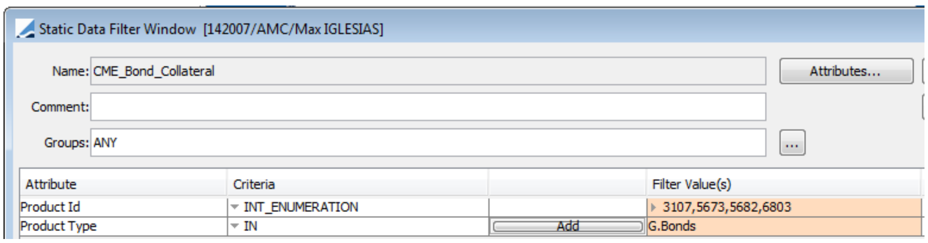
If False or null, the system should not process CCYHolNPVChange.

If True, the system should include any NPV debit reflected in CCYHolNPVChange in the InitialMargin call (MAINTENANCE_REQUIREMENT pl_mark).

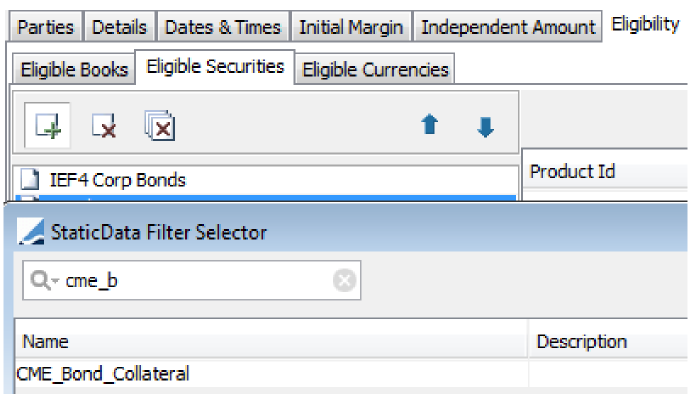
Eligibility: Eligible Securities

We must create a static data filter with the choice of securities collateral.

Example:



Once created, the filter appears in the bond selector:



6.2.2 CPP Facing - VM Margin Call Contracts (Optional)

Tab: Fields	Client Activity VM – USD **[NOTE: Repeat for each currency for the multi-currency scenario]**	House Activity VM – USD **[NOTE: Repeat for each currency for the multi-currency scenario]**
Parties: Processing Org	<clearing member>	<clearing member>
Parties: Legal Entity Role	Client	Client
Parties: Legal Entity	<CCP>	<CCP>
Details: Products	ClearingTransfer	ClearingTransfer
Details: Currencies	USD	USD
Details: End of Day Pricing Environment	<pricing env>	<pricing env>
Details: Intraday Pricing Environment	<pricing env>	<pricing env>
Details: Haircut	<haircut rule>	<haircut rule>
Dates & Times: Valuation Time Zone	Same as <pricing env> timezone	Same as <pricing env> timezone
Dates & Times: Send Statement	Checked	Checked
Initial Margin: Initial Margin	Checked	Checked
Initial Margin: Credit Multiplier		
Additional Info: CCP	<CCP>	<CCP>
Additional Info: CCP_ORIGIN_CODE	CLIENT	HOUSE
Additional Info: CCP_REFERENCE	C	H
Additional Info: PRODUCT_TYPE		
Additional Info: MARGIN_TYPE	VM	VM
Additional Info: INCLUDED_VM_FLOWS		
Additional Info: SEPARATE_VM_SETTLEMENT	False	False

Additional Info: VM_CLASSIFICATION	CTM or STM	CTM or STM
Eligible Books: Set Default Book	Checked	Checked
Eligible Books: Book	<PO Client book>	<PO House book>
Eligible Securities		
Eligible Currencies	<base currency> USD	<base currency> USD
Eligible Currencies: Cash Margin Call Account	True	
Eligible Currencies: Security Margin Call Account	True	
Eligible Currencies: Orderer Role	CounterParty	CounterParty

6.3 Client Facing Contracts

The client contracts are used to store the initial margin / variation margin on the positions of the client at the clearing member.

On these contracts, the Legal Entity configured in the contract is the client or a clearing member affiliate. This category of contract represents margin flows between the customer or affiliates and the Clearing Member.

Initial Margin

There is one IM margin call contract per CCP, position account and Product type.

The initial margins can be stored in the base currency of the Margin Call Contract, or in the native currency. Margin calls are computed in the corresponding currency, and can be substituted to collateral securities.

Variation Margin

Variation margins can be stored in multiple currencies, or in a single currency, based on the client's choice.

- Multi-currency scenario – There is one VM Margin Call Contract per Client and per currency (regardless of CCP and product type).

  In this case, there is one variation margin per currency, and the margin calls are computed per currency.

- Single-currency scenario – There is one VM Margin Call Contract per Client.

  In this case, all variation margins are converted to the base currency of the Margin Call Contract. There is one variation margin in base currency, and the margin calls are computed in base currency.

The actual margin calls are represented by margin call trades.

Collateral Held at Clearing Member, not posted at CCP

The system allows maintaining additional collaterals held at the clearing member by a given client, but not posted at the CCP, in a specific margin call contract.

These margin call contracts must be defined as the Initial Margin contracts with CCP = Unallocated.

The collaterals attached to these contracts will be included in the regulatory reporting.

Margin Call Contracts Definition

For the client contracts, it is required that the margin calls update two different accounts in Calypso:

- The clearing member external nostro account (where cash and/or securities are actually paid or received)
- The client cash account @ the clearing member

For this, the margin call contracts are defined for the external role of the client (we are using the role “Client” in this setup - It can also be “ExtCounterParty” – See On-Boarding an Individual Client for details), and you need to define the following attributes in the panel Eligibility > Eligible Currencies:

- Cash Margin Call Account = True
- Security Margin Call Account = True
- Orderer Role = “CounterParty”, the role of the Client cash account at the clearing member.

Breakdown of Variation Margin Components

This functionality allows generating client VM Margin Calls based on user-defined combinations of the CMF generated fees and the individual cashflows that are passed from the CCP, through the CMF to the client. It allows the users to associate transfers that hit a single cash account to multiple VM Margin Call contracts using configuration controlled by the user.

You need to define the following attributes in the Additional Info of the VM contracts:

- INCLUDED_VM_FLOWS (Optional) – Comma-separated list of flow types associated with the margin call contract. If it is not set, all flow types will be associated with the margin call contract (default).

  You can further specify the flow types by product types using the format “[<product type>]<flow type>”. For example: [InterestBearing]INTEREST, [CA]INTEREST.

- SEPARATE_VM_SETTLEMENT - If True, the flows associated with the margin call contract, including the Margin Call trades, will be included in a “Separate Settlements” section in the Client Statement. Otherwise, the flows will contribute to the Financial Summary table of the Client Statement.

From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Margin Call to define margin call contracts.

6.3.1 Client Facing - Initial Margin Contracts

Tab: Fields	Client Activity
Parties: Processing Org	<Clearing Member>
Parties: Legal Entity	Customer or Clearing member's affiliate Legal Entity
Parties: Legal Entity Role	Client
Details: Products	CollateralExposure
Details: Currency	<Cleared Currencies>
Details: End of Day Pricing Environment	<Your pricing environment>
Details: Intraday Pricing Environment	<Your pricing environment>
Details: Contract Type	Client@[CCP]
Details: Haircut	<haircut rule>
Dates & Time: Valuation Time Zone	Same as pricing environment time zone
Dates & Time: Valuation Date Frequency	<rule for valuation date frequency>
Dates & Time: Valuation Time Offset	<rule for valuation time offset>
Dates&Times: Send Statements	Checked
Initial Margin: Initial Margin option	Checked
Initial Margin: Credit Multiplier	<Credit Multiplier>
Additional Info: CCP	<CCP>
Additional Info: CCP_REFERENCE	Position account at the CCP (see comments below)
Additional Info: PRODUCT_TYPE	This is also known as the clearing service. Values are configured in the domain <mccAdditionalField.PRODUCT_TYPE
Additional Info: MARGIN_TYPE	IM
ELIGIBILITY Eligible Book -> Set Default Book	Checked
ELIGIBILITY	<customer/affiliate Book>

Tab: Fields	Client Activity
Eligible Book -> Books	
ELIGIBILITY Eligible Securities	Add one or more bond filters
ELIGIBILITY Eligible Currencies	<base currency> <list of eligible collateral currencies>
Eligible Currencies: Cash Margin Call Account	True
Eligible Currencies: Security Margin Call Account	True
Eligible Currencies: Orderer Role	CounterParty

Additional Info: CCP_REFERENCE

We must report the client's (or affiliate) position account id at the CCP.

Post CDML, the value can come from either the value in the element <initialMarginAccountId> or from the value in the element <positionAccountID>, depending on the level of granularity.

This happens when the CCP provides margin calculations at portfolio level for a given customer.

Example of EUREX

Client: CAXXV

Portfolios:

a) CAXXV_P

b) CAXXV_A1

c) CAXXV_2

We report in the CDML, in the element <initialMarginAccountId> the aggregated margin amounts for the three portfolios and three elements <segregationAccount>, each containing the margin requirements for a), b) and c).

The user in Calypso has the choice of creating one margin call that represents the aggregation of the three portfolios. In that case it will create one margin call and will reference in the attribute CCP_REFERENCE the value of the element <initialMarginAccountId>.

If the user needs more granularity, it can decide to create three margin calls where the CCP_REFERENCE attribute will contain the value of the <segregationAccount> element.

6.3.2 Variation Margin Contracts

Tab: Fields	Client VM – USD **[NOTE: Repeat for each currency for the multi-currency scenario]**
Parties: Processing Org	<clearing member>
Parties: Legal Entity Role	Client
Parties: Legal Entity	<client>
Details: Products	ClearingTransfer
Details: Currencies	USD
Details: End of Day Pricing Environment	<pricing env>
Details: Intraday Pricing Environment	<pricing env>
Details: Contract Type	Client
Details: Haircut	<haircut rule>
Dates & Times: Valuation Time Zone	Same as <pricing env> timezone
Dates & Times: Send Statement	Checked
Initial Margin: Initial Margin	Checked
Initial Margin: Credit Multiplier	
Additional Info: CCP	
Additional Info: CCP_REFERENCE	
Additional Info: PRODUCT_TYPE	
Additional Info: MARGIN_TYPE	VM
Additional Info: INCLUDED_VM_FLOWS	
Additional Info: SEPARATE_VM_SETTLEMENT	False
Additional Info: VM_CLASSIFICATION	CTM or STM
Eligible Books: Set Default Book	Checked

Eligible Books: Book	< client book>
Eligible Securities	
Eligible Currencies	<base currency> USD
Eligible Currencies: Cash Margin Call Account	True
Eligible Currencies: Security Margin Call Account	True
Eligible Currencies: Orderer Role	Counterparty

6.3.2.1 Sample USD VM Client Contract

For the multi-currency scenario, repeat for each client and for each currency.

For the single-currency scenario, repeat for each client.

The differences with the house contracts are listed below.

Parties

- Legal Entity Role = Client
- Legal Entity = <Client name>

Dates & Times

- Valuation Time Zone = Same as <pricing env> timezone
- "Send Statement" = Checked

Initial Margin

- "Initial Margin" = Checked

Additional Info

- CCP = Not set
- CCP_REFERENCE= Not set
- PRODUCT_TYPE = Not set
- MARGIN_TYPE = VM
- INCLUDED_VM_FLOWS (Optional) = Not set.

  Comma-separated list of flow types associated with the margin call contract. If it is not set, all flow types will be associated with the margin call contract (default).

- SEPARATE_VM_SETTLEMENT = False.

If True, the flows associated with the margin call contract, including the Margin Call trades, will be included in a “Separate Settlements” section of the Client Statement. Otherwise, the flows will contribute to the Financial Summary table of the Client Statement.

Eligible Books

- Set Default Book = Checked
- Book = <Client’s book name> - For example “Client A @ CGM”

[NOTE: The timezone of the book must be the same as the margin call contract’s valuation timezone]

Eligible Securities

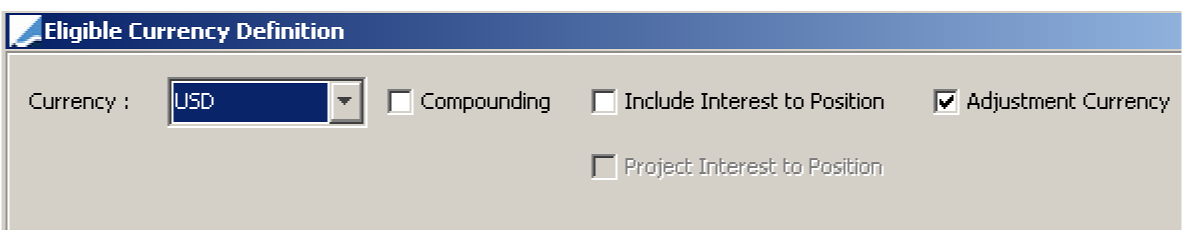
None.

Eligible Currencies

- Set the base currency – Example, “USD”
- Only add the base currency as an eligible security, and check “Adjustment Currency”.

You must also make sure that you have the workflow rule AutoAdjust on the following transitions in the Collateral workflow: PRICED_PAY - AGREE_EXPOSURE - EXPOSURE_AGREED and PRICED_RECEIVE - AGREE_EXPOSURE - EXPOSURE_AGREED.

Example:



- Cash Margin Call Account = True
- Security Margin Call Account = True
- Orderer Role = CounterParty

6.4 Omnibus Client Contracts

The omnibus client contracts are setup in the same way as individual client contracts for Omnibus client name.

▶ See Client Facing Contracts for details.

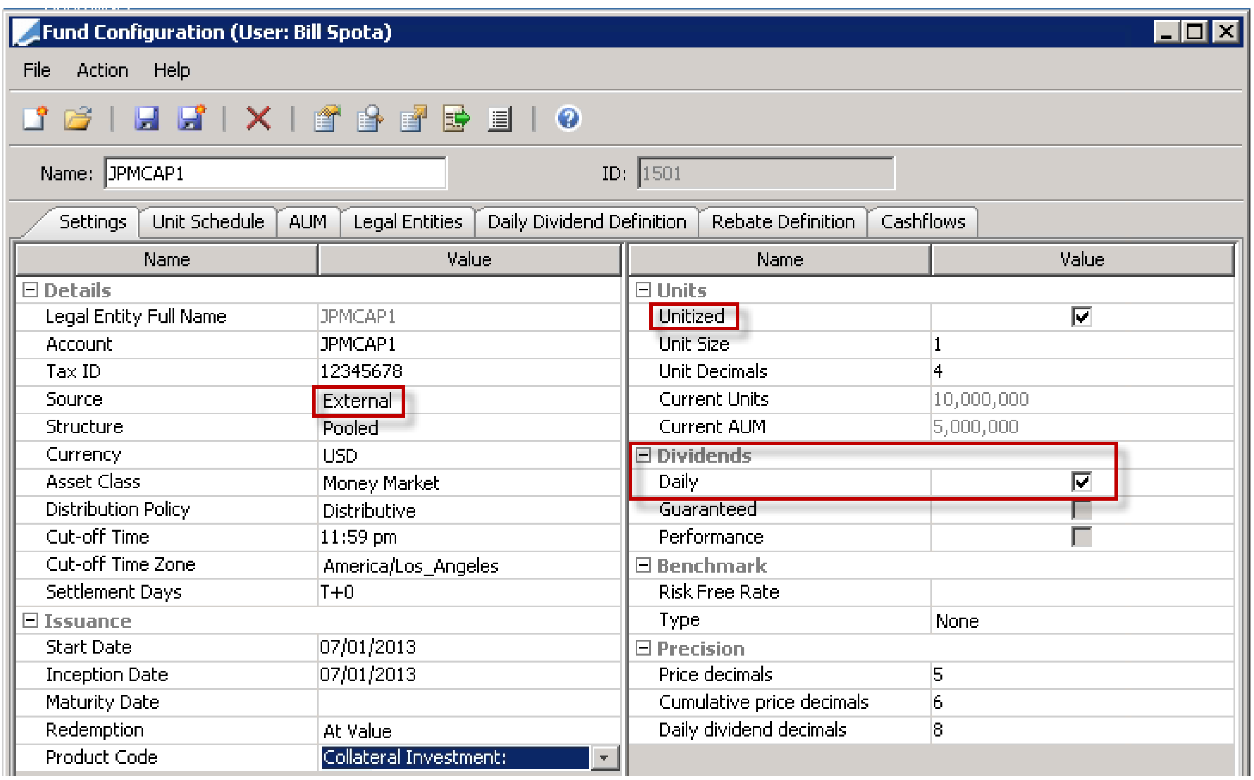
6.5 Collateral Investment Program

The Collateral Investment Program allows FCMs to reinvest margin calls into the mutual funds and treasury bonds participating in the program.

The mutual funds are defined as Funds, and the investment is represented using Collateral Substitution of the margin calls into the Unitized Funds.

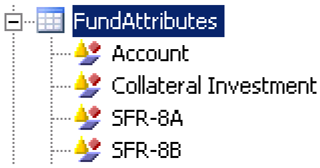
6.5.1 Funds Definition

From the Calypso Navigator, navigate to Configuration > Asset Management > Fund, and define the mutual funds as in the example below.



» Select the “External” source, check “Unitized”, and check “Daily” dividend.

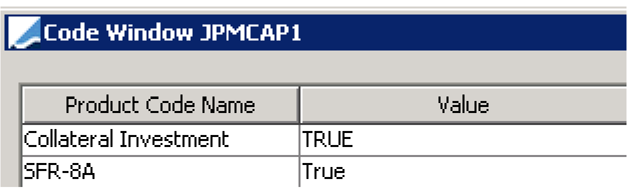
Along with creating this “UnitizedFund” product, you need to create the product codes “Collateral Investment”, “SFR-8A”, and “SFR-8B” in the domain “FundAttributes”:



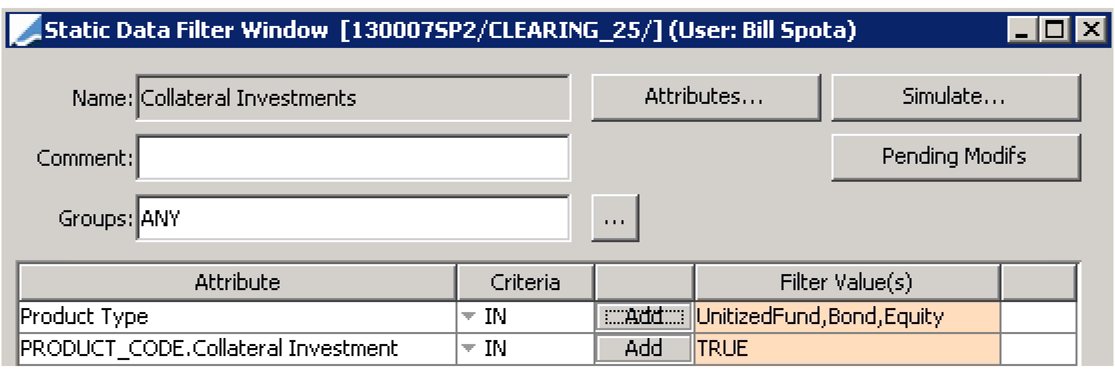
Then define the product codes using Main Entry > Configuration > Product > Code.

In the Fund Configuration window, click to open the Fund Attribute window, and set “Collateral Investment” to TRUE.

Set SFR-8A to True if the fund should be added to column 8A of the SFR report (IEF5 funds), or set SFR-8B to True if the fund should be added to column 8B of the SFR report (other IEF funds).



Then create a static data filter to identify the fund. This will be used during the Collateral Substitution process.

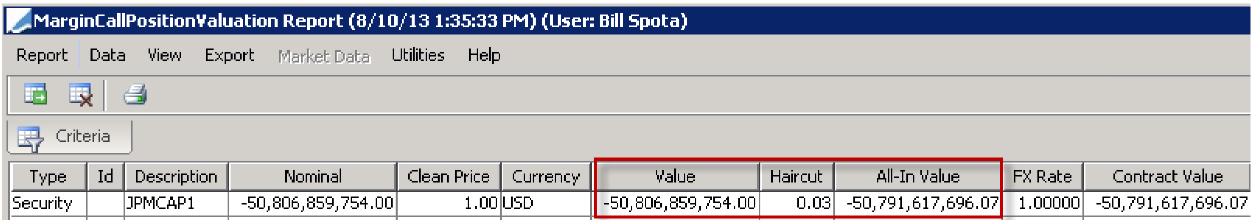


This static data filter must be added to the tab called “Eligible Securities” in respective CCP Facing Margin Call Contracts. This will allow you to see all the Money Market Funds you have set up so you can later perform a Collateral Substitution.

6.5.2 Margin Call Position Valuation Report

If you are an FCM and you want to invest a client’s collateral on deposit with you, you need to choose which of the four CME Collateral Management Programs you as the FCM would like to invest in, how much, and finally how to allocate within each fund. Using the example of CME’s IEF2 and IEF5 investment funds, the FCM can only send USD cash and then enter the allocation of that cash in a separate CME system called “Clearing 21”. Using the existing CCP facing Margin Call contract(s) already created Calypso can generate a margin call trade where the FCM will wire funds to the CME. The cash can then be converted to a security that represents the investment in Calypso via a collateral substitution within Collateral Manager. Now you have created a security that represents the FCM’s investments in various CCP Collateral Management Programs.

In Calypso, we can report on the pre/post haircut amounts invested using the Margin Call Position Valuation Report as seen below, where the pre haircut value is shown under the “Value” column and the post haircut value is seen under the :All-In Value” column.

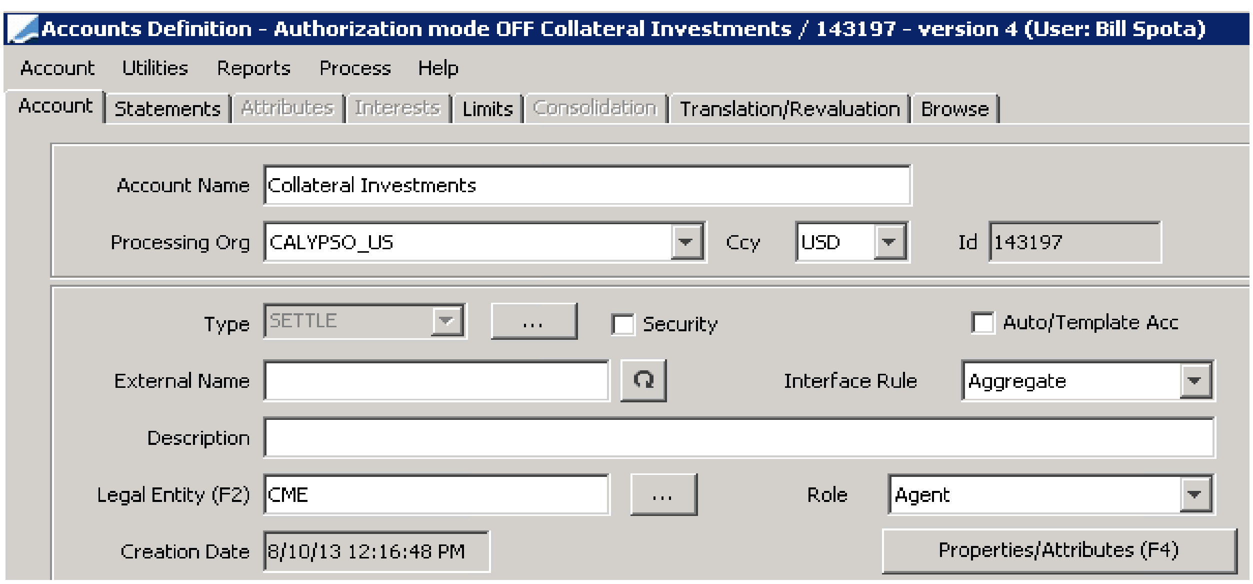


Note: In the above scenario, we have to mark the security at par on a daily basis. This can be done by using the PROP_RATE_1BUSDAY scheduled task. Should the value of the invested money market fund increase or decrease the user can manually change the price and manage the fluctuation accordingly.

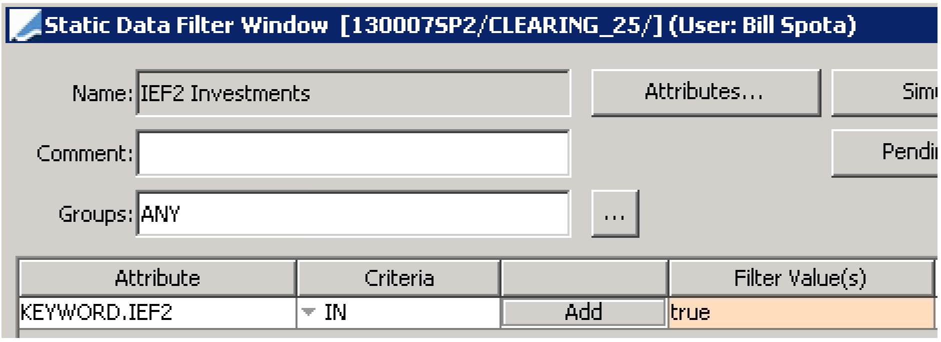
Now imagine your client wants to invest in CME’s IEF3 and 4 programs where the only acceptable forms of collateral are corporate bonds. The client must have sent in corporate bonds to the FCM to cover their collateral requirements in which case the FCM would invest in IEF3 or IEF4. The FCM will then send the bonds to the CCP. Unlike IEF2, which is an investment of cash into a money market, IEF3 and 4 are programs where the FCM can post ineligible securities into a special account where they are rebranded as eligible collateral and can be used to meet IM requirements. The FCM must commit to a certain "lockup amount" which is essentially a guaranteed minimum amount that they will invest, as well as a term for that investment which dictates the minimum amount of time that the bonds will be pledged.

6.5.3 Accounts Definition

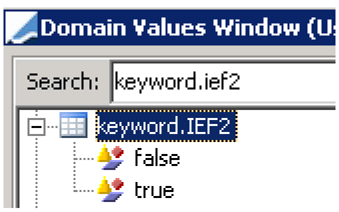
The purpose of creating a Collateral Investment Account Definition and corresponding SDIs and static data filter is to prevent the transfers that are tagged as a collateral investment from hitting the inventory engine and updating the Nostro.



Next create a static data filter that will enable you to achieve separation of trades and transfers which is further explained in the next section.

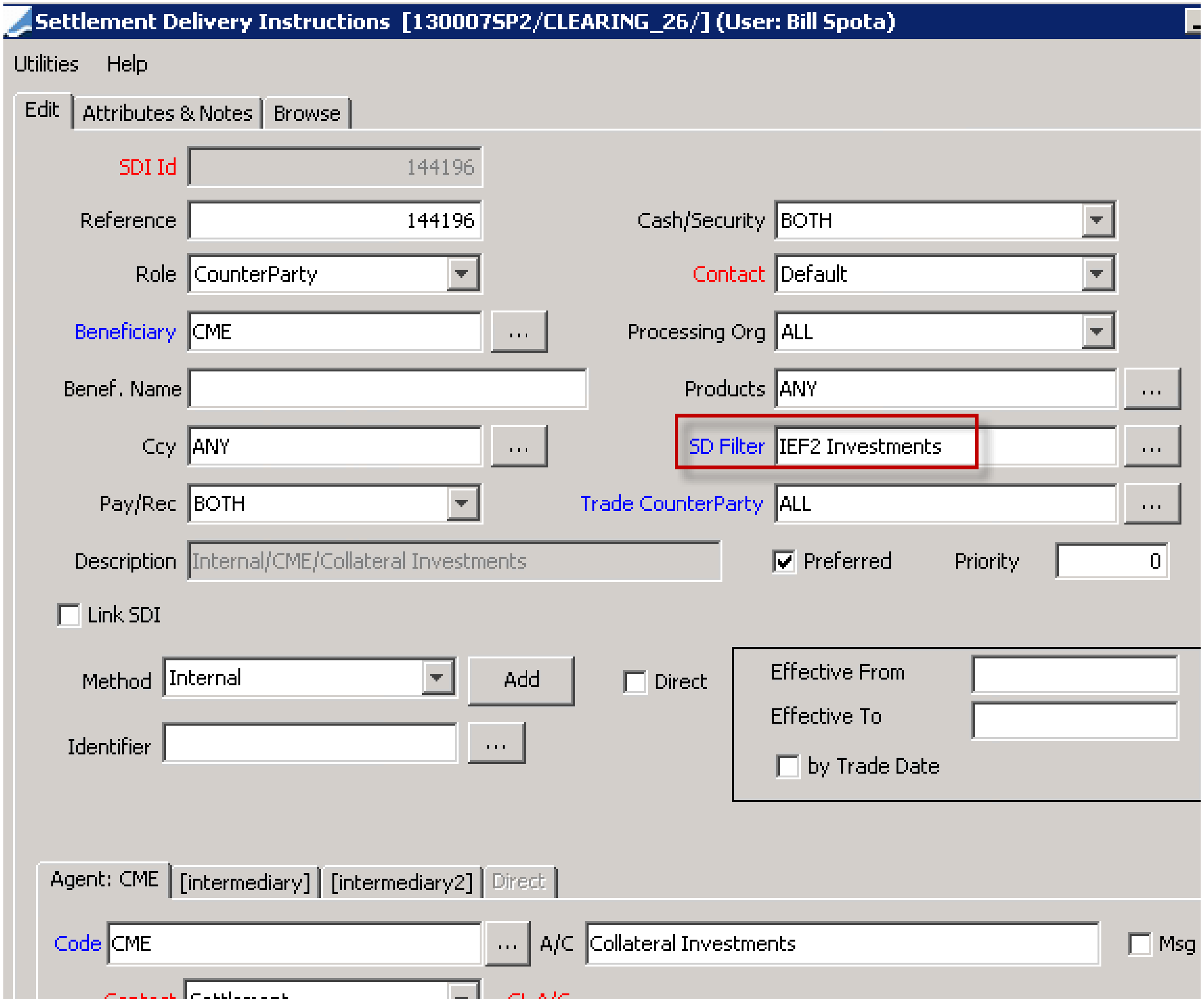


Note: You need to add the trade keyword “IEF2” to the domain “tradeKeyword”, and add the domain “keyword.IEF2” to give it a list of available values.

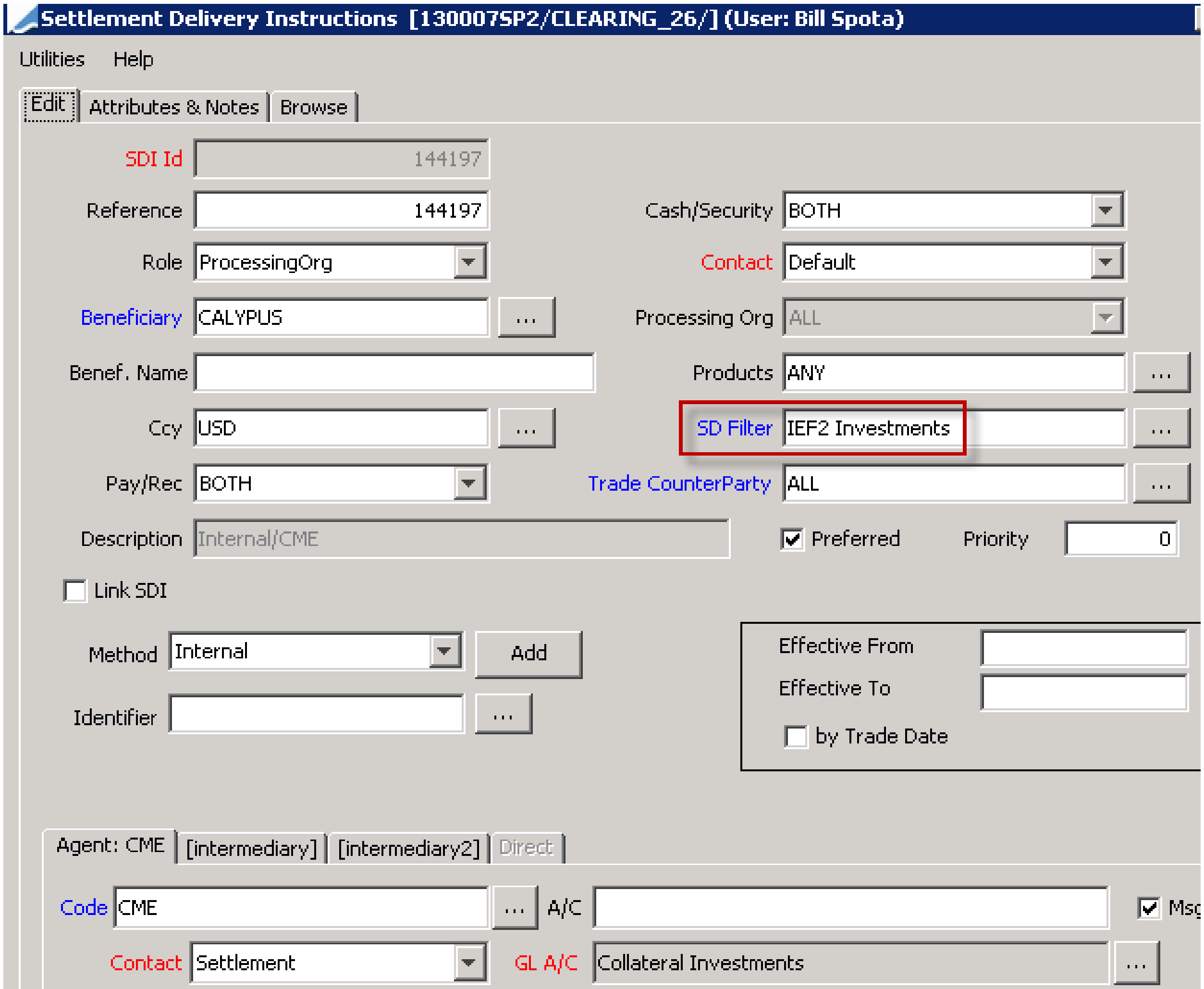


Then create the SDIs that will route both the cash and security transfers to this Collateral Investment Account.

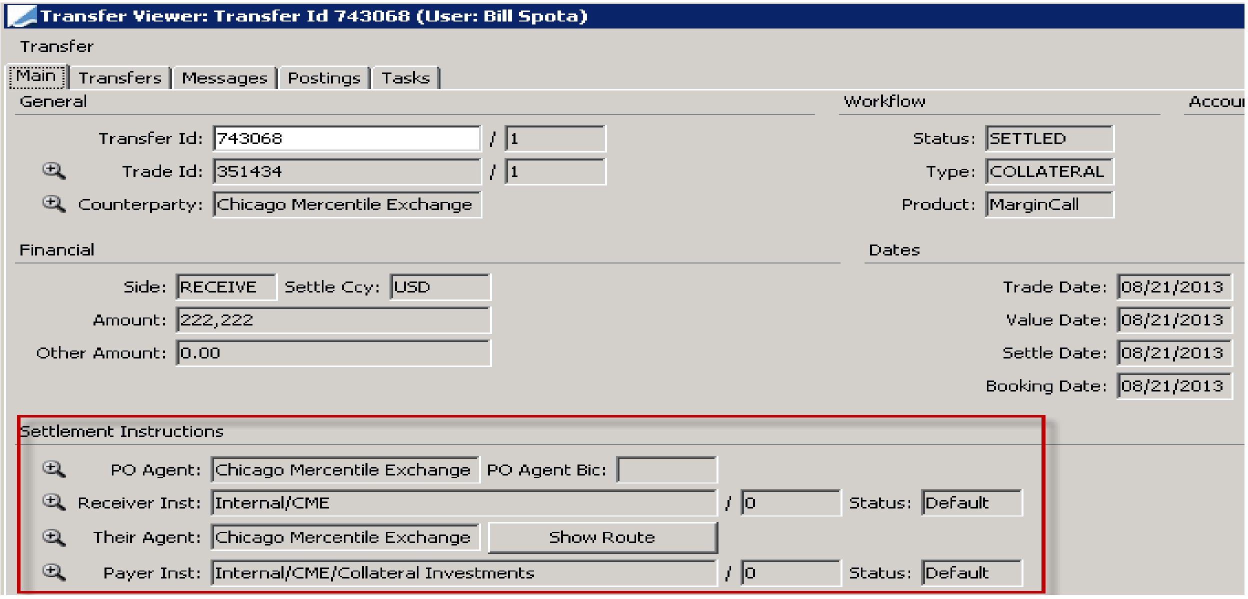
Counterparty SDI



Processing Org SDI



You can view in the Transfer Viewer that the USD cash settlement did not hit the Nostro.

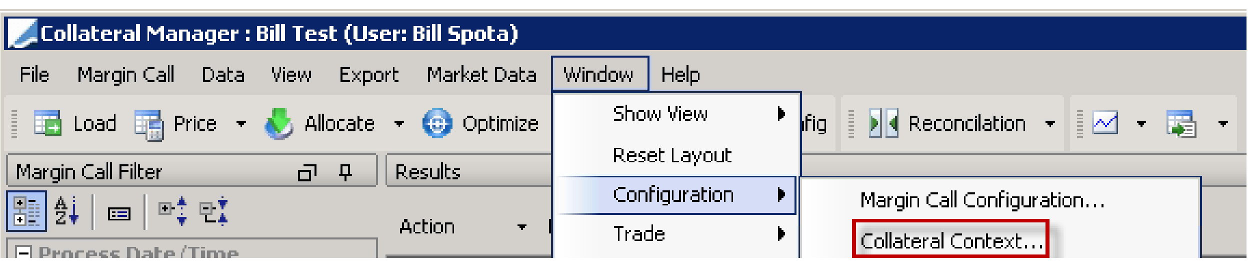


Proceed to the next section that explains how to tag both trades and transfers.

6.5.4 Collateral Investment

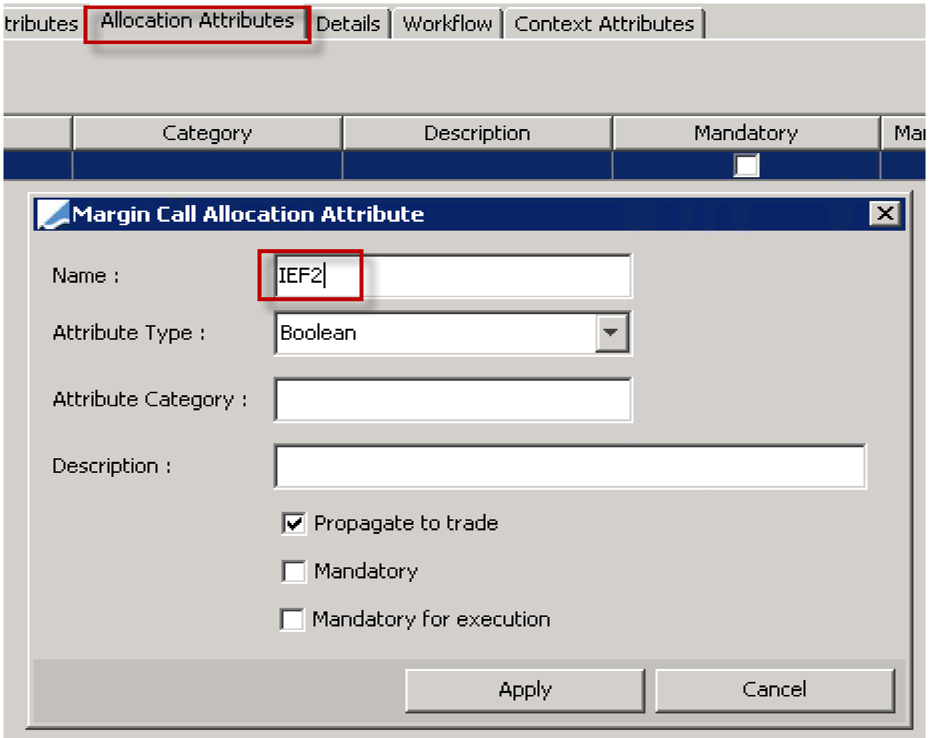
Using the Collateral Manager, you can increase or decrease the amounts in a certain investment program by choosing the security that represents the investment in Calypso and performing a Collateral Substitution.

Our recommendation to accomplish this would be the use of the “Collateral Context” feature which is located within Collateral Manager as follows:

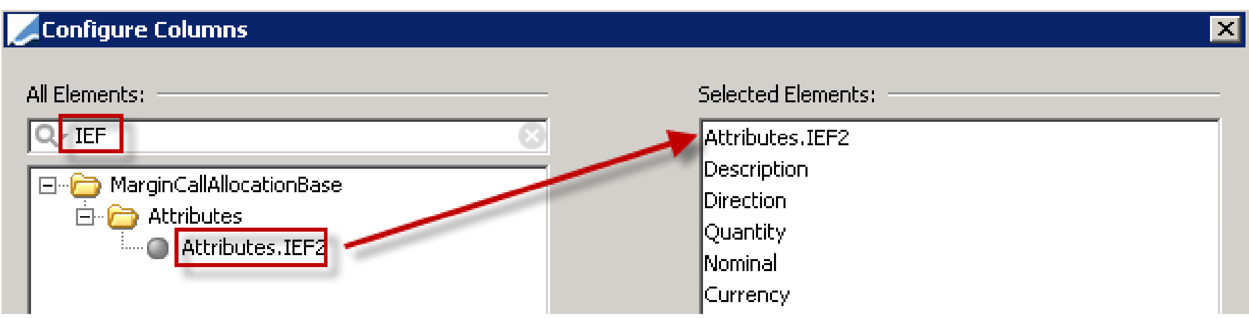


Here you can configure the system to tag the ‘investment’ allocations (both trade and transfer).

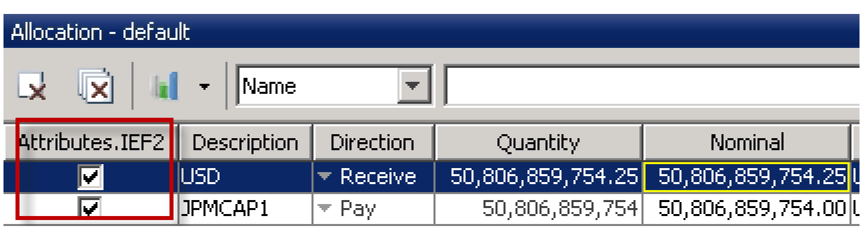
You can name the new attribute with a name that corresponds to the various investment vehicles you are investing in which from the “Allocation Attributes” tab as seen below.



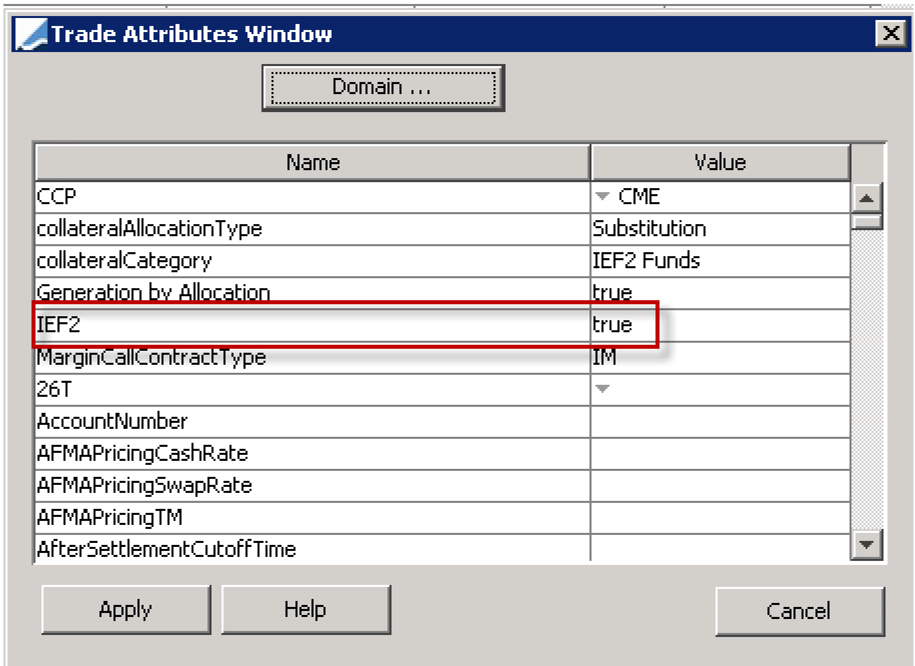
When performing a collateral substitution, you will need to configure the Allocation Attribute by choosing Data > Configure Columns, and add the name of the attribute you have configured.



When ready to perform the substitution tick off the checkbox as seen below.



After applying the allocation and pricing the contract all the way to EXECUTED status. This will put a keyword on the margin call trades.

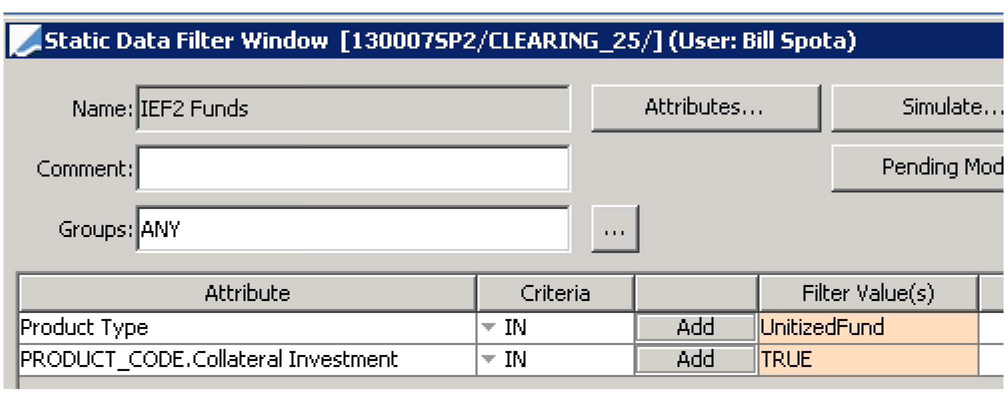


This will get both the trade and transfer tagged.

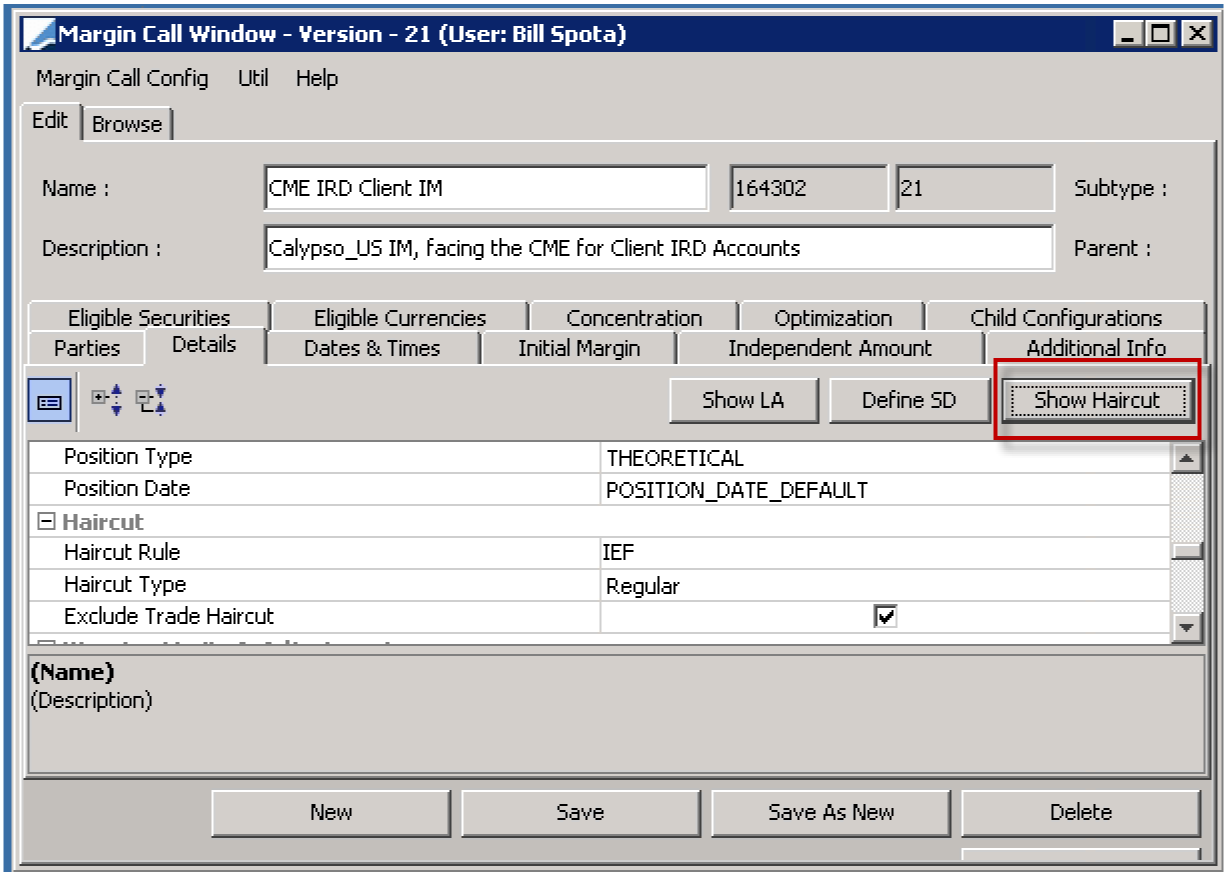
6.5.5 Haircut

Haircuts rules are setup on the Margin Call Contract under the details tab. You will need to create the haircuts specific to each fund as per the CME website. Using CME's IEF2 program as an example where there is a mandatory 3% haircut you would perform the following steps in order to record the haircut values.

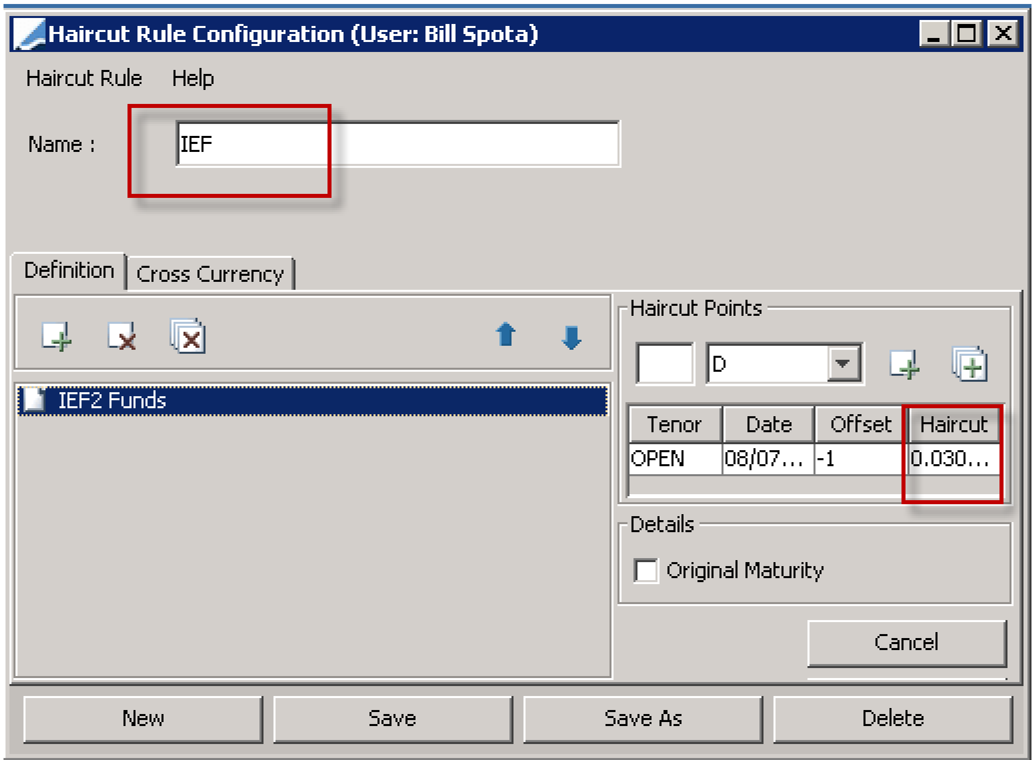
To create a haircut you load the relevant CCP facing Margin Call Contract but you must first define an SD filter that will locate the security position you want to add a haircut to.



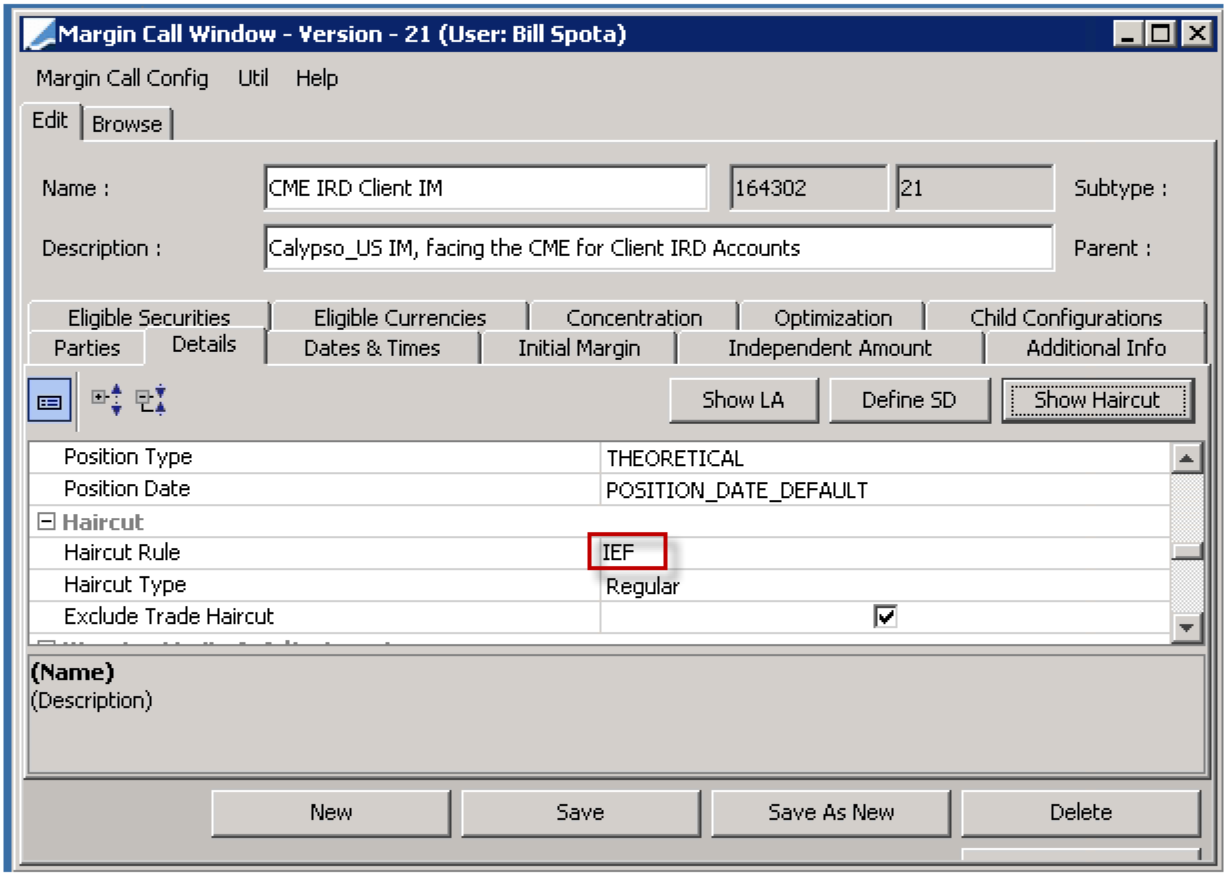
Then navigate to the details tab, and click **Show Haircut**:



It brings up the Haircut Rule Configuration GUI where you enter the PE, SD filter and finally add a haircut value.



You then choose the haircut rule you just saved in the details tab of the Margin Call Contract.



6.5.6 Inclusion in the Sequestered Fund Report

The money invested in the funds should appear in line 8A or 8B at market value, based on the fund attribute "SFR-8A" or "SFR-8B".

This information gets pulled from the Margin Call Position Valuation Report: any securities with product code "Collateral Investment = True" as of previous day's close of business (T-1) converted to USD based on FX Rate from quote set.

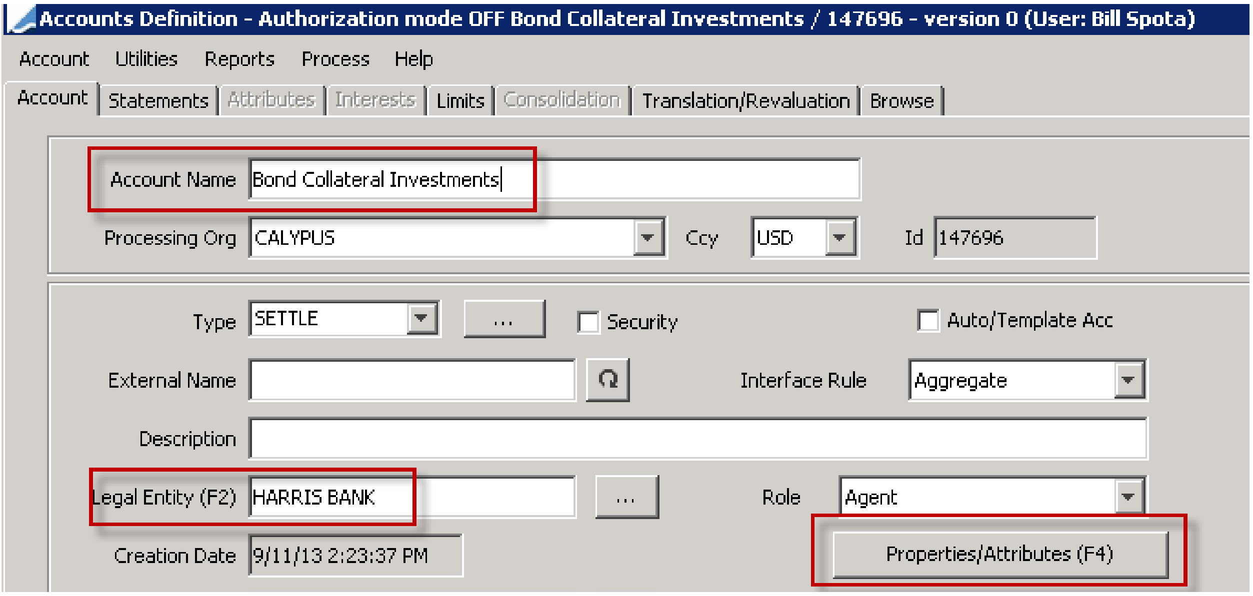
6.5.7 Configuration for Investing in Treasury Bonds

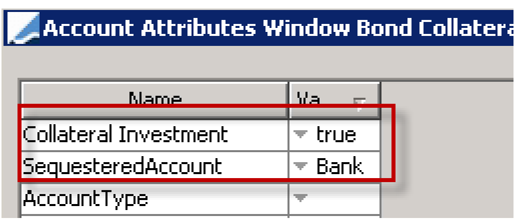
Imagine an FCM has excess client cash posted as collateral for which they are paying the client a fixed interest rate. In addition to investing client funds, the FCM can also borrow internally from another funding desk and then invest it into a non CCP Investment Vehicle (e.g. Government Securities).

Calypso recommends the FCM enter into a BOND transaction where the Counterparty can be Harris Bank or any other CFTC approved investment vehicle.

Unlike what is described above when creating a UnitizedFund where a new Product_Code: Collateral Investment = TRUE, the FCM would need to create a new "Bond Collateral Investment" bond product.

This will ensure the bond used to invest into a Harris type investment vehicle will allow the following code changes to the SFR to work. Essentially, line 7b works off of account attributes instead of a Product Code. Here is a sample of the Account definition setup along with the respective attributes.





The LE was set to Harris Bank as this is where the Bond cash was settled.

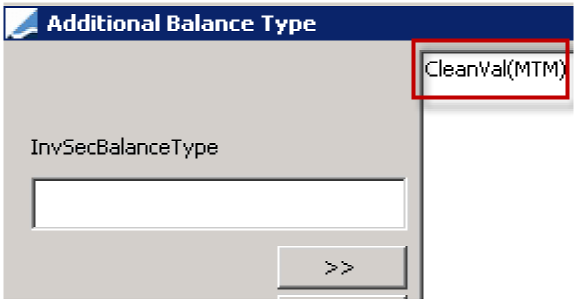
Note: You will need to create a Bond Collateral Investments account for each LE that will be holding the "Real Money Amount" for each Bond purchase and subsequent SDIs.

Line 7B - From the Inventory Position Report as of previous days close of business (T-1) take all accounts that have the "SequesteredAccount" attribute set to "BANK" as well as the attribute "Collateral Investment" set to True and calculate the values of any securities that fall into the aforementioned account criteria converted to USD based on FX Rate from quote set. The values will be determined by using the CleanVal(MTM) balance type which is the position quantity multiplied into the security clean price.

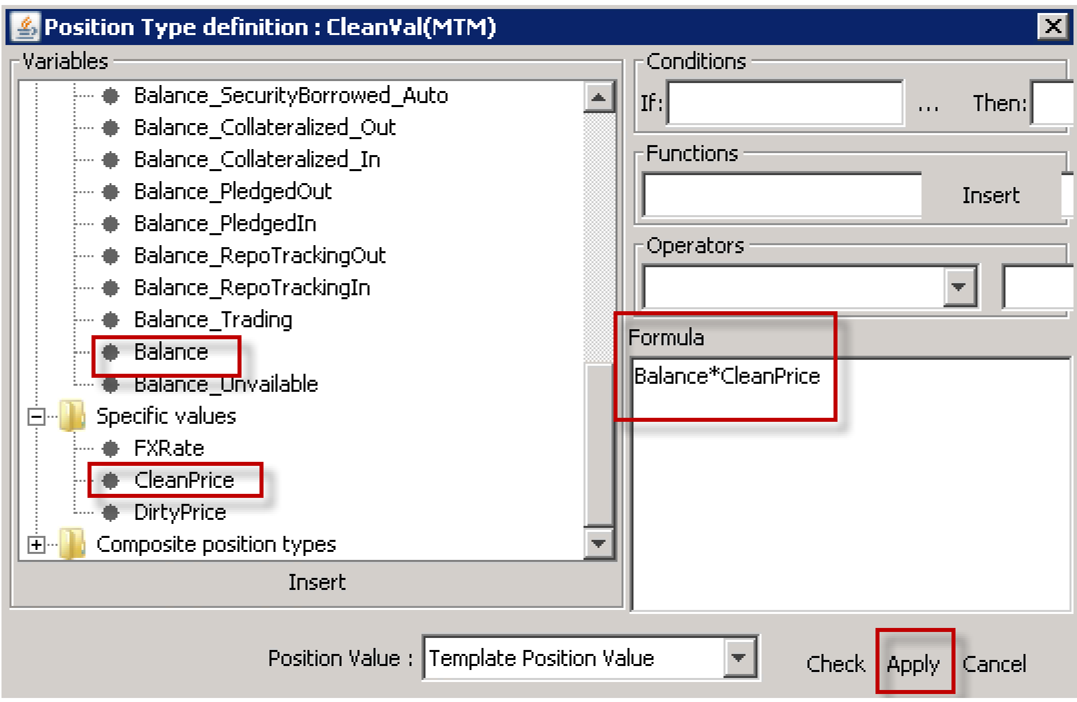
Configuration Requirements

The premise behind the following configuration is to allow Calypso to generate the value of any bond using the CleanPrice on the Settlement so that your SFR amounts are not overstated.

Within the Inventory Position report, choose Process > Create Balance Type, and create the balance type “CleanVal(MTM)”.

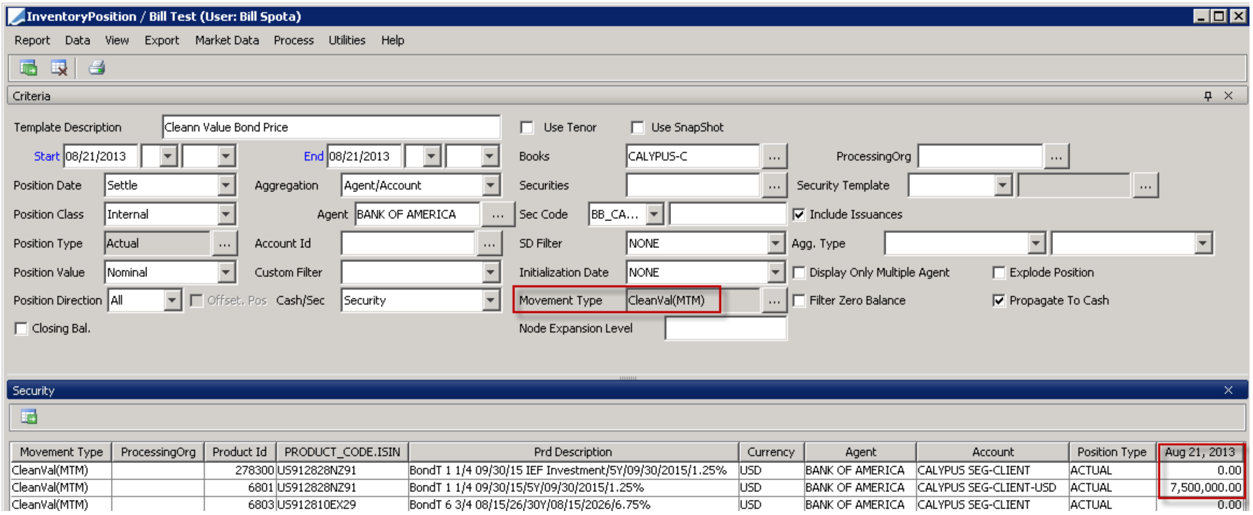


Then choose Process > Define Balance Type where you can create the formula to produce the CleanVal(MTM) balance type which is the position quantity multiplied into the security clean price.



Once you are done with the formula click **Apply**.

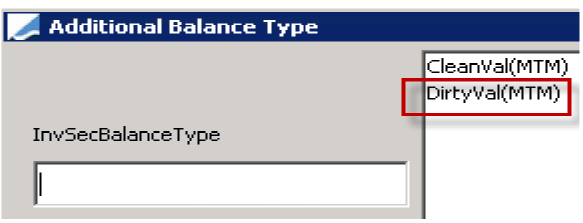
Then load up the Inventory Position report with the following parameters so that you can see the value of any settled Bond trade.

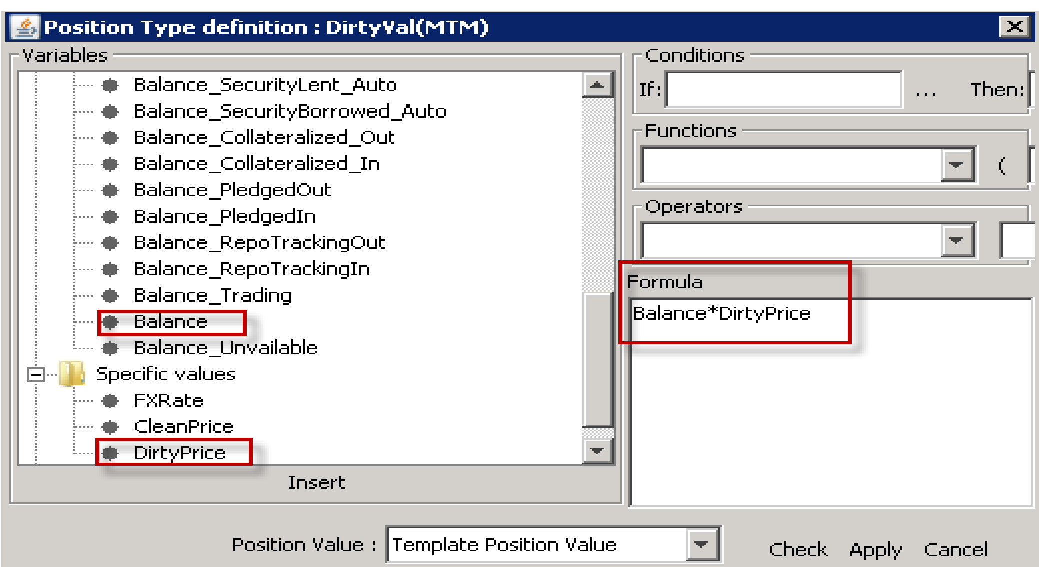


The 7,500,000.00 represents the actual clean value of a settled bond where the calculation takes the Quantity * CleanPrice. Bond details: Bond purchased with quantity of 5,000,000.00 at a price of 100.00. The closing quote for the bond is 150.00. So if you multiply 5,000,000.00 * 1.50 you get 7,500,000.00.

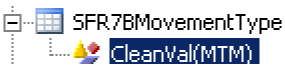
You should also setup a formula for dirty price calculations on the Inventory Position report in the same way.

Add and save new balance type





You also need create the domain “SFR7BMovementType” to control what value of the bond trade you would like to be displayed on the SFR (i.e. Clean or Dirty) on line 7B. Example:

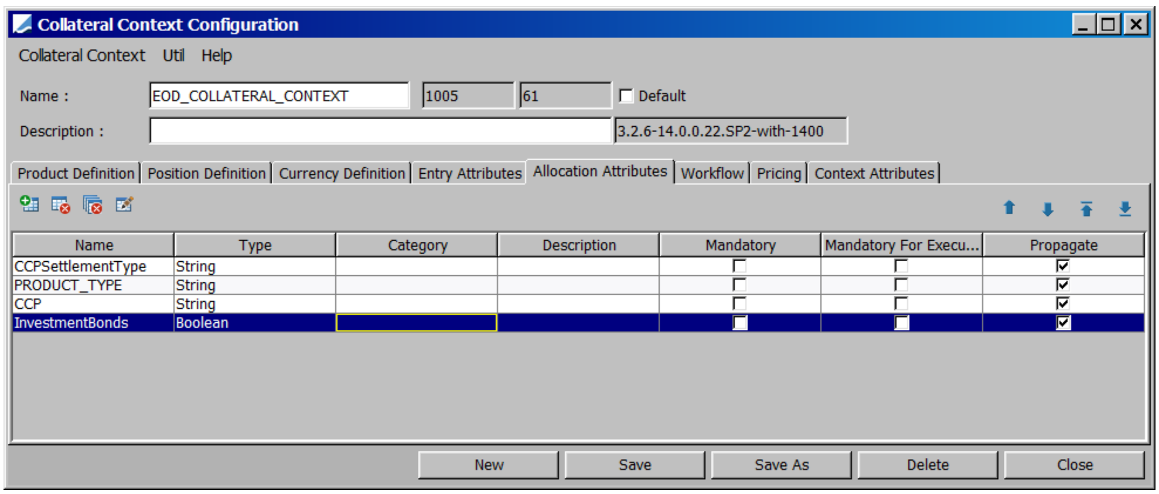


6.5.8 Pledge the Bond at the CCP and Populate 8-B

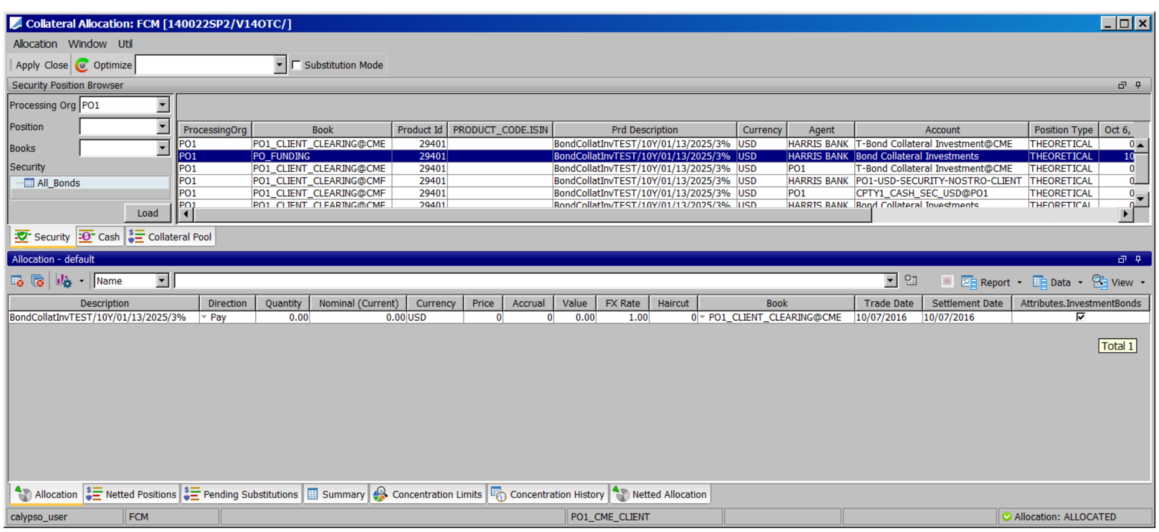
The FCM will buy the bond from the street (reflected in SFR columns 7-a and 7-b) before pledging it to the CME (reflected in column 8-b).

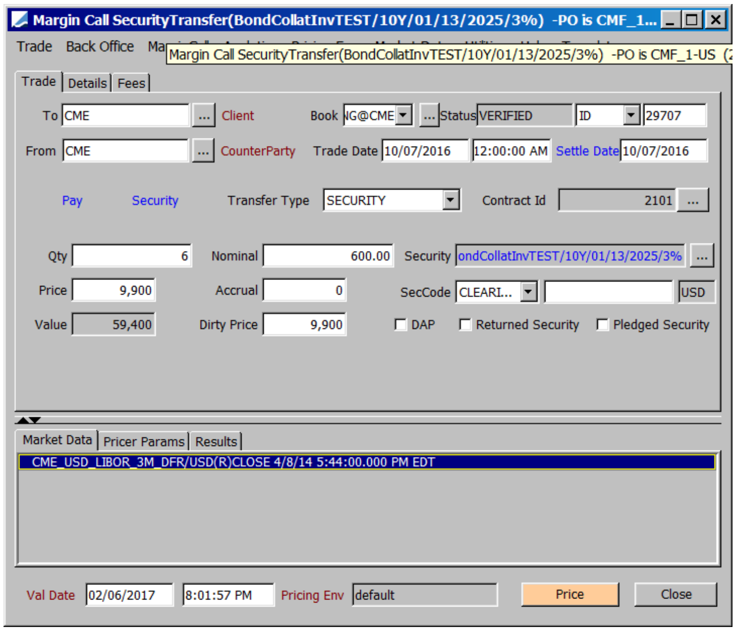
It is expected that IM Standardization is in place, meaning that we maintain internal and external client position for IM.

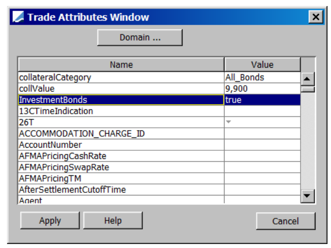
Create new Allocation Attribute ‘InvestmentBonds’ in the Collateral Context window that will be passed down to the MarginCall Trade when the bond is allocated. This attribute will be used to drive the SDIs.



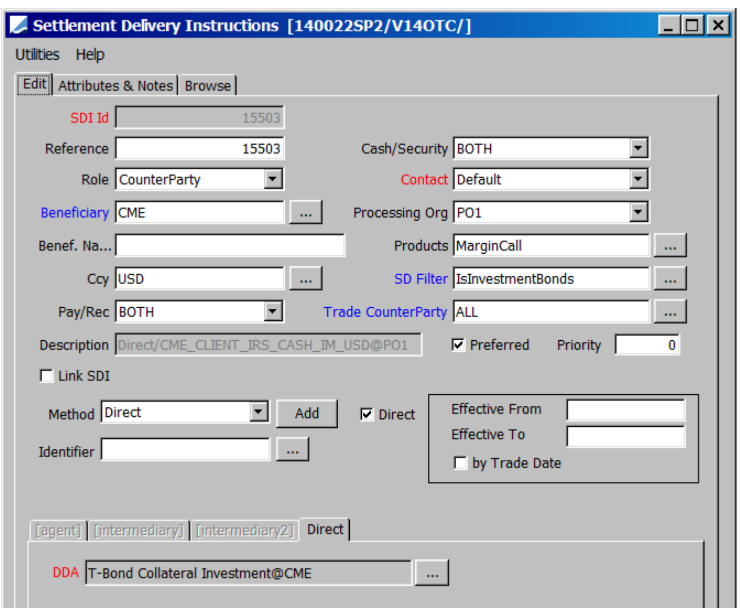
Allocate Bond and tick attribute to true.

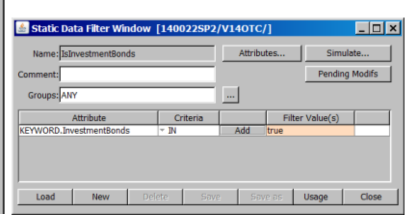




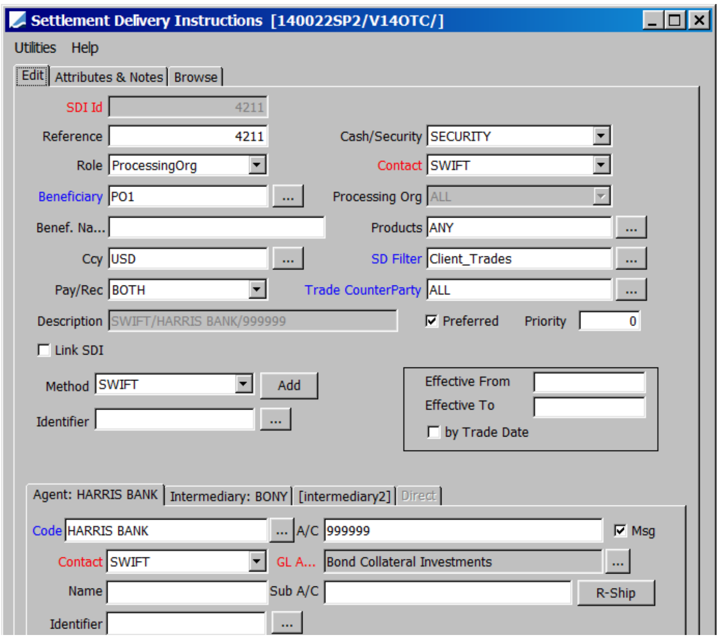


System will pick the CCPs DDA SDI based on the filter to which the security will be paid to.

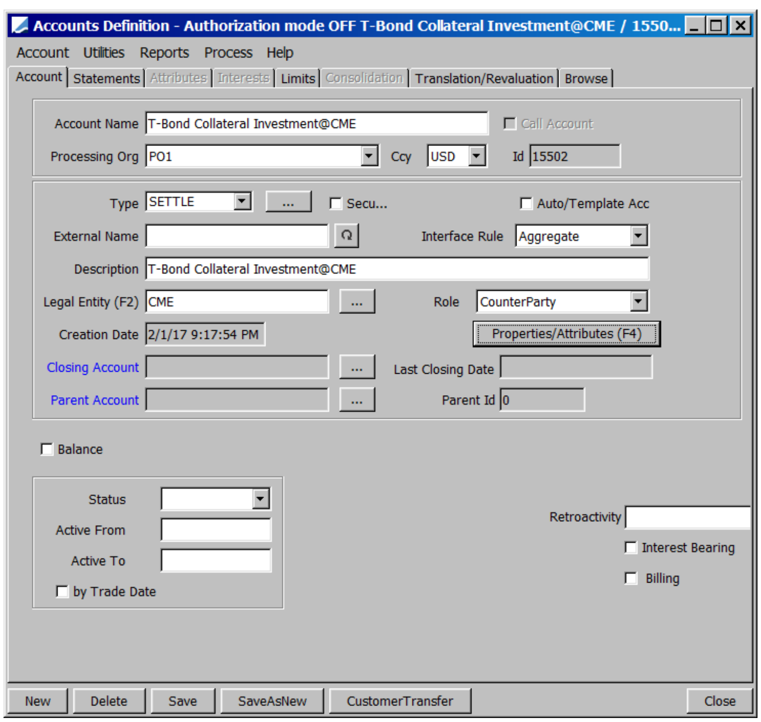


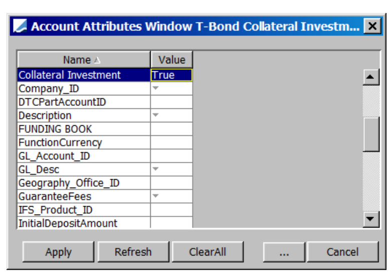


On PO Side, this SWIFT PAY SDI should be used to debit Nostro Security account

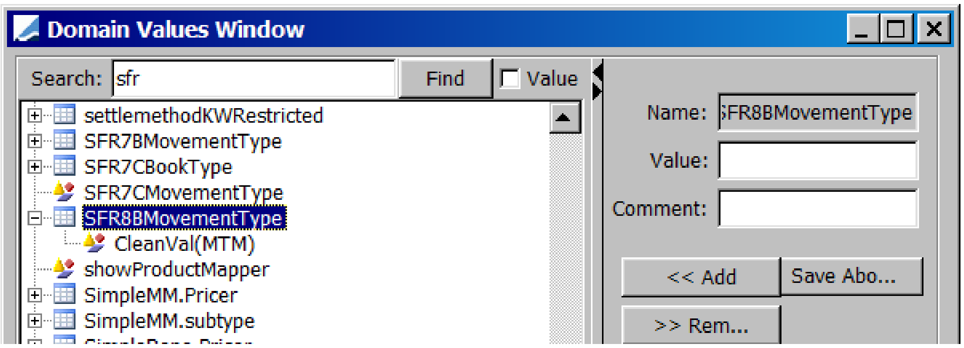


The Direct account setup with CME should have account attribute ‘Collateral Investment’ set to true (SequesteredAccount should be null)





Similarly to SFR 7b, it is possible to configure the position type to be displayed by Clean or Dirty price. The system will re-use the same configurable balance type setup for 7b and look up a new domain SFR8BMovementType set to CleanVal(MTM) or DirtyVal(MTM) depending on the position type to be displayed.



The Position is sourced from the Inventory position based on following criteria:

Position Date: Settle

Position Class: Internal

Position Type: Actual

Position Value: Nominal

Cash/Sec: Security

MovementType: CleanVal(MTM) or DirtyVal(MTM) if specified in above domain value, else defaulted to Balance

Sum of values will be converted to USD

6.6 Collateral Sweeping

To get the complete context of collateral sweeping and clearing processing, it is important to understand how collateral balances maintained at LCH are called back or posted in case of excess or deficit respectively. Collateral Sweeping is used when facing to client however post sweeping, the balances at FCMs need to reflect the balances at LCH. If this is not the case, the SOD process will make the necessary calls facing to LCH.

Collateral Sweeping Scope

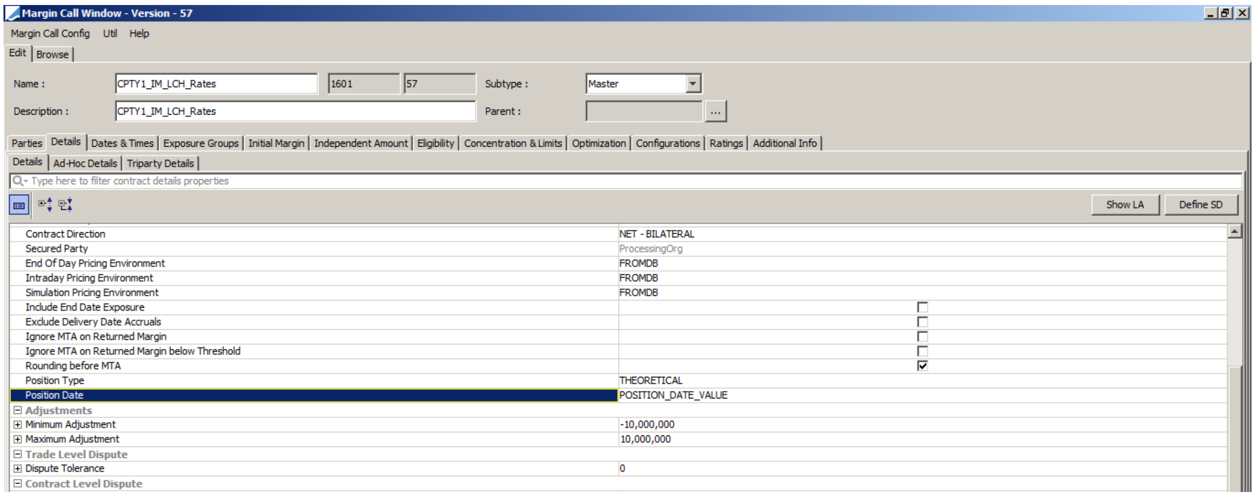
Currently sweeping supports following scenarios:

- Sweeping VM to IM for independent entity in base currency
- Sweeping VM to IM for parent/child entity in base currency

Collateral Sweeping Setup

Margin Call Contract: For OTC Clearing business user need to define MCC with LE role as Client and Orderer Role as CounterParty

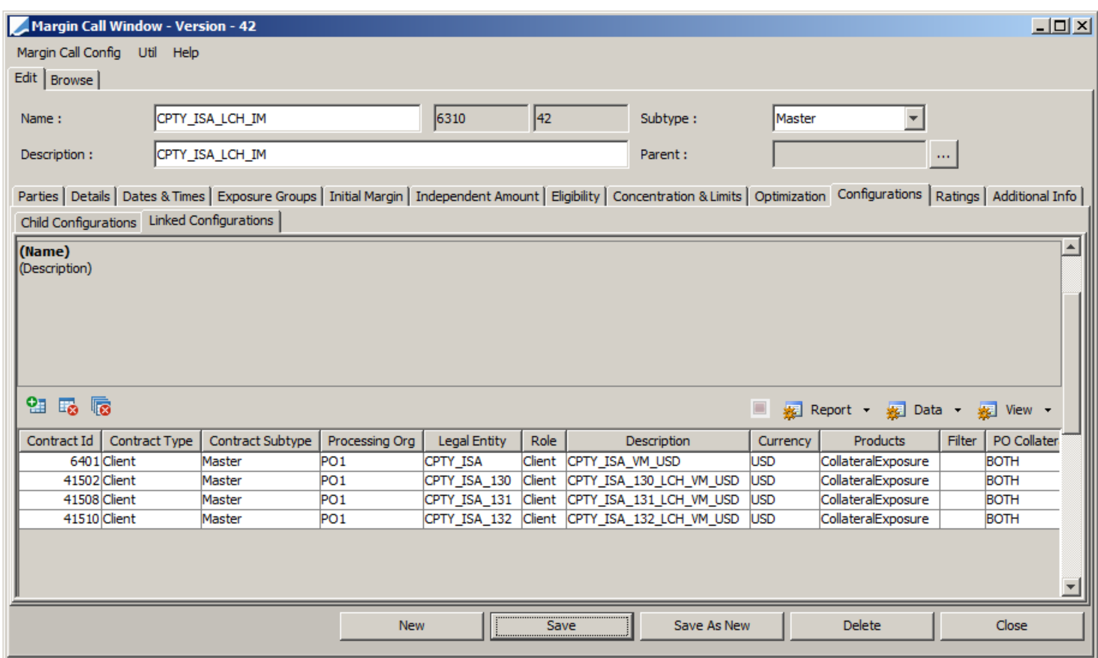
- Position Date: For collateral sweeping it is must to define IM and VM Margin Call Contract with position date as POSITION_DATE_VALUE



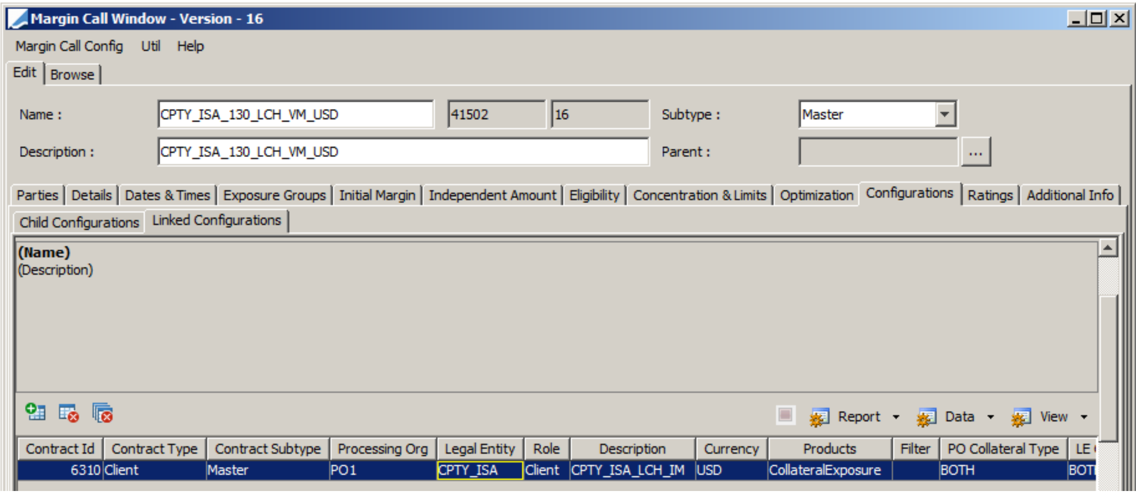
- Configuration > Linked Configurations: User need to link IM MCC to VM MCC and vice versa.

If LEs are holding parent child relationship (through LE Parent setup) then user should be able to see child MCC in Parent Linked Configuration and Parent MCC in Child MCC Linked Configuration.

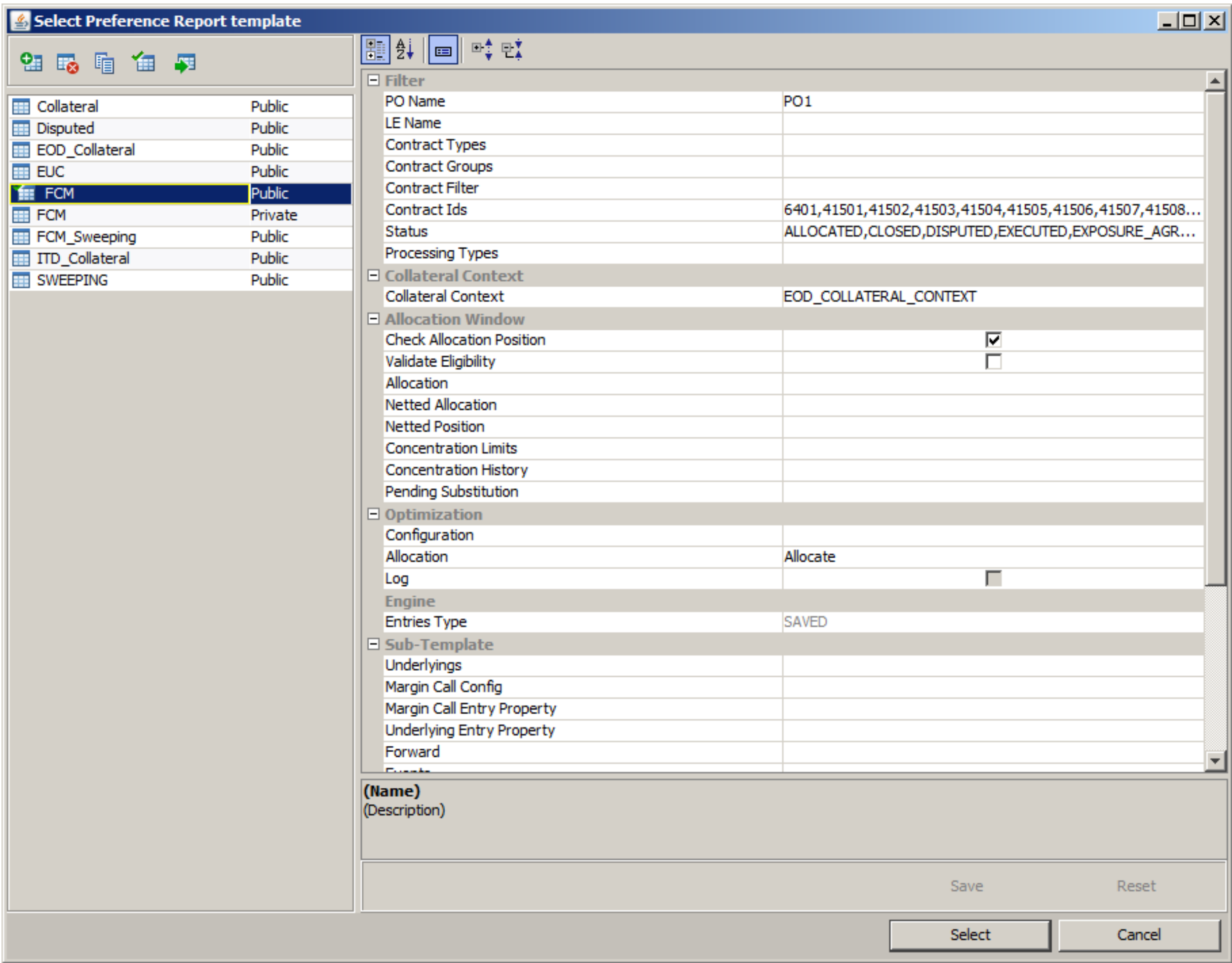
See below CPTY_ISA parent IM linked to various child VM MCC in USD ccy



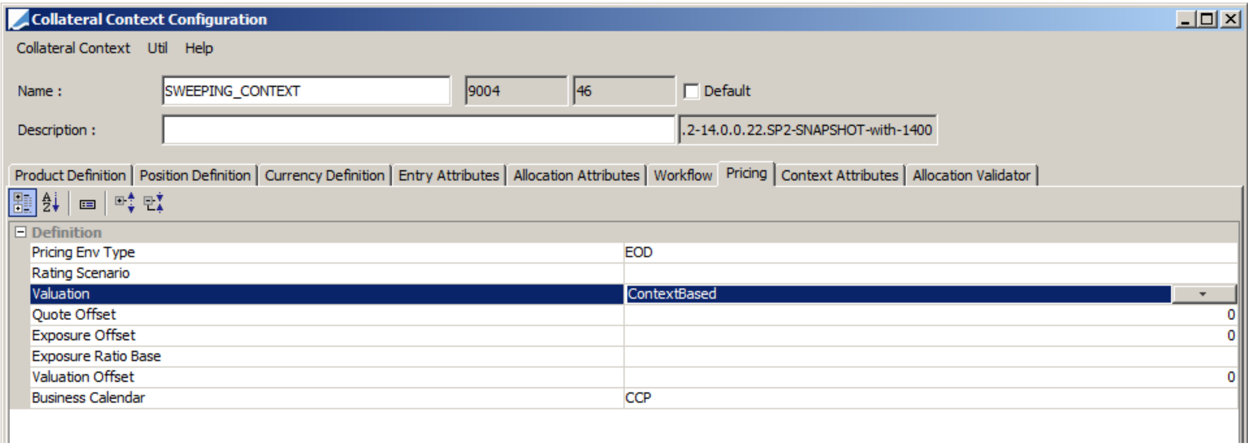
Similarly individual Child and Parent VM MCC is linked to parent IM MCC, see below one example:



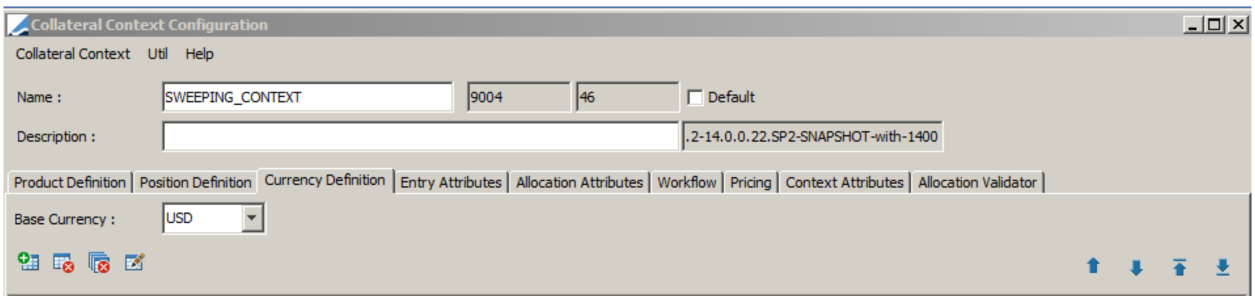
- **Preference (template):** COLLATERAL_DISTRIBUTION scheduled task needs template in one of the attributes. This template is defined as part of Preferences and should only contain VM MCC. This attribute expects source MCC, and for VM to IM sweeping source is always VM MCC. Remember Collateral Context defined in template is not used, system uses context defined on COLLATERAL_DISTRIBUTION attribute.



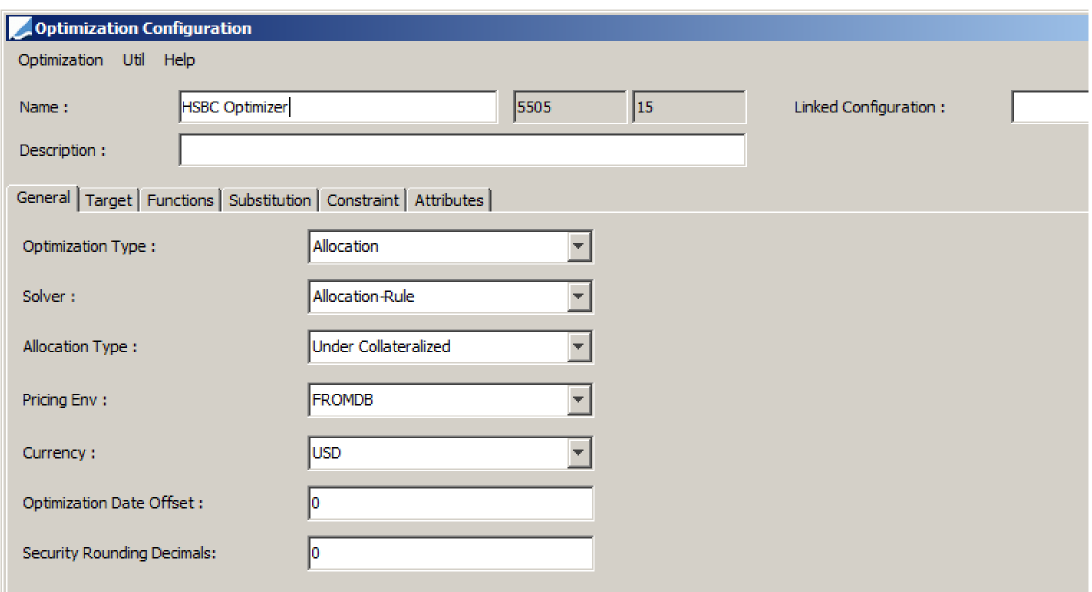
- **Collateral Context:** We need to use different context for sweeping as compare to context used for Beginning of Day collateral process done for previous day value date. Reason behind using different context is we want (sweeping) context to drive exposure offset for PL marks of Collateral Exposure, Quote and valuation Offset of the day for which Collateral Distribution ST is running. Also, valuation method should be ContextBased for system to consider all these parameters defined in Pricing tab of Collateral Context. Unlike Sweeping Context, Context used in EOD processing i.e. used in COLLATERAL_MANAGEMENT ST should have STARNTARD valuation method.



Base currency should be same as that of MCC's base currency



- **Target Configuration:** System needs to know what rules to be applied when sweeping to be done, hence it is one of the parameter in COLLATERAL_DISTRIBUTION



Optimization Type: Allocation to make sweeping/allocation from VM to IM

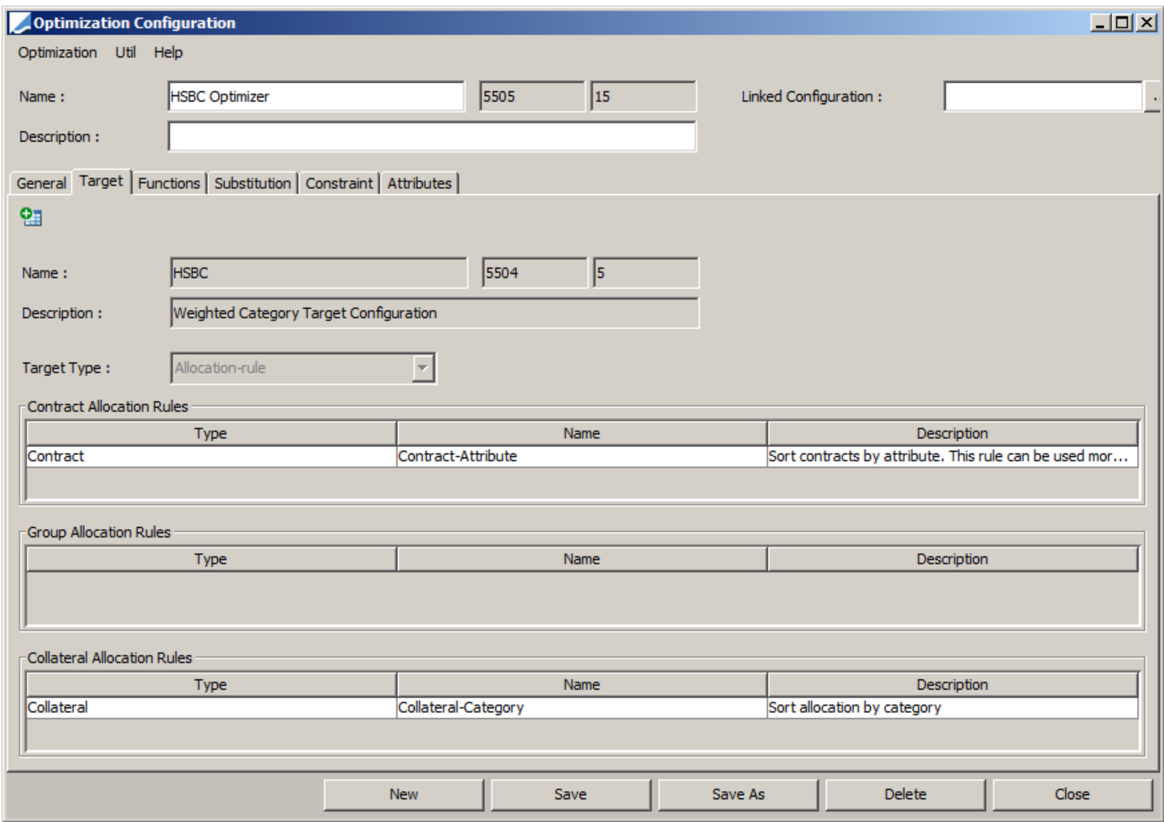
Solver: Allocation Rule

Allocation Type: under Collateralized

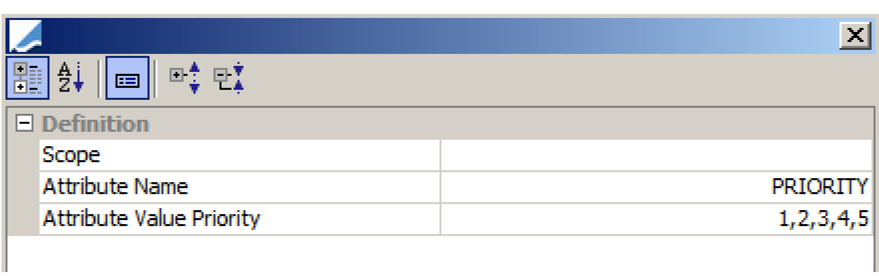
Pricing Env: Matching to MCC of IM and VM

Currency: USD

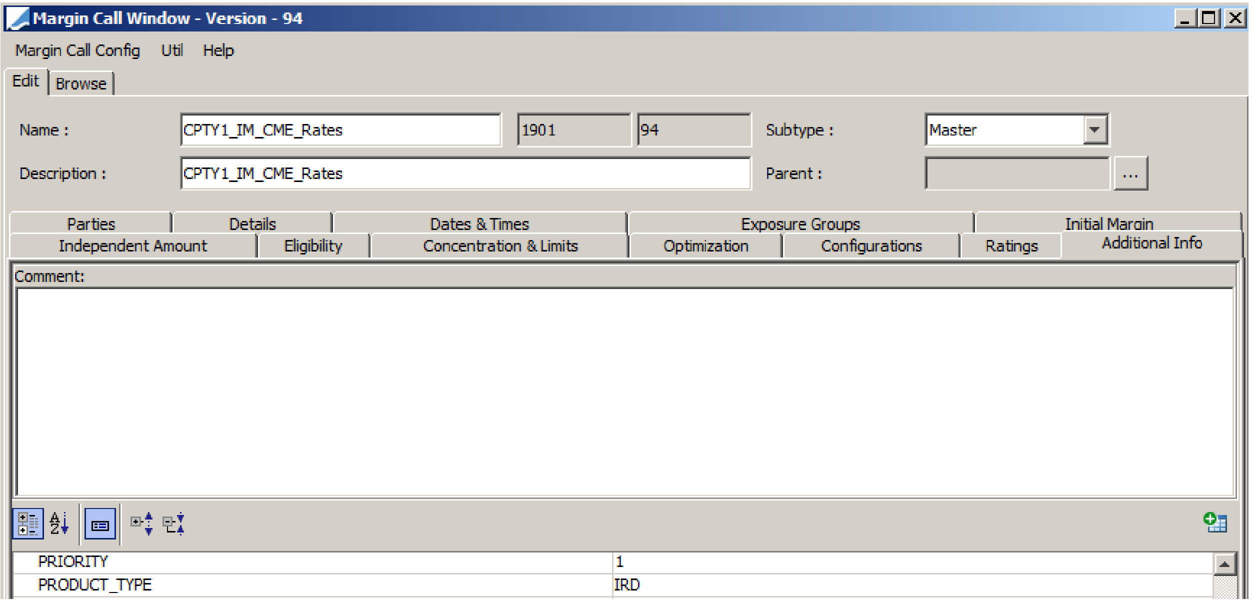
Target:



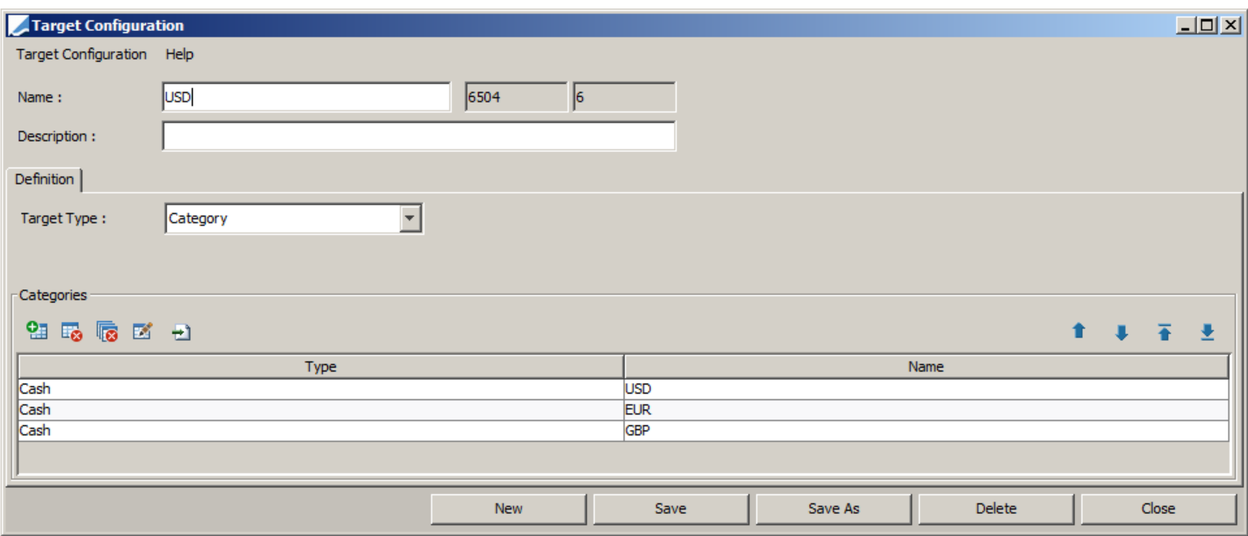
Contract Allocation Rule: User can define priorities while sweeping VM to various IM MCC i.e. CME-Rates first then LCH-rates followed by ICE-CDS.



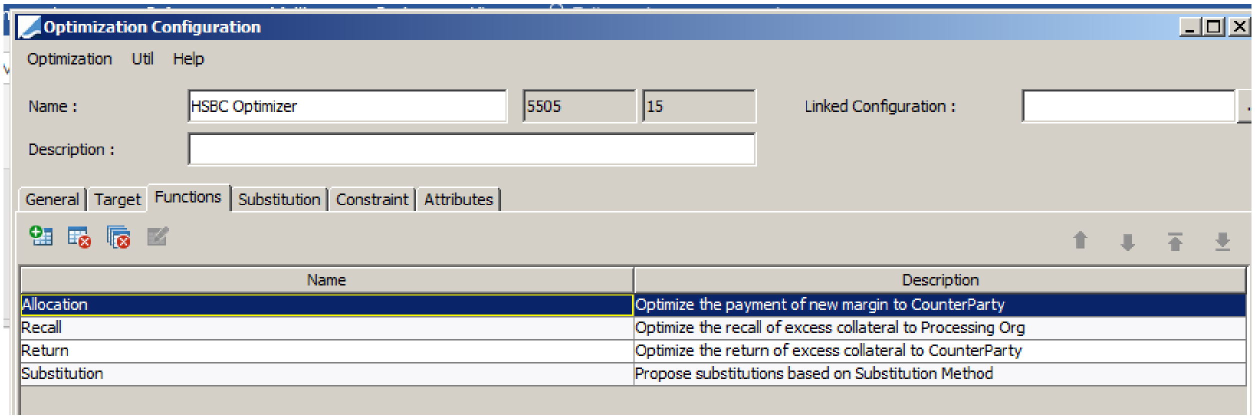
This is defined in MCC addition attribute.



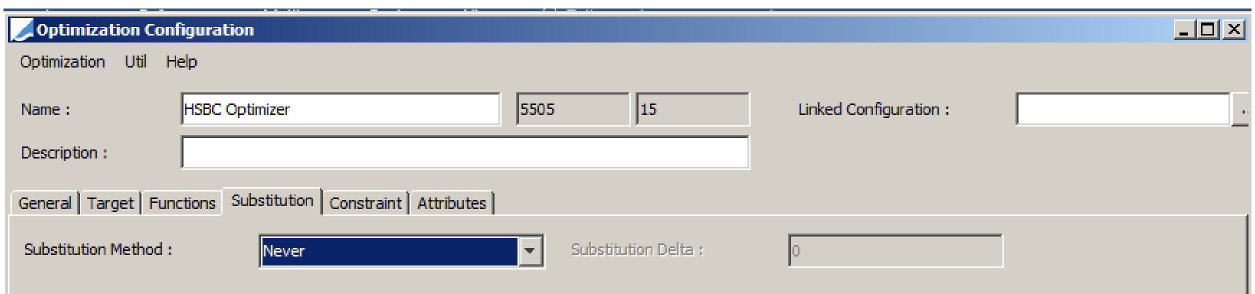
Collateral Allocation Rule: Defined in last section is sourced from **Target Configuration** it defines order in which currencies needs to be swept.



Functions: User need to add Allocation, Return, Recall and Substitution

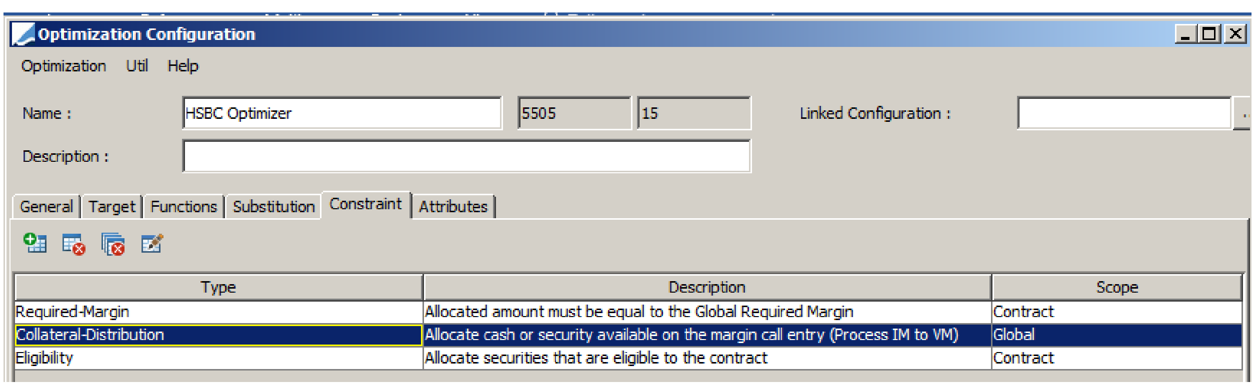


Substitution Method: Never as system should just sweep fungible cash collateral from VM to IM unlike any substitution process.



Constraint:

- Required margin to make sure allocated amount is equal to GRM
- Collateral-Distribution Allocate cash (only) available on margin call entry
- Eligibility: To sweep all currencies which are defined as eligible currencies in IM and VM MCC



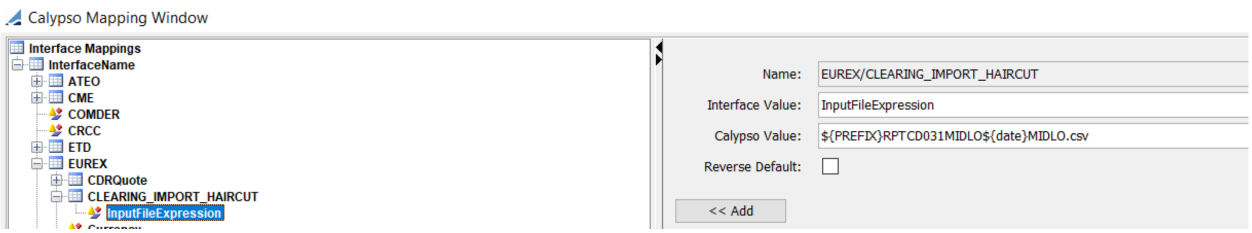
Nothing to be defined under **Attributes**.

6.7 Eurex Collateral Haircuts

6.7.1 Versions 17.24.11.1 and 18.24.12.1 and under

The scheduled task CLEARING_IMPORT_HAIRCUT allows importing Eurex collateral haircuts by CUSIP.

Calypso Mapping



Scheduled Task

Task Attributes	
CCP	EUREX
HAIRCUT NAME	EUREX TEST
INPUT FILE LOCATION	C:\Doc\Data\EUREX

CCP – Select the CCP

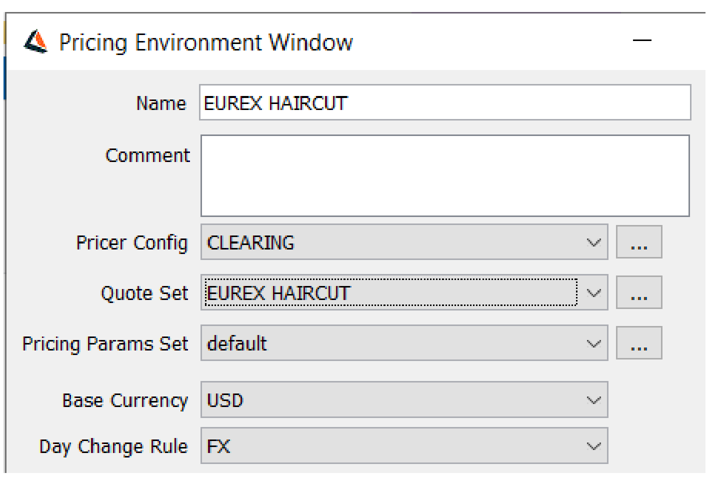
HAIRCUT_NAME – Select the haircut rule to be imported

INPUT FILE LOCATION – Enter the folder where the haircut file is located

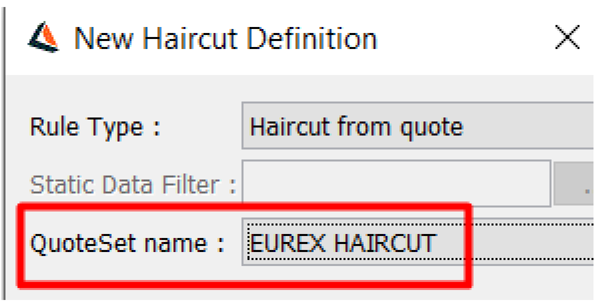
6.7.1 Versions 17.25.1.1 and 18.25.2.1 and above

Eurex Haircut quotes are imported using the CLEARING_IMPORT_MARKET_DATA scheduled task. The files are selected based on the PO EUREXFirmId.

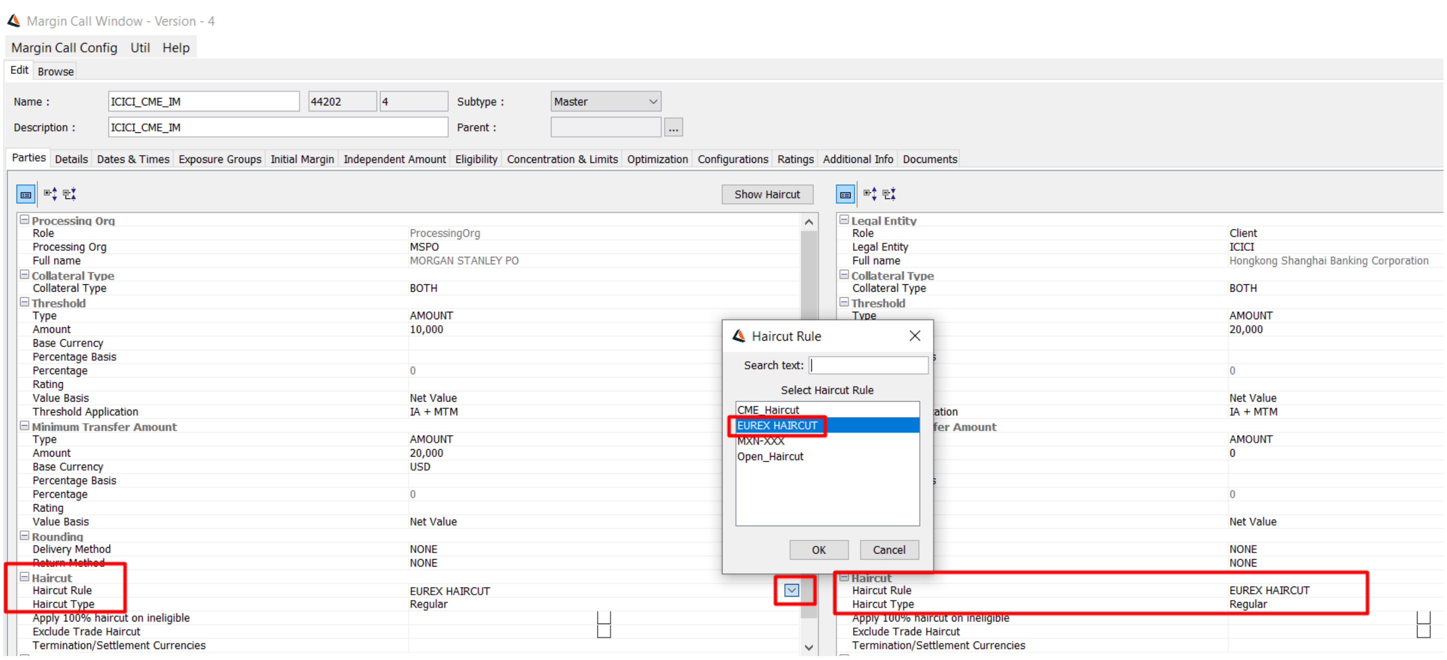
You need to define a specific pricing env / quote set for the haircut quotes.



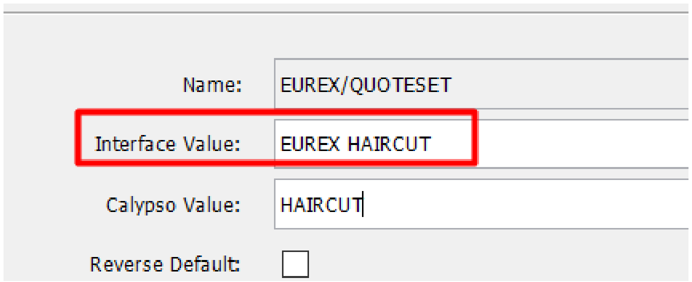
The quote set is selected in the Haircut Definition window for Rule Type “Haircut from quote”.

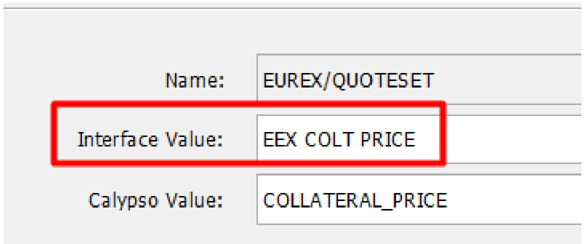


The haircut rule should be defined for the ”All_Bonds” static data filter. It is selected in the Margin Call Config for each PO.



The EUREX/QUOTESET mapping has also been added to distinguish between haircut quote set and collateral price quote set.



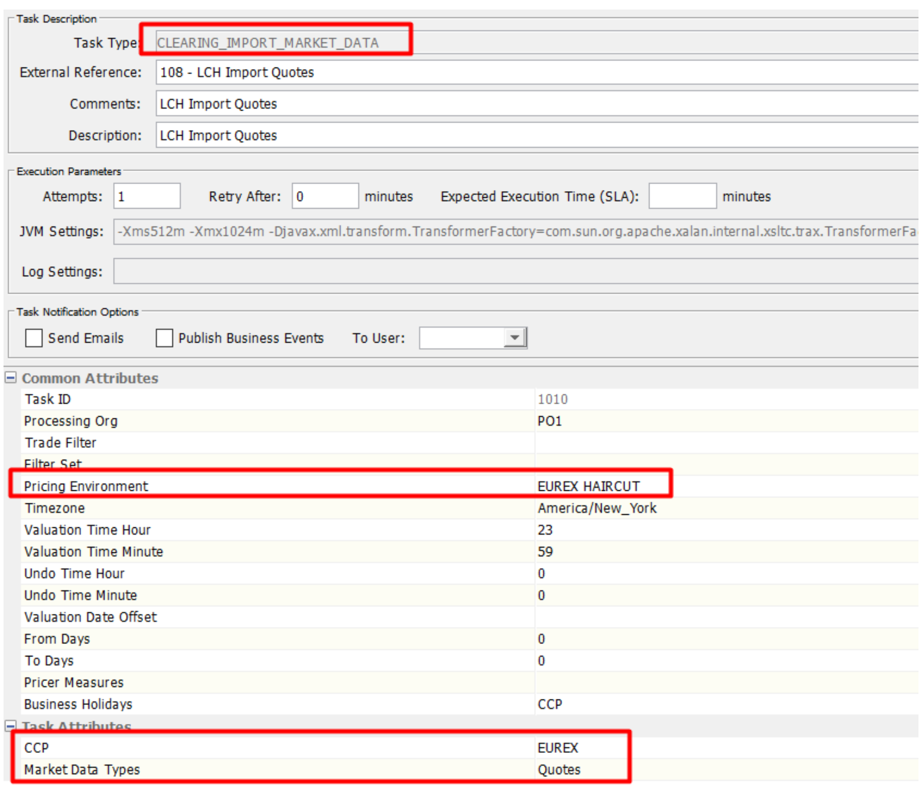


If no mapping is found, only store collateral prices in the quote set associated with the scheduled task's pricing env.

If mapping is found for haircut but not for collateral price, store haircut quotes as per mapping and store collateral prices in the quote set associated with the scheduled task's pricing env.

If mapping is found for collateral price but not for haircut, only store collateral prices as per mapping.

If mapping is found for both, then store collateral prices and haircut quotes as per mapping.



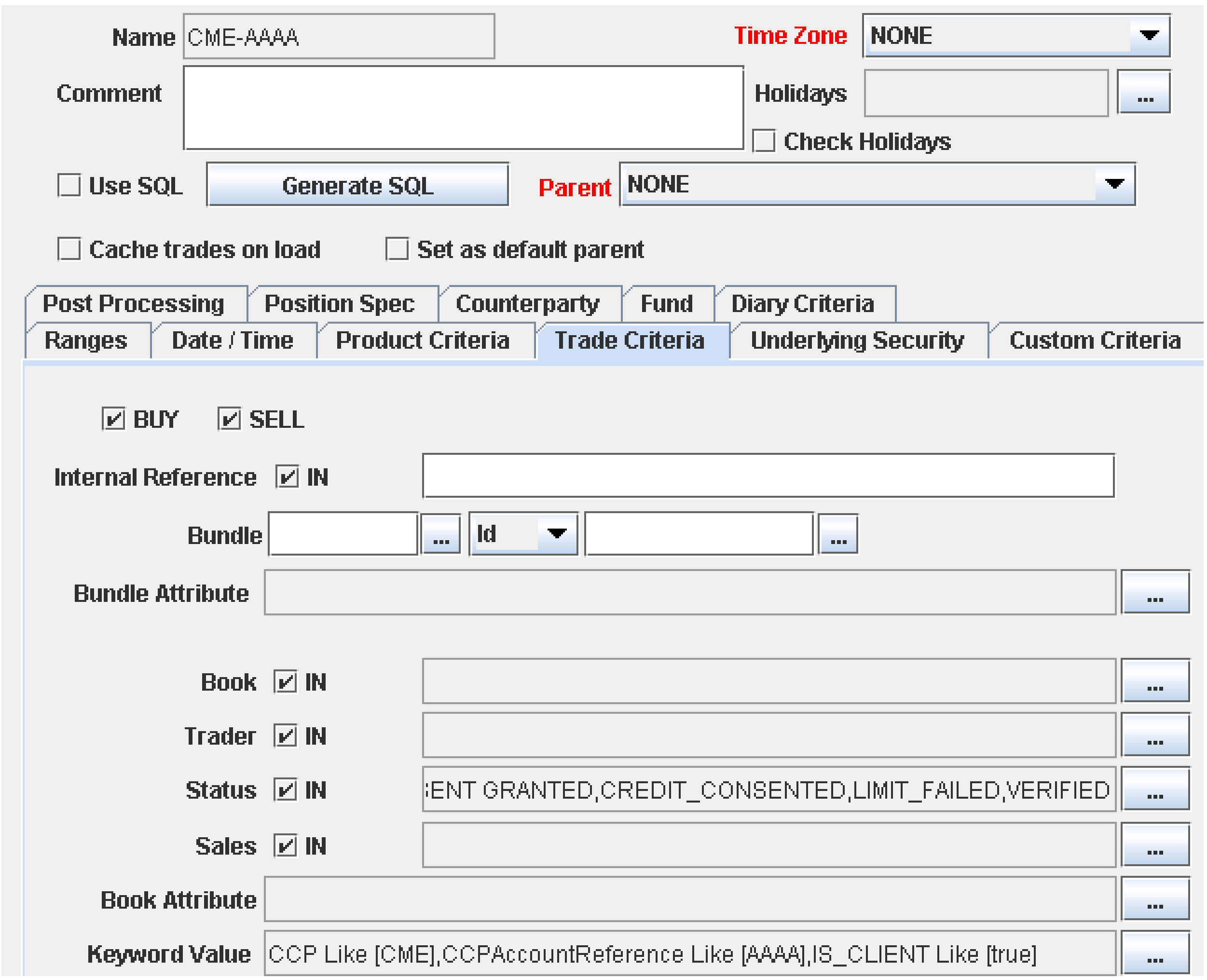
7 ERS Limits

For the trades to go through limits checking, you need to perform the following configurations.

7.1 Trade Filters

You need to create trade filters for the trades for which you want to check limits using Configuration > Filters > Trade Filter from the Calypso Navigator.

For example:

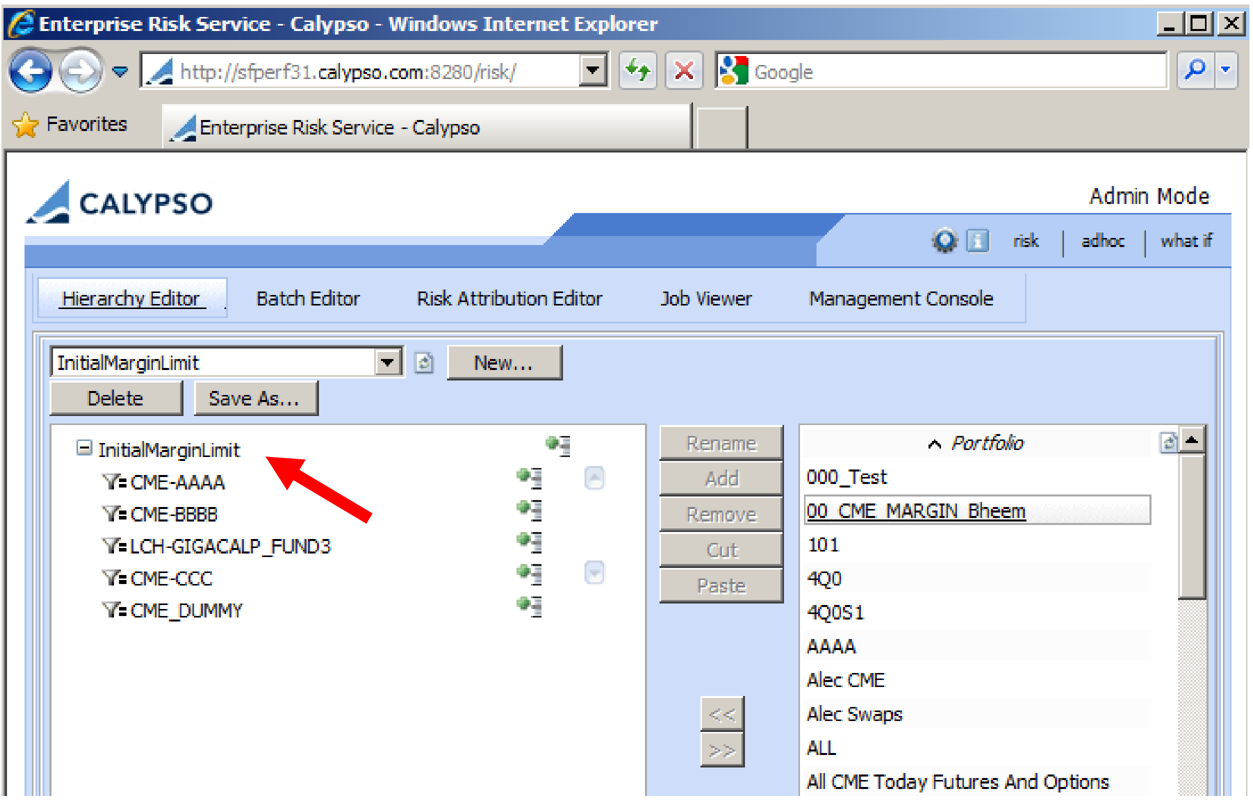


7.2 Market Risk Hierarchy

You need to define a market risk hierarchy. Market risk hierarchies are created using ERS Risk.

Bring up ERS Risk and click Admin in the upper right-hand corner.

Then select the Hierarchy Editor.



Create a hierarchy as needed, and add nodes. The nodes correspond to Trade Filters.

If the trade filter contains a book, then the trade filter is used to select the trades. Otherwise, the system selects the trades for which the trade keyword LIMIT_WHATIF_PORTFOLIO is the node name.

[NOTE: Each node name must be the same as a Trade Filter]

Please refer to the Calypso ERS Risk User Guide for details on using this window.

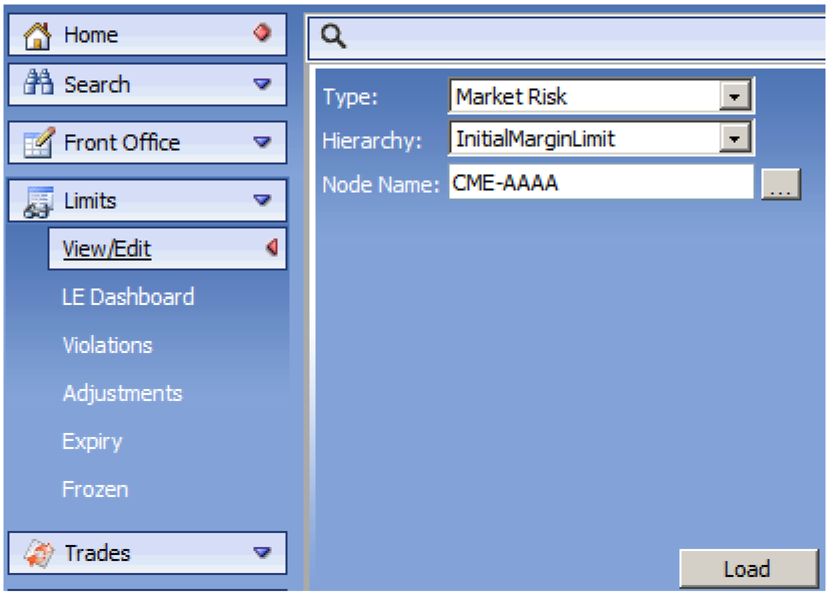
7.3 Pre-Deal Limit Configuration

Make sure that the product types for which you want to check limits are defined in domain “limit.products”.

7.4 Limits Configuration

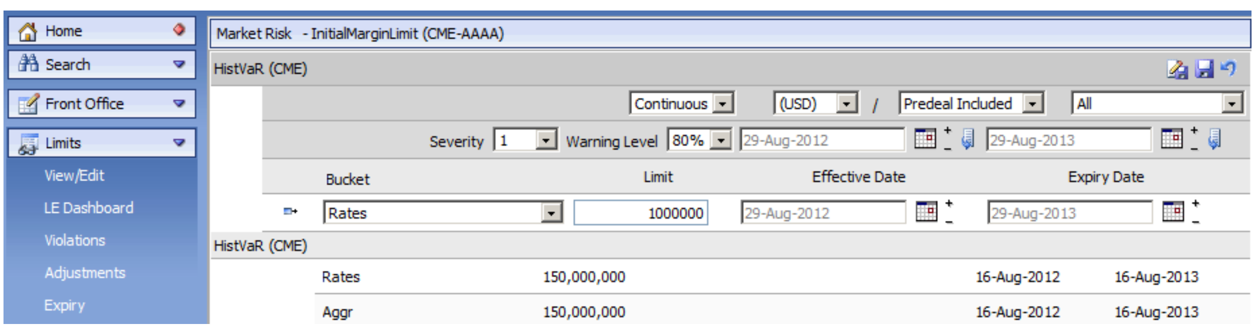
Bring up ERS Limits, and define limits for the hierarchy you have created under Limits > View / Edit.

Select the hierarchy you have created, and click **Load**.



Then click New in the upper right-hand corner, and select a measure you want to check limits against.

You can then define the limit amounts.



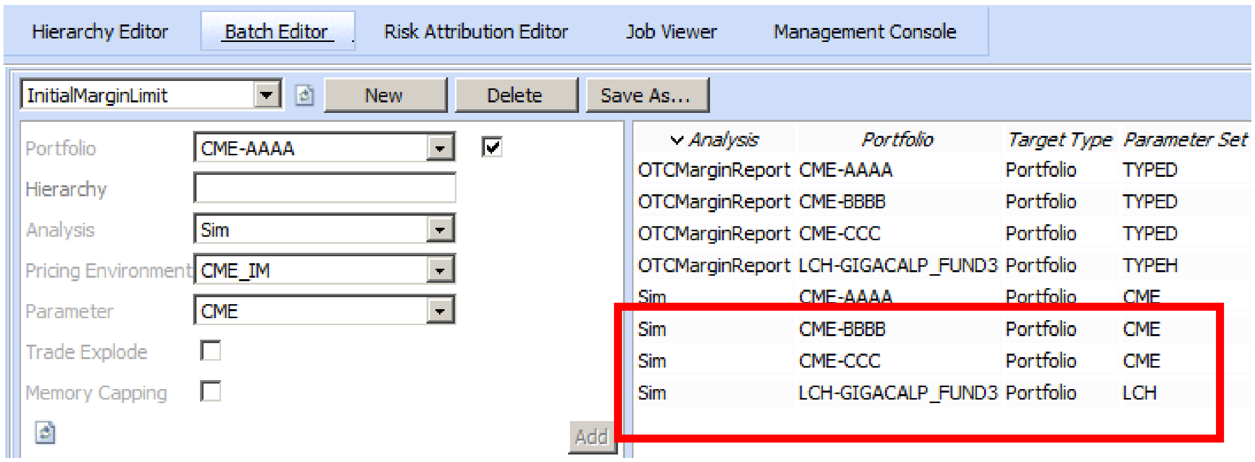
Once you have defined limits, you need to authorize them before they become effective.

Please refer to the Calypso ERS Limits User Guide for details on using these windows.

7.5 Limits Checking

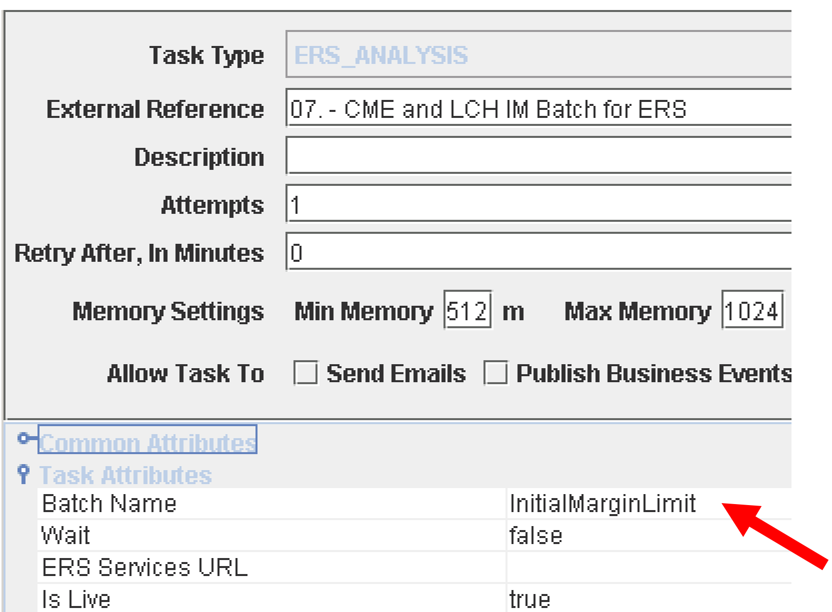
The EOD limits usage is computed using the scheduled task ERS_ANALYSIS for the ERS batch process that runs the Sim analysis on the market risk hierarchy.

You can create an ERS batch process under in ERS Risk under Admin > Batch Editor as in the example below.



The scheduled task ERS_ANALYSIS should be run at the end of the day on this batch process, after all other clearing activity is completed.

Sample setup:



The batch process is set in the Batch Name attribute.

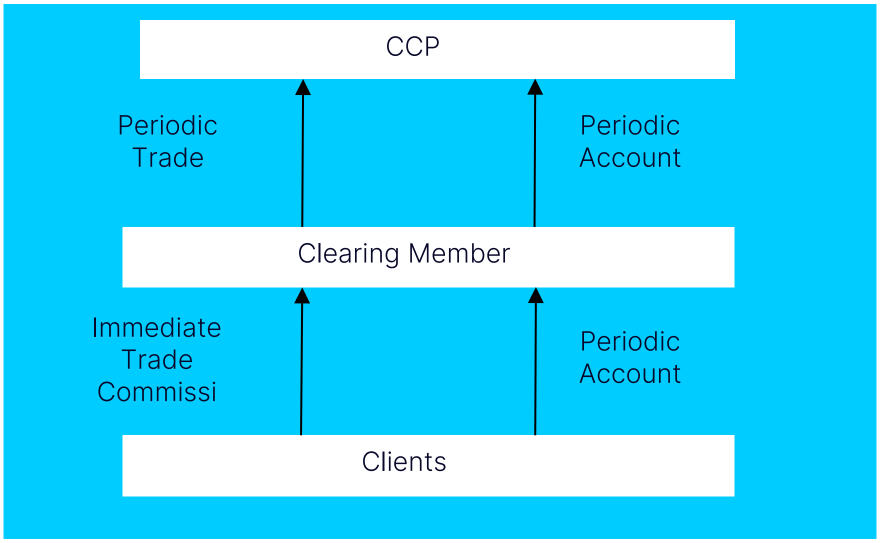
When trades are received from the CCP, they go through the limits checking using the workflow rule CheckWhatIfLimits.

The following trade keywords are populated:

Trade Keywords	Description
LIMIT_WHATIF_CHECK_PASS	Displays Y if the What-If analysis returns a usage value that does not violate the defined Market Risk Limit. It displays N otherwise.
LIMIT_WHATIF_LIMIT_MAX	Displays the maximum limit defined for the Market Risk Limit.
LIMIT_WHATIF_RISK_USAGE	Displays the usage value of the What-If analysis results.
LIMIT_WHATIF_CHECK_ERROR	Displays Y if there is an error while checking the limits, or N (or empty) otherwise.
LIMIT_WHATIF_CHECK_ERROR_MSG	Displays an error message when LIMIT_WHATIF_CHECK_ERROR=Y.
LIMIT_WHATIF_PORTFOLIO	ERS Limits portfolio.

8 Clearing Fees

The following types of clearing fees can be setup in the system.



The CCP charges commissions on the trades to the clearing member on a periodic basis, and the clearing member charges those commissions to the clients immediately.

The clearing member may also charge execution fees on the trades to the clients immediately.

The CCP also charges maintenance fees on the accounts to the clearing member on a periodic basis, and the clearing member charges those maintenance fees to the clients on a periodic basis as well.

Immediate trade fees, periodic trade fees, and account fees require a different setup.

Note on Swap Residual Maturity for Transaction Fees and Maintenance Fees

[NOTE: This only applies to version 14.4 of Core Calypso, and above]

By default, the swap residual maturity is computed as:

Swap residual maturity = MAX(CCPClearedDate,StartDate) - End Date

You can change the behavior by adding the CCP name to the following domains:

- “TransactionAdjustedEndDate” for Transactions fees - The end date is adjusted based on the Date Roll convention if it falls on a holiday (applies to LCH).
- “TransactionStartDate” for Transaction fees – The start date is CCPClearedDate (applies to LCH).
- “MaintenanceAdjustedEndDate” for Maintenance fees - The end date is adjusted based on the Date Roll convention if it falls on a holiday (applies to LCH).
- “MaintenanceOriginalClearDate” for Maintenance fees – The start date is CCPOriginalClearedDate for netted trades (applies to LCH).

- “MaintenanceStartDate” for Maintenance fees – The start date is CCPClearedDate (applies to LCH and CME).

8.1 Clearing Member Commissions and Execution Fees

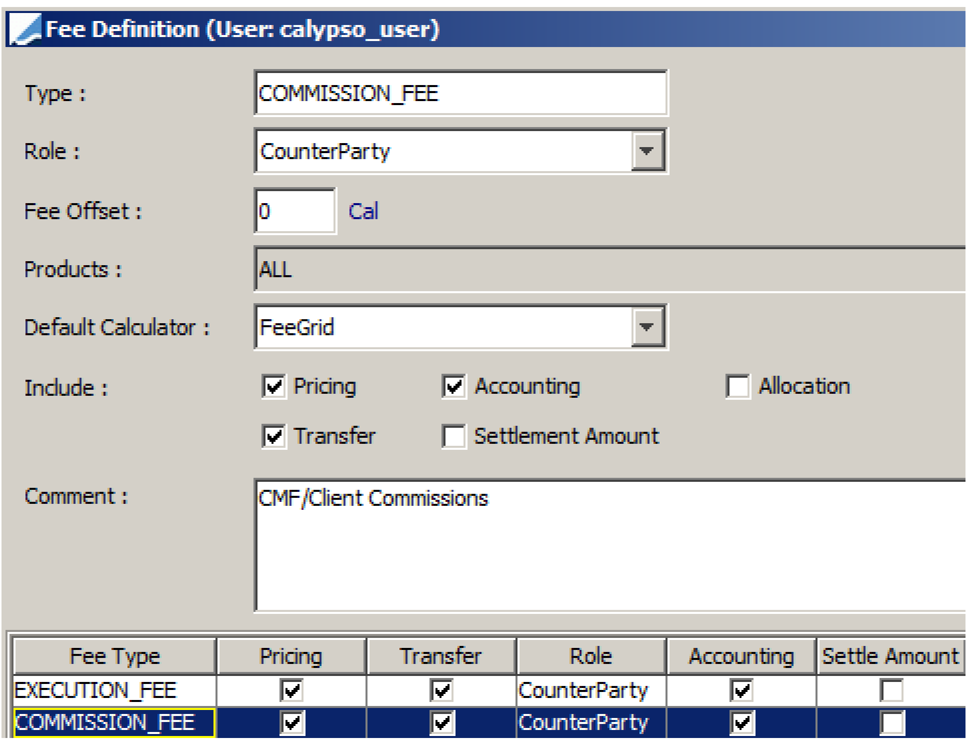
The clearing member charges commissions and execution fees on the trades to the clients immediately.

They are computed on the trades using the AutomaticFees workflow rule, which should be set on the workflow transitions once the trade is cleared: CLEARED – ENRICH – VERIFIED, VERIFIED – UPDATE – VERIFIED, etc.

▶ See Trade Workflows for complete details on the trade workflow.

8.1.1 Fee Definition

From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Fee Definition to define the fee types, for example COMMISSION_FEE and EXECUTION_FEE.

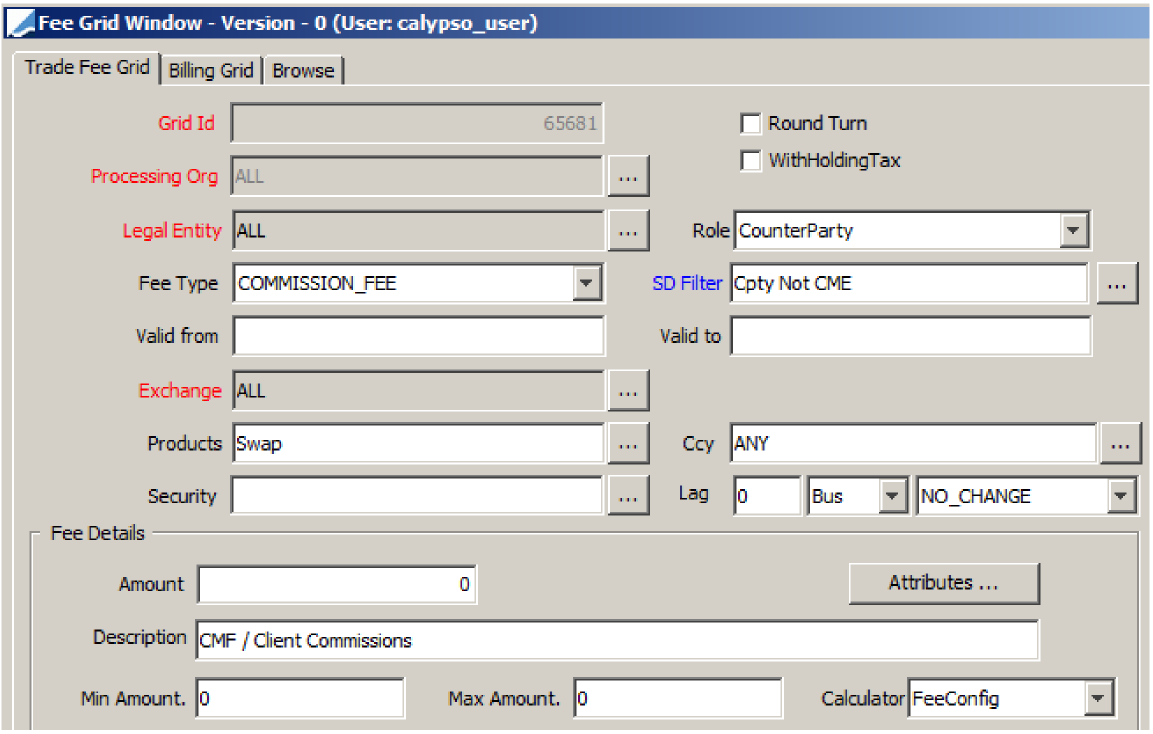


8.1.2 Fee Grids

The Fee Grid is just a link to the Fee Config window where you can define the actual fee amounts. You need to define one fee grid for each fee type.

You can use a static data filter to restrict the application of the fees.

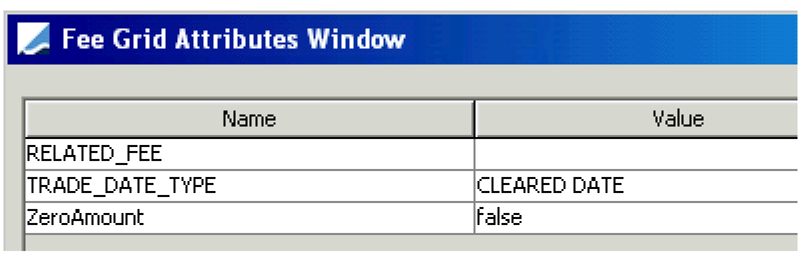
From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Fee Grid.



The Calculator must be set to “FeeConfig”.

You also need to set the following attributes:

- TRADE_DATE_TYPE should be set to “CLEARED DATE” so that the fee will settle on the cleared date set in the trade keyword CCPClearedDate.
- ZeroAmount should be set to “false” so that the system will not generate any fees with 0 amount.



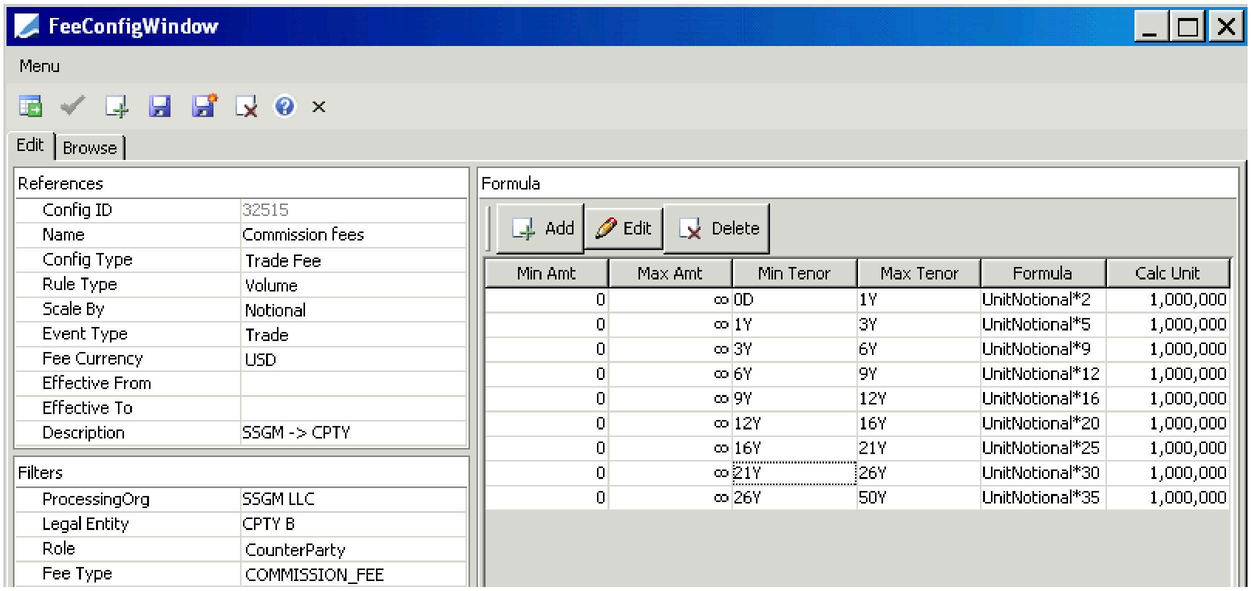
8.1.3 Fee Configs

You need to define one fee config for each fee type.

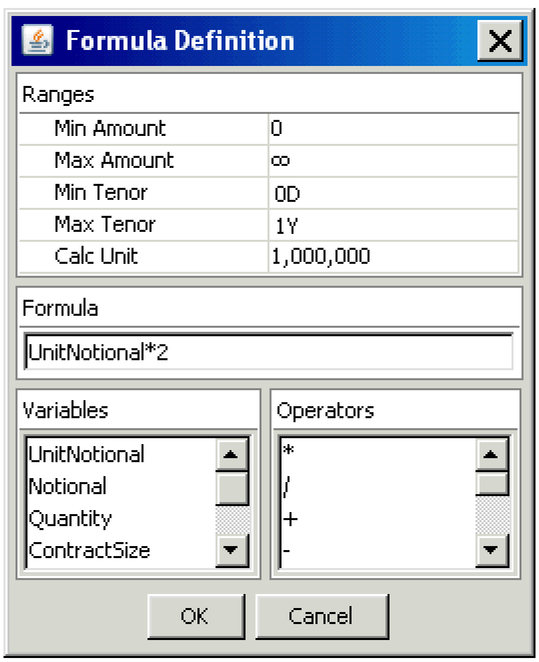
> **Note: For trade fees, the config type must always be set to “Trade Fee”.**

From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Fee Config.

Commission fees as specified below will be computed based on the trade notional. Depending on the trade’s maturity we will apply x USD per million notional. E.g. for a 10 million trade maturing in 6 month: commission = 10*2 = 20 USD.



Sample formula definition.



8.2 CCP Commissions and Maintenance Fees

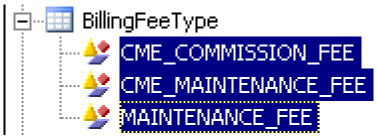
The following periodic fees can be setup:

- The CCP charges commissions on the trades to the clearing member on a periodic basis – Example CME_COMMISSION_FEE.
- The CCP charges maintenance fees on the accounts to the clearing member on a periodic basis – Example CME_MAINTENANCE_FEE.

- The clearing member charges maintenance fees on the accounts to the clients on a periodic basis – Example MAINTENANCE_FEE.

They are computed by the Billing engine based on billing grids and billing rules.

The fee types that you want to compute on a periodic bases must be defined in the domain BillingFeeType.

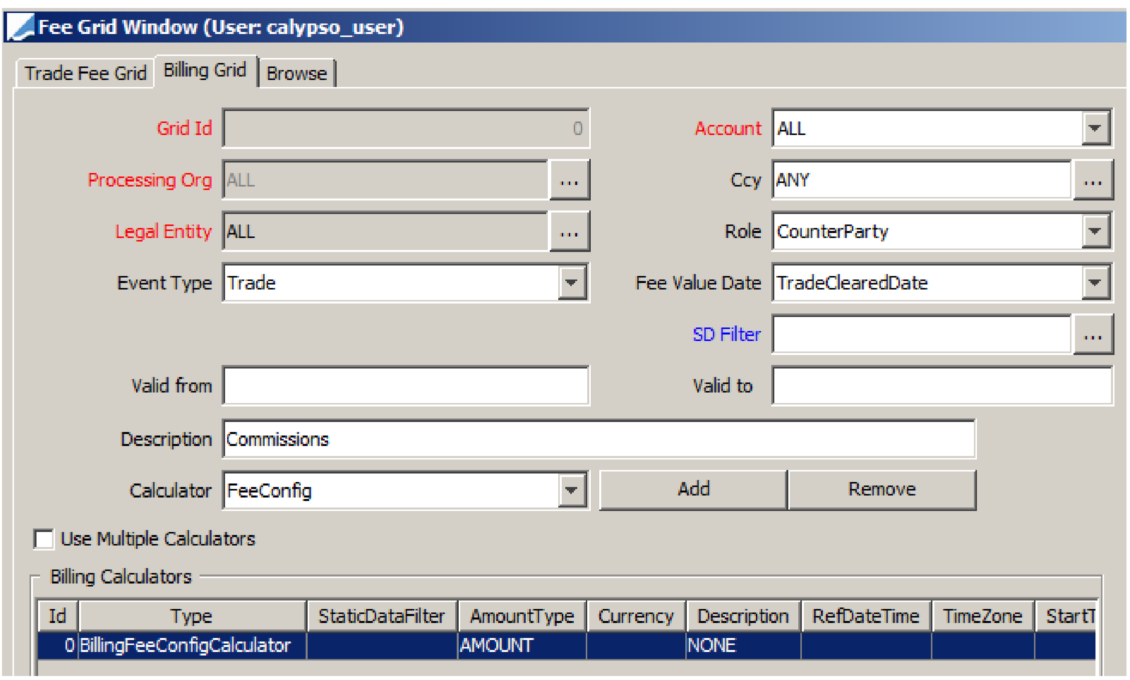


8.2.1 Billing Grids

The Billing Grid is a onetime configuration that should be as generic as possible. At least one billing grid is needed by billing event (trade, transfer, message, MaintenanceTrade, Account). The idea here is to link the fee calculation to the Fee Config window (via the calculator), and determine what date type should be used to generate the fee billing entry.

From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Fee Grid to define billing grids.

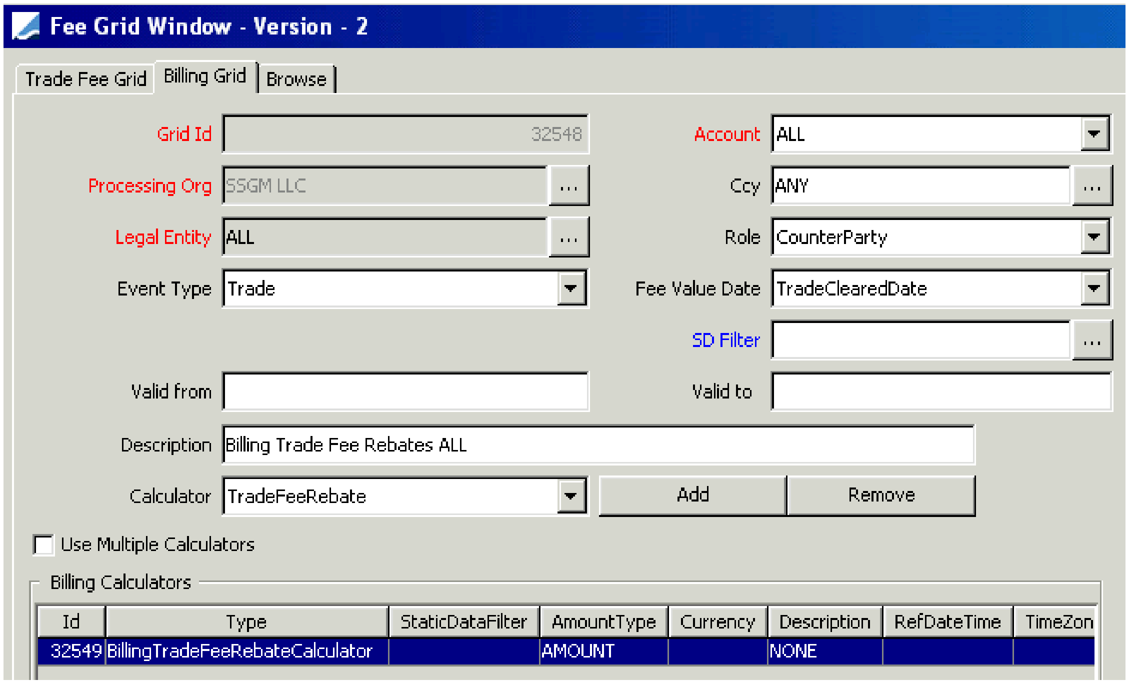
8.2.1.1 Billing Grid for Trade Events



- Role = CounterParty
- Fee Value Date = TradeClearedDate
- Calculator = FeeConfig

8.2.1.2 Billing Grid for Trade Rebate Events

This billing grid only applies if a rebate is defined in the Fee Config.

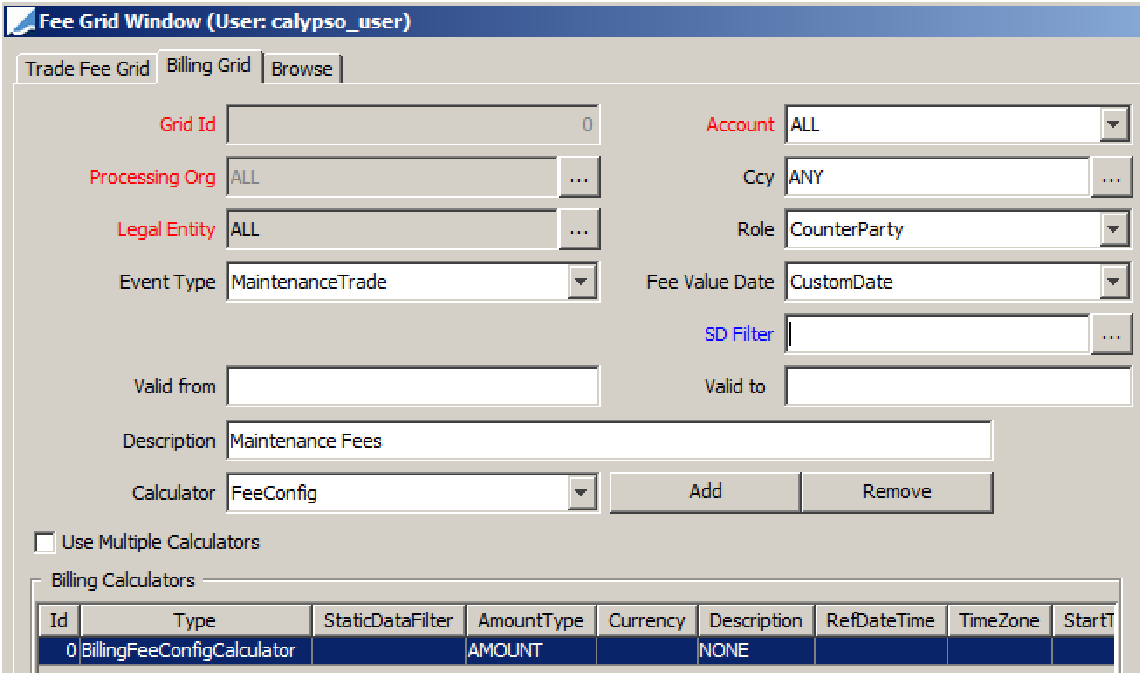


- Role = CounterParty
- Fee Value Date = TradeClearedDate
- Calculator = TradeFeeRebate

8.2.1.3 Billing Grid for Maintenance Trade Events

This billing grid will apply for ALL counterparties on MaintenanceTrade billing events, in our case MAINTENANCE_FEE and CME_ MAINTENANCE_FEE.

Note: Date should be set to “CustomDate” since the billing frequency is determined on the Fee Config.



- Role = CounterParty
- Fee Value Date = CustomDate
- Calculator = FeeConfig

8.2.2 Billing Rules

The Billing Rule determines the billing period, settle date, billing currency of the billing trade on which the billing fee entry will be generated. It is also possible to default certain billing trade entries such as the book and transfer type.

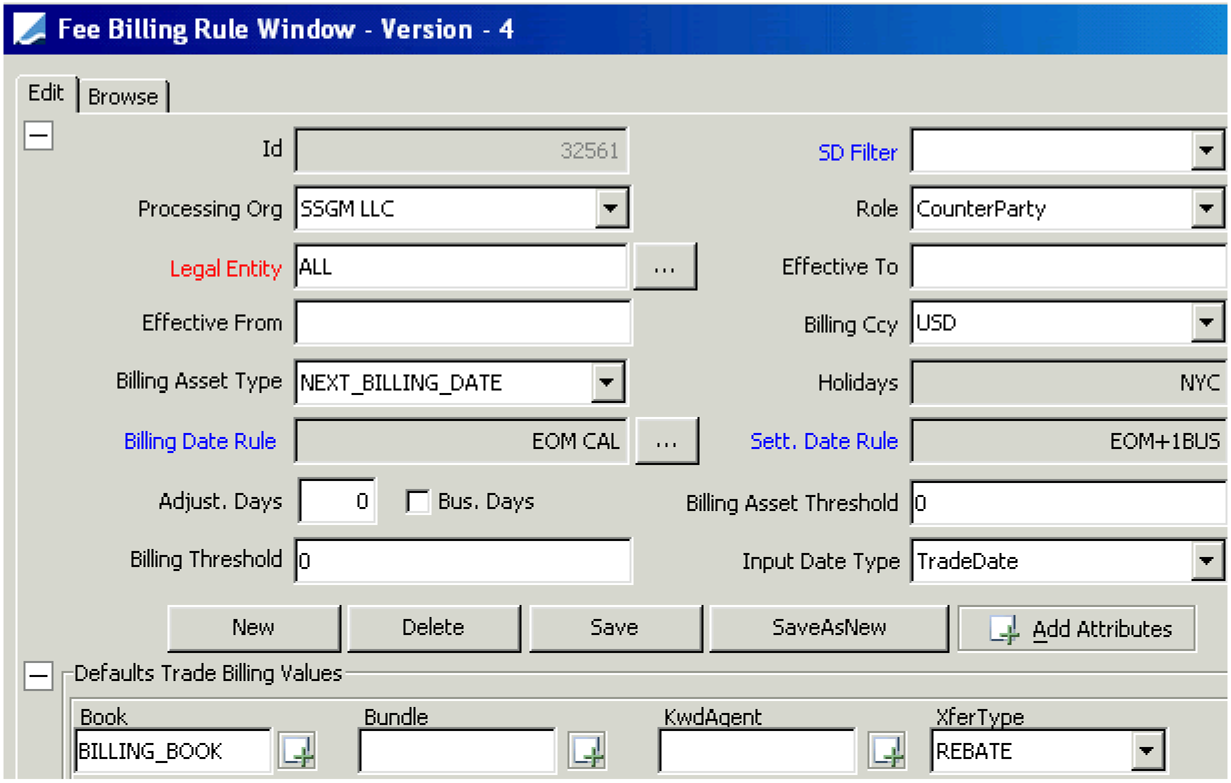
You need to define one billing rule per fee type.

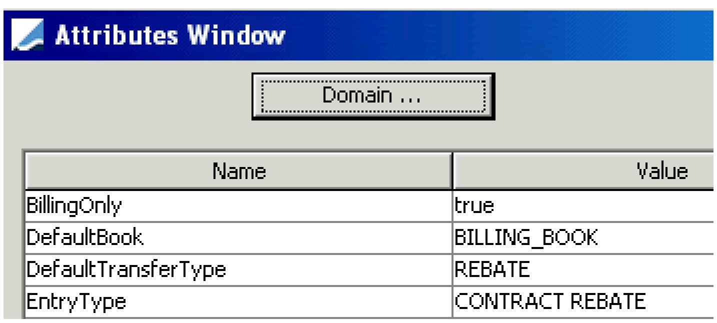
From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Fee Billing Rule to define billing rules.

8.2.2.1 CONTRACT REBATE

This config will apply for ALL counterparties in case a rebate applies.

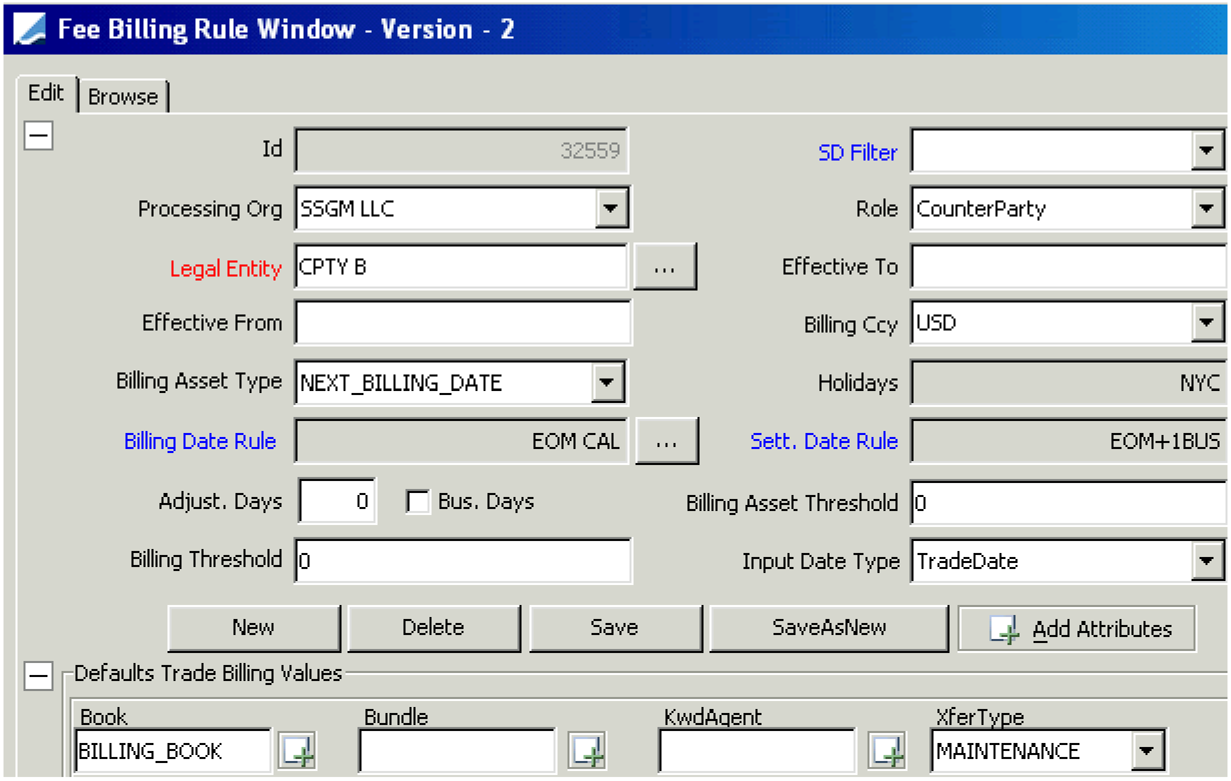
The attributes BillingOnly and EntryType are mandatory. BillingOnly should always be set to true and EntryType to the corresponding fee type.

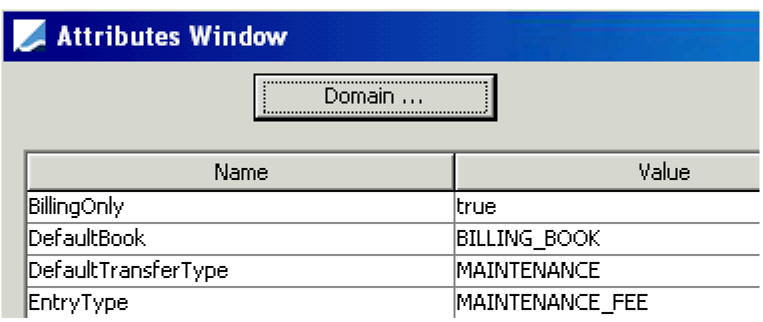




8.2.2.2 MAINTENANCE_FEE

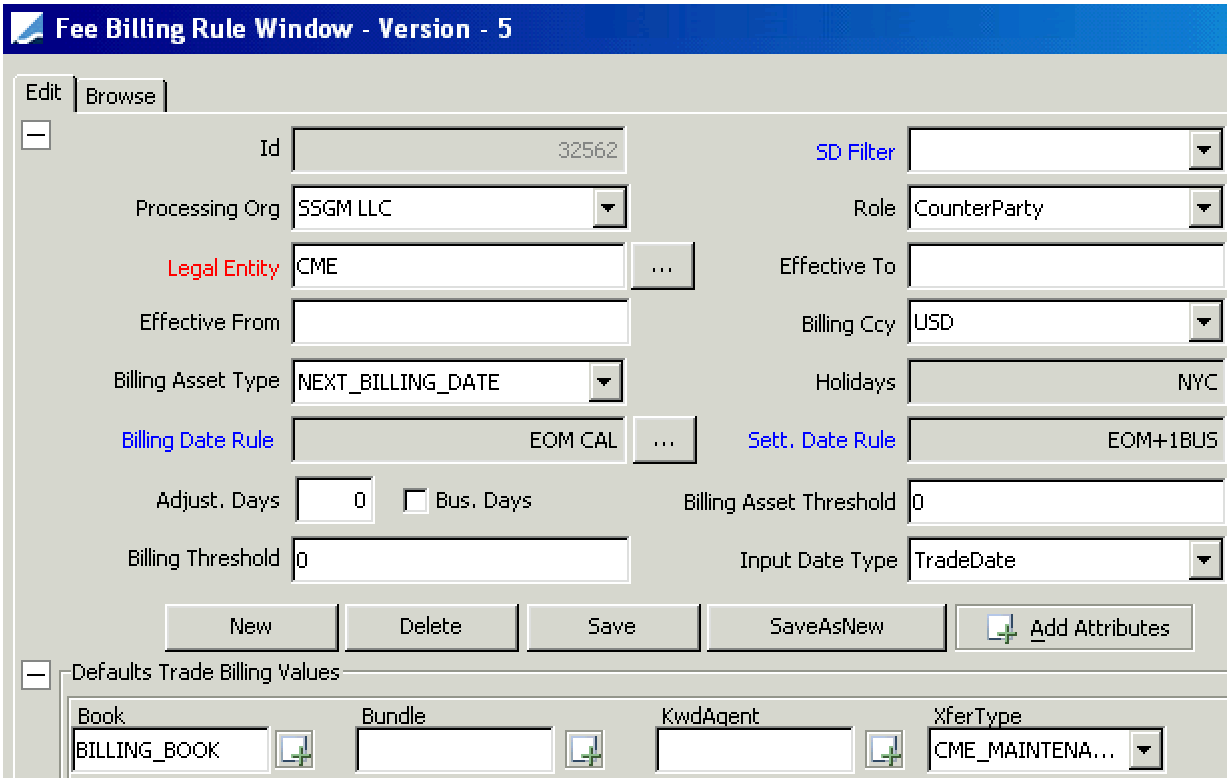
You can select a given client (counterparty) as needed.

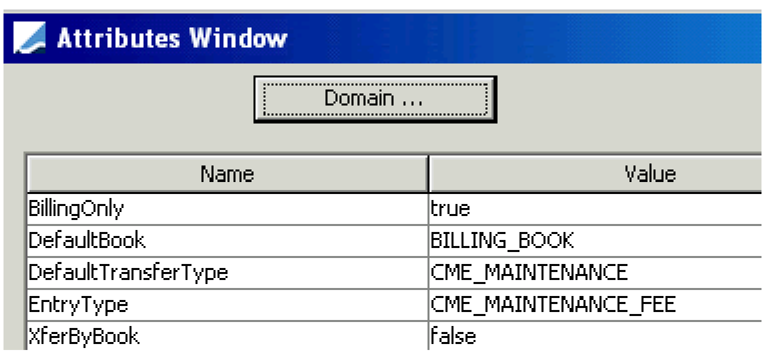




8.2.2.3 CME_MAINTENANCE_FEE

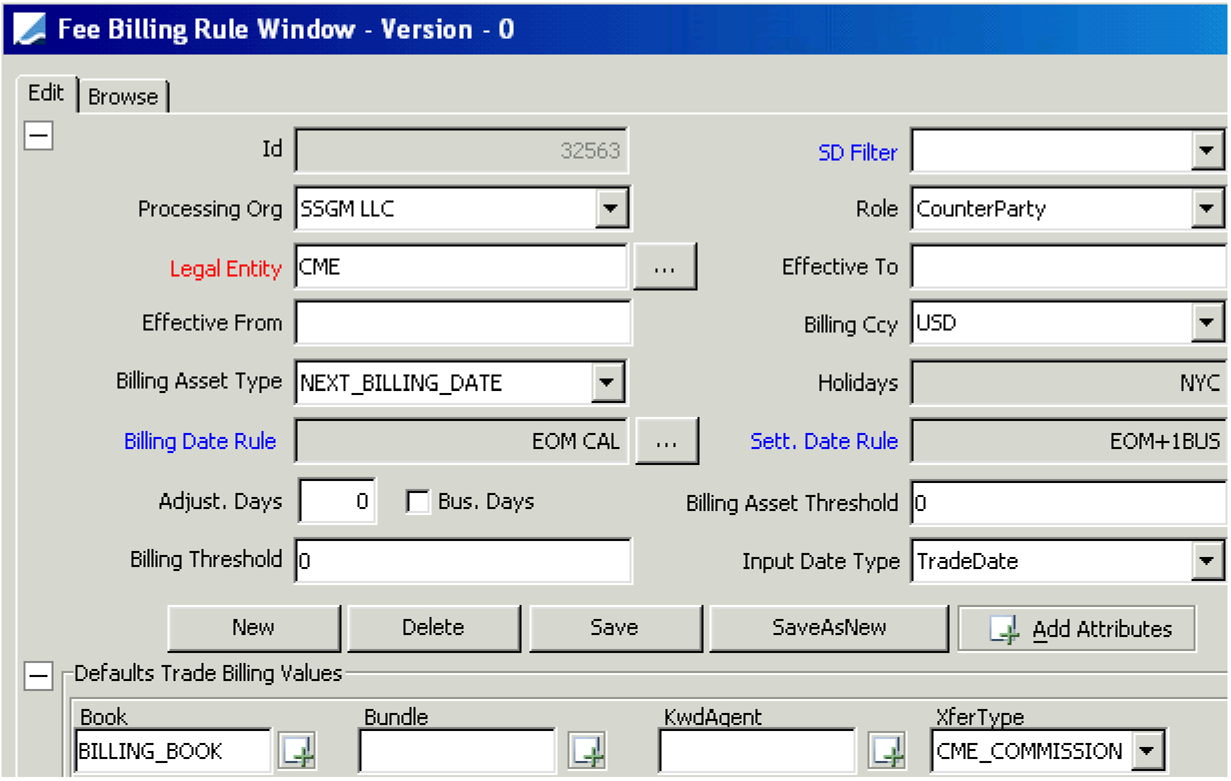
This rule will only apply for maintenance fees that will be charged from the CCP (CME in this example).

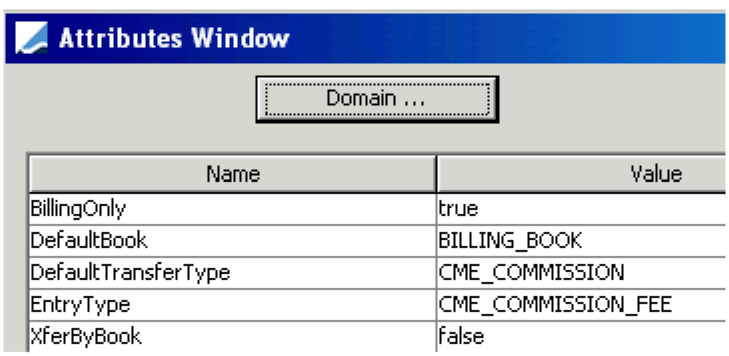




8.2.2.4 CME_COMMISSION_FEE

This rule is for CME only since the commissions charged by the clearing member are charged directly on the trades.





8.2.3 Fee Configs

You need to define one fee config for each type of fee. The billing rule is linked to the fee config via the attribute EntryType.

From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Fee Config to define fee configs.

8.2.3.1 MAINTENANCE_FEE

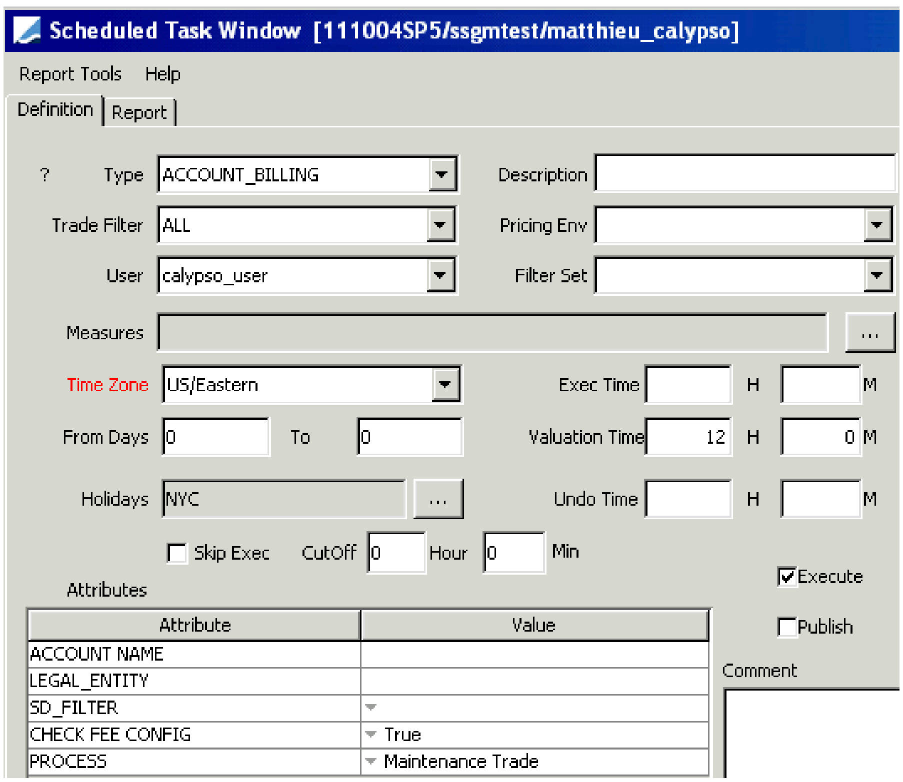
Maintenance fees are generated on account balances.

On the account for which you want to generate the fees, you need to check the Billing checkbox.

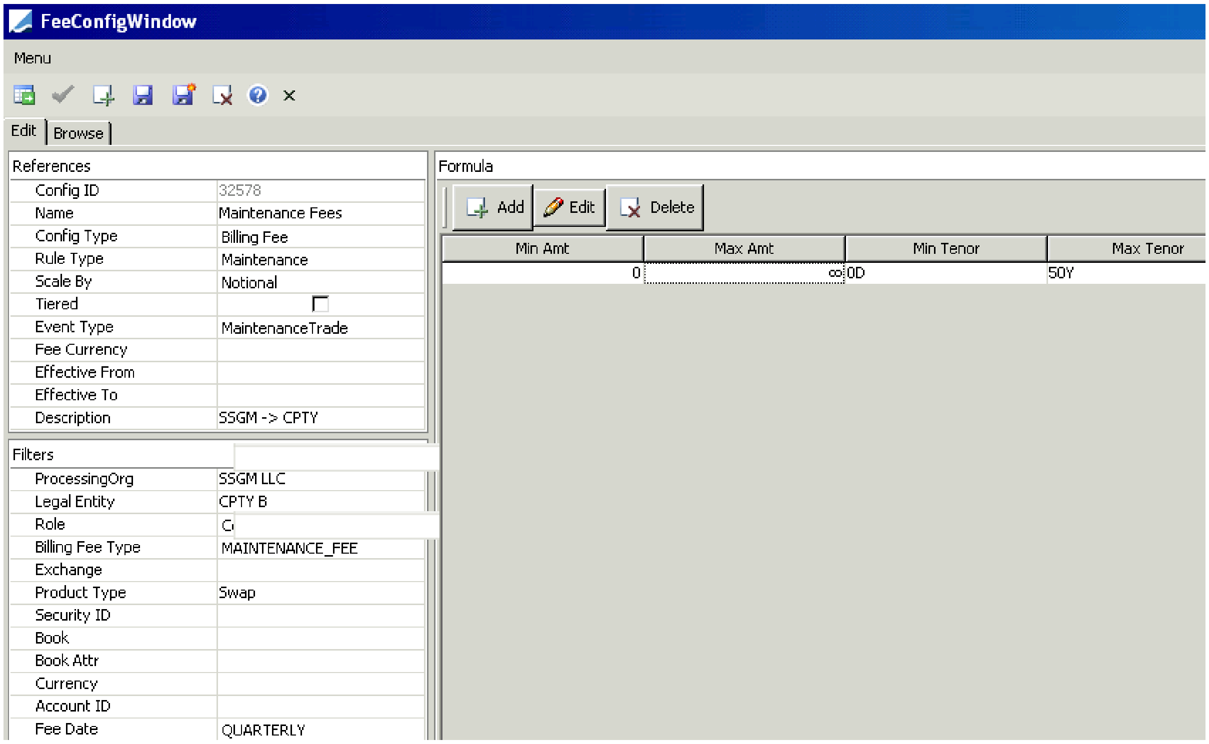
Maintenance fees are triggered by the event MaintenanceTrade which is generated by the scheduled task ACCOUNT_BILLING.

Note: You can set the legal entity attribute WAIVE FIRST to true to waive the first billing fee.

Scheduled task ACCOUNT_BILLING:

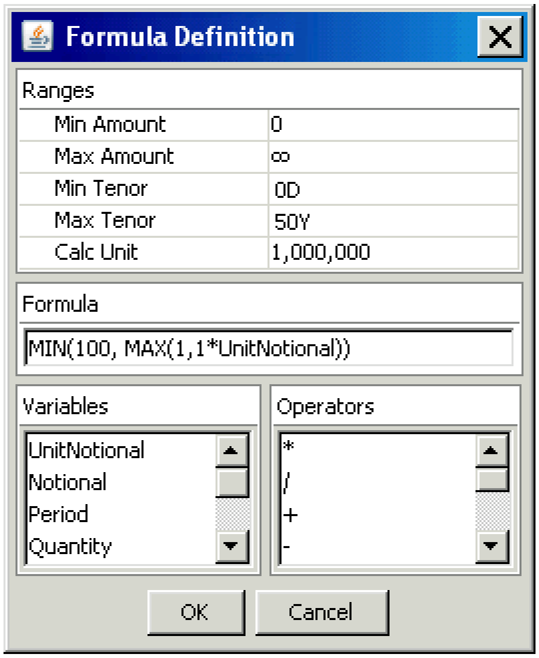


Fee Config:



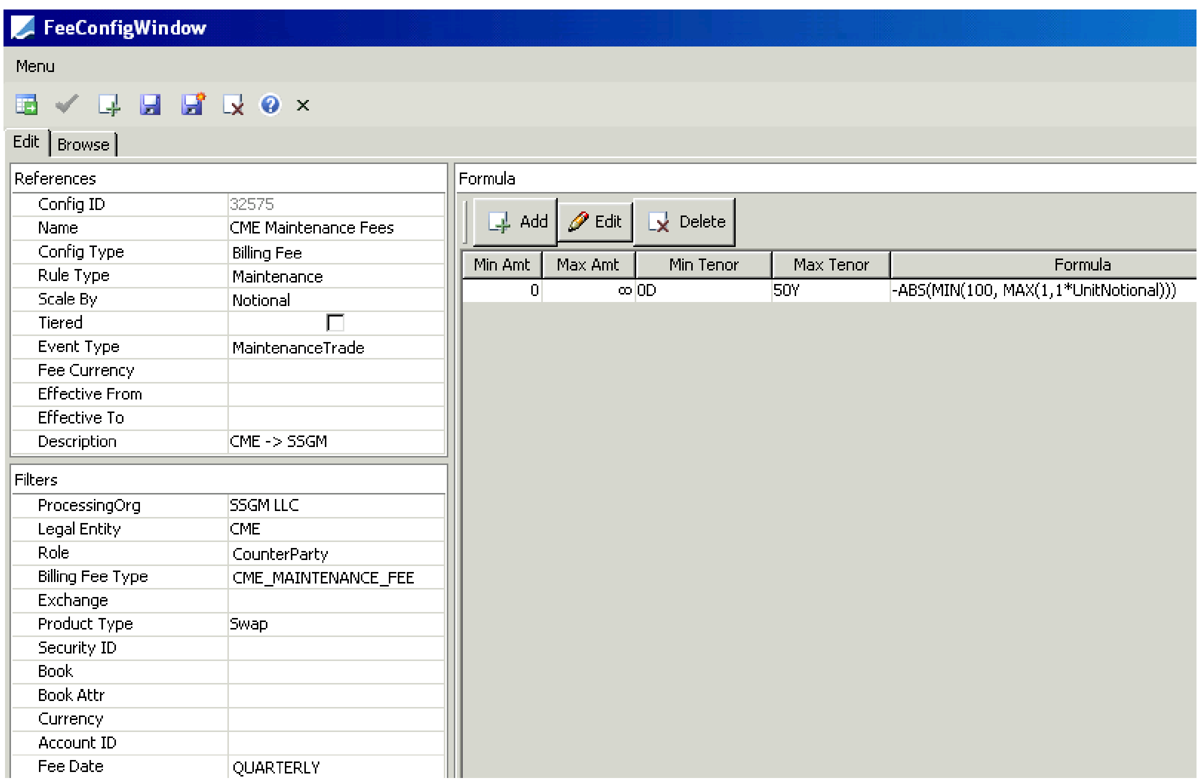
- Config Type = Billing Fee
- Rule Type = Maintenance
- Event Type = MaintranceTrade
- Billing Fee Type = EntryType set on Billing Rule = Billing fee type
- Fee Date = Fee frequency

Sample formula



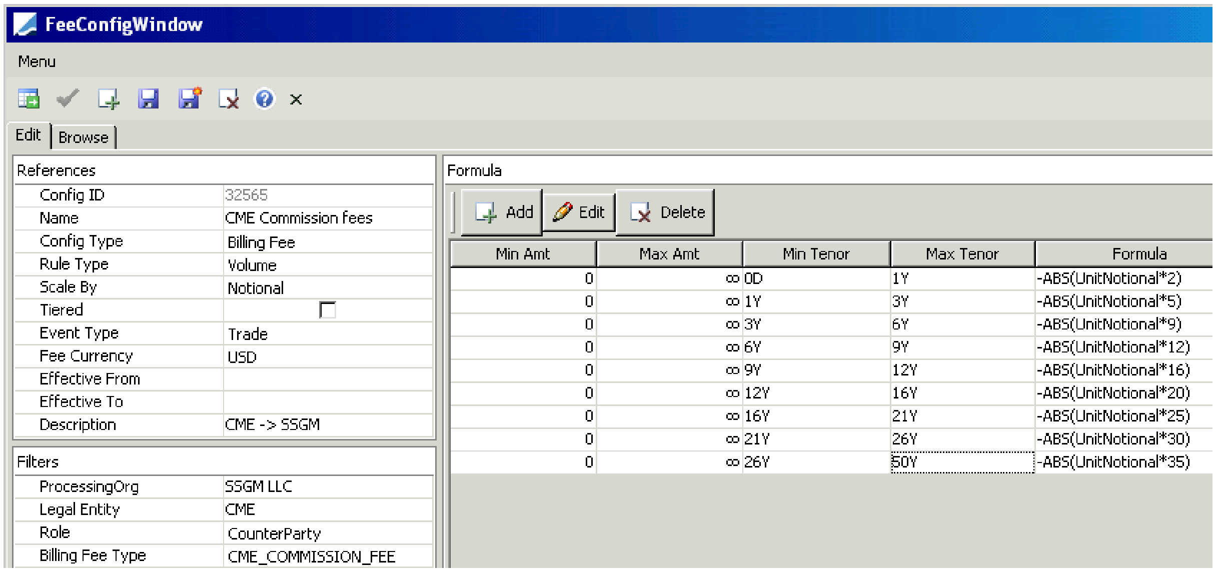
8.2.3.2 CME_MAINTENANCE_FEE

Similar setup to MAINTENANCE_FEE.



8.2.3.3 CME_COMMISSION_FEE

This fee is generated by the Billing engine based on trade events.



8.2.4 Billing Trades

The Billing engine is used to create the billing fees.

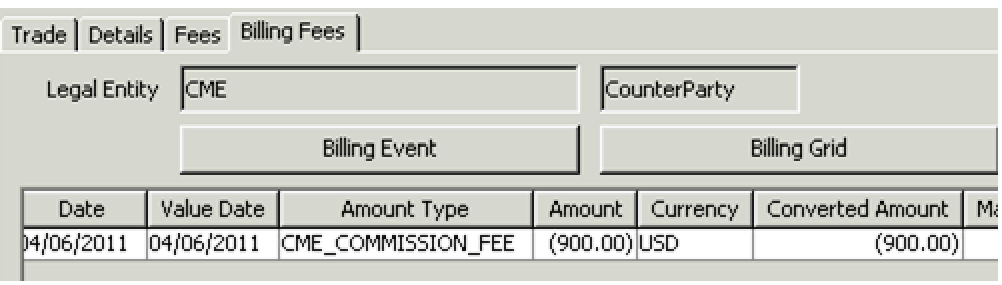
It must subscribe to the following events:

- PSEventTrade
- PSEventAccountBilling
- PSEventMaintenanceTrade

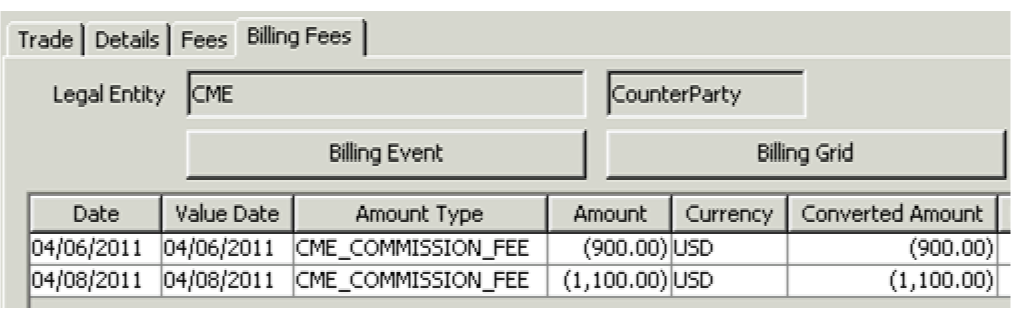
The Billing engine is configured in the Engine Manager of Web Admin: event subscription and engine parameters. You may need to add this engine if it is not available for configuration: Create a new engine called BillingEngine, with class name `com.calypso.engine.billing.BillingEngine`.
The Billing engine can be started from the Engine Manager in Web Admin.

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

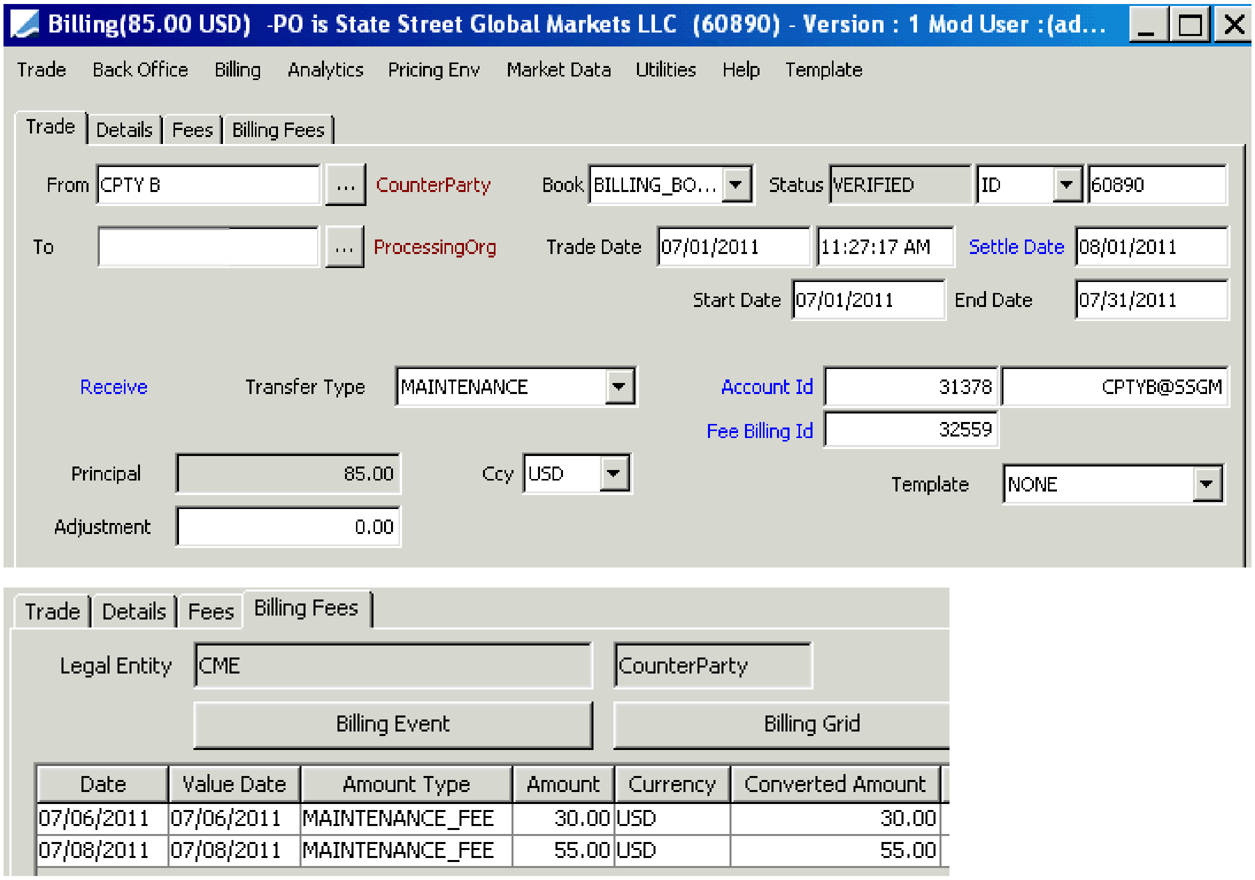
8.2.4.1 Sample CME_COMMISSION_FEE



As more trades are entered into the system, more billing fees are added to the same billing trades.



Sample MAINTENANCE_FEE



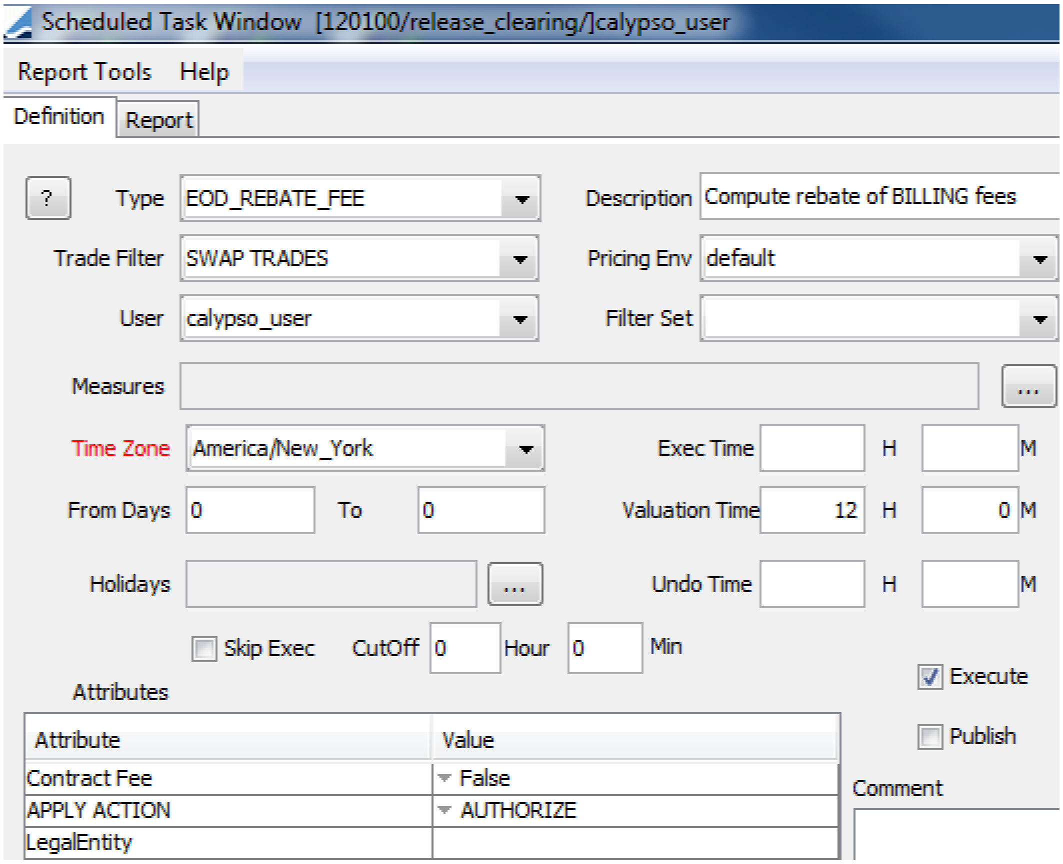
8.2.4.2 Rebate Process

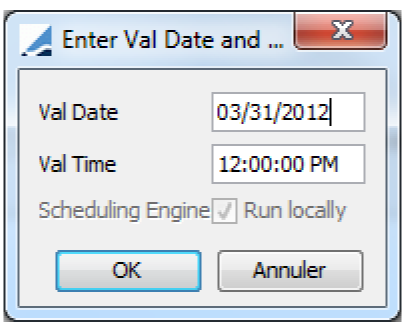
In case a rebate is configured on the Fee Config, rebate entries are generated using the EOD_REBATE_FEE scheduled task.

The rebate process adjusts the fee rate based on all the events of the billing period (Default rebate type), or applies a discount based on the total fee amount and the discount schedule (Discount rebate type).

The EOD_REBATE_FEE scheduled task must be run daily. It retrieves the billing trades for which the end date falls on the scheduled task valuation date.

The system creates new billing entries of type REBATE to book the difference between the billing fee amount originally computed, and the billing fee amount computed at the end of the period, once the actual fee rate is known / discount is applied. There is one REBATE billing entry per trading book.





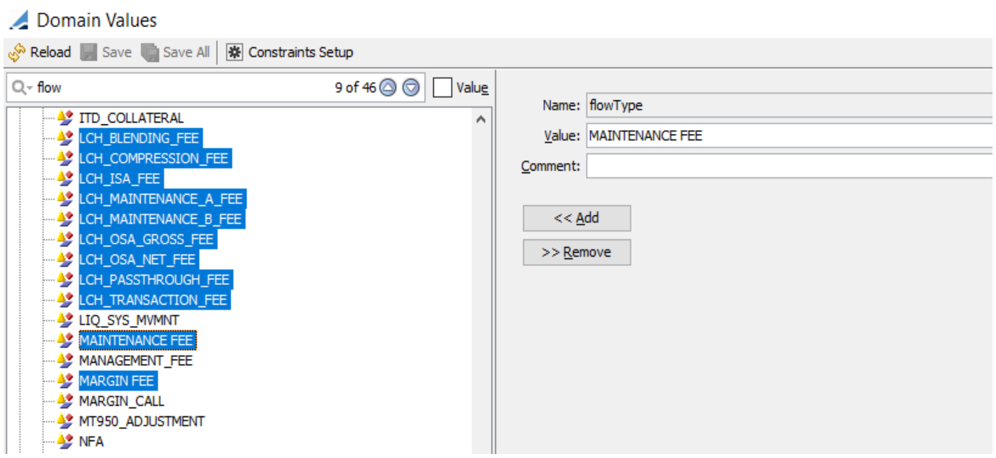
Refer to Calypso Fees documentation for details on using these windows.

8.3 CCP Fees Import

CCP fees can be imported using the scheduled task IMPORT_CCP_FEE.

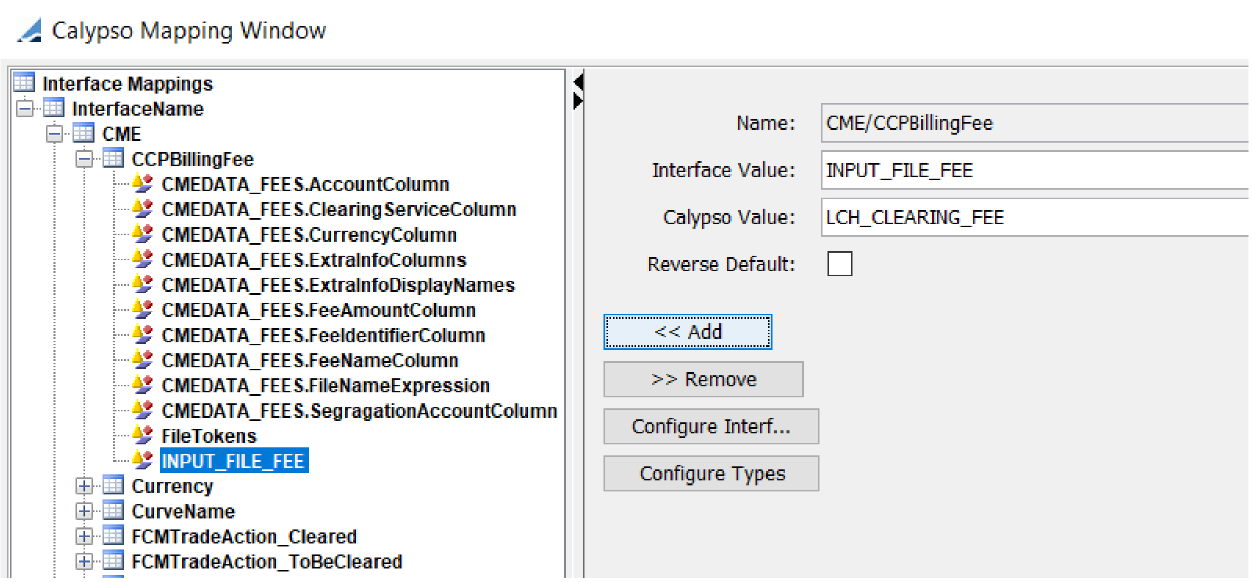
8.3.1 Fee Types

The following fee types need to be added to the domain "flowType".



These are the default fee types but you can customize them as needed in the Mapping window.

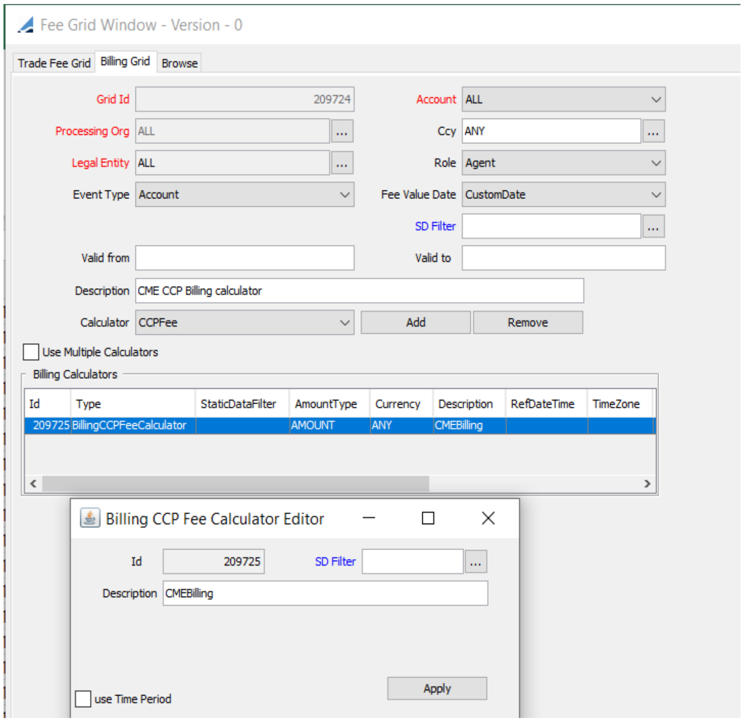
Example:



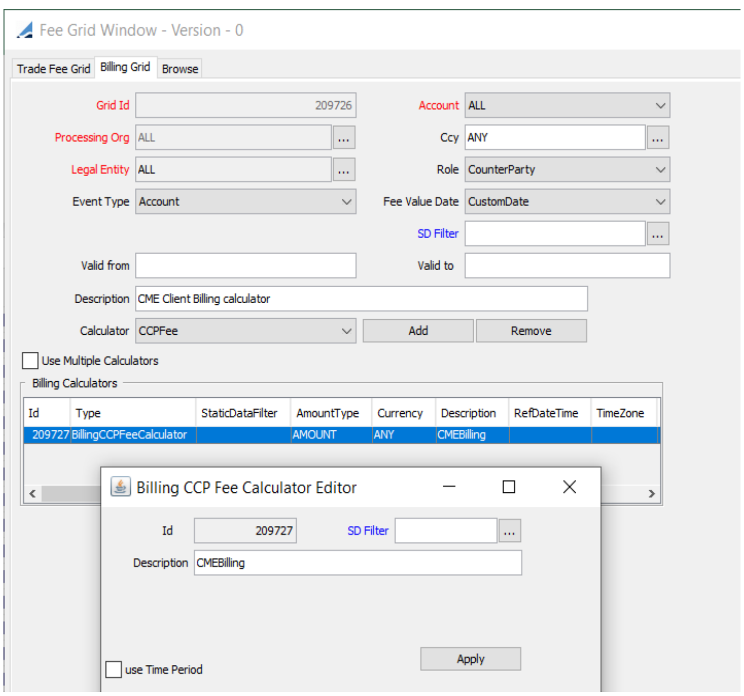
8.3.2 Billing Grid Setup

In order to import the CCP fees, you need to use the Billing Grid calculator CCPFee.

Billing Grid for CCP facing BillingTrade



Billing Grid for Client facing BillingTrade



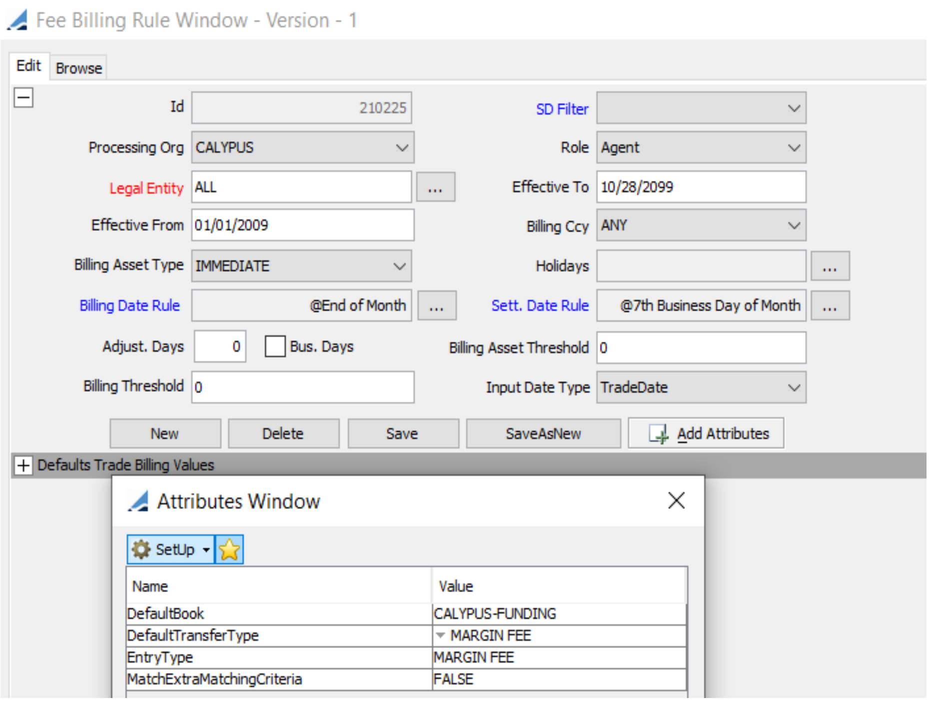
8.3.3 Billing Rule Setup

Define a Billing Rule for CCP facing trade (role Agent) and a Billing Rule for the Client facing trade (role CounterParty). This need to be defined for each fee.

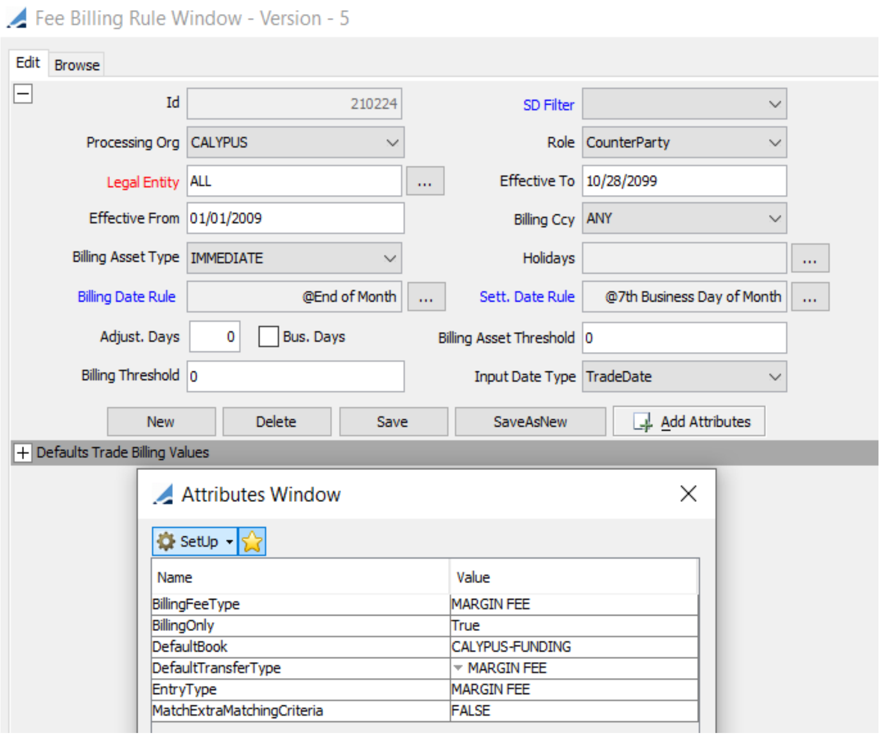
The Billing Date Rule field needs to be defined to determine how long the fee will accrue, for instance monthly, and the Sett. Date Rule to determine when the fee will settle, for instance 7 business days after the end of the previous month.

MatchExtraMatchingCriteria is a newly introduced attribute. If set to False, system should display list of all the billing fees associated with that trade in the BillingFees tab. If set to True or not present, system will override with the last fee in the file against that trade and will always see a single entry in the Billing Fees Tab. The recommended value is empty or false.

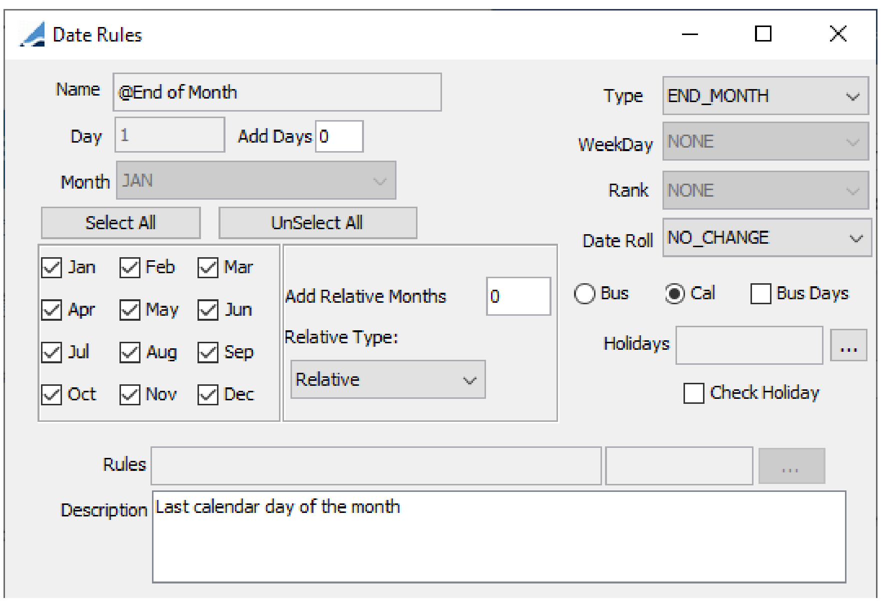
CCP Facing Billing Rule



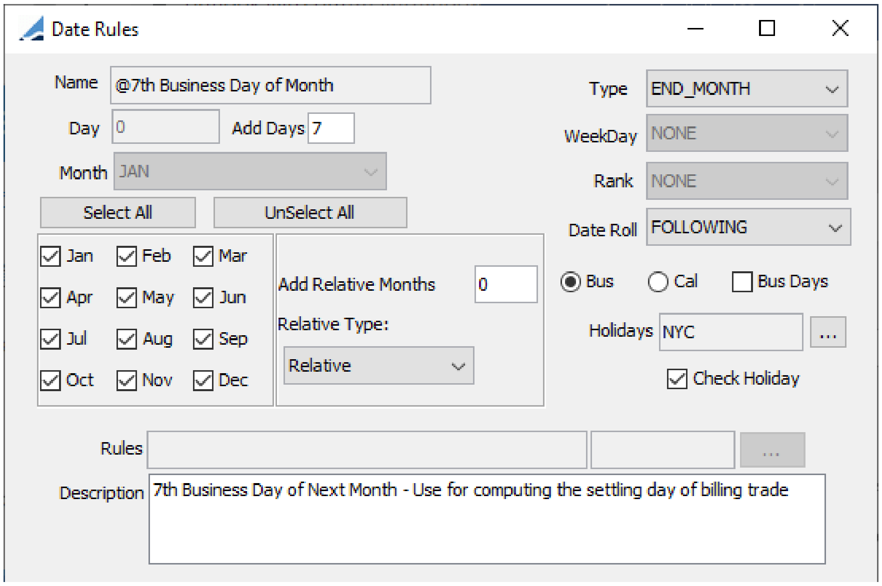
Client Facing Date Rule



Example of a monthly date rule used to determine the accruing period on the billing trade



Example of a date rule used to determine the settlement date of the billing trade



8.3.4 Scheduled Task IMPORT_CCP_FEE

Set up the scheduled task IMPORT_CCP_FEE for each applicable CCP and enter the INPUT FILE LOCATION where the CCP fee reports are stored.

8.4 Initial Margin Fees

The CCPs charge fees on the initial margin requirements.

Billing events are generated by the scheduled task CLEARING_BILLING based on account positions. The Billing engine subscribes to the billing events to generate the fees (billing trades) based on billing grids and fee billing rules.

The Billing Grid calculator “InitialMarginFee” computes fees of type IM_BASED_FEE, on a periodic basis, using the scheduled task CLEARING_BILLING and the Billing engine.

The scheduled task CLEARING_BILLING will only process accounts for which the Billing checkbox is checked.

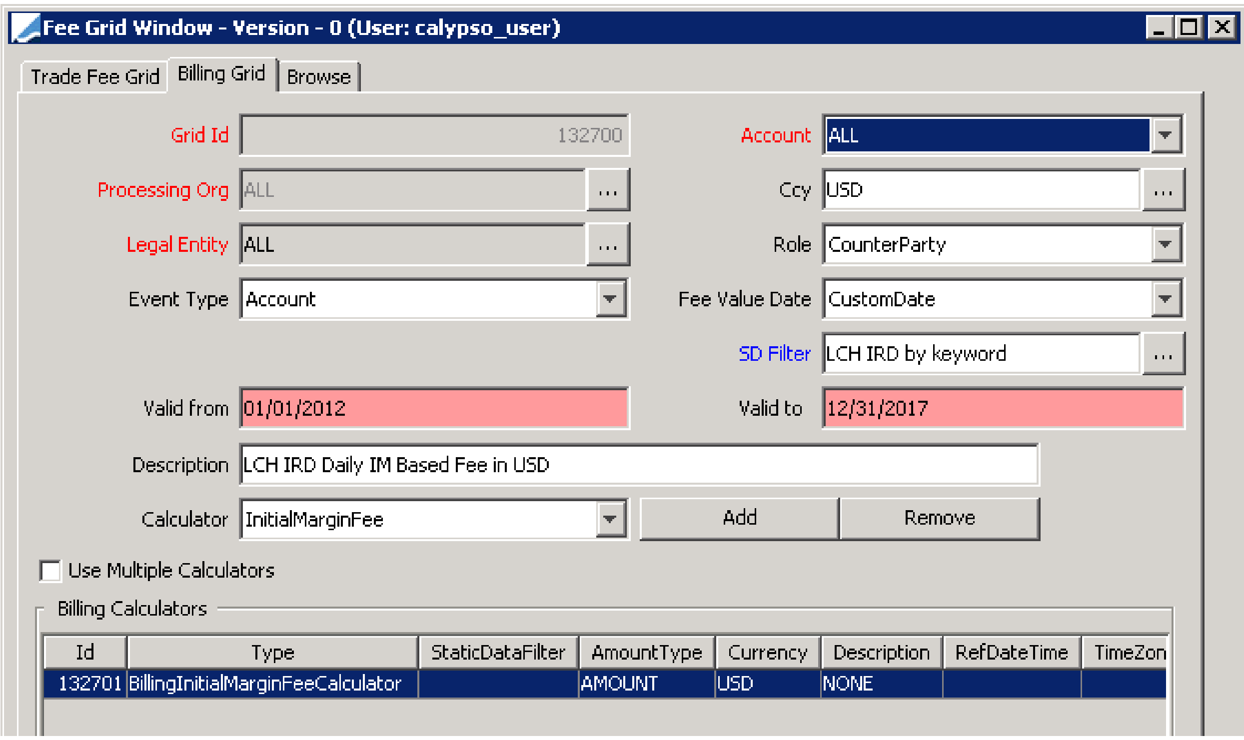
Make sure that you add IM_BASED_FEE to the domain “BillingFeeType”.

You also need to add BillingInitialMarginFeeCalculator to the domain “billingCalculator”.

Setup details are described in the following sections.

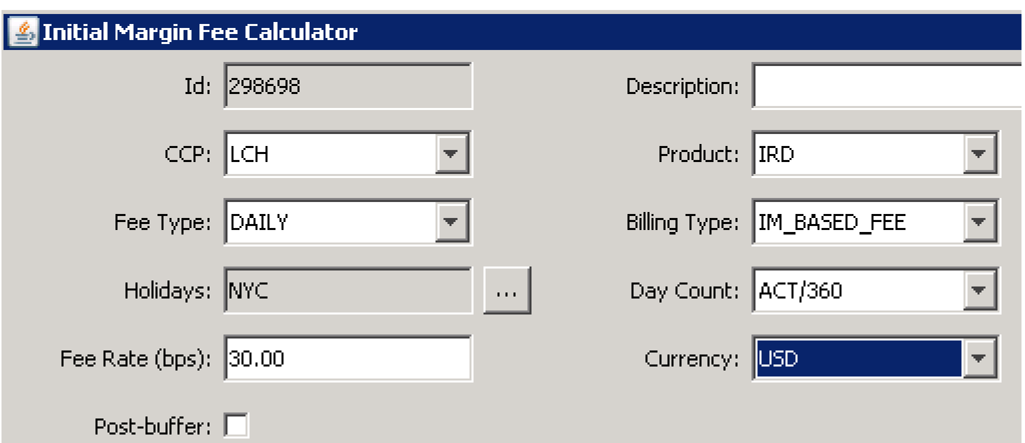
8.4.1 Billing Grid

Choose Main Entry > Configuration > Fees, Haircuts, & Margin Calls > Fee Grid, and select the Billing Grid panel to define billing grids.



Enter the criteria as needed.

Select the calculator BillingInitialMarginFeeCalculator and click **Add**.



The Daily fee type uses the previous day's IM Requirement to calculate each day's Fee, and carries the calculation forward to include the non-business days that immediately follow a given date. For example, the Fee calculated for a Friday will be generated for 3 days to cover Friday, Saturday and Sunday.

The Daily fee type inserts a unique Fee into the Billing Trade for each day that the scheduled task is run. The sum of these Daily Fees will be the Monthly Total. The Fee currency for the Daily Fee is expected to be in the currency of the Requirement, so there is no FX Conversion logic.

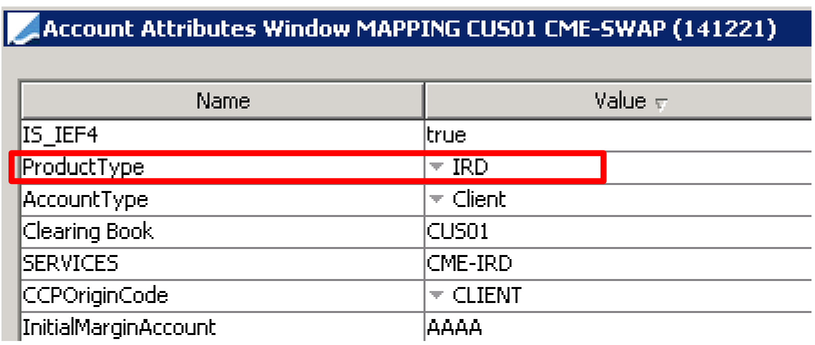
You can also select the currency as needed to define different IM requirements by currency.

If you check "Post-Buffer" the base amount to compute the fee is the Net Balance of the margin call contract (which takes the buffers into account). Otherwise, it is the pricer measure MARGIN_CALL.

Billing Account Segregation by Clearing Service

You can setup the account attribute ProductType on the billing account to segregate the billing fee by clearing service.

The ProductType attributes needs to match the "Product" field specified for the BillingInitialMarginFeeCalculator.



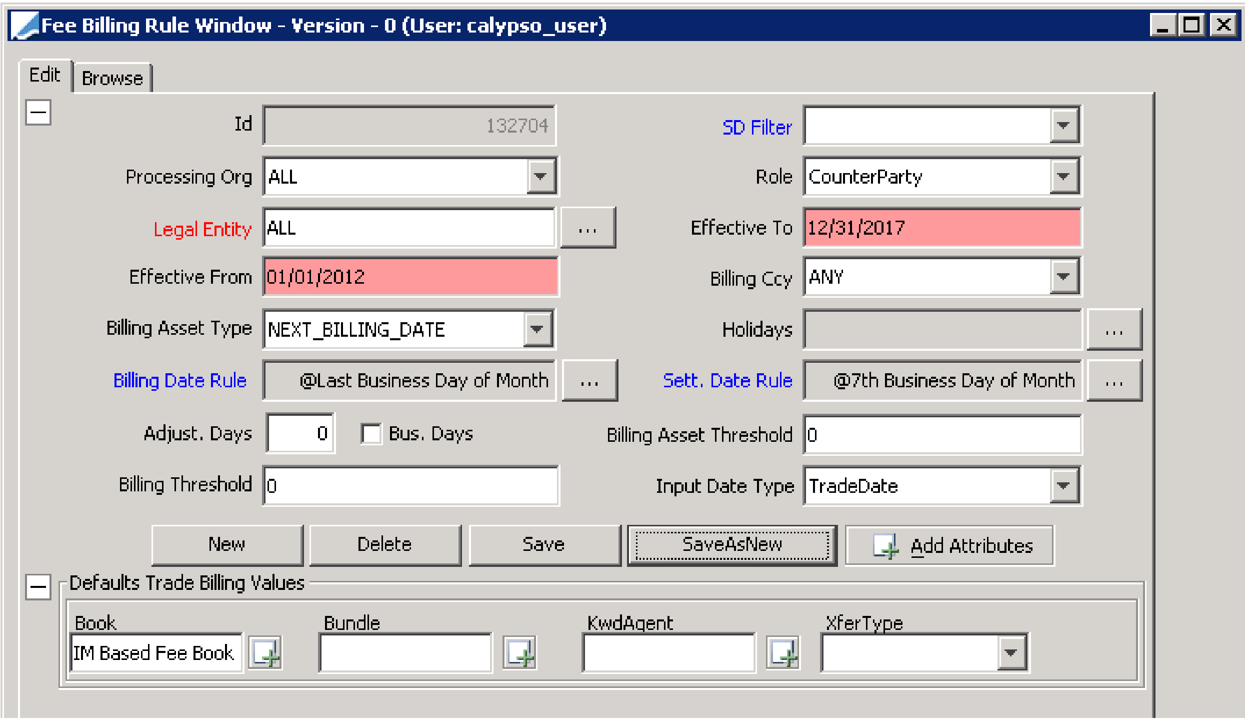
Account Attributes Window MAPPING CUS01 CME-SWAP (141221)

Name	Value
IS_IEF4	true
ProductType	IRD
AccountType	Client
Clearing Book	CUS01
SERVICES	CME-IRD
CCPOriginCode	CLIENT
InitialMarginAccount	AAAA

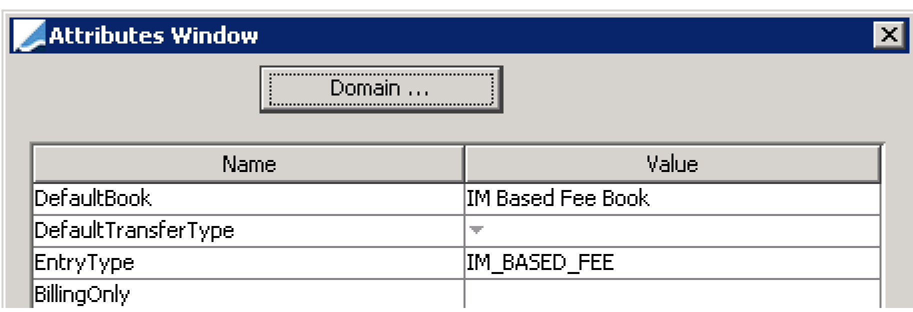
8.4.2 Fee Billing Rule

The billing rule allows defining the billing frequency, and a billing threshold if needed.

Define the billing rule using Main Entry > Configuration > Fees, Haircuts & Margin Calls > Fee Billing Rule (menu action `refdata.FeeBillingRuleWindow`).



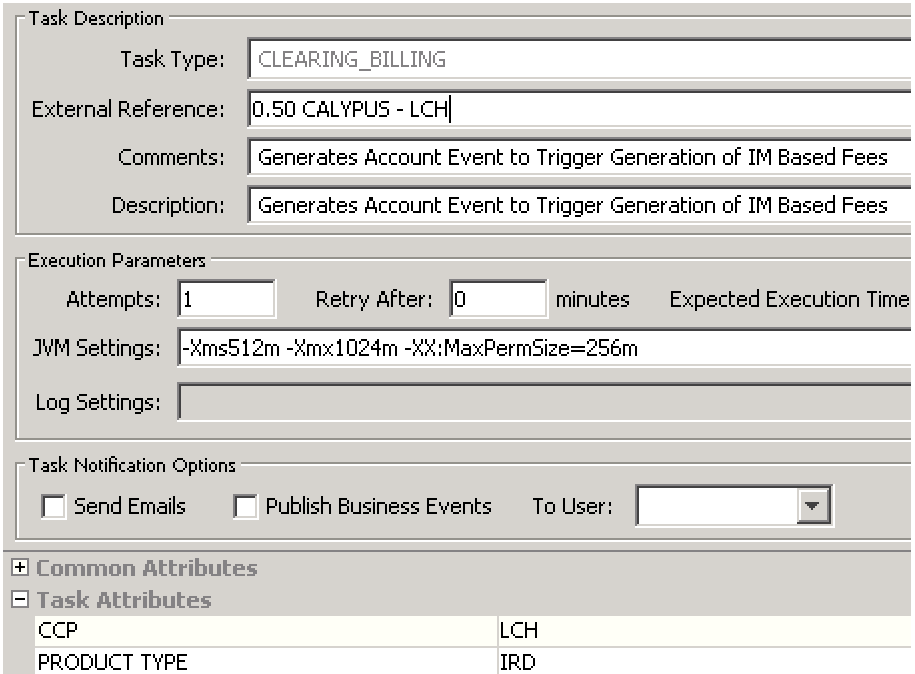
» Click **Add Attributes** to add the EntryType attribute.



Set EntryType = User-defined fee, “IM_BASED_FEE” in this example.

8.4.3 Fee Generation

Configure the CLEARING_BILLING scheduled task.



- Select the CCP for which you want to generate the fees.
- Select the product type as needed.

[NOTE: For the CME IM fee, the scheduled task should be run only at the end of the month]

If the business holidays are set, and the valuation date is a holiday, the scheduled task fails. You can monitor the exception in the Task Station:

- Add EX_CLEARING_BILLING to the domain “eventType”.
- Add CLEARING_BILLING to the domain “exceptionType”.

The scheduled task looks up the clearing account and generates PSEventAccountBilling events based on the billing grid.

The Billing engine subscribes to PSEventAccountBilling events and generates billing trades based on the billing rule.

The Billing 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 BillingEngine, with class name `com.calypso.engine.billing.BillingEngine`.

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

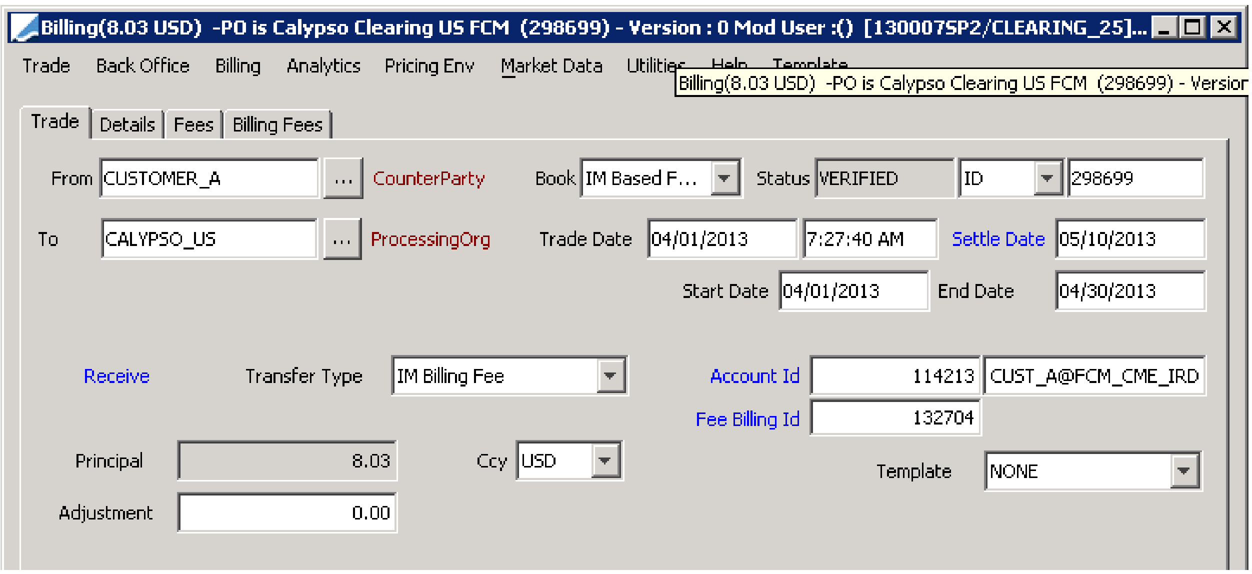
Please refer to Calypso Web Admin documentation for complete details.

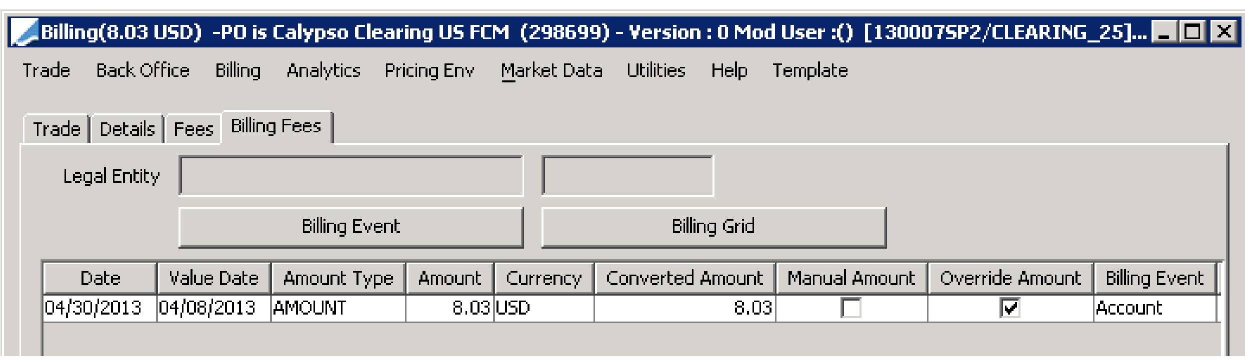
The book is set on the billing trades according to the following logic:

- The book specified on the billing rule is selected by default.
- If not set, the “Funding Book” legal entity attribute on the PO is selected.
- If not set, the standard clearing book lookup method is used.

▶ See Defining Books for details.

Sample billing trade:





8.5 Security Collateral Fees

Billing events are generated by the scheduled task CLEARING_BILLING based on margin call positions. The Billing engine subscribes to the billing events to generate the fees (billing trades) based on billing grids and fee billing rules.

The Billing Grid calculator “BondInvestmentFeeCalculator” computes fees of user-defined type, on a periodic basis, using the scheduled task CLEARING_BILLING and the Billing engine.

The scheduled task CLEARING_BILLING will only process accounts for which the Billing checkbox is checked.

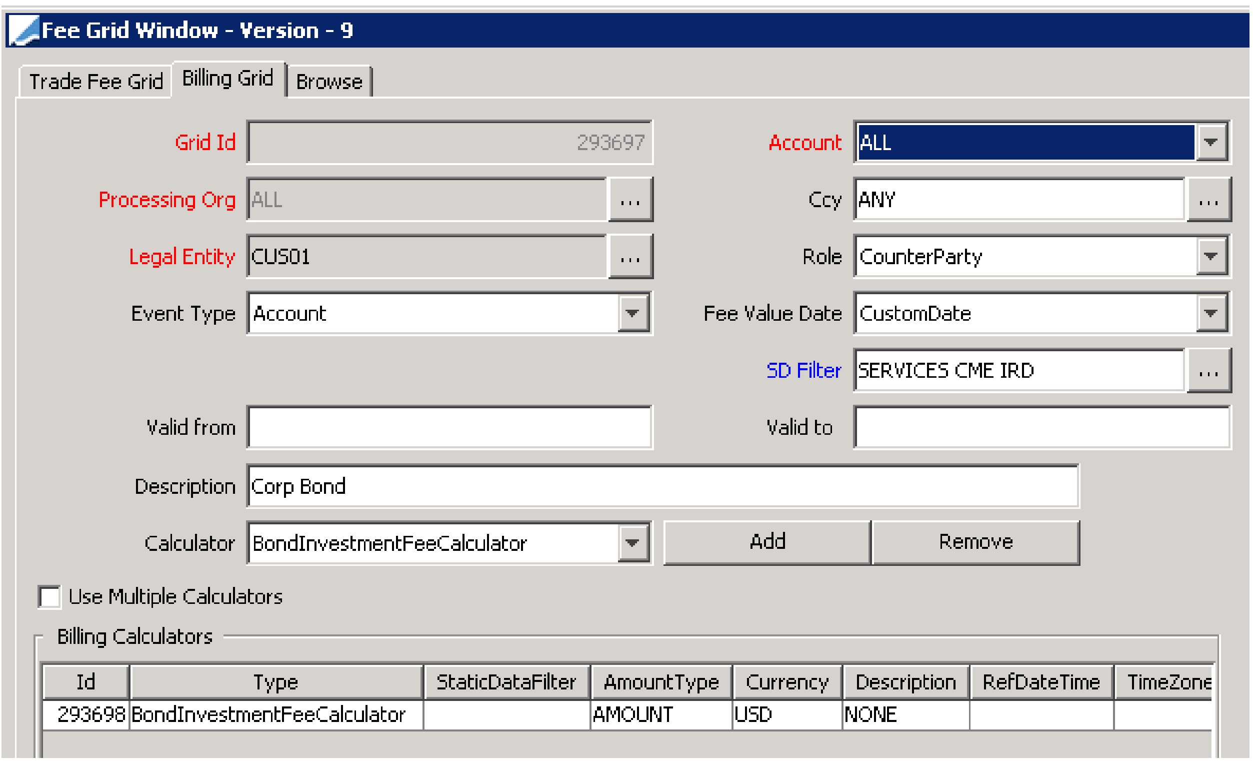
Add the fee type that you want to generate to the domain “BillingFeeType”. For example, “CORP_BONDS”.

You also need to add BondInvestmentFeeCalculator to the domain “billingCalculator”.

Setup details are described in the following sections.

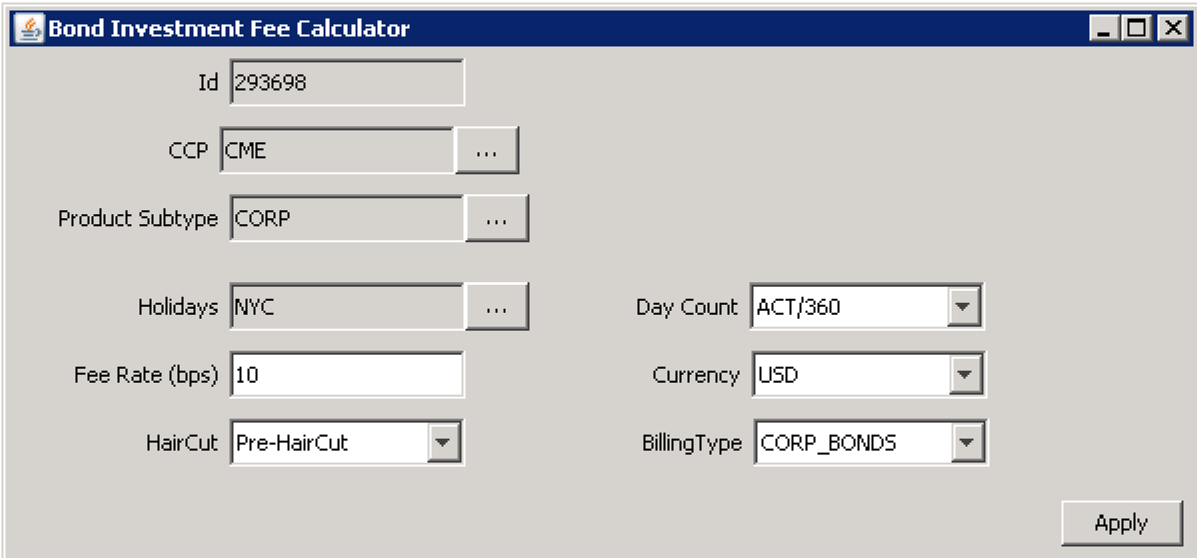
8.5.1 Billing Grid

From the Calypso Navigator, navigate to Configuration > Fees, Haircuts, & Margin Calls > Fee Grid, and select the Billing Grid panel to define billing grids.



Enter the criteria as needed.

Select the calculator BondInvestmentFeeCalculator and click **Add**.

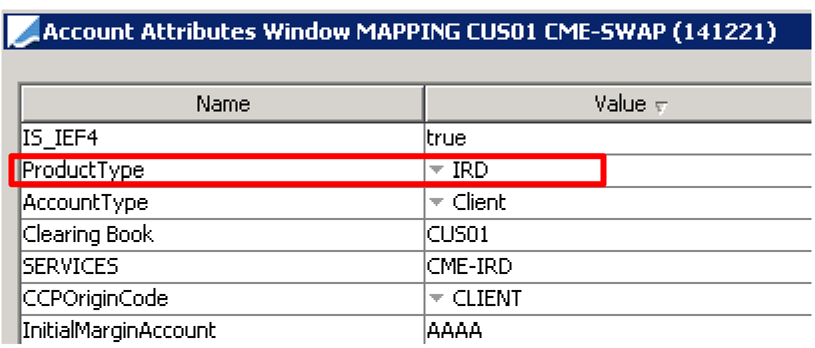


- Enter the details of the calculator.
- Set the billing type to the user-defined fee, CORP_BONDS in this example.
- Then click **Apply**.

Save the billing grid when you are done.

Billing Account Segregation by Clearing Service

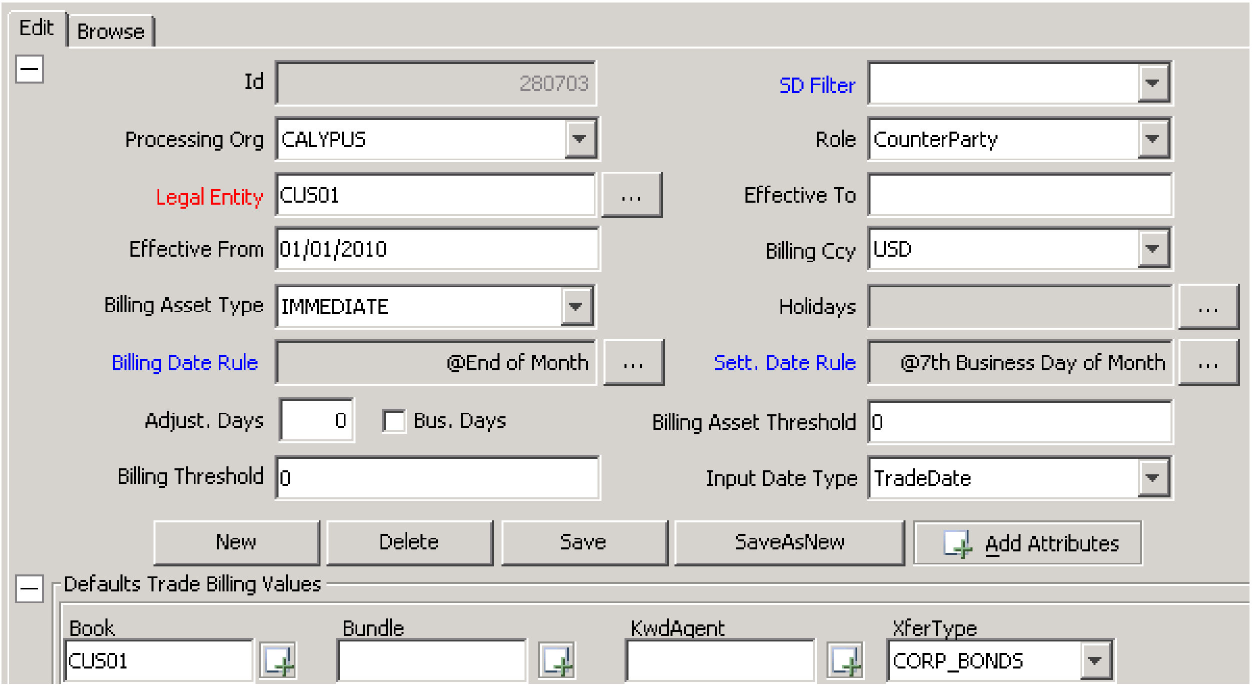
You can setup the account attribute ProductType on the billing account to segregate the billing fee by clearing service.



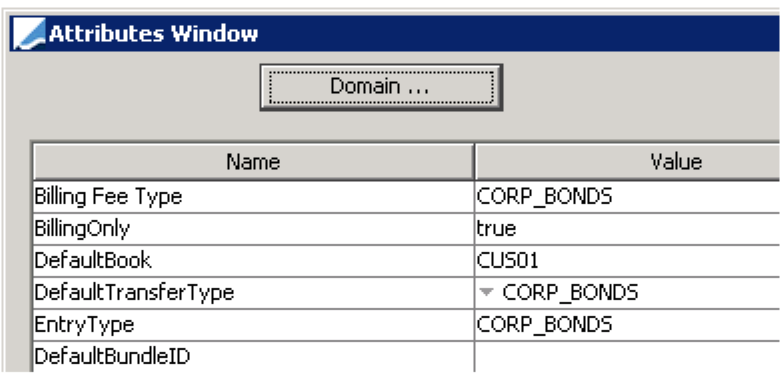
8.5.2 Fee Billing rule

The billing rule allows defining the billing frequency, and a billing threshold if needed.

Define the billing rule using Main Entry > Configuration > Fees, Haircuts & Margin Calls > Fee Billing Rule (menu action `refdata.FeeBillingRuleWindow`).



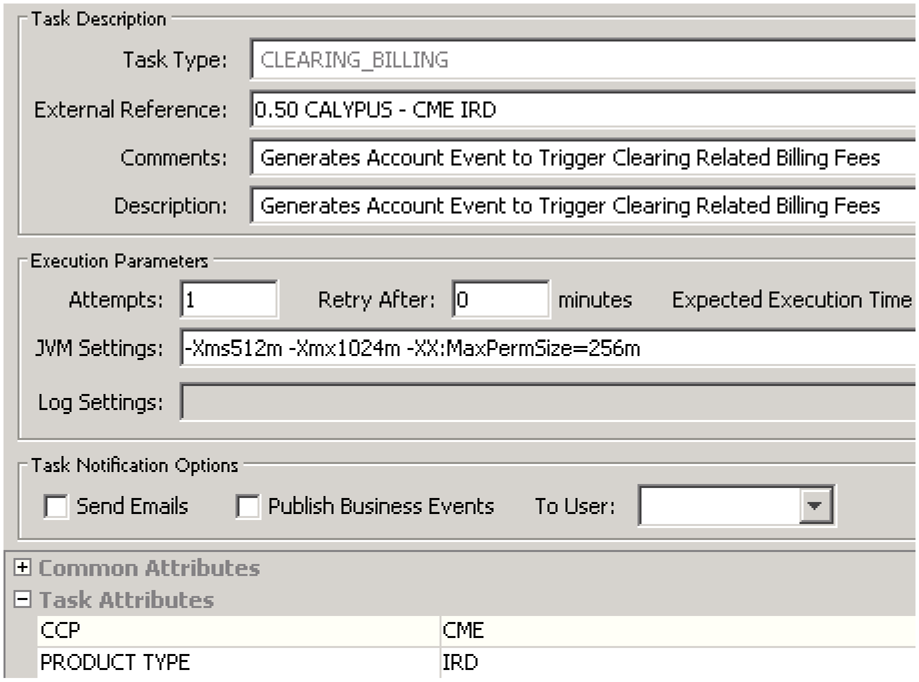
» Click **Add Attributes** to add the EntryType attribute.



Set EntryType = User-defined fee, “CORP_BONDS” in this example.

8.5.3 Fee Generation

Configure the CLEARING_BILLING scheduled task.



» Select the CCP for which you want to generate the fees.

» Select the product type as needed.

If the business holidays are set, and the valuation date is a holiday, the scheduled task fails. You can monitor the exception in the Task Station:

- Add EX_CLEARING_BILLING to the domain “eventType”.
- Add CLEARING_BILLING to the domain “exceptionType”.

The scheduled task PSEventAccountBilling events based on the billing grid.

The Billing engine subscribes to PSEventAccountBilling events and generates billing trades based on the billing rule.

The Billing 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 BillingEngine, with class name `com.calypso.engine.billing.BillingEngine`.

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

Please refer to Calypso Web Admin documentation for complete details.

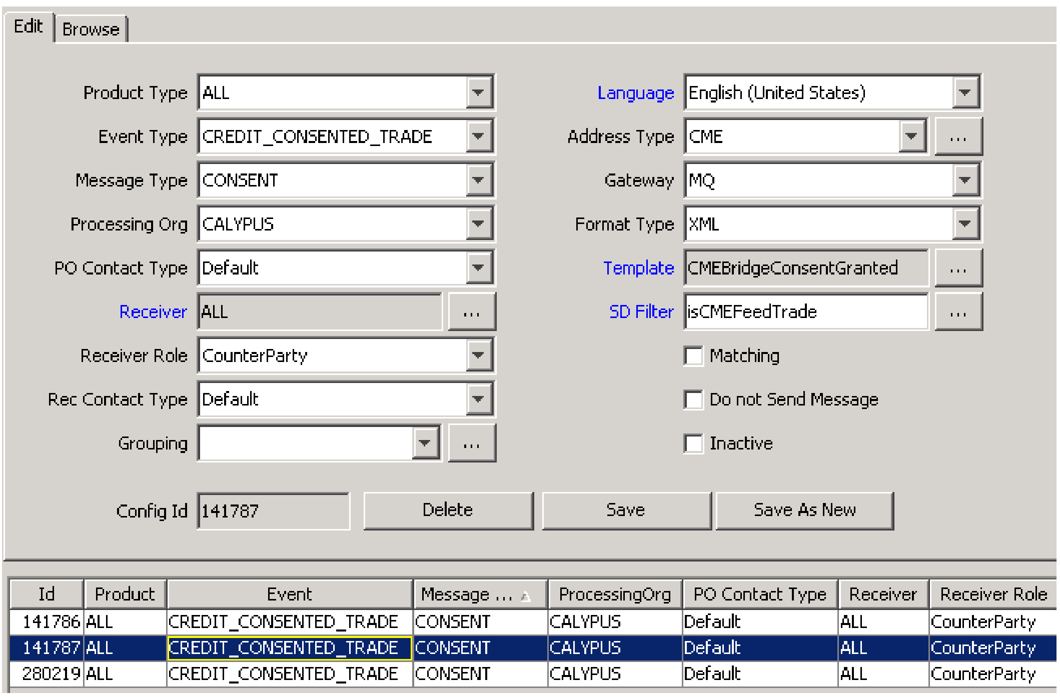
9 Message Configurations

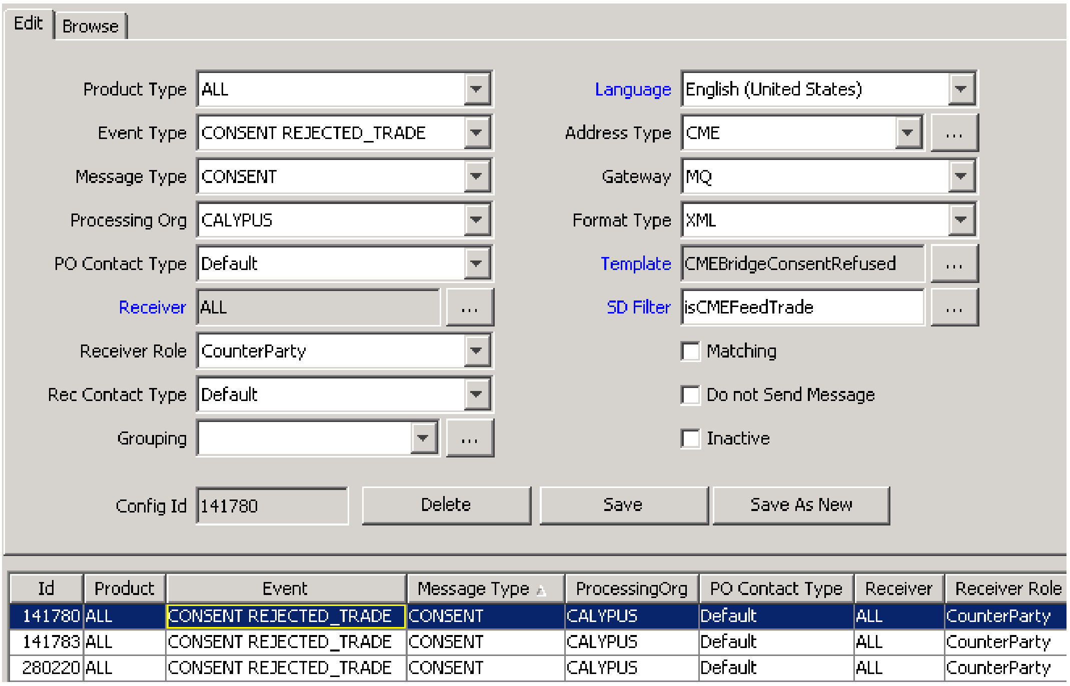
From the Calypso Navigator, navigate to Configuration > Messages & Matching > Message Set-up for defining messages.

9.1 CONSENT Messages

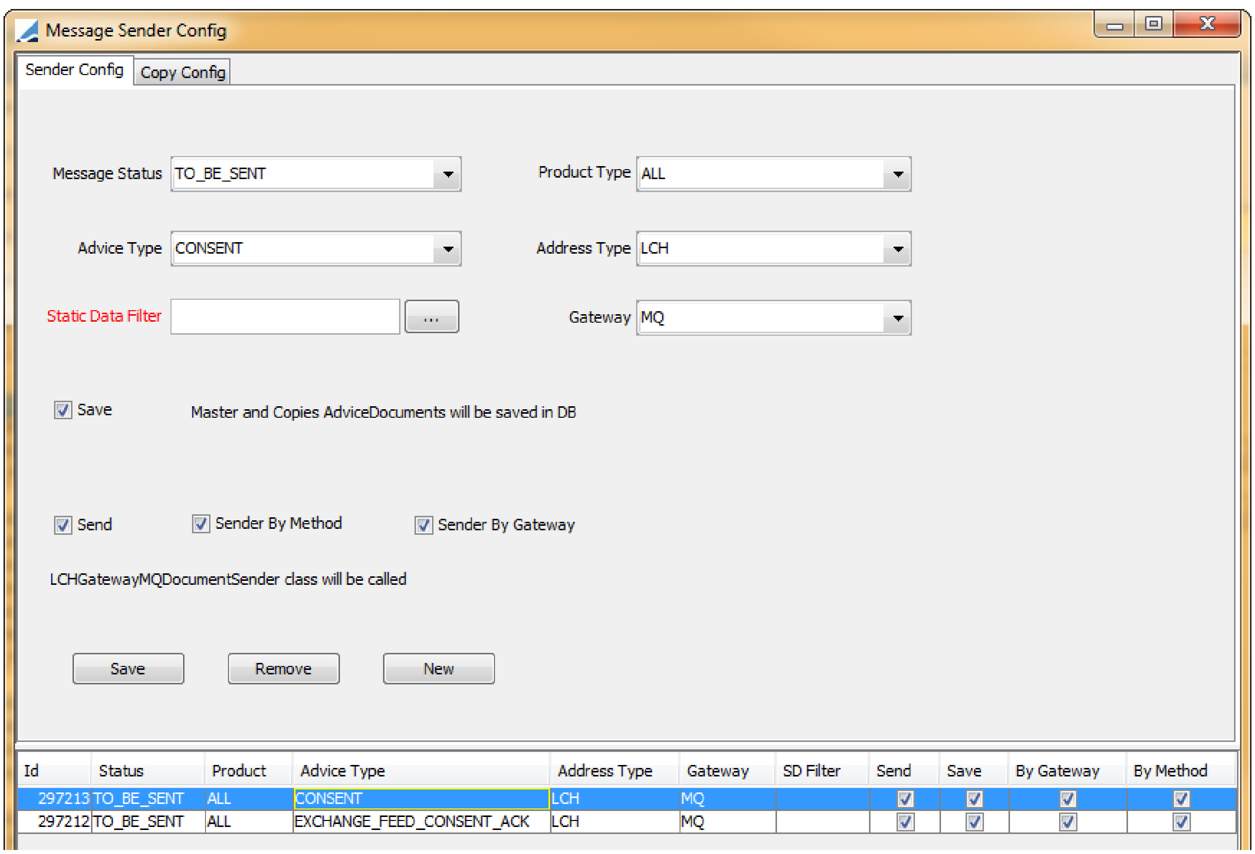
The CONSENT message is sent to the CCP once a trade has been approved / rejected in Calypso. Upon receipt of the CONSENT message, the CCP will clear / cancel the trade.

9.1.1 Message Setup



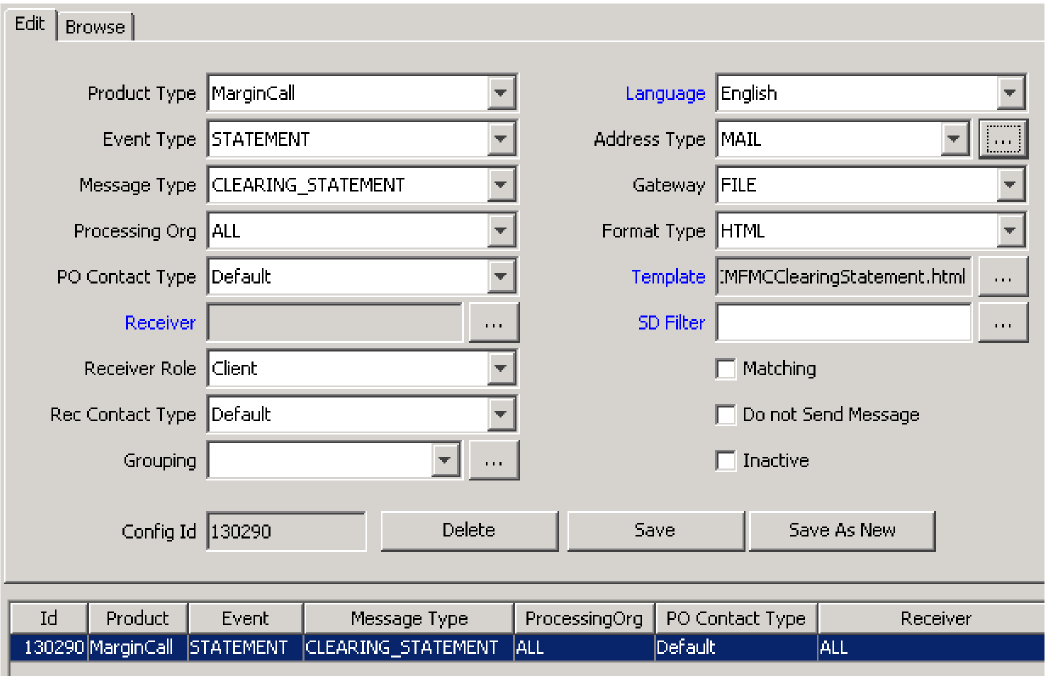


9.1.2 Message Sender Config



9.2 CLEARING_STATEMENT Messages

The CLEARING_STATEMENT message is the client statement – It is generated by the Message engine once the scheduled task CLEARING_STATEMENT sends the STATEMENT events.



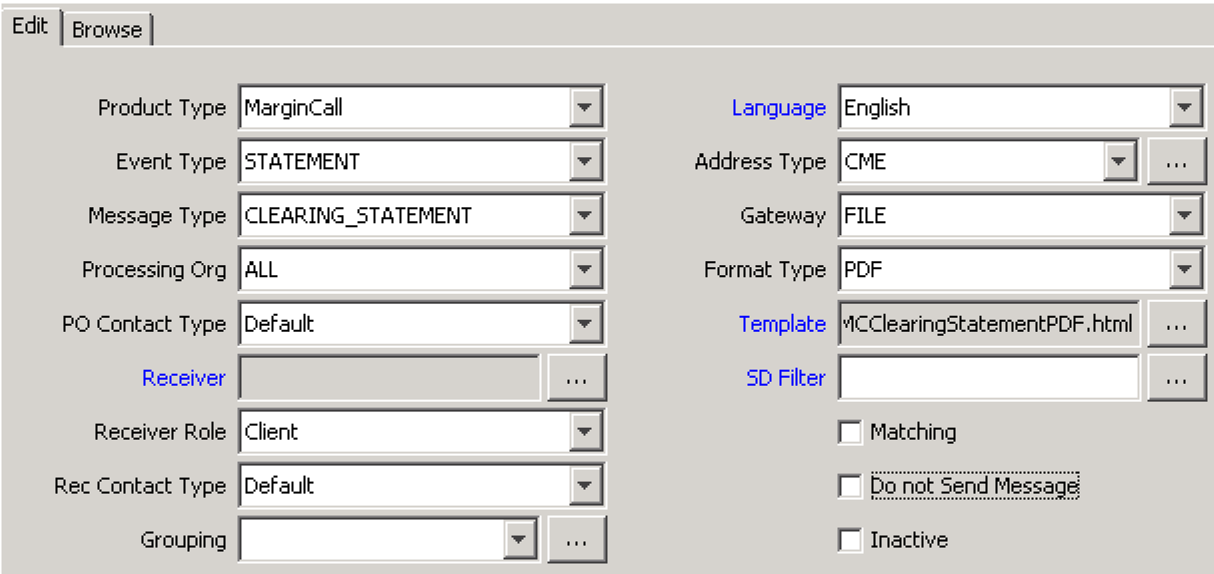
[NOTE: Receiver Role = Client]

We are using the role “Client” in this setup. It can also be “ExtCounterParty”.

▶ See On-Boarding an Individual Client for details.

You can select any HTML template – It will be overridden by the CLEARING_STATEMENT message formatter to use an XSL template.

If you also want to generate a PDF statement, add the following message configuration:



- Format Type = PDF
- Template = “CMFMCClearingStatementPDF.html”

9.2.1 Default Template

The location and name of the XSL template is set in domain “Clearing.Statement.stylesheetPath”, and defaults to “`resources/com/calypso/templates/ClearingStatement.xsl`”, identified as:

The location and name can be changed as needed.

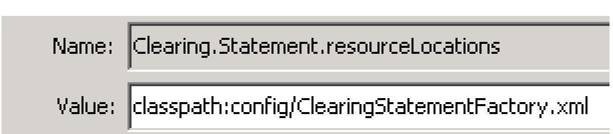
The XSL template can be customized as needed.

For example, you can easily replace the “logo” image, and any disclaimer in the “footer”.

```
<img src="https://www.calypso.com/images/logo.gif" alt="Logo"/>

<p class="FOOTER">

        Statement generated by Calypso Technology, 2013.

</p>
```

The actual content of the client statement is defined in the file “`resources/config/ClearingStatementFactory.xml`”.

Its location and name is set in domain “Clearing.Statement.resourceLocations”, and can be changed as needed.



[NOTE: If the “Excess/Deficit Including Pending Collateral” row name is customized in “ClearingStatementFactory.xml”, all occurrences of such name must also be replaced in “ClearingStatement.xsl”]

9.2.2 Defining a Template by Legal Entity

It is possible to override the default location of the template, and set it by legal entity, using the configuration file “`resources/com/calypso/tk/clearing/factory/ResourceClearingFactory.Statement.xml`”.

A sample configuration file is provided in “`resources/com/calypso/tk/clearing/factory/ResourceClearingFactory.Statement.xml.sample`”. You need to rename it to “`resources/com/calypso/tk/clearing/factory/ResourceClearingFactory.Statement.xml`” in order to use it.

If this file does not exist, the default template will be used instead.

```
<?xml version="1.0" encoding="UTF-8"?>

<beans xmlns="http://www.springframework.org/schema/beans"

        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:util="http://www.springframework.org/schema/util"

        xsi:schemaLocation="

                http://www.springframework.org/schema/util

                http://www.springframework.org/schema/util/spring-util-3.0.xsd

                http://www.springframework.org/schema/beans

                http://www.springframework.org/schema/beans/spring-beans-3.0.xsd"

        default-init-method="init" default-destroy-method="destroy">


        <!-- statementConfigurationPaths has to be a list of valid Spring resource paths. See
http://docs.spring.io/spring/docs/3.0.x/spring-framework-reference/html/resources.html#resources-app-ctx for
more info -->

        <!-- statementTemplatePath has to be either an absolute file path, or a classpath, with no classpath: or
file: prefix -->


        <!-- SAMPLES


        <bean id="calypsoUKresourceLocations"

                        class="com.calypso.tk.bo.clearing.statement.ClearingStatementResourcesLocator" >

                <meta key="LegalEntity" value="CALYPSO_UK"/>

                <property name="statementTemplatePath"

                        value="com/calypso/templates/custom_statement.xsl" />

                <property name="statementConfigurationPaths">

                        <list>
```

```
        <value>classpath:config/CustomUKClearingStatementFactory.xml</value>
        <value>config/OtherCustomUKClearingStatementFactory.xml</value>
                        </list>
                </property>
        </bean>

        <bean id="customerAresourceLocations"
class="com.calypso.tk.bo.clearing.statement.ClearingStatementResourcesLocator" />
                <meta key="LegalEntity" value="CUSTOMER_A" />
                <property name="statementTemplatePath"
value="/path/to/calypso/resources/com/calypso/templates/custom_statement.xsl" />
                <property name="statementConfigurationPaths">
                        <list>
<value>file:///path/to/calypso/resources/config/CustomerAClearingStatementFactory.xml</value>
                        </list>
                </property>
        </bean>

        END SAMPLES -->

</beans>
```

9.3 CVR_WORKSHEET Messages

This message type is used to generate the Collateral Valuation report.

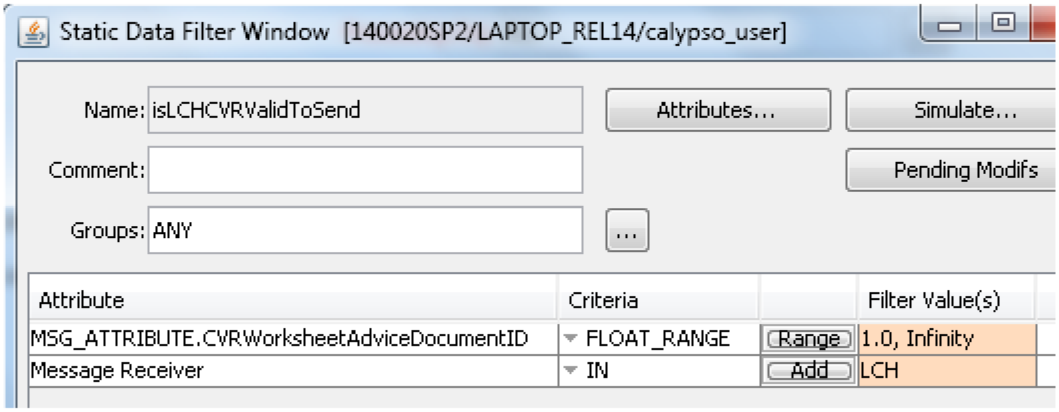
It is not necessary to setup a message configuration, but it is necessary to define a message workflow for this type of message.

The CVR_WORKSHEET message workflow can be imported using "<calypso home>/client/resources/CVR_WORKSHEET.wf".

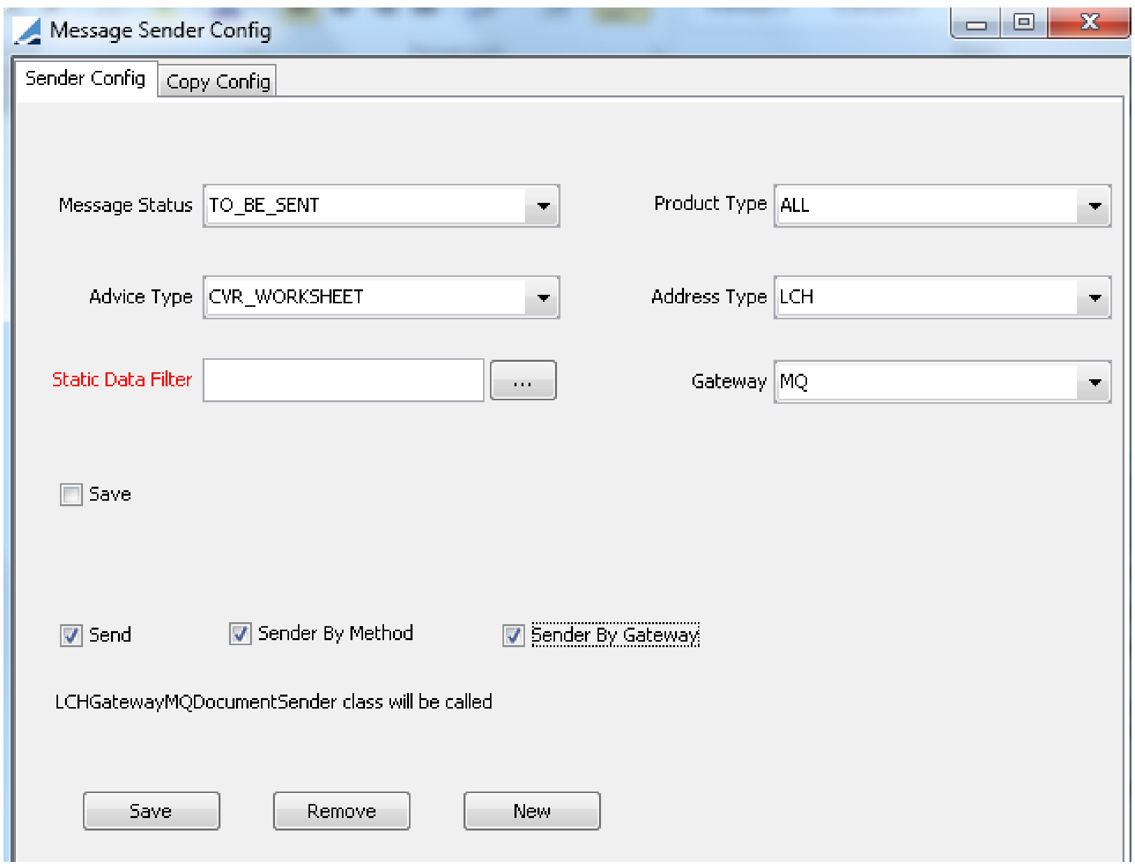
If you are clearing with LCH, you need to use the file "<calypso home>/client/resources/CVR_WORKSHEET_LCH.wf" instead. It adds the transition highlighted below for managing incoming collateralAllocation messages.

Orig Status	Action	Resulting Status	Subtype	Product Type	Processing Org
ACCEPTED	ACCEPT	ACCEPTED			
ACCEPTED	ACK	ACCEPTED			
ACKED	ACCEPT	REJECTED			
ACKED	REJECT	REJECTED			
EDITABLE	CANCEL	CANCELED	CVR_WORKSHEET	ALL	ALL
EDITABLE	EXPORT	EXPORTED	CVR_WORKSHEET	ALL	ALL
EDITABLE	UPDATE	EDITABLE	CVR_WORKSHEET	ALL	ALL
EXPORTED	AUTHORIZE	TO_BE_SENT	CVR_WORKSHEET Rule: PrepareCVRForSend Filter: isLCHCVRValidToSend	ALL	ALL
NONE	NEW	EDITABLE	CVR_WORKSHEET	ALL	ALL
REJECTED	ACK	REJECTED	CVR_WORKSHEET	ALL	ALL
REJECTED	REJECT	REJECTED	CVR_WORKSHEET	ALL	ALL
SENT	ACCEPT	ACCEPTED	CVR_WORKSHEET	ALL	ALL
SENT	ACK	ACKED	CVR_WORKSHEET	ALL	ALL
SENT	REJECT	REJECTED	CVR_WORKSHEET	ALL	ALL
TO_BE_SENT	SEND	SENT	CVR_WORKSHEET	ALL	ALL

Static data filter “isLCHCVRValidToSend”



It is also necessary to define a message sender configuration in order to send the report to LCH through MQ Series.



Once a CVR report is exported, from the CVR report or using the scheduled task CLEARING_EXPORT_CVR_WORSHEET, it is sent to LCH using the MQ connector LCHCVR.

MQ Series is configured using the following files:

- "`<calypso home>/client/resources/`LCHCVRbridge_config.properties.sample" (mandatory to send the outgoing CVR messages to LCH)

- "`<calypso home>/client/resources/`LCHCVRbridgeservice.properties.sample" (optional, used to receive response messages)

LCHCVRbridge_config.properties

Rename "`LCHCVRbridge_config.properties.sample`" to "`LCHCVRbridge_config.properties`", and modify as needed.

```
#
#  JMS properties file
#
#  REFER TO EXCHANGE FEED DOCUMENTATION FOR MORE INFO
#
#  JMSQueueIEAdaptor properties
#
#    Note: if queue.ackType is not set to auto then
#          failed messages are not acknowledged to JMS and
#          will be reconsumed when the engine restarts
#
#      Queue-specific properties are prefixed by the queue name
#
input.queue.name=JQUEUE.LCH.CALYPSO
JQUEUE.LCH.CALYPSO.queue.ackType=auto
JQUEUE.LCH.CALYPSO.queue.persist=false
JQUEUE.LCH.CALYPSO.queue.transacted=false

output.queue.name=JQUEUE.CALYPSO.LCH
JQUEUE.CALYPSO.LCH.queue.ackType=auto
JQUEUE.CALYPSO.LCH.queue.persist=false
JQUEUE.CALYPSO.LCH.queue.transacted=false

jms.queue.hostname=localhost
jms.queue.port=1414
jms.queue.connectionUserName=
jms.queue.connectionPassword=
jms.queue.transportType=MQJMS_TP_CLIENT_MQ_TCPIP
jms.queue.queueManager=QM.LCH.CALYPSO
jms.queue.channel=SYSTEM.ADMIN.SVRCONN
```

LCHCVRbridgeservice.properties

Rename "`LCHCVRbridgeservice.properties.sample`" to "`LCHCVRbridgeservice.properties`", and modify as needed.

```
bridge.counterparty.attribute.identifier=LCH_CPTY

###########################################
# Bridge original, work in progress and  #
# final transformation directory of the   #
# incoming message.                          #
# If this option is not set,            #
# <CALYPSO_HOME>/<Connection>           #
# will be used by default                    #
###########################################
#file.bridge.log.directory=C:\\LCH



REQUESTCONSENT_SWAP_BRIDGE_XSLT=LCH_REQUESTCONSENT_SWAP.xslt
CLEARINGCONFIRMED_SWAP_BRIDGE_XSLT=LCH_CLEARINGCONFIRMED_SWAP.xslt
SWAP_TRANSFORMER_CLASS=com.calypso.tk.bo.bridge.transformer.LCHSWAPMappingTransformer
KEYWORDS_REQUESTCONSENT_SWAP_XSLT=KEYWORDS_LCH_REQUESTCONSENT_SWAP.xslt
KEYWORDS_CLEARINGCONFIRMED_SWAP_XSLT=KEYWORDS_LCH_CLEARINGCONFIRMED_SWAP.xslt

REQUESTCONSENT_FRA_BRIDGE_XSLT=LCH_REQUESTCONSENT_FRA.xslt
CLEARINGCONFIRMED_FRA_BRIDGE_XSLT=LCH_CLEARINGCONFIRMED_FRA.xslt
FRA_TRANSFORMER_CLASS=com.calypso.tk.bo.bridge.transformer.LCHFRAMappingTransformer
KEYWORDS_REQUESTCONSENT_FRA_XSLT=KEYWORDS_LCH_REQUESTCONSENT_FRA.xslt
KEYWORDS_CLEARINGCONFIRMED_FRA_XSLT=KEYWORDS_LCH_CLEARINGCONFIRMED_FRA.xslt

RULE_HANDLER=com.calypso.tk.bo.bridge.handler.LCHCVRRuleHandler



# BRIDGE BO Messages default sender and receiver.
BridgeMessageDefaultSender=LCH
BridgeMessageDefaultReceiver=CALYPSO

ThreadPoolSize=5
# Look for file changes every xx-seconds.
```

```
interval=10

##########################################

# Message validator list                 #

# A list of xslt files located in        #

# /resources/calypso/mapping/            #

# for incoming message validation by     #

#  message structure                    #

##########################################

ValidatorFiles=exchange_feed_clearing_confirmed_check_fpml5.3.xslt,exchange_feed_clearing_status_check_fpml5.3.xslt,exchange_feed_request_consent_check_fpml5.3.xslt,exchange_feed_consent_acknowledgement_check_fpml5.3.xslt,exchange_feed_clearing_refused_check_fpml5.3.xslt,exchange_feed_service_notification_check_fpml5.3.xslt,exchange_feed_position_report_check_fpml5.3.xslt,exchange_feed_lch_data_document_check_fpml5.3.xslt,exchange_feed_message_rejected_check_fpml5.3.xslt
```

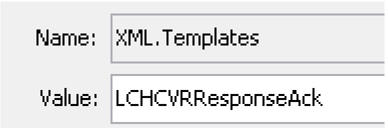
The clearing member is identified in the output file using the FCM BIC (external name of the house clearing account).

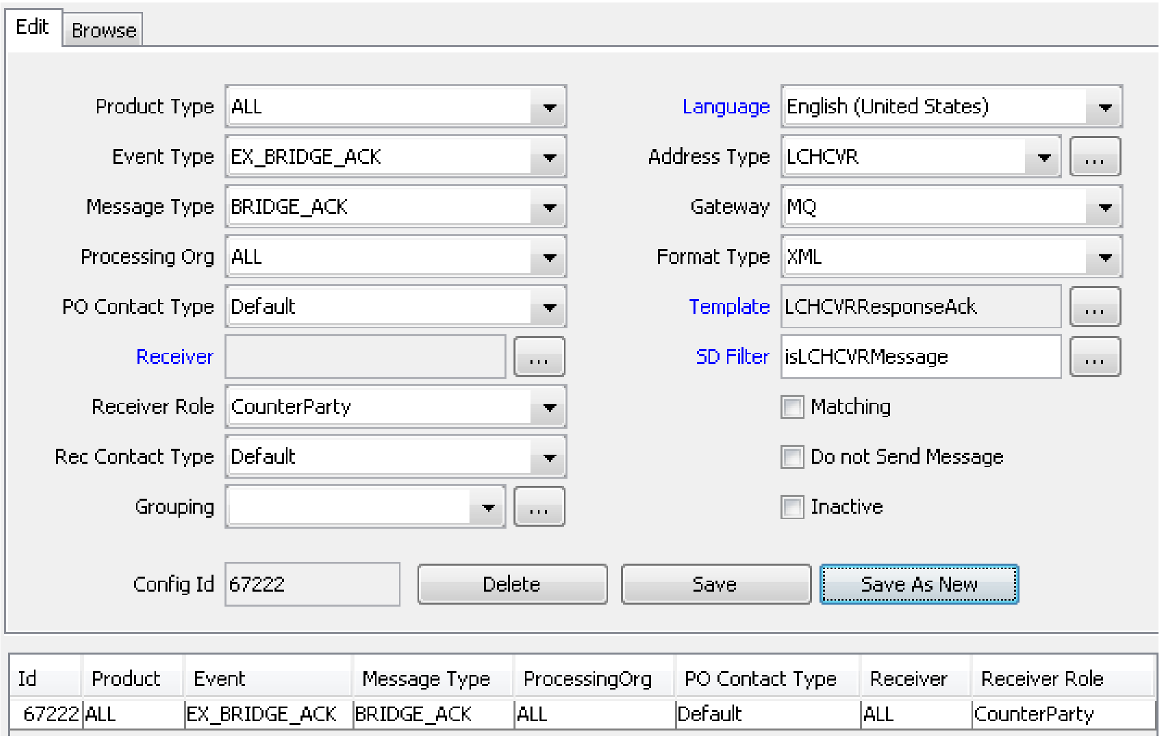
9.4 BRIDGE_ACK Messages

BRIDGE_ACK messages are sent to acknowledge that collateralAllocation BRIDGEMSG messages have been received.

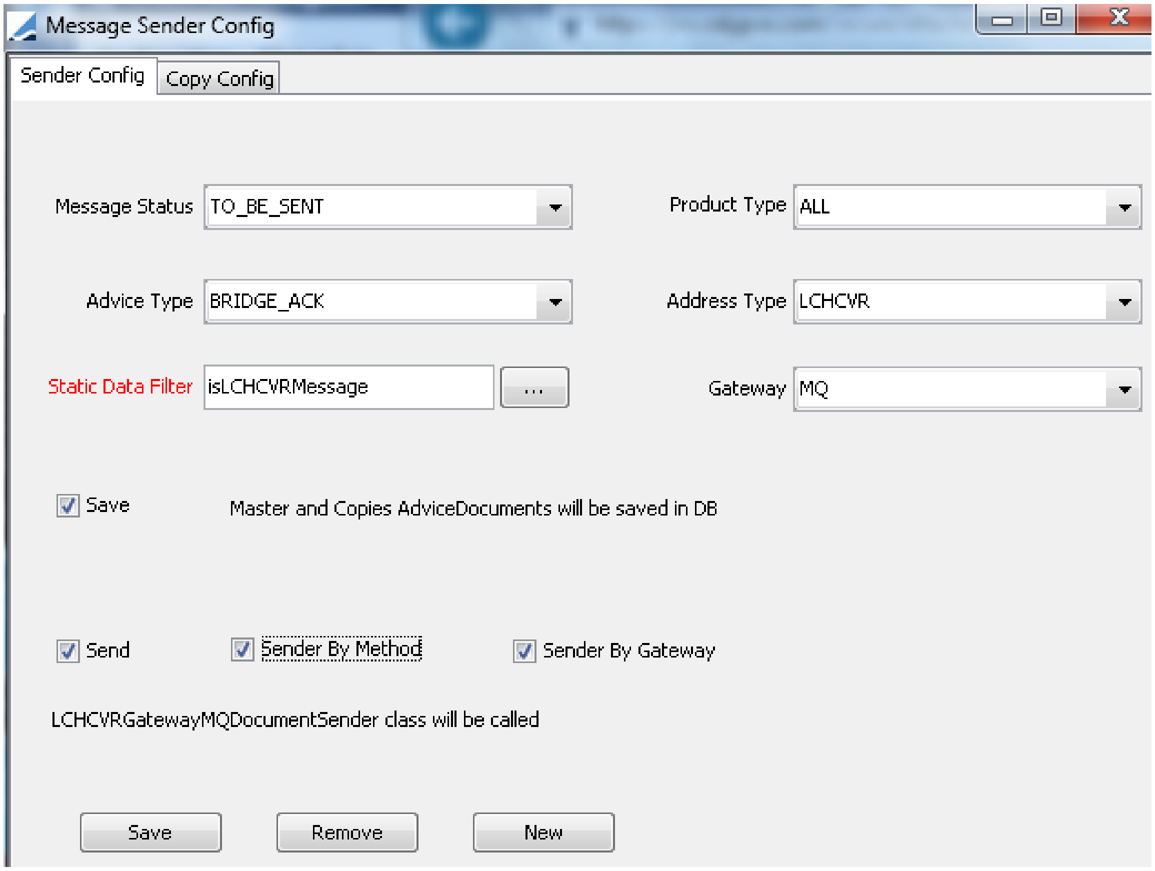
9.4.1 Message Setup

You need to add “LCHCVRResponseAck.html” to the domain “XML.Templates” if it is not available for selection.




Edit
Browse
Product Type
ALL
Event Type
EX_BRIDGE_ACK
Message Type
BRIDGE_ACK
Processing Org
ALL
PO Contact Type
Default
Receiver
Receiver Role
CounterParty
Rec Contact Type
Default
Grouping
Language
English (United States)
Address Type
LCHCVR
Gateway
MQ
Format Type
XML
Template
LCHCVRResponseAck
SD Filter
isLCHCVRMessage
Matching
Do not Send Message
Inactive
Config Id
67222
Delete
Save
Save As New
Id
Product
Event
Message Type
ProcessingOrg
PO Contact Type
Receiver
Receiver Role
67222
ALL
EX_BRIDGE_ACK
BRIDGE_ACK
ALL
Default
ALL
CounterParty

9.4.2 Message Sender Config



9.4.3 Message Workflow

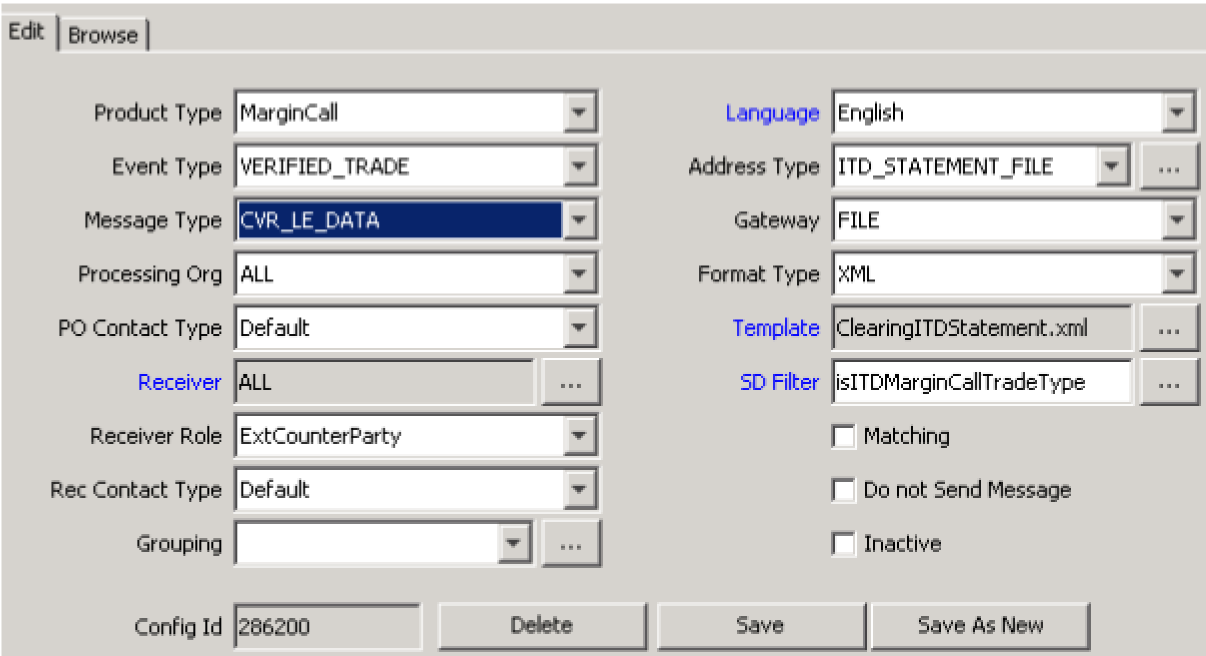
The BRIDGE_ACK message workflow can be created using the file "<calypso home>/client/resources/workflow/bridge_ack.wf".

Orig Status	Action	Resulting Status	Subtype	Product Type	Processing Org
NONE	NEW	PENDING	BRIDGE_ACK	ALL	ALL
PENDING	AUTHORIZE	TO_BE_SENT	BRIDGE_ACK	ALL	ALL
SENT	SEND	SENT	BRIDGE_ACK	ALL	ALL
TO_BE_SENT	SEND	SENT	BRIDGE_ACK	ALL	ALL

9.5 CVR_LE_DATA Messages

This message type is used to generate the report LSOC CVR Static Data.

9.5.1 Message Setup



9.5.2 Message Workflow

Orig Status	Action	Resulting Status	Subtype	Product Type	Processing Org
NONE	NEW	PENDING	CVR_LE_DATA	ALL	ALL
PENDING	TO_SEND	TO_BE_SENT	CVR_LE_DATA	ALL	ALL
TO_BE_SENT	SEND	SENT	CVR_LE_DATA	ALL	ALL
TO_BE_SENT	CANCEL	CANCELED	CVR_LE_DATA	ALL	ALL
SENT	CANCEL	CANCELED	CVR_LE_DATA	ALL	ALL
SENT	RESEND	SENT	CVR_LE_DATA	ALL	ALL

9.6 CFTC_REPORTING Messages

This message type is used to generate the reports Liquidating Deficit and Aged Margin Calls.

It is not necessary to setup a message configuration, but it is necessary to define a message workflow for this type of message.

Orig Status	Action	Resulting Status	Subtype	Product Type	Processing Org
NONE	NEW	CREATED	CFTC_REPORTING	ALL	ALL
CREATED	CANCEL	CANCELED	CFTC_REPORTING	ALL	ALL

10 Scheduled Tasks Setup

The following scheduled tasks need to be configured for each CCP.

They download the CCP files using the following property file:

- "<calypso home>/client/resources/config/clearingconnection.properties"

See Clearing Member Setup for details.

Once the files are retrieved from the CCP, they are stored in the folder specified in the property file "<calypso home>/client/resources/config/clearing.properties" if it exists.

Otherwise, they are stored by default under "<user home>\Calypso\clearing" on the server where the Scheduler engine is running, and for the user running the Scheduler engine.

From the Calypso Navigator, navigate to Configuration > Scheduled Tasks (menu action `scheduling.ScheduledTaskListWindow`) to configure the scheduled tasks. Choose this menu item to bring up the Scheduled Task Definitions & Scheduling window.

10.1 Flow Types and Fees

The scheduled tasks create Clearing Transfer trades to reflect the clearing activity. Clearing Transfer trades are of type CASH_SETTLEMENT.

CASH_SETTLEMENT Clearing Transfer trades represent the cashflow amounts that impact the cash accounts. They are used for payment purposes and these amounts have a direct impact on the Cash Account balances posted to the client statements.

They are associated with the following fees:

- CS_PAI - Price Alignment Interest. Interest paid on Mark-to-Market amounts. Taken from the CCP file.
- CS_COUPON - Interest associated with the swap trades (CME). Taken from the CCP file.
- CS_INTERESTS - Interest associated with the swap trades (LCH). Taken from the CCP file.
- CS_FRA_PAYMENT - Settlement associated with the FRA trades. Taken from the CCP file.
- CS_CASH_DELIVERY – Cash associated with the FX NDF trades. Taken from the CCP file.
- CS_VARIATION – Variation margin taken from the CCP file (EOD or intraday for LCH GBP FRAs)
- CS_FEES – CME only - Fees associated with the trades. Taken from the CCP file.
- CS_CONSIDERATN – LCH only - Fees associated with the swap trades. Taken from the CCP file.
- CS_NPV_ADJUSTED – Adjusted NPV. Taken from the CCP file.
- CS_NPV_REV – Reversal of CS_NPV_ADJUSTED, the day after.

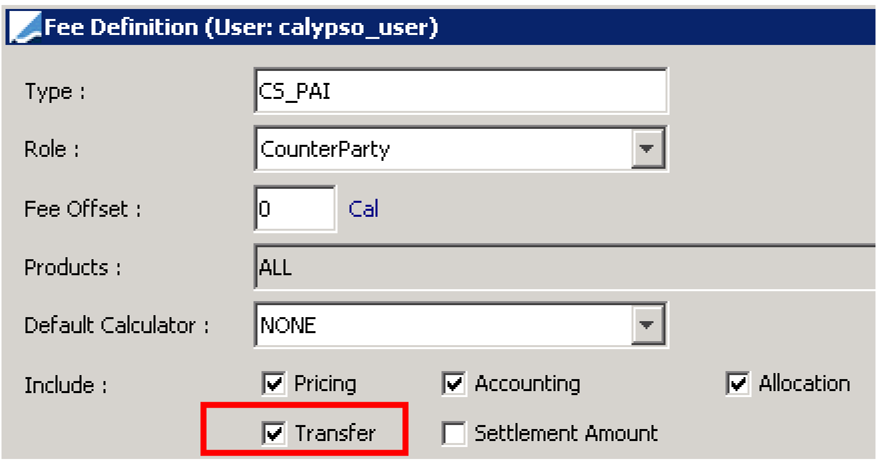
We recommend that CASH_SETTLEMENT trades be settled automatically on their value date since the CCP takes/pays the money from/to the clearing member's nostro account, and this must be reflected on the client's cash accounts. To do so, you just need to add the rule CheckToBeSettled in the transfer workflow on the transition VERIFIED – AUTO_SETTLE – SETTLED.

One Transfer for Each Fee

In order to generate proper information for the client statement, the system must generate one transfer for each fee of the trade.

> **Note: the fee definitions MUST have the Transfer option checked, except for fee CS_VARIATION.**

Example for CS_PAI:



All these fees are created by the system upon installation.

10.2 Settlement Lag

(1) For all flow types, the Settle Date is set based on the Settle Date of the Flow tag if one is provided. If a Settle Date is not provided, this date is calculated by adding the number of business days defined in the Currency Settlement Lag of the flow's settlement currency according to that currency's holiday calendar.

(2) If the CCP legal entity attribute "UseAlternateSettleDateMethod" is false or null the system follows the logic defined in (1). If set to true, the following logic applies:

T+2 currencies

- SETTLE DATE=Trade Date + 2 days (excluding weekends)
- If SETTLE DATE falls under currency Holiday, then it is set to the next business day for that currency.

T+1 currencies

- SETTLE DATE=Trade Date + 1 day (excluding weekends)
- If SETTLE DATE falls under currency Holiday, then it is set to the next business day for that currency.

"UseAlternateSettleDateMethod" should be set to true for LCH and false for CME.

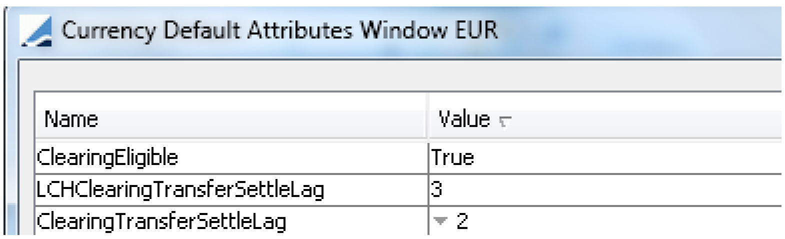
Settlement Date = Trade Date + Settlement Lag

The Settlement Lag of all Clearing Transfers is driven by the currency of the transfer in the following manner:

- If a settlement lag is specified in the currency attribute “<CCP name>ClearingTransferSettleLag”, it is used in priority.
- Otherwise, we use the settlement lag specified in the currency attribute “ClearingTransferSettleLag” if any.
- Otherwise, the settlement lag is 1 business day.

[NOTE: If you only set ClearingTransferSettleLag, it will apply to all CCPs]

Sample setup (remember that attribute names are case-sensitive):



In this example, the settlement date for CME clearing transfer trades would be Trade Date + 2, and the settlement date for LCH Clearing Transfer trades would be Trade Date + 3.

This sample setup is not realistic – It is only used to illustrate the configuration capability.

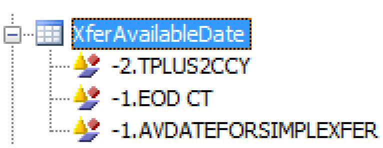
10.3 Available Date

The Inventory positions MUST be based on the Available Date.

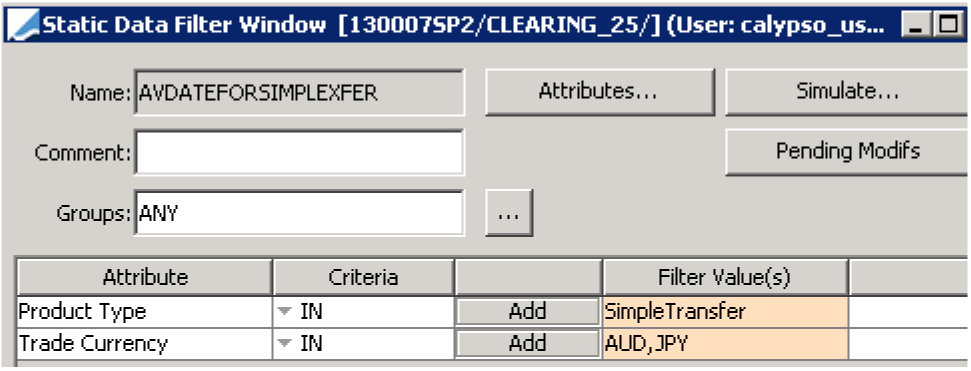
As a result, you need to define how the Available Date is set for the various trades involved in the clearing activity.

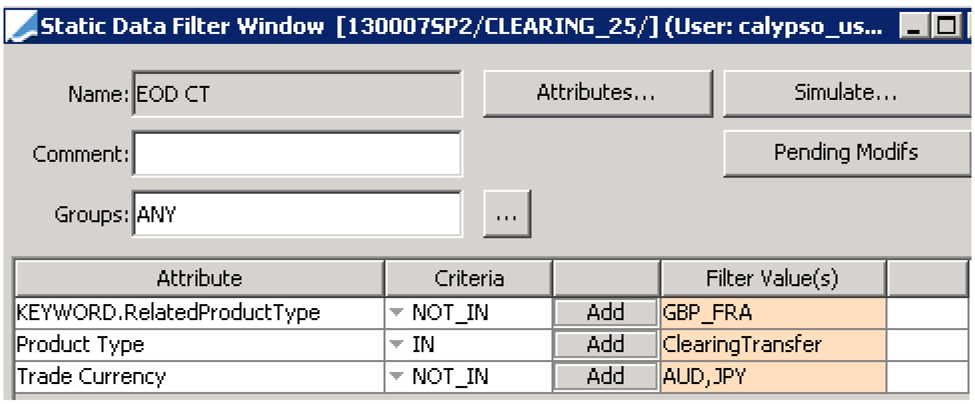
By default, the Available Date is set to the Trade Date. This behavior can be customized using the domain “XferAvailableDate” to determine the Available Date based on the Settlement Date +/- a number of days for a given static data filter. You need to setup the following:

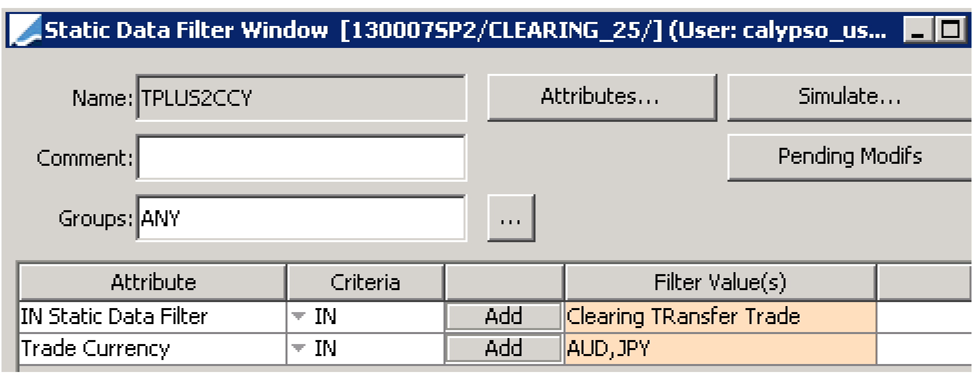
- Value = “-1.AVDATEFORSIMPLEXFER” where “AVDATEFORSIMPLEXFER” is a static data filter that filters simple transfers in AUD and JPY – The available date will be set to the settlement date -1 day.
- Value = “-1.EOD CT” where “EOD CT” is a static data filter that filters non GBP FRAs clearing transfers in currencies different from AUD and JPY – The available date will be set to the settlement date -1 day.
- Value = “-2.TPLUS2CCY” where “TPLUS2CCY” is a static data filter that filters clearing transfer trades in AUD and JPY - The available date will be set to the settlement date -2 days.



Static Data Filters


Static Data Filter Window [130007SP2/CLEARING_25/] (User: calypso_us...
Name: AVDATEFORSIMPLEXFER
Attributes...
Simulate...
Comment:
Pending Modifs
Groups: ANY
...
Attribute
Criteria
Filter Value(s)
Product Type
IN
Add
SimpleTransfer
Trade Currency
IN
Add
AUD,JPY


Static Data Filter Window [130007SP2/CLEARING_25/] (User: calypso_us...
Name: EOD CT
Attributes...
Simulate...
Comment:
Pending Modifs
Groups: ANY
...
Attribute
Criteria
Filter Value(s)
KEYWORD.RelatedProductType
NOT_IN
Add
GBP_FRA
Product Type
IN
Add
ClearingTransfer
Trade Currency
NOT_IN
Add
AUD,JPY


Static Data Filter Window [130007SP2/CLEARING_25/] (User: calypso_us...
Name: TPLUS2CCY
Attributes...
Simulate...
Comment:
Pending Modifs
Groups: ANY
...
Attribute
Criteria
Filter Value(s)
IN Static Data Filter
IN
Add
Clearing TRansfer Trade
Trade Currency
IN
Add
AUD,JPY

10.4 CDML Files Processing

The CDML files processing is a two-step process.

You first need to store the files into the system using the scheduled task CLEARING_TRANSLATE_TO_CDML. Then you can process the files using the scheduled task CLEARING_PROCESS_FROM_CDML.

The scheduled tasks CLEARING_TRANSLATE_TO_CDML and CLEARING_PROCESS_FROM_CDML use the timezone defined in the scheduled task.

10.4.1 Supported Files

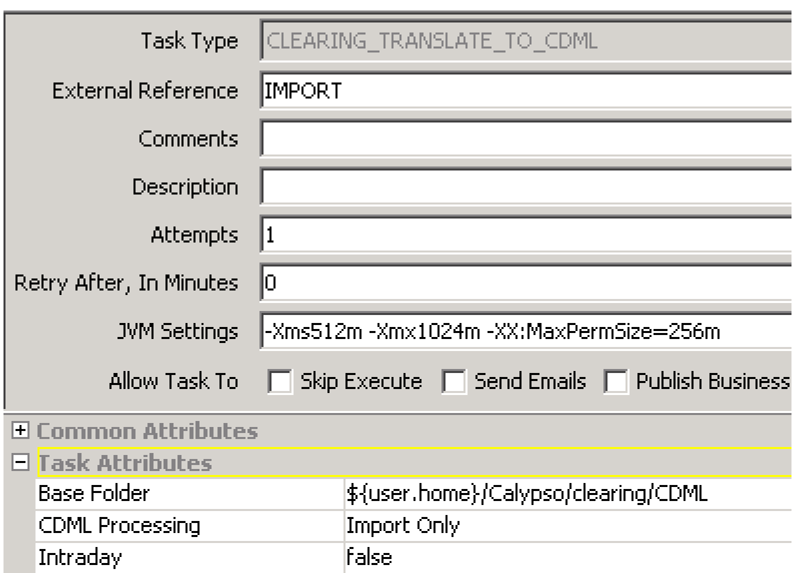
CCP	Trade Valuation	Initial Margin
CME	IRSTR	IRSMR3
LCH	91xce(client) 91xe(house) REP00002c (client) REP00002 (house) REP000105c (client) REP105 (house) REP00084c (client) REP000305c (client) REP00022a	REP00086c (client) REP00086 (house) REP00050g (client)
LCHPORTFOLIO	16c(client) 16b(house)	
LCH FX	FREP0009 (CLIENT) FRP0009 (HOUSE)	FREP0026c (client) FREP0014 (house)
LCH / LCH SA REPOCLEAR	RREP1006_MARGIN.xml RREP1005_PAYMENTS.xml	RREP1006_MARGIN.xml
HKEX	WEB Settle Details IRS_C (Client) WEB Settle Details IRS (House) WEB Money Settle_C (client) WEB Money Settle (House) WEB PAI (House) WEB ClientPAI (Client)	EOD: Web IM Call Amt (Client and House) ITD: WEB MRCleared (Client and House)

CCP	Trade Valuation	Initial Margin
ICE	PositionMTMMarginDetail report (NPV). MarkToMarketMarginInterestDetail report (PAI). TradePaymentDetail report (Upfront fees, Coupons, Credit Events).	Client gross Margin
EUREX	RPTCB202 RPTCC203 RPTCD200 RPTCI280	RPTCC204
COMDER	FXNDF_Trades_Cleared FXNDF_Maturing_Today	EOD_IM_Report

10.4.2 CLEARING_TRANSLATE_TO_CDML

The scheduled task scans the subfolders (that represent the CCPs) and tries to find pre-defined sets of CCPs EOD reports needed to generate the CDML reports.

The scheduled task can be run multiple times. If it finds new information (e.g. EOD reports for another CCP), it will add this CCP data to the existing CDML report and will create a new version of the report.



The timezone in the Common Attributes is mandatory.

- Base Folder - Enter the location of the files.

For the mode “Generation plus Import”, the raw CCP files need to be organized in subfolders by CCP short name.

For the mode “Import” only, the folder contains the CDML files to be imported into the system.

» CDML Processing - Select the type of CDML processing “Import Only” or “Generation plus Import”.
» Select Intraday = false

The scheduled task produces two types of XML reports:

- tradeValuationReport
- initialMarginRreport

LCH Producers

The LCHPORTFOLIO CDML producer is added to process Trade Valuation using position based files. The reason for adding this is to allow clearing members to keep up with client statement generation and EOD processing SLAs. There is also the LCH CDML producer which considers trade level information such as 91xce, 2c and 105c however LCH generates these files very late which delays EOD processing. LCHPORTFOLIO considers 16c and 16b files for VM flows calculation and these are available at position level. To make sure LCH v/s LCHPORTFOLIO producers are used you can use the attribute “Ignore Producers” which accepts comma separated values. You can ignore LCH or LCHPORTFOLIO based on requirement.

HKEX Intraday Initial Margin

The Clearing Member receives complete margin requirement details from the EOD files sourced by OTC Clear HKEX. However, this process is executed at EOD which leads to a delay in loading PL marks for Risk Reporting. Hence, to provide the details within time, the system provides a CDML ITD task to be set up to source the Initial Margin amount.

OTC Clear HKEX has set up this report mainly for cleared trades. It sets out the Total Margin requirement for each Position Account maintained at the Clearing Member at both House and Client level for all OTC products. Hence, we will see one position account for house and multiple position accounts for client.

It includes all margin component requirements, but we will only be sourcing Initial Margin Amount as per the Clearing Member requirement.

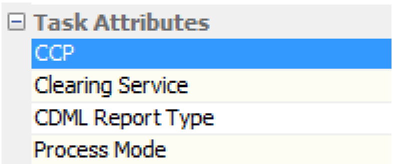
For HKEX Intraday Initial Margin, set Intraday = true.

OTC Clear HKEX provides the updated file every hour at the file location, hence, the scheduled task must pick the latest file. In that case, a logic has been set up on the scheduled task to consider the timestamp present in the filename to identify the latest file. The date attached to the file name is considered as the COB/ processing date.

10.4.3 CLEARING_PROCESS_FROM_CDML

The scheduled task CLEARING_PROCESS_FROM_CDML consumes the imported tradeValuationReport and initialMarginRreport CDML reports.

It creates CASH_SETTLEMENT Clearing Transfer trades, Collateral Exposure trades, and PL Marks.



The timezone in the Common Attributes is mandatory.

Attributes

- CCP: Select one or more CCPs (CCP short name). See CCP Lookup below.
- Clearing Service: Select one or more clearing services.
- CDML Report Type: Select All, initialMarginReport, or tradeValuationReport.
- Process Mode:
  - If you have selected the report type “tradeValuationReport”, you can select All, Clearing Transfers, or Cleared Trade Marks, to create Clearing Transfer trades only, PL Marks only, or both (All).
  - If you have selected the report type “initialMarginReport”, you can select Collateral Exposures to create Collateral Exposure trades.

These attributes allow you to process CDML for any combination of PO, CCP, Clearing Service for generation of CT, PL marks and Initial Margin exposure.

CCP Lookup

The CCP lookup uses the following mapping:

Name = CLEARING/CCPShortNames

Interface Value = <CCP legal entity short name>

Calypso Value = <expected CCP value>

When the CCP short name is selected in a CDML scheduled task, it will be matched to the legal entity attribute <expected CCP value>_CPTY.

Example:

For the LCH CCP (LCH is the value expected by Calypso), you can define the CCP legal entity short name as “LCH CLEARNET LTD”. In this case, the mapping should be:

Name = CLEARING/CCPShortNames

Interface Value = LCH CLEARNET LTD

Calypso Value = LCH

And the LCH CLEARNET LTD legal entity should have the attribute LCH_CPTY = LCH CLEARNET LTD.

If the mapping does not exist, the fallback method is to lookup the legal entity for the expected CCP value (example LCH).

LCH EOD NPV Adjustments

CS_NPV_REV and CS_VARIATION are adjusted from report 305c if Client-facing VM margin call contract attribute SETTLEMENT_TYPE = ADJ.

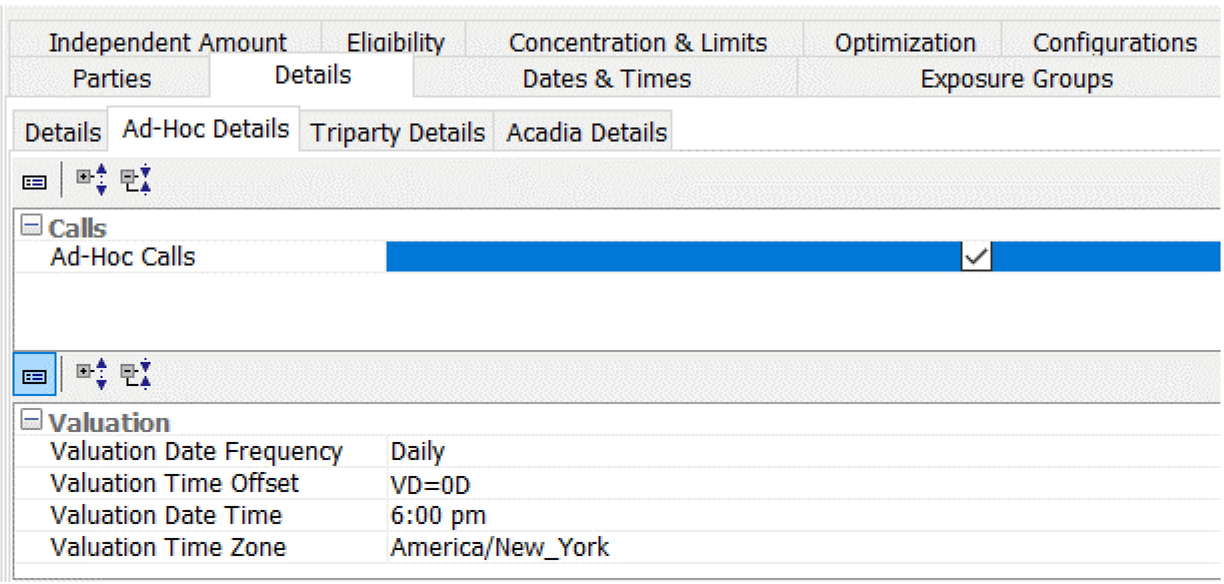
HKEX Intraday Initial Margin

For HKEX Intraday Initial Margin, set:

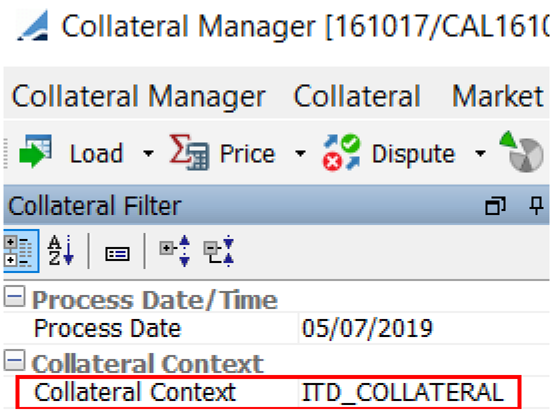
- CDML Report Type = initialMarginReport
- Process Mode = Collateral Exposures

After the ITD process, the EOD process must be executed at EOD.

Ad-Hoc Details need to be specified in the Initial Margin Call Contract as shown below:



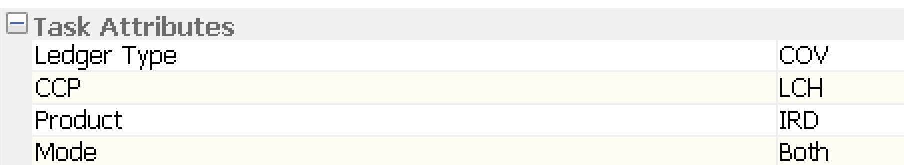
Collateral Manager Specification - ITD Collateral Context must be selected while running the ITD Collateral as highlighted below:



10.4.4 CLEARING_INTRADAY_MARGIN_REV

This scheduled task creates “return” trades for the intraday margin call trades of type ITD_COLLATERAL created by the scheduled task CLEARING_INTRADAY_MARGIN when you use CDML to create the EOD Initial Margin trades.

It creates “return” trades of type ITD_COLLATERAL, of opposite direction of the original trades, and with the trade keyword ITDMarginCallReturn=true. There is one return trade for each counterparty and currency.



Task Attributes	
Ledger Type	COV
CCP	LCH
Product	IRD
Mode	Both

Attributes

» Ledger Type – Select COV, NON-COV, or ALL.

» CCP - Select LCH.

» Product - Select the product IRD.

» Mode - Client, House, or Both.

This only applies to LCH – Select Client to import client files only, House to import house files only, or Both to import both.

10.4.5 HKEX Cross Currency Swaps

Note: No longer required as of 16.1.0.82 (Aug 2021 MR)

HKEX provides the NPV, NPV Reversal and Variation Margin breakdown for Cross Currency Swaps, but only for the non-USD leg, i.e. only for the HKD, CNY or CNH leg.

For the USD leg, HKEX provides the NPV and NPV Reversal, but it is the net NPV of both legs, so the USD NPV/ NPV Reversal provided is discounted by the other currency. The USD VM however is accurate.

Calypso needs the NPV and NPV Reversal components for Collateral Management processing and Statement generation.

Therefore, the NPV and NPV Reversal for the USD leg have to be derived by Calypso using the data provided by HKEX

The scheduled task CLEARING_HKEX_USD_NPV allows amending the existing VM files ‘WEB Settle Details IRS_C’ and ‘WEB Settle Details IRS HKEX’ and adds the missing NPV and NPV Reversal for the USD leg.

Common Attributes

Business Days - Should be set to HKEX Calendar - Used to retrieve WEB Settle Details report of previous day to determine the NPV of the previous day.

Task Attributes

Base Folder - Folder against which the scheduled task is running to retrieve the current WEB Settle Details IRS (for house and client) and the precious day CAL WEB Settle Details IRS (for house and client). Updated file will be saved under the same location.

Execution

The scheduled task CLEARING_HKEX_USD_NPV should be run with valuation date = date of the file that needs to be processed. This means that backdated processing is also supported.

For instance, to update a WEB Settle Details IRS file that has a date stamp set to 2019-01-28, you have to run the job as of that date.

The system also needs to process the file of the previous business day to determine the NPV Reversal. However, the input file required here is the modified file, not the standard HKEX file, so the system will be looking for the CAL WEB Settle Details IRS file of the previous day, in the example above it would be the 2019-01-25.

It is expected that there is no CAL report for the valuation date as of which the scheduled task is run. In case the job needs to be re-run, the “old” file needs to be manually removed.

The system adds 4 new columns to the file ‘USD EOD NPV (CCS Pay Leg)’, ‘USD EOD NPV (CCS Rec Leg)’, ‘Yesterday's USD NPV (CCS Pay Leg)’, ‘Yesterday's USD NPV (CCS Rec Leg)’ to store the values calculated by Calypso and update the file with CAL prepended to the file name:

Client File: “CAL WEB Settle Details IRS_C_53894987_2019-01-28 09-23-27 PM.csv”

House File: “CAL WEB Settle Details IRS_53894987_2019-01-28 09-23-27 PM.csv”

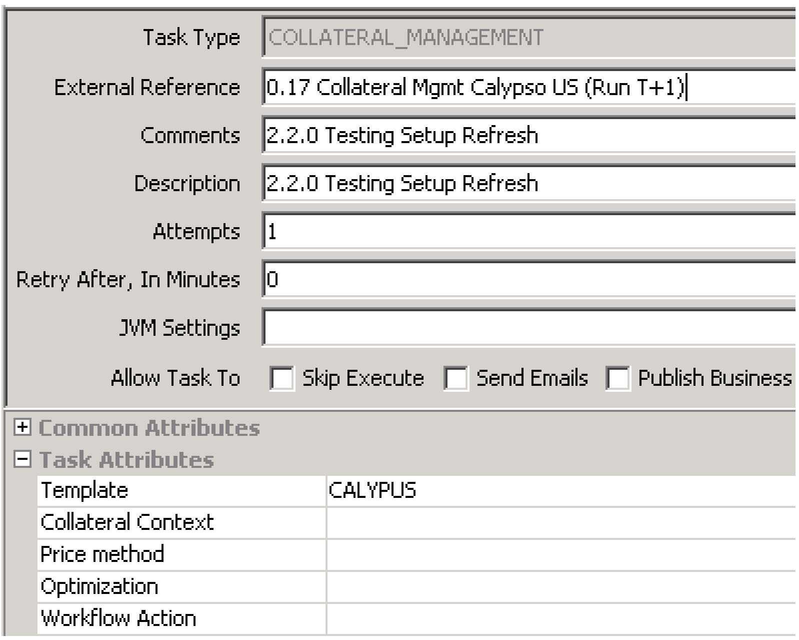
10.5 COLLATERAL_MANAGEMENT

It computes the exposure on the initial margin and variation margin, and generates cash margin calls. It requires that you save a Collateral Manager report template to retrieve selection criteria.

From the Calypso Navigator, navigate to Processing > Collateral Management > Collateral Manager (menu action `reporting.margincall.MarginCallDesktop`) to define a Collateral Manager report template.

For IM contracts, the scheduled task loads the corresponding Collateral Exposure trades.

For VM contracts, the scheduled task loads the cash accounts associated with the margin call contracts. The exposure is the inventory THEORETICAL Margin_Call position that has been updated by the CASH_SETTLEMENT Clearing Transfer trades.



Attributes

- Select a Collateral Manager template to define the selection criteria.

  You can create a Collateral Manager template in the Collateral Manager using File > Save Template.

- Select a collateral context as needed.
- The other attributes may remain empty.

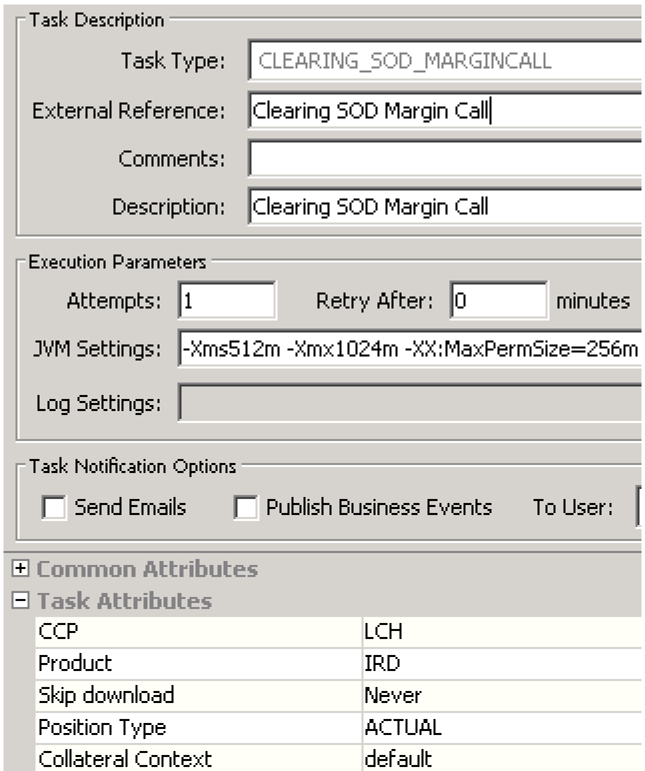
Please refer to Calypso Collateral Management documentation for complete details on this scheduled task.

10.6 CLEARING_SOD_MARGINCALL

This scheduled task can be executed at the start of day to manage the SOD pass-through function. It allows comparing the client Margin Call Positions with the CCP cash balances provided by report REP00019, and generating Margin Call Trades facing the CCP in the respective IM Margin Call Contract.

The domain "Clearing.SOD.IgnoreAccount" can be used to filter out the accounts to be ignored by this process.

The margin call attribute CCP_SEGREGATION_ACCOUNT must be set to the "Account" field of report REP00019.



Attributes

- CCP - Select LCH.

  This attribute is mapped to the <CCP>_CPTY legal entity attribute, not the legal entity short name.

  Example, if CCP = LCH, the system looks for legal entity with attribute LCH_CPTY = LCH.

- Product - Select IRD.
- Skip download - Select Always if already downloaded, or Never.

  You can skip the download of the CCP files if the files have already been downloaded, or if you download them using another process.

- Origin – Select HOUSE, CLIENT or BOTH as needed.
- Position Type – Select ACTUAL or THEORETICAL.
- Collateral Context - Select a collateral context as needed.

The margin call trades are created with Keyword.CCPSettlementType="SOD". The counterparty role is set to the OrdererRole if set on the margin call contracts, or CounterParty otherwise.

The domain "Clearing.SOD.IgnoreXferStatusOnRerun" can be used to store transfer status codes to prevent "SOD" trades modifications. The scheduled task will not modify existing "SOD" trades if their transfers are in these statuses codes.

10.7 CLEARING_INTRADAY_MARGIN

This scheduled task can be executed at any time during the day to generate intraday margin calls for LCH. You may set it up to run every half hour for example.

You need to configure the scheduled task for LCH, and for IRD products.

Task Attributes	
Ledger Type	COV
CCP	LCH
Product	IRD
Mode	Both

Attributes

» Ledger Type – Select COV, NON-COV, or ALL.

» CCP - Select LCH.

» Product – Select IRD.

» Select the mode: Client, House, or Both.

This only applies to LCH – Select Client to import client files only, House to import house files only, or Both to import both.

This scheduled task downloads the "Report 33a" from LCH and generates margin call trades of type ITD_COLLATERAL for each PPS Call entry that is after the time specified in the domain "Clearing.LCH.ExcludeBankingCallTime" with the 24 hour format "hh:mm". For example 09:30 is 09:30 am. Any entries before that time will be excluded.

The margin call trades are associated with the IM contracts (client for "C" PPS Call entries, or house for "H" PPS Call entries) of the clearing member facing the CCP, and can be viewed in the Collateral Manager as "previous margin", so that they will not be called again during the EOD process.

The following keywords are populated on the ITD_COLLATERAL trades:

- CCPAccountReference = CCP_REFERENCE from additional info of IM MCC which can be "C" or "H" or position account id for ISA
- IS_CLIENT=False (since it is CCP facing trade)
- RelatedProductType=IRD (PRODUCT_TYPE from additional info of IM MCC)
- CCPSettlementType=ITD

- CCPLedgerType = COV for cash cover IM, or NON-COV for non-cash cover (interest and fees)

10.8 CLEARING_INTRADAY_SETTLEMENT

GBP FRAs are supported with or without intraday processing (same day settlement).

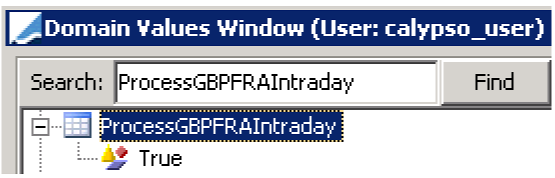
To import GBP FRAs intraday, you need to use the scheduled task CLEARING_INTRADAY_SETTLEMENT as described below (only applies to LCH).

Otherwise, if you want to import GBP FRAs with settlement at T+1 (like other FRA trades), use the scheduled task CLEARING_PROCESS_FROM_CDML.

10.8.1 Intraday Setup Requirements

Domain "ProcessGBPFRAIntraday"

You need to add the value True to the domain "ProcessGBPFRAIntraday" to import GBP FRAs intraday. It is not set by default (no intraday processing).

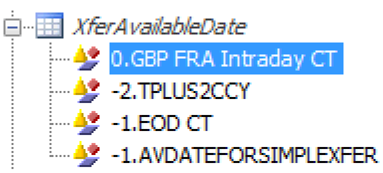


Domain "XferAvailableDate"

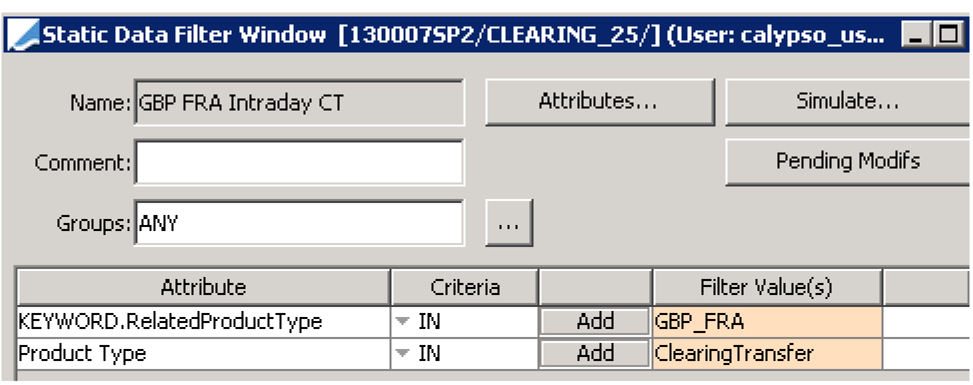
The Available Date is populated differently for GBP FRA trades and the other trades in order to allow trades that settle on different days to be included in the Client Statement.

You need to setup the following for GBP FRA trades:

- Value = "0.GBP FRA Intraday CT" where "GBP FRA Intraday CT" is a static data filter that filters GBP FRAs – The available date will be set to the settlement date.



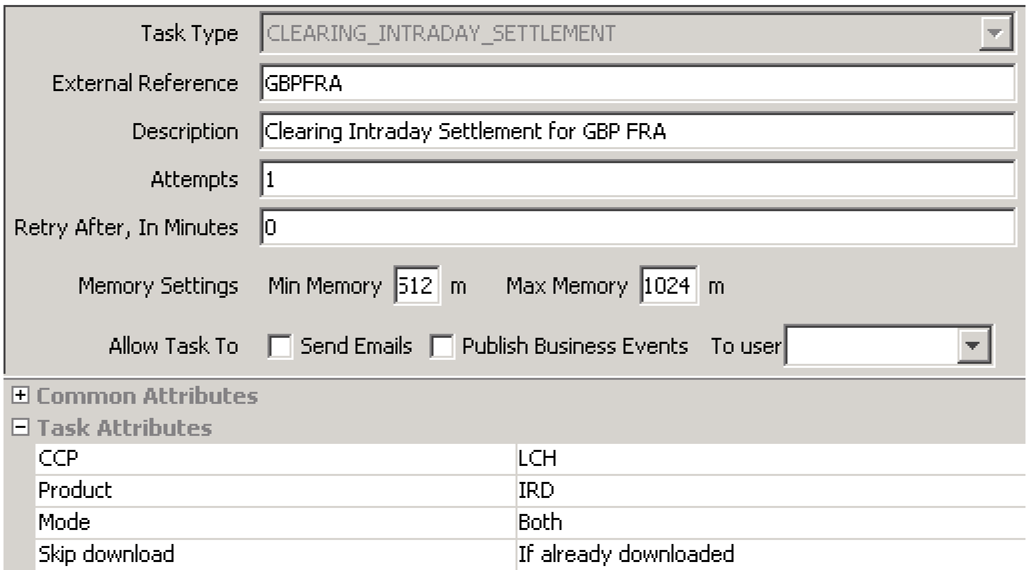
Static Data Filter



10.8.2 Scheduled Task CLEARING_INTRADAY_SETTLEMENT

To import GBP FRAs intraday, you need to configure a scheduled task CLEARING_INTRADAY_SETTLEMENT.

This scheduled task creates CASH_SETTLEMENT clearing transfer trades with CS_FRA_PAYMENT and CS_VARIATON_MARGIN fees.



Attributes

- Select the CCP: LCH (only LCH is currently supported)
- Select the product: IRD.
- Select the mode: Client, House, or Both.

  This only applies to LCH – Select Client to import client files only, House to import house files only, or Both to import both.

- Select to skip file download: Always, If already downloaded, or Never.

  You can skip the download of the CCP files if the files have already been downloaded, or if you download them using another process.

This scheduled task processes the files 104 and 104c:

- CS_FRA_PAYMENT fee = “FRASettlementAmount” column
- CS_VARIATION fee = “PreviousTradeLevelNPV” column

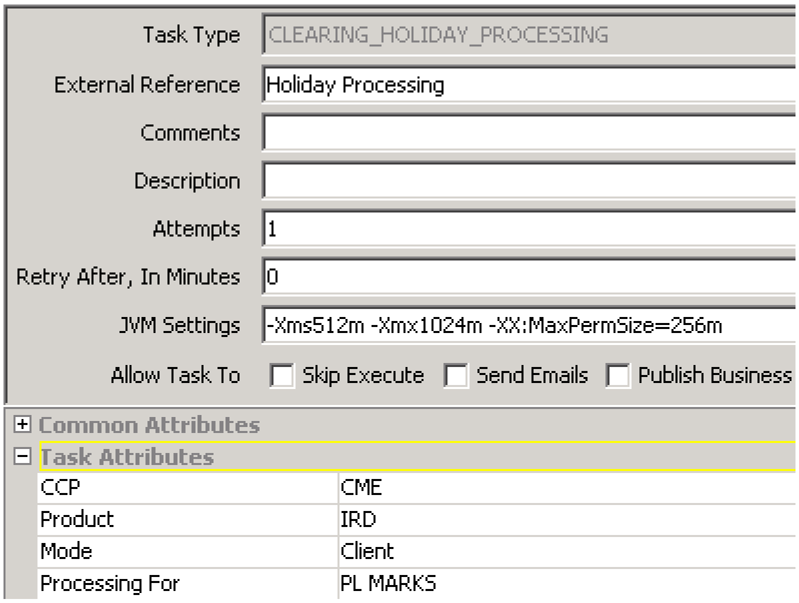
The trade keyword RelatedProductType is set to GBP_FRA.

For intraday GBP FRAs, all the fees attached to the CASH_SETTLEMENT clearing transfer trades have Fee Date = Fee Start Date = Fee End Date = Fee Known Date = Trade Settle Date.

10.9 CLEARING_HOLIDAY_PROCESSING

The scheduled task CLEARING_HOLIDAY_PROCESSING allows generating Clearing Transfer trades, Collateral Exposure trades and PL Marks, on an ad-hoc basis, when the CCP does not provide EOD files because of a CCP holiday.

It should be run on CCP holidays when the CCP does not provide the EOD files.



Attributes

- Select the CCP.
- Select the product.
- Select the mode: Client, House, or Both.
- Select the type of processing: CLEARING TRANSFER, COLLATERAL EXPOSURE, or PL MARKS.

For CLEARING TRANSFER, the scheduled task creates Clearing Transfers trades for the given valuation date. It copies the NPV from the previous business day, and generates reversals accordingly.

For COLLATERAL EXPOSURE, the scheduled task creates Collateral Exposure trades for the given valuation date. It copies the following measure from the previous business day:

- MAINTENANCE_REQUIREMENT
- MARGIN_CALL
- INITIAL_MARGIN
- LIQUIDITY_MARGIN
- ADDITIONAL_MARGIN
- BASIS_RISK_MARGIN
- CREDIT_MULTIPLIER_MARGIN

For PL MARKS, the scheduled task copies PL MARKS for the given valuation date from the previous business day.

The domain “ClearingHolidayFlows” should contain NPV Flows that need to be copied over during a CCP holiday.

The NPV Flows are mapped with the respective NPV Reversal Flows in the domain “ClearingNPVFlowNames”.

10.10 CLEARING_IMPORT_MARKET_DATA

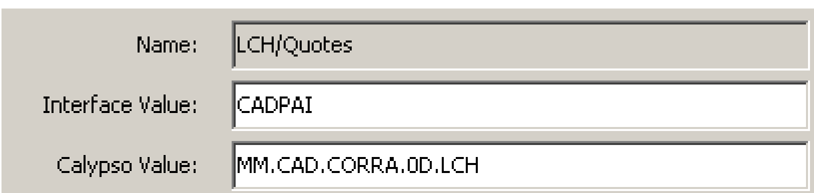
You can import the following quotes using the scheduled task CLEARING_IMPORT_MARKET_DATA.

The CCP lookup follows the same logic as the CLEARING_PROCESS_FROM_CDML scheduled task.

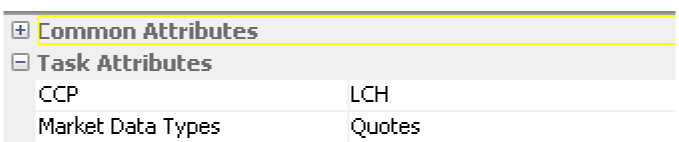
10.10.1 LCH PAI Quotes

PAI quotes are imported from report LCH REP000016c.

For PAI Quotes, the Interface Value in the Calypso Mapping Window should simply be in the format “CCYPAI”, for instance USDPAI, CADPAI, etc. We will associate a single PAI rate per currency.



CLEARING_IMPORT_MARKET_DATA import:



Market Data Types = Quotes

10.10.2 LCH Repo PAI Rates

For Repo PAI rates, the Interface Value in the Calypso Mspping should be in the format “PAIRate_<currency>”.

Example:

Name = LCH/Quotes

Interface Value = PAIRate_GBP

Calypso Value = MM.GBP.SONIA.0D.LCHPAI

CLEARING_IMPORT_MARKET_DATA import:

⊞ Common Attributes	
⊟ Task Attributes	
CCP	LCH
Market Data Types	Quotes

Market Data Types = Quotes

LCH CDR, DFR, HDR, LDR Rates

The CDR, DFR, HDR, LDR rates are imported from report LCH REP00017.

The Interface Value should be in the format CCY~INDEX~OIS0D~<LCH quote name>, for instance DKK~DENTNIN~OIS0D~CDR>.

<LCH quote name> should be CDR, DFR, HDR or LDR.

Name:	LCH/Quotes
Interface Value:	CAD~CORRA~OIS0D~LDR
Calypso Value:	MM.CAD.CORRA.0D.LCHLDR

CLEARING_IMPORT_MARKET_DATA import:

⊞ Common Attributes	
⊟ Task Attributes	
CCP	LCH
Market Data Types	Quotes

Market Data Types = Quotes

10.10.3 LCH CDRSpread, DFRSprad, HDRSpread,

Spreads are imported from report LCH REP00042.

The Interface Value should be in the format CCY~INDEX~OIS0D~<LCH spread quote name>, for instance DKK~DENTNIN~OIS0D~CDRSpread.

<LCH spread quote name> should be CDRSpread, DFRSpread or HDRSpread.

Name:	LCH/Quotes
Interface Value:	CAD~CORRA~OIS0D~CDRSpread
Calypso Value:	MM.CAD.CORRA.1D.CDRSpread
Reverse Default:	☐

CLEARING_IMPORT_MARKET_DATA import:

⊞ Common Attributes	
⊟ Task Attributes	
CCP	LCH
Market Data Types	Quotes

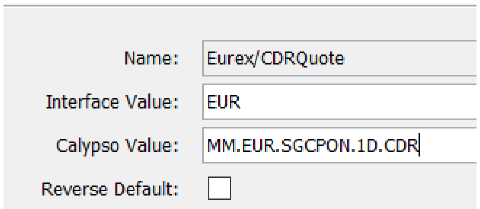
Market Data Types = Quotes

10.10.4 Eurex CDR Rate

The CDR rates are imported from reports CD230 / CD231.

You need to Value = CDRQuote to the domain “EUREXCalypsoMapping.Types”.

There is a CDR rate mapping for each currency,as needed.



CLEARING_IMPORT_MARKET_DATA import:

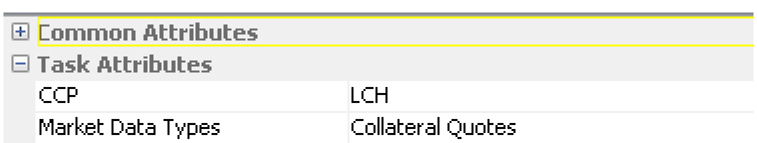
Market Data Types = Quotes

10.10.5 LCH Bond Prices

The bond prices are imported from report LCH REP00034 based on the bonds’ ISIN code. No data mapping is required.

[NOTE: The prices are imported into the quote set of the pricing environment defined in the scheduled task]

CLEARING_IMPORT_MARKET_DATA import:



Market Data Types = Collateral Quotes

10.10.6 CME Rate Resets

Import of Observed Rate is using Adjusted Fixing Date by default. You can use Reset Date by setting the rate index attribute USE_EFFECTIVE_DATE to true.

10.10.7 LCH Rate Resets

Market Data Types = Rate Reset

Rate resets are saved in the quote set defined in the mapping for LCH/QuoteSet if specified, otherwise the quote set of the scheduled task’s pricing environment.

Sample mapping:

Name = LCH/QuoteSet

Interface Value = default

Calypso Value = BackOffice

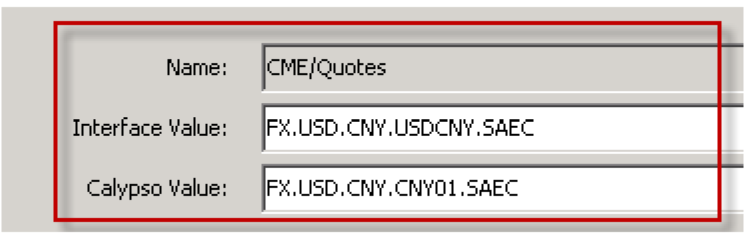
10.10.8 CME FX NDF Rate Resets

The FX NDF rate resets are imported from report CME FXNDF.

The mapping between the FX Reset and the quote is done for CME/Quotes in the Calypso Mapping window as:

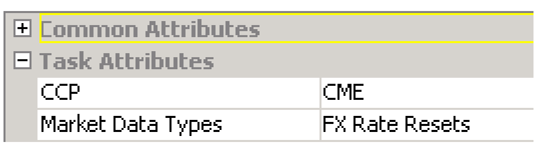
- Interface Value = FX.<ccy1>.<ccy2>.<CME FX reset>.<source>
- Calypso Value = FX.<ccy1>.<ccy2>.<Calypso FX Reset>.<source>

Example:



[NOTE: The quotes are imported into the quote set of the pricing environment defined in the scheduled task]

CLEARING_IMPORT_MARKET_DATA import:



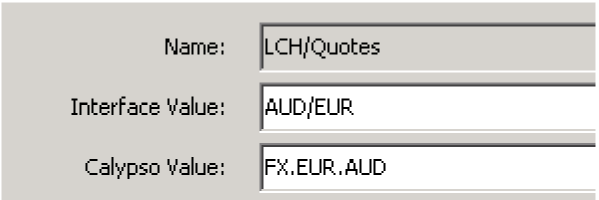
Market Data Types = FX Rate Resets

Please consider QUOTE_ALLOW_IN_FUTURE=false and QUOTE_MAX_DAY_FUTURE environment property so that the system will not populate values in the future. Also, make sure that you add the appropriate default source in FX Rate Definition window (SAEC for example).

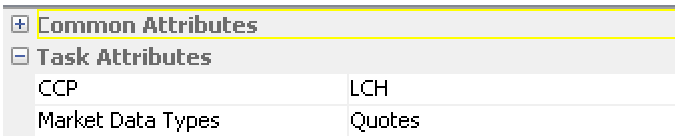
10.10.9 LCH / Comder FX Spot Rates by Currency Pair

FX Spot quotes are imported from reports FXMD0001 (LCH) and SpotQuote (Comder).

Calypso Mapping window:



CLEARING_IMPORT_MARKET_DATA import:



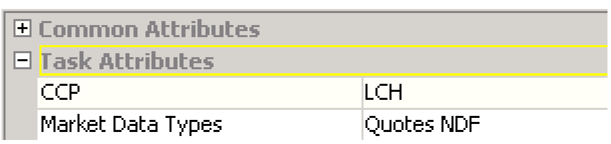
Market Data Types = Quotes

10.10.10 LCH / Comder NDF Fixing Rates

NDF fixing rates are imported from reports FXMD0010 (LCH) and SpotQuote (Comder).

You need to define the FX Resets using Configuration > Foreign Exchange > FX Rate Definitions.

CLEARING_IMPORT_MARKET_DATA import:



Market Data Types = Quotes NDF

10.10.11 HKEX Market Data

Rate Resets - WEB Appl Int Rate

Interest Rates - WEB Saving Rate

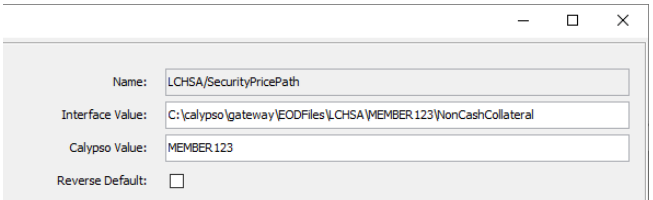
FX Rates - WEB Fee FX Rate

Non Cash Collateral Prices - WEB IM Collateral/WEB IM Collateral_C

Curves - WEB CurveZeroPoints, WEB CurveDiscountFactor

10.10.12 COMDER Non Cash Collateral Prices

Fix – There is one report per client account. The report name itself does not provide detailed information and does not carry the report type. The following mapping allows the scheduled task to look up the path to determine the files to process. The Member id is defined in LCHSAFirmId LE Attribute and support multiple members clearing at LCH CDSClear.



Multiple members are supported by setting the following in clearingConnection.properties:

LCHSA.<member ID>.URI=<URI>

Examples:

```
LCHSA.CALXV1.URI=file://C:/calypso/export_files/CDML/LCHSA
LCHSA.CALXV2.URI=file://C:/calypso/export_files/CDML/LCHSA
LCHSA.CALXV3.URI=file://C:/calypso/export_files/CDML/LCHSA
LCHSA.CALXV4.URI=file://C:/calypso/export_files/CDML/LCHSA
```

The following folder structure is required (for single or multiple member setup):

In the folder /LCHSA, you need to create sub-folders like this:

/LCHSA/<member ID>/NonCashCollateral

Examples:

/LCHSA/CALXV1/NonCashCollateral

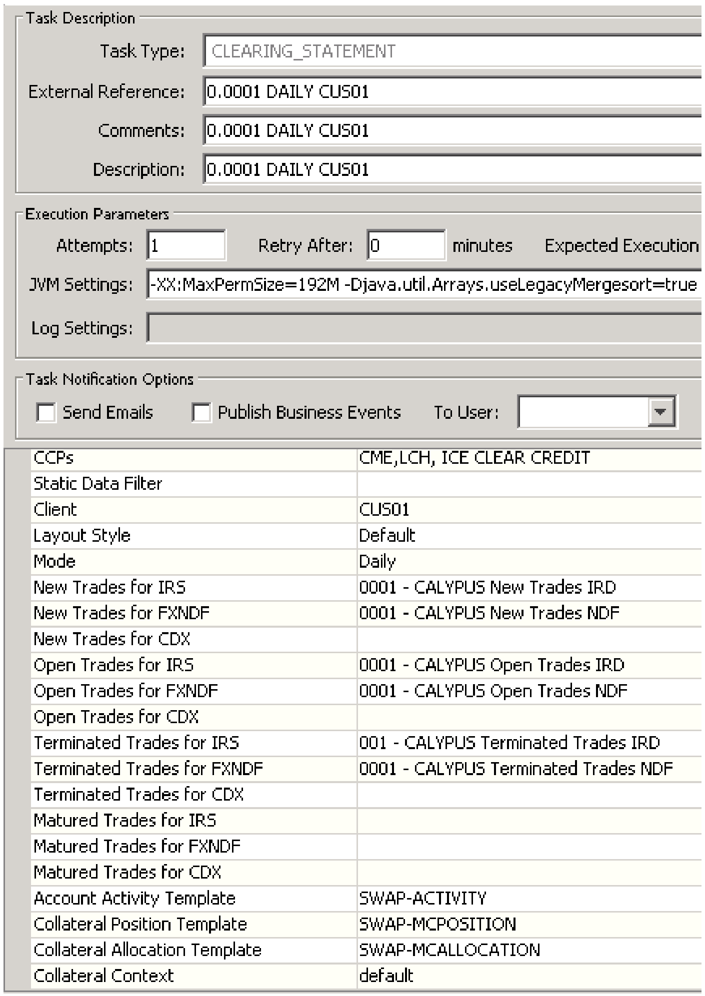
/LCHSA/CALXV2/NonCashCollateral

/LCHSA/CALXV3/NonCashCollateral

/LCHSA/CALXV4/NonCashCollateral

10.11 CLEARING_STATEMENT

This scheduled task generates Statement events that are sent to the Message engine to generate the actual client statements based on the message configuration for the message type “CLEARING_STATEMENT”. It can be run for all the CCPs that the clients use for clearing. It generates one statement per client.



Task Description

Task Type: CLEARING_STATEMENT

External Reference: 0.0001 DAILY CUS01

Comments: 0.0001 DAILY CUS01

Description: 0.0001 DAILY CUS01

Execution Parameters

Attempts: 1 Retry After: 0 minutes Expected Execution

JVM Settings: -XX:MaxPermSize=192M -Djava.util.Arrays.useLegacyMergesort=true

Log Settings:

Task Notification Options

Send Emails Publish Business Events To User:

CCPs	CME,LCH, ICE CLEAR CREDIT
Static Data Filter	
Client	CUS01
Layout Style	Default
Mode	Daily
New Trades for IRS	0001 - CALYPUS New Trades IRD
New Trades for FXNDF	0001 - CALYPUS New Trades NDF
New Trades for CDX	
Open Trades for IRS	0001 - CALYPUS Open Trades IRD
Open Trades for FXNDF	0001 - CALYPUS Open Trades NDF
Open Trades for CDX	
Terminated Trades for IRS	001 - CALYPUS Terminated Trades IRD
Terminated Trades for FXNDF	0001 - CALYPUS Terminated Trades NDF
Terminated Trades for CDX	
Matured Trades for IRS	
Matured Trades for FXNDF	
Matured Trades for CDX	
Account Activity Template	SWAP-ACTIVITY
Collateral Position Template	SWAP-MCPOSITION
Collateral Allocation Template	SWAP-MCALLOCATION
Collateral Context	default

Attributes

- CCPs - Select the CCPs for which you want to consolidate the client statement.
- Static Data Filter – You can select a static data filter that contains legal entity attributes to select the corresponding clients. This only applies if ALL is selected for the Client attribute.

In order to allow the static data filter to contain legal entity attributes, you need to add the value ClearingLEAttribute to the domain “CustomStaticDataFilter”.

- Client - Select the client for which you want to generate the client statement, or ALL for all clients (or all clients satisfying the static data filter if set).
- Layout Style: Select “Default”, “Condensed” or “CondensedAccount”.

In the Condensed Client Statement, all pending settlements are aggregated in 1 row, and the following sections are included in the Clearing Cash Flows Summary:

- Separate Settlements
- Initial Margin Summary
- Summary of Payments

The **CondensedAccount** statement is only available for client facing clearing accounts with have account attribute CCPAccountStructure = ISA, and for Mode = ISA Daily. It uses the template CondensedAccountClearingStatement available in both HTML and PDF format.

» Mode - Select the mode: Daily to get the daily activity, Monthly to get the month to date activity, or Parent Daily to get parent level daily activity.

▶ See Parent Clearing Statement for “Parent Daily” setup requirements.

» ETD Position Spec – Not currently used.

» New Trades for IRS - Select the Trade Browser template for new IRD trades.

» New Trades for FXNDF - Select the Trade Browser template for new FX NDF trades.

» New Trades for CDX - Select the Trade Browser template for new CDX trades.

» Open Trades for IRS - Select the Trade Browser template for open IRD trades.

» Open Trades for FXNDF - Select the Trade Browser template for open FX NDF trades.

» Open Trades for CDX - Select the Trade Browser template for open CDX trades.

» Terminated Trades for IRS - Select the Trade Browser template for terminated IRD trades.

» Terminated Trades for FXNDF - Select the Trade Browser template for terminated FX NDF trades.

» Terminated Trades for CDX - Select the Trade Browser template for terminated CDX trades.

» Matured Trades for IRS - Select the Trade Browser template for matured IRD trades.

» Matured Trades for FXNDF - Select the Trade Browser template for matured FX NDF trades.

» Matured Trades for CDX - Select the Trade Browser template for matured CDX trades.

» Account Activity Template - Select the Account Activity report template.

» Collateral Position Template - Select the Collateral Position report template.

» Collateral Allocation Template - Select the Collateral Allocation report template.

» Collateral Context – Select “default”.

The report templates are described below.

Performance Enhancements

To improve the performance, you can set the following JVM parameters:

“-XX:UseConcMarkSweepGC -Xms1g -Xmx4g -XX:MaxPermSize=384m”

You can also set the number of threads to use when generating client statements in the domain “Clearing.Statement.parallel.numThreads”.

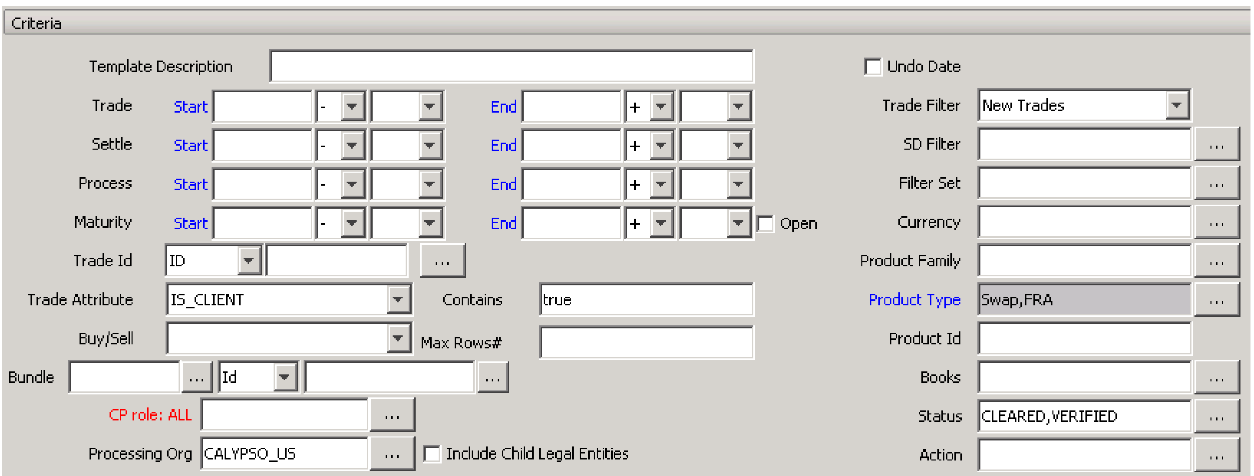
10.11.1 New Trades for IRS Template

Trade Browser template.

From the Calypso Navigator, navigate to Deal Management > Trade Browser.

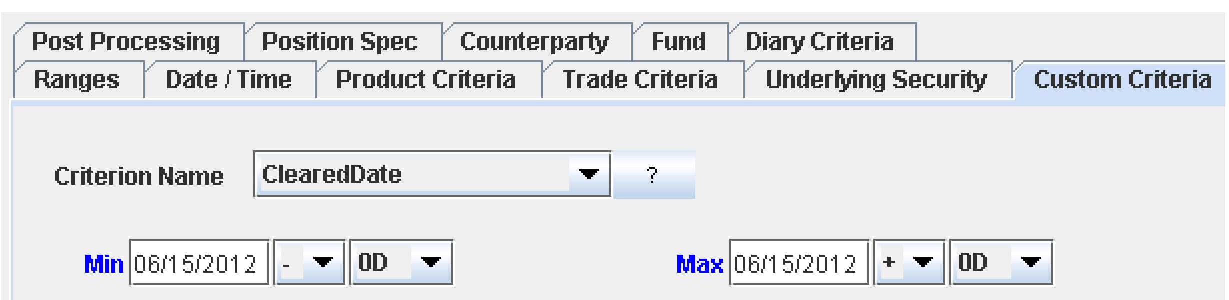
[NOTE: Make sure that the “Trade Currency” column is selected as part of the Column Configuration]

Example = “001 - Calypso US New Trades IRD”



- Trade Attribute = IS_CLIENT Contains true
- Processing org = <the clearing member>
- Trade Filter = New Trades
- Product Type = Swap, FRA
- Status = CLEARED, VERIFIED

The criteria of the “New Trades” trade filter are the following – It loads trades cleared today.



10.11.2 New Trades for FX NDF Template

Same as New Trades for IRS with Product Type = FXNDF.

10.11.3 New Trades for CDX Template

Same as New Trades for IRS with Product Type = CreditDefaultSwap, CDSIndex.

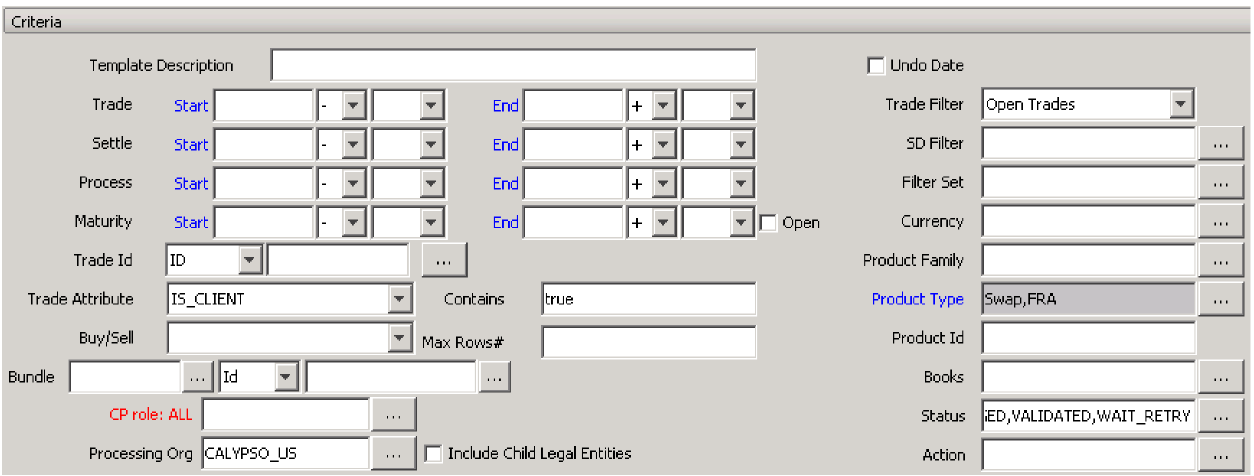
10.11.4 Open Trades for IRS Template

Trade Browser template.

From the Calypso Navigator, navigate to Deal Management > Trade Browser.

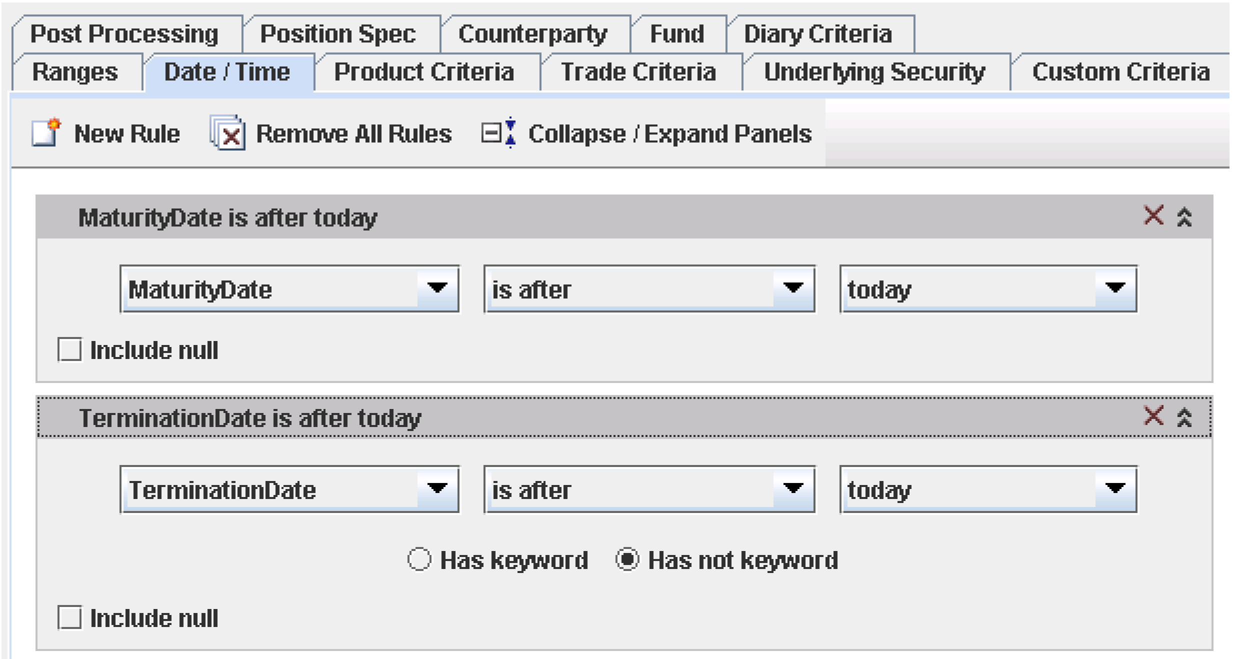
[NOTE: Make sure that the “Trade Currency” column is selected as part of the Column Configuration]

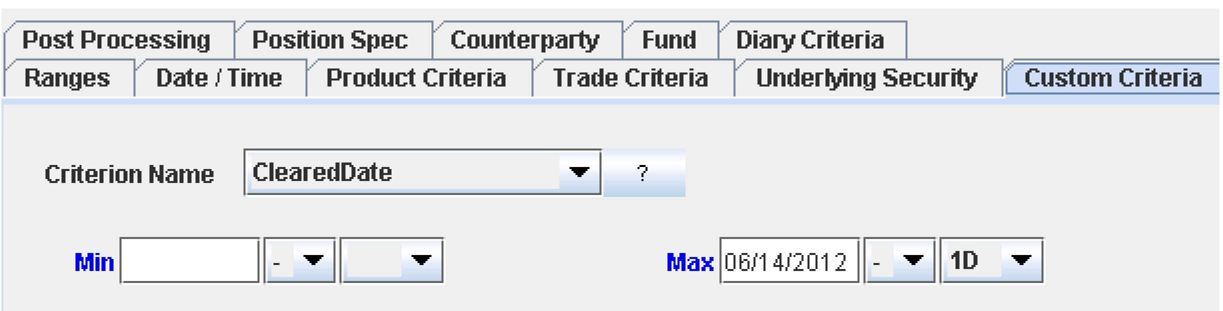
Example = “001 - Calypso US Open Trades IRD”



- Trade Attribute = IS_CLIENT Contains true
- Processing org = <the clearing member>
- Trade Filter = Open Trades
- Product Type = Swap, FRA
- Status = CLEARED, VERIFIED

The criteria of the “Open Trades” trade filter are the following – It loads trades cleared before today.





10.11.5 Open Trades for FX NDF Template

Same as Open Trades for IRS with Product Type = FXNDF.

10.11.6 Open Trades for CDX Template

Same as Open Trades for IRS with Product Type = CreditDefaultSwap, CDSIndex.

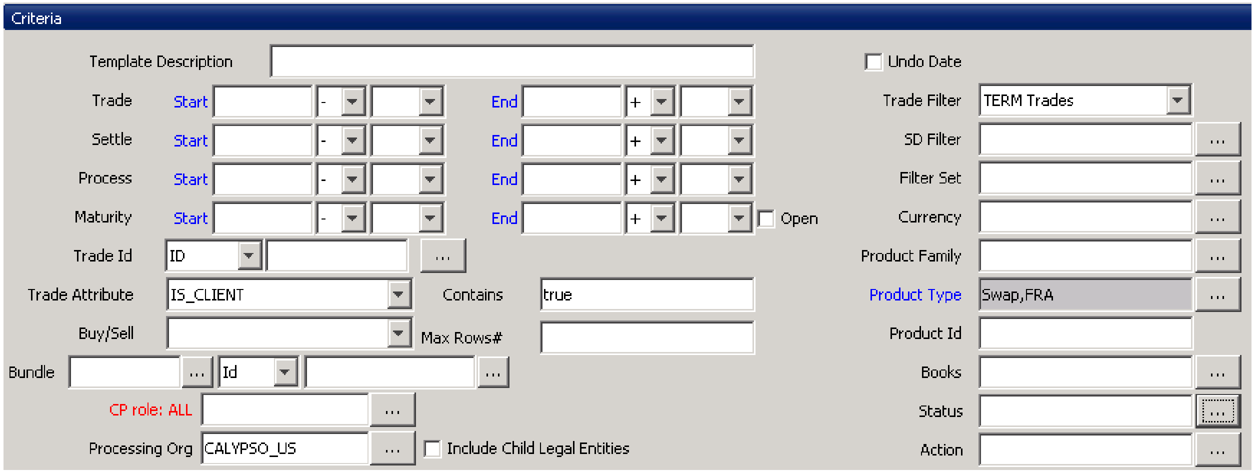
10.11.7 Terminated Trades for IRD Template

Trade Browser template.

From the Calypso Navigator, navigate to Deal Management > Trade Browser.

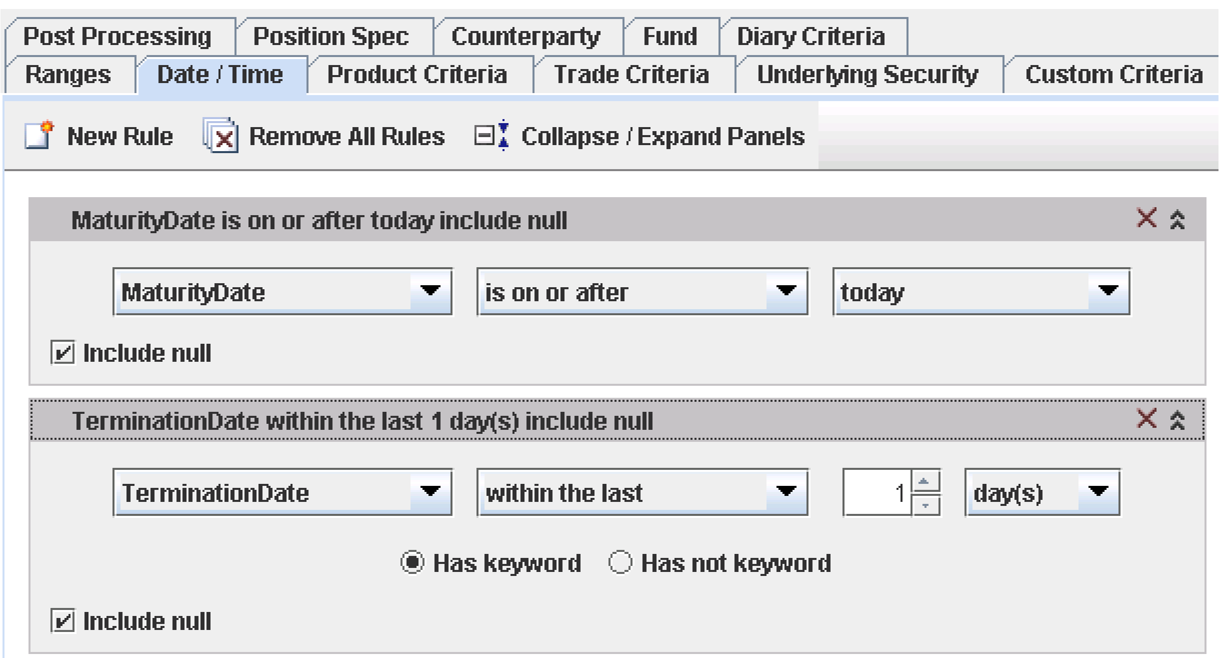
[NOTE: Make sure that the “Trade Currency” column is selected as part of the Column Configuration]

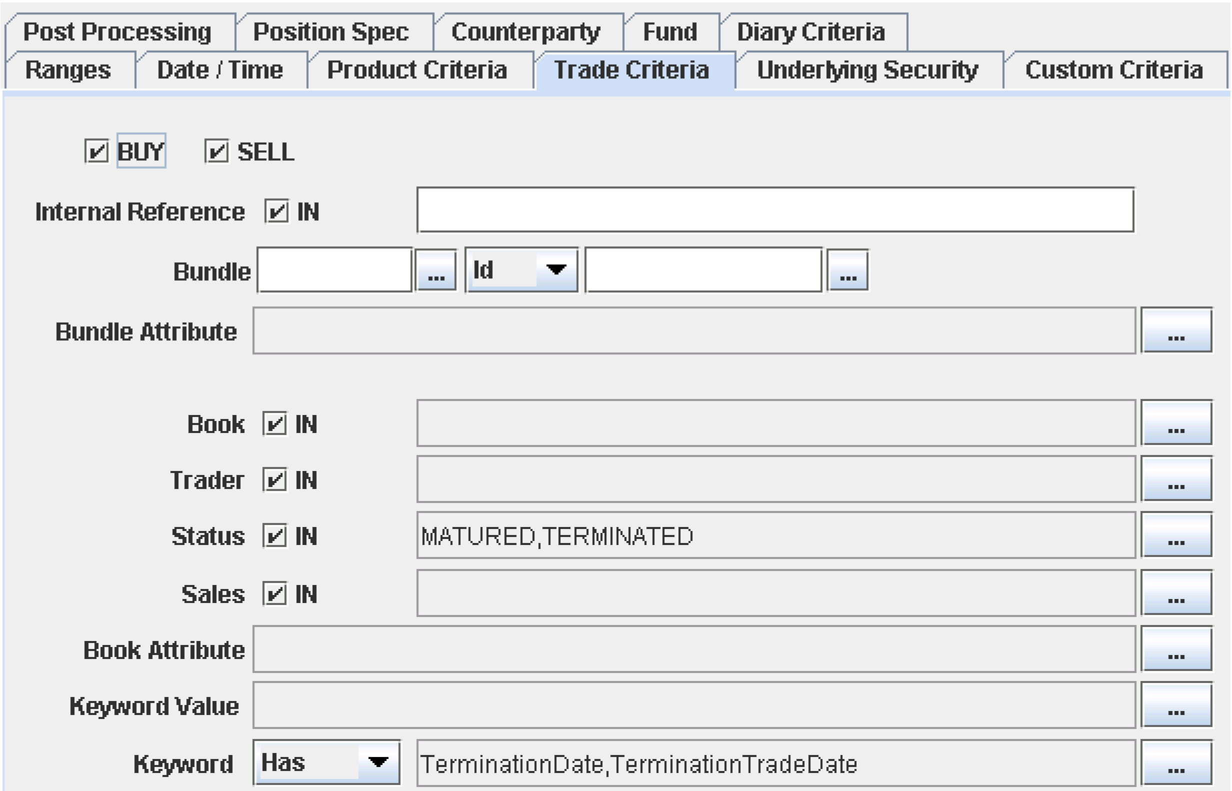
Example = “001 - Calypso US Terminated Trades IRD”



- Trade Attribute = IS_CLIENT Contains true
- Processing org = <the clearing member>
- Trade Filter = TERM Trades
- Product Type = Swap, FRA
- Status = Not set

The criteria of the “TERM Trades” trade filter are the following – It loads trades terminated today.





10.11.8 Terminated Trades for FX NDF Template

Same as Terminated Trades for IRS with Product Type = FXNDF.

10.11.9 Terminated Trades for CDX Template

Same as Terminated Trades for IRS with Product Type = CreditDefaultSwap, CDSIndex.

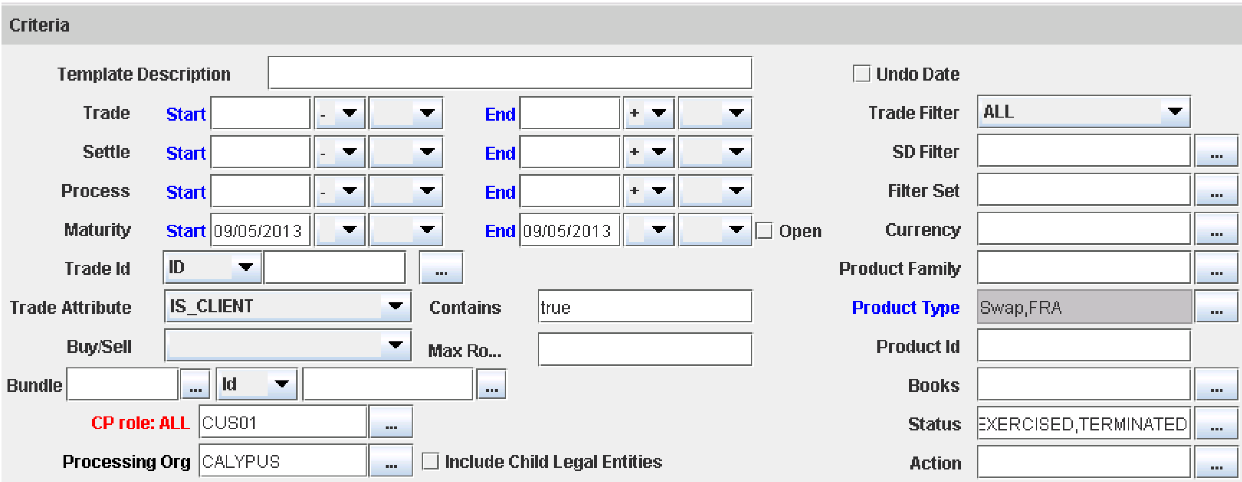
10.11.10 Matured Trades for IRD Template

Trade Browser template.

From the Calypso Navigator, navigate to Deal Management > Trade Browser.

[NOTE: Make sure that the “Trade Currency” column is selected as part of the Column Configuration]

Example = “001 - Calypso US Matured Trades IRD”



- Maturity Date = <today>
- Trade Attribute = IS_CLIENT Contains true
- Processing org = <the clearing member>
- Trade Filter = ALL
- Product Type = Swap, FRA
- Status = PENDING, PRICING, VERIFIED, ALLOCATED, ROLLOVERED, MATURED, EXERCISED, TERMINATED

10.11.11 Matured Trades for FX NDF Template

Same as Matured Trades for IRS with Product Type = FXNDF.

10.11.12 Matured Trades for CDX Template

Same as Matured Trades for IRS with Product Type = CreditDefaultSwap, CDSIndex.

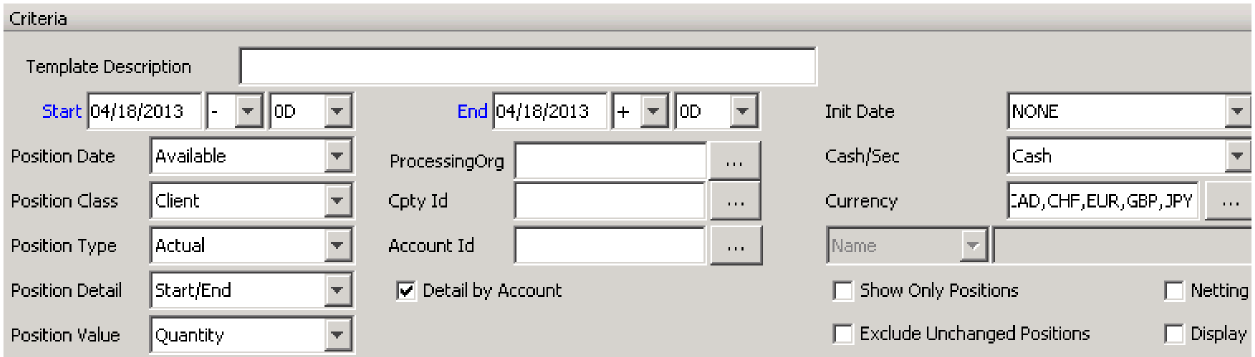
10.11.13 Account Activity Template

Account Activity report template.

From the Calypso Navigator, navigate to Reports > Nostro/Custodian Positions > Account Activity.

[NOTE: Make sure that the “Currency” column is selected]

Example = “SWAP-ACTIVITY”



- Start and End = 0D
- Position Date = Available
- Position Class = Client
- Position Type = Actual
- Detail by Account = Checked
- Currency = <list of currencies>

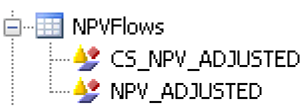
Make sure to select the currencies that you want to monitor.

This is a sample setup. You may choose the settings of the fields based on your business requirements.

You can define the flows that you want to filter out from the Account Activity section of the Client Statement in the domain “NPVFlows” and “NPVReversalFlows”.

The domain “NPVFlows” contains NPV non-reversal flows, by default:

- CS_NPV_ADJUSTED
- NPV_ADJUSTED



The domain “NPVReversalFlows” contains NPV reversal flows, by default:

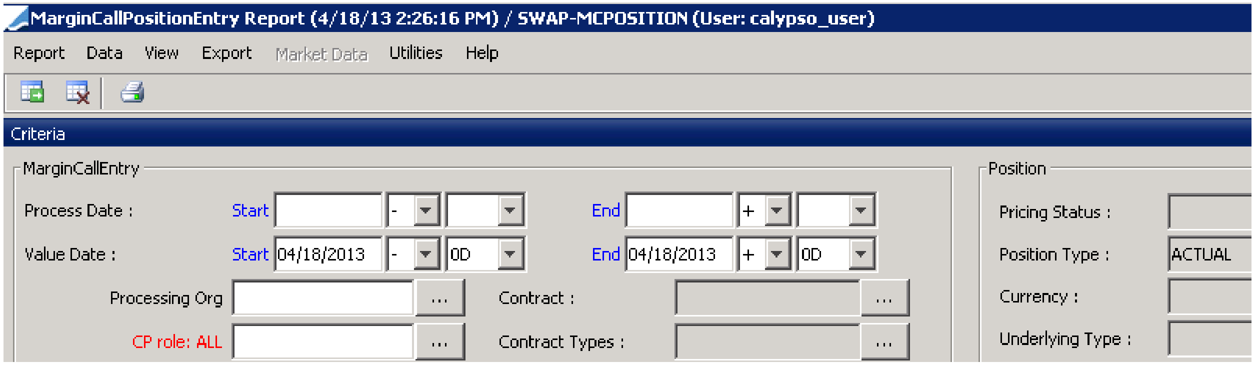
- NPV_REV
- CS_NPV_REV

10.11.14 Collateral Position Template

Margin Call Position Entry report.

From the Calypso Navigator, navigate to Processing > Collateral Management > Collateral Manager - Report available under Window > Report > Position).

Example = “SWAP-MCPOSITION” (today’s actual Margin_Call positions)



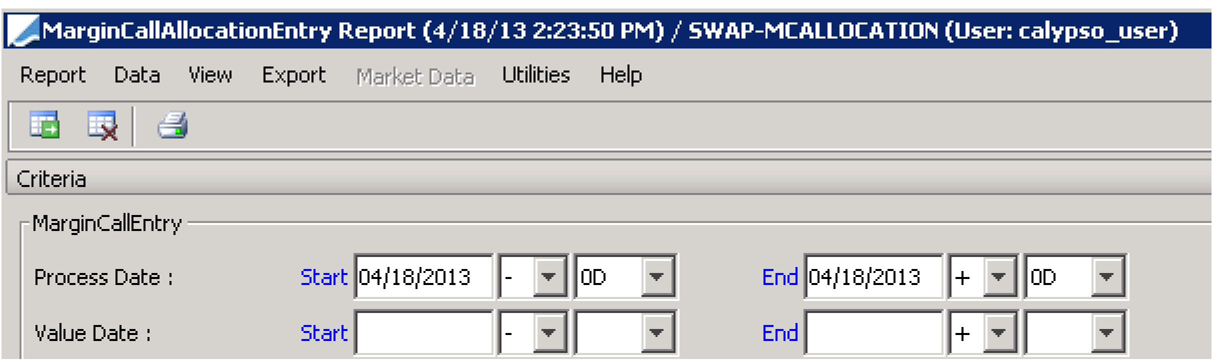
- Value Date Start and End = 0D
- Position Type = ACTUAL

10.11.15 Collateral Allocation Template

Margin Call Allocation Entry report.

From the Calypso Navigator, navigate to Processing > Collateral Management > Collateral Manager - Report available under Window > Report > Allocation).

Example = “SWAP-MCALLOCATION” (today’s margin call trades)

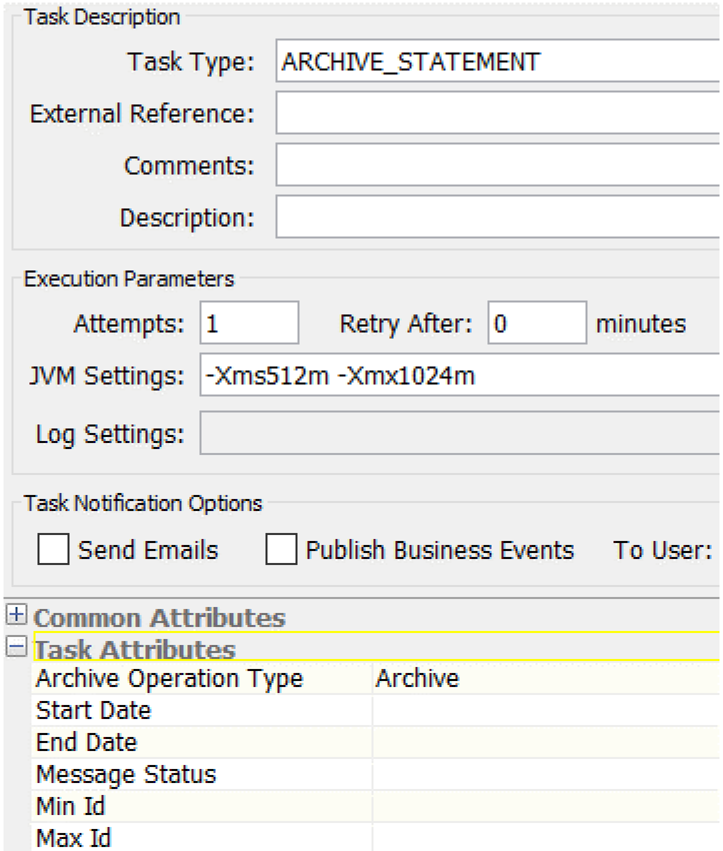


- Process Date Start and End = 0D

Please refer to the Calypso Clearing Member User Guide for sample client statements and complete details.

10.12 ARCHIVE_STATEMENT

The scheduled task ARCHIVE_STATEMENT allows archiving CLEARING_STATEMENT messages.



Attributes

- Archive Operation Type – Select either Archive, Delete from Archive, Purge/Delete, or Restore.
- Start Date – Enter a start date as needed (it allows selecting messages created on or after the start date).
- End Date – Enter an end date as needed (it allows selecting messages created on or before the end date).
- Message Status – Select a message status as needed.
- Min Id – Enter a minimum message ID as needed.
- Max Id – Enter a maximum message ID as needed.

10.13 Parent Clearing Statement

This mode pertains to multi branch account structure wherein buy side has various funds which are clearing trades under parent entity. Buy side generally have each fund acting as cost center hence some flows of VM need to be accounted for at fund level however IM needs to be calculated at parent entity level taking offsetting risk advantage across all funds.

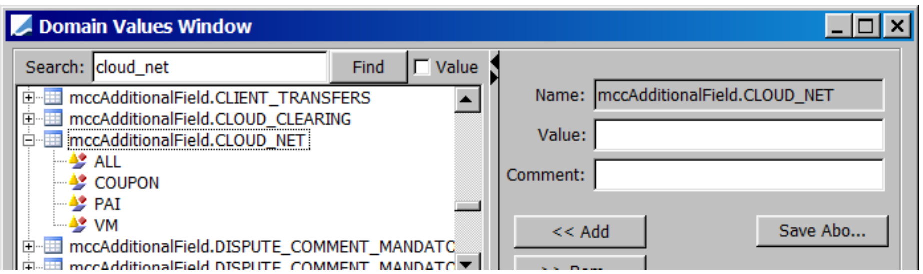
You can decide which flows need to be settled at parent level using the parent SDI functionality with environment property LOOK_PARENT_SDI = true and margin call contract attribute CLOUD_NET. The SDIs can be configured so that the system uses the parent SDIs to settle the flows defined in CLOUD_NET, and specific netting can be configured for those flows. The child SDIs are used otherwise.

The clearing statement allows reporting these flows using the scheduled task attribute Mode = Parent Daily. This only applies with the Default layout style.

10.13.1 Domain Values

Add the following domain values.

Domain “mccAdditionalField.CLOUD_NET” - Possible list of flows that can be netted. For example: ALL, COUPON, PAI, VM. This is user-defined.



Domain “tradeKeyword”:

Value = CLOUD_NET

Domain “XferAttributes”

Values=CLOUD_NET

Make sure that CLOUD_NET is added to the domains “Clearing.MCC.propagateFields” and “PropagateTradeKeyword” so that it can be propagated to margin call trades and transfer attributes to be used in static data filters and netting configurations as needed.

10.13.2 Workflow

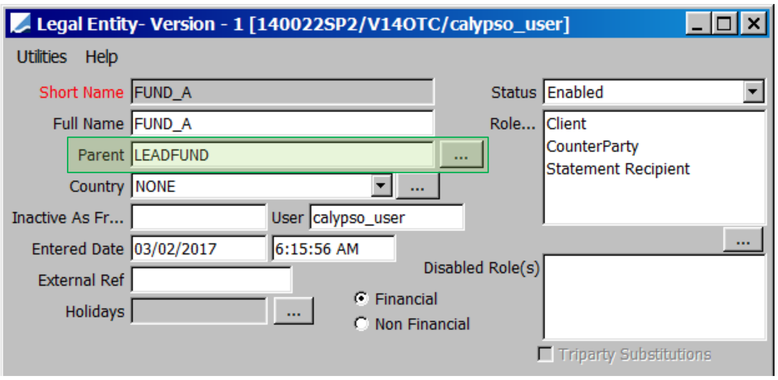
Make sure that the rule UpdateClearingMarginCallKeywords is set on the MarginCall workflow transition NONE – NEW – XXX.

Make sure that the rule PropagateTradeKeyword is set on the Transfer workflow transition NONE – NEW – XXX.

10.13.3 Legal Entities

Define Parent/ Child relationships between Parent fund and child entities as shown below.

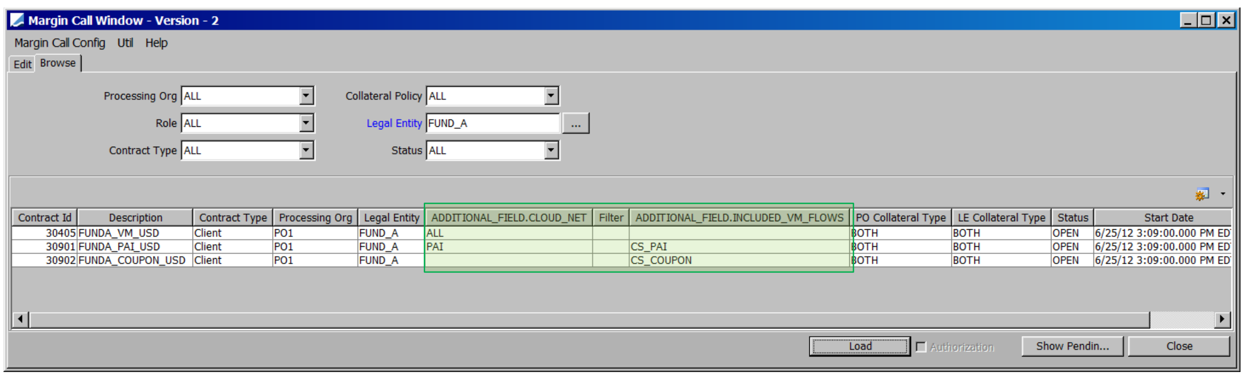
Example: FUND_A child of parent LEADFUND



10.13.4 Margin Call Contracts

Set the attribute CLOUD_NET as needed for contracts that should be settled and netted at parent level.

In the example below, child FUND_A is settling VM and PAI through its parent entity LEADFUND. Coupons are directly settled by FUND_A. PAI has as separated netting bucket and VM is netted in a general bucket.



Make sure that the attributes INCLUDED_VM_FLOWS and CLOUD_NET are compatible:

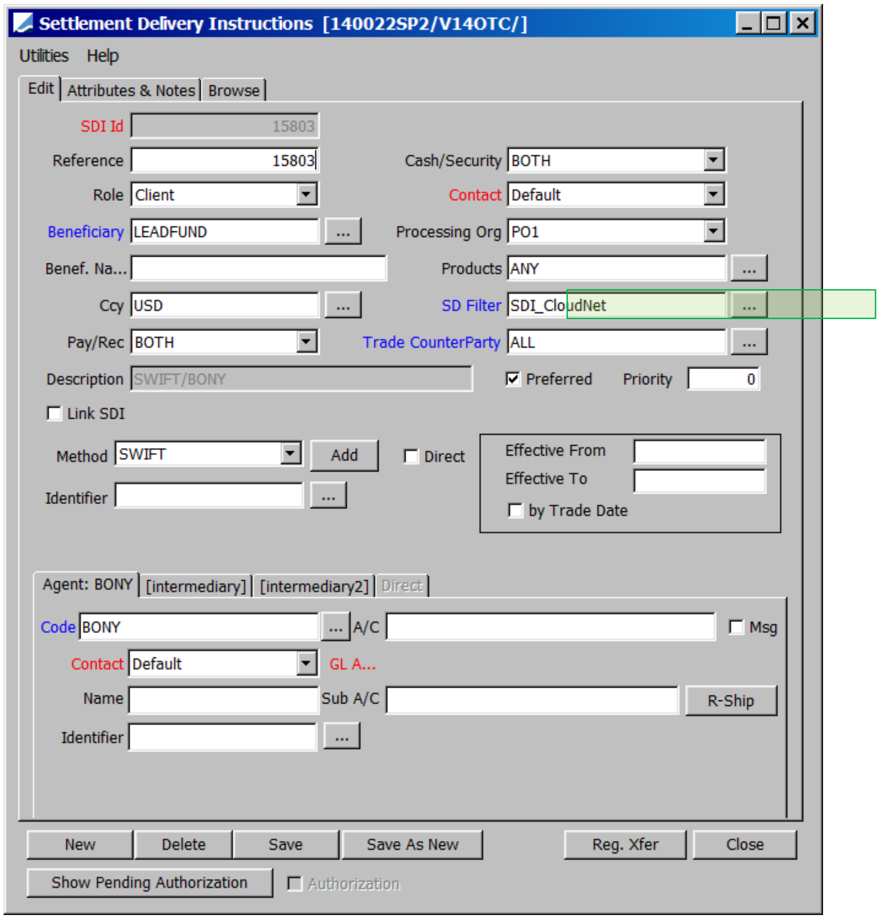
- CLOUD_NET can be ALL or empty, if INCLUDED_VM_FLOWS is empty.
- CLOUD_NET can be ALL or a subset of INCLUDED_VM_FLOWS, or empty, if INCLUDED_VM_FLOWS is not empty.

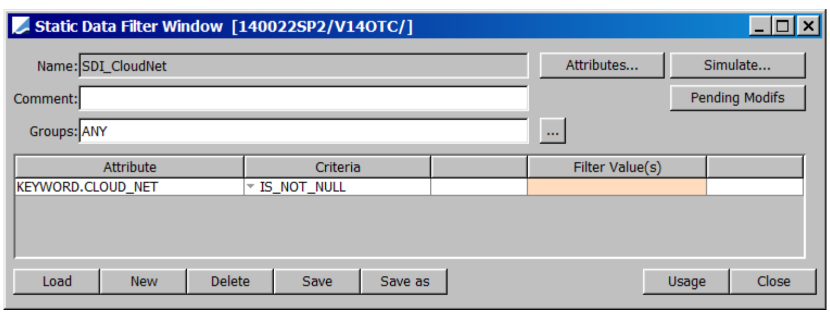
10.13.5 Settlement Instructions

Parent Level

SWIFT SDIs should be set up at Parent level to instruct the payments of all children entities (including the parent itself when acting as a child entity) that are in scope, i.e. for transactions that are settled/ netted at the parent level.

Example:





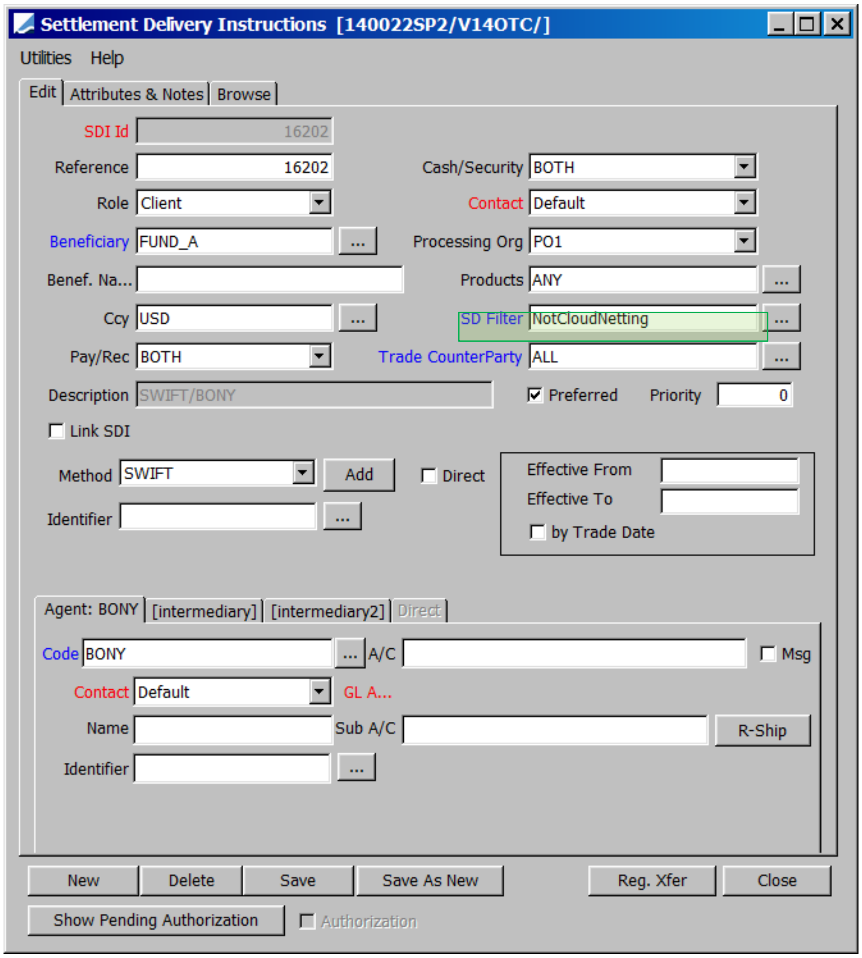
Child Level

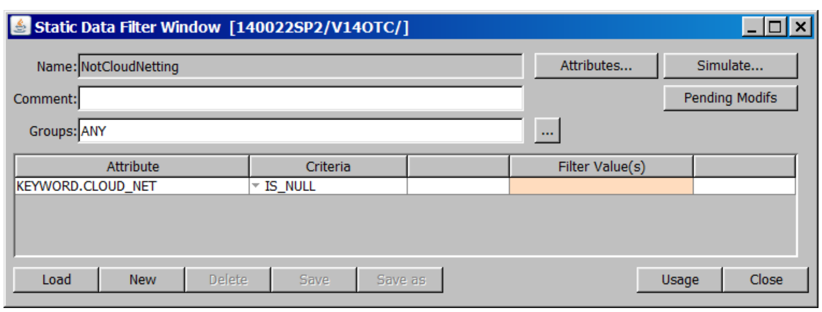
The only SWIFT SDIs required at Child level are the SDIs of the settlements that will be directly instructed by the Child fund, i.e. not applicable for Parent netting and settlement.

It is necessary to specify in a filter the applicable flows for the SDI.

Note: SDI needs also to be set up for the parent entity when it acting as a child entity and no netting is requiredNote that this

Example: FUND_A settles the coupons at Child level.

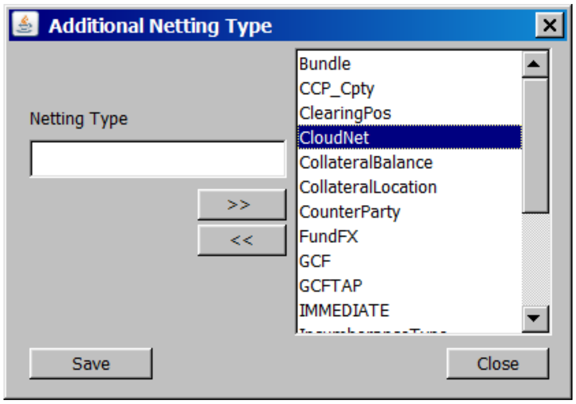




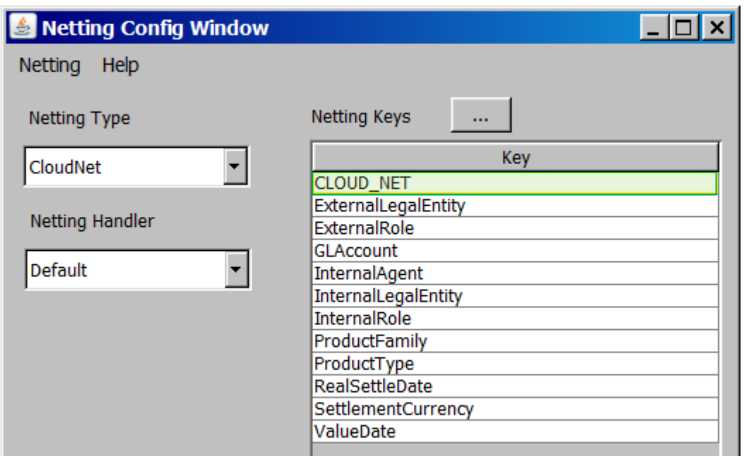
10.13.6 Netting Method

This netting method will be used to create the netting buckets as defined on the underlying MCC. For instance, if a Fund has a separate PAI contract where CLOUD_NET is set to PAI and 2 further separate VM and Coupon contracts where CLOUD_NET is set to ALL, then the system will create 2 netting buckets: 1 for the netting by flow type for PAI only and the other for the contracts that are tagged as ALL.

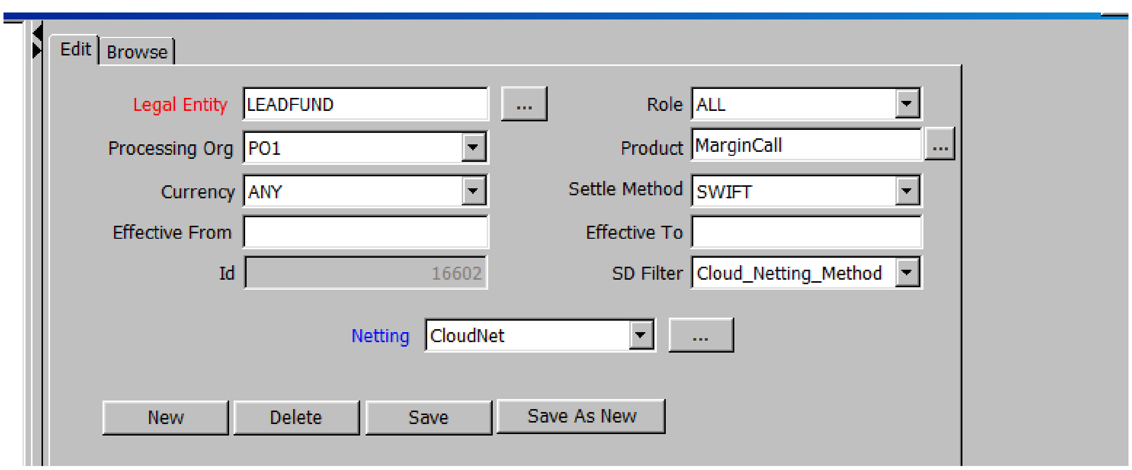
Create new netting type, for instance CloudNet.



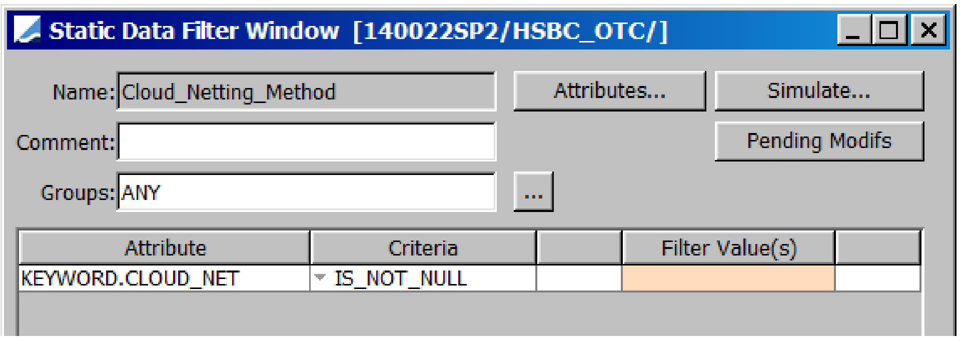
You can use the same netting keys as CounterParty netting but add key CLOUD_NET:



Create a new Netting Method as shown below



Specify in the filter which flow types should be included in this netting method:



10.13.7 Parent Statement

The CLEARING_STATEMENT scheduled task is used to trigger the parent statement using Mode = Parent Daily and the following attributes:

- CCPs - List of CCPs in scope for the statement
- Client - Should bet set to the Parent Entity(ies) only
- Layout - Default. Condensed is currently not supported for Parent statement
- Trade reports - Currently not supported, should be left empty
- Other reports - Same as default daily statement

Task Attributes	
CCPs	LCH
Static Data Filter	
Client	LEADFUND
Layout Style	Default
Mode	Parent Daily
New Trades for IRS	
New Trades for FXNDF	
New Trades for CDX	
Open Trades for IRS	
Open Trades for FXNDF	
Open Trades for CDX	
Terminated Trades for IRS	
Terminated Trades for FXNDF	
Terminated Trades for CDX	
Matured Trades for IRS	
Matured Trades for FXNDF	
Matured Trades for CDX	
Account Activity Template	PO1_STMT_ACTIVITY
Collateral Position Template	PO1_STMT_MC_POSITION
Collateral Allocation Template	PO1_STMT_MC_ALLOCATION
Collateral Context	EOD_COLLATERAL_CONTEXT

The Parent Daily Statement is an aggregation of all the flows of the Child entities that are tagged with the MCC attribute CLOUD_NET. The statement is based on the default daily statement and follows the same logic.

The Parent statement can be distinguished from the child statement by looking at BO Message Attribute “Statement Type”: Set to PARENT_DAILY for the parent statement and DAILY for the child statement.

CALYPSO

Parent Daily Statement on 2017-04-05 for LeadFund

LeadFund

, ,

Financial Summary

Clearing Cash Flows Summary

	USD	Total (USD)
Beginning Cash Balance	-459,652.00	-459,652.00
Commissions/Fees	0.00	0.00

10.14 Scheduled Tasks Execution

The scheduled tasks are executed by the Calypso Scheduler once you have defined triggers as described in the Calypso Scheduled Tasks User Guide.

Important Note – Timezones Considerations

In order to successfully process scheduled tasks which combine the import and processing of EOD files, **you need to run the relevant scheduled tasks for a given day before the EOD of the books where the trades are saved**, based on the book's timezone.

For example, the book's timezone is New York EOD 5pm. To process today's files, you need to run the scheduled tasks before 5pm New York time, regardless of where you run the scheduled tasks from, so that the trades are timestamped as of today, and the settlement date is computed from today.

Order of Execution

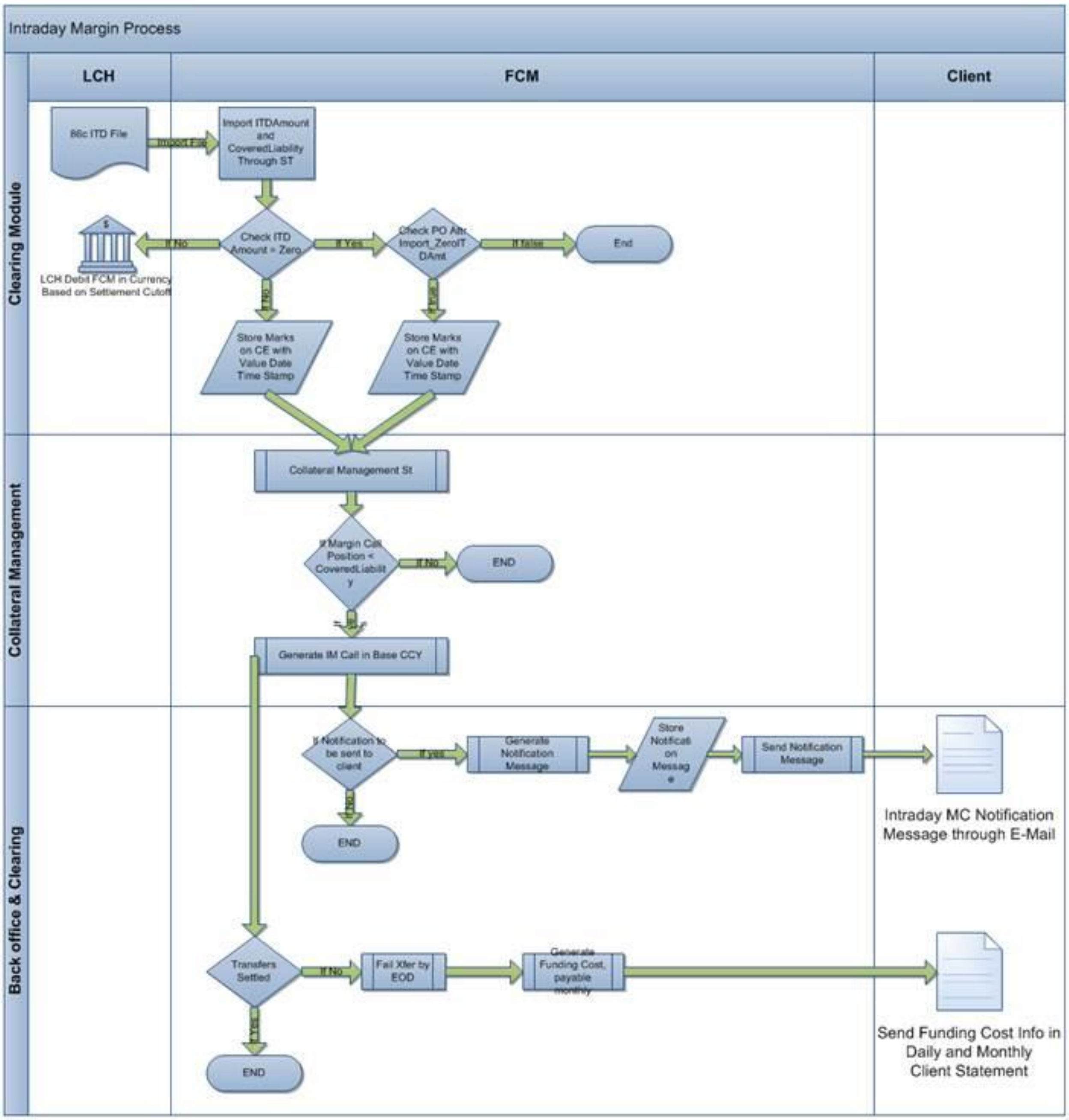
They should be executed in the following order:

- CLEARING_SOD_MARGINCALL (start of day)
- CLEARING_INTRADAY_MARGIN (every half hour during the day)
- CLEARING_TRANSLATE_TO_CDML
- CLEARING_PROCESS_FROM_CDML
- CLEARING_INTRADAY_SETTLEMENT (for intraday GBP FRAs only)
- COLLATERAL_MANAGEMENT
- CLEARING_STATEMENT
- ERS_ANALYSIS

11 Intraday Margin Calls to Clients

This section describes the setup for making intraday margin calls to clients, and sending XML margin call notifications.

Intraday margin calls to clients follow the diagram below.



11.1 PL Mark Mapping

In this process we translate yyyymmdd_REP00086c - Intraday Margin Split_ “n” into CDML format for intraday reporting. 86c Intraday contains CoveredLiability = (CoveredIM + CoveredLM + Covered AM + CoveredBR + CoveredCM + CoveredNPVChange)

This report gives information on intraday initial margin requirements at a portfolio level for client activity.

- Frequency: Intraday, LCH generates the report every 15 mins
- Report Structure: This report contains the following information
  - MbrMnemonic = “ShortName”
  - Account =”C” representing client activity
  - ReportingCCY = Currency in which CoveredLiability is reported
- Sub Components of CoveredLiability: We are importing the following components for intraday client reporting purposes along with CoveredLiability in CollateralExposure trades:
  - CoveredIM = Initial Margin for all registered trades.
  - CoveredLM = Liquidity Margin: Liquidity Risk Multiplier multiplied by the Initial Margin amount. This is taken from the Previous Days Close of Business.
  - CoveredAM = Additional Margin for all registered trades.
  - CoveredBR = BR for all registered trades.
  - CoveredCM = CM within the total liability amount which has registered a call. This is only populated should a backload call or a TriReduce call be made.
  - CoveredNPVChange = NPV change for all registered trades -i.e. CoveredNPV – NPVPreviousDay.
  - ItdCallAmount = Non-cumulative Intraday call amount.

11.2 Configuration Requirements

11.2.1 Domain Values

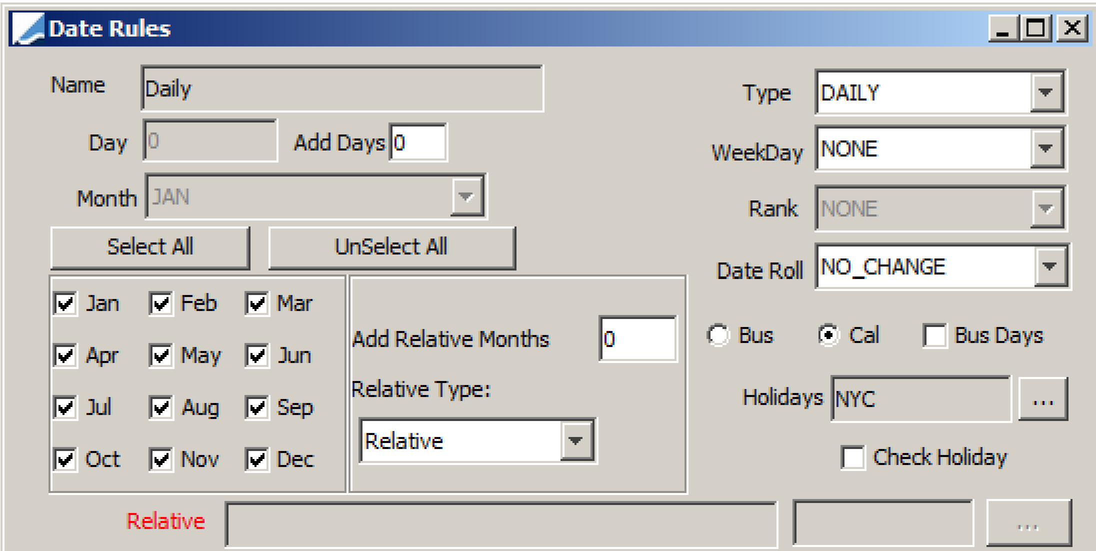
In the domain “Clearing.Statement.ITD.useBaseValue” add the value True or False.

- If true, amounts are converted to the base currency of the collateral context.
- If false, amounts are converted to the contract currency of the LCH IM contracts.

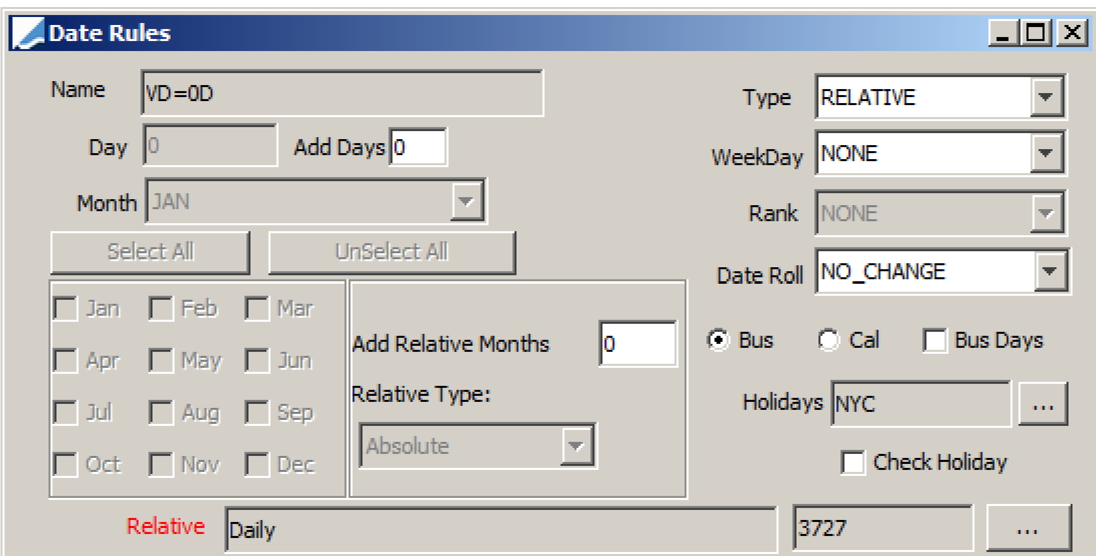
11.2.2 Date Rule Setup

The following date rules are needed for the margin call contract for ad-hoc or intraday valuation.

Daily date rule for Valuation Date Frequency



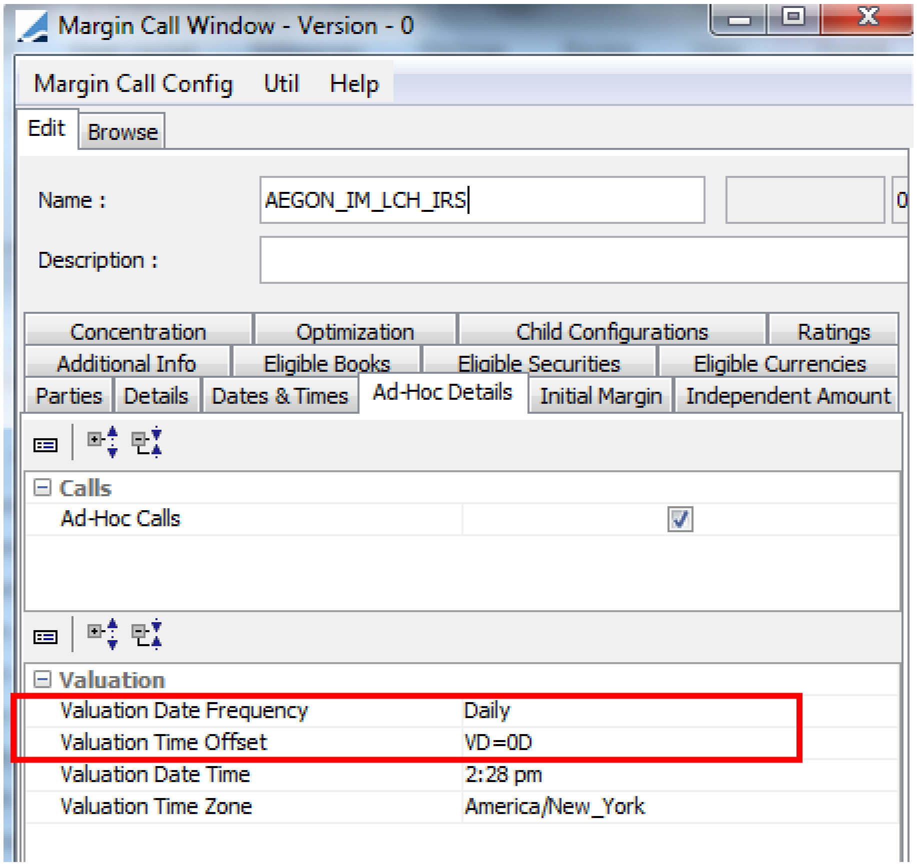
VD=0D date rule for Valuation Time Offset



11.2.3 IM Margin Call Contract Setup

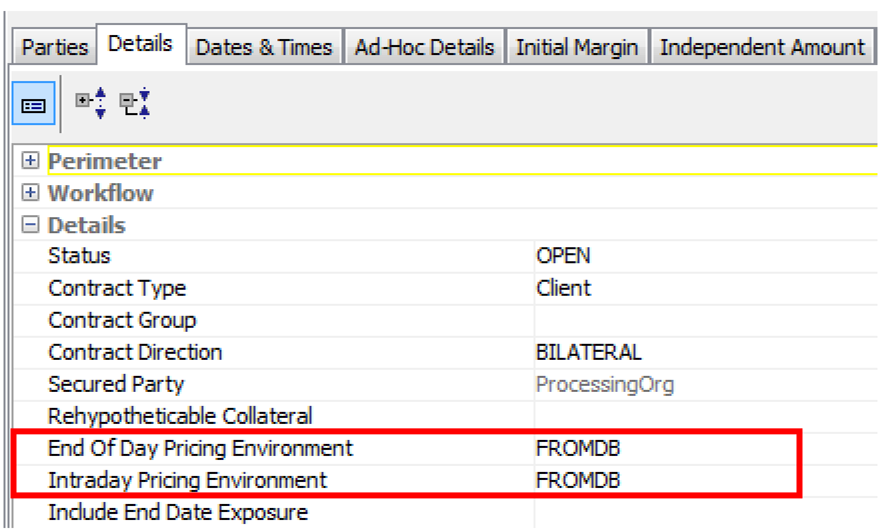
You need to set up Ad-Hoc details for the IM margin call contracts: Check “Ad-Hoc Calls” in the Ad-Hoc Details panel.

This enables the Valuation details.



» Set the Valuation Date Frequency as Daily and the Valuation Time Offset as the relative date rule based on the Daily date rule previously defined.

You also need to set an end-of-day pricing environment and an intraday pricing environment in the Details panel.



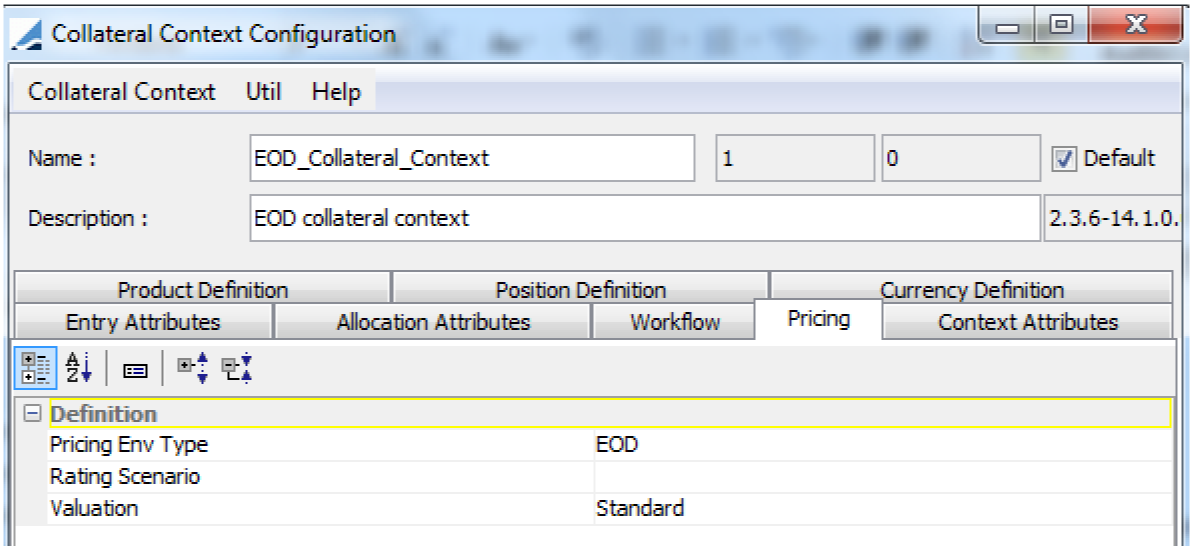
11.2.4 Collateral Contexts

You need to define a collateral context for end-of-day processing, and one for intraday processing.

EOD Collateral Context

It should have Pricing Env Type = EOD, and Valuation = Standard.

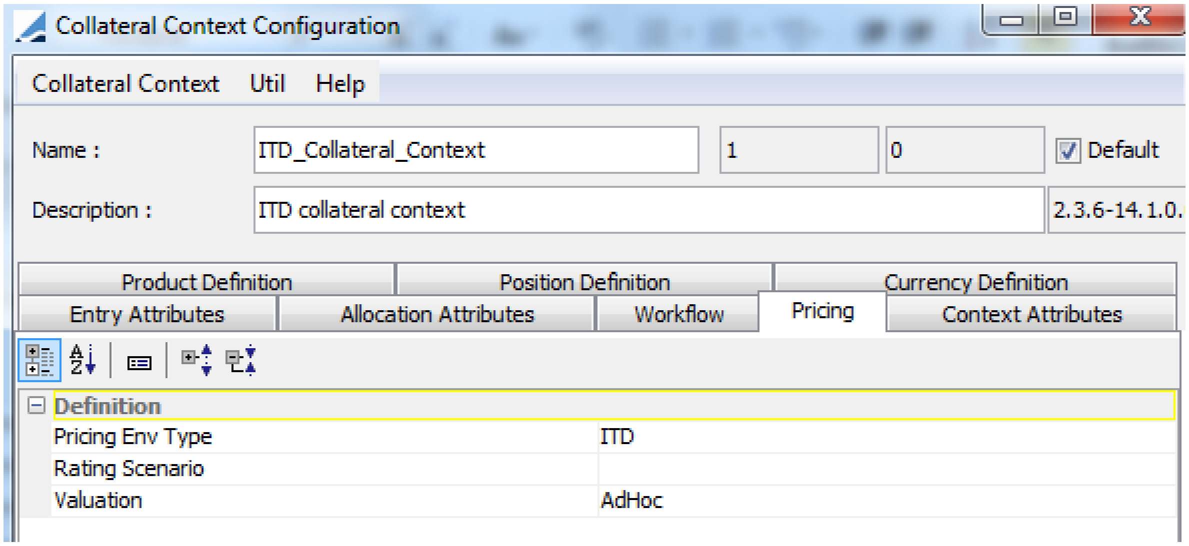
It is used for EOD processing in the scheduled task COLLATERAL_MANAGEMENT, and in the Collateral Manager.



ITD Collateral Context

It should have Pricing Env Type=ITD, and Valuation= Adhoc.

It is used for intraday processing in the scheduled task COLLATERAL_MANAGEMENT, and in the Collateral Manager.

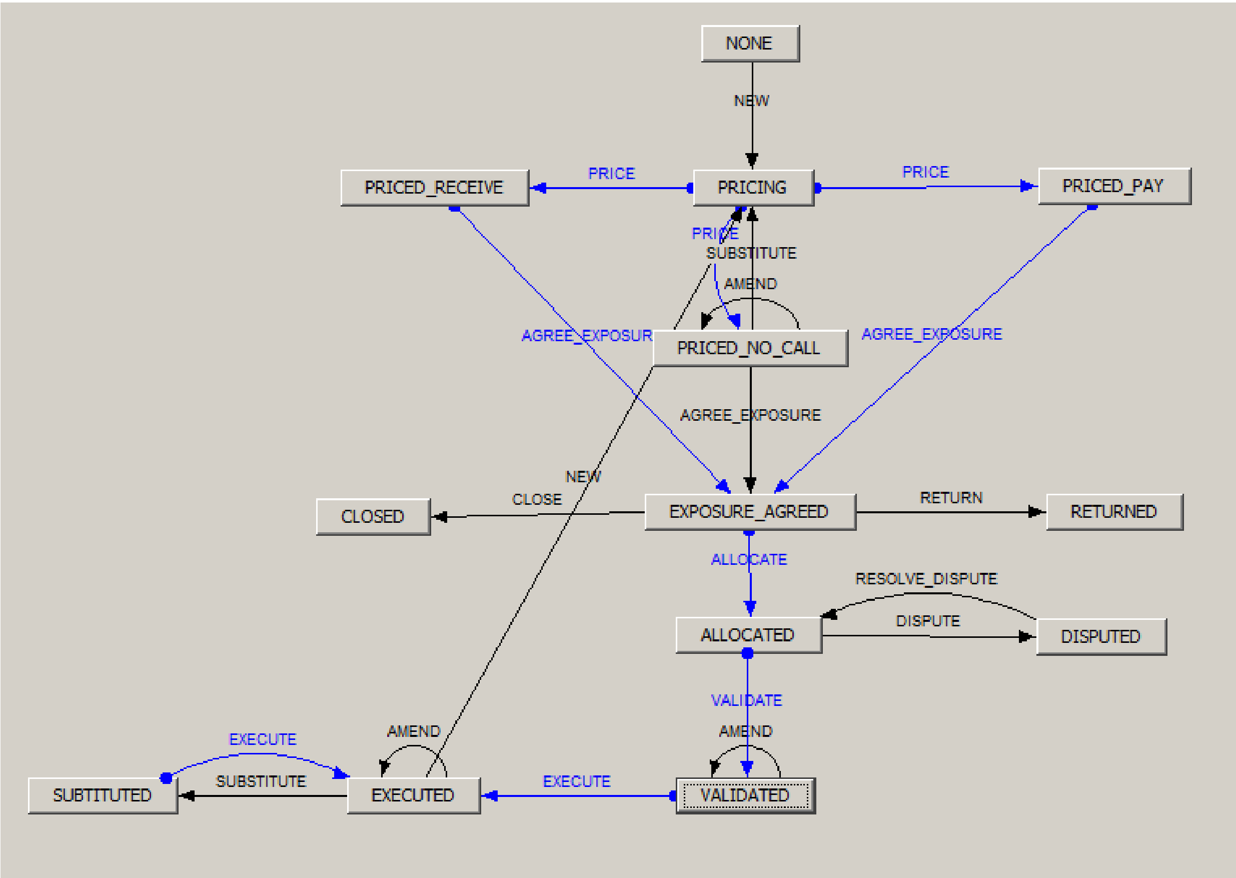


You can also define a separate collateral workflow for the intraday collateral context using the Workflow panel.

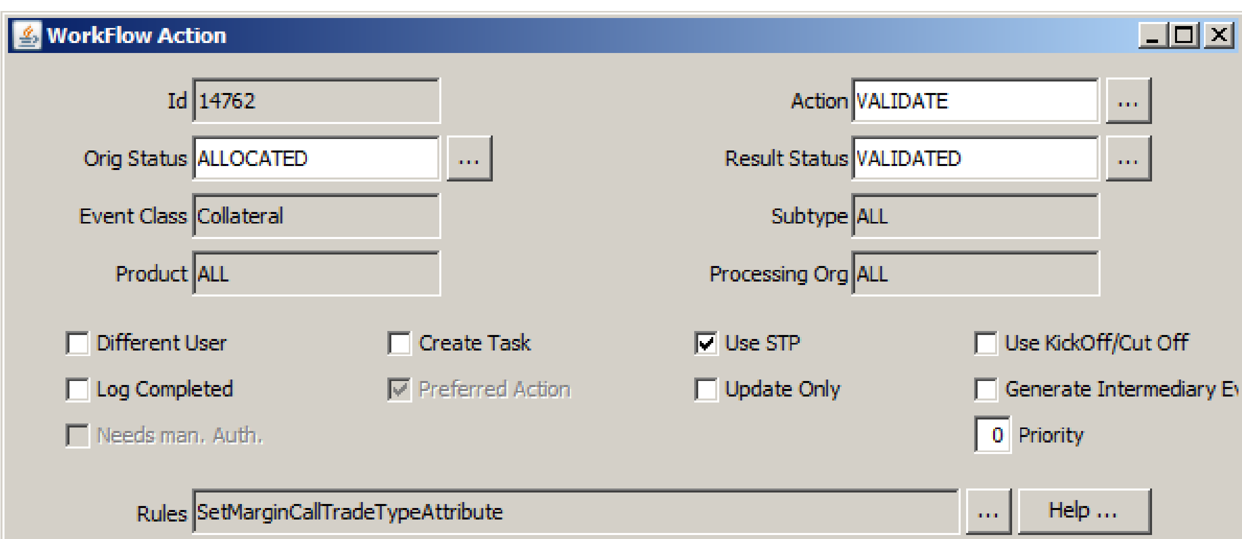
Workflow Setup

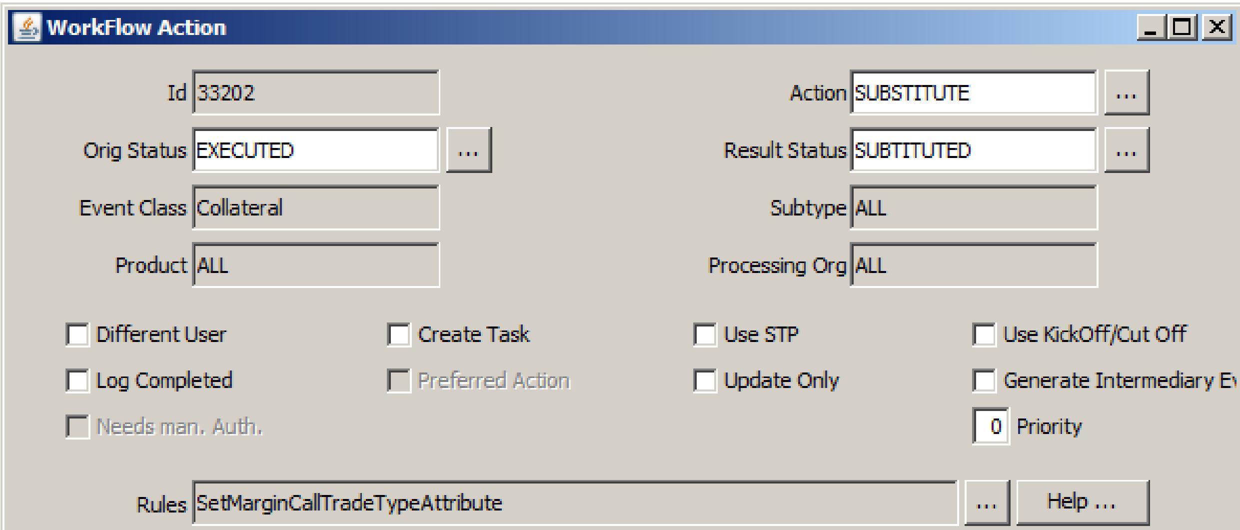
You can create a separate Collateral workflow for each context, or add a NEW transition from EXECUTED to PRICING.

It is also important to have a SUBSTITUTE intermediate transition to apply the workflow rule SetMarginCallTradeTypeAttribute.



The workflow rule SetMarginCallTradeTypeAttribute needs to be added on the VALIDATE and SUBSTITUTE transitions. This rule sets the keyword CCPSettlementType to ITD or EOD based on the Pricing Env Type of the collateral context.





11.2.5 Processing Org Attributes

You need to specify the following attributes on the processing organization:

- EODCollateralContext – Enter the EOD collateral context. Used to apply on Margin Report filters to generate appropriate information on ITD notification XML.
- ITDCollateralContext – Enter the ITD collateral context. Used to apply on Margin Report filters to generate appropriate information on ITD notification XML.
- ImportZeroMarginAmountITD – Used when importing the COVEREDLIABILITY column. Default is true.
    - If false, COVEREDLIABILITY and the other PL marks are imported **ONLY** if ITDCALLAMOUNT column <> 0
    - If true, PL Marks are imported regardless of the value in the ITDCALLAMOUNT column.
- ApplyBufferITD – Used to apply a buffer against intraday margin calls. Default is false.
    - If false, no buffer is applied.
    - If true, a buffer (multiplier) is applied.

11.2.6 Intraday Notification Message

The system creates an XML file on creation of the Margin Call Trades for intraday. It is stored into the local folder. This message is used for client notification and downstream reporting.

Message Setup

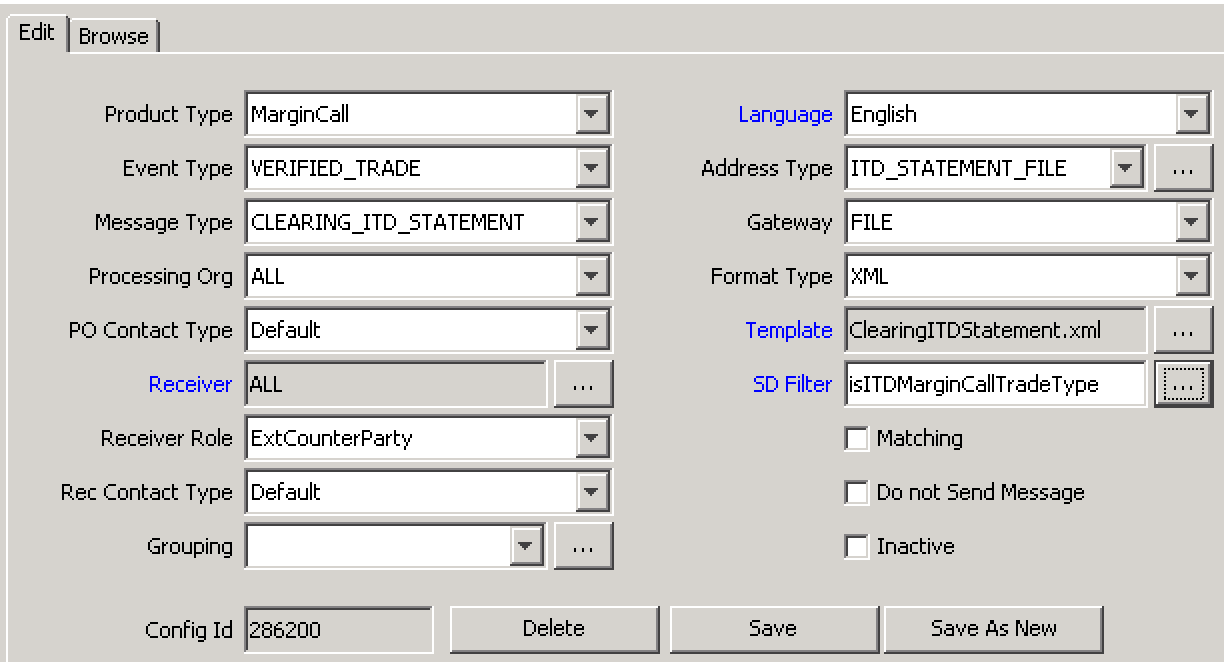
Product Type = MarginCall

Message Type = CLEARING_ITD_STATEMENT

Receiver Role = Statement Recipient

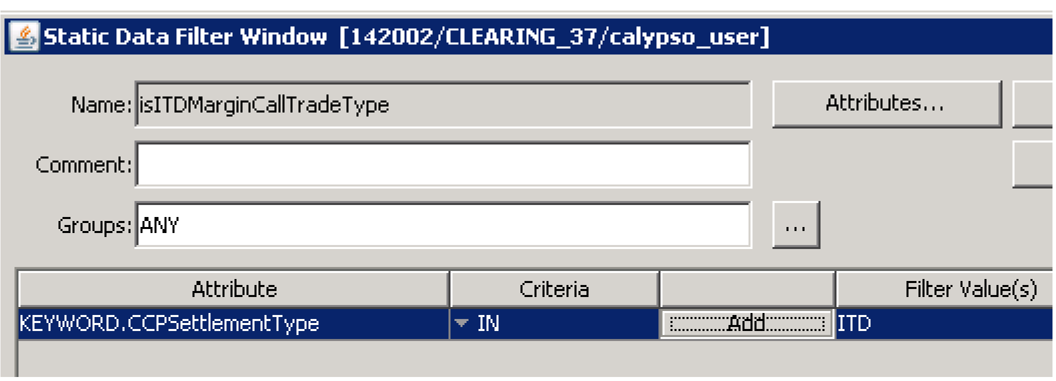
Event Type = STATEMENT

Format Type= XML

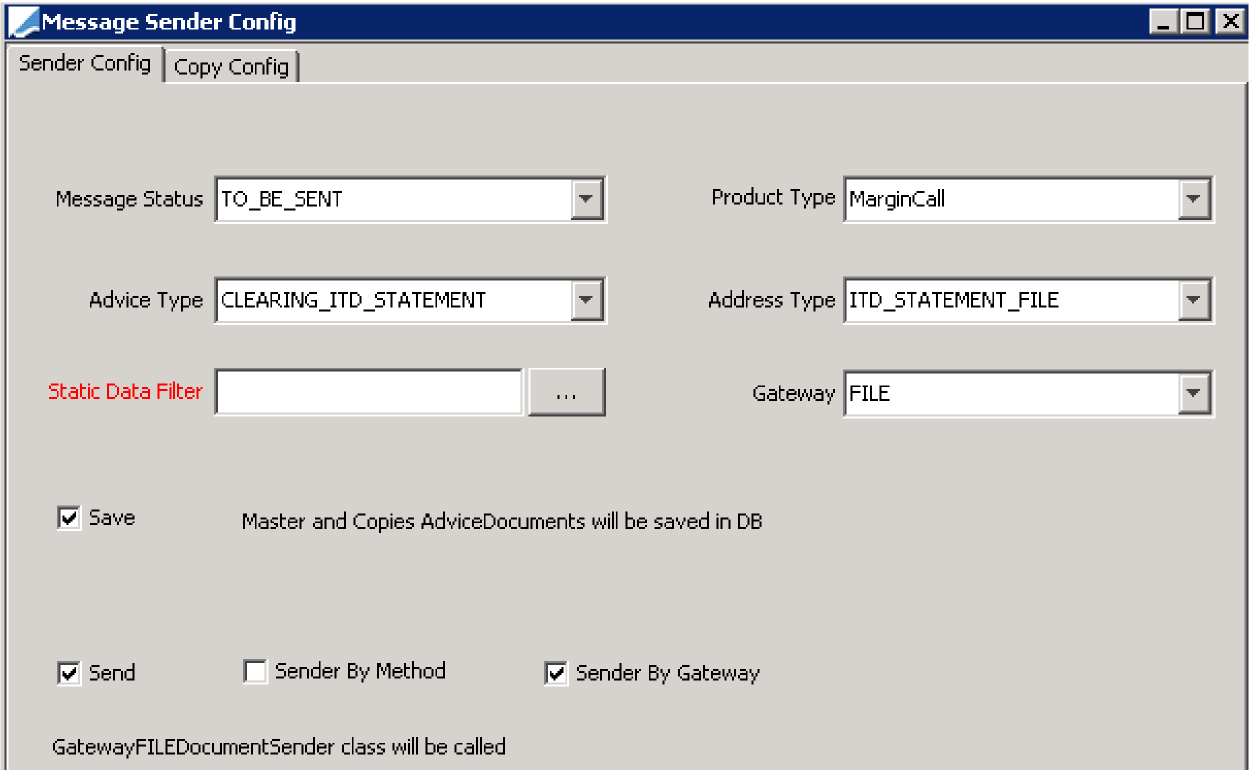


SD Filter Setup

The static data filter checks the trade keyword MarginCallTradeType.

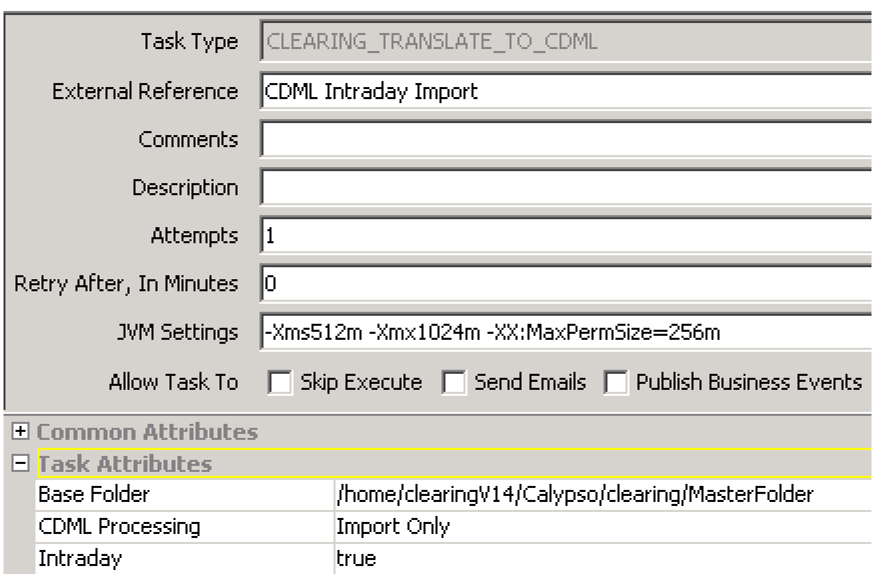


Message Sender Configuration



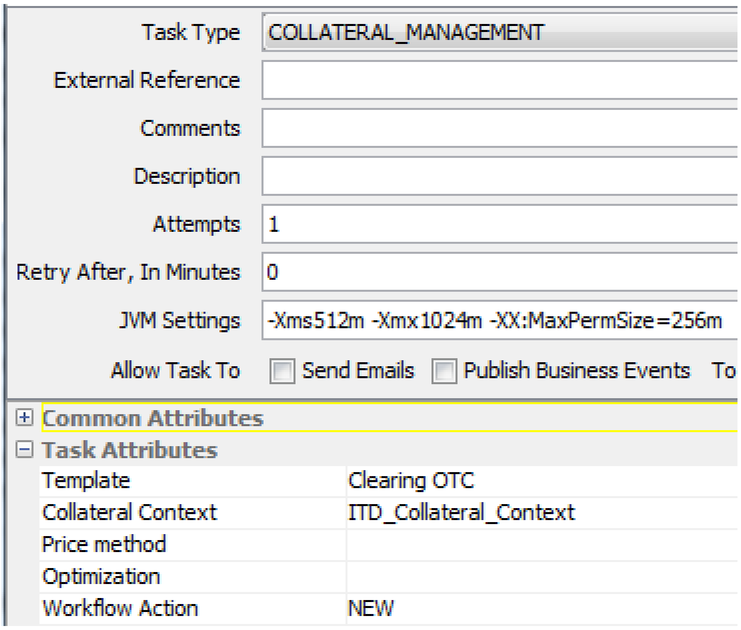
11.3 Scheduled Tasks

Configure the scheduled task CLEARING_TRANSLATE_TO_CDML with Intraday = true.



On execution of this scheduled task, the system imports PL marks on existing Collateral Exposure trades.

After executing this scheduled task, you need to execute the scheduled task COLLATERAL_MANAGEMENT with the intraday collateral context, to generate the margin calls and the intraday message notifications.



12 Default Management Process

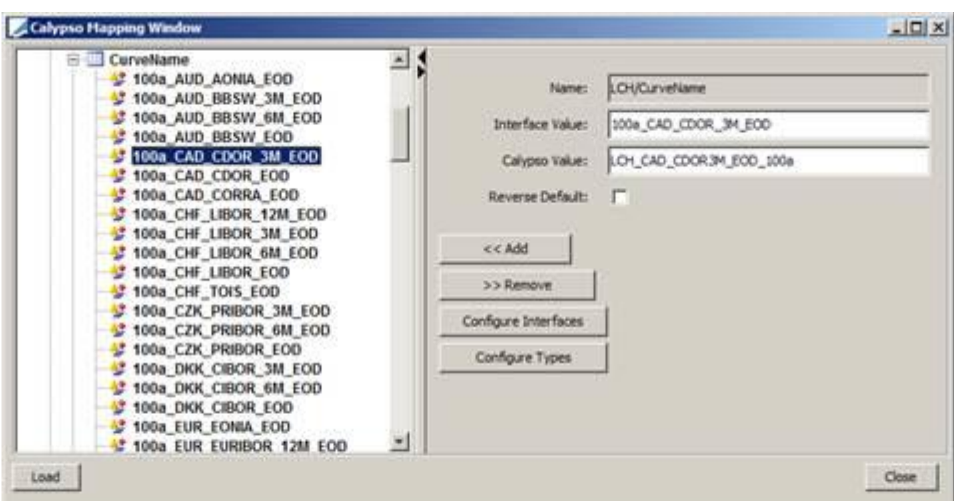
In case of counterparty default, the CCP provides a portfolio to each clearing member (DMP Auction reports) as well as scenario shifts and curves.

The expectation is to calculate VM and IM, and reconcile it with the CCP numbers. This is to check the readiness of the clearing members to take part in the auction of the defaulted portfolio.

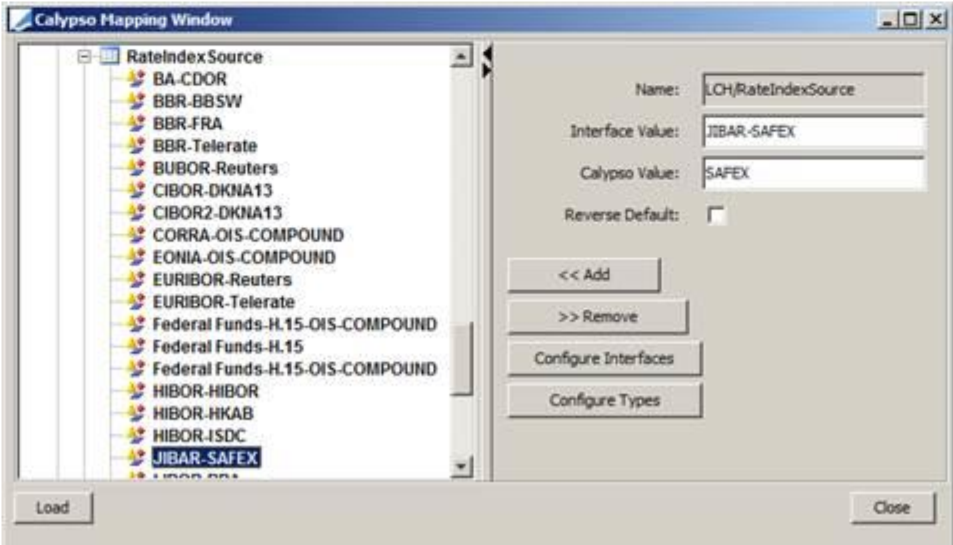
12.1 Curves Mapping

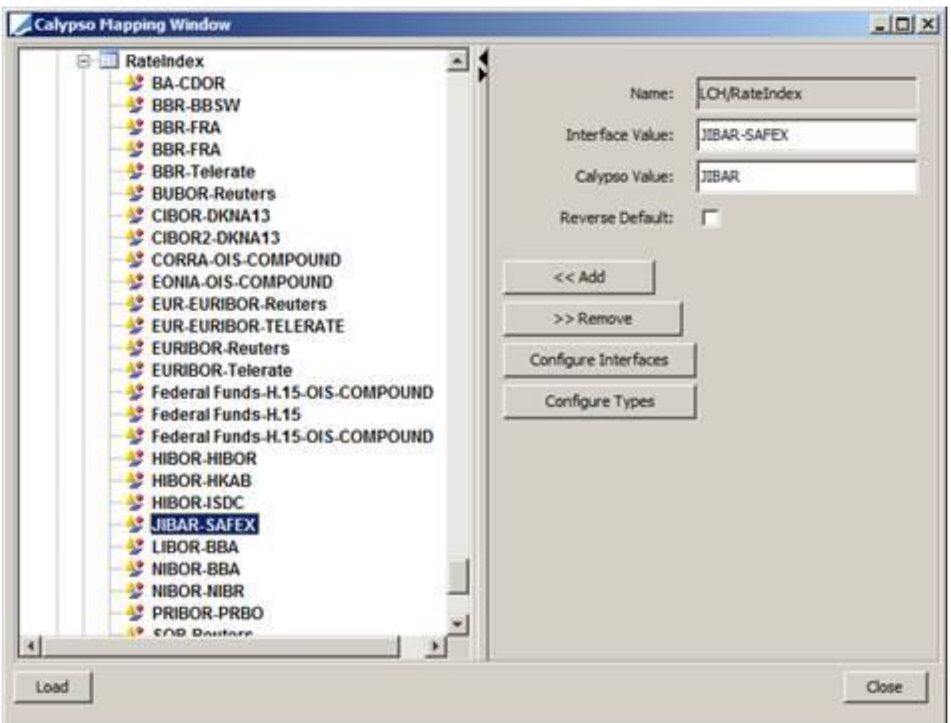
REP109 curves need to be mapped in customclearingreports like in the examples below:

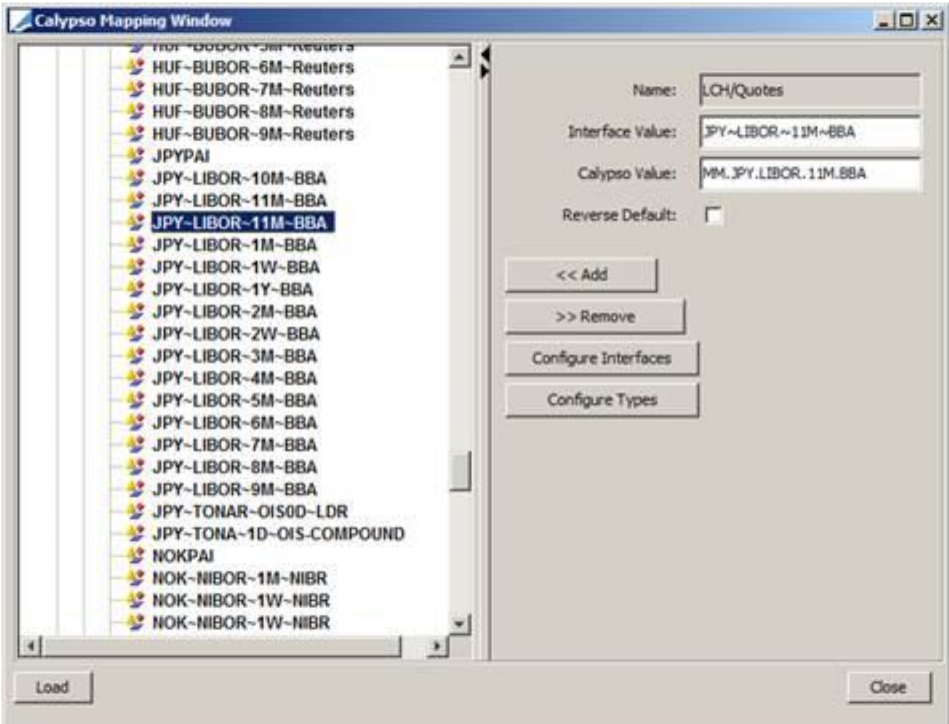
```
<bean name="VMYieldCurve-ZeroRatesDay_ZAR" parent="parentCurveLCHReport">

   <property name="displayName" value="VM Yield Curve - Zero Rates" />

   <property name="path" value="/Public(mbr)/SwapClear#{lchSwapClearFolderSuffix}/Risk/Yield
Curves/${date}_REP00109 VM Curve -  Discount Factors_ZAR_ 1.txt" />

   <property name="XSLResourcePath" value="#{lchStylesheetBasepath}/LCH_REP00100a.xslt" />

</bean>


<bean name="VMYieldCurve-ZeroRatesDay_USD" parent="parentCurveLCHReport">

   <property name="displayName" value="VM Yield Curve - Zero Rates" />

   <property name="path" value="/Public(mbr)/SwapClear#{lchSwapClearFolderSuffix}/Risk/Yield
Curves/${date}_REP00109 VM Curve -  Discount Factors_USD_ 1.txt" />

   <property name="XSLResourcePath" value="#{lchStylesheetBasepath}/LCH_REP00100a.xslt" />

</bean>
```



12.2 Indices Mapping







12.3 Process

You can use the scheduled task DEFAULT_TRADE_LOADER to import FPML messages to create trades of the defaulted portfolio into the system from the DMP Auction reports.

You can use the scheduled task CLEARING_IMPORT_MARKET_DATA to import curves and reset rates so that valuation can be done for all the imported trades.

You can then perform independent valuation and IM calculation.

13 LCH CDS Clearing

LCH CCP has differentiated clearing houses as per product like SwapClear for IRD (LCH), ForexClear for FXNDF (LCH or FXCLEAR), CDS Clear for CDS/CDX (LCHSA or LCH)

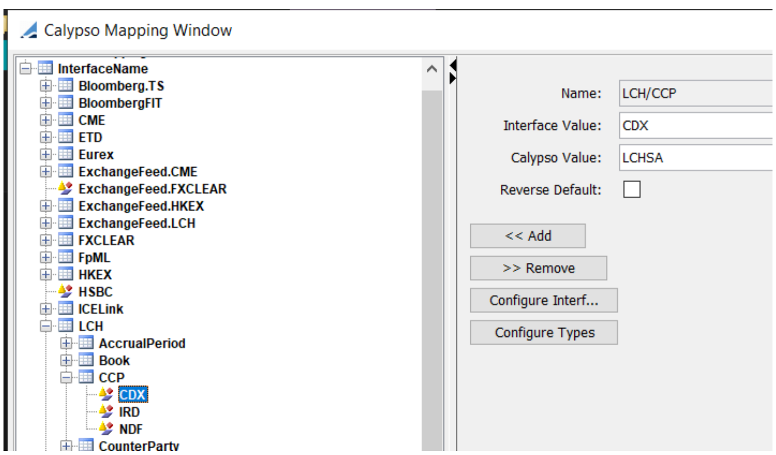
Client can set up CCP's product wise or can set up one CCP LCH for all the products. Calypso system provides this flexibility to the client to do the CCP configuration (Calypso mapping details provided below).

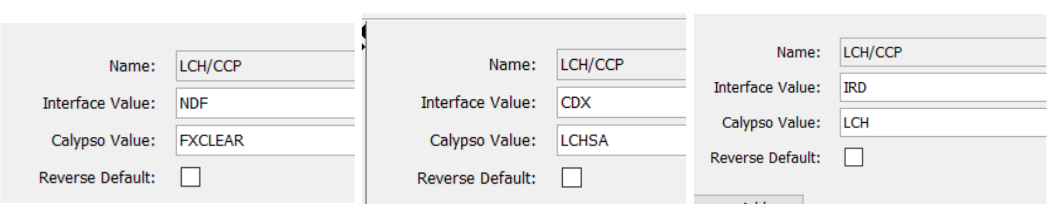
13.1 Setup Requirements

To set up CCP per product, below mapping is required for Exchange feed (EXCHF trade booking).

Note: If the client wants to set-up all products under LCH, then only CCP attribute 'LCH_CPTY'= LCH should be added on LCH LE, no calypso mappings required. If otherwise, then below calypso mappings are required.

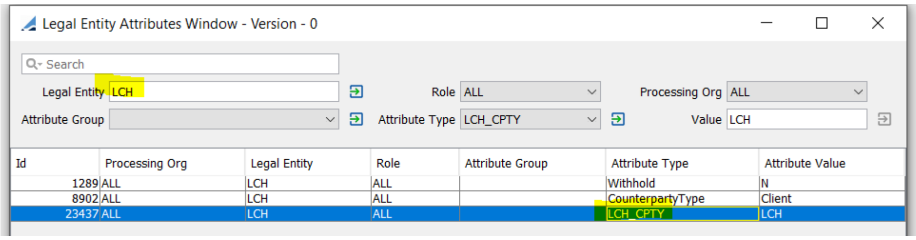
In Calypso Mappings window, user should mention the below mappings under LCH CCP:



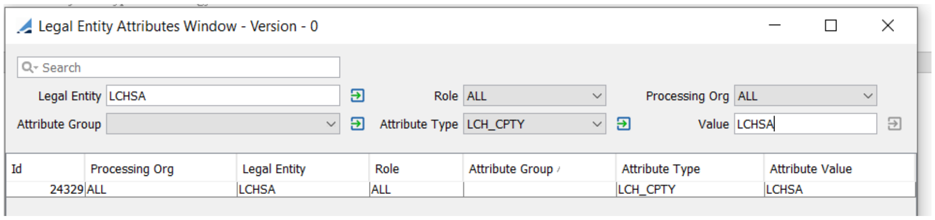


CCP Attributes

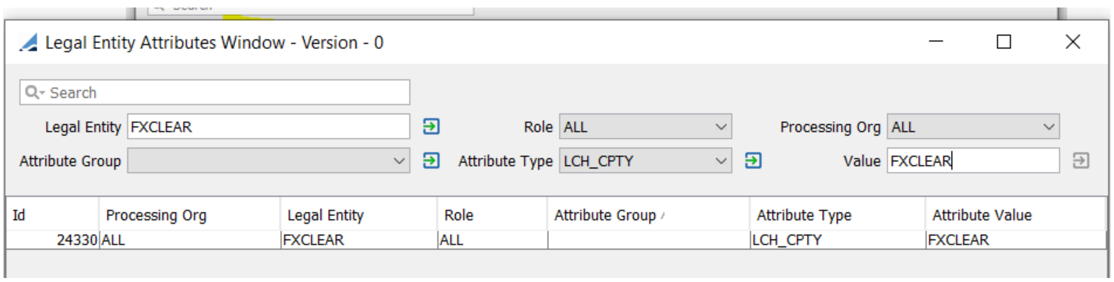
- LCH for IRD



- LCHSA for CDX/ CDS

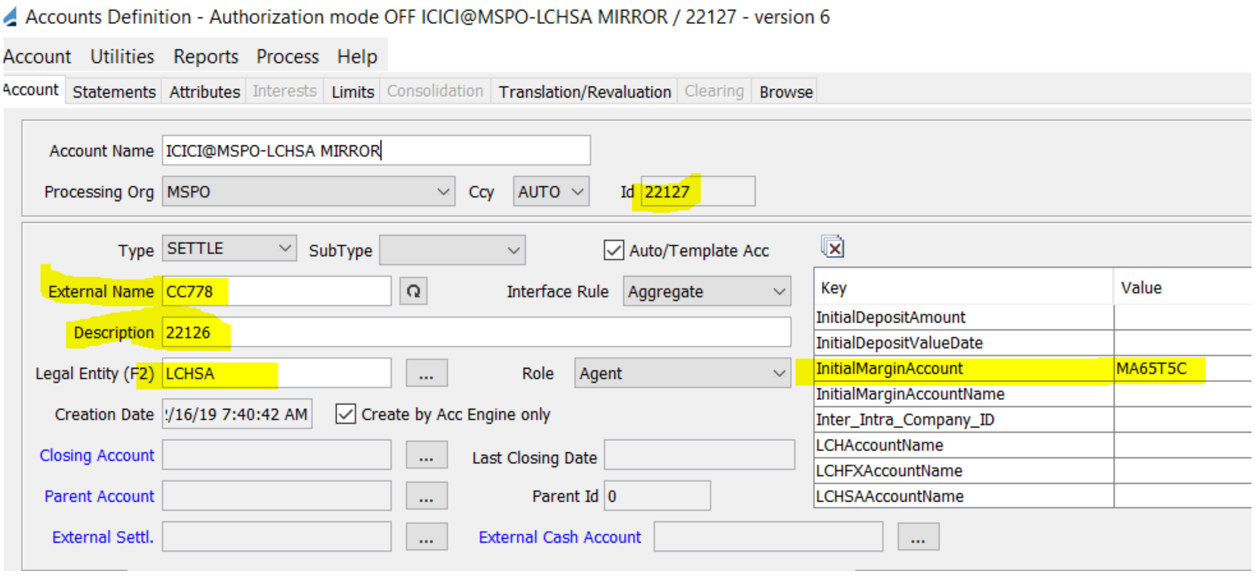


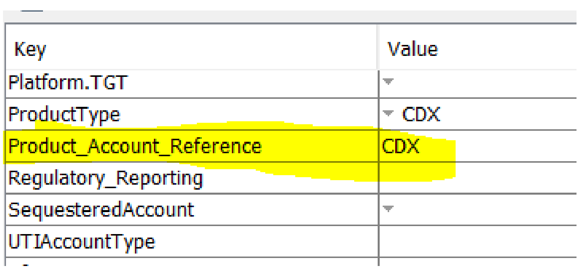
- FXCLEAR for NDF



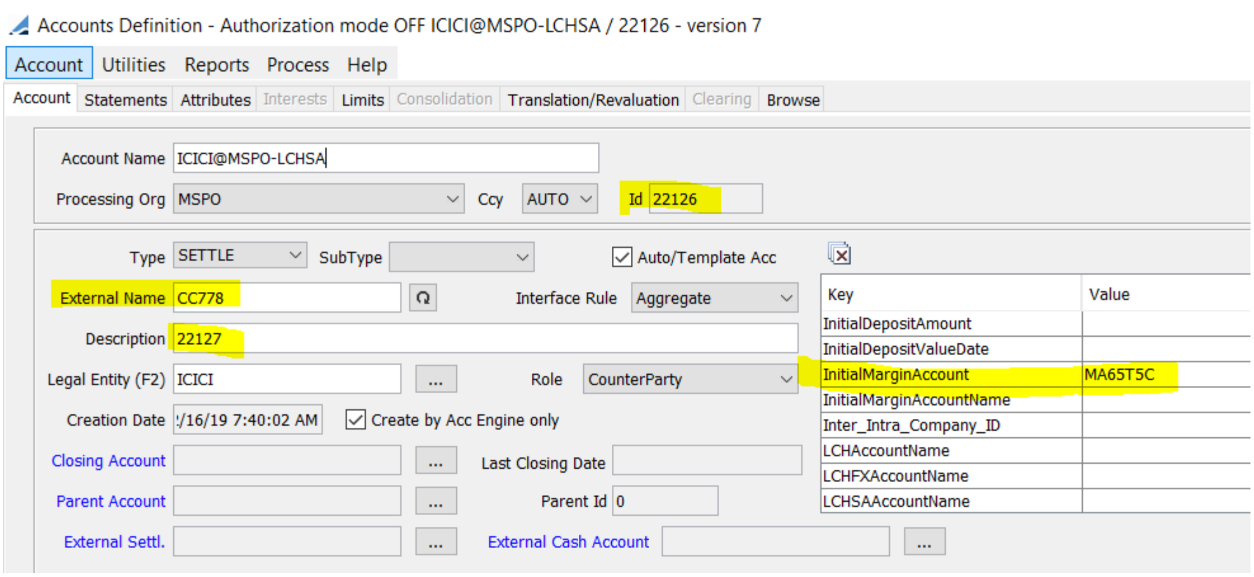
Note: The above Calypso Mapping setup is required mainly to support LCH Trade lifecycle to book the cleared trades in the system.

Clearing Account Structure





To mirror clearing accounts, user has to mention the Account ID in Description tag as below



Key	Value
Platform.STC	
Platform.TGT	
ProductType	CDX
Product_Account_Reference	CDX
Regulatory_Reporting	
SequesteredAccount	

For the clearing A/c to be picked up correctly, below points should be noted

- It is the External name i.e. position A/c ID which identifies the clearing A/c for the trades.
- Description tag on the clearing A/c creates the mirroring link between the 2 clearing A/c's
- Product_Account_Reference attribute differentiates the clearing A/c based on the product from a set of A/c's in the system
- InitialMarginAccount attribute helps linking the Initial margin

13.2 Intraday processing

Calypso supports Incoming and Outgoing FPML messages for CDS/ CDX Clearing

<u>Incoming messages</u>

- clearingAcknowledgement
- clearingRefused
- clearingStatus
- clearingConfirmed
- requestConsent
- consentAcknowledgement
- messageRejected

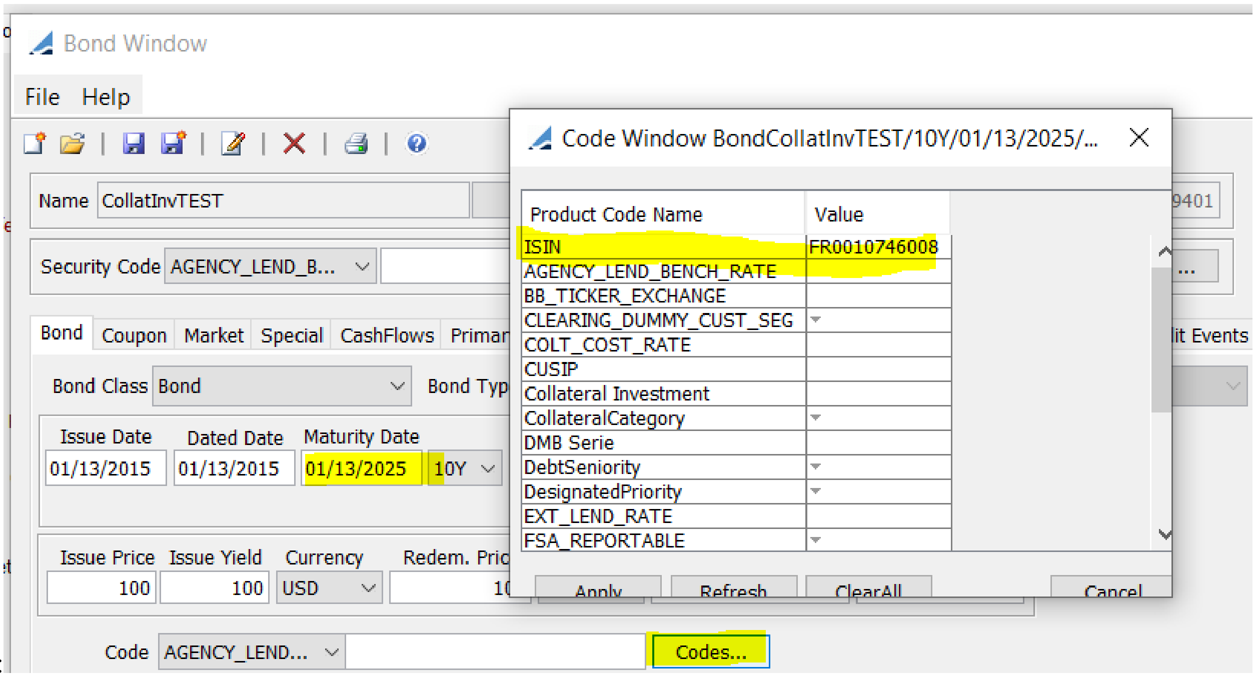
<u>Outgoing messages</u>

- requestClearing
- consentAcknowledgement
- consentGranted
- consentRefused
- messageRejected
- clearingAcknowledgment

Product Setup

To set up a CDS, underlying Bond should be defined in the system.

Example:



ISIN and the maturity date should match with the details in the FPML.

You need to add mapping for the Seniority:

Name = FpML/Seniotity

Interface Value = SeniorUnSec

Calypso Value – SENIOR_UNSECURED

You need to add mapping for the SettlementMatrix:

Name = FpML/SettlementMatrix

Interface Value = StandardEuropeanCorporate

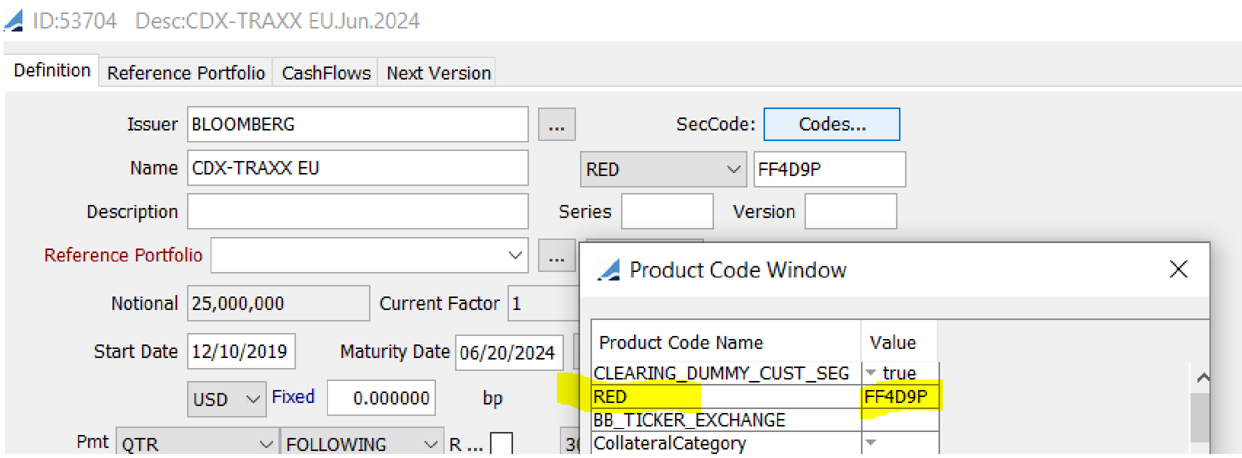
Calypso Value = European Corporate

FPML Details

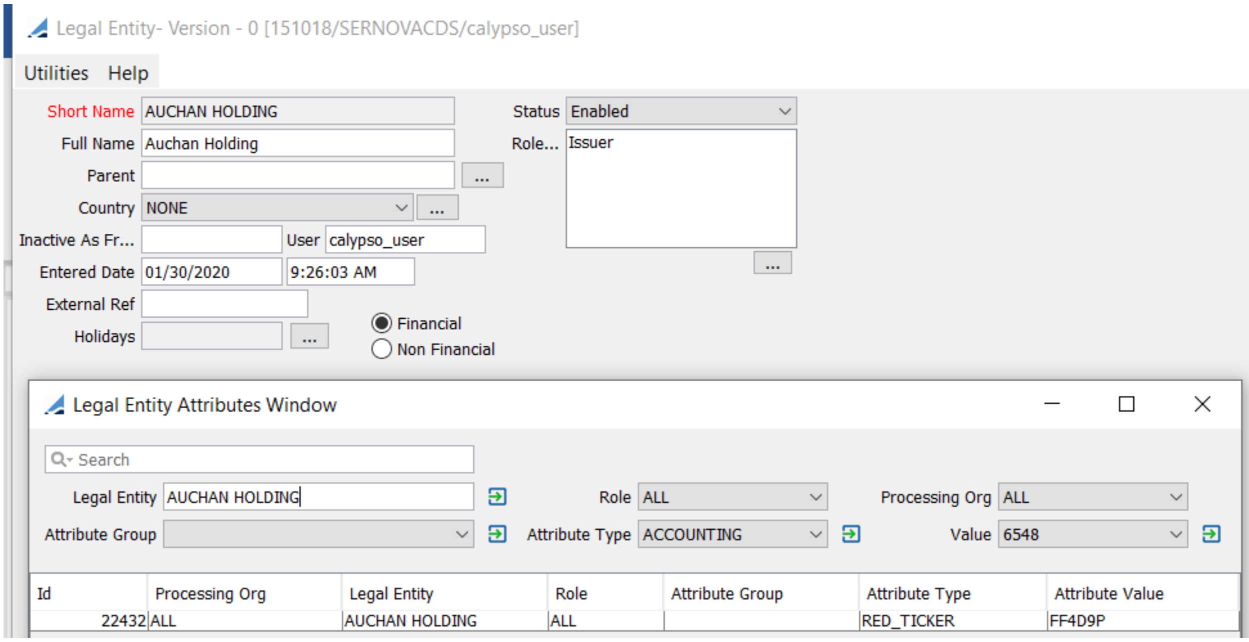
```
- <effectiveDate>
    <unadjustedDate>2017-07-25</unadjustedDate>
  </effectiveDate>
- <scheduledTerminationDate>
    <unadjustedDate>2021-06-20</unadjustedDate>
  </scheduledTerminationDate>
  <buyerPartyReference href="CDSQAET000E"/>
  <sellerPartyReference href="clearer"/>
- <referenceInformation>
  - <referenceEntity>
      <entityName entityNameScheme="http://www.fpml.org/spec/2003/entity-name-RED">Auchan Holding</entityName>
      <entityId entityIdScheme="http://www.fpml.org/spec/2003/entity-id-RED">FF4D9P</entityId>
    </referenceEntity>
  - <referenceObligation>
    - <bond xsi:type="Bond">
        <instrumentId instrumentIdScheme="http://www.fpml.org/spec/2002/instrument-id-ISIN-1-0">FR0010746008</instrumentId>
```


Similarly, CDX should be set up as below with identifier 'RED' product code which matches with the Issuer entity ID. Maturity date is also matching parameter to pick the correct product in the system.

CDX Example



Issuer



For the complete exchange feed setup, user should refer to the Calypso Exchange Feed Integration Guide.

13.3 EOD File Processing

13.3.1 EOD Reports from LCH CCP

House files:

- Initial Margin EOD reports

P-MCDS-LL1-20200130-230639_EH000C65T5**CMRG**00225.xml

P-MCDS-LL1-20200130-215712_EH000C65T4**MACH**00261.csv

- Trade Valuation EOD reports

P-MCDS-LL1-20200130-225254_EH000C65T5CVMH00225.xml

Client files:

- Initial Margin EOD reports

P-MCDS-LL1-20200220-000349_EH000C6358**CMRC**00051.xml

P-MCDS-LL1-20200220-232139_EH000C6358**MACC**00051.csv

- Trade Valuation EOD reports

P-MCDS-LL1-20200130-225254_EH000C65T5**CVMH**00225.xml

To source segregation A/c, MACH/MACC file is mandatory for the IM report to be processed. Translate ST will fail if these files are missing.

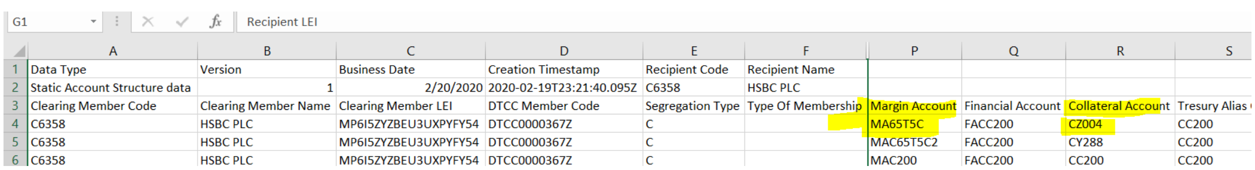
Also, Translate / Process ST will run if the user places set of house files or client files only or can run both client and house files together.

To source the segregation A/c from MACC/ MACH, system is configured to first identify the Margin A/c from CMRC/ CMRG and then locate the corresponding segregation A/c across it mentioned in MACC/ MACH.

E.g. Margin A/c from File CMRG (house)/ CMRC (client) will be sourced from below tag:

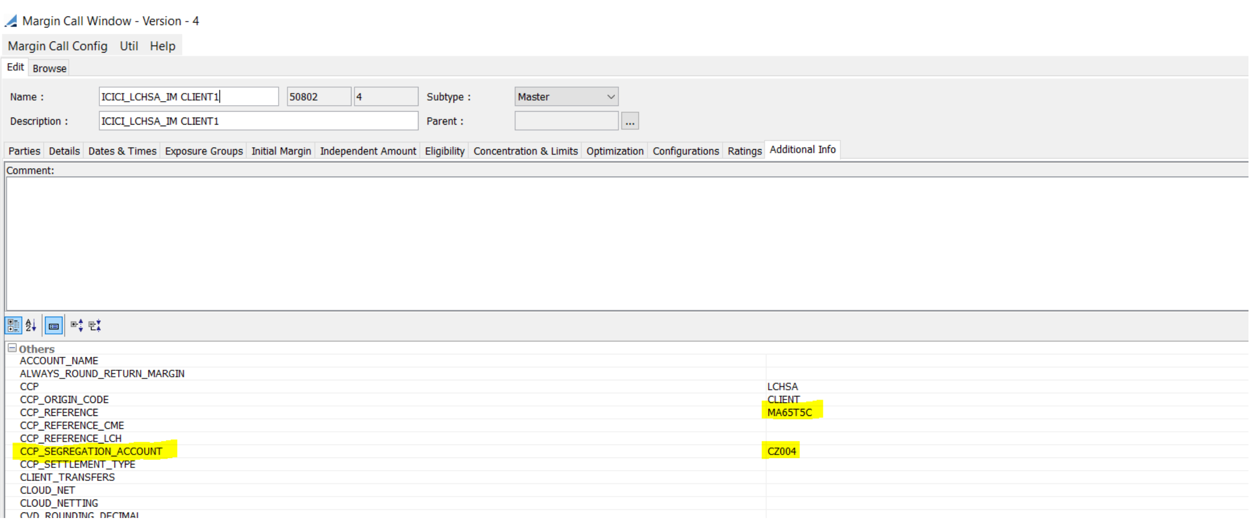
```
</CMFResult>
<MAResults>
    <MAResult>
        <accountId>MA65T5C</accountId>
        <totalMarginRequirement>
            <currency>EUR</currency>
            <amount>80149323.5</amount>
        </totalMarginRequirement>
        <initialMargin>
            <spreadMargin>
```

This accountId will be searched in MACC (client)/ MACH (house) to locate the segregation A/c as highlighted below:



	A	B	C	D	E	F	P	Q	R	S
1	Data Type	Version	Business Date	Creation Timestamp	Recipient Code	Recipient Name				
2	Static Account Structure data	1	2/20/2020	2020-02-19T23:21:40.095Z	C6358	HSBC PLC				
3	Clearing Member Code	Clearing Member Name	Clearing Member LEI	DTCC Member Code	Segregation Type	Type Of Membership	Margin Account	Financial Account	Collateral Account	Tresury Alias
4	C6358	HSBC PLC	MP6I5ZYZBEU3UXPYFY54	DTCC0000367Z	C		MA65T5C	FACC200	CZ004	CC200
5	C6358	HSBC PLC	MP6I5ZYZBEU3UXPYFY54	DTCC0000367Z	C		MAC65T5C2	FACC200	CY288	CC200
6	C6358	HSBC PLC	MP6I5ZYZBEU3UXPYFY54	DTCC0000367Z	C		MAC200	FACC200	CC200	CC200

Similarly, this should be mentioned on the IM MCC as below:



Also, to map the Trade valuation PL marks, 'deskId' from CVMH and 'clientCode' from CVMC should be mentioned in the external name on the respective client and house A/c's

- From CVMH


```xml
<CCPTRI>LCH20181205.18051300316</CCPTRI>
<USI>
    <USIPrefix>1010000251</USIPrefix>
    <USIValue>LCH20181205.18051300316</USIValue>
    <USI>1010000251LCH20181205.18051300316</USI>
</USI>
<deskId>Desk-C65T5</deskId>
<originalReferences>
```


- From CVMC


```xml
<account>
    <tradeAccountCode>TACC105C</tradeAccountCode>
    <marginAccountCode>MAC65T5C2</marginAccountCode>
    <client>
        <clientCode>CC773</clientCode>
        <clientName>HSBC BANK PLC CLIENT 9</clientName>
        <clientLEI>LEIHSBCBANKPLC9</clientLEI>
    </client>
```

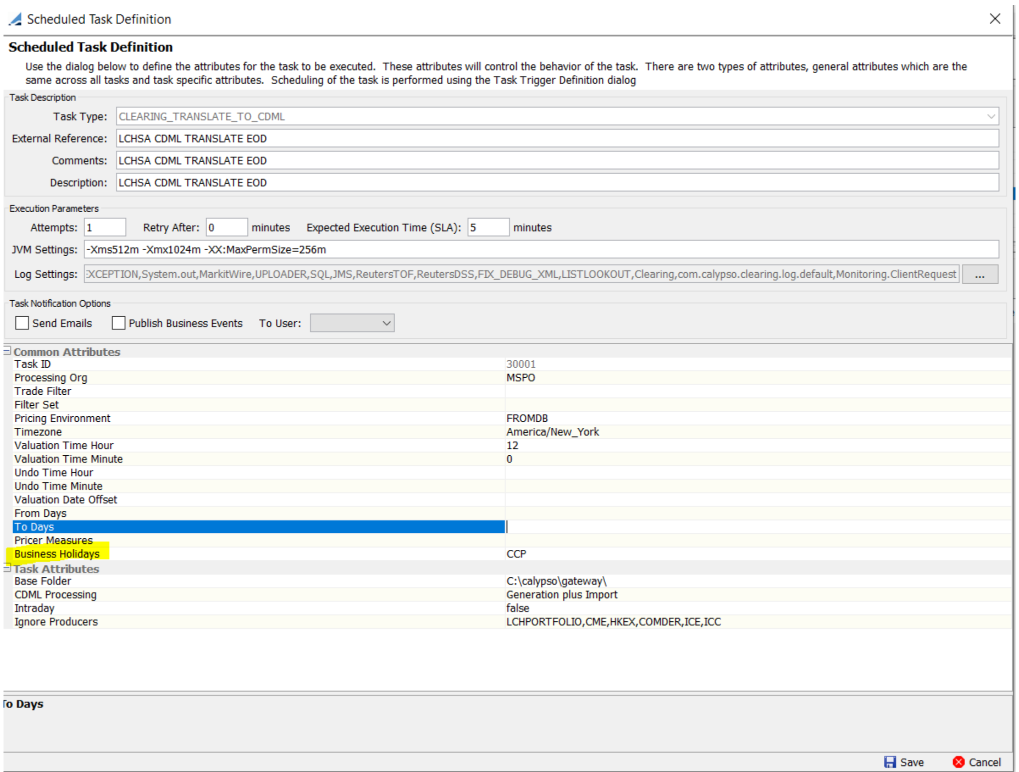

<u>Points to note in trade Valuation file:</u>

- Only record status 'stock' is filtered in from CVMC / CVMH
- Upfront fee and Coupon will only be sourced when the below payment dates match the filedate


```xml
<upfrontPremiumPaymentDate>2017-08-17</upfrontPremiumPaymentDate>

    </quarterlyCoupon>
    <quarterlyCouponPaymentDate>2019-09-20</quarterlyCouponPaymentDate>
    <tradeDate>2017-08-16</tradeDate>
```


13.3.2 Schedules Tasks Setup

Below is the CDML Translate ST used to import the CCP EOD reports into the system.



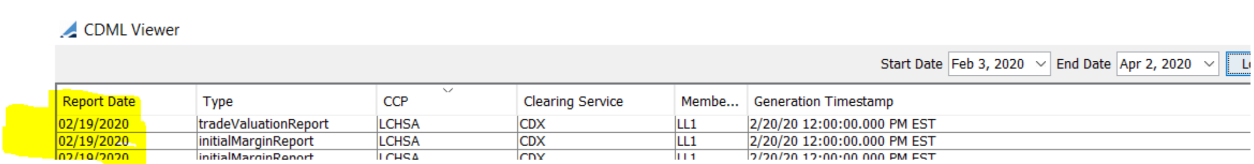
LCHSA CCP generates EOD files on T+1 instead of T day unlike other CCP's. Hence, the logic is set up at the back end where the file is translated with T+1 but the CDML report is created for T day.

CDML process ST is then processed for T day. Below is an example for this:

<u>Filename</u>: P-MCDS-LL1-**20200220**-000349_EH000C6358**CMRC**00051.xml

Filedate is 20th Feb,2020. Therefore, CDML Translate ST should be run for 20th Feb but the CDML object will be created for 19th Feb,2020 as highlighted below:

User should then run the CDML Process ST as of 19th Feb.

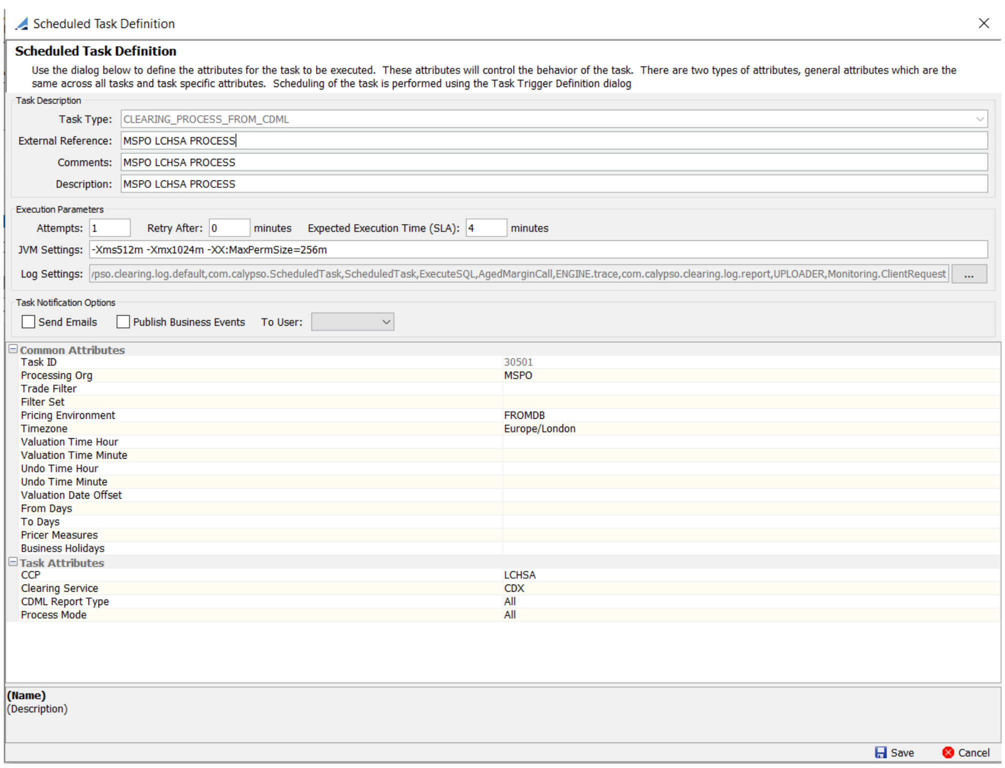


Similarly, in case of holiday scenarios, ST will be unable to locate whether the previous day is a holiday. Hence, to cover such scenarios, Business Holiday attribute should be updated with the respective holiday the user wants to apply to the process as highlighted in the above ST screenshot.

Accordingly, System will check the calendar and create the CDML object. Refer below table for example:

Business date	File Date	If file-date is
6th Dec, Friday	7th Dec- Saturday, 8th Dec- Sunday, 9th Dec- Monday	9th Dec- Monday then CDML should be able to create the object for 6th Dec, considering weekend holidays
6th Dec, Friday	7th Dec- Saturday, 8th Dec- Sunday, 9th Dec- Monday- CCP holiday	10th Dec-then CDML should be able to create the object for 6th Dec, considering weekend holidays plus Monday holiday
24th Dec, Tue	25th Dec -CCP holiday	26th Dec, then CDML should be able to create CDML object for 24th Dec considering 25th Dec as holiday

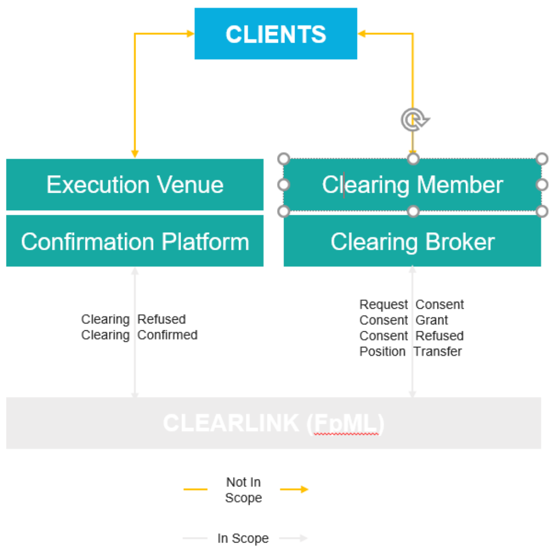
CDML Process ST Setup



14 LCH FX Clearing

The FX clearing service is part of LCH Forex Clear Clear. LCH Forex Clear clears the following product types: NDF, FX Option, FX Spot, FX Forward.

Below is the LCH FX ITD and EOD process flow along-with supported account structures / process.



Account Structure	EOD Processing

Client/House
▪ Gross Omnibus
▪ Individual Segregated
▪ Net Omnibus
▪ Multi Branch
	CDML
	▪ IM Processing
	▪ VM Processing
	  ▪ NPV Adjusted
	  ▪ Price Alignment Interest
	  ▪ Option Premium
	  ▪ Upfront Fee
	▪ Collateral Integration
	▪ Client Statement Reporting

14.1 Supported Lifecycles

The following FX option trades are supported:

- European style Vanilla option – Physically settled is supported at LCH Forex Clearing

The following currency pairs are supported:

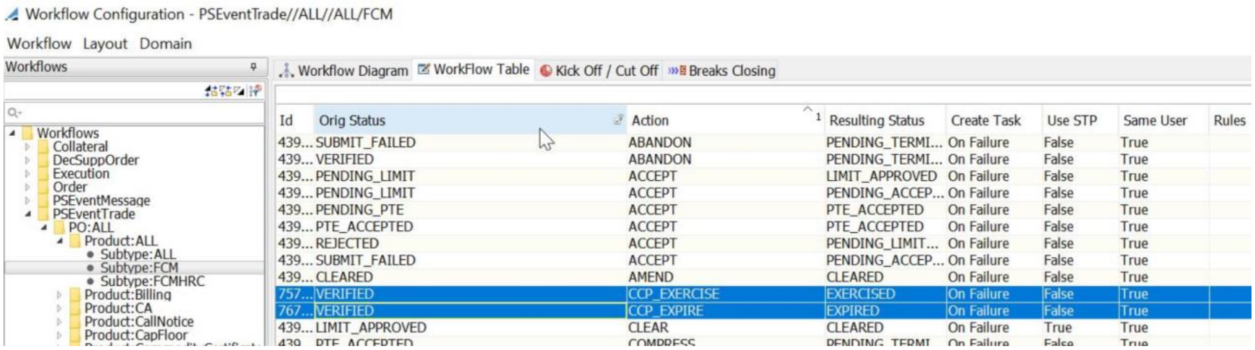
Currency Pairs		Maturity
GBP/USD	EUR/GBP	Spot to Spot + 2Y
USD/JPY	EUR/JPY	
USD/CHF	EUR/CHF	
EUR/USD	AUD/USD	

FX Spot and FX Forward are the underlying trades created upon FX option exercise.

Lifecycles supported in FX option: New, Terminate, Exercise, Expiry, De-clear

The message 'executionNotification-Execution' is sued to expire and exercise the trade.

You need to add the following trade actions to the FCM workflow for the FX option trade to be exercised / expired:



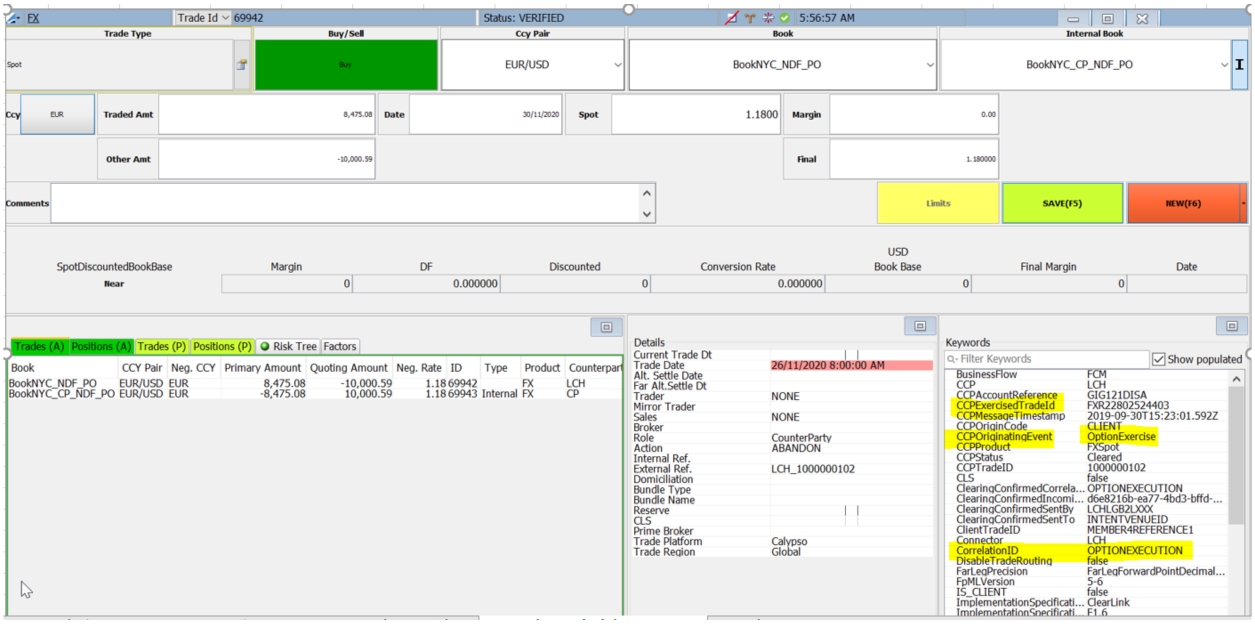
Id	Orig Status	Action	Resulting Status	Create Task	Use STP	Same User	Rules
439...	SUBMIT_FAILED	ABANDON	PENDING_TERMI...	On Failure	False	True	
439...	VERIFIED	ABANDON	PENDING_TERMI...	On Failure	False	True	
439...	PENDING_LIMIT	ACCEPT	LIMIT_APPROVED	On Failure	False	True	
439...	PENDING_LIMIT	ACCEPT	PENDING_ACCEP...	On Failure	False	True	
439...	PENDING_PTE	ACCEPT	PTE_ACCEPTED	On Failure	False	True	
439...	PTE_ACCEPTED	ACCEPT	PTE_ACCEPTED	On Failure	False	True	
439...	REJECTED	ACCEPT	PENDING_LIMIT...	On Failure	False	True	
439...	SUBMIT_FAILED	ACCEPT	PENDING_ACCEP...	On Failure	False	True	
439...	CLEARED	AMEND	CLEARED	On Failure	False	True	
757...	VERIFIED	CCP_EXERCISE	EXERCISED	On Failure	False	True	
767...	VERIFIED	CCP_EXPIRE	EXPIRED	On Failure	False	True	
439...	LIMIT_APPROVED	CLEAR	CLEARED	On Failure	True	True	
439...	PTE_ACCEPTED	COMPRESS	PENDING_TERMI...	On Failure	False	True	

For exercise: The below tag is set to ‘true’, based on which the option trade status will move to ‘EXERCISED’ and an underlying trade will be created from the following clearingconfirmed message. This clearing confirmed message also includes ‘linkId’ element which is the trade ID of the Option trade (parent trade).

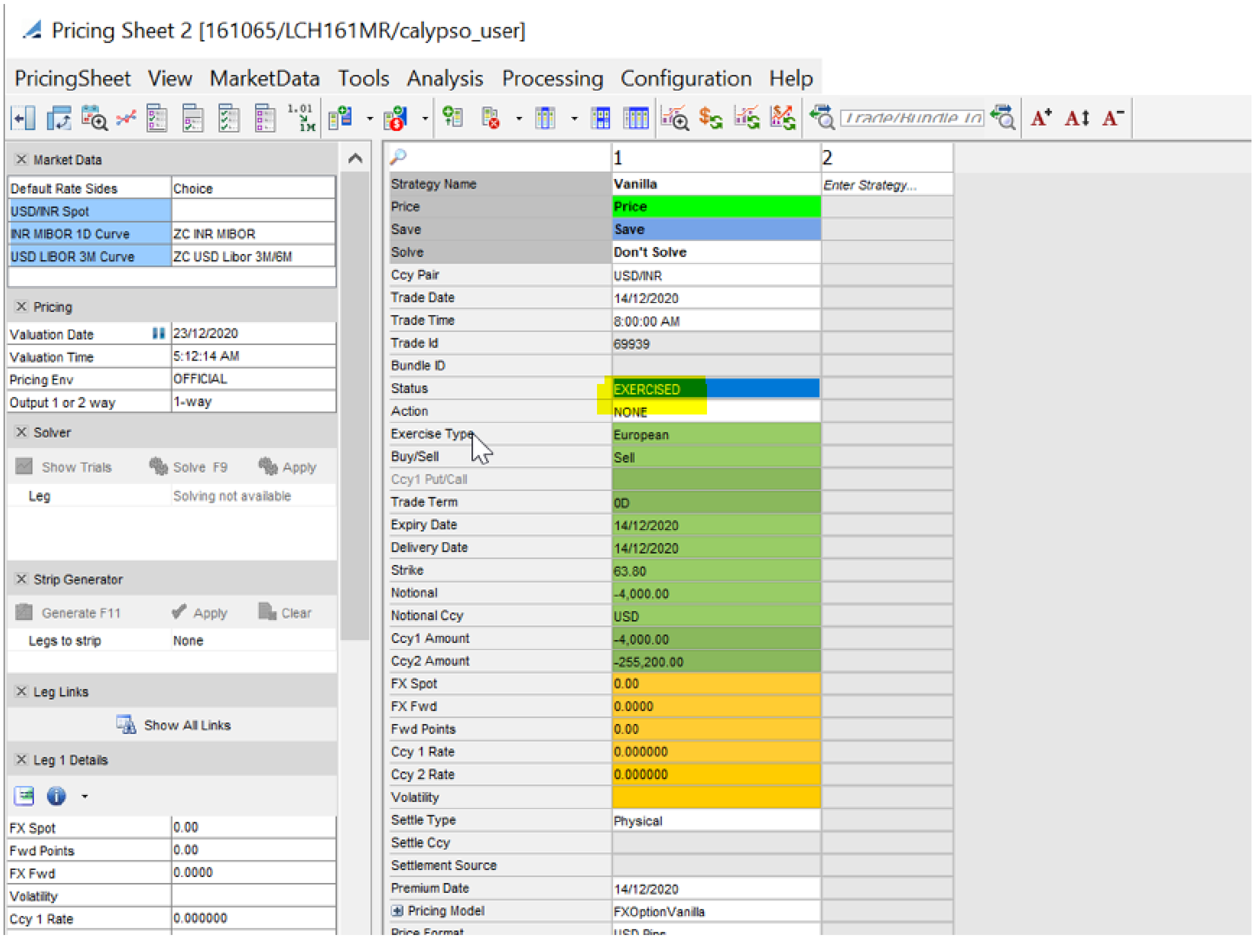
```
</originalTrade>
<exerciseDate>yyyy-mm-ddZ</exerciseDate>
<!-- ONE of expiry, fullExercise OR exerciseInNotionalAmount,outstandingNotionalAmount -->
<expiry>true</expiry>
<fullExercise>true</fullExercise>
<exerciseInNotionalAmount>
    <currency>USD</currency>
    <amount>750000.00</amount>
```

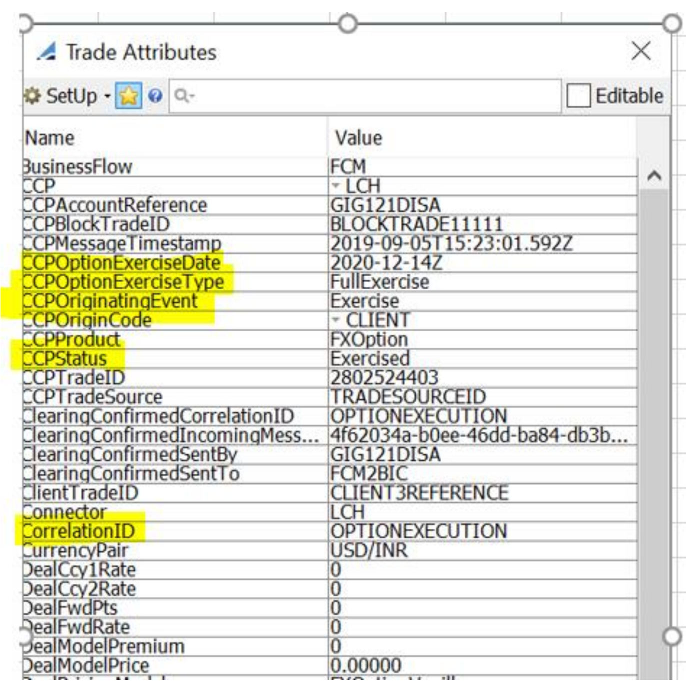
```
<clearingConfirmed xmlns="http://www.fpml.org/FpML-5/confirmation" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" fpmlVersion="5-6">
    <header>
        <messageId messageIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/message-id">d6e8216b-ea77-4bd3-bffd-16993d21557d</messageId>
        <sentBy messageAddressScheme="http://www.lchclearnet.com/clearlink/coding-scheme/party-id">LCHLGB2LXXX</sentBy>
        <sendTo messageAddressScheme="http://www.lchclearnet.com/clearlink/coding-scheme/party-id">INTENTVENUEID</sendTo>
        <creationTimestamp>2019-09-30T15:23:01.592Z</creationTimestamp>
        <implementationSpecification>
            <name>ClearLink</name>
            <version>F1.6</version>
        </implementationSpecification>
    </header>
    <correlationId correlationIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/correlation-id">OPTIONEXECUTION</correlationId>
    <sequenceNumber>1</sequenceNumber>
    <portfolioReference>
        <portfolioName>9999999999</portfolioName>
        <sequenceNumber>1</sequenceNumber>
        <submissionsComplete>true</submissionsComplete>
    </portfolioReference>
    <originatingEvent originatingEventScheme="http://www.lchclearnet.com/clearlink/coding-scheme/originating-event">OptionExercise</originatingEvent>
    <trade>
        <tradeHeader>
            <partyTradeIdentifier>
                <issuer issuerIdScheme="http://www.fpml.org/coding-scheme/external/issuer-identifier/cftc">1010000051</issuer>
                <tradeId tradeIdScheme="http://www.fpml.org/coding-scheme/external/unique-transaction-identifier">FXR11000000102</tradeId>
            </partyTradeIdentifier>
            <partyTradeIdentifier>
                <issuer issuerIdScheme="http://www.fpml.org/coding-scheme/external/issuer-identifier/esma"/>
                <tradeId tradeIdScheme="http://www.fpml.org/coding-scheme/external/unique-transaction-identifier">1010000051FXR11000000102</tradeId>
            </partyTradeIdentifier>
            <partyTradeIdentifier>
                <partyReference href="counterparty1"/>
                <tradeId tradeIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/trade-id">MEMBER4REFERENCE1</tradeId>
            </partyTradeIdentifier>
            <partyTradeIdentifier>
                <partyReference href="clearer"/>
                <tradeId tradeIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/clearing-id">1000000102</tradeId>
                <linkId linkIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/trade-id">FXR22802524403</linkId>
            </partyTradeIdentifier>
```

The above highlighted tags are set in the underlying trade keywords which will help identify that the trade is part of the FX Option Exercise process.



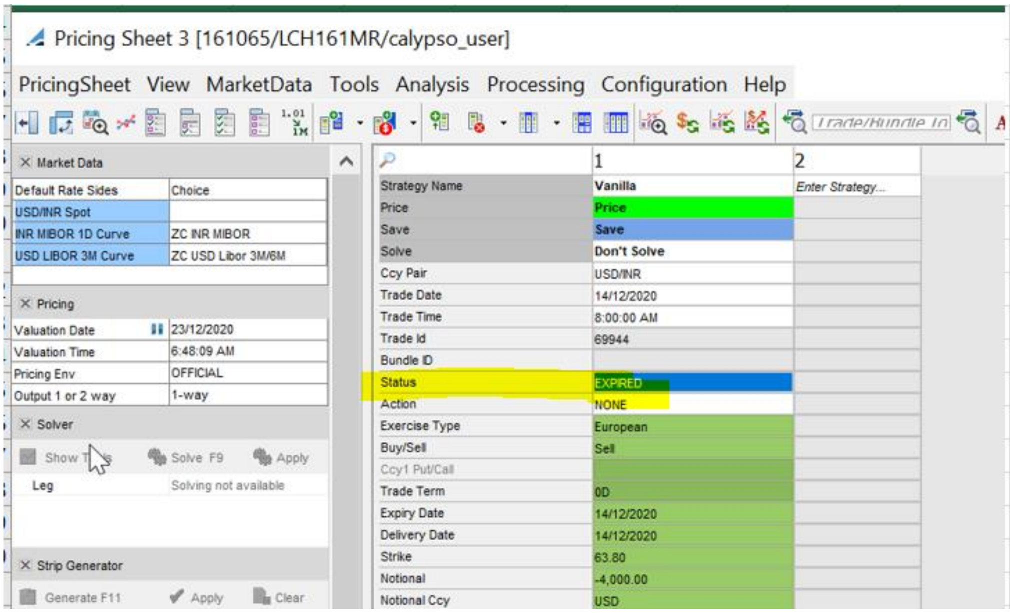
Similarly, the FX Option parent trade moves to EXERCISED status along with updated trade keywords as below:

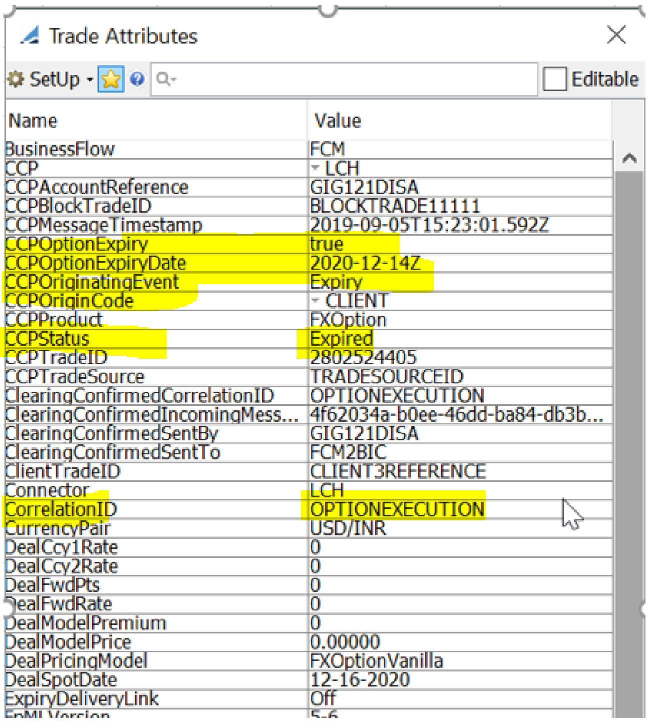

Pricing Sheet 2 [161065/LCH161MR/calypso_user]
PricingSheet View MarketData Tools Analysis Processing Configuration Help
Market Data
Default Rate Sides Choice
USD/INR Spot
INR MIBOR 1D Curve ZC INR MIBOR
USD LIBOR 3M Curve ZC USD Libor 3M/6M
Pricing
Valuation Date 23/12/2020
Valuation Time 5:12:14 AM
Pricing Env OFFICIAL
Output 1 or 2 way 1-way
Solver
Show Trials Solve F9 Apply
Leg Solving not available
Strip Generator
Generate F11 Apply Clear
Legs to strip None
Leg Links
Show All Links
Leg 1 Details
FX Spot 0.00
Fwd Points 0.00
FX Fwd 0.0000
Volatility
Ccy 1 Rate 0.000000
1
2
Strategy Name Vanilla Enter Strategy...
Price Price
Save Save
Solve Don't Solve
Ccy Pair USD/INR
Trade Date 14/12/2020
Trade Time 8:00:00 AM
Trade Id 69939
Bundle ID
Status EXERCISED
Action NONE
Exercise Type European
Buy/Sell Sell
Ccy1 Put/Call
Trade Term 0D
Expiry Date 14/12/2020
Delivery Date 14/12/2020
Strike 63.80
Notional -4,000.00
Notional Ccy USD
Ccy1 Amount -4,000.00
Ccy2 Amount -255,200.00
FX Spot 0.00
FX Fwd 0.0000
Fwd Points 0.00
Ccy 1 Rate 0.000000
Ccy 2 Rate 0.000000
Volatility
Settle Type Physical
Settle Ccy
Settlement Source
Premium Date 14/12/2020
Pricing Model FXOptionVanilla


Trade Attributes
SetUp
Editable
Name Value
BusinessFlow FCM
CCP LCH
CCPAccountReference GIG121DISA
CCPBlockTradeID BLOCKTRADE11111
CCPMessageTimestamp 2019-09-05T15:23:01.592Z
CCPOptionExerciseDate 2020-12-14Z
CCPOptionExerciseType FullExercise
CCPOriginatingEvent Exercise
CCPOriginCode CLIENT
CCPProduct FXOption
CCPStatus Exercised
CCPTradeID 2802524403
CCPTradeSource TRADESOURCEID
ClearingConfirmedCorrelationID OPTIONEXECUTION
ClearingConfirmedIncomingMess... 4f62034a-b0ee-46dd-ba84-db3b...
ClearingConfirmedSentBy GIG121DISA
ClearingConfirmedSentTo FCM2BIC
ClientTradeID CLIENT3REFERENCE
Connector LCH
CorrelationID OPTIONEXECUTION
CurrencyPair USD/INR
DealCcy1Rate 0
DealCcy2Rate 0
DealFwdPts 0
DealFwdRate 0
DealModelPremium 0
DealModelPrice 0.00000

For expiry: The below tag is set to ‘true’, based on which the option trade status will move to ‘EXPIRED’.

```
    <!-- Product to be included here -->
</originalTrade>
<exerciseDate>yyyy-mm-ddZ</exerciseDate>
<!-- ONE of expiry, fullExercise OR exerciseInNotionalAmount,outstandingNotionalAmount -->
<expiry>true</expiry>
<fullExercise>true</fullExercise>
<exerciseInNotionalAmount>
    <currency>USD</currency>
```





Trade Attributes

SetUp | Editable

Name	Value
BusinessFlow	FCM
CCP	LCH
CCPAccountReference	GIG121DISA
CCPBlockTradeID	BLOCKTRADE11111
CCPMessageTimestamp	2019-09-05T15:23:01.592Z
CCPOptionExpiry	true
CCPOptionExpiryDate	2020-12-14Z
CCPOriginatingEvent	Expiry
CCPOriginCode	CLIENT
CCPProduct	FXOption
CCPStatus	Expired
CCPTradeID	2802524405
CCPTradeSource	TRADESOURCEID
ClearingConfirmedCorrelationID	OPTIONEXECUTION
ClearingConfirmedIncomingMess...	4f62034a-b0ee-46dd-ba84-db3b...
ClearingConfirmedSentBy	GIG121DISA
ClearingConfirmedSentTo	FCM2BIC
ClientTradeID	CLIENT3REFERENCE
Connector	LCH
CorrelationID	OPTIONEXECUTION
CurrencyPair	USD/INR
DealCcy1Rate	0
DealCcy2Rate	0
DealFwdPts	0
DealFwdRate	0
DealModelPremium	0
DealModelPrice	0.00000
DealPricingModel	FXOptionVanilla
DealSpotDate	12-16-2020
ExpiryDeliveryLink	Off

Trade details included in the request consent / clearing confirmed messages:

- Call / Put notional and ccy are sourced from below tags for FX Option:

```
- <putCurrencyAmount>
      <currency>USD</currency>
      <amount>4000000.00</amount>
  </putCurrencyAmount>
  -
- <callCurrencyAmount>
      <currency>INR</currency>
      <amount>255200000.00</amount>
  </callCurrencyAmount>
  -
```

- FX Notional amounts are sourced from below tags for FX Spot / FX Forward

```
<exchangedCurrency1>
    <payerPartyReference href="counterParty1"/>
    <receiverPartyReference href="counterParty2"/>
    <paymentAmount>
        <currency>USD</currency>
        <amount>1000000.00</amount>
    </paymentAmount>
</exchangedCurrency1>
<exchangedCurrency2>
    <payerPartyReference href="counterParty2"/>
    <receiverPartyReference href="counterParty1"/>
    <paymentAmount>
        <currency>TWD</currency>
        <amount>31055000.00</amount>
    </paymentAmount>
</exchangedCurrency2>
```

- Strike rate from below tag for FX option:

```
- <strike>
    <rate>63.80000000</rate>
    <strikeQuoteBasis>CallCurrencyPerPutCurrency</strikeQuoteBasis>
  </strike>
```

- FX rate from below tag for FX Spot / FX Forward:

```
<exchangeRate>
    <quotedCurrencyPair>
        <currency1>TWD</currency1>
        <currency2>USD</currency2>
        <quoteBasis>Currency1PerCurrency2</quoteBasis>
    </quotedCurrencyPair>
    <rate>31.05500000</rate>
</exchangeRate>
```

- Premium amount / Premium payment date / Premium ccy from below tags for FX option

```
- <premium>
    <payerPartyReference href="counterParty1"/>
    <receiverPartyReference href="counterParty2"/>
    -
  - <paymentDate>
      -
    - <adjustableDate>
        <unadjustedDate>2019-09-05Z</unadjustedDate>
        -
      - <dateAdjustments>
          <businessDayConvention>NONE</businessDayConvention>
        </dateAdjustments>
      </adjustableDate>
    </paymentDate>
    -
  - <paymentAmount>
      <currency>USD</currency>
      <amount>9999999999.99999999</amount>
    </paymentAmount>
  </premium>
```

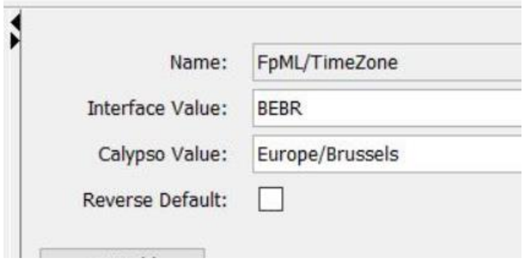
- Maturity date / Start date/ First exercise date / Exercise Date are set equal to Expiry Date
- Expiry Date and Exercise Date are sourced from below tag for FX Option

```
- <europeanExercise>
    <expiryDate>yyyy-mm-ddZ</expiryDate>
    -
```

- Spot date / Value date for FX Spot / Forward will be sourced from below tag for FX Spot/ Forward

```
</exchangedCurrency2>
<valueDate>yyyy-mm-ddZ</valueDate>
<exchangeRate>
    <quotedCurrencyPair>
```

- Timezone as per below calypso mapping

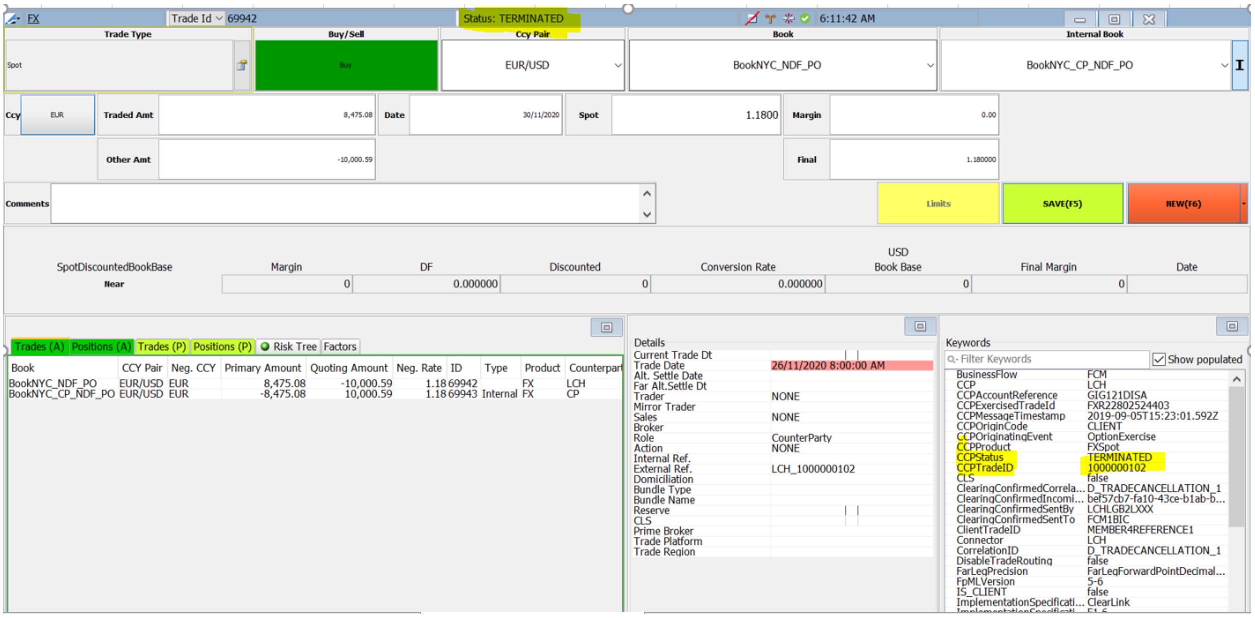


- Related Product type for FX Option / FX Spot/ FX Forward will be updated as FX

For de-clear: You should upload below de-clear message to move the trade to VERIFIED to TERMINATED status.

In the below de-clear trade message, trade ID will be identified from the below tag were characters after the prefix FXR1 or FXR2 indicate the trade ID. System ignores this prefix and looks up for the trade that matches this trade ID. CCP trade ID in the trade keyword will be matched with this tag.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
    ==  LCH Copyright (c) 2002-2015. All rights reserved.
    ==  Financial Products Markup Language is subject to the FpML public license.
    ==  This is a sample message and should be used for illustrative purposes only
-->
<clearingConfirmed xmlns="http://www.fpml.org/FpML-5/confirmation" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" fpmlVersion="5-6">
    <header>
        <messageId messageIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/message-id">bef57cb7-fa10-43ce-b1ab-b0ebdbe73070</messageId>
        <sentBy messageAddressScheme="http://www.lchclearnet.com/clearlink/coding-scheme/party-id">LCHLGB2LXXX</sentBy>
        <sendTo messageAddressScheme="http://www.lchclearnet.com/clearlink/coding-scheme/party-id">FCM1BIC</sendTo>
        <creationTimestamp>2019-09-05T15:23:01.592Z</creationTimestamp>
        <implementationSpecification>
            <name>ClearLink</name>
            <version>F1.6</version>
        </implementationSpecification>
    </header>
    <correlationId correlationIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/correlation-id">D_TRADECANCELLATION_1</correlationId>
    <sequenceNumber>1</sequenceNumber>
    <deClear>
        <tradeIdentifier>
            <partyReference href="clearer"/>
            <tradeId tradeIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/clearing-id">FXR21000000102</tradeId>
        </tradeIdentifier>
        <effectiveDate>2020-11-05Z</effectiveDate>
    </deClear>
    <party id="clearer">
        <partyId partyIdScheme="http://www.lchclearnet.com/clearlink/coding-scheme/party-id">LCHLGB2LXXX</partyId>
    </party>
</clearingConfirmed>
```



14.2 EOD File Processing

House files:

P-MFXC-BBF-20200910-041328_20200909_2359_BBF_FREP0014.csv

P-MFXC-BBF-20200910-044638_20200909_2359_BBF_FREP0001.csv

P-MFXC-BBF-20200910-044638_20200909_2359_BBF_FREP0009.csv

Client files:

P-MFXC-BBF-20200910-041326_20200909_2359_BBF_FREP0026C.csv

P-MFXC-BBF-20200910-044638_20200909_2359_BBF_FREP0001C.csv

P-MFXC-BBF-20200910-044638_20200909_2359_BBF_FREP0009C.csv

LCH reports aggregate IM for NDF and FX Option, hence, IM for these products will be settled together and clearing service for NDF, FX Option, FX Spot, FX Forward will be updated as FX.

SETTLEMENT_MANAGEMENT_MARGIN applies to FX Options and is included in Initial Margin.

Logic to source the underlying FX notional - Pick up Trade ref from FREP0009/9C and locate it in FREP0001/1C. System will select the trade ref in FREP0001/1C, when valuation date + settle ccy lag matches with the Maturity date in FREP0001/1C.

New PL marks (Option Greeks) introduced like Gamma, Vega, Vanna, Volga for FX option

Scheduled task CLEARING_TRANSLATE_TO_CDML: FXCLEAR CCP is selected as CCP for the FX product. Files should be located in FXCLEAR folder at the specified location.

Task Attributes	
Base Folder	C:\calypso\gateway\
CDML Processing	Generation plus Import
Intraday	false
Ignore Producers	LCHPORTFOLIO,CME,HKEX,COMDER,EUREX

Scheduled task CLEARING_PROCESS_FROM_CDML:

Task Attributes	
CCP	FXCLEAR
Clearing Service	FX
CDML Report Type	All
Process Mode	All

Margin Call Contract configuration remains the same except the product type which should be selected as FX on the MCC as highlighted below in Additional Info:

Others	
ACCOUNT_NAME	
ALWAYS_ROUND_RETURN_MARGIN	
CCP	LCH
CCP_ORIGIN_CODE	CLIENT
CCP_REFERENCE	LCHFXOPTCT
CCP_REFERENCE_CME	
CCP_REFERENCE_LCH	
CCP_SEGREGATION_ACCOUNT	S1B3
CCP_SETTLEMENT_TYPE	
CLIENT_TRANSFERS	Include as Client
CLOUD_NET	
CLOUD_NETTING	
CVD_ROUNDING_DECIMAL	
DISPUTE_COMMENT_MANDATORY	
EXCLUDE_ACCOUNT_FROM_INTERACCOUNTXFER	
EXCLUDE_REPO_INTEREST	
EXCLUDE_SECLENDING_INTEREST	
IGNORE_ALLOW_EX_DIVIDEND	
IM_IMPORT_CURRENCY	
INCLUDED_VM_FLOWS	
INTEREST_DATERULEONLY	
LAST_NOTIFICATION_DATE	
LAST_NOTIFICATION_ID	
LCH_VM_HOLIDAY	
LOCATION	
MARGIN_TYPE	IM
MCC_CASH_LOCATION	
MCC_SEC_LOCATION	
NOTIFY_ON_CLAIM	true
PRIORITY	1
PRODUCT_TYPE	FX
REINVEST_COUPON	
RISK_CCY	

15 LCH Swap Agent Clearing

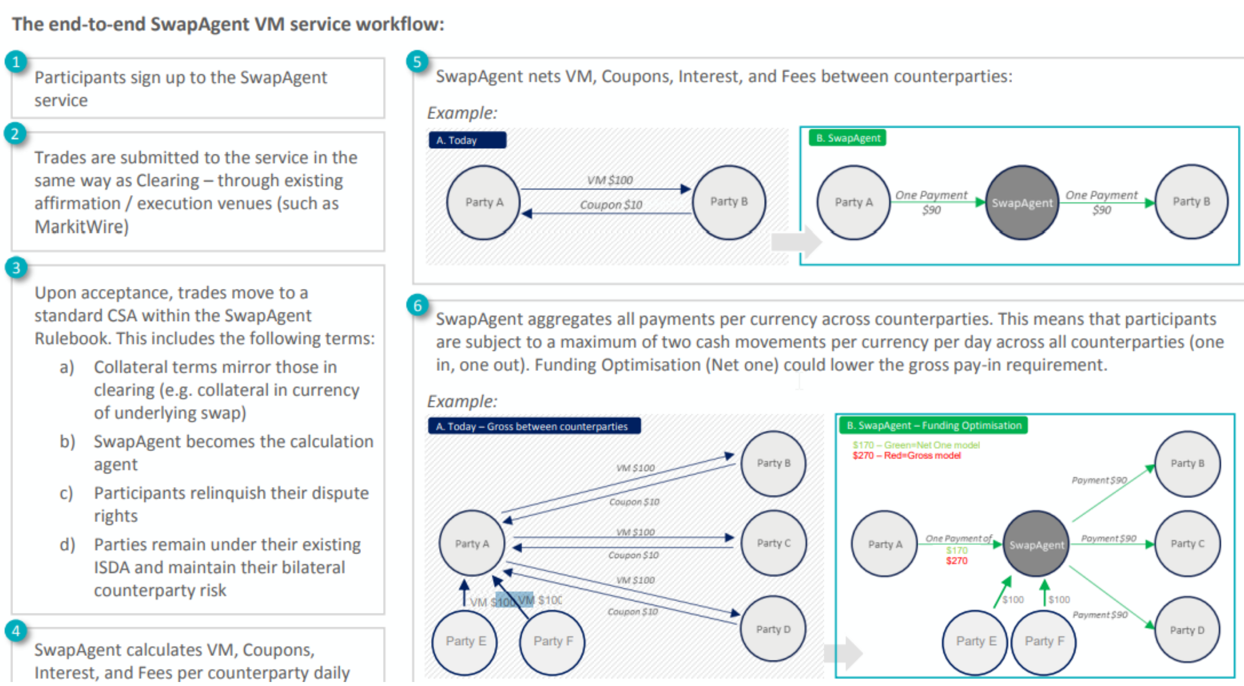
LCH SwapAgent, a fully owned subsidiary of LCH Group, is a service designed to simplify the processing, margining and settlement of non-cleared derivatives.

SwapAgent streamlines non-cleared derivatives processing by extending the LCH's centralized clearing infrastructure i.e., standardized document terms, trade processing, margining and payment processing to the bilateral market without requiring novation to a central counterparty as we see for the Cleared trades.

So, trades managed by SwapAgent remain fully bilateral and follow a similar operational process as cleared trades. That way LCH can extend many of the efficiencies that customers have become accustomed to in the cleared market to the non-cleared market.

SwapAgent acts as an independent calculation agent for all trades submitted to the service, thus, eliminating margin disputes. It also processes the trade life cycle events and performs netting, exchange, and settlement of bilateral margin payments, thus, reducing any settlement risks.

Currently, LCH Swap Agent is supporting this feature only for proprietary (house) business and will later be enhanced for client business.



Products supported:

- All Swap Clear eligible products: Inflation Zero-Coupon Inflation-Indexed Swap • Zero Coupon Swap • Single CCY Basis Swap • Overnight Index Swap • Variable Notional Swap • Forward Rate Agreements • Overnight / LIBOR Basis

- Cross Currency Basis Swaps (ccy pairs supported AUD, CAD, CHF, EUR, GBP, and JPY vs. USD)

- Swaptions (ccy's supported EUR & USD)

LCHSAL solution is now enhanced to support new files for EOD processing and also added support to enrich the Bilateral trade with LCHSAL trade-keywords. Along-with this, we have also added support to import Billing Fees and FX Quotes data at EOD.

To provide some details on LCHSAL, LCH Swap Agent is LCH Clear Group subsidiary and works on the similar lines of LCH Clearing. It supports processing, margining & settlement of non-cleared derivative trades i.e. Bilateral trades, thus, behaving as a settlement agent between the cpty's.

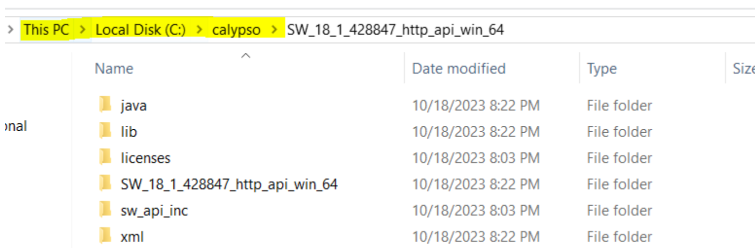
Following sections will provide details on all the supported functionalities.

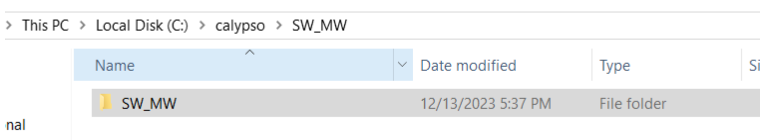
15.1 LCH Swap Agent Interfaces Support:

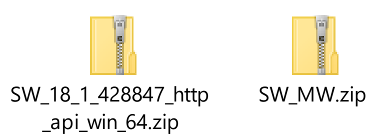
15.1.1 MW / Swapswire Engine Setup

- Calypso Test env : MW Link : https://mw.uat.markit.com/
- SWdealsink: aaa_calypsodealsink

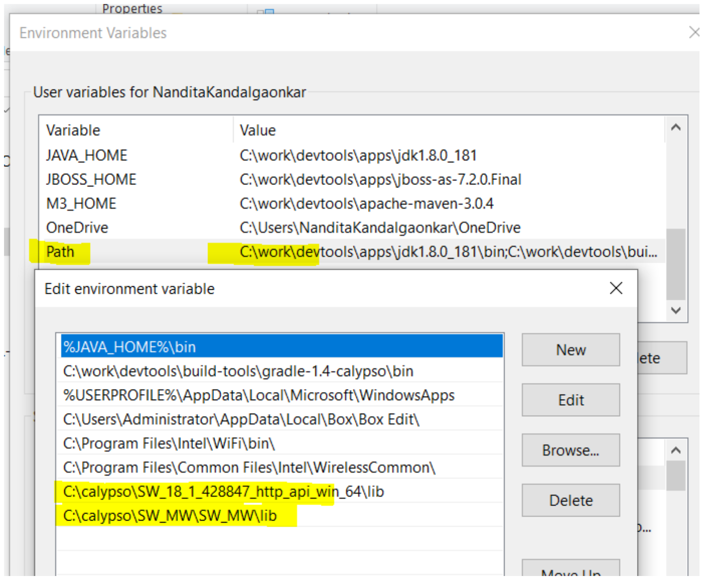
We require below jars for Swapswire engine to run :



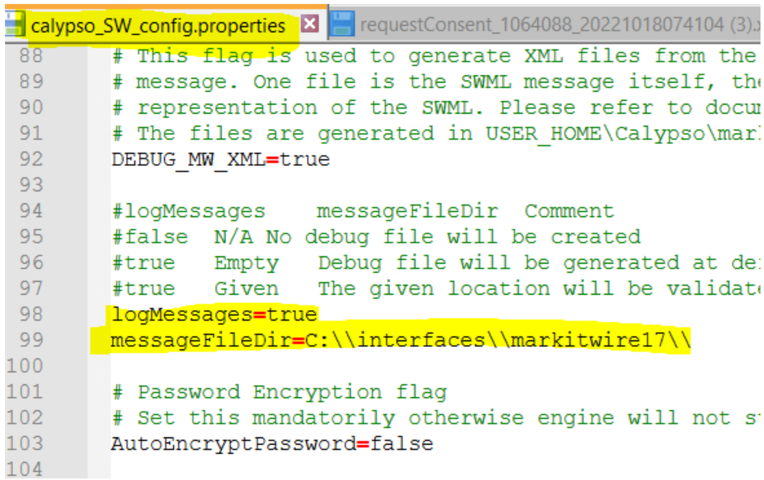




This property must be added in the env variables as below :



- MW A/c's to be used:
  - Username : aaa_calypsotrader3 / password : Markit123@
  - Username : mega_calypsotrader4/ password : Markit123@
  - Sample Trade ID : 96732948 (IRS : LCHSAL Accepted Case) / 96734433 (XCCY : LCHSAL Rejected case)
- Env properties as below:
  - SWAPSWIRE_LOGIN_INTERVAL=10000
  - SWAPSWIRE_PASSWORD=markit123
  - SWAPSWIRE_SERVER=https\://mw.uat.api.markit.com
  - SWAPSWIRE_USER=aaa_calypsodealsink
  - SWAPSWIRE_LOGIN_ATTEMPTS=1
  - SWAPSWIRE_TIMEOUT=60000
  - SWAPSWIRE_CONCURRENT_LOGIN_NO=1
  - SWAPSWIRE_BIDIR_MODE=true
- Servers to be started:
  - If gateway=true, then authServer.bat / discoveryServer.bat / gatewayServer.bat / eventServer.bat / dataServer.bat / engineServer.bat (Swapswire engine should be started)
  - If gateway=false, then authServer.bat / eventServer.bat / dataServer.bat / engineServer.bat (Swapswire engine should be started)
  - SW messages can be stored at a user defined location which is mentioned in calypso_SW_config.properties.
  - This property file is located at C:\calypso\calypso-17.23.11.3\client\resources

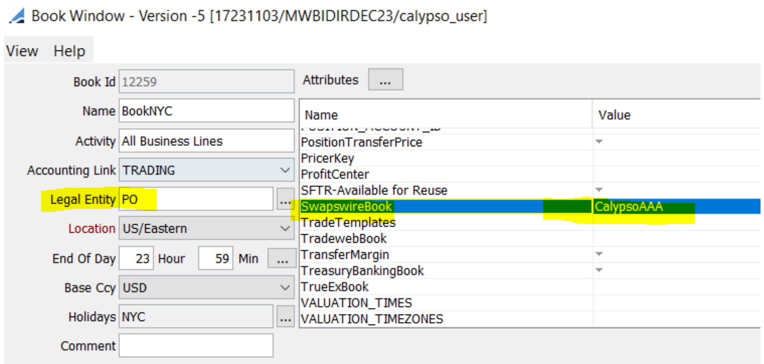


calypso_SW_config.properties   requestConsent_1064088_20221018074104 (3).

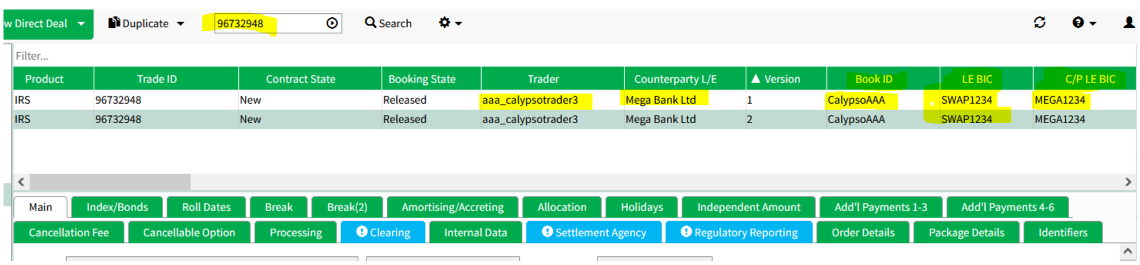
```
# This flag is used to generate XML files from the
# message. One file is the SWML message itself, the
# representation of the SWML. Please refer to docu
# The files are generated in USER_HOME\Calypso\mar
DEBUG_MW_XML=true

#logMessages    messageFileDir  Comment
#false  N/A No debug file will be created
#true   Empty   Debug file will be generated at de
#true   Given   The given location will be validat
logMessages=true
messageFileDir=C:\\interfaces\\markitwire17\\

# Password Encryption flag
# Set this mandatorily otherwise engine will not s
AutoEncryptPassword=false
```

15.1.2 Calypso setup

- Calypso book attribute:

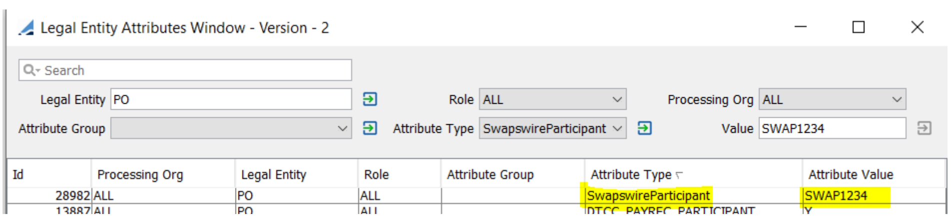


- SwapswireBook value will be updated as per the below MW 'Book ID' column:



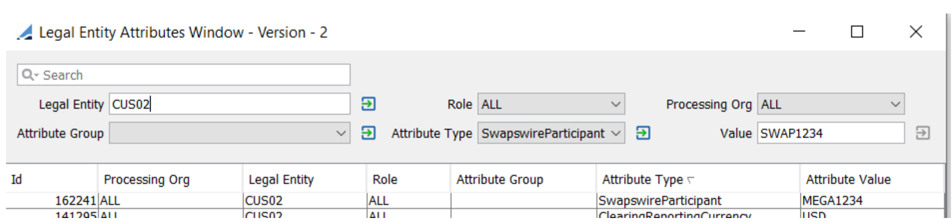
- PO LE attribute:

PO SwapswireParticipant ID : SWAP1234 (LE BIC column as above) should be added on PO LE attribute.

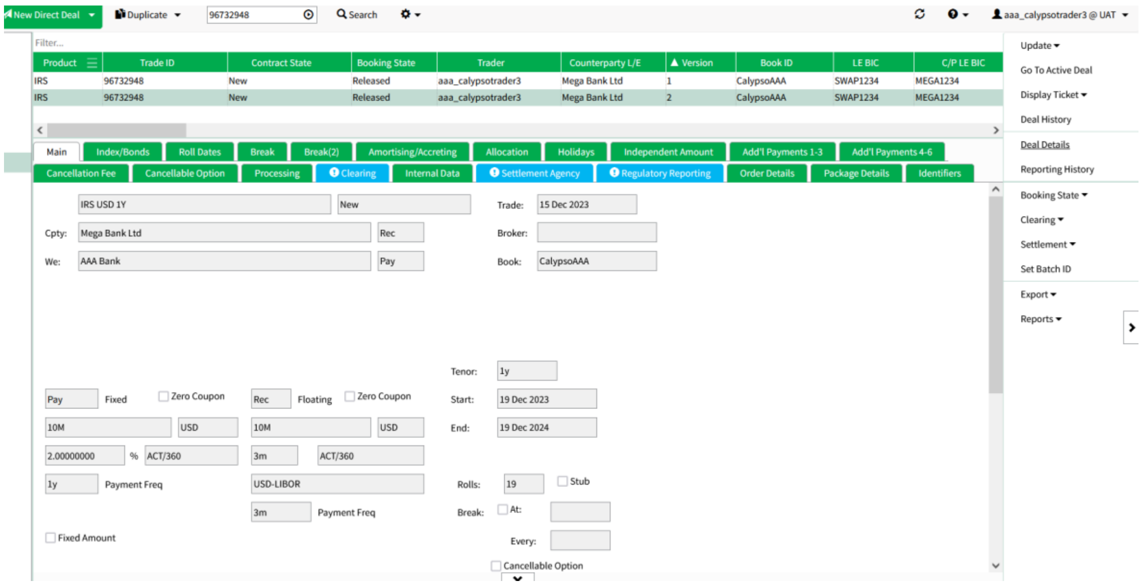


- CP LE attribute:

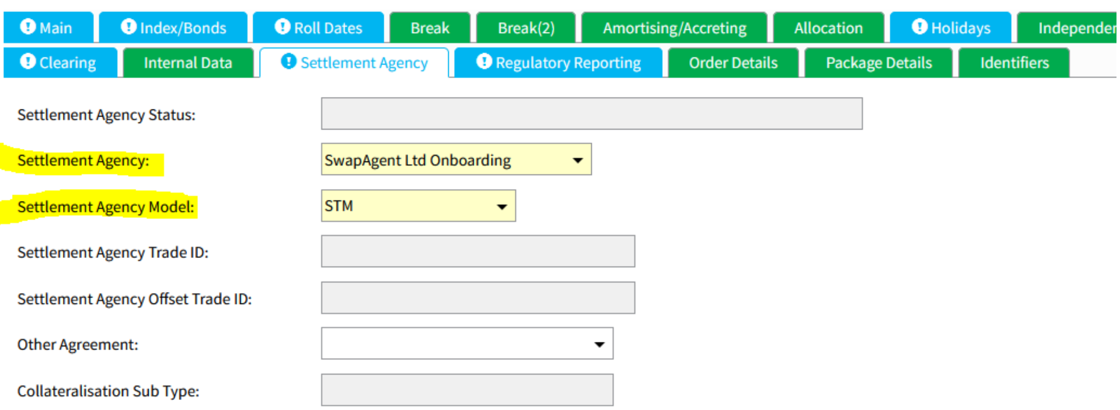
CP SwapswireParticipant ID : MEGA1234 (C/P LE BIC column as above) should be added on CP LE attribute



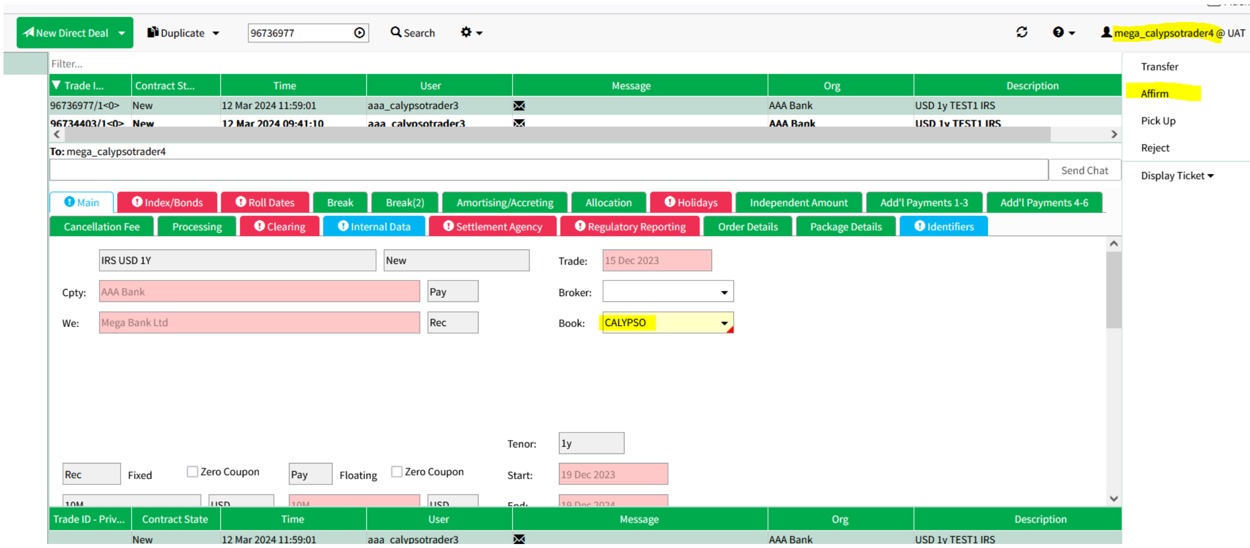
15.1.3 Sample trade booking:

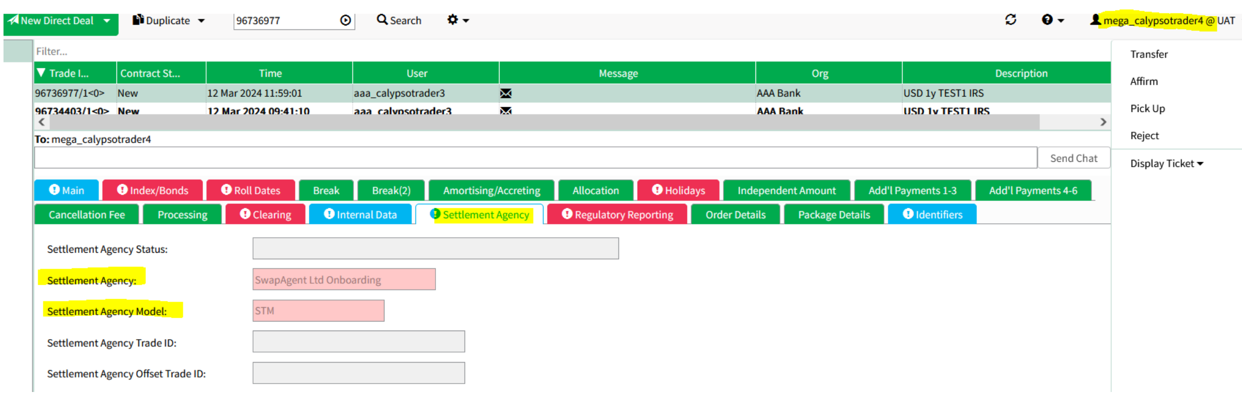


- Before affirming the trade and sending it to cpty for affirmation, user must select below attributes:

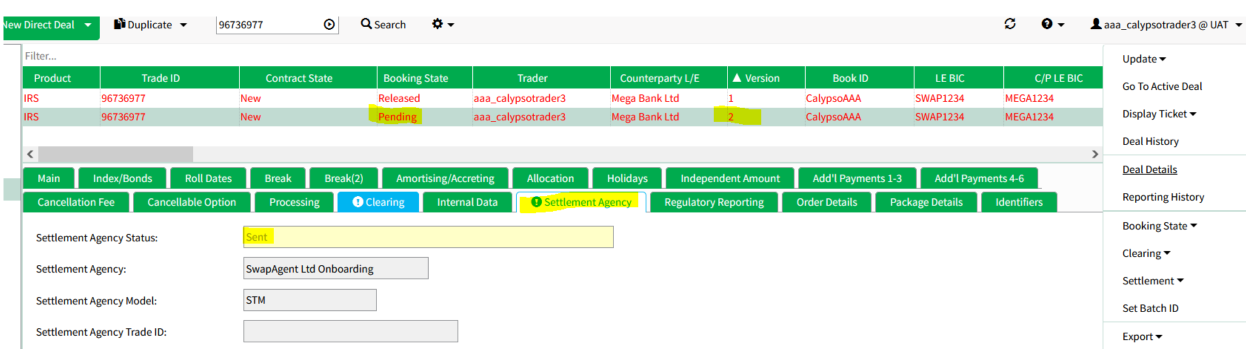


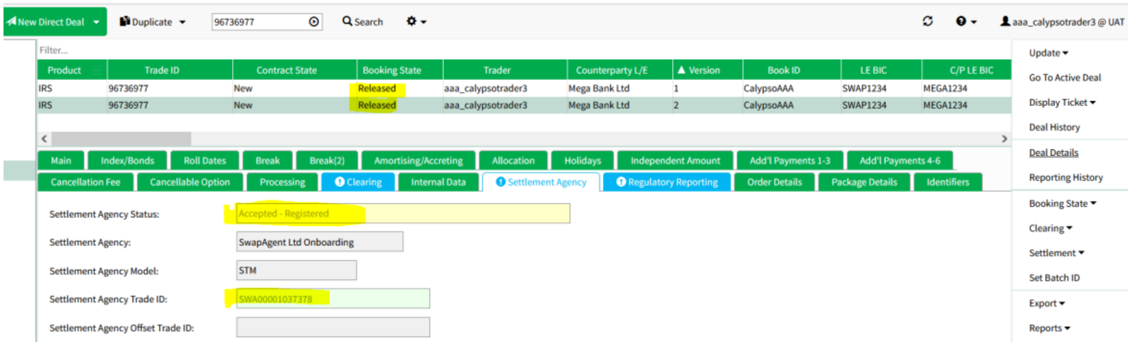
- Post cpty affirmation:





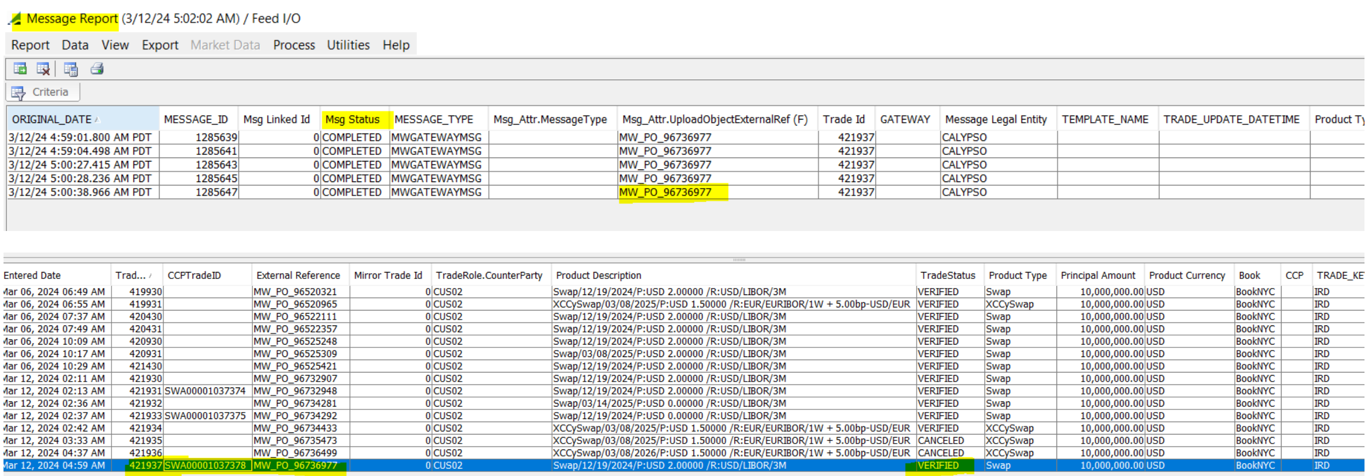
- Settlement Agency Status tab gets updated as below:



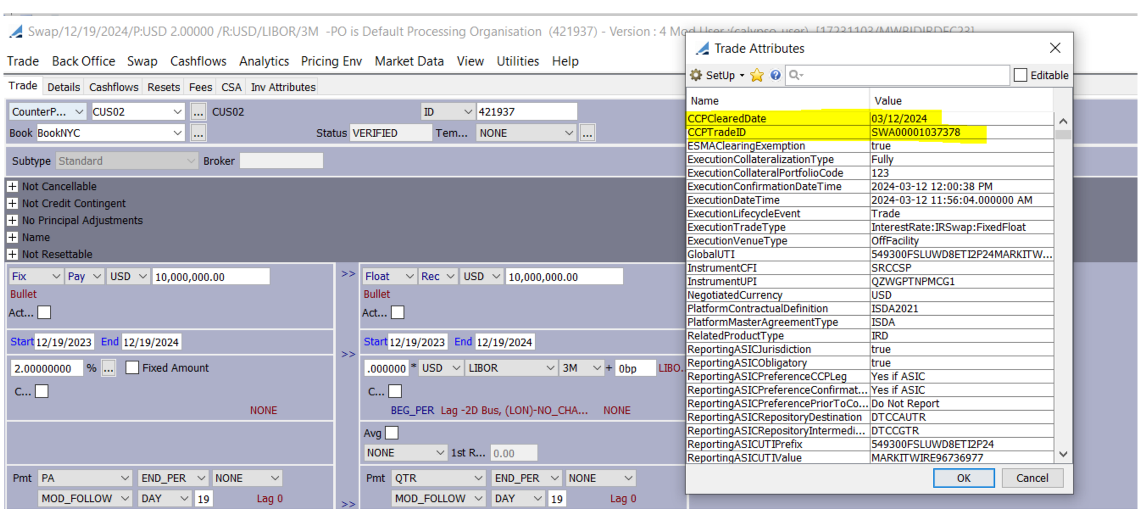


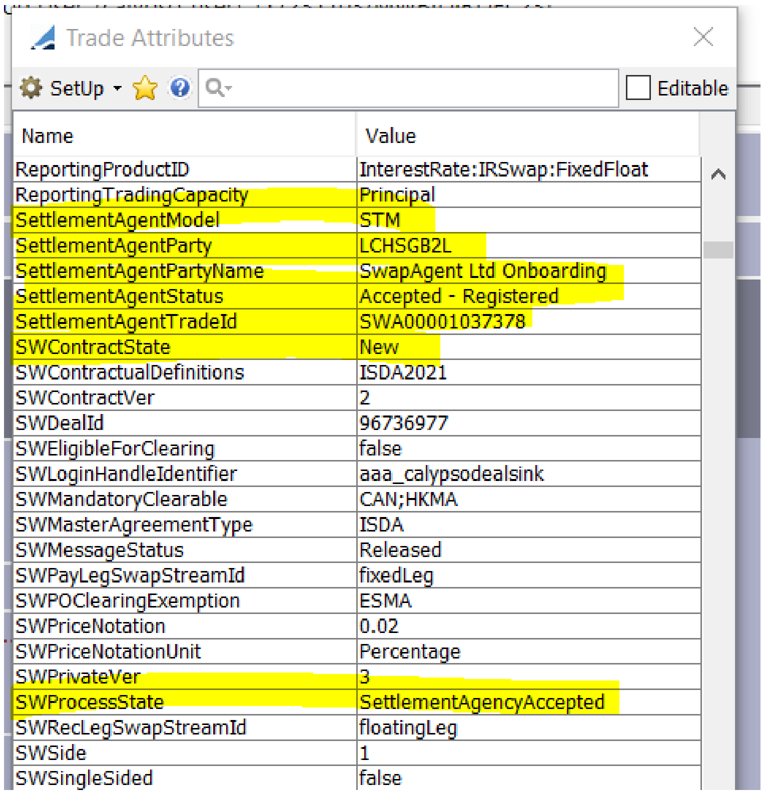
We receive the trade message in message report as below and trade is booked as highlighted in Trade browser.

- External reference indicates the MW ID by which we can locate the correct trade.



- Trade keywords as below :

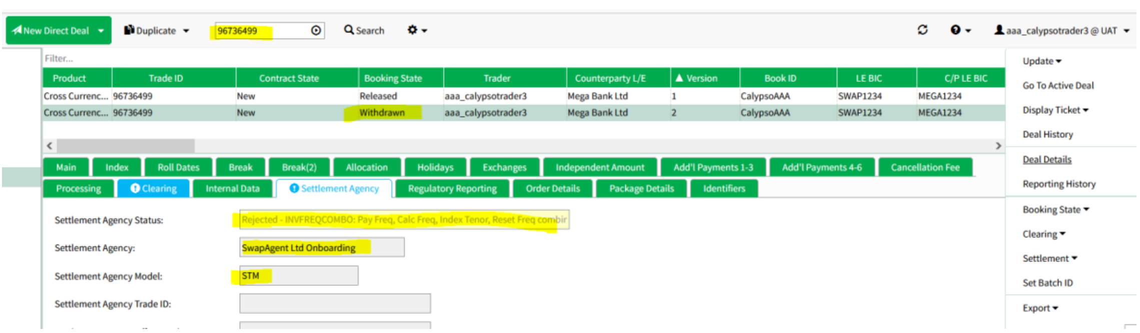


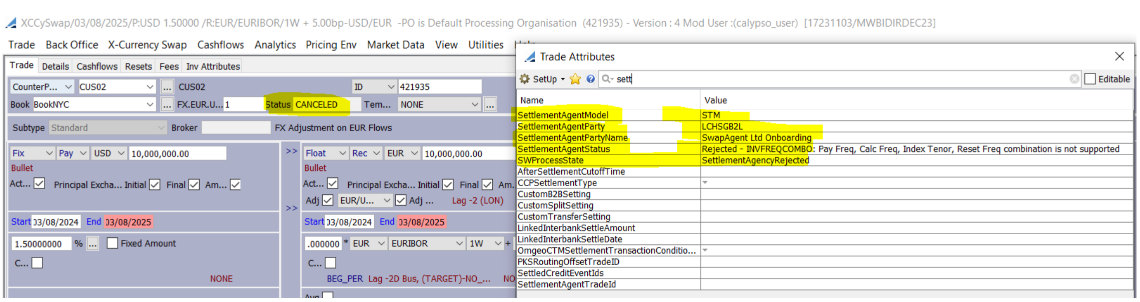


Trade Attributes

Name	Value
ReportingProductID	InterestRate:IRSwap:FixedFloat
ReportingTradingCapacity	Principal
SettlementAgentModel	STM
SettlementAgentParty	LCHSGB2L
SettlementAgentPartyName	SwapAgent Ltd Onboarding
SettlementAgentStatus	Accepted - Registered
SettlementAgentTradeId	SWA00001037378
SWContractState	New
SWContractualDefinitions	ISDA2021
SWContractVer	2
SWDealId	96736977
SWEligibleForClearing	false
SWLoginHandleIdentifier	aaa_calypsodealsink
SWMandatoryClearable	CAN;HKMA
SWMasterAgreementType	ISDA
SWMessageStatus	Released
SWPayLegSwapStreamId	fixedLeg
SWPOClearingExemption	ESMA
SWPriceNotation	0.02
SWPriceNotationUnit	Percentage
SWPrivateVer	3
SWProcessState	SettlementAgencyAccepted
SWRecLegSwapStreamId	floatingLeg
SWSide	1
SWSingleSided	false

- Similarly, if LCHSAL rejects a trade then we see the LCHSAL status as below:





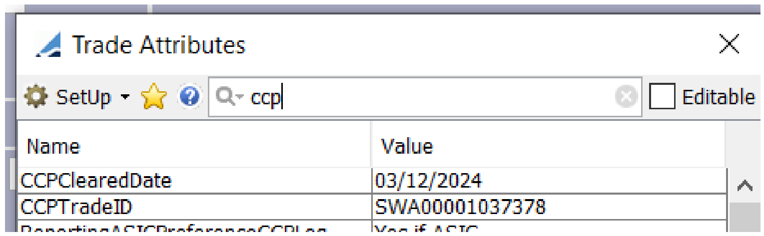
- As mentioned earlier, we can save the SW messages at the user defined location as below:

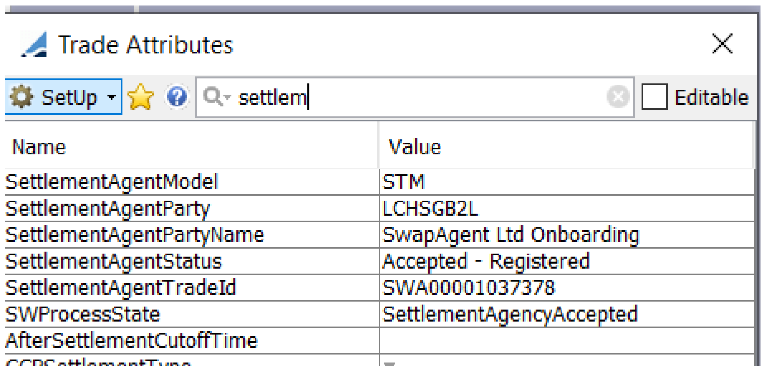
> Local Disk (C:) > interfaces > markitwire17

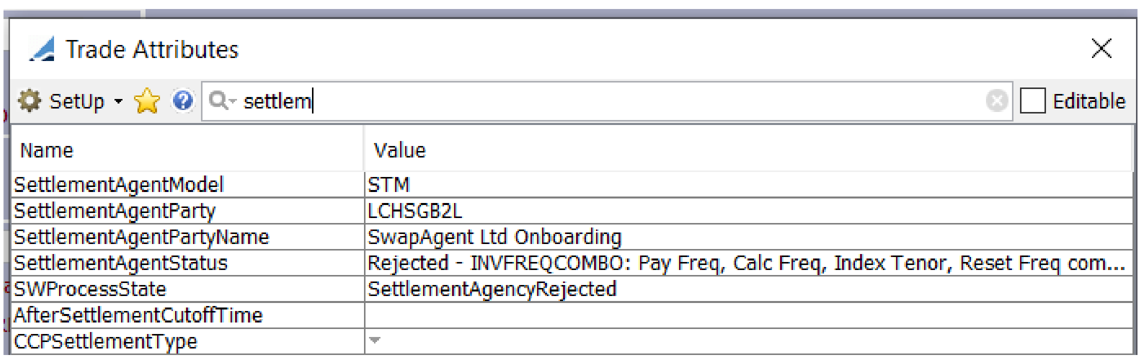
Name	Date modified	Type
MW_PO_96736977_UPDATEKEYWORDS.xml	3/12/2024 5:30 PM	XML File
SWML_Swap_96736977_2_3_New_3101_1.xml	3/12/2024 5:30 PM	XML File
SWML_Swap_96736977_1_4_New_3101_1.xml	3/12/2024 5:30 PM	XML File
SWML_Swap_96736977_1_3_New_3101_1.xml	3/12/2024 5:30 PM	XML File
SWML_Swap_96736977_1_2_New_3101_1.xml	3/12/2024 5:29 PM	XML File
MW_PO_96736977_NEW.xml	3/12/2024 5:29 PM	XML File
SWML_Swap_96736977_1_1_New_3101_1.xml	3/12/2024 5:29 PM	XML File
MW_PO_96736499_CANCEL.xml	3/12/2024 5:08 PM	XML File
SWML_Xccy_96736499_2_2_New_3101_1.xml	3/12/2024 5:08 PM	XML File
MW_PO_96736499_UPDATEKEYWORDS.xml	3/12/2024 5:08 PM	XML File
SWML_Xccy_96736499_1_4_New_3101_1.xml	3/12/2024 5:08 PM	XML File
SWML_Xccy_96736499_1_3_New_3101_1.xml	3/12/2024 5:08 PM	XML File
SWML_Xccy_96736499_1_2_New_3101_1.xml	3/12/2024 5:07 PM	XML File
MW_PO_96736499_NEW.xml	3/12/2024 5:07 PM	XML File
SWML_Xccy_96736499_1_1_New_3101_1.xml	3/12/2024 5:07 PM	XML File

15.1.4 Keywords added

In all, below keywords have been added to the Bilateral trade:







As we are using Clearing feature to generate PL marks for these Bilateral trades, we require specific Trade keywords for this i.e. CCPTradeID & CCPClearedDate.

We source the keyword from below tags:

```
  </swTradeHeader>
  <swSettlementAgent>
    <swSettlementAgency>
      <partyId>LCHSGB2L</partyId>
      <partyName>SwapAgent Ltd Onboarding</partyName>
    </swSettlementAgency>
    <swSettlementAgencyModel>STM</swSettlementAgencyModel>
    <swSettlementAgencyStatus>Accepted - Registered</swSettlementAgencyStatus>
    <swSettlementAgencyTradeId>SWA00001037375</swSettlementAgencyTradeId>
  </swSettlementAgent>
</swExtendedTradeDetails>
<swTradeEventReportingDetails>
```

CCPClearedDate will be sourced from below tag where message status is “ Settlement Accepted”

```xml
    <swReceiverReference href="traderB"/>
  </swTraderMessage>
  <swTraderMessage>
    <swHubTimestamp>2024-03-12T09:38:58Z</swHubTimestamp>
    <swTradeVersionId>2</swTradeVersionId>
    <swMessageStatus>SettlementAccepted</swMessageStatus>
    <swSenderReference href="traderC"/>
    <swMessageText>Registered</swMessageText>
  </swTraderMessage>
  <swTraderMessage>
    <swHubTimestamp>2024-03-12T09:38:58Z</swHubTimestamp>
    <swTradeVersionId>2</swTradeVersionId>
```


15.2 LCH Swap Agent EOD Processing of Bilateral Trades

We support EOD Processing at position & trade level.

15.2.1 File supported : Position Level

- G-TSAL-SS2-20230223-044419_SALREP00190-EOD-MBR-FINAL-Member_Settlement_Report.txt
- G-TSAL-SS2-20230224-111000_SALREP00190-EOD-MBR-PAY-OUT-1-Member_Settlement_Report.txt
- G-TSAL-SS2-20230224-111000_SALREP00190-EOD-MBR-PAY-OUT-2-Member_Settlement_Report.txt
- G-TSAL-SS2-20230224-111000_SALREP00190-EOD-MBR-ADDITIONAL_FUNDING-Member_Settlement_Report.txt
- A-MSAL-ABC-20231213-113024_SALREP00190-EOD-MBR-FALLBACK-Member_Settlement_Report.txt

As we see, all the reports are REP190 but with different versions indicating settlement status of the bilateral trades.

Below is the priority in which the files are generated and will be translated:

File Name	File Date	File Time	CDML report Date	Translate ST date	CDML report version
EOD Final report	**7th Feb EOD**	**on 7th Feb EOD 6pm**	7th Feb	7th Feb	version 1
Additional Funding	8th Feb	on 8th Feb morning 8 am	7th Feb (T-1)	7th Feb (T-1)	version 2
Payout-1	8th Feb	on 8th Feb morning 9 am	7th Feb (T-1)	7th Feb (T-1)	version 3
Payout-2	8th Feb	on 8th Feb morning 11 am	7th Feb (T-1)	7th Feb (T-1)	version 4
Fallback Funding	8th Feb	on 8th Feb morning 1 pm	7th Feb (T-1)	7th Feb (T-1)	version 5

File Name	File Date	File Time	CDML report Date	Translate ST date	CDML report version
EOD Final report	**8th Feb EOD**	**on 8th Feb** EOD 6pm	**8th Feb**	**8th Feb**	**version 1**

Report name	Imported Cashflows
EOD-MBR-FINAL	EOD Final Report on T day EOD (FTP Flag : N / Settlement Context : EOD_Final
EOD-MBR-PAY-OUT-1	T+1 Report SOD approx. 9 am GMT (Depending on Payments / Receipts following details will be updated : "FTP Flag : N & Settlement Context : EOD_Settled" OR "FTP Flag : L or P or OL / Settlement Context : EOD_Pending")
EOD-MBR-PAY-OUT-2	T+1 Report Midday approx. 1 pm GMT (FTP flag / Settlement Context updates as per above)
EOD-MBR-FALLBACK	Adhoc report: If multiple members are late & have missed the cut-off of EOD-MBR-PAY-OUT-2 then this report is generated to provide details about the Fallback ccy / amount details w.r.t. the cpty
EOD-MBR-ADDITIONAL FUNDING	Adhoc report: If multiple members are late & LCHSAL is not able to complete the sequencing then this report is created before EOD-MBR-PAY-OUT-1 report notifying FTP flag : L and Settlement Context : EOD_Pending

While translating one REP190 at a time as per the below sequence. In such case once the 1st file is translated, we are suffixing it with '.finished ' and next time the translate ST is executed it will move to next preferred file.

Also, we have a scenario where 'Additional Funding' & 'Payout-1' report is present at the file location then translate ST will translate 'Additional Funding' report 1st and create a TV report and user must again run translate ST to translate Payout-1 report for the updated TV version.

Further, we also have a scenario where 'Additional Funding' report is not present and directly Payout-1' report is present at the file location then translate ST will translate Payout -1 report and create the TV report. This file preference sequence will be followed for all the files.

Once the file is translated, it will appear as below:

> Local Disk (C:) > calypso > gateway > LCHSAL

Name

G-TSAL-SS2-20230224-111000_SALREP00190-EOD-MBR-ADDITIONAL_FUNDING-Member_Settlement_Report.txt.finished
G-TSAL-SS2-20240227-044419_SALREP00190-ADDITIONAL_FUNDING-Member_Settlement_Report - Copy.txt.finished
G-TSAL-SS2-20240227-044419_SALREP00190-EOD-MBR-FINAL-Member_Settlement_Report.txt.finished
G-TSAL-SS2-20240228-111000_SALREP00190-EOD-MBR-PAY-OUT-1-Member_Settlement_Report.txt.finished
G-TSAL-SS2-20240228-111000_SALREP00190-EOD-MBR-PAY-OUT-2-Member_Settlement_Report.txt.finished
G-TSWA-SS2-20240227-220822_SALREP00105-EOD-MBR-SAM_FRA_Trades.txt
G-TSWA-SS2-20240227-225203_SALREP00045-EOD-MBR-IRS_Consideration_Flow.txt
G-TSWA-SS2-20240227-225218_SALREP00002-EOD-MBR-IRS_Coupon_Flow.txt

- Sample EOD Report190 :

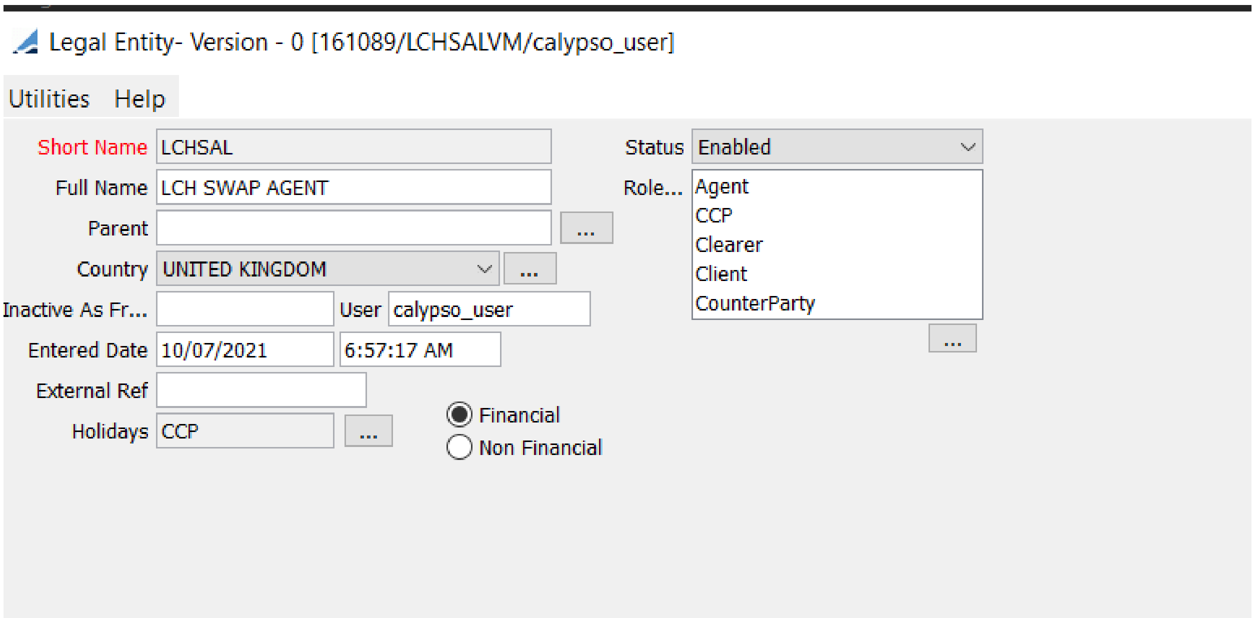
A	B	C	E	F	G	H	I	J
ITDRevalDateTime	Party_A_MbrMnemonic	Party_B_MbrShortName	Currency	SettlementContext	PreviousTradeLevelNPV	CurrentNPV	VariationMargin	ManualAdjustme
2/23/2023 4:44	SS2	SS2SAL	CAD	EOD_Final	58268.85	58177.19	-91.66	
2/23/2023 4:44	SS2	SS2SAL	CHF	EOD_Final	436	318.01	-117.99	
2/23/2023 4:44	SS2	SS2SAL	PLN	EOD_Final	196178.27	195112.88	-1065.39	
2/23/2023 4:44	SS2	SS2SAL	USD	EOD_Final	-5756.56	-1918.95	3837.61	
2/23/2023 4:44	SS2	**SC6SAM**	USD	EOD_Final	-67455.12	-67472.5	-17.38	
2/23/2023 4:44	SS2	SS3SAL	AUD	EOD_Final	-28001.3	-28390.98	-389.68	
2/23/2023 4:44	SS2	SS3SAL	EUR	EOD_Final	-4888.19	-4780.6	107.59	
2/23/2023 4:44	SS2	SS3SAL	NOK	EOD_Final	-104154.11	-103361.42	792.69	
2/23/2023 4:44	SS2	SS3SAL	USD	EOD_Final	-79013.95	-75804.17	3209.78	
2/23/2023 4:44	SS2	ALL	AUD	TOTAL_Final	-28001.3	-28390.98	-389.68	
2/23/2023 4:44	SS2	ALL	CAD	TOTAL_Final	58268.85	58177.19	-91.66	
2/23/2023 4:44	SS2	ALL	CHF	TOTAL_Final	436	318.01	-117.99	
2/23/2023 4:44	SS2	ALL	EUR	TOTAL_Final	-4888.19	-4780.6	107.59	

15.2.2 File supported : Trade Level

Report name	Sample file name	Usage
SALREP00105	G-TSWA-SS2-20210218-220822_**SALREP00105**-EOD-MBR-SAM_FRA_Trades.txt	To import FRA payment & Trade NPV sensitivity PL mark – PV01 for FRA trades
SALREP00045	G-TSWA-SS2-20210218-225203_**SALREP00045**-EOD-MBR-IRS_Consideration_Flow.txt	To import Upfront fee
SALREP00002	G-TSWA-SS2-20210218-225218_**SALREP00002**-EOD-MBR-IRS_Coupon_Flow.txt	To import Coupon for IRS
SALREP00084	G-TSWA-SS2-20210218-225221_**SALREP00084**-EOD-MBR-SAM_Trade_Level_Report.txt	To import Trade NPV sensitivity PL mark – PV01 for Swap trades
SALREP00201	G-TSWA-SS2-20210218-225619_**SALREP00201**-EOD-MBR-X-CCY_Settlement_Report.txt	To import FX reset for XCCY trades
SALREP00091	G-TSWA-SS2-20210218-230002_**SALREP00091**-EOD-MBR-FINAL-Trade_Level_NPV_PAI.txt	To import cashflows like NPV, NPV reversal, Variation, PAI, Accrual payments
SALREP00197	G-TSWA-SS2-20210218-230019_**SALREP00197**-EOD-MBR-X_CCY_Trade_Attributes_Report.txt	To import cashflows at settlement of XCCY trades
SALREP00206	G-TSWA-SS2-20210218-230710_**SALREP00206**-EOD-MBR-Swaption_NPV_Report.txt	To import cashflows like Premium amount, Premium NPV, PL mark – PV01, DV01, Delta, Gamma, Vega for Swaption trades

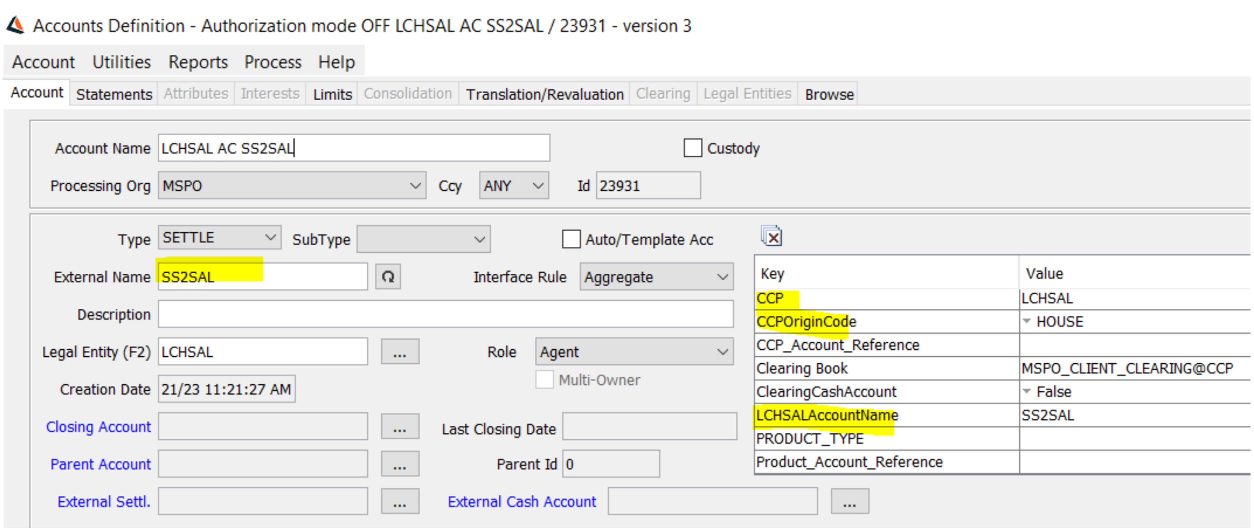
15.2.3 Calypso Setup for importing Position & Trade level files

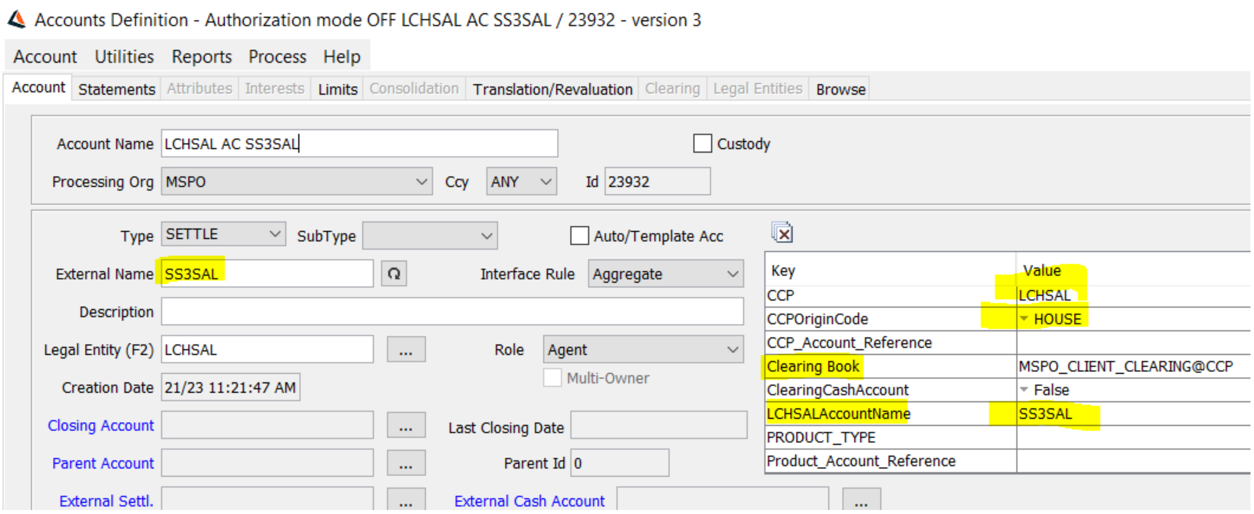
- LCH Swap Agent (LCHSAL) LE Setup.



- Clearing Account Setup :

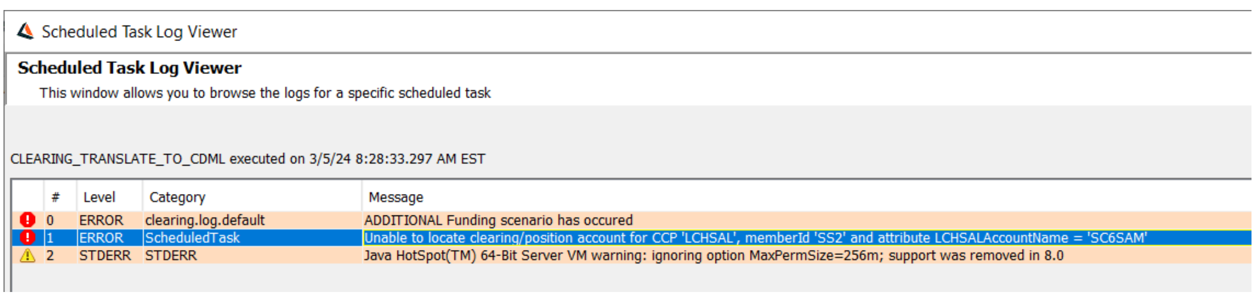
We are sourcing position A/c from Column C which is mentioned on the below Clearing Account.





If any clearing A/c is missing, then we see below exception 'Unable to locate clearing/position account for LCHSALAccountName : SS6SAL

Similarly, if Additional Funding / Fallback scenario has occurred then we will see exception as e.g. 'Additional Funding scenario has occurred.



Note: We do not perform mirroring of trades for the Cpty as trades are not novated to a CCP for this trade flow. Hence, the Description tag is empty on the Clearing A/c.

Currently, this is supported only for House Business.

15.3 Scheduled Task Setup

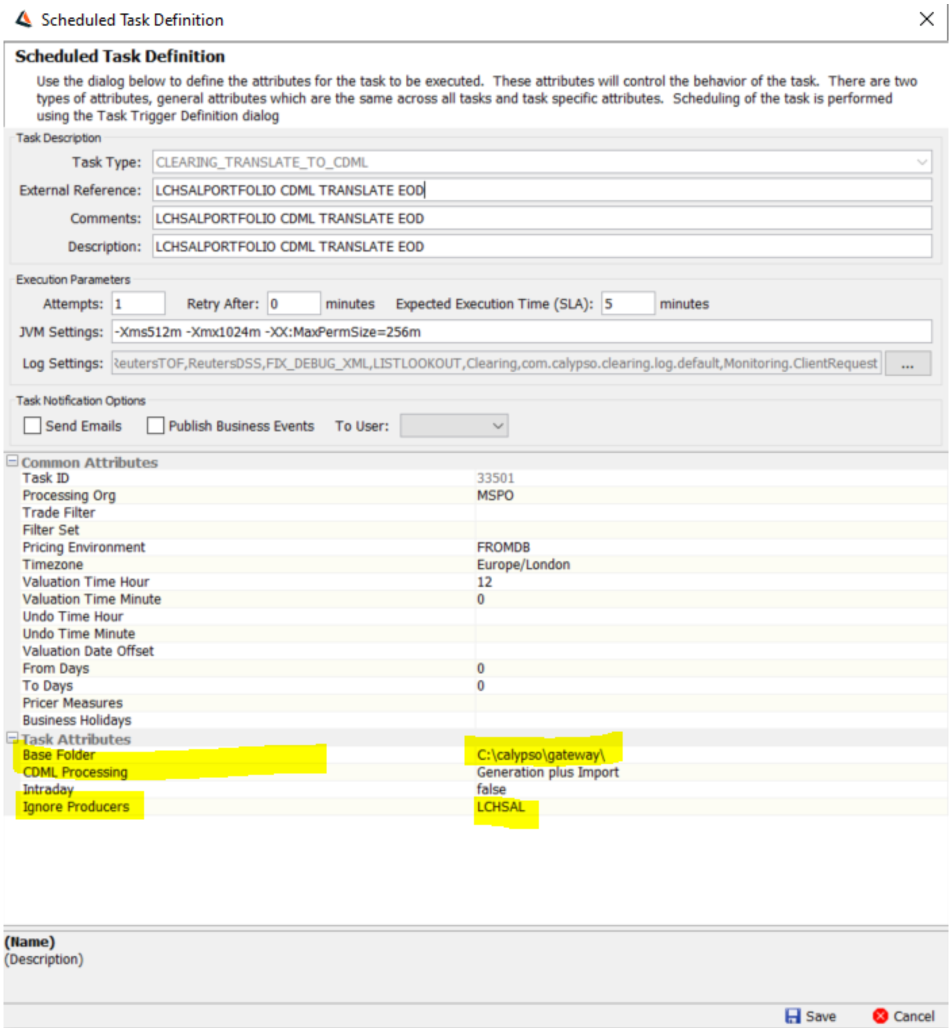
For position level, CDML producer name is mentioned as LCHSALPORTFOLIO, whereas, for trade level it is named as LCHSAL.

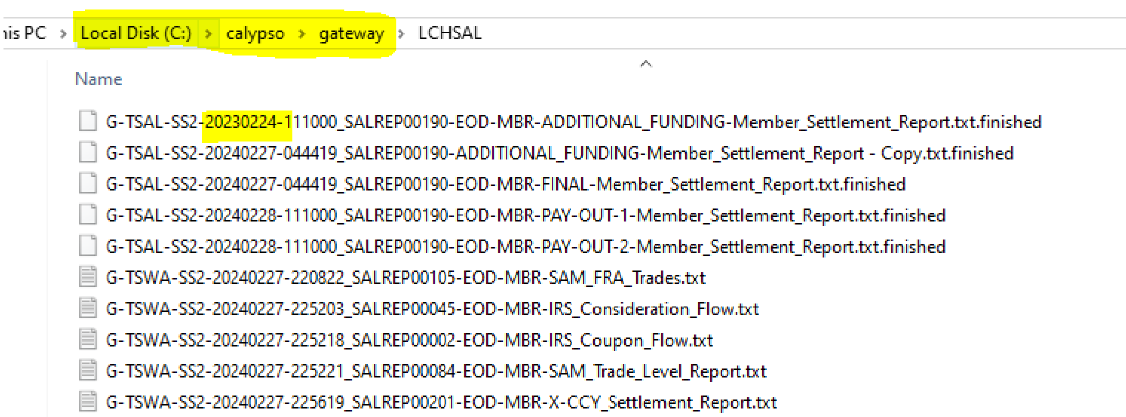
Trade level process provides details at trade level which are useful at the accounting level, hence, it is executed even after position level process.

Note: While executing LCHSAL Trade level process, we add LCHSALPORTFOLIO in 'Ignore Producers' as both the producers are within the same LCHSAL module and only one should be executed at a time. If it is not added, then while execution system also searches for Portfolio files and throws an exception.

Similarly, while executing LCHSALPORTFOLIO, LCHSAL should be added in 'Ignore Producers'.

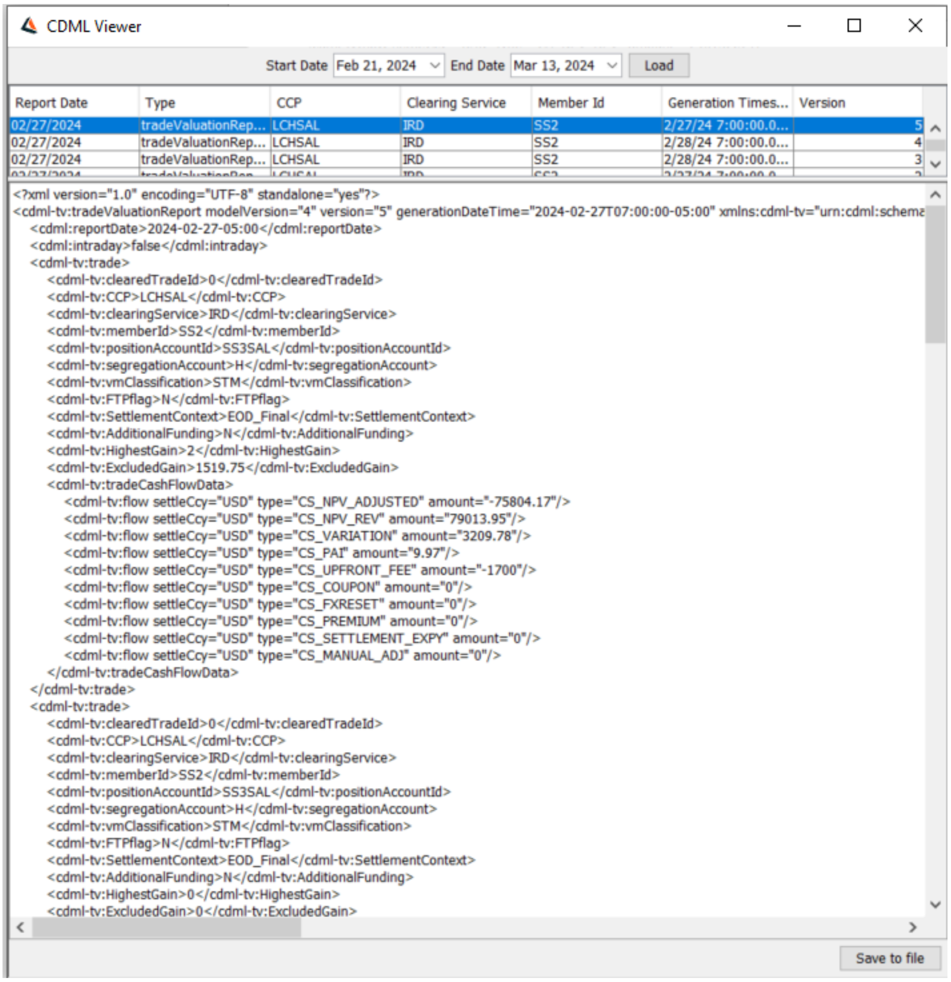
15.3.1 Translate ST





File Name	File Date	File Time	CDML report Date	Translate ST date	CDML report version
EOD Final report	**7th Feb EOD**	**on 7th Feb EOD 6pm**	7th Feb	7th Feb	version 1
Additional Funding	8th Feb	on 8th Feb morning 8 am	7th Feb (T-1)	7th Feb (T-1)	version 2
Payout-1	8th Feb	on 8th Feb morning 9 am	7th Feb (T-1)	7th Feb (T-1)	version 3
Payout-2	8th Feb	on 8th Feb morning 11 am	7th Feb (T-1)	7th Feb (T-1)	version 4
Fallback Funding	8th Feb	on 8th Feb morning 1 pm	7th Feb (T-1)	7th Feb (T-1)	version 5
EOD Final report	**8th Feb EOD**	**on 8th Feb** EOD 6pm	**8th Feb**	**8th Feb**	**version 1**

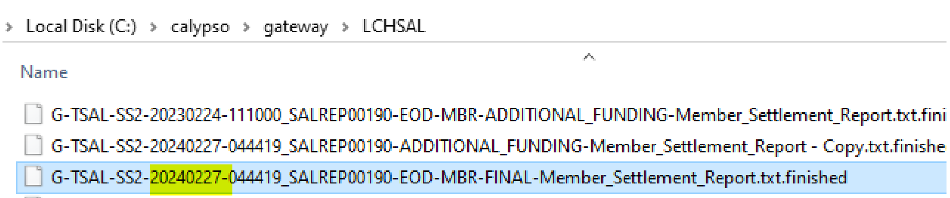
Once the ST is executed, CDML report will be generated as below for the resp execution date:



Post this report is generated, we execute Process ST.

For Process ST, for processing EOD_MBR_FINAL report we have to run the Process ST with same business date as per the file date.

Eg file date is 27th Feb,'24 then ST should be executed with date as 27th Feb'24.



For files other than EOD_MBR_FINAL, all other files are generated on T+1 business date. Thus, the process ST should be executed with an offset as 1.

Note: Translate ST should not be executed with any offset as we have setup logic at the backend to create the report with T date for T+1 reports.

For EOD_MBR_Final Report, we run the process ST without offset as we are running the ST on same business day.

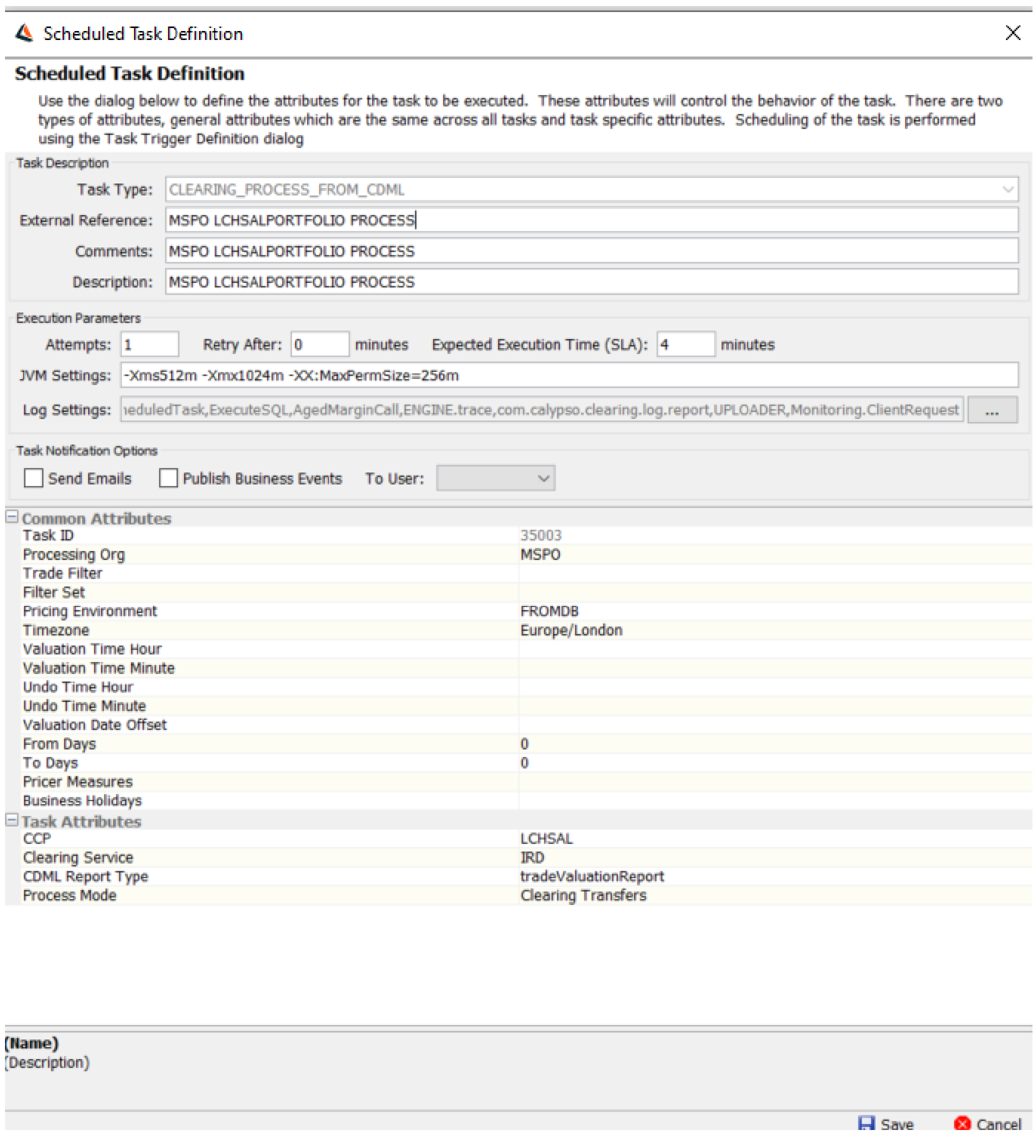
15.3.2 Process ST

- For EOD_MBR_Final Report

Note: CCP used is LCHSAL for both position and trade level. We use product type as IRD for all products.

Note: As this process is related to Bilateral trades and LCHSAL works as calculation agent, we don't see initial margin requirement for this process. Therefore, we select only Trade valuation report on below ST.

For position level, Process Mode should be selected as 'Clearing Transfers'

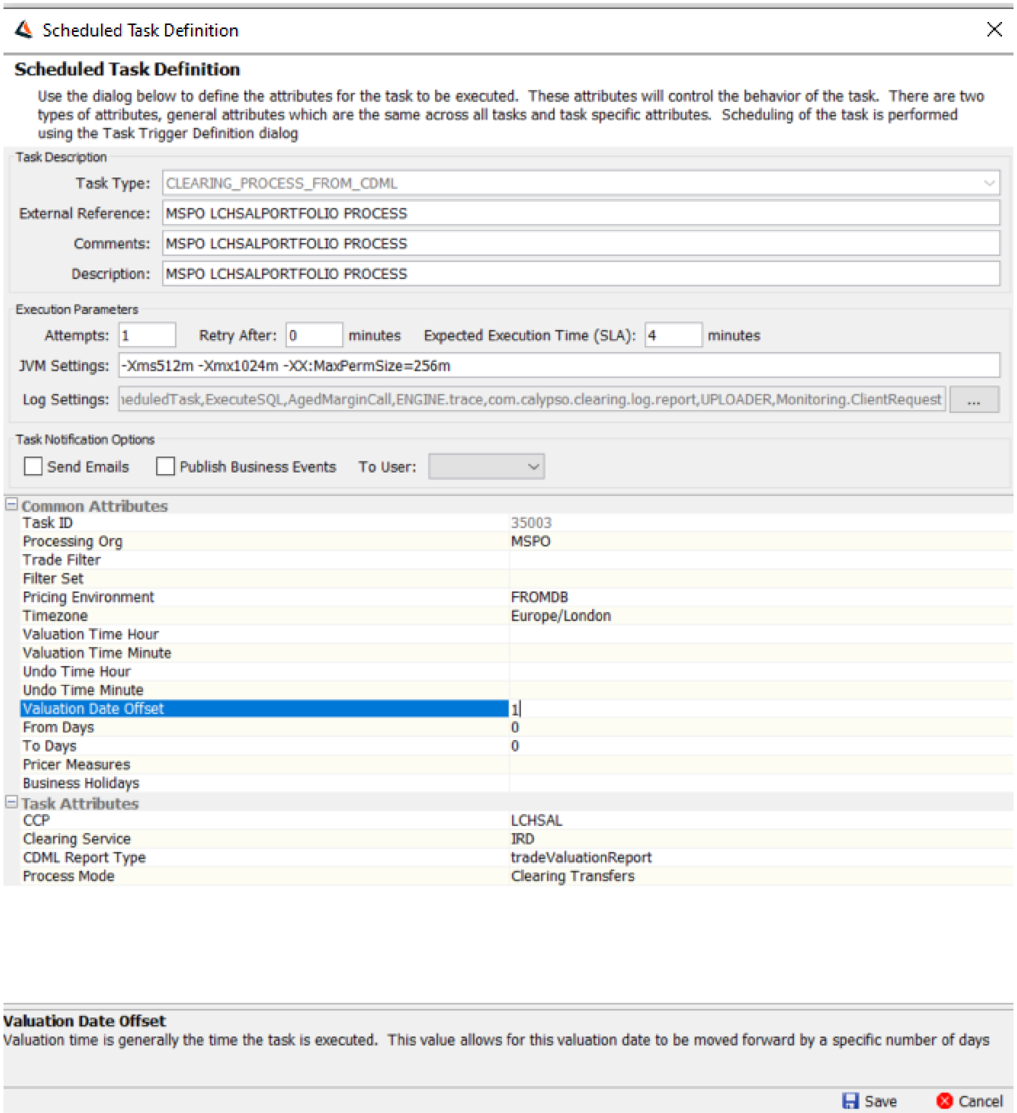


As the other reports are generated with T+1 business date, process ST will be executed on T+1. However, as these trades are for previous business day CDML report is created with T date.

Eg. If Payout_1 report is for 13th March,2024 then Translate ST should be executed with 13th March without Valuation Date Offset mentioned on it. CDML report will be created with report date as 12th March,2024

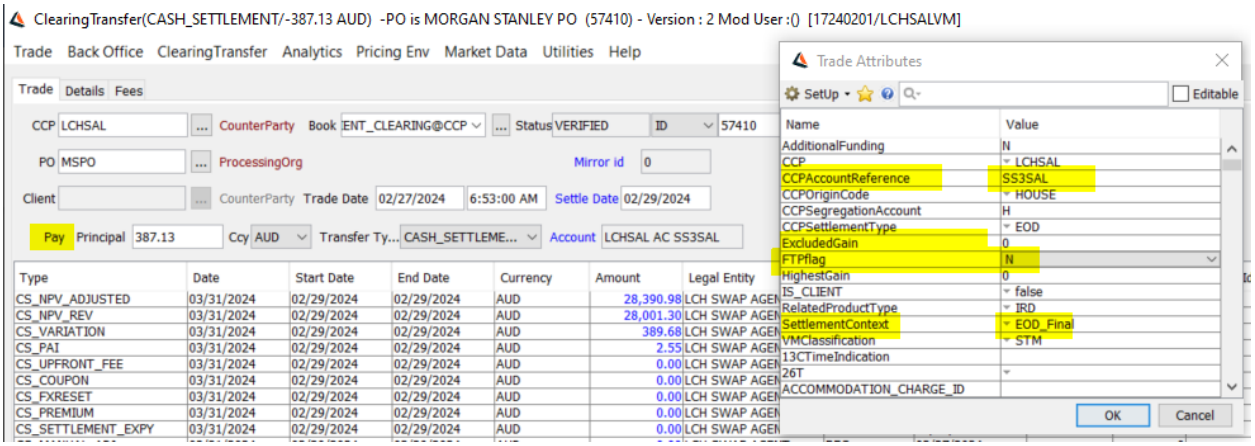
For Process ST, it should be executed with 13th March,2024 with Valuation Date Offset = 1. Post this ST will correctly pick the 12th March,2024 CDML report and update the CT's.

For position level, Process Mode should be selected as 'Clearing Transfers'

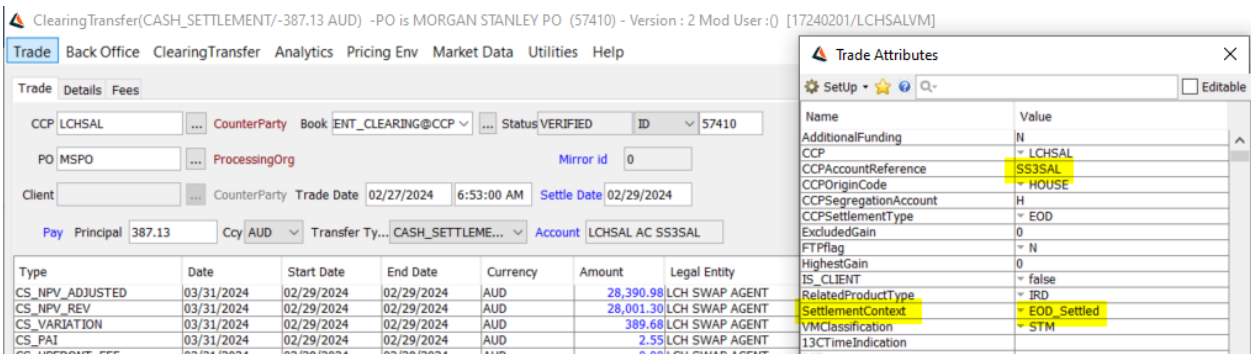


Post Translate & Process ST is successful, we will see the CT's created as below:

Trade Id	Product Description (F)	TRADE_KEYWORD.CCPAccountReference	Trade Date	Settle Cur.	CounterParty	TradeStatus	Book	Trader	Entered Date	Entered User	Trade Currency
57407	ClearingTransfer(CASH_SETTLEMENT/-1,099.47 PLN)	SS2SAL	Feb 27, 2024 06:53 AM	PLN	LCHSAL	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	PLN
57412	ClearingTransfer(CASH_SETTLEMENT/-118.00 CHF)	SS2SAL	Feb 27, 2024 06:53 AM	CHF	LCHSAL	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	CHF
57410	ClearingTransfer(CASH_SETTLEMENT/-387.13 AUD)	SS3SAL	Feb 27, 2024 06:53 AM	AUD	LCHSAL	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	AUD
57409	ClearingTransfer(CASH_SETTLEMENT/-98.84 CAD)	SS2SAL	Feb 27, 2024 06:53 AM	CAD	LCHSAL	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	CAD
57408	ClearingTransfer(CASH_SETTLEMENT/1,519.75 USD)	SS3SAL	Feb 27, 2024 06:53 AM	USD	LCHSAL	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	USD
57411	ClearingTransfer(CASH_SETTLEMENT/3,838.34 USD)	SS2SAL	Feb 27, 2024 06:53 AM	USD	LCHSAL	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	USD
57406	ClearingTransfer(CASH_SETTLEMENT/800.65 NOK)	SS3SAL	Feb 27, 2024 06:53 AM	NOK	LCHSAL	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	NOK
57405	Swap/03/07/2025/P:USD 2.00000 /R:USD/LIBOR/3M	SS2SAL	Mar 05, 2024 06:18 AM	USD	CPTY_1	VERIFIED	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:20 AM	calypso_user	USD

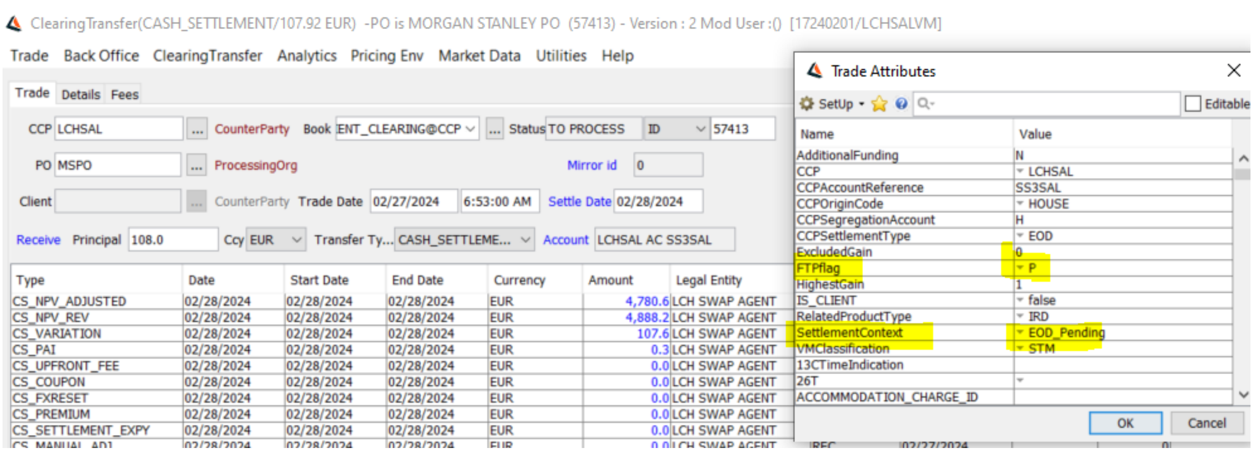


In the subsequent runs, these keywords will get updated.



If the CT is to be kept on hold, then user can specify SD filter in Trade workflow and control the CT status.

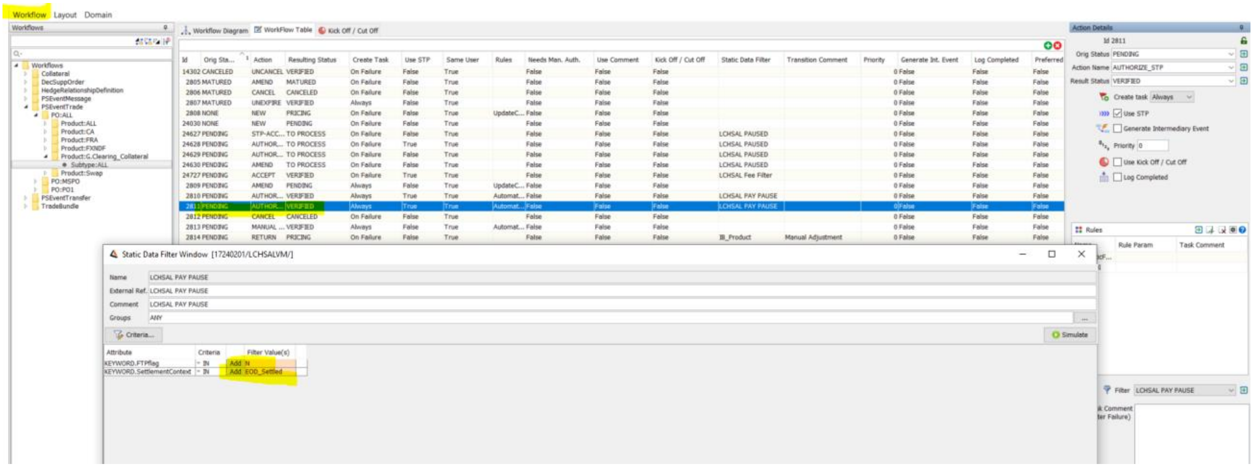
Eg. Below Pay paused trade



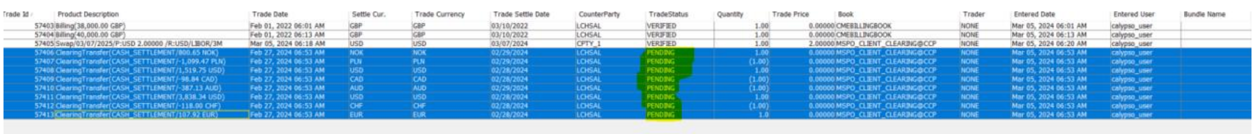
Post this, user can run Collateral Manager and execute the Margin Call Trades.

15.3.3 Sample workflow

If the user wants to transit the CT to 'Verified' status only after FTP flag = N & Settlement Context = EOD_Settled, then we have the below SD filter applied :

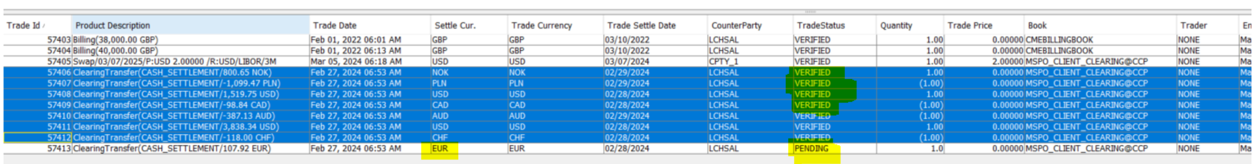


- In 1st run, after translating / processing EOD_MBR_Final report we will see all the CT's in Pending status as below:



Trade Id	Product Description	Trade Date	Settle Cur.	Trade Currency	Trade Settle Date	CounterParty	TradeStatus	Quantity	Trade Price	Book	Trader	Entered Date	Entered User	Bundle Name
57403	Billing(38,000.00 GBP)	Feb 01, 2022 06:01 AM	GBP	GBP	03/10/2022	LCHSAL	VERIFIED	1.00	0.00000	CMEBILLINGBOOK	NONE	Mar 05, 2024 06:01 AM	calypso_user	
57404	Billing(40,000.00 GBP)	Feb 01, 2022 06:13 AM	GBP	GBP	03/10/2022	LCHSAL	VERIFIED	1.00	0.00000	CMEBILLINGBOOK	NONE	Mar 05, 2024 06:13 AM	calypso_user	
57405	Swap/03/07/2025/P:USD 2.00000 /R:USD/LIBOR/3M	Mar 05, 2024 06:18 AM	USD	USD	03/07/2024	CPTY_1	VERIFIED	1.00	2.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:20 AM	calypso_user	
57406	ClearingTransfer(CASH_SETTLEMENT/800.65 NOK)	Feb 27, 2024 06:53 AM	NOK	NOK	02/29/2024	LCHSAL	PENDING	1.00	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	
57407	ClearingTransfer(CASH_SETTLEMENT/-1,099.47 PLN)	Feb 27, 2024 06:53 AM	PLN	PLN	02/29/2024	LCHSAL	PENDING	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	
57408	ClearingTransfer(CASH_SETTLEMENT/1,519.75 USD)	Feb 27, 2024 06:53 AM	USD	USD	02/28/2024	LCHSAL	PENDING	1.00	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	
57409	ClearingTransfer(CASH_SETTLEMENT/-98.84 CAD)	Feb 27, 2024 06:53 AM	CAD	CAD	02/28/2024	LCHSAL	PENDING	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	
57410	ClearingTransfer(CASH_SETTLEMENT/-387.13 AUD)	Feb 27, 2024 06:53 AM	AUD	AUD	02/29/2024	LCHSAL	PENDING	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	
57411	ClearingTransfer(CASH_SETTLEMENT/3,838.34 USD)	Feb 27, 2024 06:53 AM	USD	USD	02/28/2024	LCHSAL	PENDING	1.00	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	
57412	ClearingTransfer(CASH_SETTLEMENT/-118.00 CHF)	Feb 27, 2024 06:53 AM	CHF	CHF	02/28/2024	LCHSAL	PENDING	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	
57413	ClearingTransfer(CASH_SETTLEMENT/107.92 EUR)	Feb 27, 2024 06:53 AM	EUR	EUR	02/28/2024	LCHSAL	PENDING	1.0	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar 05, 2024 06:53 AM	calypso_user	

- Only on T+1 , after translating / processing PayOut_1 report where the FTP = N / & Settlement Context = EOD_Settled we see the trades moved to verified and one is in Pending Status.



Trade Id	Product Description	Trade Date	Settle Cur.	Trade Currency	Trade Settle Date	CounterParty	TradeStatus	Quantity	Trade Price	Book	Trader	En
57403	Billing(38,000.00 GBP)	Feb 01, 2022 06:01 AM	GBP	GBP	03/10/2022	LCHSAL	VERIFIED	1.00	0.00000	CMEBILLINGBOOK	NONE	Ma
57404	Billing(40,000.00 GBP)	Feb 01, 2022 06:13 AM	GBP	GBP	03/10/2022	LCHSAL	VERIFIED	1.00	0.00000	CMEBILLINGBOOK	NONE	Ma
57405	Swap/03/07/2025/P:USD 2.00000 /R:USD/LIBOR/3M	Mar 05, 2024 06:18 AM	USD	USD	03/07/2024	CPTY_1	VERIFIED	1.00	2.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57406	ClearingTransfer(CASH_SETTLEMENT/800.65 NOK)	Feb 27, 2024 06:53 AM	NOK	NOK	02/29/2024	LCHSAL	VERIFIED	1.00	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57407	ClearingTransfer(CASH_SETTLEMENT/-1,099.47 PLN)	Feb 27, 2024 06:53 AM	PLN	PLN	02/29/2024	LCHSAL	VERIFIED	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57408	ClearingTransfer(CASH_SETTLEMENT/1,519.75 USD)	Feb 27, 2024 06:53 AM	USD	USD	02/28/2024	LCHSAL	VERIFIED	1.00	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57409	ClearingTransfer(CASH_SETTLEMENT/-98.84 CAD)	Feb 27, 2024 06:53 AM	CAD	CAD	02/28/2024	LCHSAL	VERIFIED	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57410	ClearingTransfer(CASH_SETTLEMENT/-387.13 AUD)	Feb 27, 2024 06:53 AM	AUD	AUD	02/29/2024	LCHSAL	VERIFIED	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57411	ClearingTransfer(CASH_SETTLEMENT/3,838.34 USD)	Feb 27, 2024 06:53 AM	USD	USD	02/28/2024	LCHSAL	VERIFIED	1.00	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57412	ClearingTransfer(CASH_SETTLEMENT/-118.00 CHF)	Feb 27, 2024 06:53 AM	CHF	CHF	02/28/2024	LCHSAL	VERIFIED	(1.00)	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma
57413	ClearingTransfer(CASH_SETTLEMENT/107.92 EUR)	Feb 27, 2024 06:53 AM	EUR	EUR	02/28/2024	LCHSAL	PENDING	1.0	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Ma

- CDML report 2nd version for reference stating EOD Settled & EOD Pending Status.

Report Date	Type	CCP
02/27/2024	tradeValuationReport	LCHSAL
02/27/2024	tradeValuationReport	LCHSAL
02/27/2024	tradeValuationReport	LCHSAL
02/26/2024	tradeValuationReport	LCHSAL


```xml
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   <cdml-tv:trade>
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   <cdml-tv:trade>
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      <cdml-tv:clearingService>IRD</cdml-tv:clearingService>
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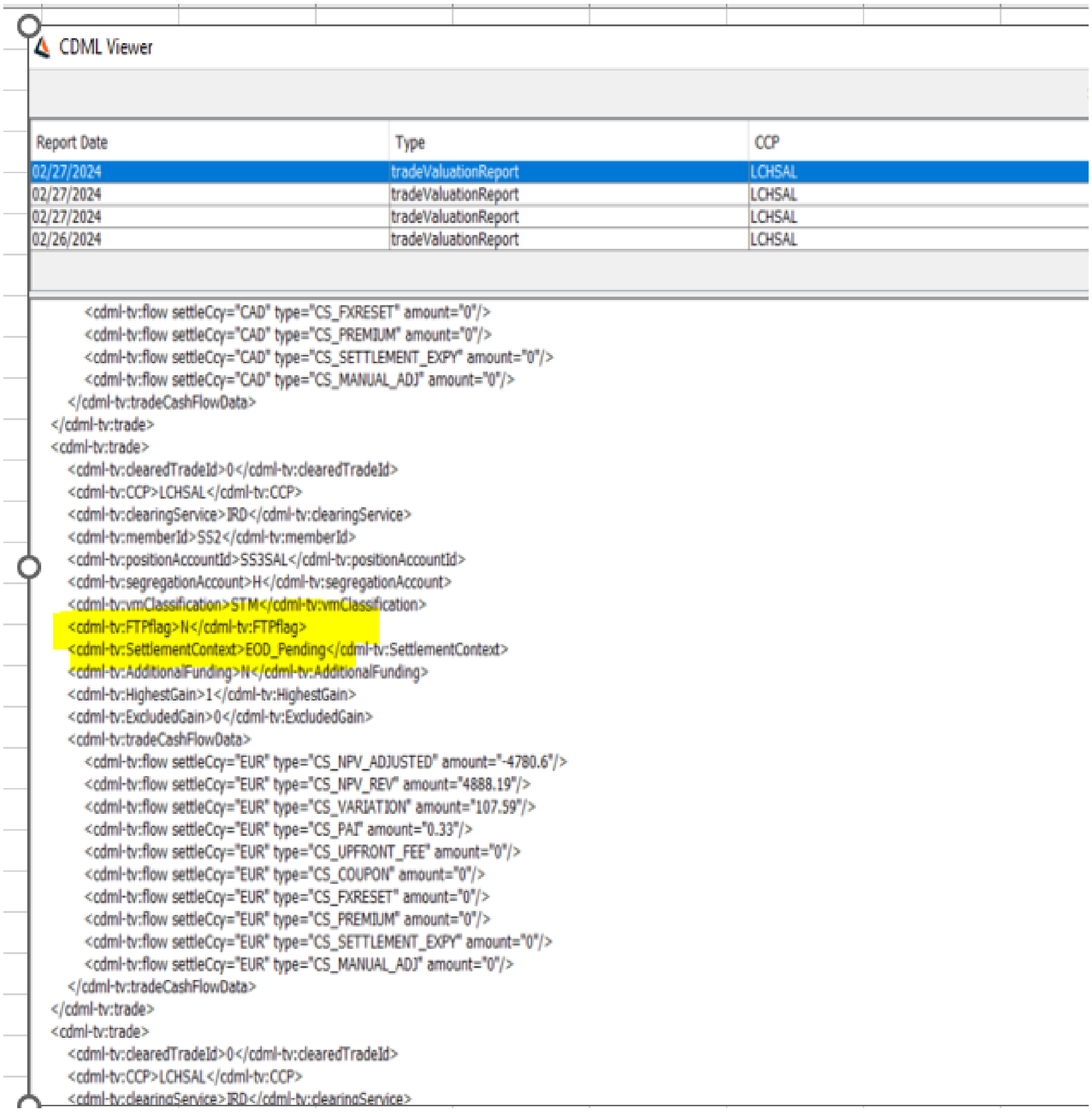
CDML Viewer
Report Date
Type
CCP
02/27/2024 tradeValuationReport LCHSAL
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<cdml-tv:flow settleCcy="EUR" type="CS_COUPON" amount="0"/>
<cdml-tv:flow settleCcy="EUR" type="CS_FXRESET" amount="0"/>
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</cdml-tv:trade>
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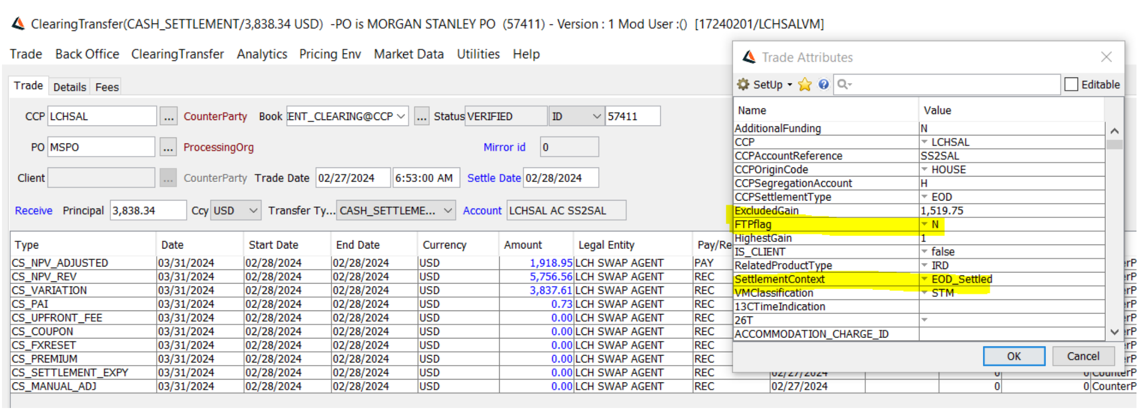
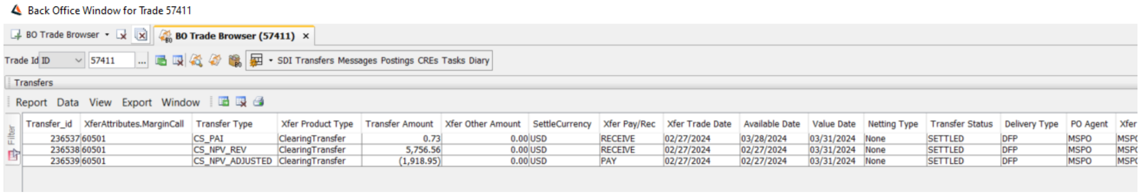
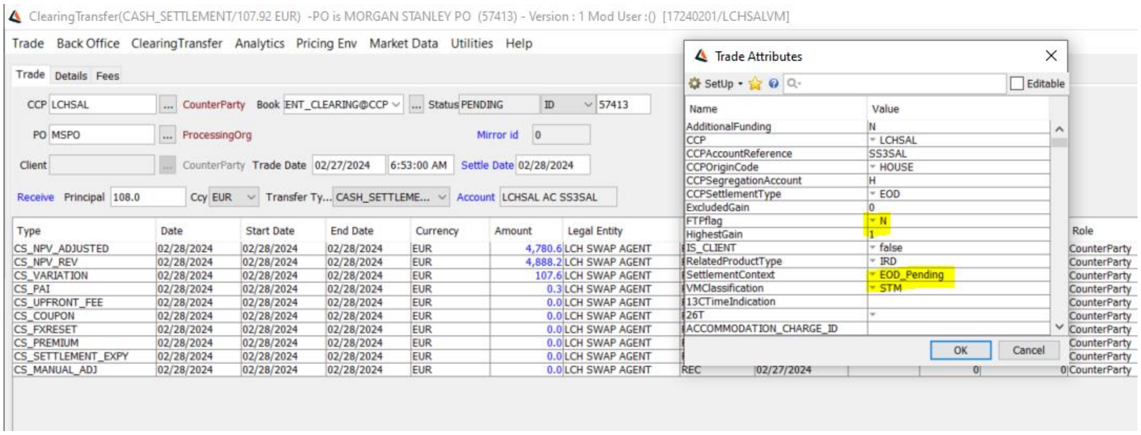
<cdml-tv:CCP>LCHSAL</cdml-tv:CCP>
<cdml-tv:clearingService>IRD</cdml-tv:clearingService>

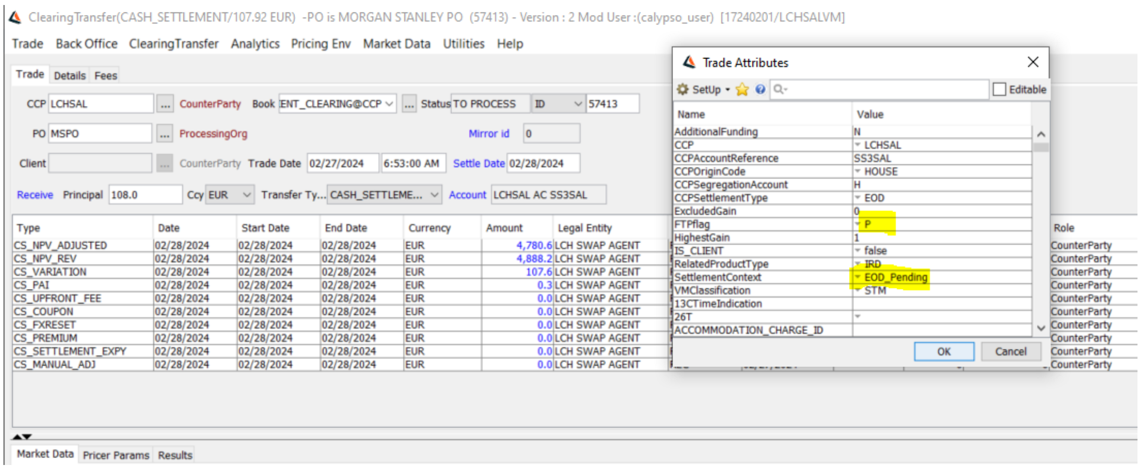

ClearingTransfer(CASH_SETTLEMENT/3,838.34 USD) -PO is MORGAN STANLEY PO (57411) - Version : 1 Mod User :() [17240201/LCHSALVM]
Trade Back Office ClearingTransfer Analytics Pricing Env Market Data Utilities Help
Trade Details Fees
CCP LCHSAL CounterParty Book ENT_CLEARING@CCP Status VERIFIED ID 57411
PO MSPO ProcessingOrg Mirror id 0
Client CounterParty Trade Date 02/27/2024 6:53:00 AM Settle Date 02/28/2024
Receive Principal 3,838.34 Ccy USD Transfer Ty... CASH_SETTLEME... Account LCHSAL AC SS2SAL
Type Date Start Date End Date Currency Amount Legal Entity Pay/Re
CS_NPV_ADJUSTED 03/31/2024 02/28/2024 02/28/2024 USD 1,918.95 LCH SWAP AGENT PAY
CS_NPV_REV 03/31/2024 02/28/2024 02/28/2024 USD 5,756.56 LCH SWAP AGENT REC
CS_VARIATION 03/31/2024 02/28/2024 02/28/2024 USD 3,837.61 LCH SWAP AGENT REC
CS_PAI 03/31/2024 02/28/2024 02/28/2024 USD 0.73 LCH SWAP AGENT REC
CS_UPFRONT_FEE 03/31/2024 02/28/2024 02/28/2024 USD 0.00 LCH SWAP AGENT REC
CS_COUPON 03/31/2024 02/28/2024 02/28/2024 USD 0.00 LCH SWAP AGENT REC
CS_FXRESET 03/31/2024 02/28/2024 02/28/2024 USD 0.00 LCH SWAP AGENT REC
CS_PREMIUM 03/31/2024 02/28/2024 02/28/2024 USD 0.00 LCH SWAP AGENT REC
CS_SETTLEMENT_EXPY 03/31/2024 02/28/2024 02/28/2024 USD 0.00 LCH SWAP AGENT REC
CS_MANUAL_ADJ 03/31/2024 02/28/2024 02/28/2024 USD 0.00 LCH SWAP AGENT REC 02/27/2024 0 CounterP
Trade Attributes
SetUp Editable
Name Value
AdditionalFunding N
CCP LCHSAL
CCPAccountReference SS2SAL
CCPOriginCode HOUSE
CCPSegregationAccount H
CCPSettlementType EOD
ExcludedGain 1,519.75
FTPflag N
HighestGain 1
IS_CLIENT false
RelatedProductType IRD
SettlementContext EOD_Settled
VMClassification STM
13CTimeIndication
26T
ACCOMMODATION_CHARGE_ID
OK Cancel



- Pending CT : Settlement Context : EOD_Pending / FTP Flag : N



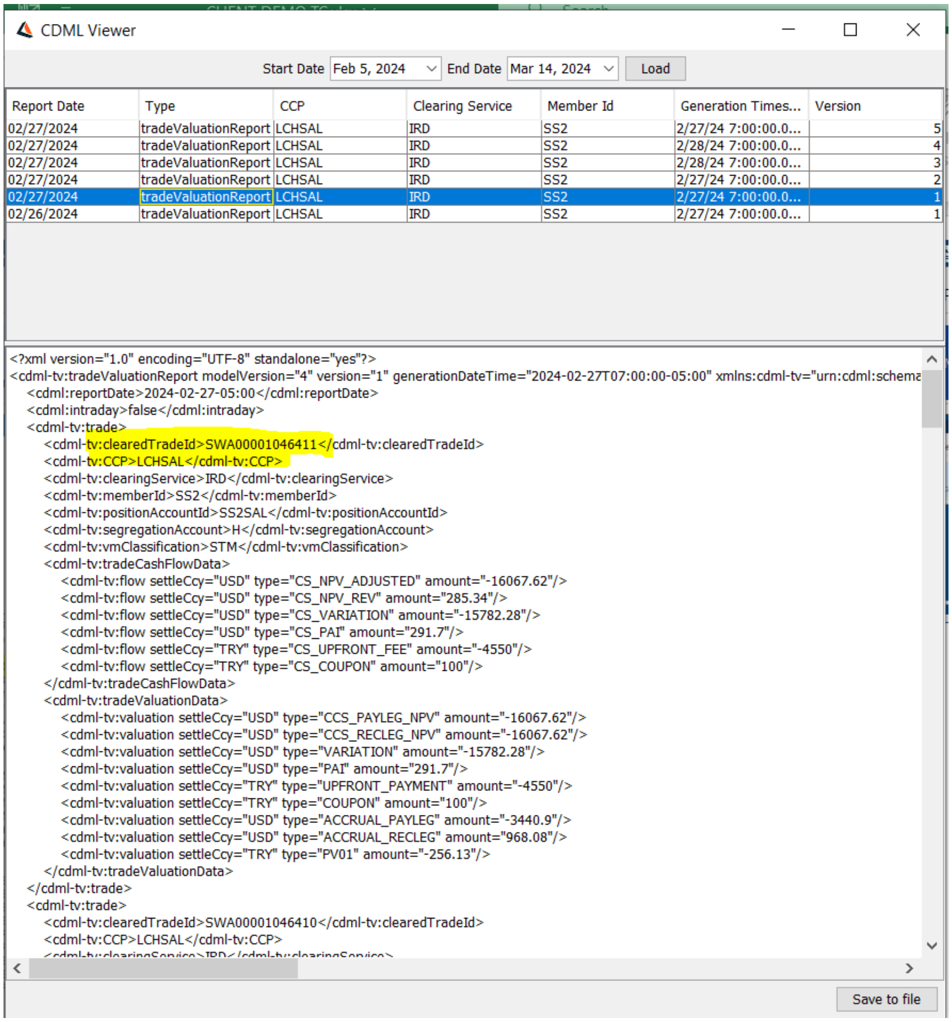
- Pending CT with ‘To Process’ status : Settlement Context : EOD_Pending / FTP Flag : P



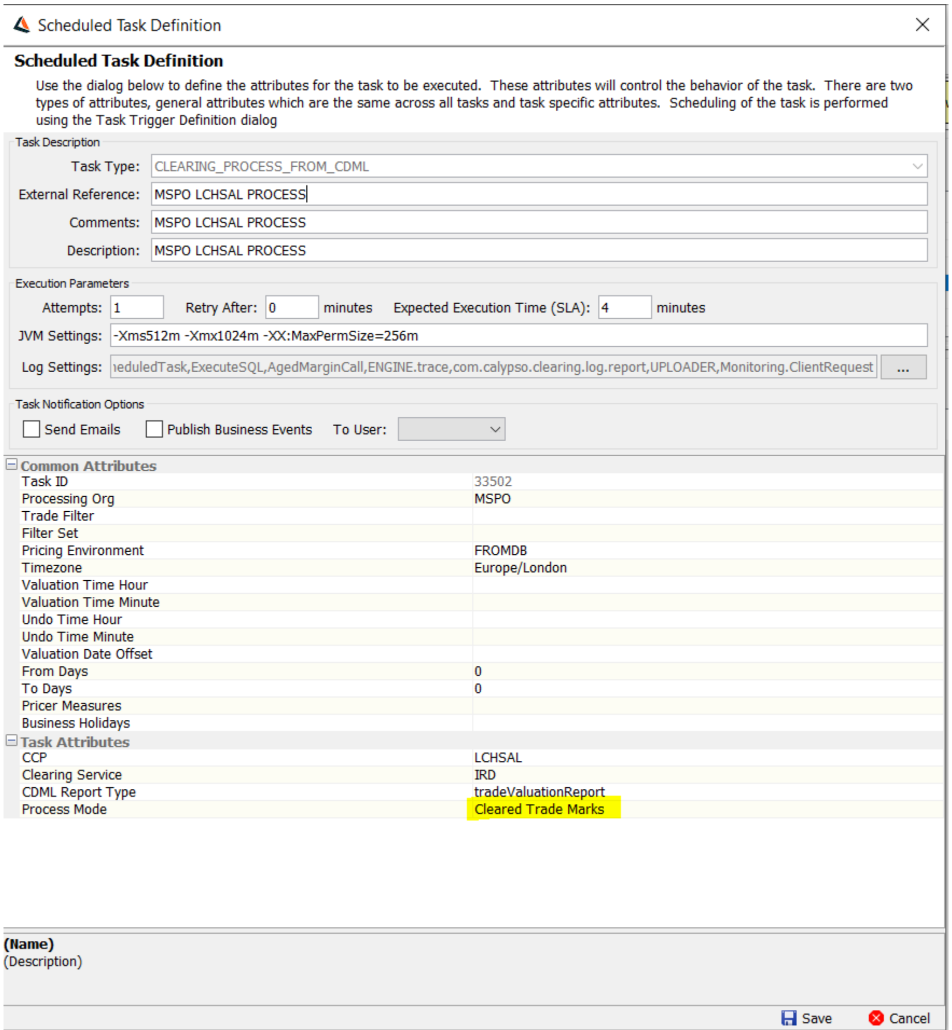
15.3.4 Trade Level Process ST

To create Cleared Trade PL marks

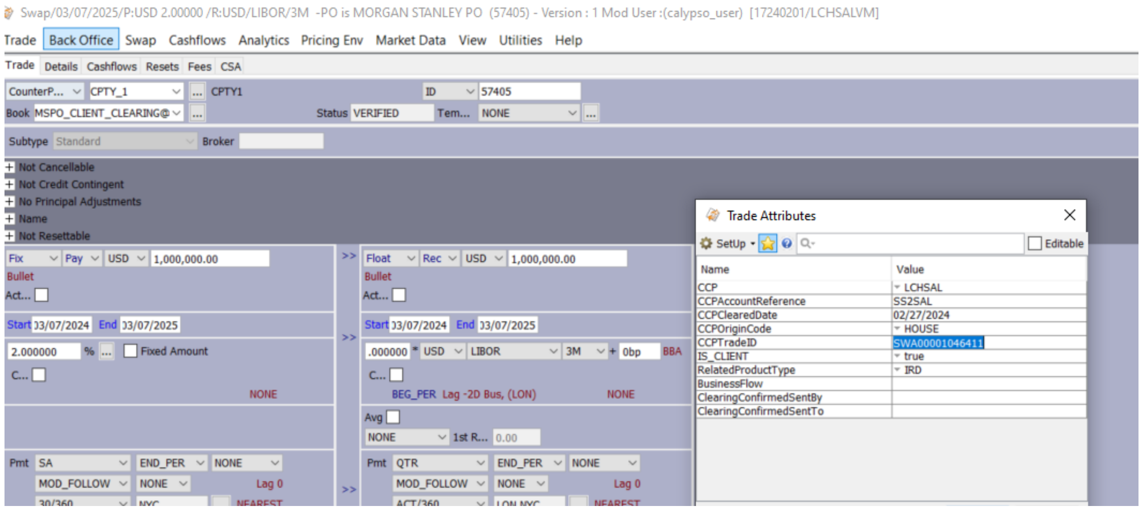
- CDML report at Trade level:



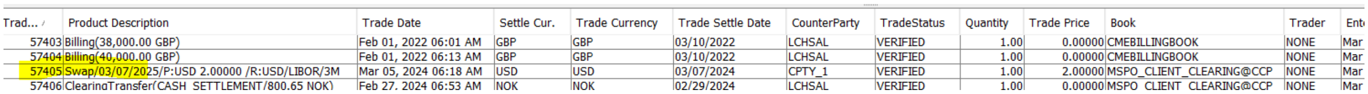
- For Trade Level, Process ST should be executed with Process Mode 'PL Marks'



- Bilateral trade booked with relevant keywords:

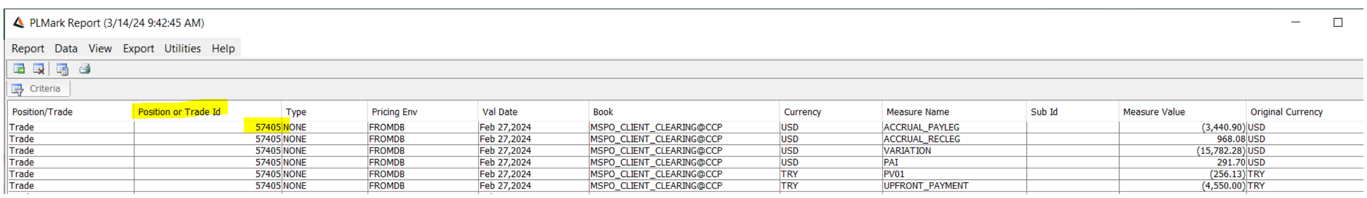


- Trade Browser:



Trad...	Product Description	Trade Date	Settle Cur.	Trade Currency	Trade Settle Date	CounterParty	TradeStatus	Quantity	Trade Price	Book	Trader	Ent
57403	Billing(38,000.00 GBP)	Feb 01, 2022 06:01 AM	GBP	GBP	03/10/2022	LCHSAL	VERIFIED	1.00	0.00000	CMEBILLINGBOOK	NONE	Mar
57404	Billing(40,000.00 GBP)	Feb 01, 2022 06:13 AM	GBP	GBP	03/10/2022	LCHSAL	VERIFIED	1.00	0.00000	CMEBILLINGBOOK	NONE	Mar
57405	Swap/03/07/2025/P:USD 2.00000 /R:USD/LIBOR/3M	Mar 05, 2024 06:18 AM	USD	USD	03/07/2024	CPTY_1	VERIFIED	1.00	2.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar
57406	ClearingTransfer(CASH_SETTLEMENT/800.65 NOK)	Feb 27, 2024 06:53 AM	NOK	NOK	02/29/2024	LCHSAL	VERIFIED	1.00	0.00000	MSPO_CLIENT_CLEARING@CCP	NONE	Mar

15.3.5 PL Mark Report



PLMark Report (3/14/24 9:42:45 AM)

Report Data View Export Utilities Help

Criteria

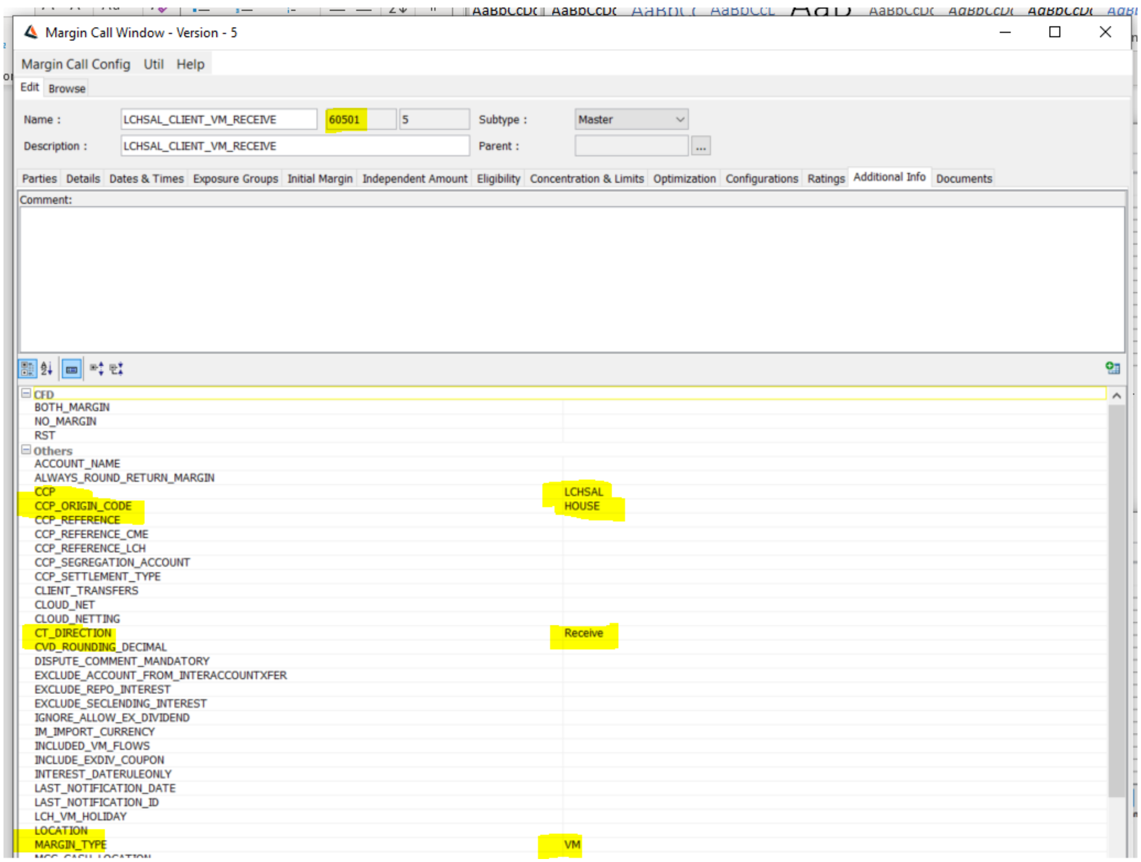
Position/Trade	Position or Trade Id	Type	Pricing Env	Val Date	Book	Currency	Measure Name	Sub Id	Measure Value	Original Currency
Trade	57405	NONE	FROMDB	Feb 27,2024	MSPO_CLIENT_CLEARING@CCP	USD	ACCRUAL_PAYLEG		(3,440.90)	USD
Trade	57405	NONE	FROMDB	Feb 27,2024	MSPO_CLIENT_CLEARING@CCP	USD	ACCRUAL_RECLEG		968.08	USD
Trade	57405	NONE	FROMDB	Feb 27,2024	MSPO_CLIENT_CLEARING@CCP	USD	VARIATION		(15,782.28)	USD
Trade	57405	NONE	FROMDB	Feb 27,2024	MSPO_CLIENT_CLEARING@CCP	USD	PAI		291.70	USD
Trade	57405	NONE	FROMDB	Feb 27,2024	MSPO_CLIENT_CLEARING@CCP	TRY	PV01		(256.13)	TRY
Trade	57405	NONE	FROMDB	Feb 27,2024	MSPO_CLIENT_CLEARING@CCP	TRY	UPFRONT_PAYMENT		(4,550.00)	TRY

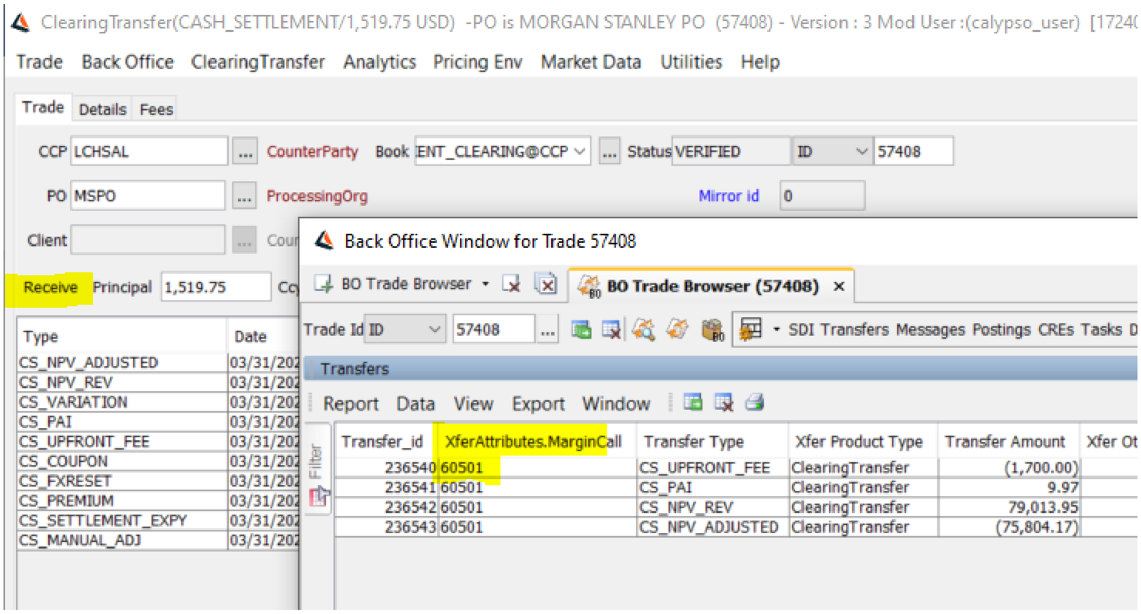
15.3.6 Margin Call Contract Setup

For Margin Call Contract, we have introduced an attribute on the MCC 'Additional Info' to differentiate. Pay / Rec CT's as LCHSAL 1st settles the Payin cashflows and then the Payout cashflows. Post this, user can run Collateral Manager and execute the Margin Call Trades.

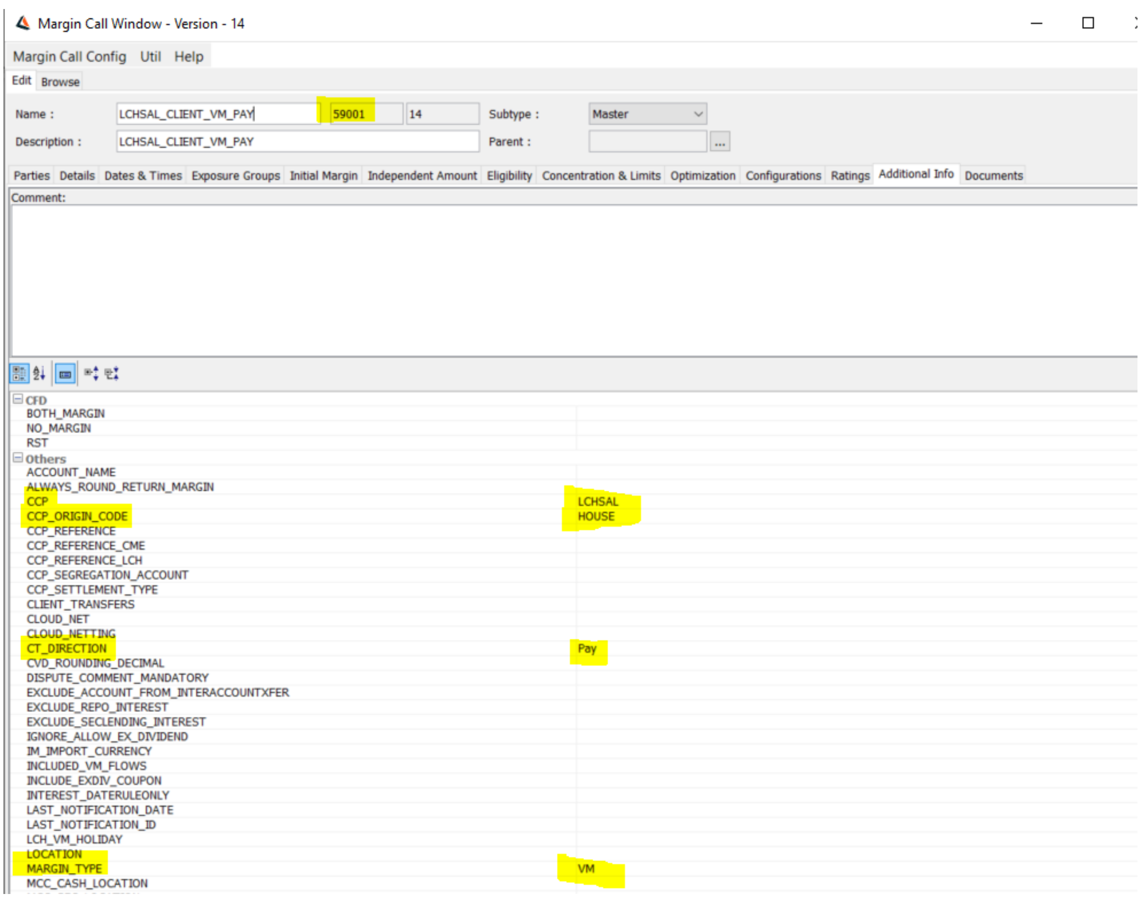
For Margin Call Contract, we have introduced an attribute on the MCC 'Additional Info' to differentiate Pay / Rec CT's as LCHSAL 1st settles the Payin cashflows and then the Payout cashflows.

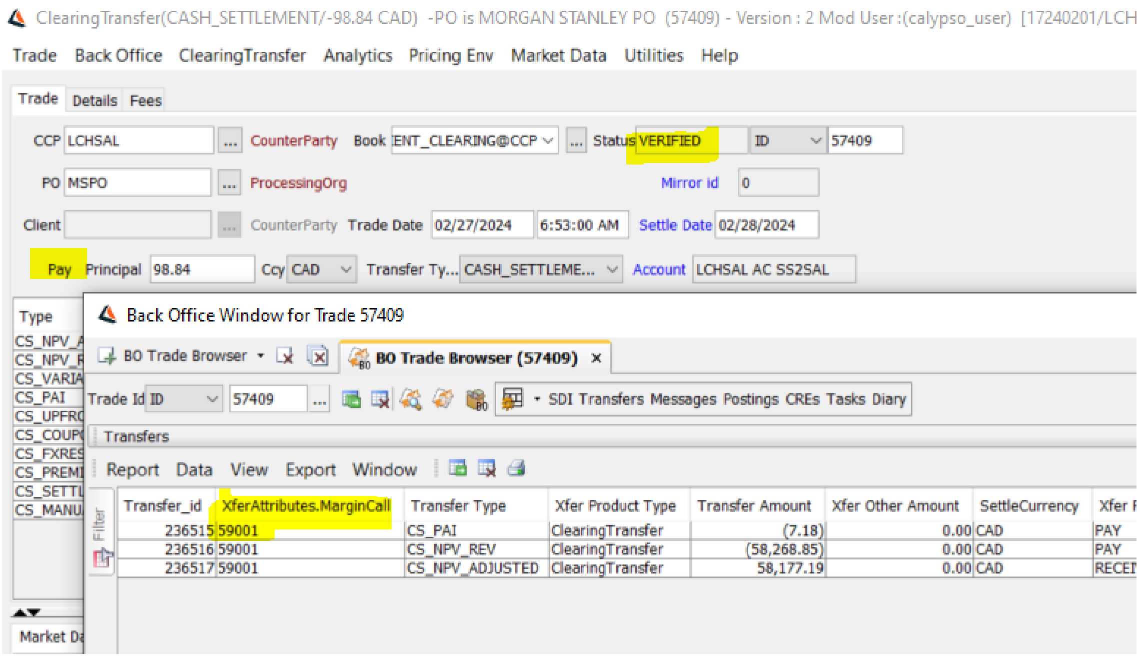
- MCC with CT_Direction = Receive :





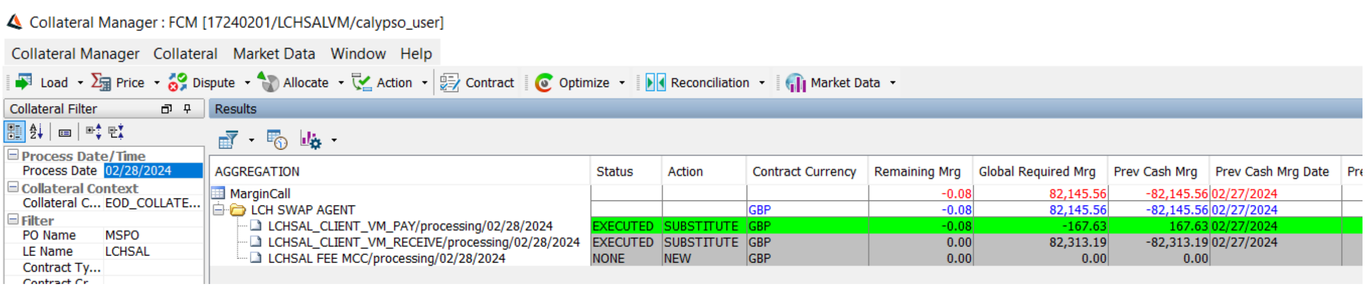
- MCC with CT_Direction = Pay :





We have tested various use cases of FTP flag / settlement context amendment with sample w/f. User can define the w/f as per their requirement.

- Collateral Manager Process



This is the end of EOD process for Bilateral trades.

15.4 Billing Process

Currently, LCH Swap Agent is applying below fees to Swap Agent Member. These fees are reported in file REP250.

- Filename : P-PSWA-SS2-20220201-014631_SALREP00250-EOD-MBR-SwapAgent_Serv.txt
- SS2 : Member Firm ID / Date format : 20220201 : yyyyMMDD

Below are the file format details:

	Seq Number	Attribute	Data Type	Description
13	**Seq Number**	**Attribute**	**Data Type**	**Description**
14	1	InvoiceDate	Date	The date the invoice was posted
15	2	FeeCollectionDate	Date	The date the Total Amount due will be debited
16	3	Party_A_SdMnemonic	Varchar2(40)	SwapAgent Party Identifier (This is either a real Bic code or a short code constructed from party name)
17	4	Party_A_MbrLongName	Varchar2(40)	The member long name.
18	5	Party_A_MbrShortname	Varchar2(40)	The MarkitWire BIC code
19	6	InvoiceNumber	Varchar2(32)	Unique invoice reference
20	7	FeeType	Varchar2(64)	The type of fee being charged: SAL Service Fee, SAL Cash Settlement Account Fee, SAL Membership Fee, SAL Affiliate Fee, SAL Fee Rebate, Markitserv Ticket Fee, SAL Variable Service Fee, Late Settlement Payment Fees, Cash Settlement Bank Charges - Call, Cash Settlement Bank Charges - Pay, Sequent Transfer Charges, Interbank Sweep Charges, Sweep Pre-Advice Charges, Credit Confirmation Charges, Debit Confirmation Charges, Sequence Debit Confirmation Charges, Sequence Credit Confirmation Charges, Sweep Debit Confirmation Charges, Sweep Credit Confirmation Charges, SAL Maintenance Fees, SAL Account Statement Charges There is a Fee Type of TOTAL for the aggregated line entry.
21	8	Comment	Varchar2(64)	Contains additional detail for some fee types (CSB fees)
22	9	Currency	Varchar2(3)	ISO Standard Alphabetic Currency Code
23	10	FeeRate	Number(15,2)	The charge for an individual line item
24	11	FeeVolume	Number(10)	The volume of transactions (trade or CSB fee volumes)
25	12	VatAmount	Number(15,2)	Any VAT associated with the fee
26	13	TotalAmount	Number(15,2)	The total fee amount charged per line item (there is an aggregated total per currency at the end of the report). Rebates will be shown as negative numbers, standard fees will be shown as positive numbers.

There are around 21 fees currently supported by LCHSAL.

We have supported these via Calypso Mapping feature so that if any fee is introduced in future, then user can add this fee in the mapping and billing trades can be generated without any code change.

Further, we use Margin Call Contract to pay the fees to CCP. User can set up fee specific MCC by mentioning the fee name on MCC – Tab 'Additional Info' in attribute 'Include VM Flows'.

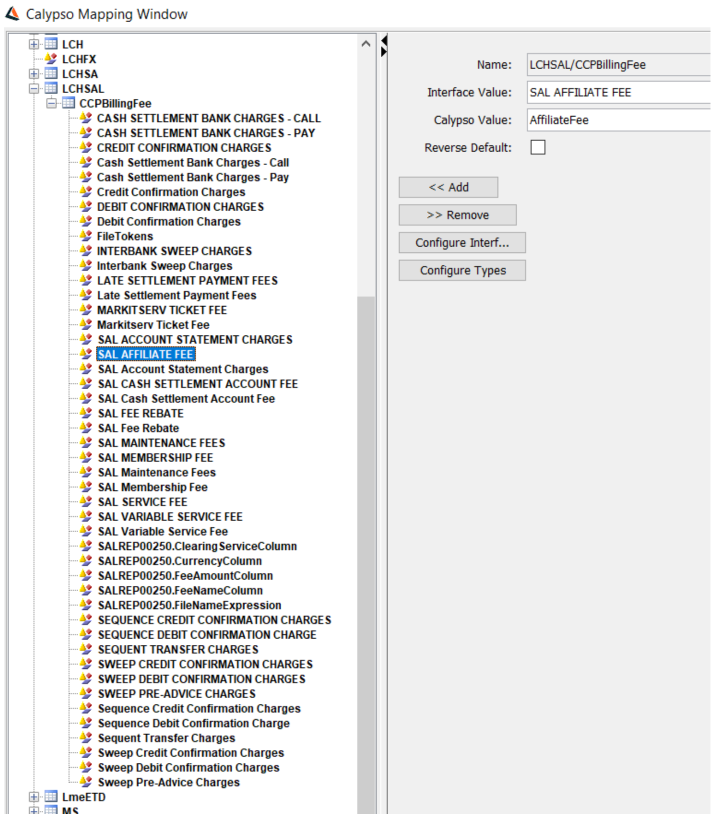
This attribute field has 250-character size limit, hence, the fee names defined by LCHSAL cannot be fully saved on the MCC. Due to this, below calypso mapping feature has been introduced where fee name has been customized to fit within the 250-character limit.

These names are customizable, and user can update the fee names as per the requirement.

15.4.1 Calypso Mapping Details

LCHSAL Fee List	Calypso Mapping Name
SAL SERVICE FEE	ServiceFee
SAL CASH SETTLEMENT ACCOUNT FEE	CashSettlementAccountFee
SAL MEMBERSHIP FEE	MembershipFee
SAL AFFILIATE FEE	AffiliateFee
SAL FEE REBATE	FeeRebate
MARKITSERV TICKET FEE	TicketFee
SAL VARIABLE SERVICE FEE	VariableServiceFee
LATE SETTLEMENT PAYMENT FEES	SettlementPaymentFees
CASH SETTLEMENT BANK CHARGES - CALL	SettlementBankChargesCall
CASH SETTLEMENT BANK CHARGES - PAY	SettlementBankChargesPay
SEQUENT TRANSFER CHARGES	TransferCharges
INTERBANK SWEEP CHARGES	SweepCharges
SWEEP PRE-ADVICE CHARGES	PreAdviceCharges
CREDIT CONFIRMATION CHARGES	CreditConfirmationFee
DEBIT CONFIRMATION CHARGES	DebitConfirmationFee
SEQUENCE DEBIT CONFIRMATION CHARGE	SeqDebitConfirmationFee
SEQUENCE CREDIT CONFIRMATION CHARGES	SeqCreditConfirmationFee
SWEEP DEBIT CONFIRMATION CHARGES	SweepDebitConfirmationFee
SWEEP CREDIT CONFIRMATION CHARGES	SweepCreditConfirmationFee
SAL MAINTENANCE FEES	MaintenanceFee
SAL ACCOUNT STATEMENT CHARGES	AcStatementFee

Calypso Mapping Setup:



Eg. SAL AFFILIATE FEE is LCHSAL reported fee name which is mentioned in Interface Value and user has mentioned this fee name as AffiliateFee in Calypso Value.

Similarly, user can update the Calypso Value for the mentioned fee as well as add any new fee that is being introduced by LCHSAL.

15.4.2 Billing Setup

- File structure :

```
P-PSWA-SS2-20220202-014631_SALREP00250-EOD-MBR-SwapAgent_Serv.txt | clearingconnection.properties | P-PSWA-PUBLIC-20240227-014631_SALREP00304-EOD-REF-FX_Exchange_Rates.txt | G-TSAL-SS2-20240227-044419_SALREP00190-EOD-MBR-FINAL-Member
1  InvoiceDate FeeCollectionDate  Party_A_SdMnemonic  Party_A_MbrLongName Party_A_MbrShortname  InvoiceNumber  FeeType Comment Currency  FeeRate FeeVolume  VatAmount  TotalAmount
2  01/02/2022  08/02/2022  SS2 ABC Bank  ABC_H_SAM  S0123456  SAL AFFILIATE FEE  GBP 0  0  0  40000
3  01/02/2022  08/02/2022  SS2 ABC Bank  ABC_H_SAM  S0123456  TOTAL  GBP  0  33333.33
4
```

```
P-PSWA-SS2-20220201-014631_SALREP00250-EOD-MBR-SwapAgent_Serv.txt | clearingconnection.properties | P-PSWA-PUBLIC-20240227-014631_SALREP00304-EOD-REF-FX_Exchange_Rates.txt | G-TSAL-SS2-20240227-044419_SALREP00190-EOD-MBR-FINAL-Mem
1  InvoiceDate FeeCollectionDate  Party_A_SdMnemonic  Party_A_MbrLongName Party_A_MbrShortname  InvoiceNumber  FeeType Comment Currency  FeeRate FeeVolume  VatAmount  TotalAmount
2  01/02/2022  08/02/2022  SS2 ABC Bank  ABC_H_SAM  S0123456  SAL SERVICE FEE  GBP 0  0  0  38000
3  01/02/2022  08/02/2022  SS2 ABC Bank  ABC_H_SAM  S0123456  TOTAL  GBP  0  33333.33
4
```

```
P-PSWA-SS2-20220202-014631_SALREP00250-EOD-MBR-SwapAgent_Serv.txt | clearingconnection.properties | P-PSWA-PUBLIC-20240227-014631_SALREP00304-EOD-REF-FX_Exchange_Rates.txt | G-TSAL-SS2-20240227-044419_SALREP00190-EOD-MBR-FINAL-Member
1  InvoiceDate FeeCollectionDate  Party_A_SdMnemonic  Party_A_MbrLongName Party_A_MbrShortname  InvoiceNumber  FeeType Comment Currency  FeeRate FeeVolume  VatAmount  TotalAmount
2  01/02/2022  08/02/2022  SS2 ABC Bank  ABC_H_SAM  S0123456  SAL AFFILIATE FEE  GBP 0  0  0  40000
3  01/02/2022  08/02/2022  SS2 ABC Bank  ABC_H_SAM  S0123456  TOTAL  GBP  0  33333.33
4
```

It has been observed that some of the above fees are Bank A/c charges and member can have multiple bank accounts as per the trading activity.

Thus, every bank account applies these charges to the member resulting in multiple records of same fee type in the file as below:

If we see in below case, we have Cash Settlement Bank Charges – Call reported twice which is distinguished by Comment. Comment column is mentioning the respective Bank account charge which the member is pending to settle.

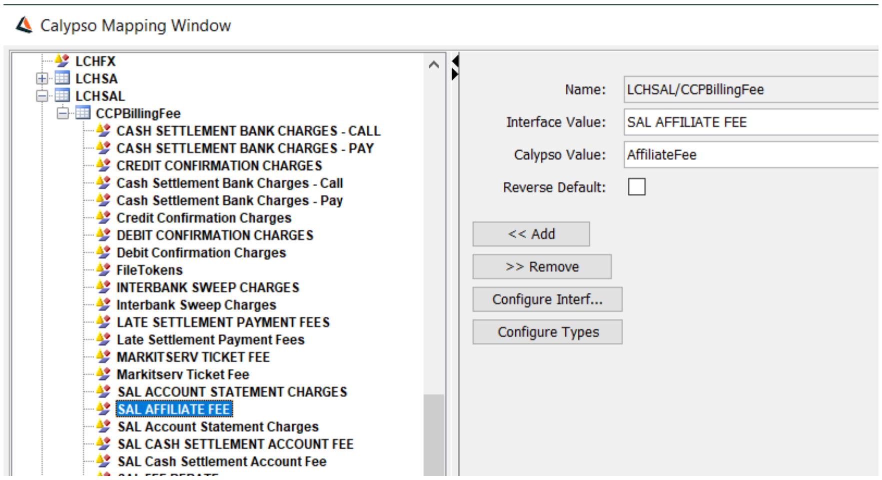
	B	C	D	E	F	G	H	I	M	N
1	eCollectionDate	Party_A_SdMnemonic	Party_A_MbrLongName	Party_A_MbrShortname	InvoiceNumber	FeeType	Comment	Currency	TotalAmount	
2	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Cash Settlement Bank Charges - Call	SWA BARCLAYS BANK PLC	GBP	100	
3	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Cash Settlement Bank Charges - Call	SWA JP MORGAN CHASE BANK NA	GBP	200	
4	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Cash Settlement Bank Charges - Pay	SWA BARCLAYS BANK PLC	GBP	400	
5	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Cash Settlement Bank Charges - Pay	SWA JP MORGAN CHASE BANK NA	GBP	500	
6	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Credit Confirmation Charge	SWA BARCLAYS BANK PLC	GBP	5	
7	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Credit Confirmation Charge	SWA JP MORGAN CHASE BANK NA	GBP	6	
8	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Debit Confirmation Charge	SWA BARCLAYS BANK PLC	GBP	7	
9	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Debit Confirmation Charge	SWA JP MORGAN CHASE BANK NA	GBP	8	
10	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Interbank Sweep Charges	SWA BANK OF AMERICA MERRILL LYNCH	GBP	9	
11	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Interbank Sweep Charges	SWA BARCLAYS BANK PLC	GBP	10	
12	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Interbank Sweep Charges	SWA JP MORGAN CHASE BANK NA	GBP	11	
13	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	SAL ACCOUNT MAINTENANCE FEES	SWA BANK OF AMERICA MERRILL LYNCH	GBP	12	
14	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	SAL ACCOUNT MAINTENANCE FEES	SWA JP MORGAN CHASE BANK NA	GBP	13	
15	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	SAL ACCOUNT STATEMENT CHARGES	SWA BANK OF AMERICA MERRILL LYNCH	GBP	14	
16	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	SAL ACCOUNT STATEMENT CHARGES	SWA JP MORGAN CHASE BANK NA	GBP	15	
17	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	SAL SERVICE FEE		GBP	16	
18	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Sequence Credit Confirmation Charge	SWA BANK OF AMERICA MERRILL LYNCH	GBP	17	
19	8/2/2022	LWL	LWL Bank	LWL_H_SAM	S0123456	Sequence Credit Confirmation Charge	SWA JP MORGAN CHASE BANK NA	GBP	18	

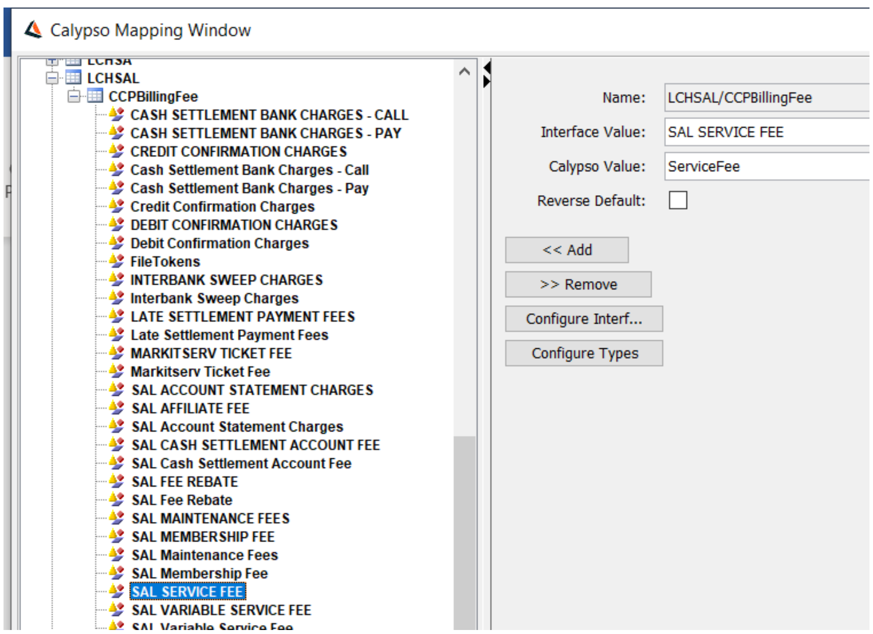
Thus, as a part of APL =10689 design has been changed where we will see the Billing trade will be created with Principal amount as Total (200+ 100) = 300 GBP but the underlying Fee entry tab will report these resp fee records separately. Pay & Receive convention will be taken into consideration.

So, for the same business date, we will have more than 1 billing entry for the same fee type for same TD / VD but differentiated by Comment value.

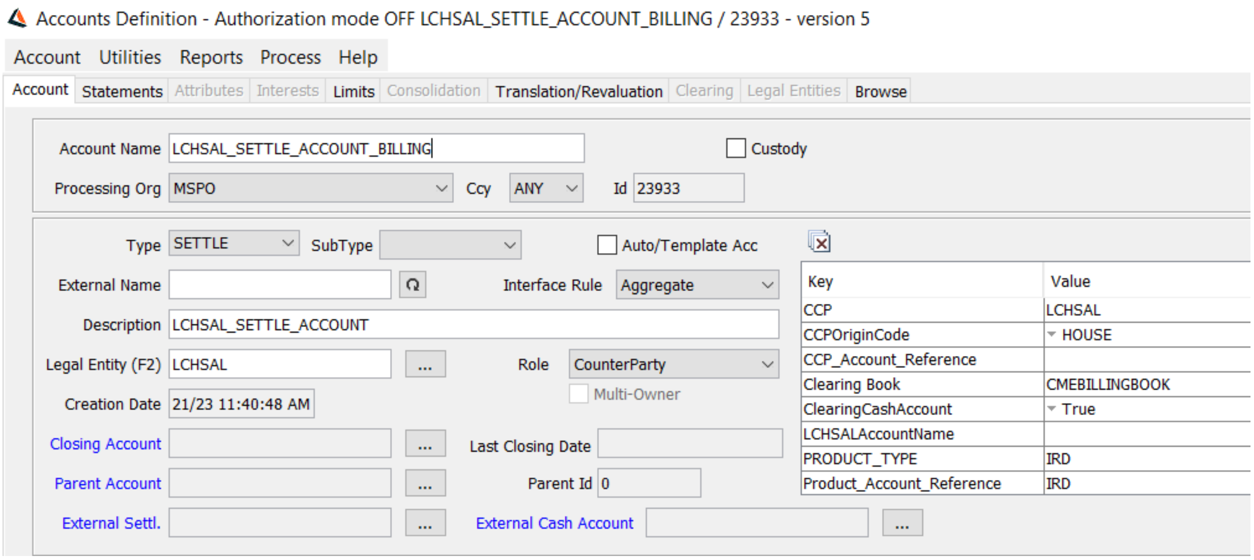
In above case eg. 100 GBP is for Barclays A/c & 200 GBP is for JP Morgan A/c.

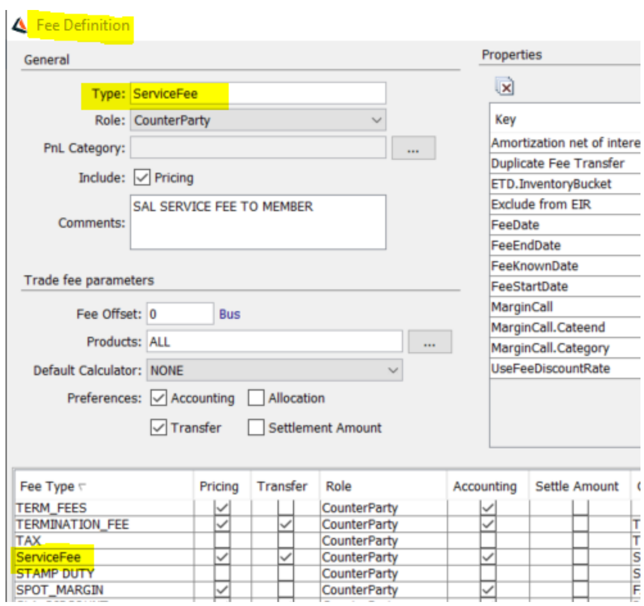
- Calypso mapping as below :



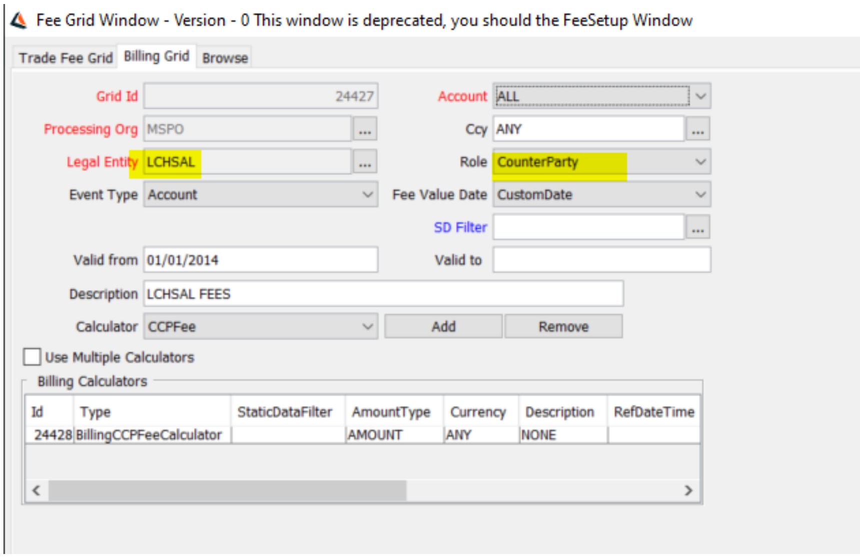


- Every Fee should be defined in ‘Fee Definition’ eg. ServiceFee.
- Billing A/c setup:

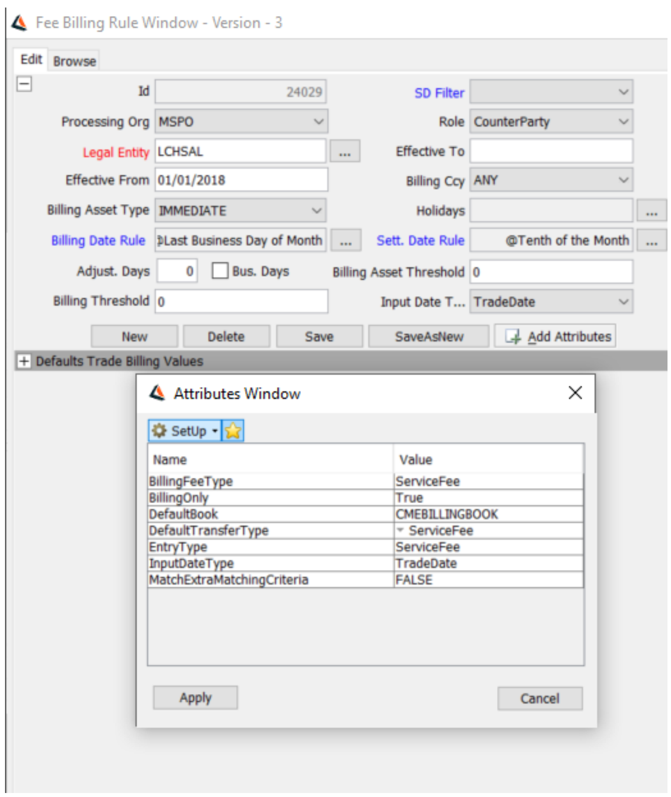

Accounts Definition - Authorization mode OFF LCHSAL_SETTLE_ACCOUNT_BILLING / 23933 - version 5
Account Utilities Reports Process Help
Account Statements Attributes Interests Limits Consolidation Translation/Revaluation Clearing Legal Entities Browse
Account Name LCHSAL_SETTLE_ACCOUNT_BILLING
Custody
Processing Org MSPO
Ccy ANY
Id 23933
Type SETTLE
SubType
Auto/Template Acc
External Name
Interface Rule Aggregate
Description LCHSAL_SETTLE_ACCOUNT
Legal Entity (F2) LCHSAL
Role CounterParty
Multi-Owner
Creation Date 21/23 11:40:48 AM
Closing Account
Last Closing Date
Parent Account
Parent Id 0
External Settl.
External Cash Account
Key
Value
CCP
LCHSAL
CCPOriginCode
HOUSE
CCP_Account_Reference
Clearing Book
CMEBILLINGBOOK
ClearingCashAccount
True
LCHSALAccountName
PRODUCT_TYPE
IRD
Product_Account_Reference
IRD

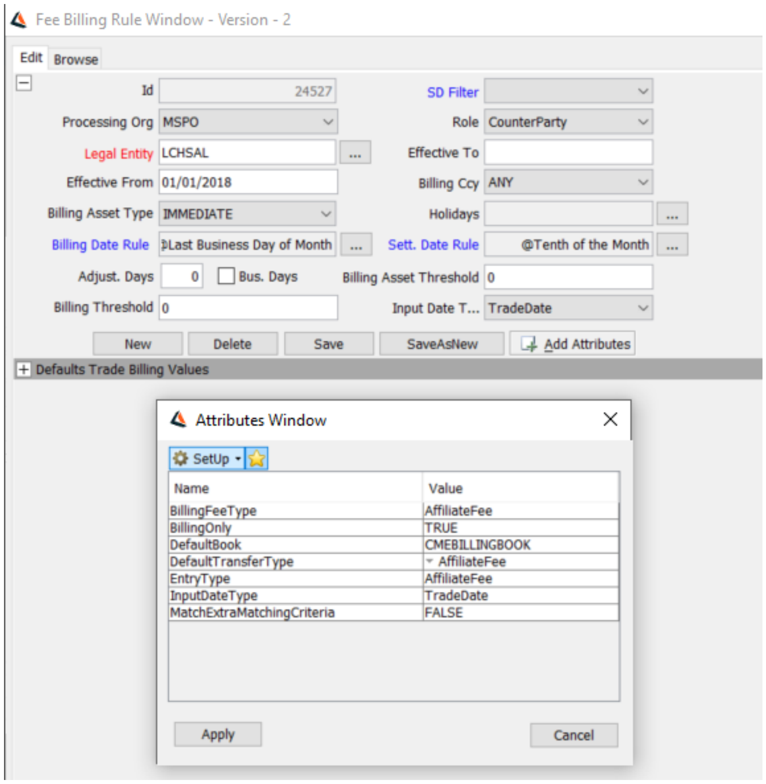

Fee Definition
General
Type: ServiceFee
Role: CounterParty
PnL Category:
Include: Pricing
Comments: SAL SERVICE FEE TO MEMBER
Trade fee parameters
Fee Offset: 0 Bus
Products: ALL
Default Calculator: NONE
Preferences: Accounting Allocation
Transfer Settlement Amount
Properties
Key
Amortization net of intere
Duplicate Fee Transfer
ETD.InventoryBucket
Exclude from EIR
FeeDate
FeeEndDate
FeeKnownDate
FeeStartDate
MarginCall
MarginCall.Cateend
MarginCall.Category
UseFeeDiscountRate
Fee Type
Pricing
Transfer
Role
Accounting
Settle Amount
TERM_FEES
TERMINATION_FEE
TAX
ServiceFee
STAMP DUTY
SPOT_MARGIN
CounterParty

- Billing Grid:



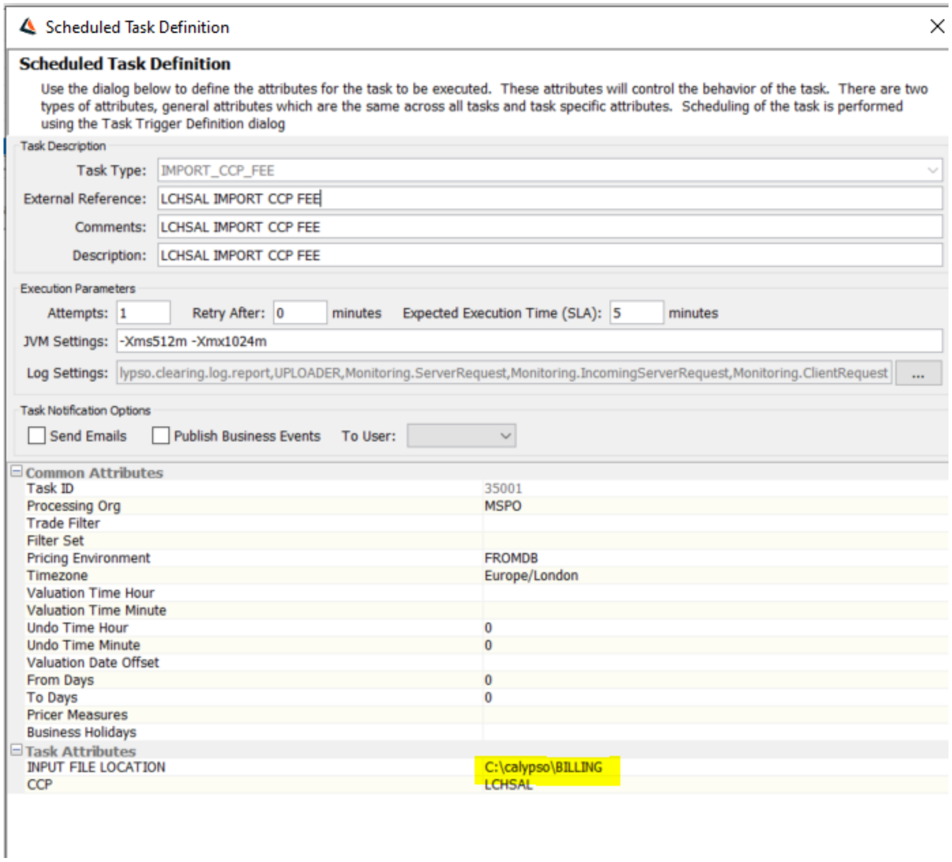
- Billing Rule

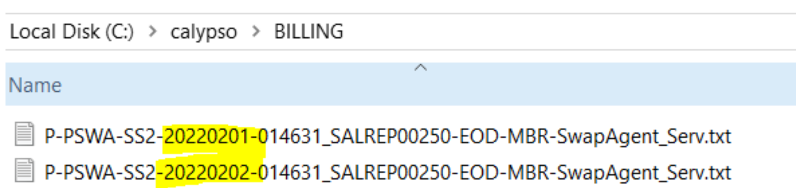



Fee Billing Rule Window - Version - 2
Edit
Browse
Id
24527
SD Filter
Processing Org
MSPO
Role
CounterParty
Legal Entity
LCHSAL
Effective To
Effective From
01/01/2018
Billing Ccy
ANY
Billing Asset Type
IMMEDIATE
Holidays
Billing Date Rule
Last Business Day of Month
Sett. Date Rule
Tenth of the Month
Adjust. Days
0
Bus. Days
Billing Asset Threshold
0
Billing Threshold
0
Input Date T...
TradeDate
New
Delete
Save
SaveAsNew
Add Attributes
Defaults Trade Billing Values
Attributes Window
SetUp
Name
Value
BillingFeeType
AffiliateFee
BillingOnly
TRUE
DefaultBook
CMEBILLINGBOOK
DefaultTransferType
AffiliateFee
EntryType
AffiliateFee
InputDateType
TradeDate
MatchExtraMatchingCriteria
FALSE
Apply
Cancel

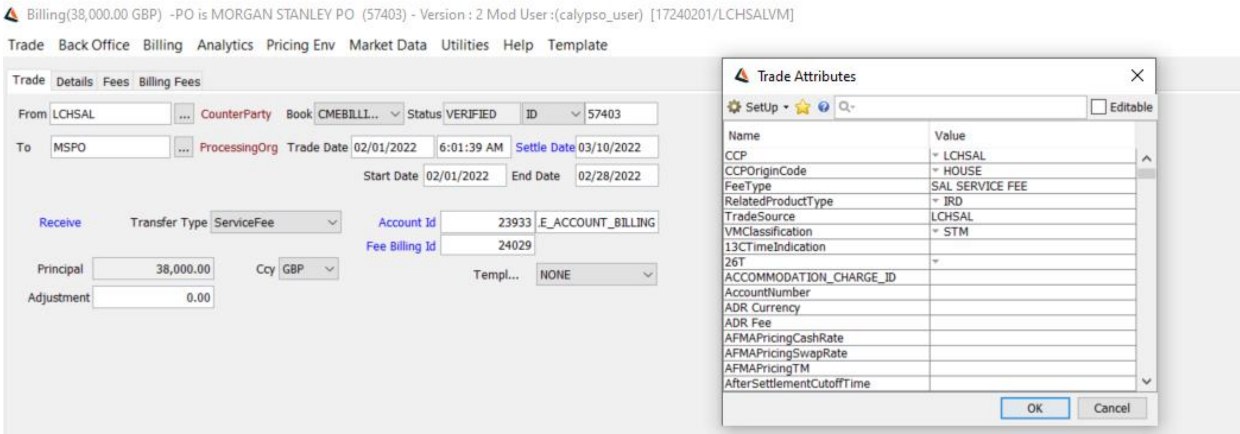
15.4.3 Billing Scheduled task Setup

- Post defining the grid / rules, we should execute the Scheduled Task ‘IMPORT_CCP_FEE’.

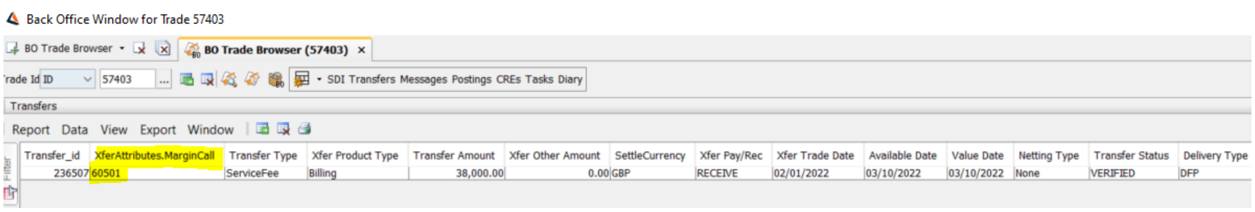


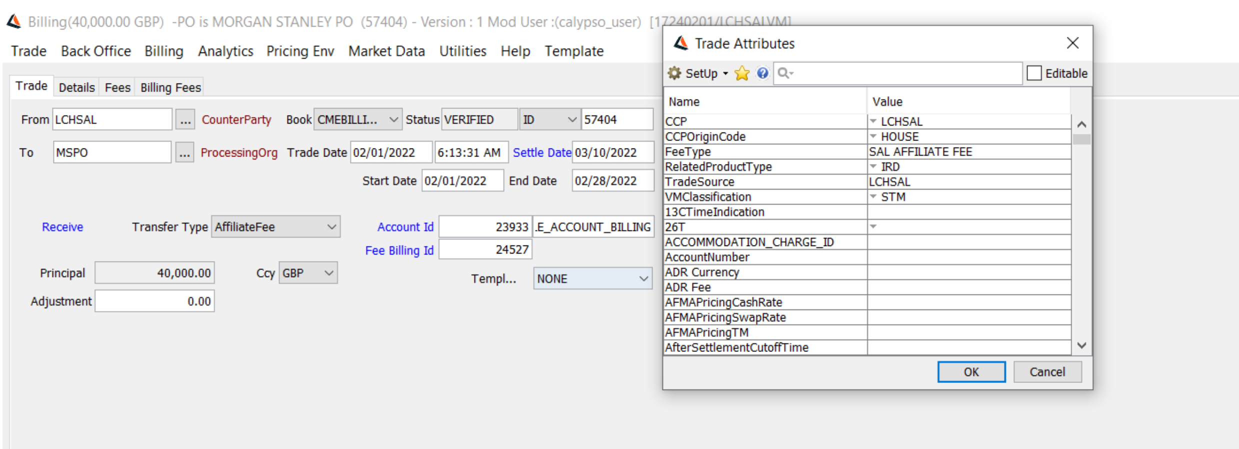


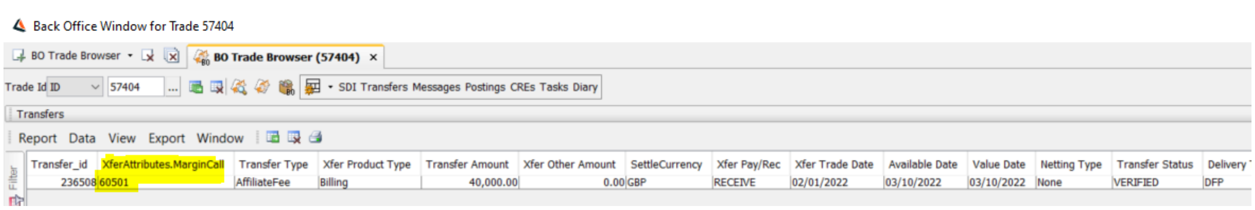
- Post executing the Scheduled Task for 1st Feb,'22 as per the above filename, Billing trade will be created as below:



- Keywords include: FeeType updates LCHSAL fee name from the calypso mapping.



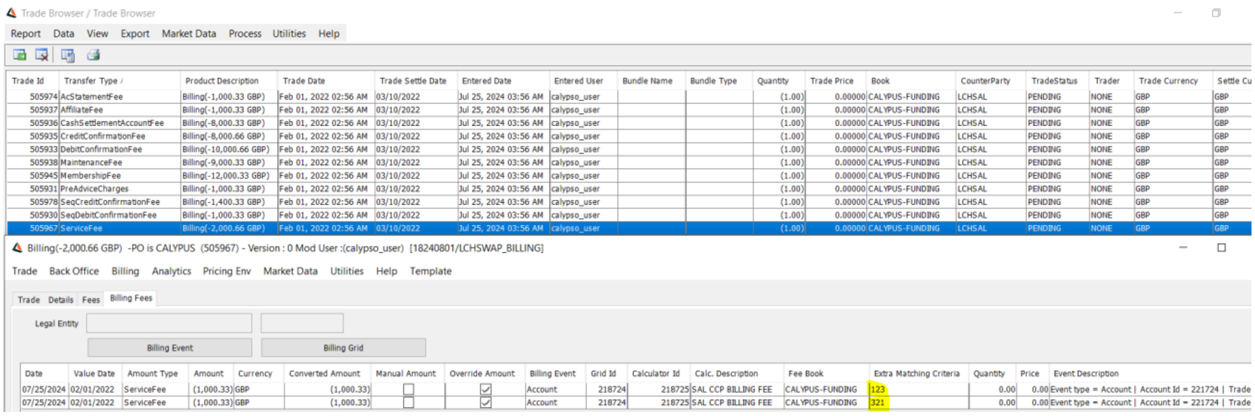


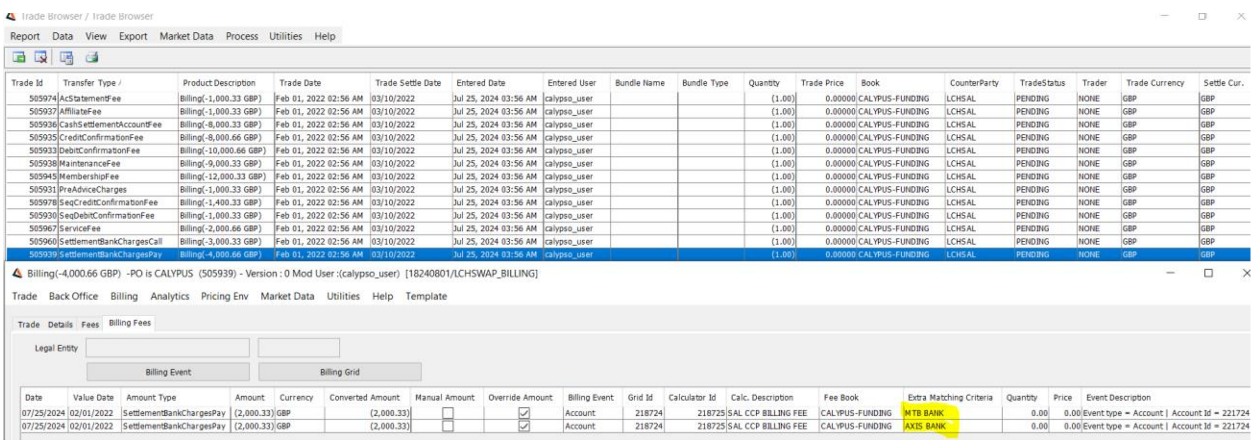


- In case we have multiple fee records as below:

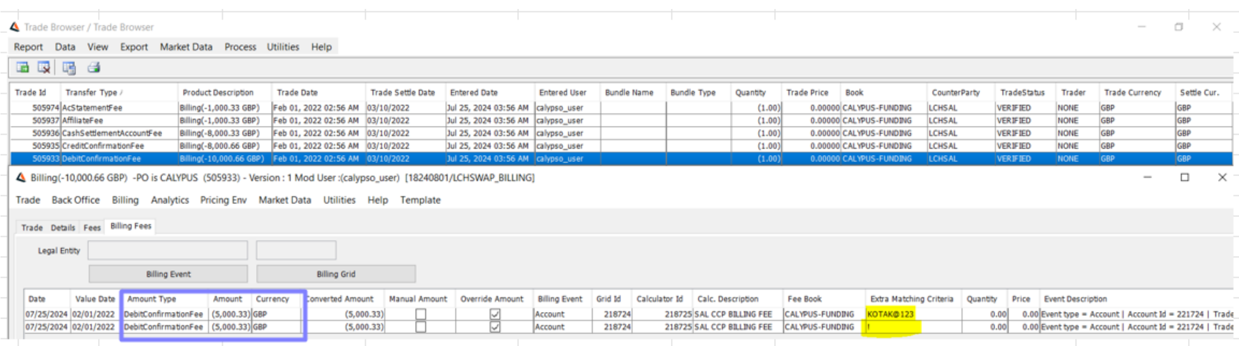
InvoiceDate	FeeCollectionDate	Party_A_SdMnemonic	Party_A_MbrLongName	Party_A_MbrShortname	InvoiceNumber	FeeType	Comment	Currency	FeeRate	FeeVolume	VatAmount	TotalAmount
2/1/2022	2/8/2022	ABC	ABC Bank	ABC_H_SAM	S0123456	SAL SERVICE FEE	123	GBP	0	0	0	1000.33
2/1/2022	2/8/2022	ABC	ABC Bank	ABC_H_SAM	S0123456	SAL SERVICE FEE	321	GBP	0	0	0	1000.33
2/1/2022	2/8/2022	ABC	ABC Bank	ABC_H_SAM	S0123456	CASH SETTLEMENT BANK CHARGES - PAY	MTB BANK	GBP	0	0	0	2000.33
2/1/2022	2/8/2022	ABC	ABC Bank	ABC_H_SAM	S0123456	CASH SETTLEMENT BANK CHARGES - PAY	AXIS BANK	GBP	0	0	0	2000.33
2/1/2022	2/8/2022	ABC	ABC Bank	ABC_H_SAM	S0123456	CASH SETTLEMENT BANK CHARGES - CALL		GBP	0	0	0	3000.33

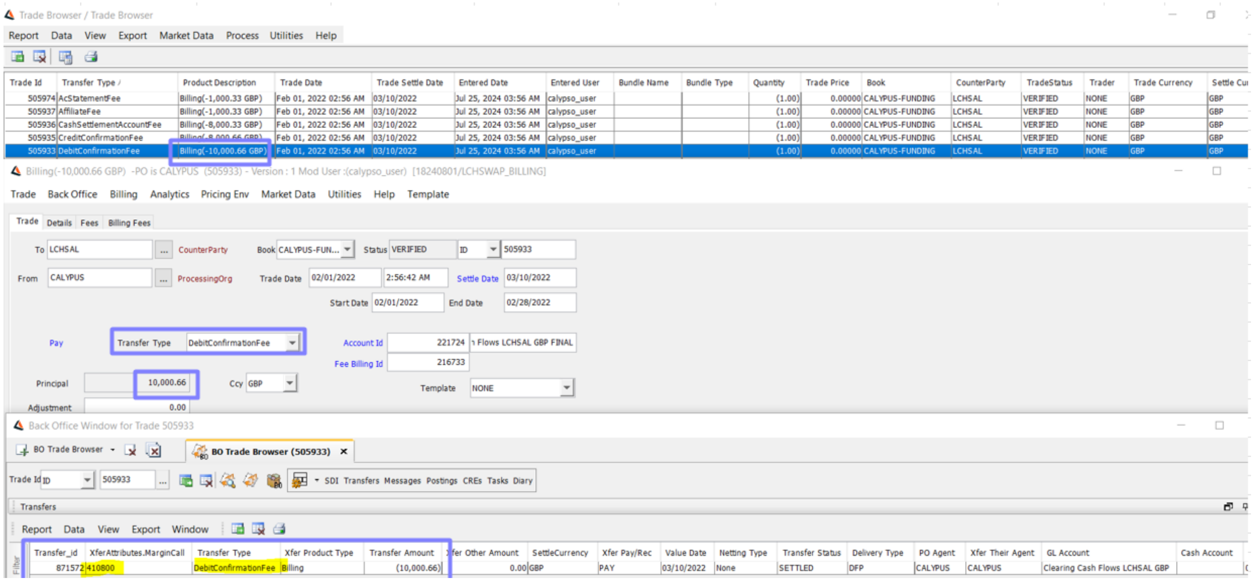
Then 1 biiling trade will be created but we will see multiple fee entries as mentioned in earlier section.





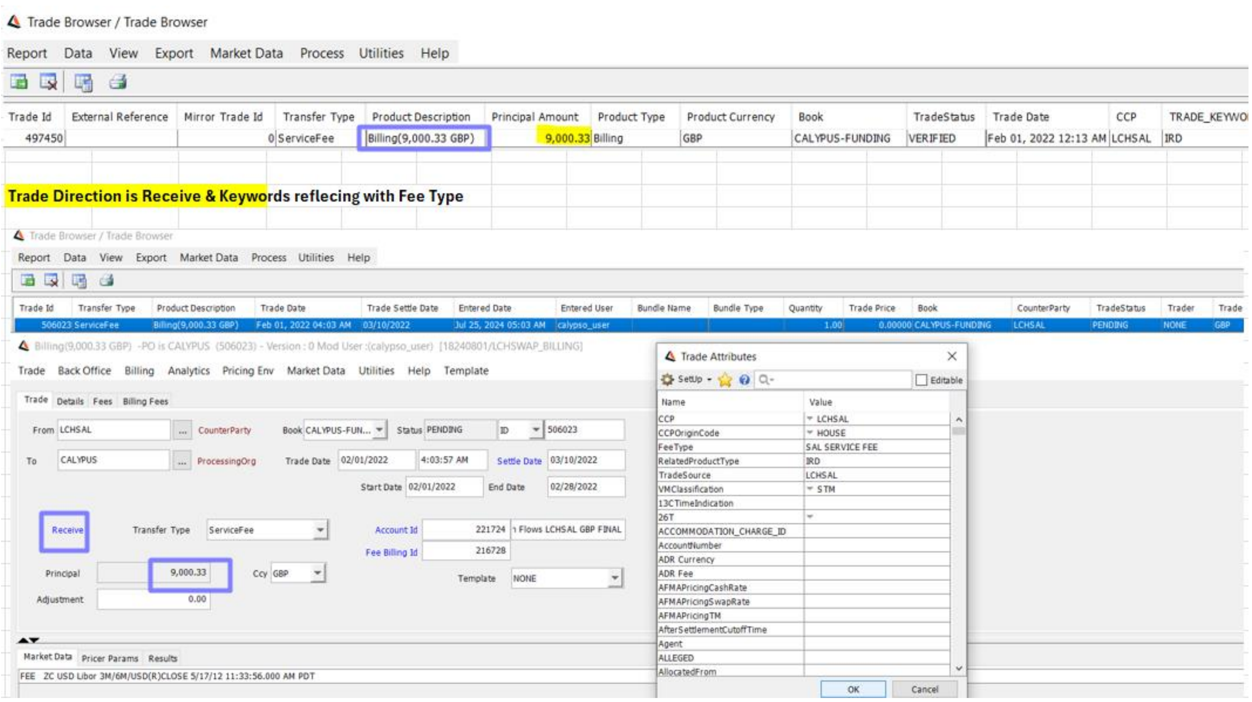
Similarly, MCC is picked up for the below trade as below:



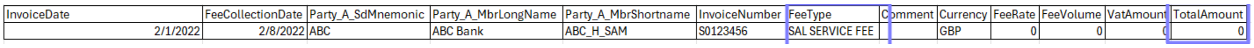


Similarly, to test the sign convention, if the amount reported in file is -ve then we see the Receive trade created as expected.

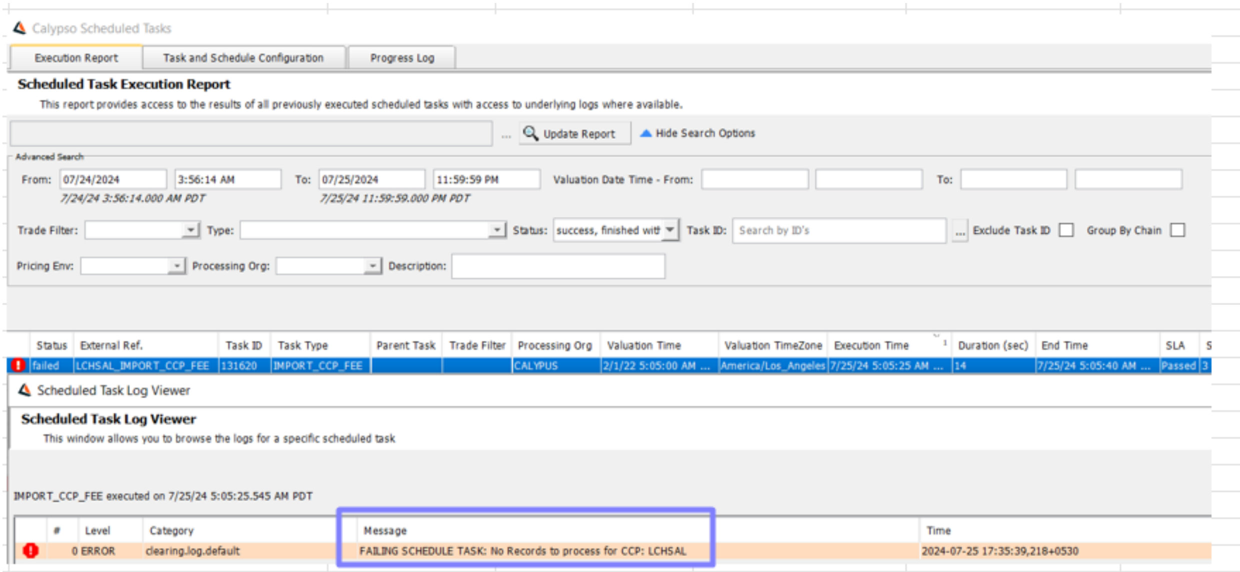
InvoiceDate	FeeCollecti	Party_A_SdN	Party_A_M	Party_A_M	InvoiceNu	FeeType	Comment	Currency	FeeRate	FeeVolum	VatAmour	TotalAmount
2/1/2022	2/8/2022	ABC		ABC Bank	ABC_H_SA	S0123456	SAL SERVICE FEE	GBP	0	0	0	-9000.33



Further, if the fee record is reported with 0 amount, then we see the exception as below:

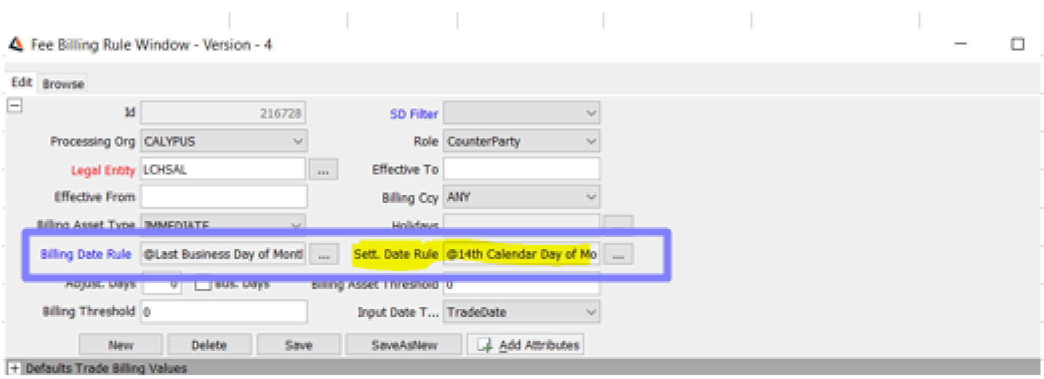


InvoiceDate	FeeCollectionDate	Party_A_SdMnemonic	Party_A_MbrLongName	Party_A_MbrShortname	InvoiceNumber	FeeType	Comment	Currency	FeeRate	FeeVolume	VatAmount	TotalAmount
2/1/2022	2/8/2022	ABC	ABC Bank	ABC_H_SAM	S0123456	SAL SERVICE FEE		GBP	0	0	0	0

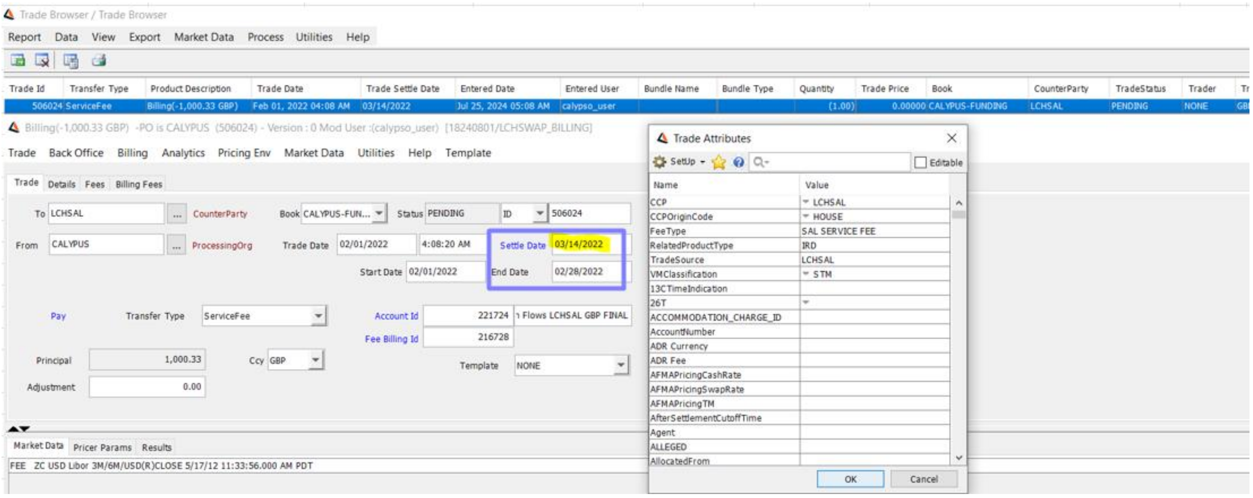


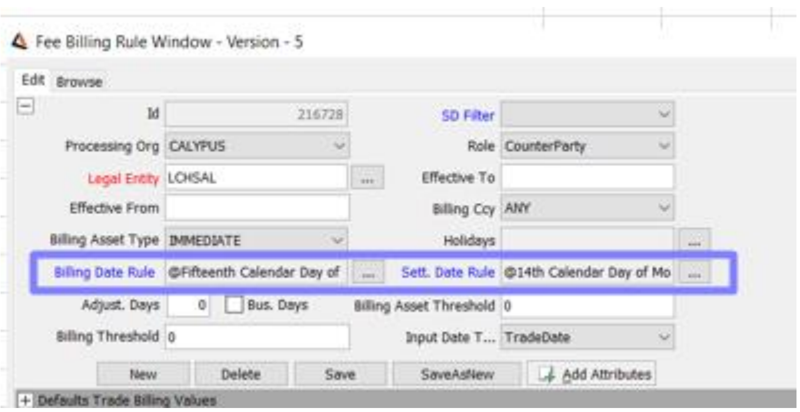
To control the settle / end date on the billing trade, user must configure the Fee billing rule with resp Date rule definition.

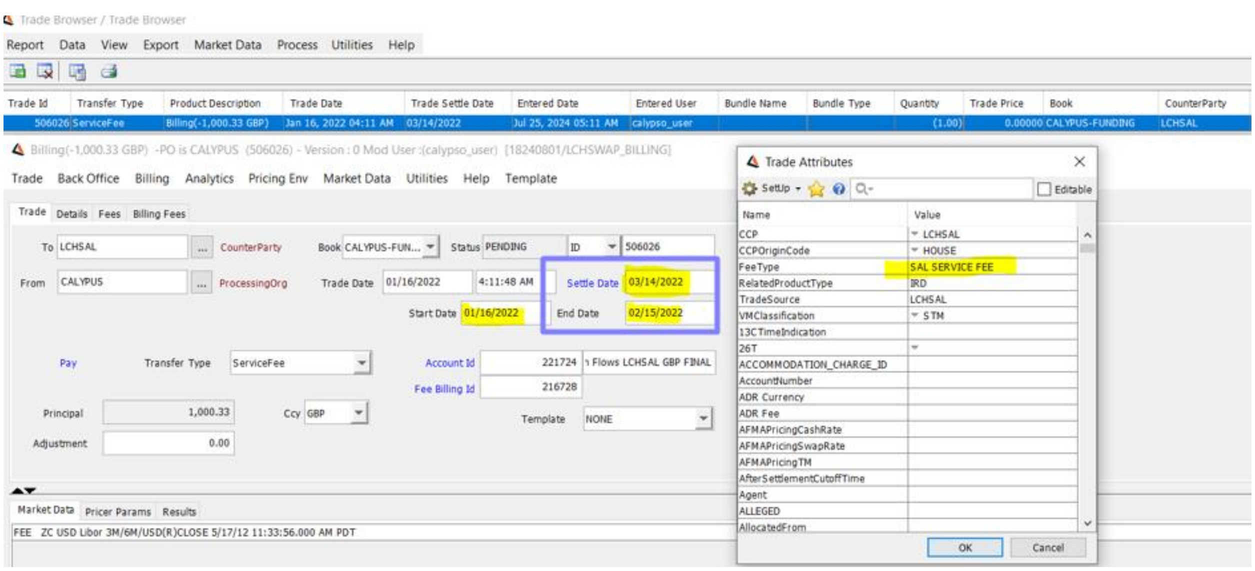
For Example:



For Example:


Trade Browser / Trade Browser
Report Data View Export Market Data Process Utilities Help
Billing(-1,000.33 GBP) -PO is CALYPUS (506024) - Version : 0 Mod User :(calypso_user) [18240801/LCHSWAP_BILLING]
Trade Back Office Billing Analytics Pricing Env Market Data Utilities Help Template
Trade Details Fees Billing Fees
To LCHSAL
CounterParty
Book CALYPUS-FUN...
Status PENDING
506024
From CALYPUS
ProcessingOrg
Trade Date 02/01/2022 4:08:20 AM
Settle Date 03/14/2022
Start Date 02/01/2022
End Date 02/28/2022
Pay
Transfer Type ServiceFee
Account Id 221724
Fee Billing Id 216728
Principal 1,000.33
Ccy GBP
Template NONE
Adjustment 0.00
Market Data Pricer Params Results
FEE ZC USD Libor 3M/6M/USD(R)CLOSE 5/17/12 11:33:56.000 AM PDT
Trade Attributes
Editable
Name
Value
CCP
LCHSAL
CCPOriginCode
HOUSE
FeeType
SAL SERVICE FEE
RelatedProductType
IRD
TradeSource
LCHSAL
VMClassification
STM
13CTimeIndication
26T
ACCOMMODATION_CHARGE_ID
AccountNumber
ADR Currency
ADR Fee
AFMAPricingCashRate
AFMAPricingSwapRate
AFMAPricingTM
AfterSettlementCutoffTime
Agent
ALLEGED
AllocatedFrom
OK
Cancel


Fee Billing Rule Window - Version - 5
Edit Browse
Id 216728
SD Filter
Processing Org CALYPUS
Role CounterParty
Legal Entity LCHSAL
Effective To
Effective From
Billing Ccy ANY
Billing Asset Type IMMEDIATE
Holidays
Billing Date Rule @Fifteenth Calendar Day of
Sett. Date Rule @14th Calendar Day of Mo
Adjust. Days 0
Bus. Days
Billing Asset Threshold 0
Billing Threshold 0
Input Date T... TradeDate
New
Delete
Save
SaveAsNew
Add Attributes
Defaults Trade Billing Values


Trade Browser / Trade Browser
Report Data View Export Market Data Process Utilities Help
Billing(-1,000.33 GBP) -PO is CALYPUS (506026) - Version : 0 Mod User :(calypso_user) [18240801/LCHSWAP_BILLING]
Trade Back Office Billing Analytics Pricing Env Market Data Utilities Help Template
Trade Details Fees Billing Fees
To LCHSAL
CounterParty
Book CALYPUS-FUN...
Status PENDING
506026
From CALYPUS
ProcessingOrg
Trade Date 01/16/2022 4:11:48 AM
Settle Date 03/14/2022
Start Date 01/16/2022
End Date 02/15/2022
Pay
Transfer Type ServiceFee
Account Id 221724
Fee Billing Id 216728
Principal 1,000.33
Ccy GBP
Template NONE
Adjustment 0.00
Market Data Pricer Params Results
FEE ZC USD Libor 3M/6M/USD(R)CLOSE 5/17/12 11:33:56.000 AM PDT
Trade Attributes
Editable
Name
Value
CCP
LCHSAL
CCPOriginCode
HOUSE
FeeType
SAL SERVICE FEE
RelatedProductType
IRD
TradeSource
LCHSAL
VMClassification
STM
13CTimeIndication
26T
ACCOMMODATION_CHARGE_ID
AccountNumber
ADR Currency
ADR Fee
AFMAPricingCashRate
AFMAPricingSwapRate
AFMAPricingTM
AfterSettlementCutoffTime
Agent
ALLEGED
AllocatedFrom
OK
Cancel

15.5 FX Quote Import

15.5.1 Calypso Setup

We set up the file location in clearing connection property file. This file is placed in below resources folder.

› Local Disk (C:) › calypso › calypso-17.24.2.1-CLEAR-17-LCHSALREP190-APL-8200-SNAPSHOT › client › resources › config

Name	Date modified	Type	Size
schema	3/4/2024 11:36 AM	File folder	
clearing.properties.sample	3/4/2024 11:36 AM	SAMPLE File	3 KB
clearing.reportPaths.properties.sample	3/4/2024 11:36 AM	SAMPLE File	1 KB
clearingconnection.properties	3/5/2024 3:23 PM	PROPERTIES File	1 KB
clearingServiceCodes.properties.sample	3/4/2024 11:36 AM	SAMPLE File	1 KB
ClearingStatementFactory.xml	3/4/2024 11:36 AM	XML File	98 KB
clientinformation.conditional.etdclient.properties	3/4/2024 11:36 AM	PROPERTIES File	5 KB
clientinformation.conditional.euc.client.properties	3/4/2024 11:36 AM	PROPERTIES File	3 KB
clientinformation.conditional.euc.fcm.properties	3/4/2024 11:36 AM	PROPERTIES File	3 KB
clientinformation.conditional.fcm.properties	3/4/2024 11:36 AM	PROPERTIES File	5 KB
CondensedAccountClearingStatementFactory.xml	3/4/2024 11:36 AM	XML File	91 KB
CondensedClearingStatementFactory.xml	3/4/2024 11:36 AM	XML File	61 KB
CustomClearingReports.xml.sample	3/4/2024 11:36 AM	SAMPLE File	5 KB
VMTSClearingStatementFactory.xml	3/4/2024 11:36 AM	XML File	99 KB

clearingconnection.properties ☒ P-PSWA-PUBLIC-20240227-014631_SALREP00304-EOD-REF-FX_Excha

```
# Key format is
#
# <CCP short name>.<Firm ID (PO LE attribute)>.<configurationKey>
#
# URI format must include protocol, host and port (where applicab
#
# For public key SFTP authentication, keyPassphrase is optional.
# path can be an absolute filesystem path, or a resource path wit
# the classpath. Filesystem paths take precedence
#

CME.4Q0.URI=sftp://sftpng.cmegroup.com:22
CME.4Q0.user=4Q0_SFTP_user
CME.4Q0.password=******

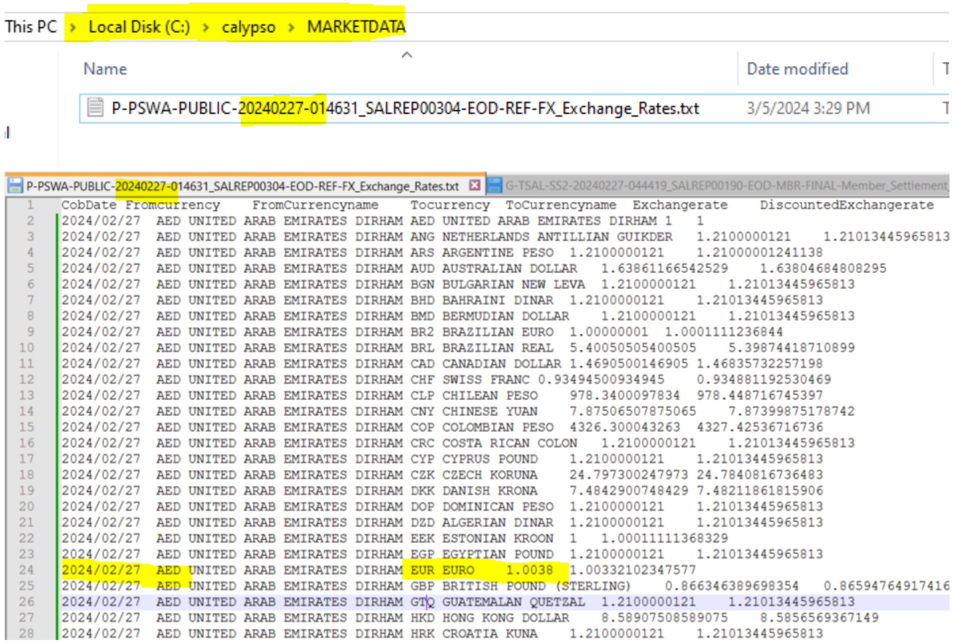
LCH.CC1.URI=sftp://195.246.228.9:6022
LCH.CC1.user=CC1_SFTP_user
LCH.CC1.key=/path/to/CC1/key

LCH.CC2.URI=sftp://195.246.228.9:6022
LCH.CC2.user=CC2_SFTP_user
LCH.CC2.key=/path/to/CC2/key
LCH.CC2.keyPassphrase=CC2_key_passphrase

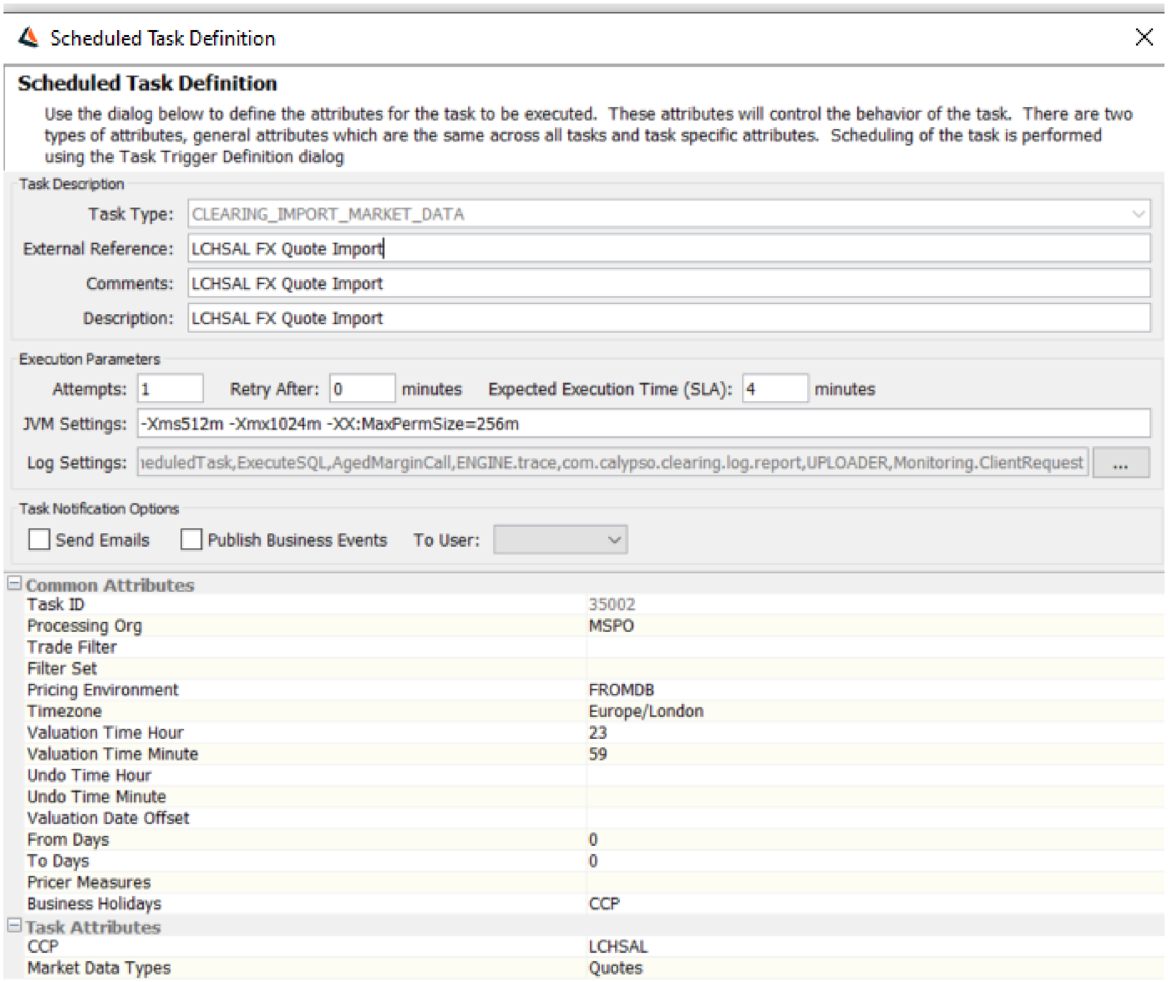
EUREX.ABCFR.URI=file:///home/clearing/Calypso/EUREX


LCHSAL.SS2.URI=file:///C:/Calypso/MARKETDATA

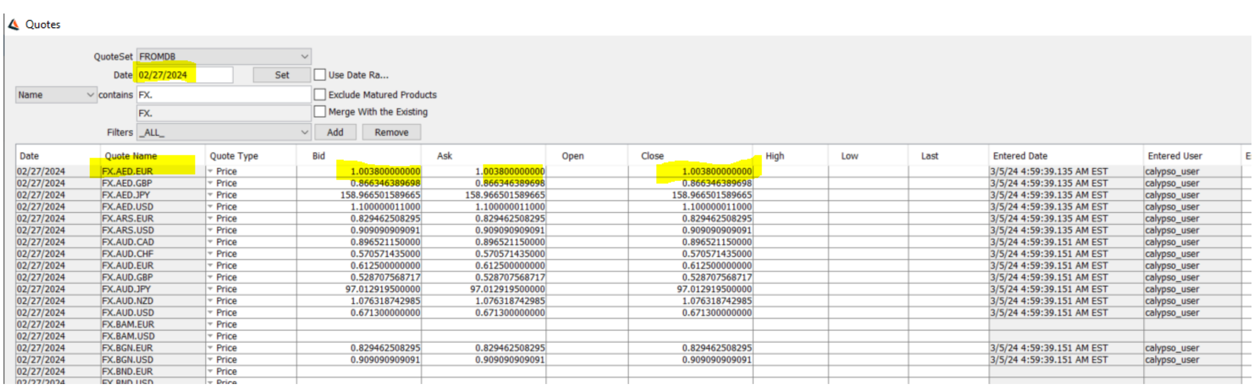
```


This PC > Local Disk (C:) > calypso > MARKETDATA
Name
Date modified
P-PSWA-PUBLIC-20240227-014631_SALREP00304-EOD-REF-FX_Exchange_Rates.txt
3/5/2024 3:29 PM
P-PSWA-PUBLIC-20240227-014631_SALREP00304-EOD-REF-FX_Exchange_Rates.txt
G-TSAL-SS2-20240227-044419_SALREP00190-EOD-MBR-FINAL-Member_Settlement
CobDate Fromcurrency FromCurrencyname Tocurrency ToCurrencyname Exchangerate DiscountedExchangerate
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM AED UNITED ARAB EMIRATES DIRHAM 1 1
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM ANG NETHERLANDS ANTILLIAN GUIKDER 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM ARS ARGENTINE PESO 1.2100000121 1.2100001241138
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM AUD AUSTRALIAN DOLLAR 1.63861166542529 1.63804684808295
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM BGN BULGARIAN NEW LEVA 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM BHD BAHRAINI DINAR 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM BMD BERMUDIAN DOLLAR 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM BR2 BRAZILIAN EURO 1.00000001 1.0001111236844
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM BRL BRAZILIAN REAL 5.40050505400505 5.39874418710899
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM CAD CANADIAN DOLLAR 1.4690500146905 1.46835732257198
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM CHF SWISS FRANC 0.93494500934945 0.934881192530469
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM CLP CHILEAN PESO 978.3400097834 978.448716745397
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM CNY CHINESE YUAN 7.87506507875065 7.87399875178742
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM COP COLOMBIAN PESO 4326.300043263 4327.42536716736
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM CRC COSTA RICAN COLON 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM CYP CYPRUS POUND 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM CZK CZECH KORUNA 24.797300247973 24.7840816736483
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM DKK DANISH KRONA 7.4842900748429 7.48211861815906
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM DOP DOMINICAN PESO 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM DZD ALGERIAN DINAR 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM EEK ESTONIAN KROON 1 1.00011111368329
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM EGP EGYPTIAN POUND 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM EUR EURO 1.0038 1.00332102347577
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM GBP BRITISH POUND (STERLING) 0.866346389698354 0.86594764917416
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM GTQ GUATEMALAN QUETZAL 1.2100000121 1.21013445965813
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM HKD HONG KONG DOLLAR 8.58907508589075 8.5856569367149
2024/02/27 AED UNITED ARAB EMIRATES DIRHAM HRK CROATIA KUNA 1.2100000121 1.21013445965813

15.5.2 Scheduled task Setup



- FX quote window post import:



16 LCH Repoclear Fund Contributions

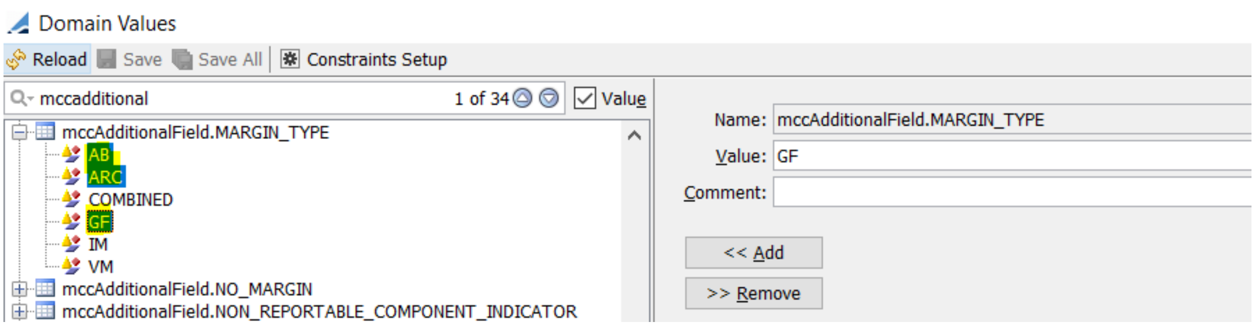
Sponsored Members join under a new membership category that allows buy-side firms to enjoy the full benefits of clearing through LCH. This new model creates a direct transactional relationship between LCH and the Sponsored Member, making LCH the counterparty to each cleared trade. Sponsored Members are supported by an Agent Member (sponsoring bank) that facilitates margin payments and provides default fund contributions for each sponsored transaction.

Fund contributions are maintained by the Agent member i.e. also the Clearing member (on behalf of Sponsored bank) at LCH Repoclear:

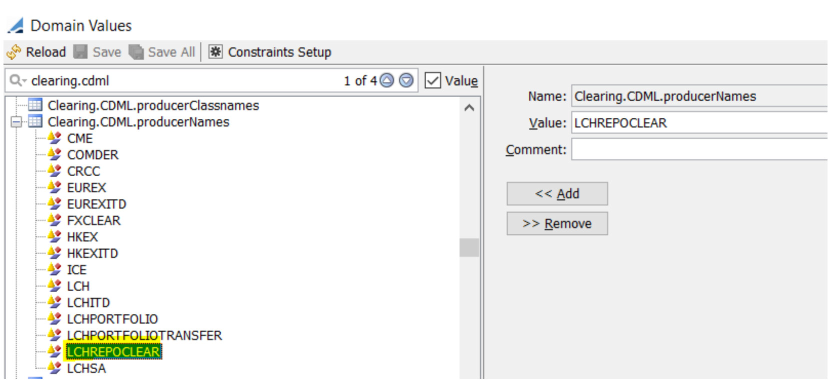
- Default fund contribution means the funds contributed by a clearing member to a CCP's mutualized loss sharing arrangement in case of any default crisis. This fund is also known as Guarantee Fund.
- Similarly, an additional prefunded resource and buffer for margin cover i.e. ARC & AB is provided by the Agent to the default contribution at the CCP.

16.1 Setup Requirements

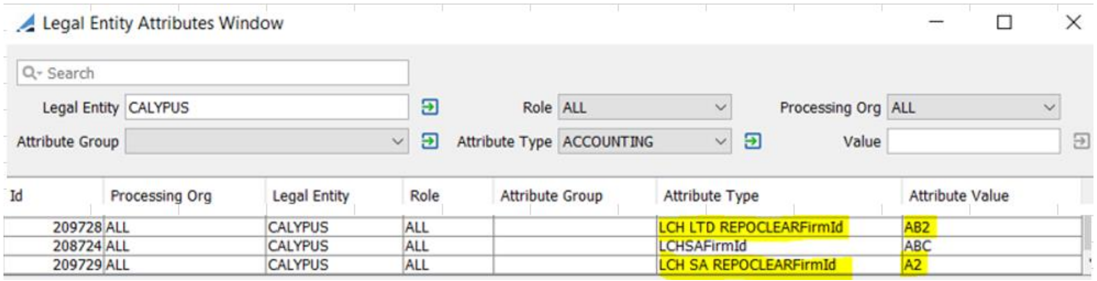
Margin Call Contract Additional Info



Producer Names



PO LE attributes


Legal Entity Attributes Window

Search

Legal Entity CALYPUS | Role ALL | Processing Org ALL

Attribute Group | Attribute Type ACCOUNTING | Value

Id	Processing Org	Legal Entity	Role	Attribute Group	Attribute Type	Attribute Value
209728	ALL	CALYPUS	ALL		LCH LTD REPOCLEARFirmId	AB2
208724	ALL	CALYPUS	ALL		LCHSAFirmId	ABC
209729	ALL	CALYPUS	ALL		LCH SA REPOCLEARFirmId	A2

<u>LCH LTD Repoclear files</u>

AB2 is the clearing member firm ID which should be updated in the PO LE attribute

Agent Buffer fund files: Any one of the latest available files will be translated (one is EOD file and other is an Intraday file)

P-MRCL-**AB2**-20221010-030001_RREP1006_MARGIN_EOD.xml

P-MRCL-**AB2**-20221010-174652_RREP1006_MARGIN.xml

Agent Resource Contribution Fund file:

P-PRCL-**AB2**-20221010-113922_RREP0077f - Default and Agent Contributions_1.txt

Guarantee Fund Contribution files: 1 file generated for each Sponsored Member by CCP. Thus, we can have multiple files for this fund, and all of these should be translated.

In below example, there are have 3 Sponsored member ID's:

P-PRCL-**AB2**-20221010-150644_AB3_RREP0077f - Default and Agent Contributions_1.txt (AB3 is the Sponsored member ID)

P-PRCL-**AB2**-20221010-150644_CB3_RREP0077f - Default and Agent Contributions_1.txt (CB3 is the Sponsored member ID)

P-PRCL-**AB2**-20221010-150644_DB3_RREP0077f - Default and Agent Contributions_1.txt (DB3 is the Sponsored member ID)

<u>LCH SA Repoclear Files</u>:

A2 is the clearing member firm ID which should be updated in the PO LE attribute.

Agent Buffer fund file:

P-MRCL-**A2**-20221010-184917_RREP1006_MARGIN.xml

Agent Resource Contribution Fund file:

P-MRCB-**A2**-20221010-075203_RCL_AC0140E_00_116_10115.xml

Guarantee Fund Contribution file (Contribution for all the sponsored members is reported in 1 file for this CCP)

P-MRCB-**A2**-20221010-075203_RCL_AC0103E_00_116_10115.xml

<u>File-date Translation logic:</u>

For all files (except report REP1006- for both LCH LTD RPCL / LCH SA RPCL) below logic has been applied:

Translate ST Date = T / File date = T+1 : CDML Translated report = T date. Clearing process ST date will be executed with 'T' date

Eg. Translate ST Date = 2nd Nov'22 / File date = 3rd Nov'22, CDML report will be created with report date as 2nd Nov'22

For holiday case, refer holiday to scheduled task.

Eg. Translate ST date: 28th Oct'22 / File date: 31st Oct'22 (29th Oct'22 Sat / 30th Oct'22 Sun – will be ignored) / CDML report will be created with report date as 28th Oct'22.

Similarly, it should work for any other holiday case.

<u>CDML Report exposure calculation logic</u>:

CCP is reporting required margin exposure for all the margin types in the file and not the total Margin exposure similar to Initial & Variation Margin reporting. Due to which, during the collateral management process, we were seeing discrepancy with margin call amount with the CCP for these funds.

Thus, to support this requirement, we have enhanced the CDML translation logic to create the translated report by considering the margin position for previous days. This is explained with the help of below calculation.

This logic is only applied to these margin types – AB / ARC / GF and for Repoclear CCP.

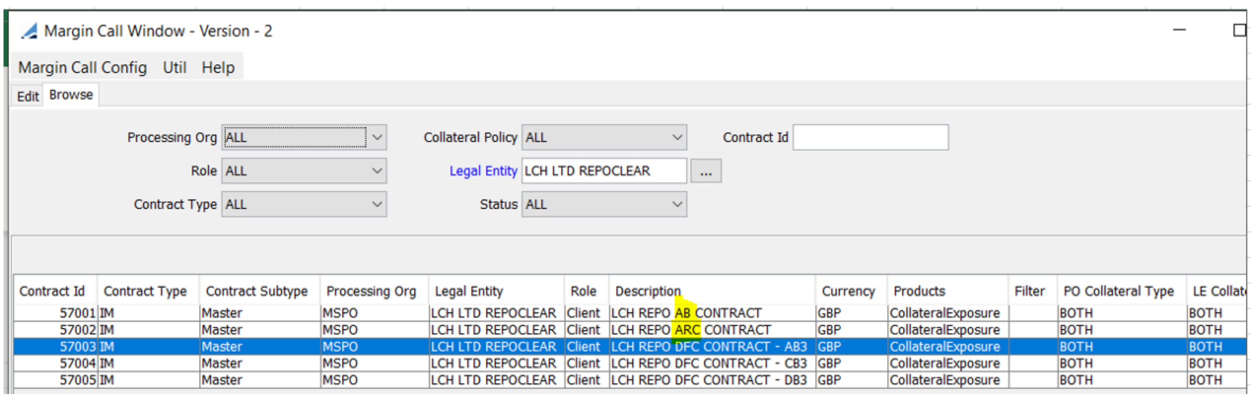
	File amount	Netted amount in CDML report	CDML report	CE/ Margin trade	GRM	Direction
Day 1 – 11/21	100	100	100	100	100	Pay to CCP
Day 2- 11/22	No File or 0 amount	100+0 =	100	0	100	No margin Call

	File amount	Netted amount in CDML report	CDML report	CE/ Margin trade	GRM	Direction
Day 3 – 11/23	No File or 0 amount	100+0+0 =	100	0	100	No margin Call
Day 3 – 11/24	250	100+ 0+0 +250 =	350	250	250	Pay to CCP
Day 4 – 11/25	400	100+0+0+250+400 =	750	400	400	Pay to CCP
Day 5 – 11/28	-100	100+0+0+250+400 -100 =	650	-100	100	Receive from CCP
Day 6 – 11/29	300	100+0+0+250+400 -100 +300 =	950	300	300	Pay to CCP

<u>Margin call contract setup</u>:

Margin call payments will be between PO and CCP only.

LCH LTD REPO:



Similarly, AB / ARC / DFC MCC's should be set up for LCH SA Repoclear CCP as well.

Agent Buffer (AB):

- CCP = LCH LTD REPOCLEAR
- CCP_ORIGIN_CODE = CLIENT
- MARGIN_TPE = AB
- PRODUCT_TYPE = REPO

Agent Resource Contribution (ARC) MCC:

- CCP = LCH LTD REPOCLEAR
- CCP_ORIGIN_CODE = CLIENT
- MARGIN_TPE = ARC
- PRODUCT_TYPE = REPO

Guarantee Fund (GF) margin type: CCP reports contribution as per each Sponsored member. Thus, we must generate margin call for each Sponsored member separately. In such case, MCC can be identified by updating the Sponsored Member ID on MCC – additional Info tab – CCP_REFERENCE tag.

Eg. DFC Margin File as below for 3 Sponsored Members:

LCH Repoclear LTD CCP reports fund contribution in a separate file w.r.t. each Sponsored member.

P-PRCL-AHB-20221010-150644_AB3_RREP0077f - Default and Agent Contributions_1.txt | P-MRCB-A2-20220427-075203_RCL_AC01(

```
1  Member Id   Sub Account Service Currency    Liability Amount    Liability Type  From Date   To Date
2  AB3  F    RPC  GBP  2,000,000.00     DEFAULT_FUND_CONTRIBUTION   04/02/2022  03/03/2022
3
```

P-PRCL-AHB-20221010-150644_CB3_RREP0077f - Default and Agent Contributions_1.txt | P-MRCB-A2-20220427-075203_RCL_AC01

```
1  Member Id   Sub Account Service Currency    Liability Amount    Liability Type  From Date   To Dat
2  CB3  F    RPC  GBP  4,000,000.00     DEFAULT_FUND_CONTRIBUTION   04/02/2022  03/03/2022
```

P-PRCL-AHB-20221010-150644_DB3_RREP0077f - Default and Agent Contributions_1.txt | P-MRCB-A2-20221010-075203_RCL_AC01

```
1  Member Id   Sub Account Service Currency    Liability Amount    Liability Type  From Date   To Date
2  DB3  F    RPC  GBP  6,000,000.00     DEFAULT_FUND_CONTRIBUTION   04/02/2022  03/03/2022
```

LCH SA Repoclear CCP reports fund contribution in 1 single file for all the sponsored members.

This can be identified as below:

- Only Tag with RptName – 'DEFAULT FUND DOCUMENT' will be considered.
- Within this tag, sponsored member ID is identified by Participant ID tag. In below eg. participant ID is '10115'

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<Document>
    <RptParams>
        <RptId>AC0103E-20220427-10115-i-1</RptId>
        <RptDtAndTm>
            <DtTm>2022-04-27T07:52:03</DtTm>
        </RptDtAndTm>
        <Frqcy>DAIL</Frqcy>
        <Participant>
            <Id>10115</Id>
            <Issr>HSBC Continental Europe</Issr>
            <MnemonicOTC>A2TS</MnemonicOTC>
        </Participant>
        <MsgSndr>
            <Id>LCH SA</Id>
            <Issr>LCH SA</Issr>
        </MsgSndr>
        <MsgRcpt>
            <Id>10115</Id>
            <Issr>HSBC Continental Europe</Issr>
        </MsgRcpt>
    </RptParams>
    <Rpt>
        <AC0103E>
            <Header>
                <RptName>DEFAULT FUND DOCUMENT</RptName>
                <RptCode>AC0103E</RptCode>
                <Run>INITIAL</Run>
                <Ccy>EUR</Ccy>
                <ValueDate>
                    <Dt>2022-04-27</Dt>
                </ValueDate>
                <TradingDate>
                    <Dt>2022-04-26</Dt>
                </TradingDate>
                <Participant>
                    <Id>10115</Id>
                    <Issr>HSBC Continental Europe</Issr>
                    <Type>MEMBER</Type>
                </Participant>
                <ColFLow>AUTOREPAY ON</ColFLow>
            </Header>
            <Body>
                <Amt Ccy="EUR">6075.17</Amt>
                <CdtDbtInd>DBIT</CdtDbtInd>
                <Transfers>
```


Similarly, we will see multiple ‘RptName – DEFAULT FUND DOCUMENT’ tags with Participant ID tag. User should set up MCC’ for all these participant ID’s.


```xml
        <AC0103E>
            <Header>
                <RptName>DEFAULT FUND DOCUMENT</RptName>
                <RptCode>AC0103E</RptCode>
                <Run>INITIAL</Run>
                <Ccy>EUR</Ccy>
                <ValueDate>
                    <Dt>2022-04-27</Dt>
                </ValueDate>
                <TradingDate>
                    <Dt>2022-04-26</Dt>
                </TradingDate>
                <Participant>
                    <Id>A2SM6</Id>
                    <Issr>Sponsored Member 6</Issr>
                    <Type>MEMBER</Type>
                </Participant>
                <ColFLow>AUTOREPAY ON</ColFLow>
            </Header>
            <Body>
                <Amt Ccy="EUR">2147962.25</Amt>
                <CdtDbtInd>CRDT</CdtDbtInd>
                <Transfers>
                    <Transfer>
                        <Type>CASH</Type>
                        <BicCode>CCFRFRP0XXX</BicCode>
                        <AccountNumber></AccountNumber>
                        <Bank>BANQUE DE FRANCE</Bank>
```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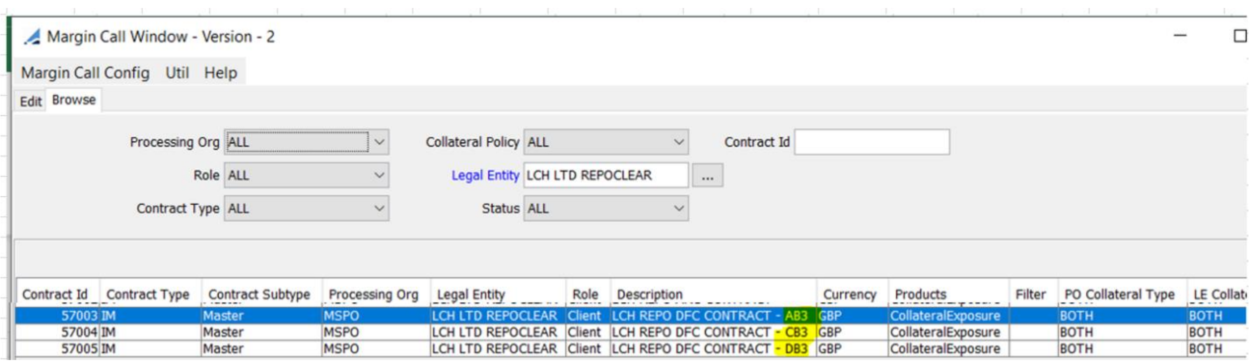
```xml
<AC0103E>
    <Header>
        <RptName>DEFAULT FUND DOCUMENT</RptName>
        <RptCode>AC0103E</RptCode>
        <Run>INITIAL</Run>
        <Ccy>EUR</Ccy>
        <ValueDate>
            <Dt>2022-04-27</Dt>
        </ValueDate>
        <TradingDate>
            <Dt>2022-04-26</Dt>
        </TradingDate>
        <Participant>
            <Id>A2SM3</Id>
            <Issr>Sponsored Member 3</Issr>
            <Type>MEMBER</Type>
        </Participant>
        <ColFLow>AUTOREPAY OFF</ColFLow>
    </Header>
    <Body>
        <Amt Ccy="EUR">0.00</Amt>
        <CdtDbtInd>CRDT</CdtDbtInd>
        <Transfers>
```


CDML Translated report updates tag ‘sponsoredMemberFirmID’ with this member ID (for LCH LTD RPCL) & Participant ID (for LCH SA RPCL)

Respective Default Fund amounts will be reported in the CDML report for every Sponsored member ID as below:

This sponsored member ID is updated as below on the MCC. Below is the list of 3 different MCC’s set up for this margin type for CCP- LCH LTD Repoclear.



User must similarly set up MCC's for LCH SA Repoclear CCP for all the 3 margin types.

16.2 CDML Report Translation / Processing

Scheduled task CLEARING_TRANSLATE_TO_CDML

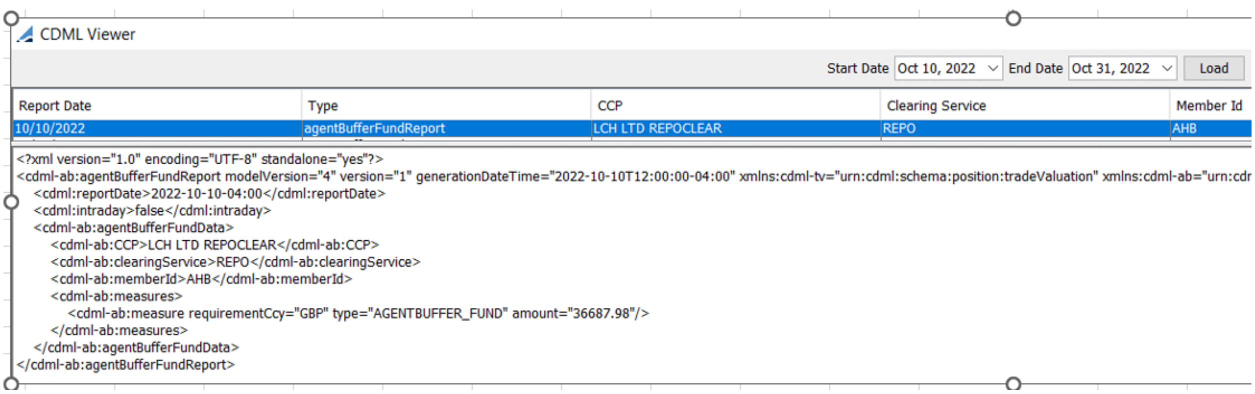
While translating LCH LTD Repoclear files, user should mention 'LCHSA' in 'Ignored Producers' on the scheduled task.

Task Attributes	
Base Folder	C:\Doc\Data
CDML Processing	Generation plus Import
Intraday	false
Ignore Producers	LCHPORTFOLIO,EUREX,COMDER,EUREX_IRD,ICE CLEAR CREDIT,ICE CLEAR EUROPE,HKEX,FXCLEAR,LCHSA

Similarly, while translating LCH SA Repoclear files, user should mention 'LCHREPOCLEAR' in 'Ignored Producers' on the scheduled task.

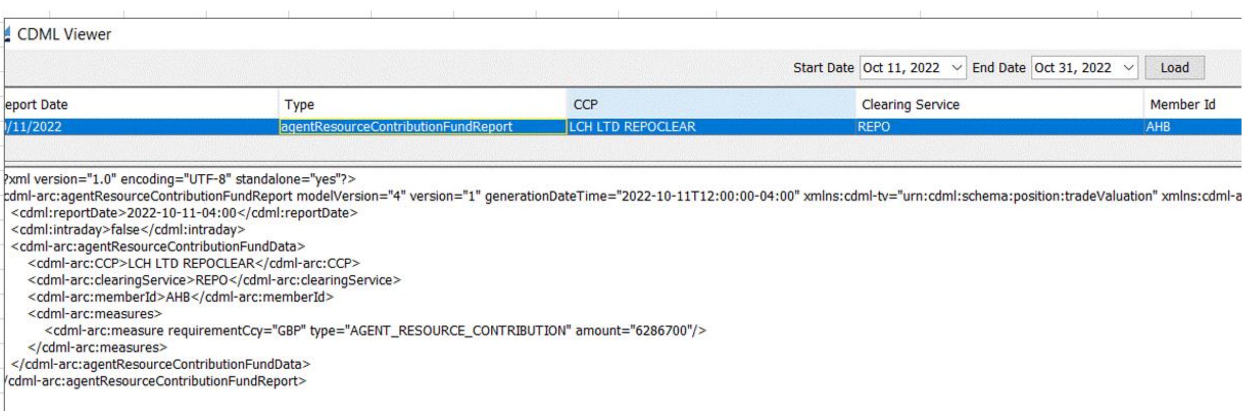
Task Attributes	
Base Folder	C:\Doc\Data
CDML Processing	Generation plus Import
Intraday	false
Ignore Producers	LCHPORTFOLIO,EUREX,COMDER,EUREX_IRD,ICE CLEAR CREDIT,ICE CLEAR EUROPE,HKEX,FXCLEAR,LCHREPOCLEAR

We will have below 3 reports generated for each of the CCP's which will be displayed as below:



Report Date	Type	CCP	Clearing Service	Member Id
10/10/2022	agentBufferFundReport	LCH LTD REPOCLEAR	REPO	AHB


```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<cdml-ab:agentBufferFundReport modelVersion="4" version="1" generationDateTime="2022-10-10T12:00:00-04:00" xmlns:cdml-tv="urn:cdml:schema:position:tradeValuation" xmlns:cdml-ab="urn:cdr
  <cdml:reportDate>2022-10-10-04:00</cdml:reportDate>
  <cdml:intraday>false</cdml:intraday>
  <cdml-ab:agentBufferFundData>
    <cdml-ab:CCP>LCH LTD REPOCLEAR</cdml-ab:CCP>
    <cdml-ab:clearingService>REPO</cdml-ab:clearingService>
    <cdml-ab:memberId>AHB</cdml-ab:memberId>
    <cdml-ab:measures>
      <cdml-ab:measure requirementCcy="GBP" type="AGENTBUFFER_FUND" amount="36687.98"/>
    </cdml-ab:measures>
  </cdml-ab:agentBufferFundData>
</cdml-ab:agentBufferFundReport>
```

eport Date	Type	CCP	Clearing Service	Member Id
/11/2022	agentResourceContributionFundReport	LCH LTD REPOCLEAR	REPO	AHB


```
?xml version="1.0" encoding="UTF-8" standalone="yes"?>
cdml-arc:agentResourceContributionFundReport modelVersion="4" version="1" generationDateTime="2022-10-11T12:00:00-04:00" xmlns:cdml-tv="urn:cdml:schema:position:tradeValuation" xmlns:cdml-a
  <cdml:reportDate>2022-10-11-04:00</cdml:reportDate>
  <cdml:intraday>false</cdml:intraday>
  <cdml-arc:agentResourceContributionFundData>
    <cdml-arc:CCP>LCH LTD REPOCLEAR</cdml-arc:CCP>
    <cdml-arc:clearingService>REPO</cdml-arc:clearingService>
    <cdml-arc:memberId>AHB</cdml-arc:memberId>
    <cdml-arc:measures>
      <cdml-arc:measure requirementCcy="GBP" type="AGENT_RESOURCE_CONTRIBUTION" amount="6286700"/>
    </cdml-arc:measures>
  </cdml-arc:agentResourceContributionFundData>
/cdml-arc:agentResourceContributionFundReport>
```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CDML Viewer

Start Date Oct 10, 2022 End Date Nov 1, 2022 Load

Report Date	Type	CCP	Clearing Service	Member Id
10/10/2022	guaranteeFundReport	LCH SA REPOCLEAR	REPO	A2
10/10/2022	guaranteeFundReport	LCH SA REPOCLEAR	REPO	A2


```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<cdml-gf:guaranteeFundReport modelVersion="4" version="4" generationDateTime="2022-10-10T12:00:00-04:00" xmlns:cdml-tv="urn:cdml:schema:position:tradeValuation" xmlns:cdml-ab="urn:cdml:
  <cdml:reportDate>2022-10-10-04:00</cdml:reportDate>
  <cdml:intraday>false</cdml:intraday>
  <cdml-gf:guaranteeFundData>
    <cdml-gf:CCP>LCH SA REPOCLEAR</cdml-gf:CCP>
    <cdml-gf:clearingService>REPO</cdml-gf:clearingService>
    <cdml-gf:memberId>A2</cdml-gf:memberId>
    <cdml-gf:sponsoredMemberFirmID>10115</cdml-gf:sponsoredMemberFirmID>
    <cdml-gf:measures>
      <cdml-gf:measure requirementCcy="EUR" type="GUARANTEE_FUND" amount="450"/>
    </cdml-gf:measures>
  </cdml-gf:guaranteeFundData>
  <cdml-gf:guaranteeFundData>
    <cdml-gf:CCP>LCH SA REPOCLEAR</cdml-gf:CCP>
    <cdml-gf:clearingService>REPO</cdml-gf:clearingService>
    <cdml-gf:memberId>A2</cdml-gf:memberId>
    <cdml-gf:sponsoredMemberFirmID>A2SM6</cdml-gf:sponsoredMemberFirmID>
    <cdml-gf:measures>
      <cdml-gf:measure requirementCcy="EUR" type="GUARANTEE_FUND" amount="350"/>
    </cdml-gf:measures>
  </cdml-gf:guaranteeFundData>
  <cdml-gf:guaranteeFundData>
    <cdml-gf:CCP>LCH SA REPOCLEAR</cdml-gf:CCP>
    <cdml-gf:clearingService>REPO</cdml-gf:clearingService>
    <cdml-gf:memberId>A2</cdml-gf:memberId>
    <cdml-gf:sponsoredMemberFirmID>A2SM3</cdml-gf:sponsoredMemberFirmID>
    <cdml-gf:measures>
      <cdml-gf:measure requirementCcy="EUR" type="GUARANTEE_FUND" amount="250"/>
```


Scheduled task CLEARING_PROCESS_FROM_CDML

Post the translated reports are created, these will be processed using the below scheduled tasks.

Task Attributes	
CCP	LCH SA REPOCLEAR
Clearing Service	REPO
CDML Report Type	All
Process Mode	All

Task Attributes	
CCP	LCH LTD REPOCLEAR
Clearing Service	REPO
CDML Report Type	All
Process Mode	All

On successful processing of the reports, we will have the Collateral Exposure Trades created for each margin type.

User must then run the Collateral manager and generate the respective Margin call trades for every margin type.

17 LCH – Report 22a

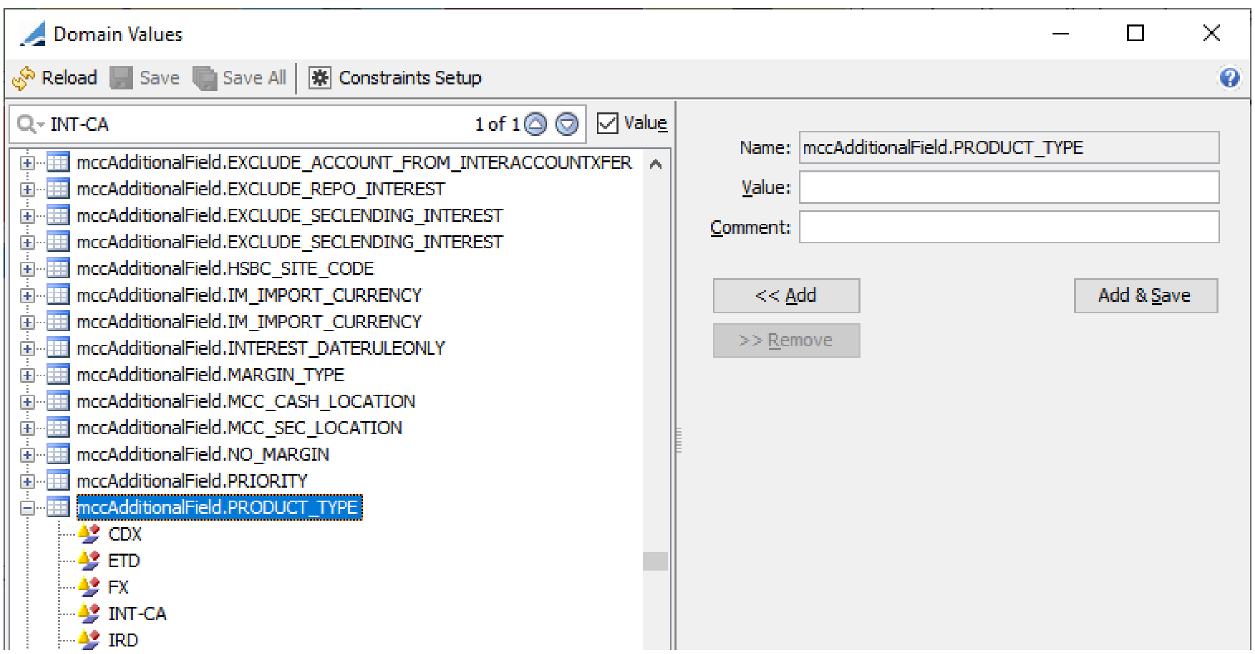
Historically we have been supporting the replication of interest on IM/VM balances as well as the generation of corporate actions for the pledged securities. This resulted sometimes in penny differences between LCH and Calypso.

LCH provides the Interest and CA flows in report 22a. By processing directly this report, Calypso can exactly match the LCH interest and CA settlements.

17.1 Configuration

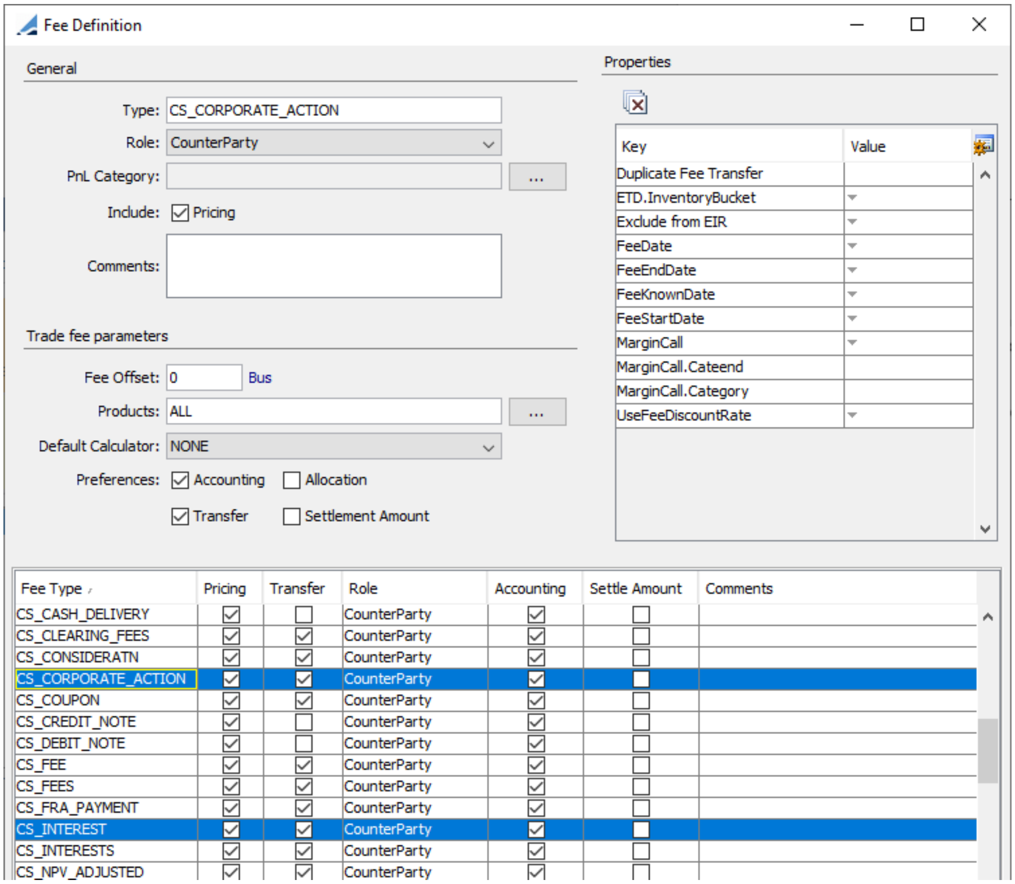
Clearing Service

The following "Clearing Service" is now supported: INT-CA since CA and interest is applied across services.



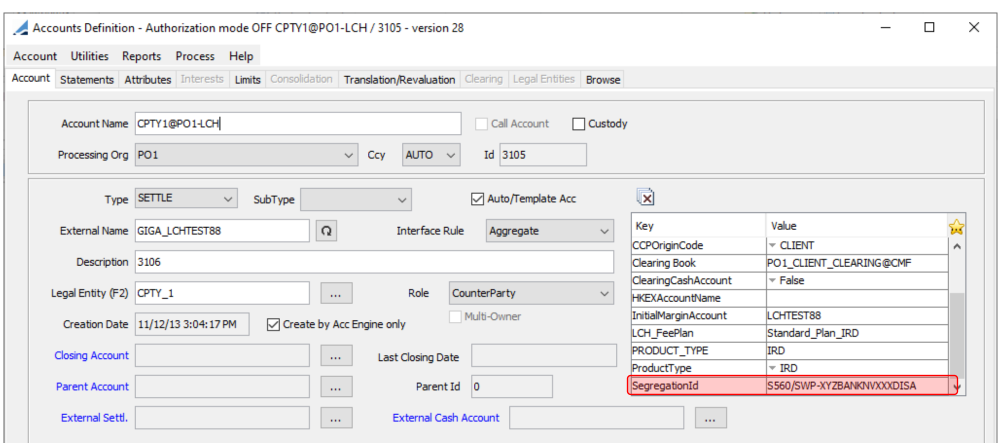
Clearing Flows

CS_INTEREST and CS_CORPORATE_ACTION flows are used to integrate report22a. These flows need to be configured in the fee definition as shown below.



Clearing Account Setup

Report 22a is not provided at member id level, but at segregation account level. Account attribute SegregationId needs to be added on existing clearing accounts and match the Account column in report 22a.



	A	B	C	D	E	F	G	H	I	J	K
1	Cobdate	sCMName	Scmmnemonic	Account	Currency	Page	Linenumber	Postingdescription	Commodity	Exchange	Reference
2	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	H	EUR	1	1	Margin Coupon			ES0000012G34; 20,000,000.00; 0.01250
3	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	H	EUR	1	2	PPS PAYMENT			ES0000012G34; 20,000,000.00; 0.01250
4	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	L	GBP	2	1	COUPON	SGB	SWP	
5	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	L	GBP	2	2	NPV CHANGE	SGB	SWP	
6	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	L	GBP	2	3	PPS CALL			
7	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	L	GBP	2	4	PPS PAYMENT			
8	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	H	GBP	3	1	COUPON	SGB	SWP	
9	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	H	GBP	3	2	NPV CHANGE	SGB	SWP	
10	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	S560/SWP-XYZBANKNVXXXDISA	GBP	3	3	INTEREST			
11	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	H	GBP	3	4	PPS PAYMENT			
12	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	S560/SWP-XYZBANKNVXXXDISA	USD	4	1	Margin Coupon			ES0000012A89; 10,000,000.00; 0.01450
13	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	S560/SWP-XYZBANKNVXXXDISA	USD	4	2	PPS PAYMENT			ES0000012A89; 10,000,000.00; 0.01450
14	2/11/2021 0:00	ABC LTD	JCSIUS33FCM	S560/SWP-XYZBANKNVXXXDISA	GBP	3	3	INTEREST			
15											

MarginCall Contract

The RelatedProductType trade keyword is set to INT-CA on the the clearingTransfer trade, which allows the users to process the CA and Interest flows on a generic VM MarginCall contract or on a dedicated MarginCall contract where PRODUCT_TYPE = INT-CA in MCC Additional Info tab.

Trade Id	CounterParty	Product Description	TRADE_KEYWORD.RelatedProductType	Trade Settle Date	Fee.CS_CORPORATE_ACTION.Amount
58004	CPTY_1	ClearingTransfer(CASH_SETTLEMENT/-145,000.00 USD)	INT-CA	11/03/2021	(145,000)
58003	CPTY_1	ClearingTransfer(CASH_SETTLEMENT/-1,318,219.28 GBP)	INT-CA	11/03/2021	0
58002	LCH	ClearingTransfer(CASH_SETTLEMENT/145,000.00 USD)	INT-CA	11/03/2021	145,000
58001	LCH	ClearingTransfer(CASH_SETTLEMENT/1,318,219.28 GBP)	INT-CA	11/03/2021	0
57220	CPTY_1	ClearingTransfer(CASH_SETTLEMENT/-1,004.00 GBP)	IRD	10/31/2022	
57219	CPTY_1	ClearingTransfer(CASH_SETTLEMENT/-5,023.00 GBP)	IRD	10/31/2022	
57218	LCH	ClearingTransfer(CASH_SETTLEMENT/1,004.00 GBP)	IRD	10/31/2022	
57217	LCH	ClearingTransfer(CASH_SETTLEMENT/5,023.00 GBP)	IRD	10/31/2022	
57204	CPTY_1	ClearingTransfer(CASH_SETTLEMENT/-35,000.00 GBP)	IRD	10/28/2022	
57203	CPTY_1	ClearingTransfer(CASH_SETTLEMENT/-8,000.00 GBP)	IRD	10/28/2022	
57202	LCH	ClearingTransfer(CASH_SETTLEMENT/8,000.00 GBP)	IRD	10/28/2022	
57201	LCH	ClearingTransfer(CASH_SETTLEMENT/35,000.00 GBP)	IRD	10/28/2022	

LOCATION	PORTFOLIO A
MARGIN_TYPE	VM
MCC_CASH_LOCATION	
MCC_SEC_LOCATION	
NON_REPORTABLE_COMPONENT_INDICATOR	
NOTIFY_ON_CLAIM	true
PRIORITY	1
PRODUCT_TYPE	INT-CA
REINVEST_COUPON	
RISK_CCY	
SEND_STATEMENT	true

17.2 Importing Report 22a

Rep22a is processed by the CLEARING_TRANSLATE_TO_CDML scheduled task for the LCH or LCHPORFOLIO producer.

Task Attributes	
Base Folder	C:\calypso\gateway\EODFiles
CDML Processing	Generation plus Import
Intraday	false
Ignore Producers	LCHPORTFOLIO

The CLEARING_PROCESS_FROM_CDML scheduled task needs to be defined with CCP=LCH and INT-CA needs to be added to the Clearing Service attribute.

Task Attributes	
CCP	LCH
Clearing Service	IRD, INT-CA
CDML Report Type	tradeValuationReport
Process Mode	All

18 COMDER – Guarantee Fund Management

Guarantee Fund also known as default fund is intended to cover losses that exceed the margin collateral and individual default fund contribution in case of a default by a Clearing Member.

Each Clearing Member contributes to the Default Fund on the relative risk exposure brought to the clearing system by that member. This contribution percentage is decided by the CCP as per its risk parameters.

This fund is utilized by CCP exclusively to cover open liabilities in the event of default that cannot be covered fully by the clearing collateral or the amount contributed to the default fund by the defaulting party.

18.1 Setup Requirements

Guarantee fund details will be imported in the system via CDML Translate / Process Scheduled Task in the similar manner the way margin requirements are imported from CCP files at EOD.

File details: EOD_GF_Report_20200529.csv

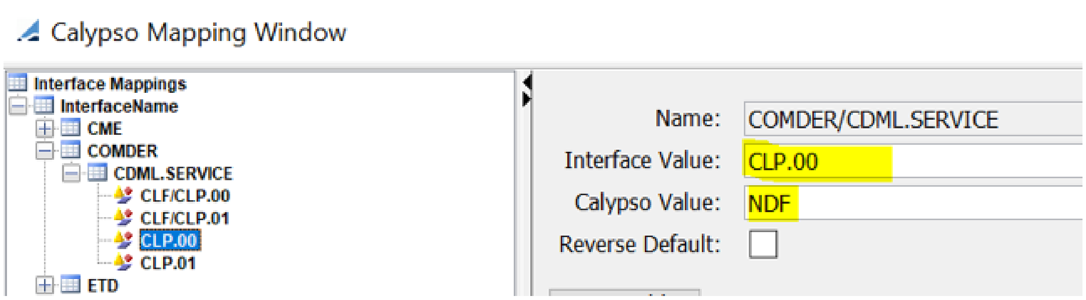
Guarantee fund amount will be translated from this file. Funds are reported w.r.t each supported clearing service i.e. NDF and IRD.

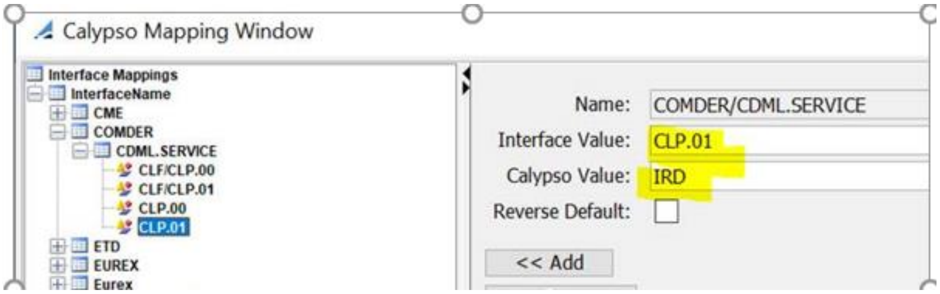
In case of COMDER, Position Account ending with 00 is for product type NDF & ending with 01 is for product type IRD.

Apart from this, position A/c does not play any role in the translate / import process.

A	B
DP;Position Account;Currency;Guarantee Fund Margin	
BICE;BICEBICE97080000K01;CLP;186255475	
BICE;BICEBICE97080000K00;CLP;609134308	

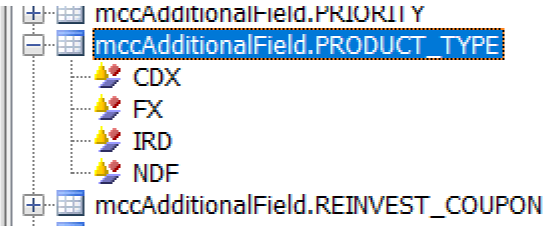
To identify / update correct clearing service during translation CDML ST will search for the below calypso mappings, hence, user should add below calypso mapping before running this process.





Further, these product types IRD and NDF should be updated in domain value as below:

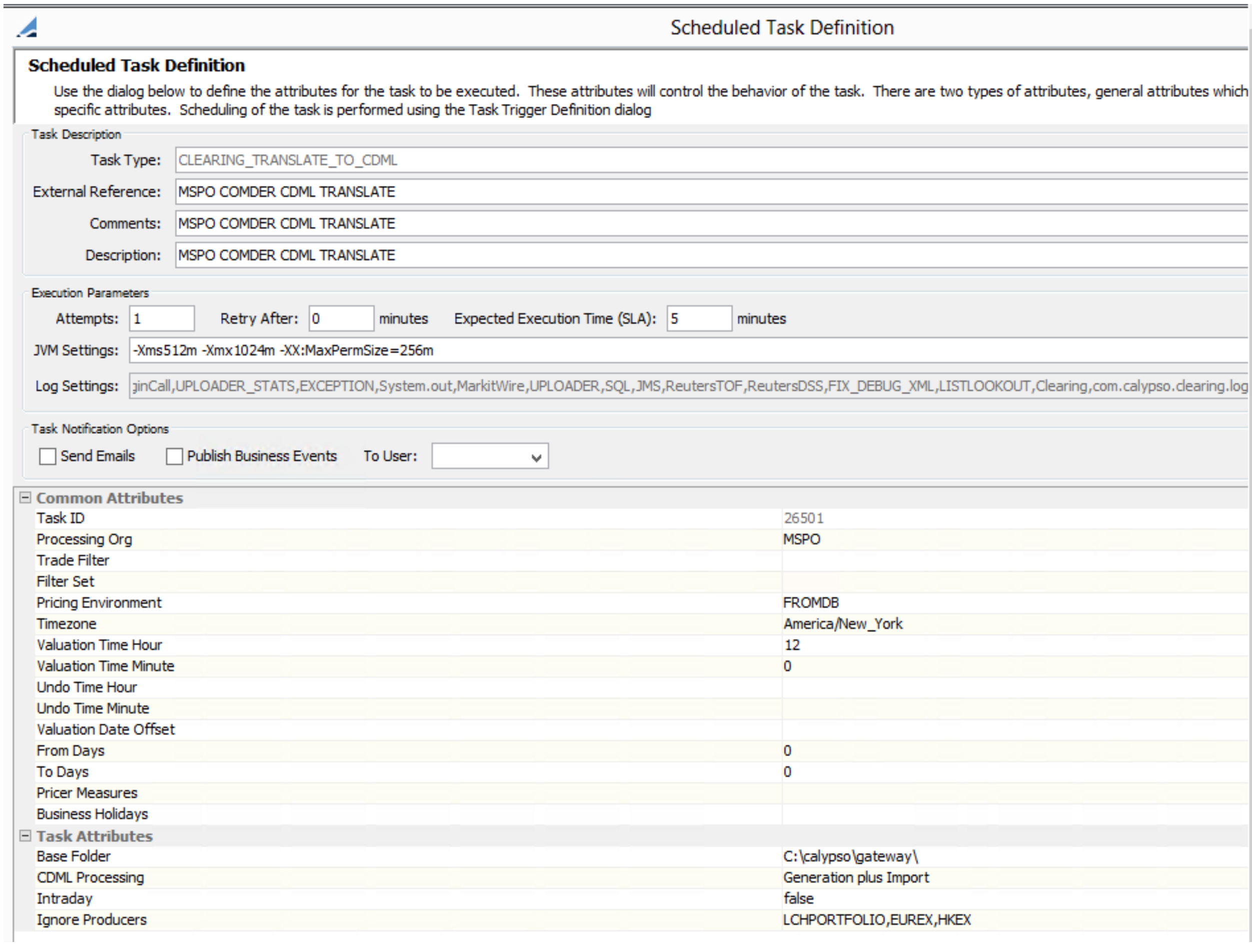
mccAdditionalField.PRODUCT_TYPE



However, to keep the fall back logic in place like Comder Initial Margin report, if the above mappings are not updated in the mappings then CDML will refer to the last characters of the position A/c. If 00 then clearing service is NDF and if 01 then clearing service is IRD.

18.2 Scheduled Tasks

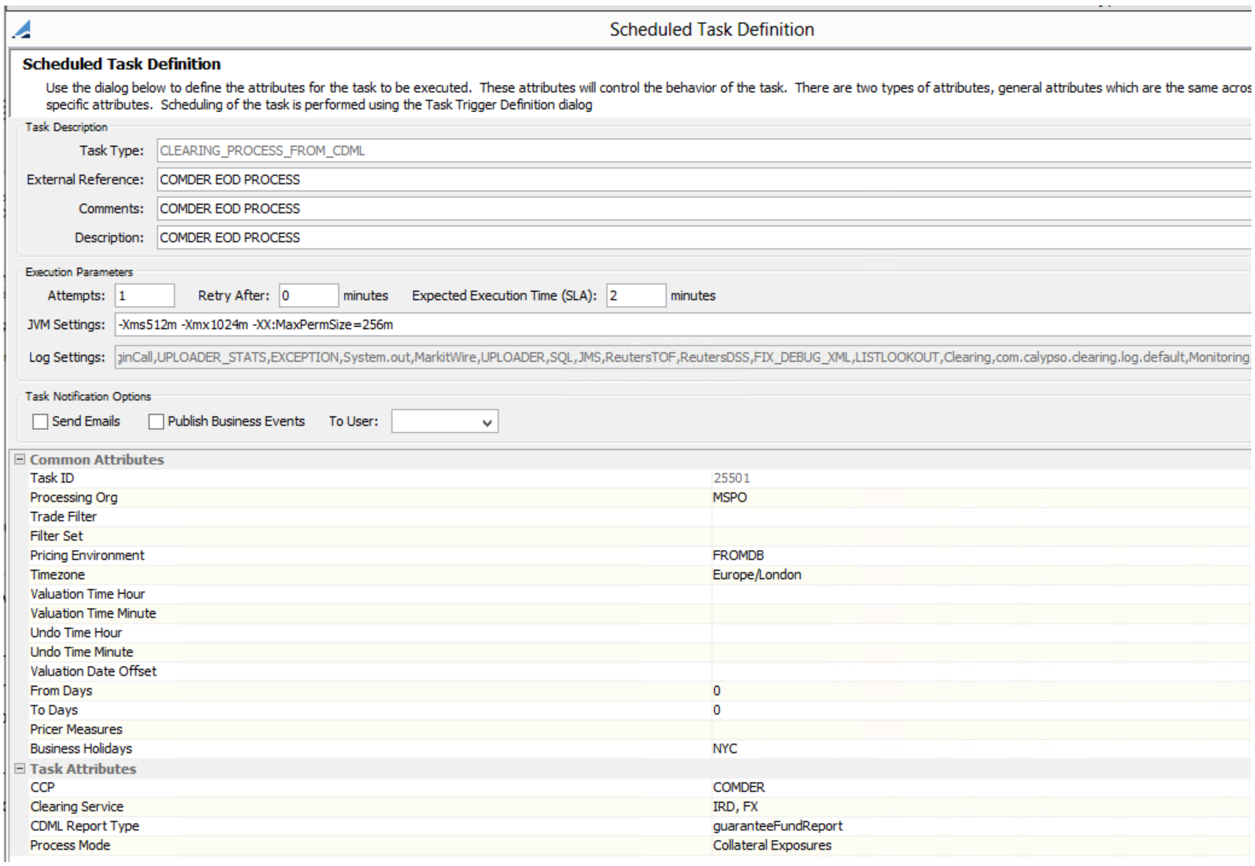
18.2.1 CLEARING_TRANSLATE_TO_CDML



Task Attributes:

- Base Folder: Location of the files to be imported
- CDML Processing: Generation plus Import or Import Only
  - Generation plus Import: When file is not in CDML format, the scheduled task generates the file in CDML format first and then imports it into the system
  - Import Only: When file is already in CDML format
- Intraday: false, only an EOD report.
- Ignore Producers: User can use this to skip any CCP folder to be translated

18.2.2 CLEARING_PROCESS_FROM_CDML



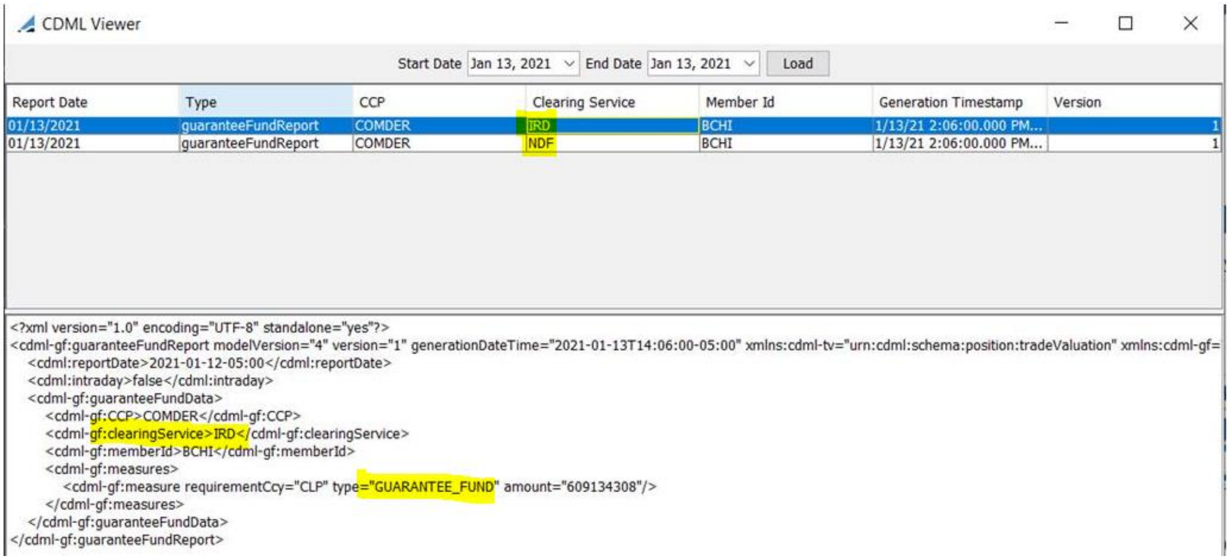
Task Attributes:

- CCP: COMDER
- Clearing Service: IRD, NDF (Comder supports clearing for these products)
- CDML Report: guaranteeFundReport
- Process Mode: Collateral Exposure

The Guarantee Fund report is an EOD report and is not generated daily by the CCP. This report is generated to the Clearing Member only when there is a shortfall in the guarantee fund amount requirement.

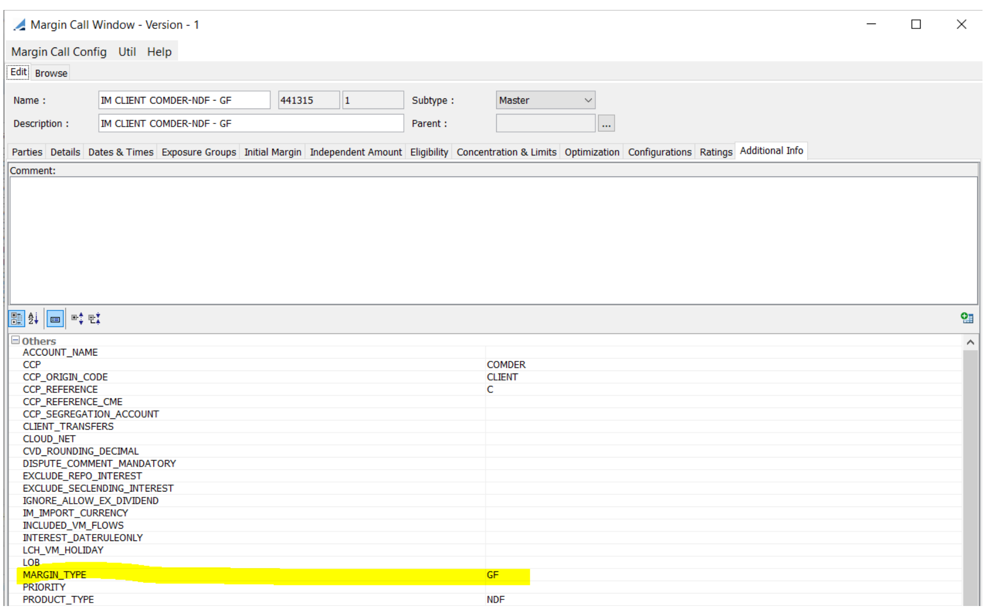
Also, this amount is paid by the FCM to CCP. Hence, we will not see any transaction related to it between FCM and Client.

Translated report format as follows:

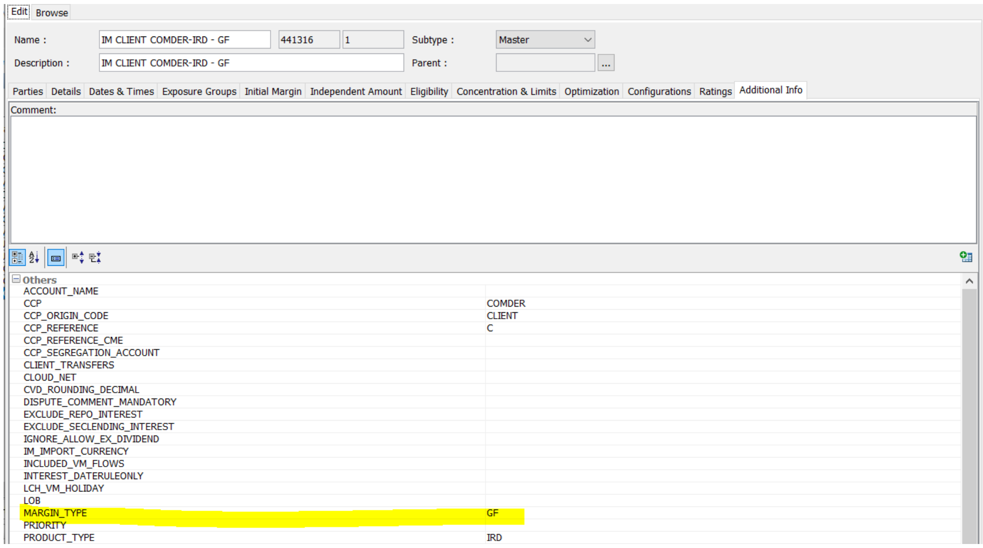


COMDER (CCP) facing Margin Call contracts should be updated as highlighted below:

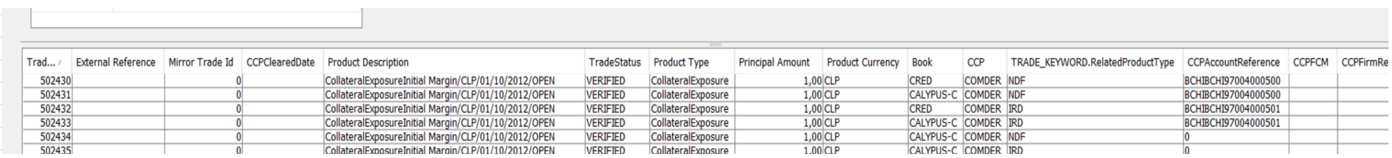
NDF GF contract – MARGIN_TYPE = GF



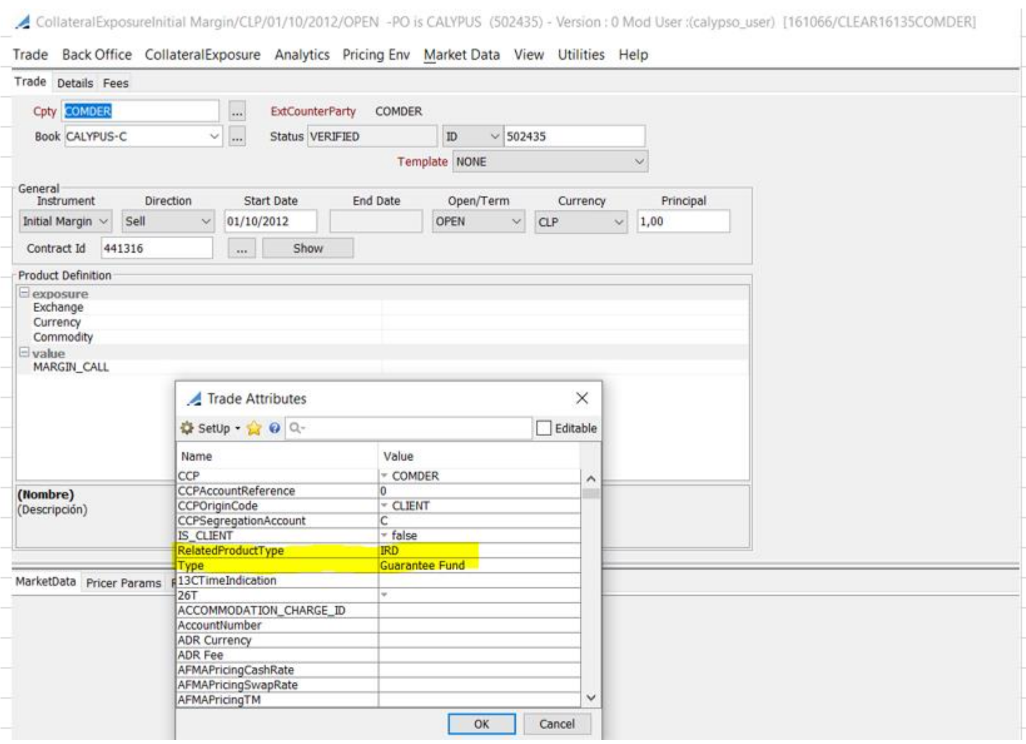
IRD GF Contract – MARGIN_TYPE = GF

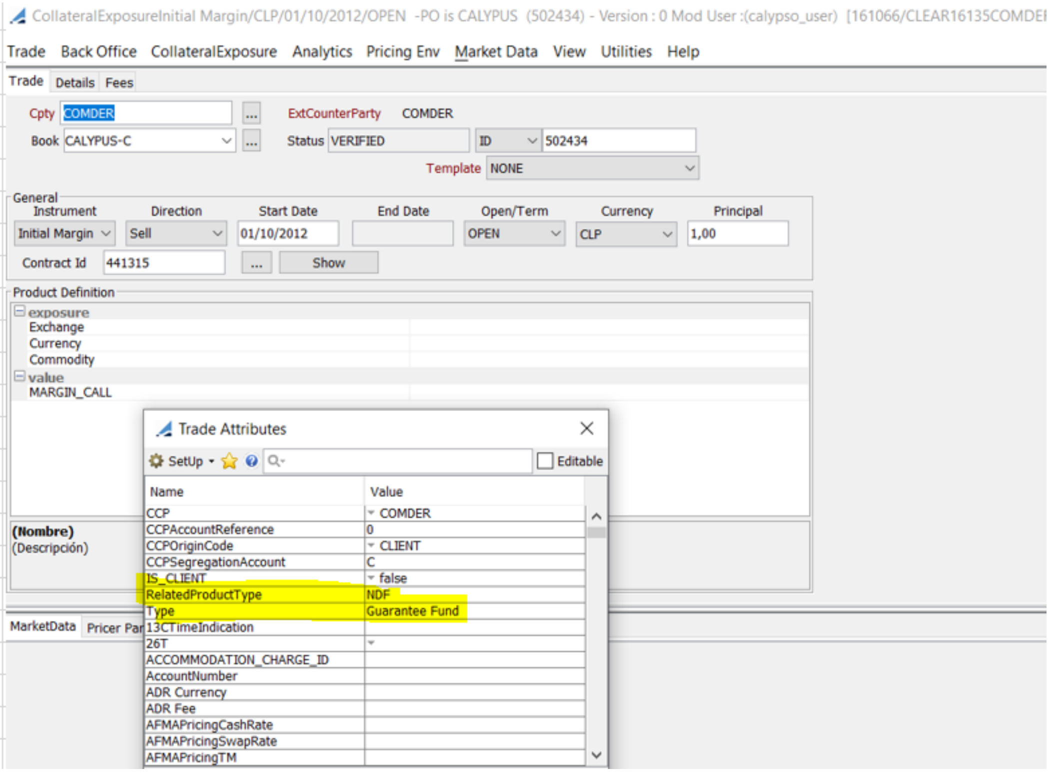


Upon processing, the following Collateral Exposure trades facing CCP are created along with below PL marks and Trade keywords:

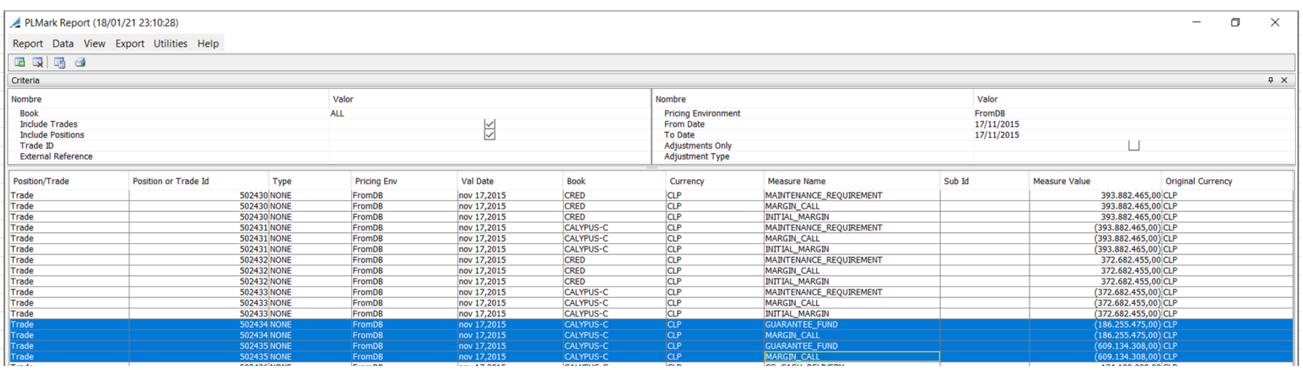


Trad...	External Reference	Mirror Trade Id	CCPClearedDate	Product Description	TradeStatus	Product Type	Principal Amount	Product Currency	Book	CCP	TRADE_KEYWORD.RelatedProductType	CCPAccountReference	CCPFCM	CCPFirmRe
502430		0		CollateralExposureInitial Margin/CLP/01/10/2012/OPEN	VERIFIED	CollateralExposure	1,00	CLP	CRED	COMDER	NDF	BCHIBCHI97004000500		
502431		0		CollateralExposureInitial Margin/CLP/01/10/2012/OPEN	VERIFIED	CollateralExposure	1,00	CLP	CALYPUS-C	COMDER	NDF	BCHIBCHI97004000500		
502432		0		CollateralExposureInitial Margin/CLP/01/10/2012/OPEN	VERIFIED	CollateralExposure	1,00	CLP	CRED	COMDER	IRD	BCHIBCHI97004000501		
502433		0		CollateralExposureInitial Margin/CLP/01/10/2012/OPEN	VERIFIED	CollateralExposure	1,00	CLP	CALYPUS-C	COMDER	IRD	BCHIBCHI97004000501		
502434		0		CollateralExposureInitial Margin/CLP/01/10/2012/OPEN	VERIFIED	CollateralExposure	1,00	CLP	CALYPUS-C	COMDER	NDF	0		
502435		0		CollateralExposureInitial Margin/CLP/01/10/2012/OPEN	VERIFIED	CollateralExposure	1,00	CLP	CALYPUS-C	COMDER	IRD	0		

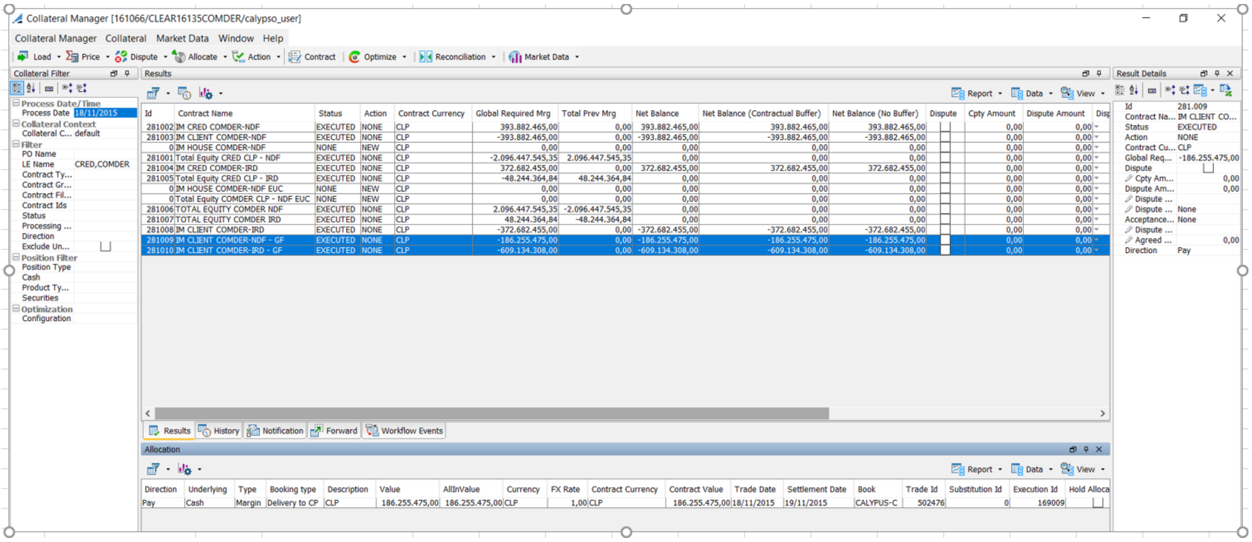




Below highlighted are the PL marks for these CE trades:



After running the Collateral Manager, we will see the Margin call generated as below:

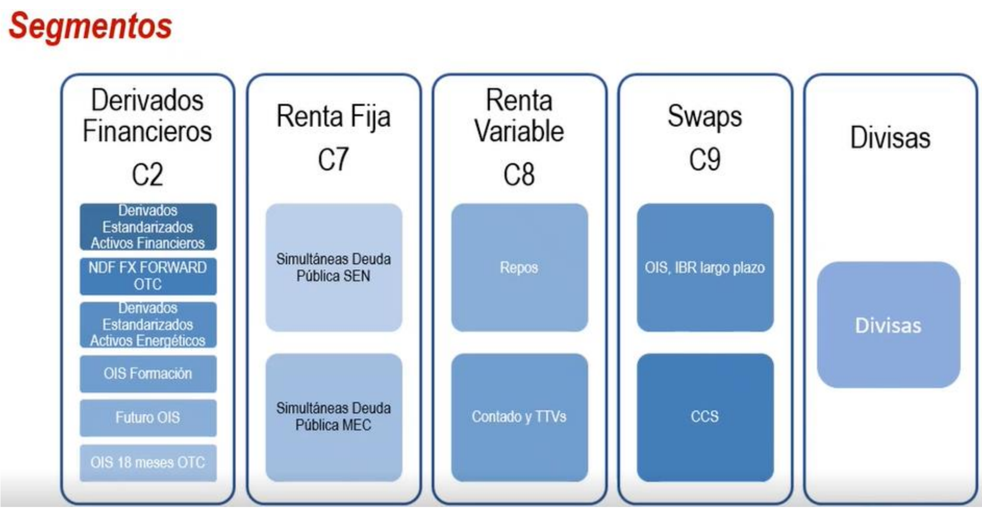

Collateral Manager [161066/CLEAR16135COMDER/calypso_user]
Collateral Manager Collateral Market Data Window Help
Load Price Dispute Allocate Action Contract Optimize Reconciliation Market Data
Collateral Filter
Results
Result Details
Results History Notification Forward Workflow Events
Allocation

19 CRCC EOD Clearing Process

19.1 Introduction to CRCC Clearing

CRCC Colombia (Camara de Riesgo Central de Contraparte de Colombia SA) supports clearing of various Listed and OTC Derivatives products.

CRCC has grouped these products in various under 'Segments' and has different types of products within the umbrella.



Only segments C2 and C9 are currently supported.

19.2 Setup Requirements

19.2.1 Legal Entities, Books, Accounts

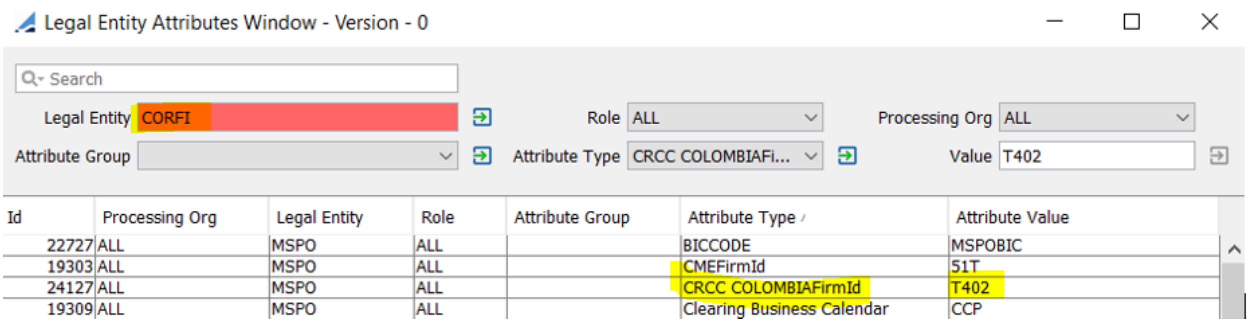
The following legal entities need to be created:

- CRCC CCP
- Corfi Colombiana FCM (PO)
- Corfi House Entity
- Corfi's Clients eg. Porvenir

This setup is from the Direct Participant perspective 'Corfi Colombiana' where it plays the role of a Clearing Member for its house and client entities.

To set up these entities, see Legal Entities and Accounts Setup.

For the PO to be identified by the CCP files, LE attribute CRCC Colombia FirmID must be set on the PO as below.



Once the entities are set up, you must define the House and Client books and accounts.

House and Client mirror A/c's are set up to record the trading activity which is cleared at the CCP via the FCM.

CCP = CRCC and FCM = Corfi Colombiana

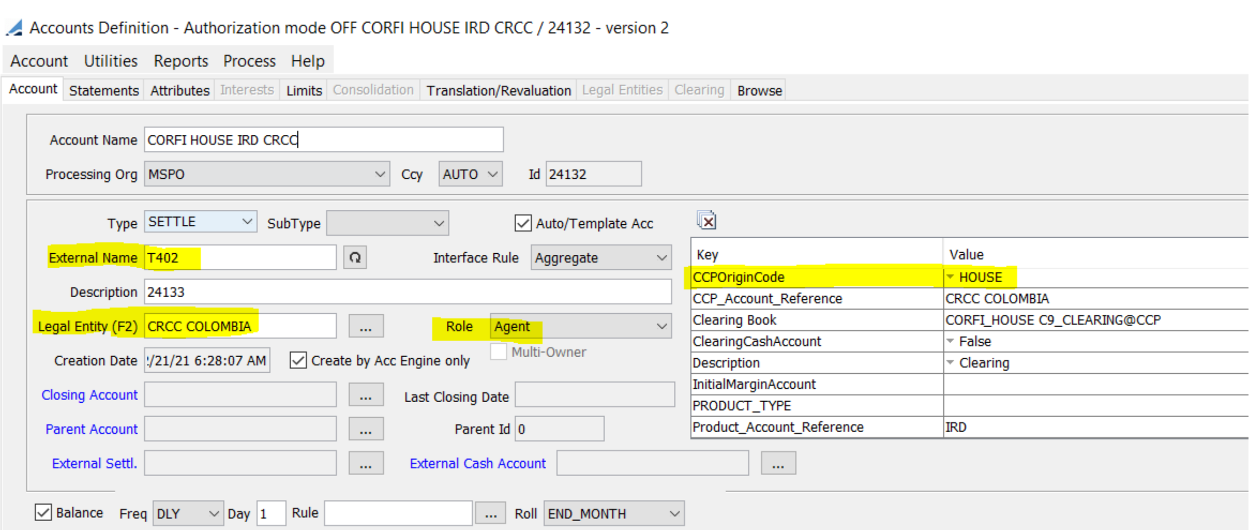
Set of clearing A/c: One A/c is set up between the CCP and the FCM and another is a mirror A/c set up between FCM and Client / House entity to update the equal and opposite positions.

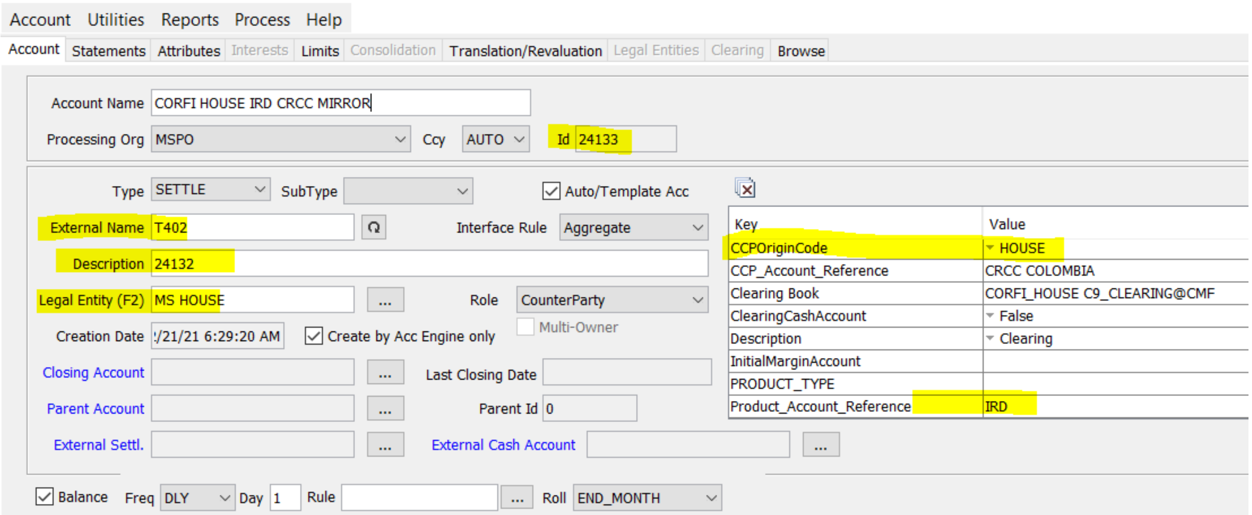
Reason for mirroring: Mirroring is done so that correct positions are reflected at the CCP / FCM / Client – House.

The mirroring is activated by mentioning the Account ID of the clearing A/c to be mirrored in the Description tag on the clearing A/c as highlighted below.

Example of House mirror accounts

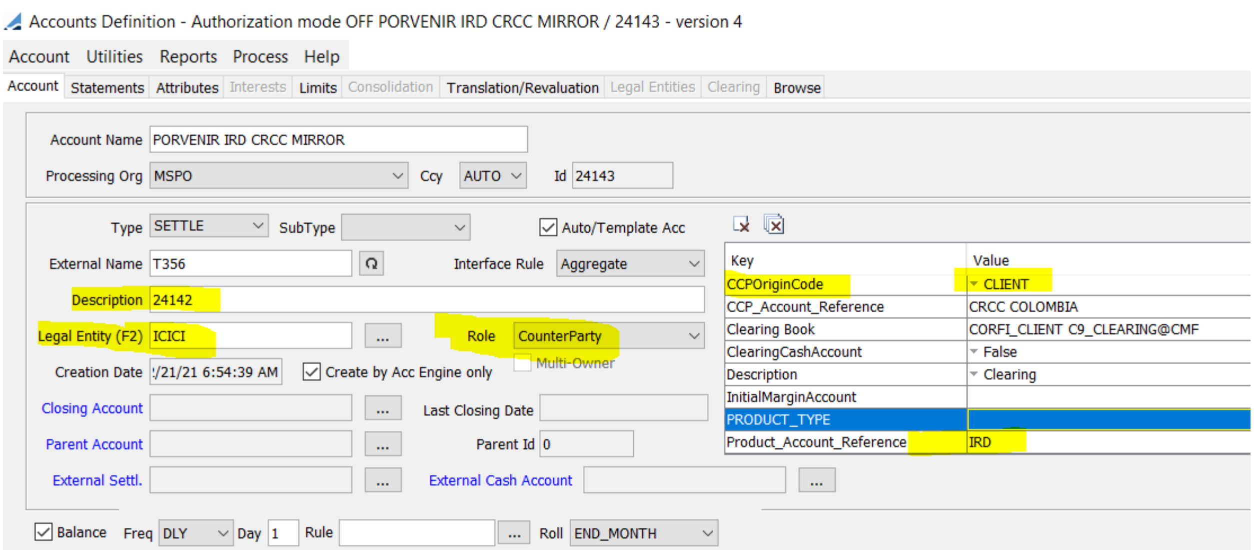
Account ID 24132 / 24133 are mirror A/c's of each other as 24133 has been updated in the Description tag for Account ID 24132 and vice-versa. External name / Ac attributes should be the same on both these A/c's except the Clearing Book attribute.

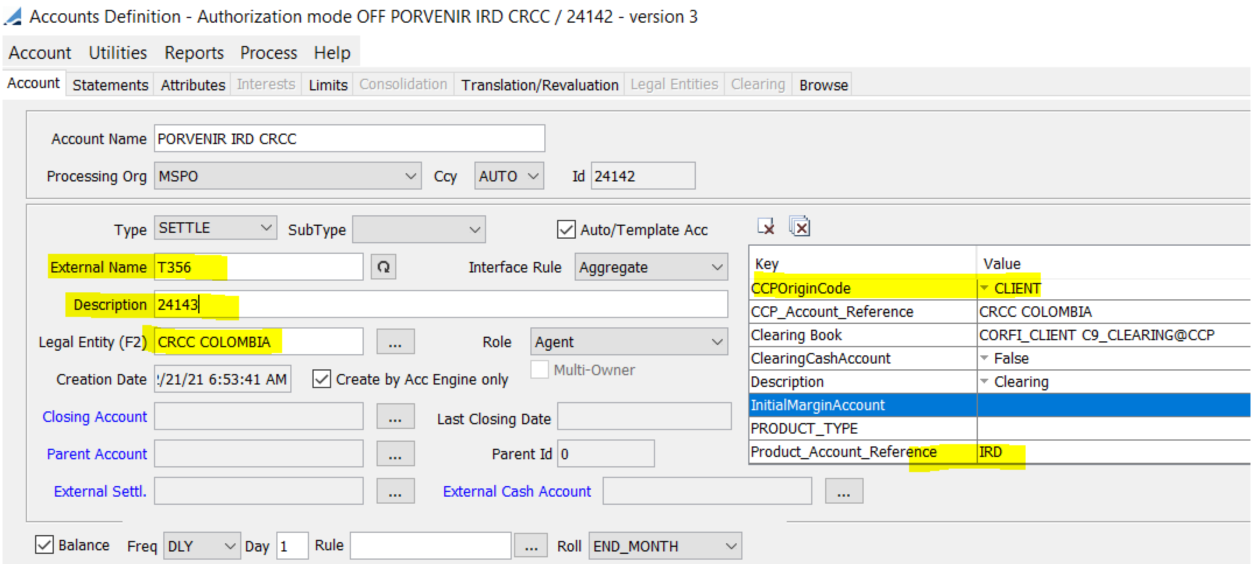




Example of Client mirror accounts

Account ID 24143 / 24142 are mirror A/c's of each other as 24142 has been updated in the Description tag for Account ID 24143 and vice-versa. External name / Ac attributes should be the same on both these A/c's except the Clearing Book attribute.





As per the existing functionality, in the above pattern, user can set up 'n' number of clearing A/c's provided the external names are unique. Cpty LE is fetched from this clearing A/c.

Importance of External name: All the traded positions are mapped to the resp Cpty LE based on the external name. These traded positions are created at the back of the trading activity done by the client / house entity at the CCP for the products like IRD / FX / NDF and Listed products.

Note: Listed products are tagged as clearing service / related product type 'FX' for the products to be recognized in the system.

There must be a unique clearing A/c for each product type. Product type must be updated in A/c attribute Product_Account_Reference.

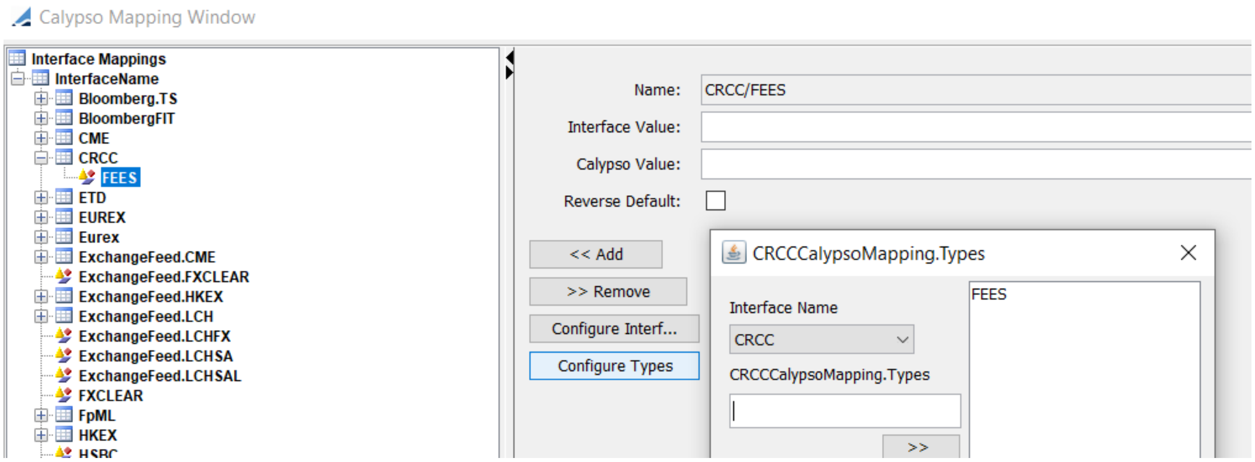
19.2.2 Margin Call Contracts

For margin call contracts, see Margin Calls Setup.

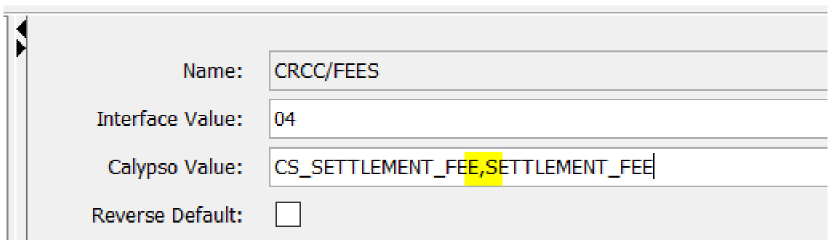
19.2.3 Fees

A mapping entry can be defined in the Calypso Mapping Window to allow importing the CRCC fees.

You need to add the CRCC interface to the Calypso Mapping Window by clicking on "Configure Interface", then add the type "FEES" by clicking on "Configure Types":



Then add the fee types as needed: The Interface Value is the Concepto code from the Fee list, and the Calypso Value is the list of corresponding fee types.



Cód.Concepto	Description
1	Guarantees
2	Other Guarantees
3	Daily settlement for differences
4	Fee settlement and compensation
5	Premiums
7	Non periodic interests
10	Daily Trading Fess
11	Daily Fees Compensation

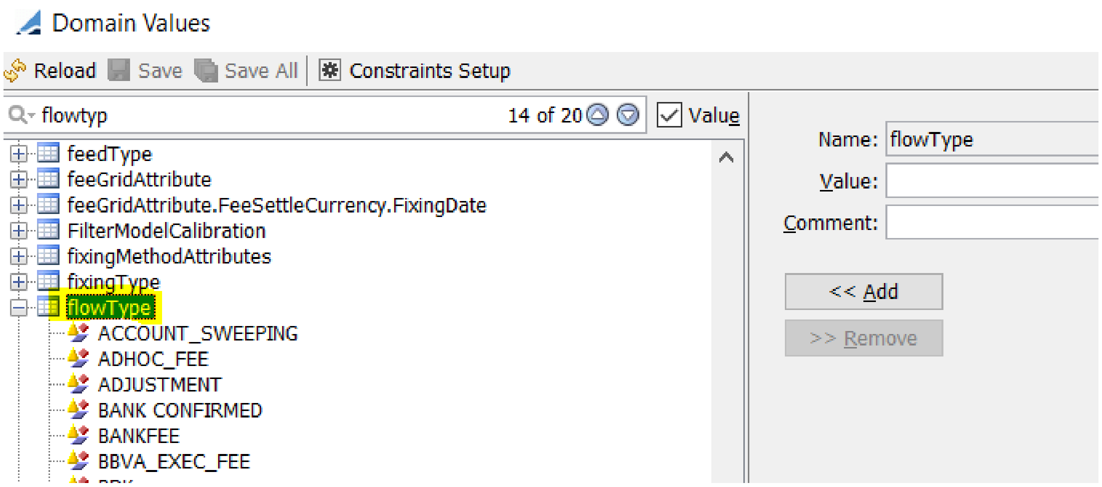
Sample CCPCASHMOVCLM file

Fecha	CCPCode	Camara	Compensador	Negociador	Concepto	Divisa	MetodoPago	CashMovGroup	DescConcepto	Importe	FechaValor
3/16/2021	CM	C2	M439	M045	03	COP		M439-001	-	44,737,000.00 €	3/17/2021
3/16/2021	CM	C2	M439	M439	03	COP		M439-001	-	-742,597,000.00 €	3/17/2021
3/16/2021	CM	CM	M439	M045	04	COP		M439-001	-	-1,008,195.00 €	3/17/2021
3/16/2021	CM	CM	M439	M045	55	COP		M439-001	-	-191,658.00 €	3/17/2021

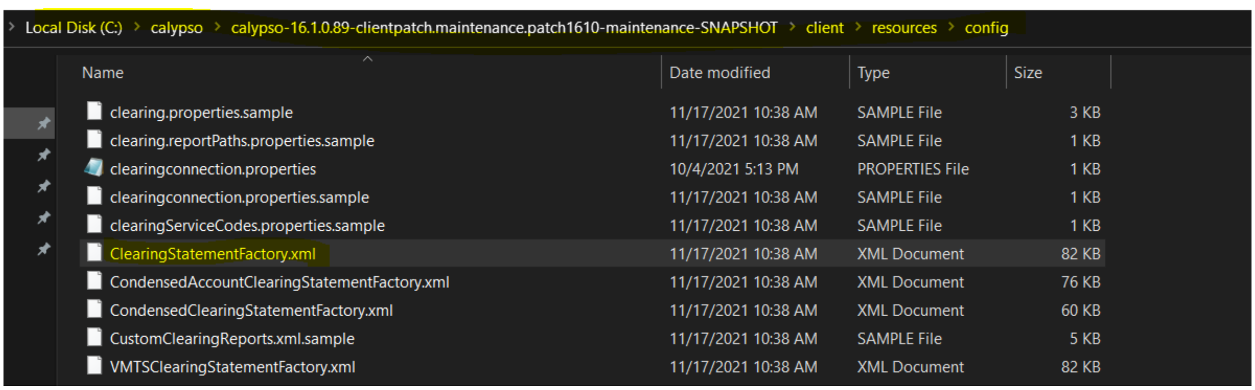
When the system identifies the Concepto code in the import file, it will search for the mapping entry under the CRCC/FEES node.

When this mapping value is matched, the system will import the amount from column 'Importe' for the cashflows mentioned in Calypso value.

Note: For this cashflow to be captured in the Clearing Statement, it must be manually added to the flowType domain and to the Clearing Statement style sheet under “feeTypes”.



The Clearing Statement stylesheet is located under <calypso home>\client\resources\config\ClearingSatementFactory.xml.



CDML Exception: If Calypso mapping is missing for any of the “Concepto” code, an exception is generated.

19.3 Scheduled Tasks Setup and Processing

Once this set up is done, user would have to import and translate the EOD files.

To import & translate the files from the file location, we use CDML application.

User sets up the scheduled task CLEARING_TRANSLATE_TO_CDML and executes it as per the required valuation date i.e. the Business date.

Note: Valuation date must be equal to the date in the filename. If it doesn’t match, then files will not be translated.

Task Attributes	
Base Folder	C:\calypso\gateway\
CDML Processing	Generation plus Import
Intraday	false
Ignore Producers	RTFOLIO,CME,HKEX,COMDER,ICE,LCH,ICC,LCHSAL,LCHSALPORTFOLIO

See CLEARING_TRANSLATE_TO_CDML for complete details on this scheduled task.

Files are placed at the location mentioned on the scheduled task as above. All the available files at the location will be imported and a CDML report as below will be created.

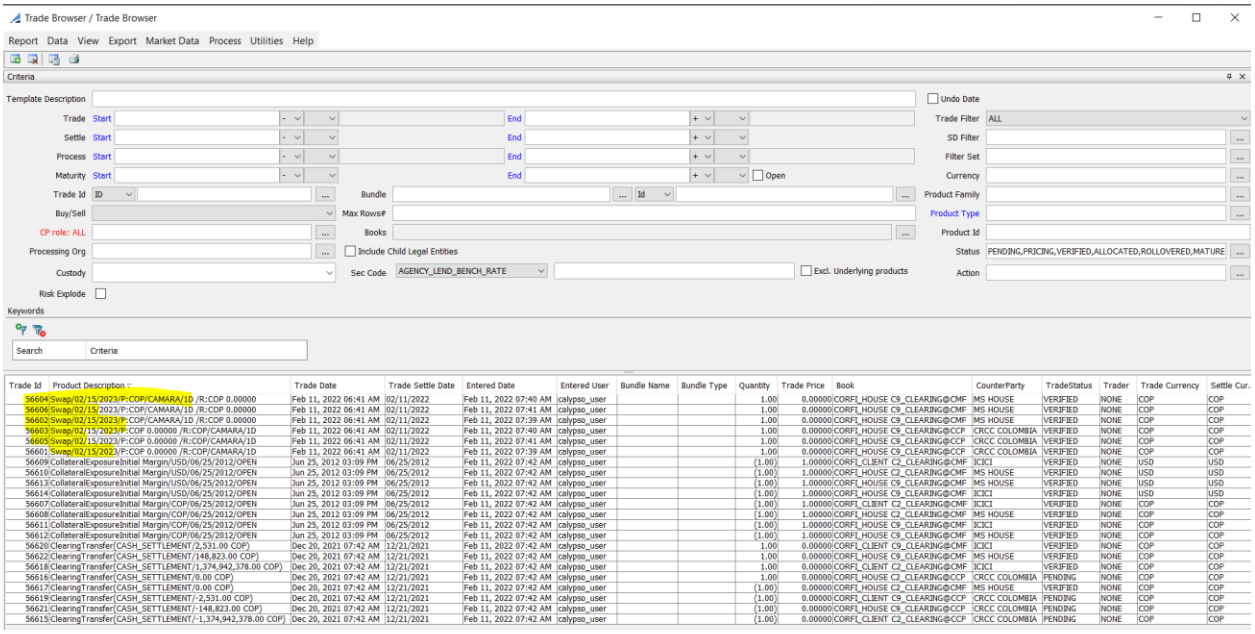
Local Disk (C:) > calypso > gateway > CRCC COLOMBIA

Name	Date modified	Type	Size
CVARMARGIN20211220.csv	12/22/2021 2:02 PM	Microsoft Excel Co...	1 KB
CTOTALINITIALMARGIN20211220-EOD.csv	12/23/2021 4:19 PM	Microsoft Excel Co...	3 KB
COPINIRSFRA-EOD20211220.csv	12/23/2021 4:21 PM	Microsoft Excel Co...	10 KB
CCPCASHMOVCLM20211220.csv	1/31/2022 5:04 PM	Microsoft Excel Co...	1 KB
CCOUPONS-EOD20211220.csv	12/21/2021 6:01 PM	Microsoft Excel Co...	250 KB
CACCOUNTSETTL20211220.csv	12/28/2021 7:47 PM	Microsoft Excel Co...	1 KB

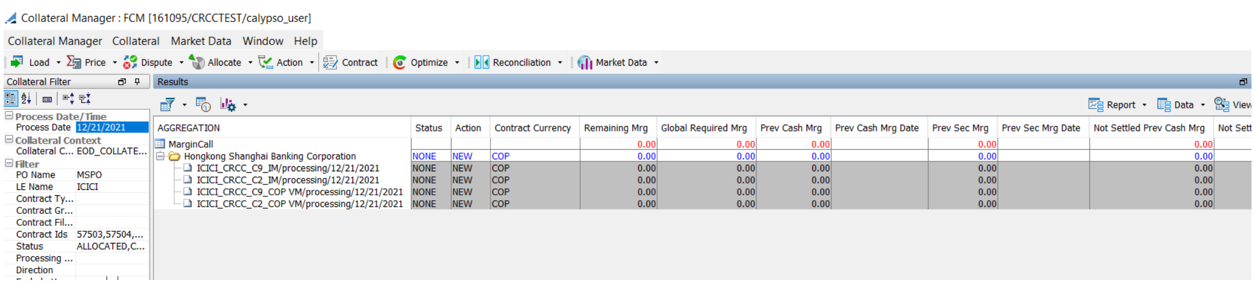
Then the scheduled task CLEARING_PROCESS_FROM_CDML is used for processing these reports, and to create the clearing transfers which will in turn create all the positions / trades.

Task Attributes	
CCP	CRCC COLOMBIA
Clearing Service	IRD, FX
CDML Report Type	All
Process Mode	All

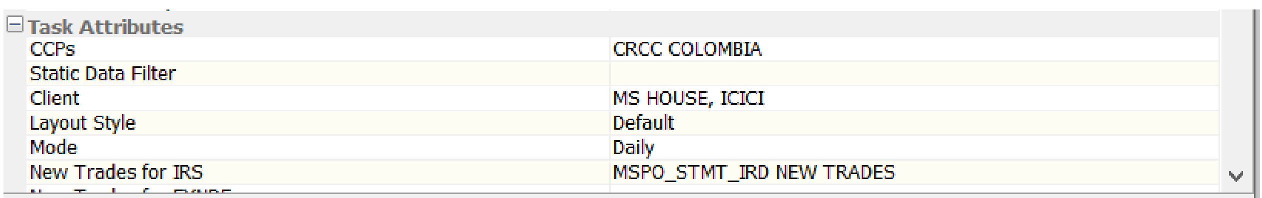
Post processing, you can see the Clearing Transfers / PL marks / Cleared Trade booked as below:



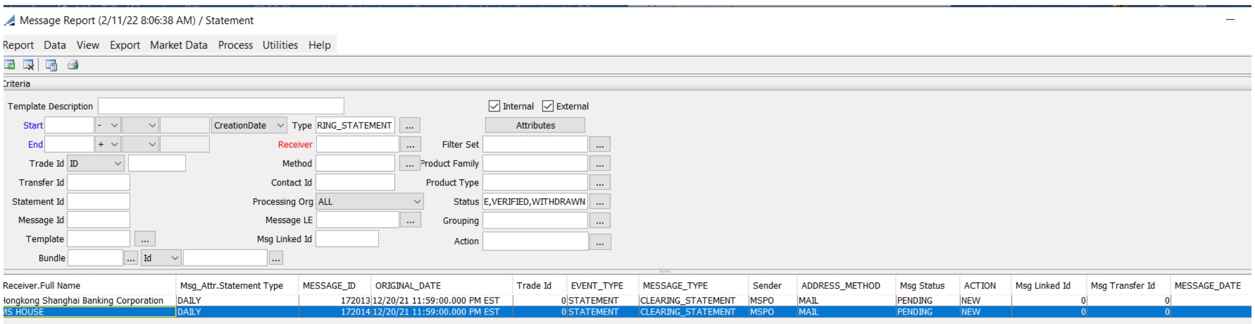
After this step, you can run the Collateral Manager process as of T+1 to create the IM and VM margin calls.



You can then run the CLEARING_STATEMENT scheduled task to product the Clearing Statement to send all the trading activity of the day to the client.



The scheduled task should be processed for the current business day. It generates the Clearing Statement message:

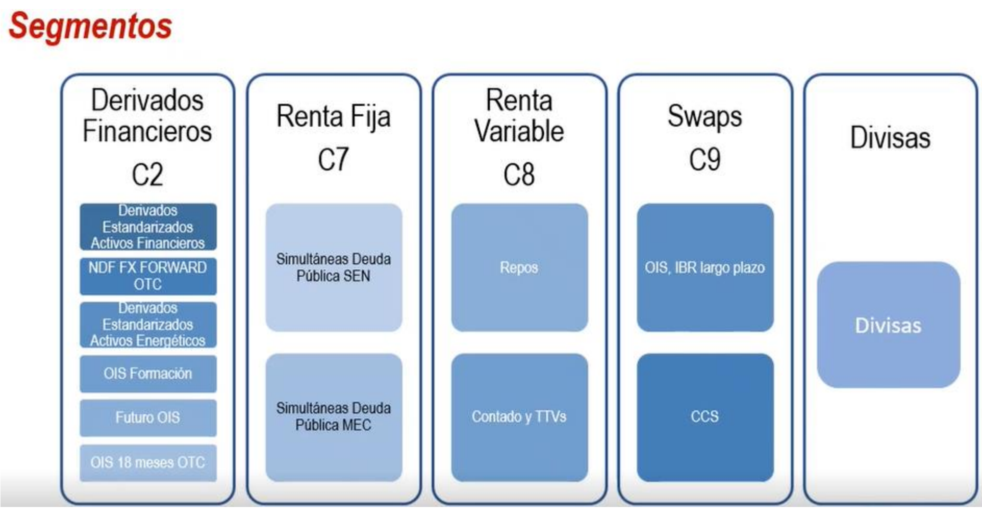

Message Report (2/11/22 8:06:38 AM) / Statement
Report Data View Export Market Data Process Utilities Help
Criteria
Template Description
Internal External
Start
CreationDate
Type RING_STATEMENT
Attributes
End
Receiver
Filter Set
Trade Id ID
Method
Product Family
Transfer Id
Contact Id
Product Type
Statement Id
Processing Org ALL
Status E,VERIFIED,WITHDRAWN
Message Id
Message LE
Grouping
Template
Msg Linked Id
Action
Bundle Id
Receiver.Full Name | Msg_Attr.Statement Type | MESSAGE_ID | ORIGINAL_DATE | Trade Id | EVENT_TYPE | MESSAGE_TYPE | Sender | ADDRESS_METHOD | Msg Status | ACTION | Msg Linked Id | Msg Transfer Id | MESSAGE_DATE
Hongkong Shanghai Banking Corporation | DAILY | 172013 | 12/20/21 11:59:00.000 PM EST | 0 | STATEMENT | CLEARING_STATEMENT | MSPO | MAIL | PENDING | NEW | 0 | 0
MS HOUSE | DAILY | 172014 | 12/20/21 11:59:00.000 PM EST | 0 | STATEMENT | CLEARING_STATEMENT | MSPO | MAIL | PENDING | NEW | 0 | 0

20 CRCC Clearing

20.1 Introduction to CRCC Clearing

CRCC Colombia (Camara de Riesgo Central de Contraparte de Colombia SA) is a Colombian clearing house supporting clearing of various Listed and OTC Derivatives products.

CRCC has grouped these products in various groups known as 'Segments' and has different type of products within the umbrella.



Support for EOD clearing at Member & Segment level – C2 & C9 segment, as well as Fund Account level & Sub Product level within the segment.

20.2 Setup Requirements

20.2.1 Segment wise Product details & Settlement snapshot

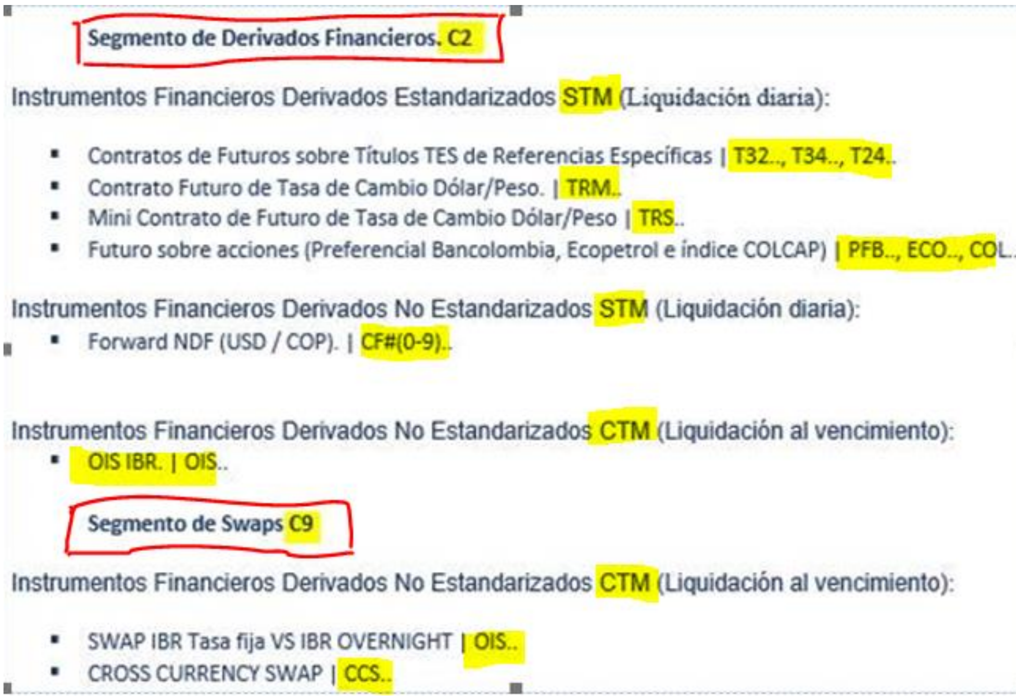
Below is the product snapshot from CRCC CCP which provides details about supported products and settlement types CTM or STM.

We have introduced 2 new clearing services C2 and C9 w.r.t CRCC segments.

C2 Segment: **Clearing Service 'C2'**: Listed Derivatives (FX Futures) – STM, FX NDF – STM, Short term OIS – CTM

C9 Segment: **Clearing Service 'C9'**: Long term OIS – CTM, Cross Ccy Swap CCS – CTM

Along with these details, we see Contract codes (initial characters eg. T32, TRM, etc.) which will help the user identify the product type.



Segmento de Derivados Financieros. C2

Instrumentos Financieros Derivados Estandarizados STM (Liquidación diaria):

- Contratos de Futuros sobre Títulos TES de Referencias Específicas | T32.., T34.., T24..
- Contrato Futuro de Tasa de Cambio Dólar/Peso. | TRM..
- Mini Contrato de Futuro de Tasa de Cambio Dólar/Peso | TRS..
- Futuro sobre acciones (Preferencial Bancolombia, Ecopetrol e índice COLCAP) | PFB.., ECO.., COL..

Instrumentos Financieros Derivados No Estandarizados STM (Liquidación diaria):

- Forward NDF (USD / COP). | CF#(0-9)..

Instrumentos Financieros Derivados No Estandarizados CTM (Liquidación al vencimiento):

- OIS IBR. | OIS..

Segmento de Swaps C9

Instrumentos Financieros Derivados No Estandarizados CTM (Liquidación al vencimiento):

- SWAP IBR Tasa fija VS IBR OVERNIGHT | OIS..
- CROSS CURRENCY SWAP | CCS..

20.2.2 Required Entities & Clearing Accounts

To start with the basic set up structure which is common for both C2 & C9 segment, we will require configuring the 4 entities in Calypso:

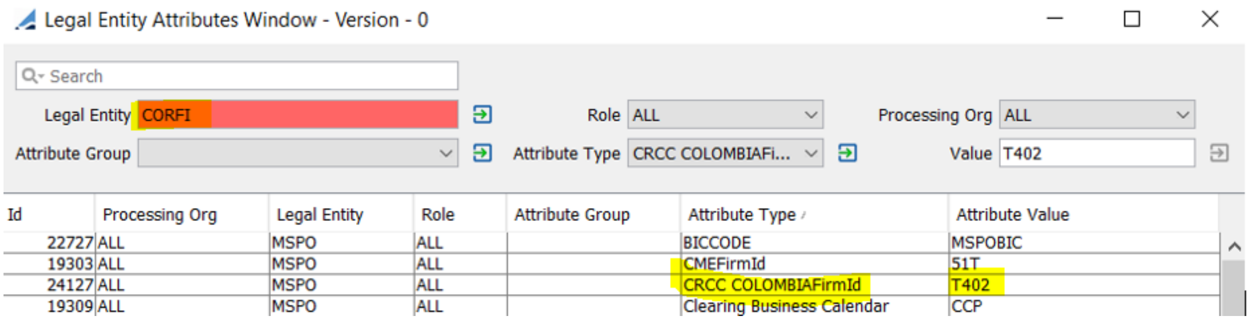
1. CRCC CCP
2. Corfi Colombiana FCM (PO)
3. Corfi House Entity
4. Corfi's Clients eg. Porvenir

This whole set-up is from the Direct participant perspective 'Corfi Colombiana' where it plays the role of a Clearing Member for its house and client entities.

To set up these entities, user can refer to Section 4: Legal Entities & Account Setup.

Mandatory PO attribute as highlighted must be added on the PO for the files to be imported

For the PO to be identified by the CCP files, we set up LE attribute CRCC Colombia FirmID on the PO as below. Based on this attribute, the system can relate that the files are for this PO.



Once the entities are set up, user must define the House & Client books.

To start with the clearing process, we will require the set of clearing A/c's to be set up for House & Client Entity. Based on these accounts, system can capture the margin requirements.

Currently, in clearing module, we set up House and Client mirror A/c's to record the trading activity which is cleared at the CCP via the FCM.

CCP: CRCC & FCM: Corfi Colombiana

Set of clearing A/c: One A/c is set up between the CCP and the FCM and another is a mirror A/c set up between FCM and Client / House entity to update the equal and opposite positions.

Reason for mirroring: Mirroring is done so that correct positions are reflected at the CCP / FCM / Client - House

Mirroring feature can be activated by mentioning the Account ID of the clearing A/c to be mirrored in the Description tag on the clearing A/c as highlighted below.

Clearing Account setup

For C9 segment: Below is an example for House mirror account.

Account ID 24132 / 24133 are mirror A/c's of each other as 24133 has been updated in the Description tag for Account ID 24132 and vice-versa. External name / Ac attributes should be the same on both these A/c's except the Clearing Book attribute.

To capture the margin requirements at fund account level, we are defining the position A/c by combining the FirmID with the resp a/c reported in the file.

For C9 segment, we are importing 2 files '**CTOTALINITIALMARGIN**'& '**COPINIRSFRA**'.

To configure position A/c Id, we are referring columns as below:

For position file '**CTOTALINITIALMARGIN**': Combine value in '**MarginAccountMember'_'MarginAccount'**

rptName	CCPMember	MarginAccountMember	ClearingMember	MarginAccount
CTOTALINITIALMARGIN	T402	T402	T402	P01
CTOTALINITIALMARGIN	T402	T402	T402	P20
CTOTALINITIALMARGIN	T402	T402	T402	Z01
CTOTALINITIALMARGIN	T402	T402	T402	Z02
CTOTALINITIALMARGIN	T356	T356	T402	Z03
CTOTALINITIALMARGIN	T356	T356	T402	P20

Thus, Position account ID will be as T402_P01, T402_P20, T402_Z01, T402_Z02, T356_Z03, T356_P20.

In similar manner, For Trade file 'COPINIRSFRA' we will be combining values in 'CCPMember'_'PositionAccount'

rptName	CCPMember	Member	ClearingMember	PositionAccount
COPINIRSFRA	T402	T402	T402	P20
COPINIRSFRA	T356	T356	T402	P20

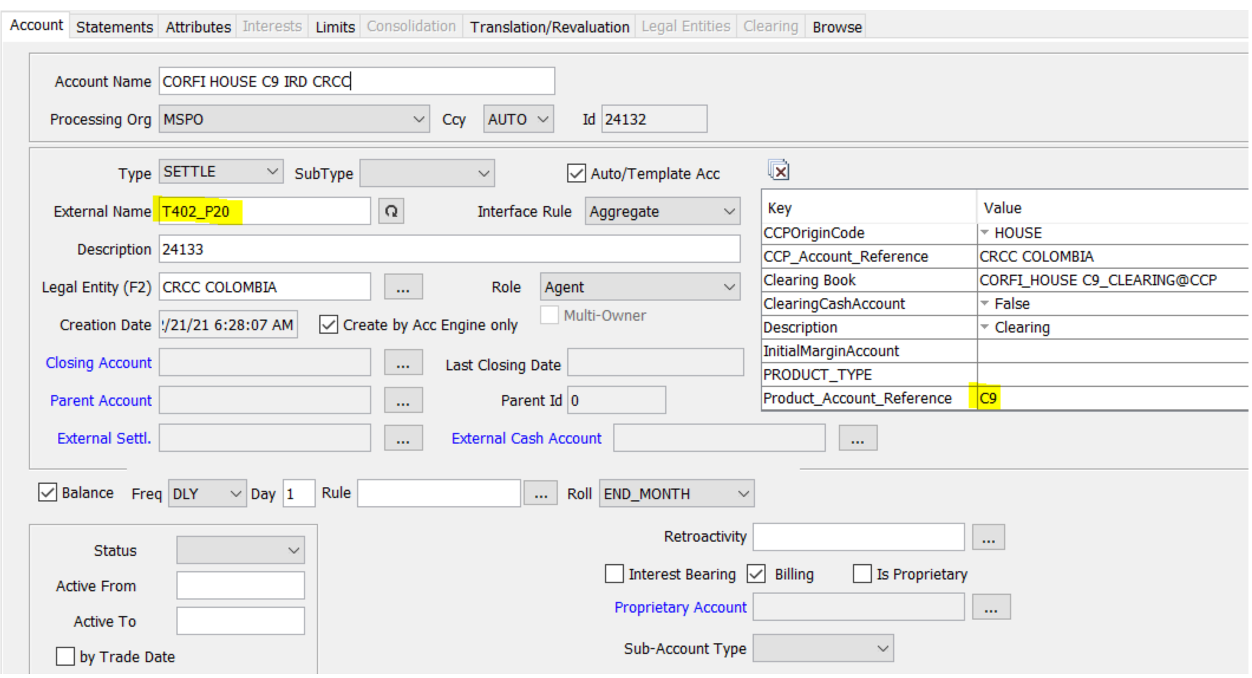
Based on this convention, clearing A/c & Initial Margin Call Contract will be fetched.

To identify segregation A/c:

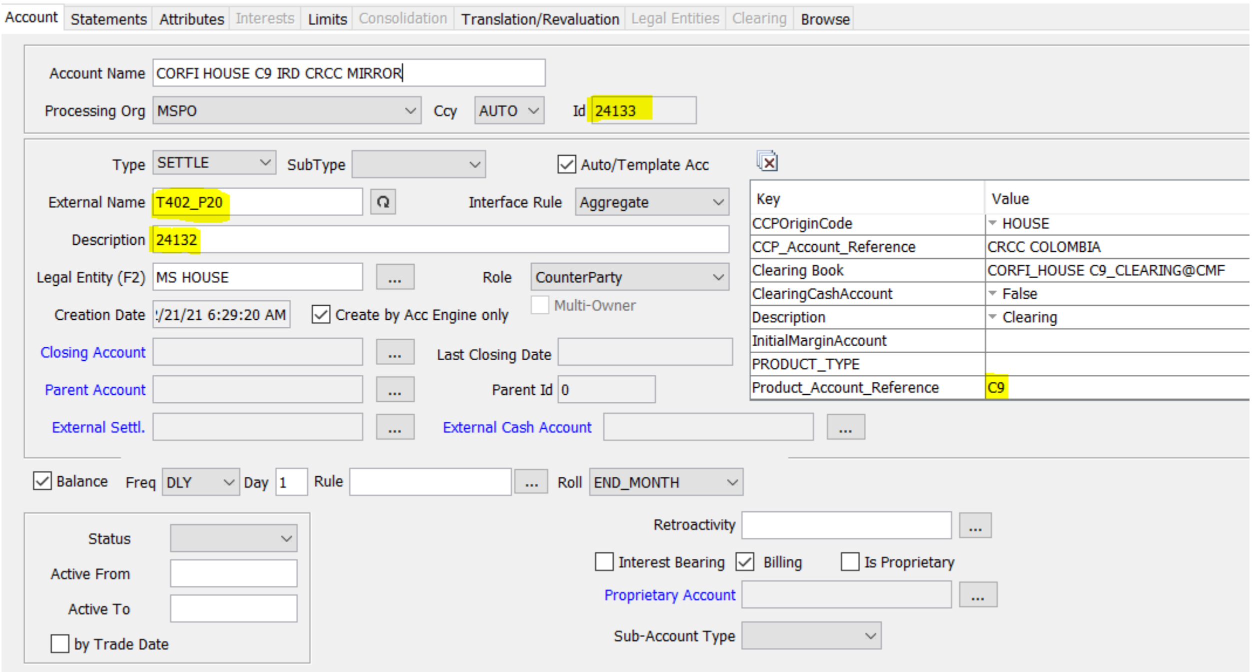
'ClearingMember' value = 'MarginAccountMember' value → segregation A/c = H (i.e., House Account)

'ClearingMember' value /= 'MarginAccountMember' value → segregation A/c = C (i.e., Client Account)

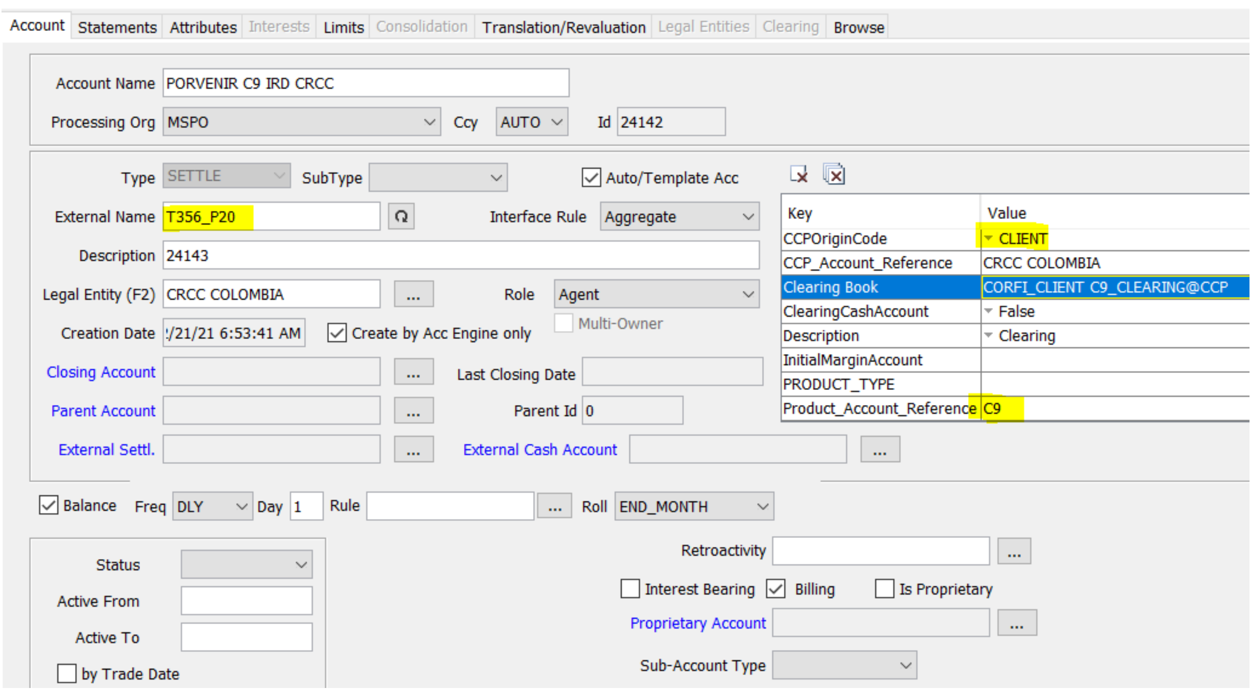
C9 segment house clearing A/c's:



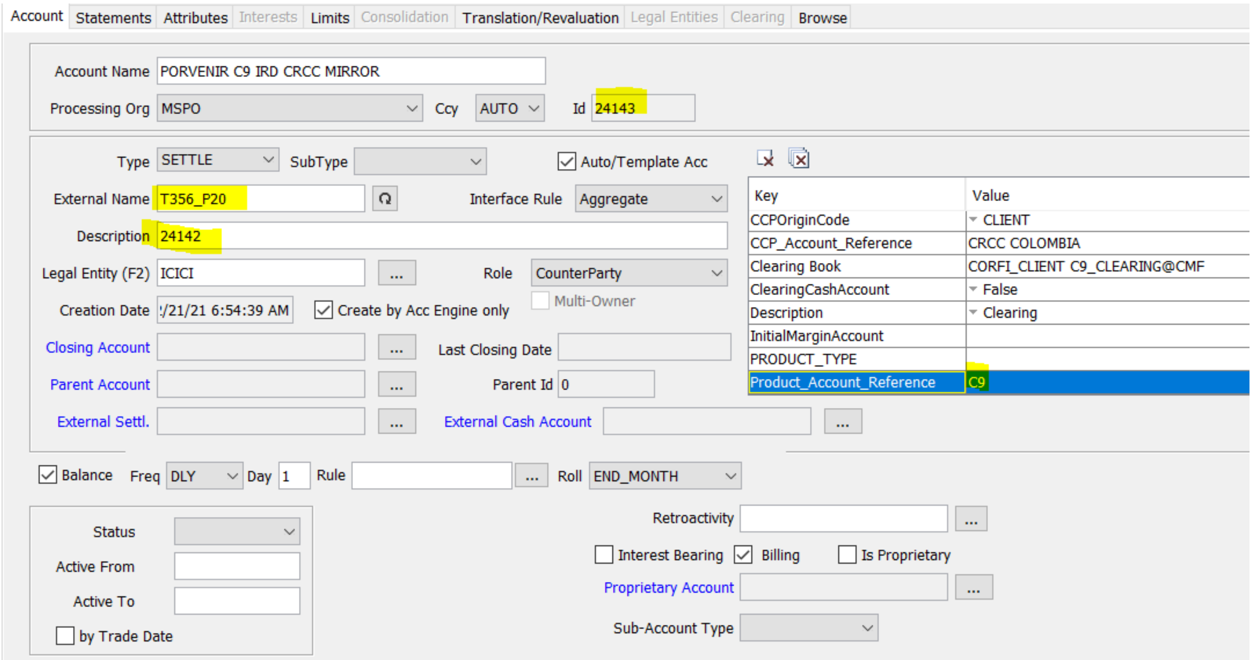
Below MS House LE corresponds to Corfi House LE



C9 segment client clearing A/c's:



Below ICICI LE corresponds to Corfi Client LE eg. Porvenir.



<u>For C2 segment:</u>

We are importing margin requirements / cashflows from 2 files CVARMARGINyyyyMMDD & CVARMARGINPENDyyyyMMDD

<u>To configure position A/c Id</u> from both CVARMARGINyyyyMMDD & CVARMARGINPENDyyyyMMDD file, we combine values from column 'Miembro_CuentaPosicion' (1st 3 characters of CuentaPosicion)

B	C	D
Camara	Miembro	CuentaPosicion
C2	T402	P0101
C2	T402	P0101
C2	T356	P0101
C2	T356	P0201
C2	T356	P0101

Thus, in above case, we have 3 different position A/c ID's T402_P01, T356_P02, T356_P01.

<u>To identify segregation A/c</u>:

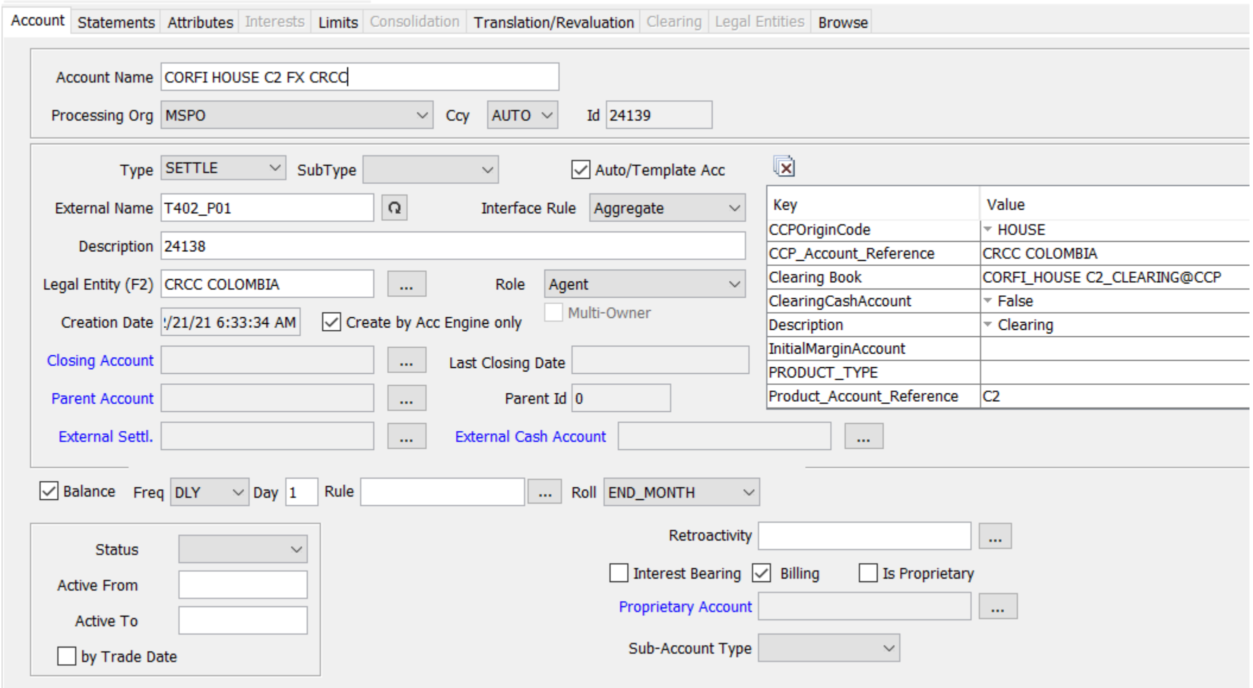
'Compensador' value = 'MiembroGarantias' value → segregation A/c = H (i.e., House Account)

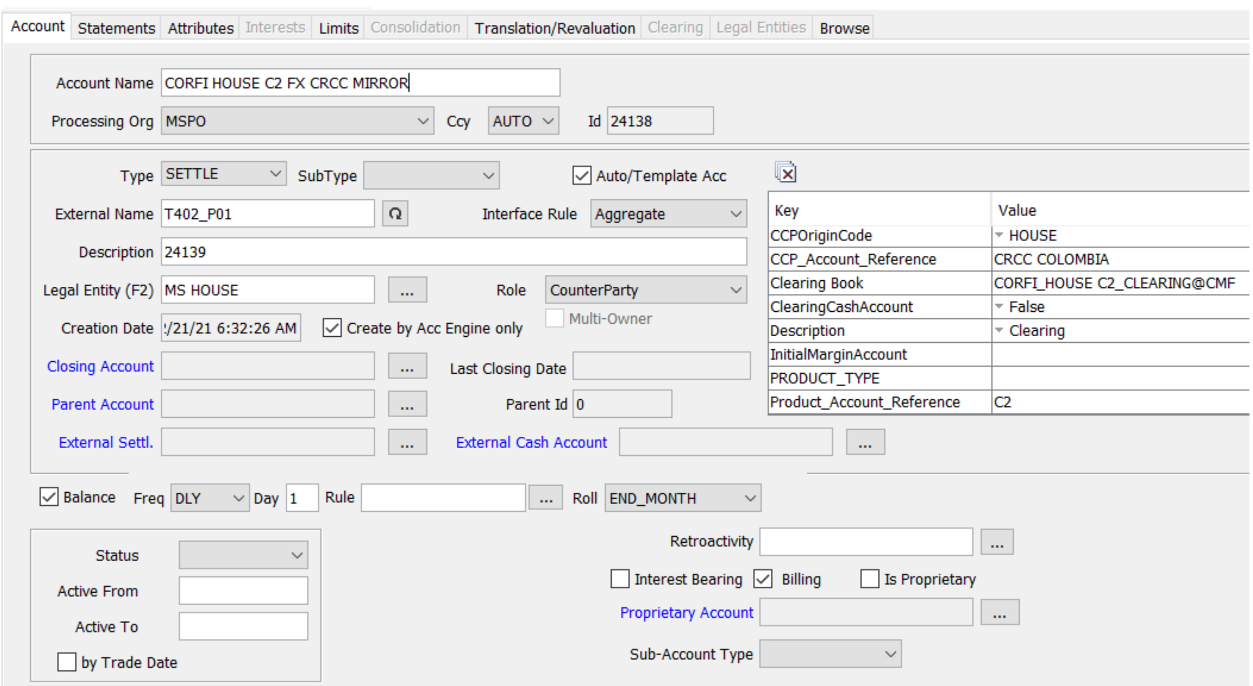
'Compensador' value /= 'MiembroGarantias' value → segregation A/c = C (i.e., Client Account)

Note: Margin Call Contract for IM / VM will be defined at segment level i.e C9 or C2 level and not sub-product level.

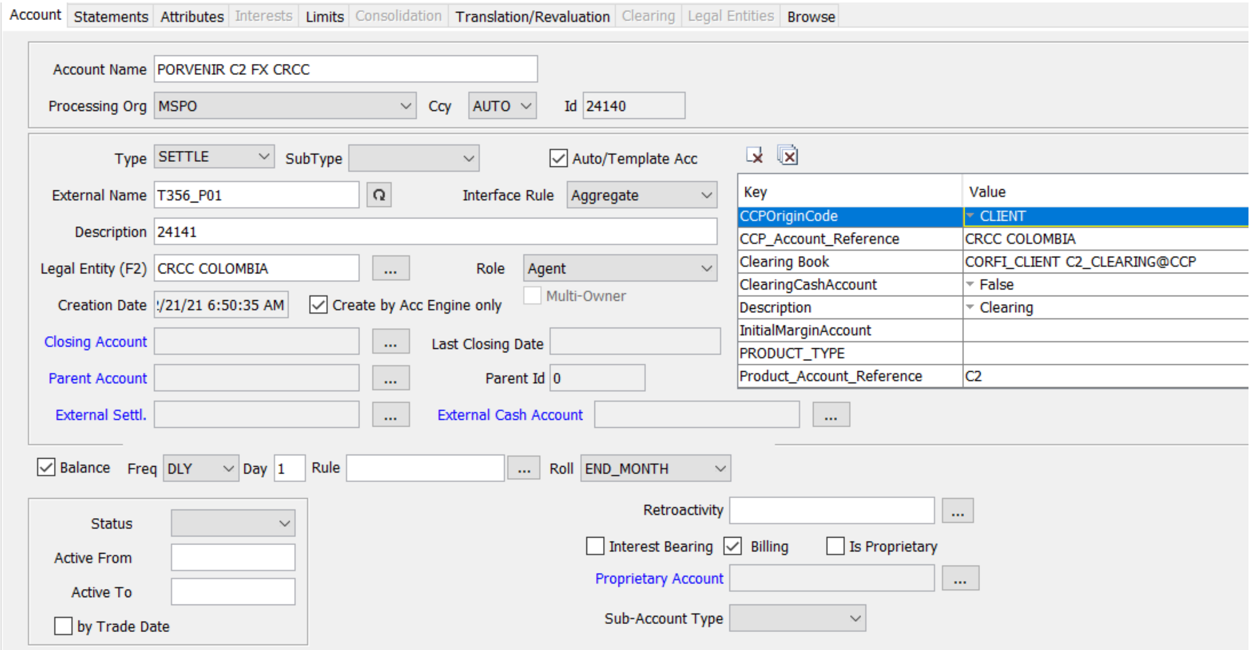
Clearing Ac is set up as below:

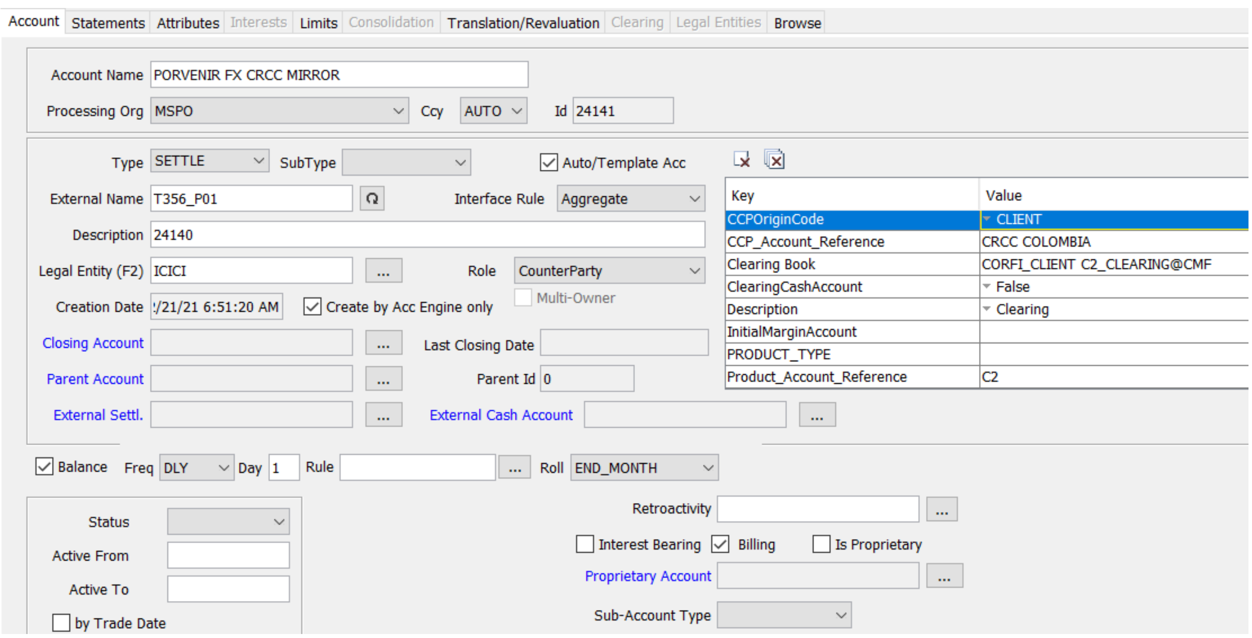
<u>C2 segment House Clearing Account:</u>





<u>C2 segment Client Clearing A/c:</u>





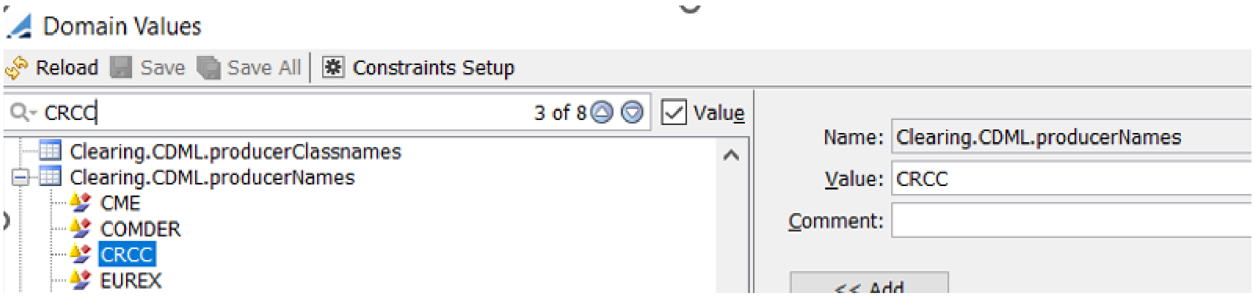
As per the existing functionality, in the above pattern, user can set up 'n' number of clearing A/c's provided the external names are unique. Cpty LE is fetched from this clearing A/c.

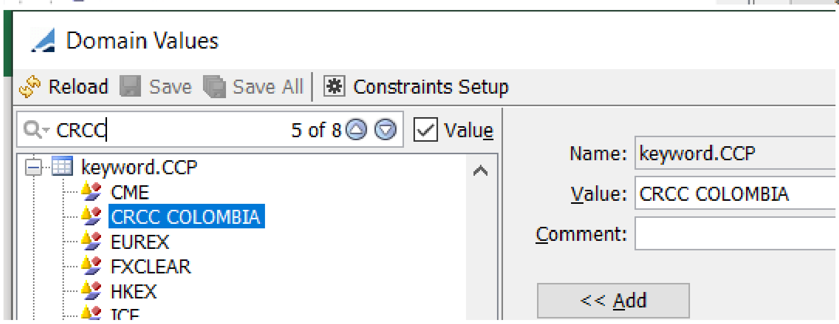
Importance of External name: All the trades are mapped to the resp Cpty LE based on the external name. Based on this external name, all trade cashflows created at the back of the trading activity done by the client / house entity at the CCP for the products like IRD / FX / NDF and ETD products are linked to the clearing A/c.

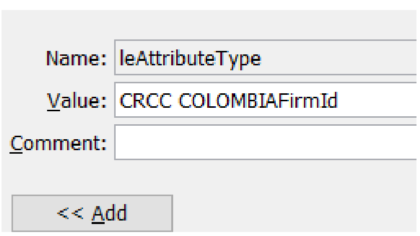
Note: We are tagging ETD products as clearing service / Related product type as 'C2' for the products to be recognized in the system. We have not setup any clearing service as 'ETD'

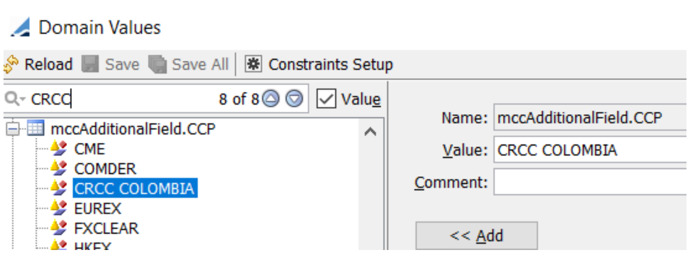
20.2.3 Domain Values Update

Below set up is required irrespective of segment:





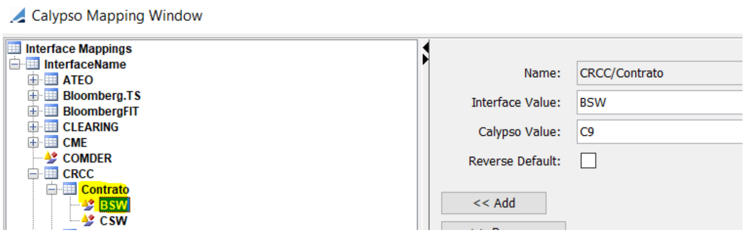




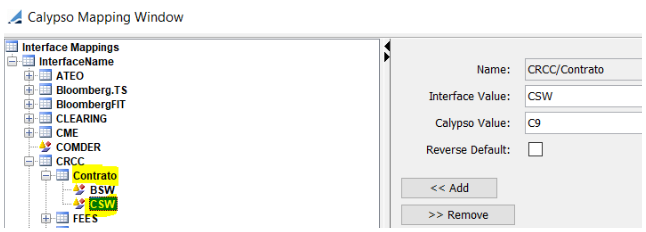
20.2.4 Calypso Mapping

CRCC contrato – To identify segment (This mapping will be required during fee import).

BSW: Basis Swap Currency

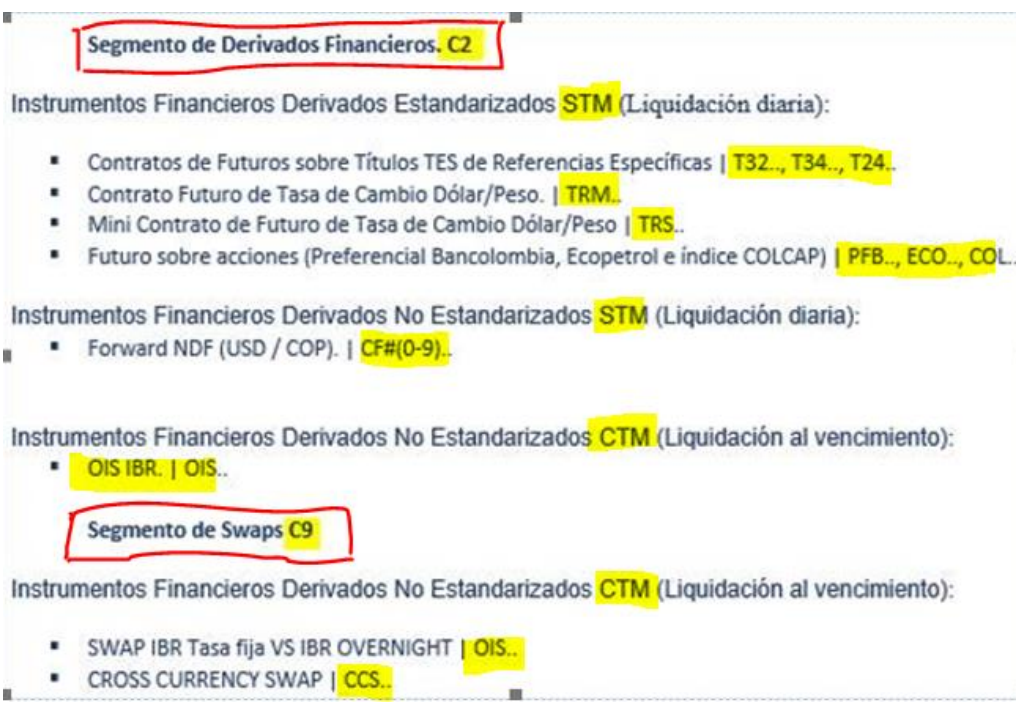


CSW: Cross Currency Swap



20.2.5 VM Classification

CRCC CCP segment – VM classification: Based on the below product settlement classification, user must define the segment and 1st 3 characters of the contract code in Calypso mapping to define whether the product should settle CTM or STM.



Segmento de Derivados Financieros. C2

Instrumentos Financieros Derivados Estandarizados STM (Liquidación diaria):

- Contratos de Futuros sobre Títulos TES de Referencias Específicas | T32.., T34.., T24..
- Contrato Futuro de Tasa de Cambio Dólar/Peso. | TRM..
- Mini Contrato de Futuro de Tasa de Cambio Dólar/Peso | TRS..
- Futuro sobre acciones (Preferencial Bancolombia, Ecopetrol e índice COLCAP) | PFB.., ECO.., COL..

Instrumentos Financieros Derivados No Estandarizados STM (Liquidación diaria):

- Forward NDF (USD / COP). | CF#(0-9)..

Instrumentos Financieros Derivados No Estandarizados CTM (Liquidación al vencimiento):

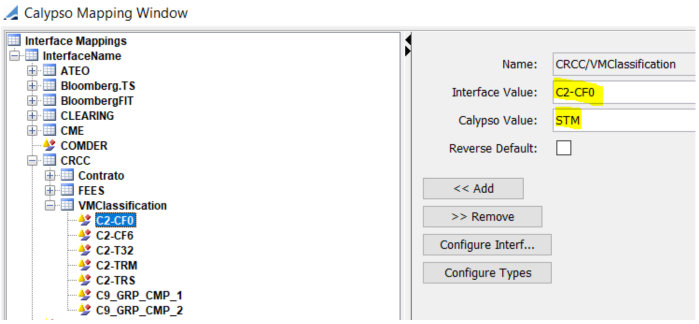
- OIS IBR. | OIS..

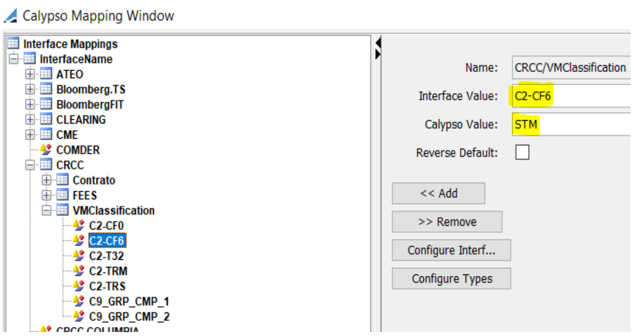
Segmento de Swaps C9

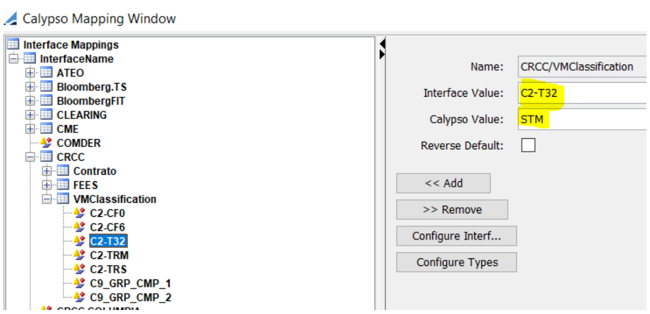
Instrumentos Financieros Derivados No Estandarizados CTM (Liquidación al vencimiento):

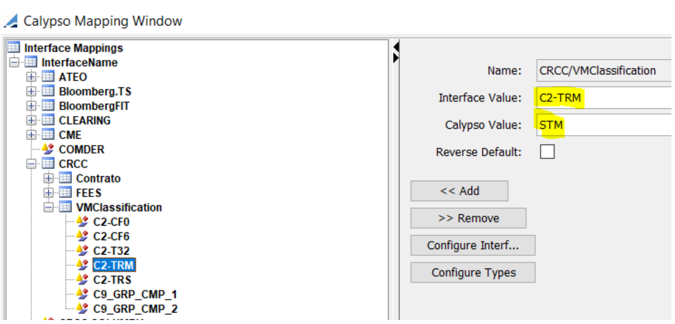
- SWAP IBR Tasa fija VS IBR OVERNIGHT | OIS..
- CROSS CURRENCY SWAP | CCS..

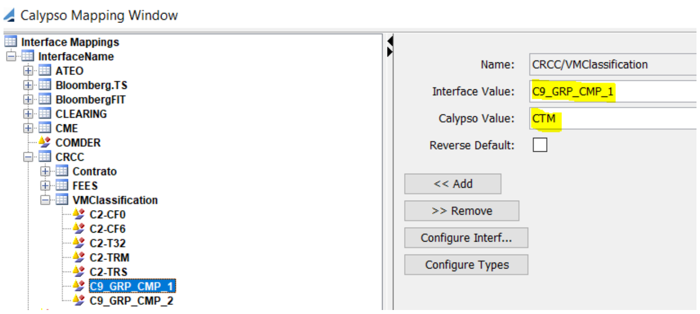
For C2 segment

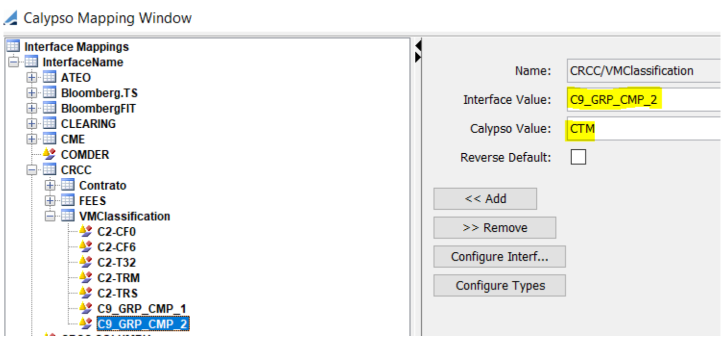












For C9 segment

Contract codes start with these characters: OIS / CSW / BSW

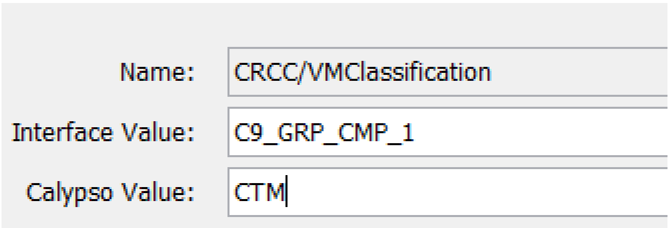
For position level, From file **CTOTALINITIALMARGIN**, Check values in column **'contractGroup' & 'SwapClearingGroup'**

For Cleared Trade PL marks, From file **COPINIRSFRA**, Check values in column **'contractGroup' & 'SwapClearingGroup'**

- Form the combination of these values as below:

contractGroup	SwapClearingGroup	contractGroup_SwapClearingGroup
C9	GRP_CMP_1	C9_GRP_CMP_1
C9	GRP_CMP_2	C9_GRP_CMP_2

- Go to Calypso Mapping and search this combination value in Interface value.



Corresponding Calypso value should be defined as ‘CTM’ by the user as per the above product table.

- Calypso value will be updated in ‘VMClassification’.

- If no matching value found in Calypso mapping, then exception will be generated as ‘Missing VM Classification mapping’.

(*this is being designed in this manner to handle future projects)

This will be populated for position CDML block (tradecashflow data) and tradevaluation data (PL marks)

20.2.6 Trade Keyword RelatedProductSubType

To cater to the accounting & reporting requirement of client, we have introduced new tag in the CDML report / Trade keyword (RelatedProductSubType) which provides details related to the underlying product exposure in the segment.

This keyword will only be used at the Collateral Exposure (CE)/ Clearing Transfer (CT) level, but the Margin call will be created at the segment level only.

For C2 segment

C2 Initial Margin report / CE Trade – This trade keyword information is not available in the i/p file, hence, this keyword will be blank for C2 IM.

C2 Trade Valuation report / CT Trade –

For C2 segment, as we have 3 different products within it, we have set up a logic to source the product name by filtering the details from 3 different files as below:

- Refer value in column 'Contrato' from CVARMARGIN (or CVARMARGINPEND) and search for it in File 'CCONTRACTS' / column 'Contrato'

*If the value in 'Contrato' column starts with OIS then **RelatedProductSubType is updated** as **'OIS Short Term Swap'**

If the value in 'Contrato' column does not start with OIS, then proceed with **Step 2**

- From 'File 'CCONTRACTS', pick up the corresponding value in column 'SubgrupoContrato' & column 'TipoContrato' for this 'Contrato' value.

- Once the '**SubgrupoContrato'** & **TipoContrato'** Combination is identified from step 2, system will search for it in File 'CCONTRTYP'.

'**SubgrupoContrato'** value to be searched in Column '**Grupo'** & '**TipoContrato'** value to be searched in Column '**Tipo**'.

- Once identified, it will update the corresponding '**Descripcion'** value in '**RelatedProductSubType'.**

- eg. Select file **CVARMARGIN** or **CVARMARGINPEND** and for position A/c T356-P0101, pick up value 'TRMM09F' from Column 'Contrato'

A	B	C	D	E	
Fecha	Camara	Miembro	CuentaPosicion	Contrato	Trad
23/09/2021	C2	T356	P0101	TRMM09F	

- Search value 'TRMM09F' in file 'CCONTRACTS' / Column 'Contrato' and pick up value from 'SubgrupoContrato' as '04' and 'TipoContrato' as FD01. Therefore, combination is 04 – FD01

A	B	C	D	E	F
Fecha	Cámara	Contrato	SubgrupoContrato	TipoContrato	Preci
6/11/2009	C2	TRMM09F	04	FD01	

- Now, refer file 'CCONTRTYP' and search 'SubgrupoContrato' value '04' in Column 'Grupo' and search 'TipoContrato' value 'FD01' in Column 'Tipo'

A	B	C	D	E	F
Camara	Grupo	Tipo	Descripcion	Multiplicador	Nominal
C2	04	C000	TRM	50000	$ 50,000.0
C2	04	FD01	Futuro TRM	50000	$ 50,000.0

Once the above combination is identified, then the value in column '**Descripcion**' is updated in '**RelatedProductSubType**' value. Therefore, in this case value is 'Futuro TRM'. Similarly, there will be different types of values in 'Descripcion' column.

This will be followed for every position A/c.

For C9 segment:

C9 Initial Margin report / CE Trade-

Value will be sourced from column 'SwapClearingGroup' : Possible value 'GRP_CMP_1' and 'GRP_CMP_2'

If value 'GRP_CMP_1' then **RelatedProductSubType = IRD**

If value 'GRP_CMP_2' then **RelatedProductSubType = CCS**

C9 Trade Valuation report / CT Trade –

- Refer file 'COPINIRSFRA' and locate position A/c as per 'CCPMember'_ 'PositionAccount' column

- Refer column 'SwapClearingGroup'.

If value = GRP_CMP_2, then update 'RelatedProductSubType' as **'CCS'**

If value = GRP_CMP_1, then refer column: 'Index 1' & 'Index 2' and follow below steps:

- Refer both 'Index 1' & 'Index 2' columns and if value in any of the column is 'IBR_ON', then 'RelatedProductSubType' will be updated as 'OIS Long Term Swap'.

- If value in 'Index 1' & 'Index 2' is not 'IBR_ON', then 'RelatedProductSubType' will be updated as 'IRS'.

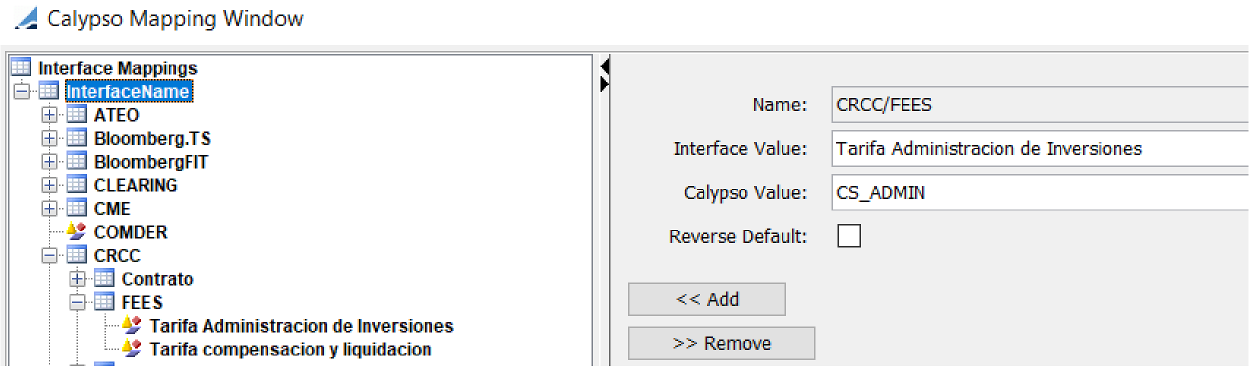
20.2.7 Fee Mapping and Fee Import

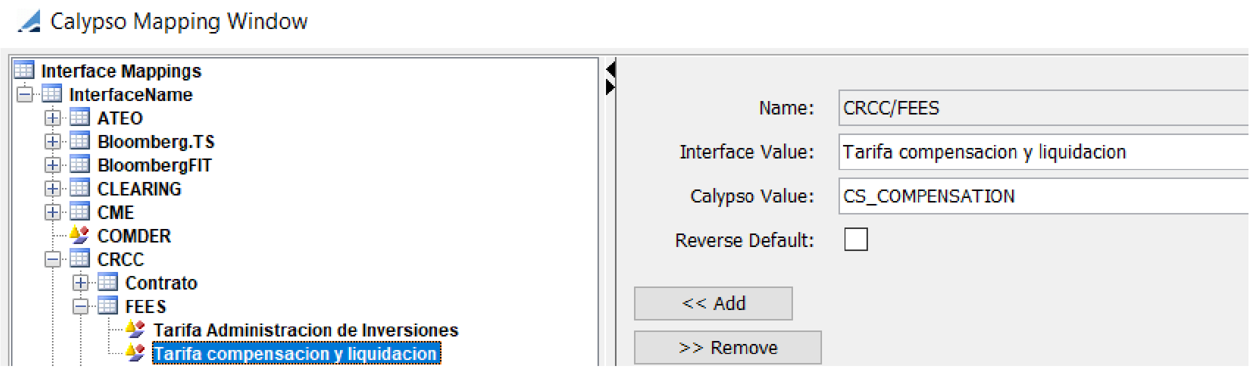
CRCC CCP applies different types of fees as mentioned below. Hence, to support this fee requirement, we introduced calypso mapping feature by which user can decide which fees are to be considered in clearing.

Fee code	Fee list 'Interface Value'	Translated Names	Calypso Value
4	Tarifa compensación y liquidación	Clearing and settlement fee	CS_COMPENSATION
15	Tarifa tipo de conexión Terminal Server	Terminal Server connection rate	
16	Tarifa cambios en vinculación	Fee changes in linkage	

Fee code	Fee list 'Interface Value'	Translated Names	Calypso Value
17	Tarifa por Cambio en la estructura de Cuenta	Account Structure Change Fee	
18	IVA Tarifa por Cambio en la estructura de Cuenta	VAT Fee for Change in Account structure	
44	Tarifa retardo por garantías	Delay rate for guarantees	
45	IVA tarifa retardo por garantías	VAT delay fee for guarantees	
48	Tarifa por Extensión de Horario	Schedule Extension Fee	
49	Iva por Tarifa de Extensión de Horarios	VAT for Hours Extension Fee	
53	Tarifa Administracion de Inversiones	Investment Management Fee	CS_ADMIN
54	IVA Tarifa Administracion de Inversiones	VAT Investment Management Fee	
55	IVA tarifas compensación y liquidación	VAT clearing and settlement rates	
56	IVA tarifa empleo cuenta residual	VAT employment rate residual account	
57	IVA tarifa operación gestión t+n	VAT t+n management transaction fee	
63	IVA tarifa tipo de conexión Terminal Server	VAT rate type of connection Terminal Server	
78	Tarifa operación gestión t+n	T+n management operation fee	
79	Tarifa empleo cuenta residual	Residual account employment rate	
84	Tarifa retardo en pago liquidación	Delay payment settlement fee	
85	Tarifa mantenimiento	maintenance fee	CS_MAINTENANCE_FEE

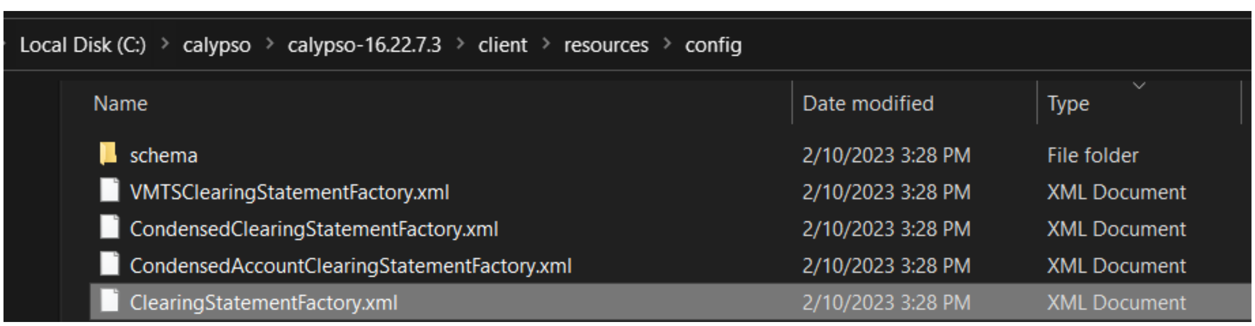
For eg., we have set up below 2 different types of fees by using calypso mapping. User can mention the values from above 'Interface' Column and accordingly mention the Calypso value. Resp calypso value will then be reflected on the clearing transfer.





User will have to add these different types of fees in clearing statement stylesheet for it to reflect in the clearing statement in the resp fee tag.

User can merge these fees with Upfront fee / Commission tag as required.



Eg. In below case, user has merged these fees with Upfront fee.

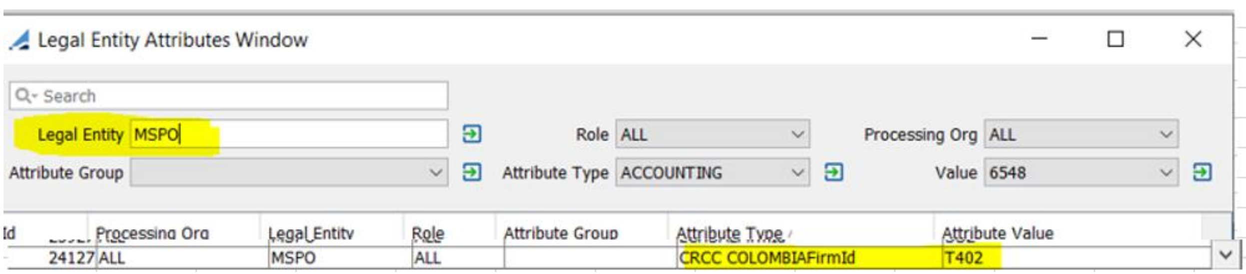
```
<bean id="pendingUpfrontFeesXferCalc" class="com.calypso.tk.bo.
   parent="abstractSummaryRowCalculator">
   <property name="pending" value="true" />
   <property name="collapseIfEmpty" value="true" />
   <property name="startingBalance" value="false" />
   <property name="rowName" value="Pending Upfront Fees" />
   <property name="feeTypes">
      <list>
         <value>UPFRONT_FEES</value>
         <value>CS_UPFRONT_FEE</value>
         <value>CS_FEES</value>
         <value>CS_CONSIDERATN</value>
         <value>CS_PREM_PAYMENT</value>
         <value>CS_PREMIUM_AMOUNT</value>
         <value>CS_ADMIN</value>
         <value>CS_COMPENSATION</value>
      </list>
```

For C2 segment

Fee file name: Fee file 'M4390414H'

M439 is the clearing member firm ID in the sample filename. While importing the file, system will check the PO LE attribute 'CRCC COLOMBIAFirmID' and will accordingly search for the filename at the file location.

Eg. In below case, clearing member firm ID is T402. Therefore, this fee filename at the file location will be 'T402MMDDH'.



System will identify the resp Position A/c in Fee file 'M4390414H' by combining value in column 'Miembro No Liquidador'_'Cuenta' (1st 3 characters) in this file. Eg. Select M045_AQ9 from below sample and match it with correct CDML block with segment C2.

fecha Sesion	Miembro Liquidador	Miembro No Liquidador	Importe	IVA	Cuenta	Contrato	Concepto
3/2/2020	M439	M045	136	26	AQ901	OIS06MION	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	496	94	AQ901	OIS07MION	Tarifa Administracion de Inversiones
3/2/2020	M439	M045	836	159	AQ901	OIS220414221014	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	66	13	AQ901	OIS220418221018	Tarifa Administracion de Inversiones

- After locating the position A/c, pick up the corresponding value in 'Contrato' column check whether value is starting with 'OIS'.
- If the value in 'Contrato' column starts with 'OIS', then count the number of characters in this value.

- If the number of characters is 15 then segment is 'C2' segment and update the corresponding fee as 'Importe' & 'IVA'
- If the number of characters is 9 then ignore the record for this position A/c.

  - Now, we see 2 'C2' swaps in above sample with 2 different 'Concepto' (i.e., fees)

  Refer the value in '**Concepto'** column and search for it in 'Calypso Mapping' as mentioned in above mapping.

  Thus, 2 Fee cashflows will be fetched as CS_COMPENSATION_FEE = 836 & CS_COMPENSATION_VAT = 159

  CS_ADMIN_FEE = 66 & CS_ADMIN_VAT = 39

- If value is sourced from Importe column, then it will be _FEE and if from IVA then it will be _VAT.
- If same fee CS_COMPENSATION is applied to both the C2 swap as below then, we combine the fees and create only 1 cashflow as

  CS_COMPENSATION_FEE = 836 + 66 = 902

  CS_COMPENSATION_VAT = 159 + 13 = 172

fecha Sesion	Miembro Liquidador	Miembro No Liquidador	Importe	IVA	Cuenta	Contrato	Concepto
3/2/2020	M439	M045	136	26	AQ901	OIS06MION	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	496	94	AQ901	OIS07MION	Tarifa Administracion de Inversiones
3/2/2020	M439	M045	836	159	AQ901	OIS220414221014	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	66	13	AQ901	OIS220418221018	Tarifa compensacion y liquidacion

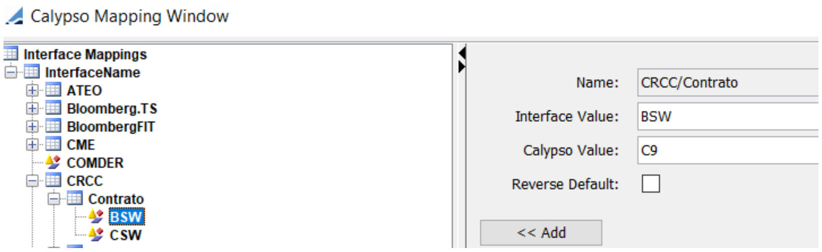
Thus, these fees for 'OIS' will be applied to CDML block which matches the below condition:

- the Segment 'C2'
- Position A/c
- VM Classification: **CTM**
- RelatedProductSubType: 'OIS Short Term Swap'

  - If the value is starting other than **OIS,** then pick up the respective 'Contrato' value and search this value in **file** 'CCONTRACTS'/ **column** 'Cámara'.

  - - If the value in 'Camara' segment = C2 then consider the record in M4390203H file. We can confirm that this record belongs to C2 segment otherwise ignore it.

  - If the value is **not** found in CCONTRACTS file, then search for it in the below CRCC / Contrato mapping. If the value is found as below, then segment is C9 and can be ignored for this record.



- If the value is not found in CCONTRACTS file as well and it is not updated in the above 'CRCC/Contrato' Calypso mapping, then an exception will be generated as 'Missing Contrato Segment mapping'

*Reason to search segment from other file: In future we may be supporting different segments.

- To import fee for products other than OIS Short Term Swap for C2 segment in M4390203H file

A	B	C	D	E	F	G	H
fecha Sesion	Miembro Liquidador	Miembro No Liquidador	Importe	IVA	Cuenta	Contrato	Concepto
3/2/2020	M439	M045	136	26	AQ901	OIS06MION	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	496	94	AQ901	OIS07MION	Tarifa Administracion de Inversiones
3/2/2020	M439	M045	836	159	AQ901	OIS220414221014	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	66	13	AQ901	OIS220418221018	Tarifa Administracion de Inversiones
3/2/2020	M439	M045	379	72	AQ901	TRMM09F	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	908	173	AQ901	TRSX10F	Tarifa compensacion y liquidacion

CCONTRACTS file

A	B	C	D	E
Fecha	Cámara	Contrato	SubgrupoContrato	TipoContrato
6/11/2009	C2	TRMM09F	04	FD01
11/11/2010	C2	TRSX10F	08	FD02

- Now, that segment is identified, this fee should be mapped to correct 'RelatedProductSubType' CDML block, hence, below steps should be followed:
- From 'File 'CCONTRACTS', pick up the corresponding value in column 'SubgrupoContrato' & column 'TipoContrato' for this 'Contrato' value.
- Once the '**SubgrupoContrato**' & **TipoContrato**' Combination is identified from above step, then system will search for it in File 'CCONTRTYP'.
- In File 'CCONTRTYP', '**SubgrupoContrato**' value will be searched in Column '**Grupo**' & '**TipoContrato**' value will be searched in Column '**Tipo**'.

Camara	Grupo	Tipo	Descripcion
C2	4	C000	TRM
C2	**4**	**FD01**	**Futuro TRM**
C2	8	C000	TRS
C2	**8**	**FD02**	**Futuro TRM**

- Once identified, match the corresponding 'Descripcion' value with the 'RelatedProductSubType' value in CDML block.

  In this case, values will be Futuro TRM & Futuro TRS resp.

- Finally, match the VM Classification = STM & position A/c ID with the CDML block. If all below criteria are matched, then the fees will be imported.

  - Segment 'C2'
  - Position A/c
  - VM Classification: STM
  - RelatedSubProductType: 'Descripcion' value

- Import the fee from Column 'Importe' & from column 'IVA'

Fee Cashflow name will be tagged as the mentioned Calypso Value in Calypso mapping.

Refer the value in 'Concepto' column and search for it in 'Calypso Mapping' as below eg:

Name:	CRCC/FEES
Interface Value:	Tarifa compensación y liquidación
Calypso Value:	CS_COMPENSATION
Reverse Default:	☐

For above eg., import CS_COMPENSATION for each product will be as: Futuro TRM = 379 & Futuro TRS = 908

Similarly, CS_COMPENSATION_ VAT will be as 72 and 173 resp.

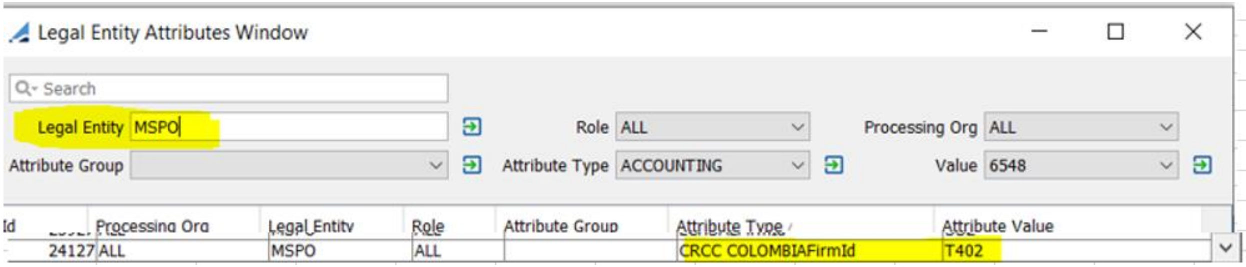
Also, if both the product types were same as Futuro TRM then, CS_COMPENSATION_FEE will be imported as 379+908 and CS_COMPENSATION_VAT = 72+173

For C9 segment

To source fees from file 'M4390414H' (only applicable at position level)

M439 is the clearing member firm ID in the sample filename. System while importing the file will check the PO LE attribute 'CRCC COLOMBIAFirmID' and will accordingly search for the filename at the file location.

Eg. In below case, clearing member firm ID is T402. Therefore, this fee filename at the file location will be 'T402MMDDH'.



I/p file:

fecha Sesion	Miembro Liquidador	Miembro No Liquidador	Importe	IVA	Cuenta	Contrato	Concepto
3/2/2020	M439	M045	136	26	AQ901	RCEMARGOS070220	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	496	94	AW301	RPFAVAL100220	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	836	159	AG801	RPFAVAL270420	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	66	13	AZ701	RGRUPOSURA060220	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	379	72	BA101	RPFGRUPSURA100220	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	908	173	AG901	RCORFICOLCF040220	Tarifa compensacion y liquidacion

- To identify, position A/c in this file: combine value in column 'Miembro No Liquidador'_'Cuenta' (only the 1st 3 characters of 'Cuenta' column value) and match with the resp CDML block.

  Eg. 'M045_AQ9' / 'M045_AW3'

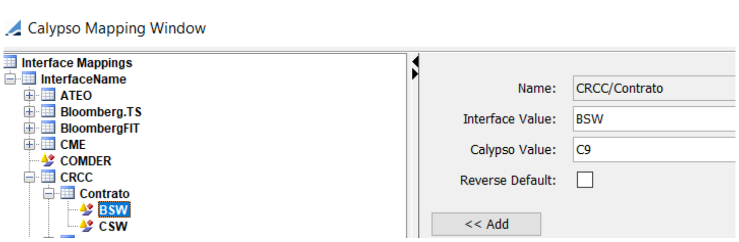
- Considering above eg. for M045_AQ9, to identify C9 segment.

- If value in 'Contrato' starting from **OIS** and is of 9 characters then Segment is 'C9'.
- If value in 'Contrato' is starting **other than 'OIS'** then search 1st 3 characters of the 'Contrato' column value in below Calypso mapping 'CRCC/Contrato' → Interface value

  For C9 segment, values other than 'OIS' are 'CSW' (GRP_CMP_1) & 'BSW' (GRP_CMP_2)

- If the 'Calypso value' is 'C9' then we confirm that this record belongs to C9 segment and fees should be updated for the selected position A/c.
- **If the 1st 3 characters of the 'Contrato' code are not located for both 'C9' & 'C2' segment (C2 segment logic as mentioned in C2 TV Fee import procedure) then exception will be generated as 'Missing Contrato Segment mapping'.**

  Refer Calypso Mapping as below:



- Fee Cashflow name must be tagged by referring the value in ‘**Concepto**’ column and search for it in ‘Calypso Mapping’ as below eg:

  ‘Importe’ amount = Respective ‘Concepto’ name

  ‘IVA’ amount = Respective ‘Concepto VAT’

fecha Sesion	Miembro Liquidador	Miembro No Liquidador	Importe	IVA	Cuenta	Contrato	Concepto
3/2/2020	M439	M045	136	26	AQ901	OIS06MION	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	496	94	AQ901	OIS07MION	Tarifa Administracion de Inversiones
3/2/2020	M439	M045	836	159	AQ901	OIS220414221014	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	66	13	AQ901	OIS220418221018	Tarifa Administracion de Inversiones

Name: CRCC/FEES
Interface Value: Tarifa compensación y liquidación
Calypso Value: CS_COMPENSATION
Reverse Default:

Name: CRCC/FEES
Interface Value: Tarifa Administracion de Inversiones
Calypso Value: CS_ADMIN_FEE
Reverse Default:

Thus, based on above eg., we see 2 cashflows CS_COMPENSATION and CS_ADMIN_FEE

CS_COMPENSATION_FEE = 136

CS_COMPENSATION_VAT = 26

CS_ADMIN_FEE = 496

CS_ADMIN_VAT = 94

Similarly, if we have Compensation fee applied to both the contracts as below, then we only see 1 cashflow
CS_COMPENSATION = 136 + 496 = 632

CS_COMPENSATION_VAT = 26 +94 = 120

fecha Sesic	Miembro L	Miembro No Liquidador	Importe	IVA	Cuenta	Contrato	Concepto
3/2/2020	M439	M045	136	26	AQ901	OIS06MION	Tarifa compensacion y liquidacion
3/2/2020	M439	M045	496	94	AQ901	OIS09MION	Tarifa compensacion y liquidacion

- Now that it is identified that value is starting from ‘**OIS**’ and segment is ‘**C9**’ then we map this fee to CDML block where:

  ‘RelatedProductSubType’ is ‘OIS Long term Swap’ **and** matches the position A/c & VM Classification = CTM

If the Contrato value is starting **other than** 'OIS' and 'BSW' and segment is 'C9' then fees will be mapped to CDML block where:

RelatedProductSubType is 'IRS' **and** matches the position A/c & VM Classification = CTM

If the Contrato value is starting with 'BSW' and segment is 'C9' then this fee will be mapped to CDML block where:

'RelatedProductSubType' is 'CCS' **and** matches the position A/c & VM Classification = CTM

- - Fee will be calculated separately as value in column 'Importe' & value 'IVA'

20.2.8 Coupon for C9 segment

8.1 At Position level from file CCOUPONS

Logic for trade level coupon PL marks is mentioned separately below

- Check 'Segment' from Column 'contractGroup' = C9
- Locate position Account ID by combining values in column 'CCPMember_PositionAccount'
- Locate Column – 'SwapClearingGroup' and check value whether GRP_CMP_1 or GRP_CMP_2

- For 'SwapClearingGroup' = GRP_CMP_1 (this involves OIS & IRS product, so only one currency COP involved) i.e., currency in column Currency1 = Currency2

  - Check Column 'Floating_Index': If value in it is 'IBR_ON' then this coupon amount belongs to the CDML block where 'RelatedProductSubType' = OIS Long Term Swap

  If the value in this column is **not** equal to 'IBR_ON' then this coupon amount belongs to the CDML block where 'RelatedProductSubType' = IRS

  (* this logic is required as we will have 2 CDML blocks with same position A/c which are differentiated by 'RelatedProductSubType')

  - Then check column '**paymentDate**', If 'PaymentDate' = ST Valuation Date + "x" business days (using the currency's calendar)

  Where 'x' = the value of the currency's 'ClearingTransferSettleLag'

  - Coupon amount will then be imported from column 'CouponAmount'

- For 'SwapClearingGroup' = GRP_CMP_2 (this involves CCS product, so we see 2 currency's COP & USD involved)

  *no matching required on 'RelatedSubProductType' as this group involves only 'CCS' product for now.

  Thus, we see COUPON_PAYLEG & COUPON_RECLEG

  For COUPON_PAYLEG:

  - Check column 'Leg_Side' with value = P

  - Check column 'paymentDate', If 'PaymentDate' = ST Valuation Date + "x" business days (using the currency's calendar)

- Coupon amount will then be imported from column ‘CouponAmount’.

For COUPON_RECLEG:

- Check column ‘Leg_Side’ with value = R

- Check column ‘paymentDate’, If ‘PaymentDate’ = Valuation Date + “x” business days (using the currency’s calendar)

- Coupon amount will then be imported from column ‘CouponAmount’.

Note: We are sourcing coupon from trade file, therefore, we will see multiple trade records for a position A/c. System will add the coupon applied on these records and update it as a single coupon amount.

Example - Valuation Date is 27th April, then Coupon Amount should be sourced for ‘Valuation Date + X’ (Clearing Transfer Settle Lag is 1 by default) i.e 28th April.

Therefore, if Payment Date = 27th April + 1 = 28th April, then Coupon Amount will be sourced.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
rptName	CCPMember	PositionAccount	CCP Trade Id	Approved Trade Source Trade Id	ContractCode	Currency1	Currency2	SwapClearingGroup	LegType	Leg_Side	paymentDate	Coupon Currency	CouponAmount
CCOUPONS	T402	P20	5871	21031020215924654T-1	BSW02YU1YION	USD	COP	GRP_CMP_2	FL	P	4/28/2022	USD	2589
CCOUPONS	T402	P20	5872	21031020215924654T-1	BSW02YU1YION	USD	COP	GRP_CMP_2	FL	P	4/28/2022	USD	49805
CCOUPONS	T402	P20	5873	21031020215924654T-1	BSW02YU1YION	USD	COP	GRP_CMP_2	FL	R	4/28/2022	COP	9054028
CCOUPONS	T402	P11	5881	21031020215924654T-1	BSW02YU1YION	USD	COP	GRP_CMP_2	FL	R	4/28/2022	COP	2128837813
CCOUPONS	T402	P11	5882	21031120215924668T-1	CSW02YU1M	COP	USD	GRP_CMP_2	FIX	P	4/29/2022	COP	552000
CCOUPONS	T402	P11	5883	21031120215924668T-1	CSW02YU1M	COP	USD	GRP_CMP_2	FIX	P	4/29/2022	COP	500250

If ‘SwapClearingGroup’ = GRP_CMP_2’ in above eg. then

For T402_P20:

COUPON_PAYLEG = 2589 + 49805

COUPON_RECLEG = 9054028

For T402_P11:

COUPON_PAYLEG = will not be imported as payment date is 29th April

COUPON_RECLEG = 2128837813

If ‘SwapClearingGroup’ = GRP_CMP_1 then,

Valuation Date is 27th April, then Coupon Amount will be sourced for ‘Valuation Date + X’ (Clearing Transfer Settle Lag is 1 by default) i.e 28th April.

Therefore, if Payment Date = 27th April + 1 = 28th April, then Coupon Amount will be sourced.

A	B	C	D	E	F	G	H	I	J	K
rptName	CCPMember	PositionAccount	CCP Trade Id	ContractCode	Currency1	Currency2	SwapClearingGroup	paymentDate	Coupon Currency	CouponAmount
CCOUPONS	T004	P20	**5542**	OIS03YION	COP	COP	GRP_CMP_1	4/28/2022	COP	5432
CCOUPONS	T004	P20	**5543**	OIS03YION	COP	COP	GRP_CMP_1	4/28/2022	COP	5492
CCOUPONS	T004	P20	**5542**	OIS03YION	COP	COP	GRP_CMP_1	**4/29/2022**	COP	5480
CCOUPONS	T004	**P10**	5537	OIS02YION	COP	COP	GRP_CMP_1	4/28/2022	COP	1425
CCOUPONS	T004	**P10**	5537	OIS02YION	COP	COP	GRP_CMP_1	4/28/2022	COP	1565
CCOUPONS	T004	**P10**	5537	OIS02YION	COP	COP	GRP_CMP_1	4/28/2022	COP	1332

Therefore, for A/c T004_P20, Coupon = 5432 + 5492 = 10924 (5480 is not imported as Payment date is 29th April)

Similarly, for A/c T004_P10, Coupon = 1425 + 1565 +1332 = 4322

At trade level from file CCOUPONS for Cleared Trade PL marks (applicable only for C9 segment)

clearedTradeId will be sourced from Column 'Approved Trade Source Trade ID'

Refer file 'CCOUPONS' and pick the resp clearedTradeId

- Check whether ccy in column Currency1 = Currency2

If yes then check column 'paymentDate'

Import amount from Column 'CouponAmount' only if date logic is passed as mentioned below*

*Date logic to import Cashflow:

Source as stated above only IF : paymentDate= Valuation Date + "x" business days (using the currency's calendar)

Where: x = the value of the currency's ClearingTransferSettle Lag

- If Currency1 is not equal to Currency2 then:

- Check column 'Leg_Side'

- If value in 'Leg_Side' = P then Update Currency 1 & Coupon for PayLeg as per above date logic

- Similarly, also check for 'Leg_Side' = R then update Currency 2 & Coupon for RecLeg as per above date logic

20.2.9 To calculate NPV / Previous NPV / Variation Margin

For C2 segment:

- CS_NPV_ADJUSTED will be sourced from file CVARMARGIN – Column Valor & file CVARMARGINPEND

- Column ValorActual

- CS_NPV_REV will be sourced from file CVARMARGIN – Column InitialValue & file CVARMARGINPEND

- Column InitialValue

- CS_VARIATION will be sourced from file CVARMARGIN – Column VariationMargin & file CVARMARGINPEND – Column Diferencia

-Upfront Fee i.e. Advance fee in terms of CRCC is not applicable for C2 & C9 segment

- Coupon – no intermittent payments for C2 Short term Swaps, only payment at maturity. Hence, no coupon cashflow for C2 segment

- PAI not applicable as cash settlement of VM for Short term Swaps - C2 segment & FX NDF only takes place when there is deficit in the Collateral A/c which is held at CRCC. This Collateral A/c is prefunded and any daily VM requirement is deducted from this A/c. Hence, no PAI is applied.

For C9 segment

To calculate NPV / Previous NPV / Variation Margin from file COPINIRSFRA (for position level only)

- Check 'Segment' from Column 'contractGroup' = C9
- Locate position Account ID by combining values in column 'CCPMember_PositionAccount'
- Locate Column – '**SwapClearingGroup**' and check value whether GRP_CMP_1 or GRP_CMP_2
- Below steps will be followed to verify 'RelatedProductSubType'.

- **For 'SwapClearingGroup' = GRP_CMP_1** (this involves OIS & IRS product)

  Check Column 'Index 1' & 'Index 2': If value in any of the column is 'IBR_ON' then this amount belongs to the CDML block where 'RelatedProductSubType' = OIS Long Term Swap

  If the value in both the columns is **not** equal to 'IBR_ON' then this amount belongs to the CDML block where 'RelatedProductSubType' = IRS

  (* this logic is required as we will have 2 CDML blocks with same position A/c which are differentiated by 'RelatedSubProductType')

- **For 'SwapClearingGroup' = GRP_CMP_2** (This involves CCS product then RelatedSubProductType' = CCS
  - Once these details are matched then follow below steps:
- To source **CS_NPV_ADJUSTED**: Refer column 'Trade NPV' and add up all the amounts in this column for the above CDML block
- To source **CS_NPV_REV**: Refer column 'Trade Previous NPV' and add up all the amounts in this column for the above CDML block.

  This should be updated as CS_NPV_REV * -1

- To source **Variation**: '**CS_NPV_ADJUSTED**' amount – '**CS_NPV_REV**' amount (CS NPV Rev amount will be considered as is from the file **not** multiplied by -1 while calculating Variation Margin)

  - To source cleared Trade PL marks

  For C2 segment – Not applicable as details not available at trade level

  For C9 segment – PL marks will be sourced from COPINIRSFRA file (QA TC to be referred)

  PL mark block (tradevaluation data) will be created for every cleared trade ID (Column 'Approved Trade Source Trade ID') and cash flows will be sourced as per above mentioned columns.

20.3 Section 3. Scheduled Task Setup and Processing

20.3.1 For C2 Segment

- Initial Margin File: CACCOUNTSETTLyyyyMMDD.csv
- Trade Valuation File:

CVARMARGINyyyyMMDD.csv (Position level file includes all C2 product **except** Short term OIS)

CVARMARGINPEND20211220.csv (Position level file includes C2 product Short term OIS)

Below files are also used for TV and are used to source product / fee details.

- Files used to identify 'RelatedProductSubType'

CCONTRACTSyyyyMMDD.csv

CCONTRTYPyyyyMMDD.csv

- File used to import Fees:

T402MMDDH.csv (Here, T402 is the Clearing Member Firm ID which will match the PO LE attribute CCPFirm ID to identify the file, 'H' is a constant)

20.3.2 For C9 Segment

- Initial Margin File: CTOTALINITIALMARGINyyyyMMDD-EOD.csv

- Trade Valuation File:

COPINIRSFRAyyyyMMDD (Trade level File, data will be grouped to translate details at position level. Further, it will also be used to source cleared trade PL marks. This trade file has been preferred over below position file as trade file provides details at sub product level unlike position file)

CTOTALINITIALMARGINyyyyMMDD-EOD.csv (Position level file)

CCOUPONSyyyyMMDD.csv (Trade level file)

- Files used to identify 'RelatedProductSubType'

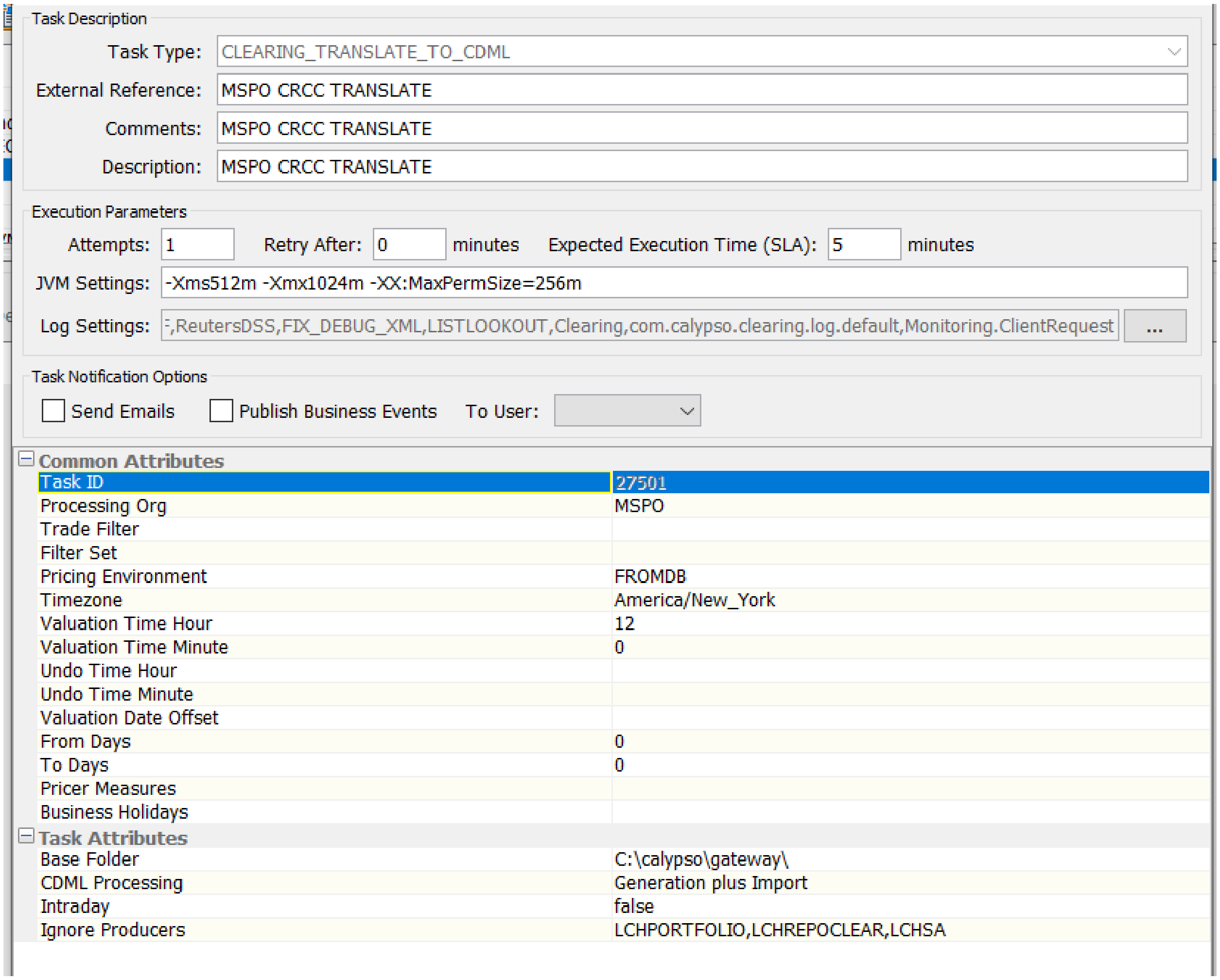
CCONTRACTSyyyyMMDD.csv

CCONTRTYPyyyyMMDD.csv

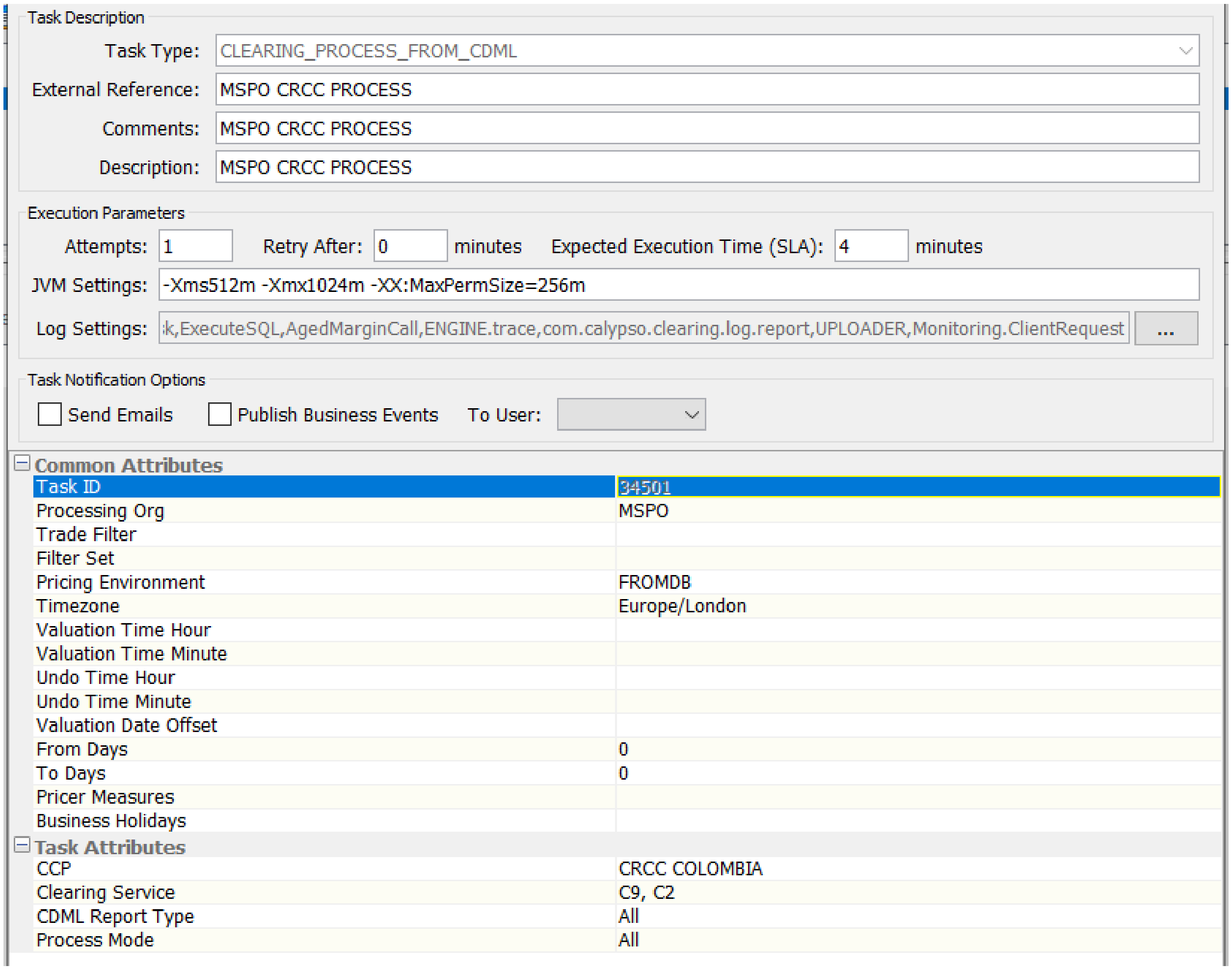
- File used to import Fees:

T402MMDDH.csv (Here T402 is the Clearing Member Firm ID which will match the PO LE attribute CCPFirm ID to identify the file, 'H' is a constant)

20.3.3 CDML Translate ST



20.3.4 CDML Process ST



Accordingly, post processing the ST, user should execute Collateral Manager and Clearing Statement ST to complete the EOD clearing process.

21 Glossary

COVA	Value of Collateral Held	Total value of posted collateral (post-haircut) for the transaction.
MARG	Margin Amount	Difference between the total collateral value and the total collateral required.
TACR	Total Accrued Interest Amount	Total amount of money accrued interest computed in the case of interest bearing financial instruments.
TCFA	Total Cash Failed Amount	Total value of undelivered intended transaction cash amount.
TCOR	Total Collateral Required	Collateral is required to cover interest that accrues on the exposure. Margin amount would thus be the difference between collateral required and collateral value (that is COVA).
TEXA	Total Exposure Amount	Total exposure amount between the giver and the taker expressed in the transaction currency.
TPIN	Total Pending Collateral In	Value of incoming collateral, to be settled for the transaction.
TPOU	Total Pending Collateral Out	Value of outgoing collateral, to be settled for the transaction.
TPRI	Total of Principals	Total of principals for the transaction.
TRAA	Transaction Amount	Transaction amount.
TRTE	Termination Transaction Amount	Termination transaction amount.