



Nasdaq Calypso

Bilateral Margin User Guide ISDA SIMM and Schedule

Version 18

Revision 6.0

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Approved

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Document History

Revision	Published	Summary of Changes
1.0	February 2024	First revision for version 18.
2.0	June 2024	Updates for version 18 monthly release – Added support for CDS Index Option and Risk_CreditVol
3.0	October 2024	Updates for version 18 monthly release – Added ISDA SIMM library version 2.7
4.0	November 2024	Updates for version 18 monthly release – Added domain "MarginInput.ScheduleDuration", ARCHIVE_MARGIN scheduled task.
5.0	March 2025	Updates for version 18 monthly release - Added new attribute "Threshold Groups" for MARGIN_CALCULATOR scheduled task and updated user interface screenshots.
6.0	April 2025	Updates for version 18 monthly release - Added new attribute "Trade IM" for MARGIN_CALCULATOR scheduled task.

This document describes how to install, configure, and run Bilateral Margin for non-cleared trades, to meet UMR compliance

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1. Bilateral Margin Overview

Global markets continue to rapidly evolve in response to advances in technology, product development, and the increased demands of market regulation. It is critical in today's environment that financial institutions, asset managers, and traders can efficiently analyze their regulatory exposure, both cross-asset and multi-currency, to ascertain their regulatory requirements in the capital markets. These sophisticated requirements, especially in regard to the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) Uncleared Margin Rules (UMR), demand a robust and scalable software solution for firms to assess their investments and portfolios accurately in real-time.

ISDA has created a working group with firms and is developing to implement industry solutions to aid compliance, including standard initial margin (IM) documentation, and the ISDA Standard Initial Margin Model (ISDA SIMM). With this recommended best practice implementation of margin for uncleared trades and consistency across jurisdictions, most firms will implement the ISDA SIMM certified solution for their portfolios which include non-cleared bilateral trades. The Calypso Bilateral Margin solution provides for the Calypso client this capability with a robust, end-to-end, framework which is certified and licensed by the ISDA.

To address these requirements, the process for UMR (Uncleared Margin Rules) compliance has been developed. It is an end-to-end integrated solution which provides our clients the capability to achieve BCBS and IOSCO UMR compliance with an ISDA licensed proven solution. Additionally, UMR solution is integrated with the Collateral Management platform enabling clients to minimize collateral costs across their portfolio. The UMR solution incorporates simple user-friendly interfaces for efficiently displaying the data required for UMR compliance and Collateral Management. The architecture of the UMR solution and Collateral Manager leverages the valuation methodology incorporated in the Front Office and Official P&L solutions for full cross-application consistency regarding performance and risk management.

The end-to-end process for UMR (Uncleared Margin Rules) compliance from a margin perspective can be summarized as follows:

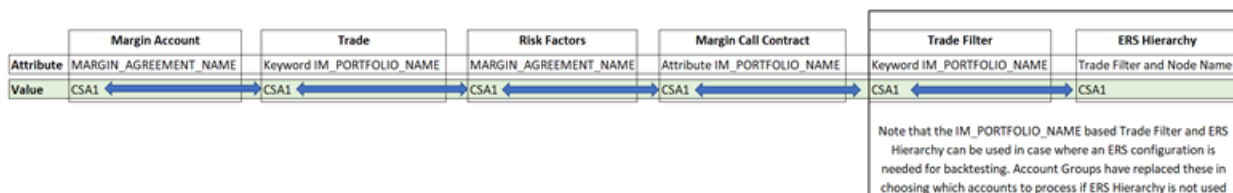
The process for using the margin module is as follows:



Each part of the process can be done in the following areas of Calypso:

Steps	Calypso features	In WebUI
Onboard accounts and regulators	MARGIN INPUT ST (Import Mode)	Account page Regulator page
Calculate Risk Factors	MARGIN INPUT ST (Calculate Mode)	
Import Risk Factors	MARGIN INPUT ST (Import Mode)	Risk factor page
Calculate the Margin Amounts	MARGIN_CALCULATOR Scheduled Task	
Generate Margin output and CRIF file	MARGIN INPUT ST (Export Mode)	Exposures page
Run What-if	Pricing Sheet	What-if Page
Monitor activity and results		Dashboard
Investigate imported RF		Risk Factor page
Margin Decomposition		Exposure page

Whether calculating risk factors from trades in Calypso or importing the risk factors, the setup must match across all items within a margin account. The diagram below shows which attributes are needed to match to link everything together to calculate IM.



1.1 Supported Products

- Swap
- Swaption
- Cap/Floor
- Cancellable Swap
- Inflation Swap
- FXNDF

- CDS
- CDSIndex
- CDSIndexOption
- FX Option *
- Structured Product *
- Equity Derivatives *
- Commodity Derivatives *

* Products are supported if they can be priced and are supported in the sensitivity analysis.

1.2 Supported Risk Types

CALCULATE MODE

- Risk_IRCurve
- Risk_IRVol
- Risk_XccyBasis
- Risk_Inflation
- Risk_InflationVol
- Risk_FX
- Risk_FXVol
- Risk_CreditQ
- Risk_CreditVol
- Risk_Equity
- Risk_EquityVol
- Risk_Commodity
- Risk_CommodityVol
- Notional *
- PV *

IMPORT RISK FACTORS MODE

- Risk_IRCurve
- Risk_XccyBasis

- Risk_Inflation
- Risk_IRVol
- Risk_InflationVol
- Risk_FX
- Risk_FXVol
- Risk_CreditQ
- Risk_CreditVol
- Risk_BaseCorr
- Risk_CreditNonQ
- Risk_CreditVolNonQ
- Risk_Equity
- Risk_EquityVol
- Risk_Commodity
- Risk_CommodityVol
- Notional *
- PV *

EXPORT MODE

- Risk_IRCurve
- Risk_XccyBasis
- Risk_Inflation
- Risk_IRVol
- Risk_InflationVol
- Risk_FX
- Risk_FXVol
- Risk_CreditQ
- Risk_CreditVol
- Risk_BaseCorr
- Risk_CreditNonQ
- Risk_CreditVolNonQ
- Risk_Equity
- Risk_EquityVol

- Risk_Commodity
- Risk_CommodityVol
- Notional *
- PV *

* Risk types are used in Schedule methodology

2. Bilateral Margin Setup

2.1 Access Permissions

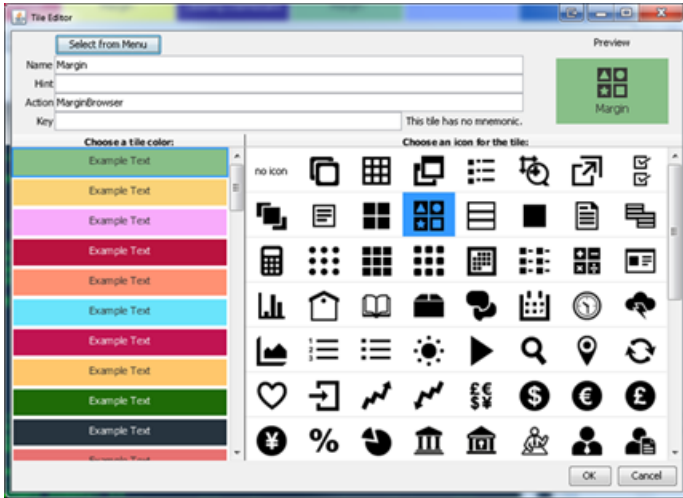
To use the functions of the UMR solution, users must have the following permissions added to one of their groups:

- MARGIN_USERRole – Permission to log in and view information
- MARGIN_ADMINRole – Permission to save information
- MARGIN_READERRole – Permission to retrieve information
- CORE_SERVICE_MANAGERRole – Permission to access FX Rates
- CORE_SERVICE_USERRole – Permission to access FX Rates
- MARGIN_WEBUIRole – Grants access to the UMR Margin Web UI. Should be used paired with previous roles.

The detailed permissions for each role are the following:

		Margin User		Margin Admin		Margin Reader	
Navigation Page	Function	Read	Write	Read	Write	Read	Write
Admin	Calculation Sets	x		x	x	x	
	Account Group	x		x	x	x	
	Exposure monitoring	x		x	x	x	
	Product Class Mapping	x		x	x	x	
	Risk Factor Sources	x		x	x	x	
	Threshold Monitoring	x		x	x	x	
Risk Inputs	Upload Risk Factors	x	x	x	x	x	
Reference Data	Margin Account	x		x	x	x	
	Group Thresholds	x		x	x	x	
	Regulators	x		x	x	x	
Initial Margin	Exposures	x		x	x	x	
	Threshold Monitoring	x		x	x	x	
	Simulation UI	x	x	x	x	x	x
	What-IF	x	x	x	x	x	x
Dashboard	Dashboard	x	x	x	x	x	

The Web UI browser can be opened from the Calypso menus once the following menu action is added to a specific button: MarginBrowser.



2.2 Regulator Setup

Regulatory parameters are stored in the Regulators page. They will be applied by default for any compliant accounts. Account specific regulatory parameters can be additionally defined at account level. If a parameter exists in the “Regulators” section but not on the account, the account will inherit the values defined at the regulator level. Regulators can be defined through UI or uploading account file.

Define Regulator via UI

In Regulators page, user can create a new regulator by clicking the New icon on the top, and add and edit parameters under each regulator.

MARGIN v6.2.0

Dashboard

Initial Margin

Exposures

Threshold Monitoring

What-If IM

Simulations

Static Backtesting

Dynamic Backtesting

Reference Data

Margin Accounts

Regulators

Risk Inputs

Risk Factors

Admin

UMR Configuration

Regulators

APRA

Parameter

Type

Criteria

Amount

NotionalFactor

CheesyOption

3

NotionalFactor

SWAP

2

ScheduleProduct

FXOption_Sche

-

ScheduleProduct

SCHEDULE

-

CFTC

Parameter

Type

Criteria

Amount

NotionalFactor

CheesyOption

4

ScheduleProduct

FlexiCallOption

-

ScheduleProduct

SCHEDULE

-

FINMA

Parameter

Type

Criteria

Amount

All

Parameter

Type

Criteria

Amount

ESA

Parameter

Type

Criteria

Amount

JFSA

Parameter

Type

Criteria

Amount

NotionalFactor

CheesyOption

3

NotionalFactor

SWAP

2

NotionalFactor

XccySwap

5

ScheduleProduct

FXOption_Sche

-

Adding new regulator:

Create New Regulator

Regulator Name *

HKMA

Cancel

Add

Editing Regulator Information:

Regulators

APRA

Parameter	Type	Criteria
NotionalFactor	CheesyO	
ScheduleProduct	FXOption	
ScheduleProduct	SCHEDU	

ESMA

Parameter	Type	Criteria
-----------	------	----------

Modify APRA Parameter

Parameter Type *

ScheduleProduct

Criteria *

FXOption

Value

CLOSE

SAVE

Upload Regulator from Account File

Regulator definition with generic parameters or account specific parameters can also be defined in account csv file with other account information. User can run MARGIN_INPUT scheduled task to import this file or upload the file in Margin Accounts UI page.

In account file, the column COLLECT_REGULATIONS includes the regulators for receive direction and POST_REGULATORS for pay. List of regulators of receive and pay can be different.

To define regulators for each margin account, regulators are required for RISK_TYPE Param_Regulation. When margin account is symmetric, same margin currency for pay and receive, regulators are required in the same row. When margin account is asymmetric, different margin currencies for pay and receive, regulators are defined in two rows per direction.

To define global regulator parameters, MARGIN_AGREEMENT_NAME column is blank and all accounts which are applicable to the regulators will apply these global parameters automatically. Global parameters are displayed in Regulators page as well as in margin account details, and it can be edited in Regulators page or by uploading modified account file.

To define account specific regulator parameters, MARGIN_AGREEMENT_NAME must be defined and it only applicable to this account. Account specific parameters are displayed in margin account details, and user can edit it directly without impacting global ones.

See below an example of uploading account file with regulators and parameters.

TRADE_ID	UTI	MARGIN_THRESHOLD_GROUP	ACCOUNT	IM_MODE	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT_SOURCE	PRODUCT	END_DATE	COLLECT_REGULATIONS	POST_REGULATION	WARNING_LEVEL
CSA1		ThresholdGroup1	MarginGroup1	Param_Regulation	CSA In Place					5.00E+07	USD				APRA,CFTC,JFSA	APRA,CFTC,JFSA	
CSA2		ThresholdGroup2	MarginGroup1	Param_Regulation	Pre-CSA					5.00E+07	USD				APRA	APRA	
CSA3		ThresholdGroup2	MarginGroup2	Param_Regulation	CSA In Place					5.00E+07	GBP				APRA	APRA/JFSA	
CSA4		ThresholdGroup2	MarginGroup2	Param_Regulation	Pre-CSA						GBP				CFTC,APRA	JFSA	
CSA5		MarginGroup3	Param_Regulation	CSA In Place							USD				CFTC,JFSA	APRA	
CSA_ASY		MarginGroup3	Param_Regulation	CSA In Place							USD					APRA	
CSA_ASY		MarginGroup3	Param_Regulation	CSA In Place							EUR				CFTC,JFSA		
			Param_Schedule-Product	FXOption											APRA/JFSA	APRA/JFSA	
			Param_AddOnFixedAmount							1000	USD				APRA	APRA	
			Param_LocalRegSIMM	CDSWP											ESA,JFSA,USPR	ESA,JFSA,USPR	
			Param_AddOnNotionalFactor	Swap						2					APRA	APRA	
			Param_ProductClassMultiplier	RatesFX						1.1					CFTC	CFTC	
			Param_Schedule-Product	Swaption											APRA/JFSA	APRA/JFSA	
CSA1			Param_ProductClassMultiplier	Equity						1.1					CFTC	CFTC	
CSA3			Param_AddOnNotionalFactor	Swap						3					CFTC	CFTC	
CSA3			Param_AddOnFixedAmount							1000	GBP				JFSA	JFSA	
CSA3			Param_Schedule-Product	CDSWP											APRA	APRA	

Regulators are defined at account

Global Parameters

Account Specific Parameters

Regulators and their global parameters

APRA

Parameter

+ New

Type	Criteria	Amount		
FixedAmount	USD	1,000		
NotionalFactor	Swap	2		
ScheduleProduct FXOption		-		

ESA

Parameter

+ New

Type	Criteria	Amount		
LocalRegSIMM	CDSWP	-		

CFTC

Parameter

+ New

Type	Criteria	Amount		
Multiplier	RatesFX	1.1		

JFSA

Parameter

+ New

Type	Criteria	Amount		
LocalRegSIMM	CDSWP	-		
ScheduleProduct FXOption		-		

Margin account details display the same information.

[< Back](#) Edit Margin Account

CSA1

☐ Pre-CSA
 ☒ CSA In Place

Margin Group

MarginGroup1

Threshold Group

ThresholdGroup1

Processing Org

Counterparty

Start Date

Minimum 3 letters to search

Pay

Threshold

50,000,000

Currency

USD

Regulators

JFSA

CFTC

APRA

Applicable Regulators

Parameters

Type	Criteria	Amount	Regulators
ScheduleProduct	Swaption	-	APRA
ScheduleProduct	Swaption	-	JFSA
Multiplier	Equity	1.1	CFTC

FixedAmount	USD	1,000	Regulator
NotionalFactor	Swap	2	Regulator
ScheduleProduct	FXOption	-	Regulator
Multiplier	RatesFX	1.1	Regulator
LocalRegSIMM	CDSWP	-	Regulator
ScheduleProduct	FXOption	-	Regulator

Account Specific Parameters

Global Parameters

Receive

Threshold

50,000,000

Currency

USD

Regulators

CFTC

JFSA

APRA

Parameters

Type	Criteria	Amount	Regulators
ScheduleProduct	Swaption	-	APRA
ScheduleProduct	Swaption	-	JFSA
Multiplier	Equity	1.1	CFTC

FixedAmount	USD	1,000	Regulator
NotionalFactor	Swap	2	Regulator
ScheduleProduct	FXOption	-	Regulator
Multiplier	RatesFX	1.1	Regulator
LocalRegSIMM	CDSWP	-	Regulator
ScheduleProduct	FXOption	-	Regulator

Cancel

Save

Except for Param_Regulation, all other parameters are optional. Here is the list of supported values.

- Param_AddOnNotionalFactor** – percentage add-on for a product name specified in the qualifier column. Use Amount column as percentage add-on. For example, 5 means “5% of notional”. It is used to calculate the IM add-on in ‘Additional IM’ column.

MARGIN_AGR	THRESH	ACCOU	IM_MODE	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL	AMOUNT	CURRENCY	AMOU	SOURC	PRO	END_D	COLLECT_REGULATIONS	POST_REGULATIO
				Param_AddOnNotionalFactor	Swap				2						APRA	APRA
CSA3				Param_AddOnNotionalFactor	Swap				3						CFTC	CFTC

- Param_AddOnFixedAmount** - the amount of the fixed add-on in terms of currency units is provided in the amount column. It is used to calculate the IM add-on in ‘Additional IM’ column.

MARGIN_AGR	THRESH	ACCOU	IM_MODE	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL	AMOUNT	CURRENCY	AMOU	SOURC	PRO	END_D	COLLECT_REGULATIONS	POST_REGULATIO
				Param_AddOnFixedAmount					1000	USD					APRA	APRA

- Param_ProductClassMultiplier** – scale factor to calculate IM add-on for a certain product class (RatesFX, Credit, Equity, Commodity) specified in the qualifier column. For example, 1.1 means "multiply by 1.1".

MARGIN_AGR	THRESH	ACCOU	IM_MODE	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL	AMOUNT	CURRENCY	AMOU	SOURC	PRO	END_D	COLLECT_REGULATIONS	POST_REGULATIO
				Param_ProductClassMultiplier	RatesFX				1.1						CFTC	CFTC

- **Param_Schedule-Product** - defines the product types for which Schedule margin is required. This product type name must match the Qualifier from the Schedule input of risk factors. Note that by default, SIMM methodology will be applied.

CALYPUS	CUS01	CSACUS01	SIMM	Risk_IRVol	USD	6m	-1800	USD	-1800	External F RatesFX	
CALYPUS	CUS01	CSACUS01	SIMM	Risk_IRVol	USD	1y	-2200	USD	-2200	External F RatesFX	
CALYPUS	CUS01	CSACUS01	SCHEDULE	Notional	Swap		-1000000	USD	-1000000	External F Rates	#####
CALYPUS	CUS01	CSACUS01	SCHEDULE	PV	Swap		-25000	USD	-25000	External F Rates	#####

ImportReg.csv - Excel

HomeInsertPage LayoutFormulasDataReviewViewHelp

ID	UTI	PARTY_ID	CP_ID	MARGIN_MODE	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT_SOURCE	PRODUCT	END_DATE	COLLECT	POST_F
		CALYPUS	CUS01	CSACUS01	Param_Regulation						USD					CFTC, APR, CFTC, APR
		CALYPUS	CUS01	CSACUS01	Param_ProductClassMultiplier					1						CFTC CFTC
		CALYPUS	CUS01	CSACUS01	Param_Schedule											APRA APRA

- **Param_LocalRegSIMM** – defines the product types to be included in SIMM calculation for a specific regulator. When importing regulators, the product type can be specified in the 'Qualifier' column for a certain account where the risk type is Param_LocalRegSIMM and the regulators that we want to include in the IM calculation are mentioned in the regulator columns.

Once the regulators are imported, when we import/calculate trade sensitivities, the trades for the above-mentioned products where risk type is Param_LocalRegSIMM will only be included in the regulators specified for that product type. All other trades will be included for all regulators. When Param_LocalRegSIMM is updated for a certain product to a different regulator, the existing regulator records will be terminated and new record for the new regulator will be created.

The Margin Input file is expected to include Schedule Margin data and the product type as Qualifier as before.

Examples of *LocalRegSIMM* parameter:

Below example shows under different global and account level parameter setup, same product type can be included in SIMM calculation for all regulators, SCHEDULE calculation for all regulators, SIMM and SCHEDULE for different regulators, and excluded from neither SIMM or SCHEDULE for all or certain regulators.

MARGIN_AG	ACCOUNT	RISK_TYPE	QUALIFIER	AMOUNT	CURRENCY	COLLECT REGULATIONS	POST REGULATIONS
		Param_LocalRegSIMM	FXO_ASIAN			APRA,CFTC,ESA,FINMA,HKMA,JFSA,MAS,OSFI,SANT,SEC,USPR	APRA,CFTC,ESA,FINMA,HKMA,JFSA,MAS,OSFI,SANT,SEC,USPR
CSA1	Group1	Param_Regulation	Pre-CSA		USD	APRA,ESA,JFSA,USPR	APRA,ESA,JFSA,USPR
CSA1		Param_LocalRegSIMM	EQOVA			APRA,FINMA,HKMA,JFSA,KFSC,OSFI,RBI,SANT,SEC	APRA,FINMA,HKMA,JFSA,KFSC,OSFI,RBI,SANT,SEC
CSA2	Group1	Param_Regulation	Pre-CSA		EUR	CFTC,ESA	CFTC,ESA
CSA2		Param_LocalRegSIMM	EQOVA			HKMA,APRA,SEC,OSFI,KFSC,JFSA,SANT,RBI,FINMA	JFSA,OSFI,SEC,HKMA,APRA,SANT,FINMA,RBI,KFSC
CSA3	Group1	Param_Regulation	Pre-CSA		GBP	APRA,ESA,USPR	ESA,USPR
CSA3		Param_Schedule-Product	CDSWP			APRA,ESA,USPR	ESA,USPR
CSA3		Param_Schedule-Product	EQOVA			ESA	ESA

- **SIMM calculation for all regulators** - FXO_ASIAN is defined at global LocalRegSIMM parameter for all regulators. Hence SIMM risk factors of FXO_ASIAN trades are saved for any margin account. Any product types which are not specifically defined in accounts are SIMM by default cross all regulators.
- **SCHEDULE calculation for all regulators** - For account CSA3, CDSWP is defined in Param_Schedule-Product for APRA, ESA and USPR, it's SCHEDULE calculation for all defined regulators.
- **SIMM and SCHEDULE calculation for different regulators** - For account CSA3, EQOVA is defined in Param_Schedule-Product only for ESA, it's SCHEDULE calculation for ESA and SIMM calculation for other regulators.

- **Neither SIMM nor SCHEDULE for all regulators** - For account CSA2, EQOVA is defined at account level LocalRegSIMM. By comparing the regulators list under Param_Regulation and Param_LocalRegSIMM, CFTC and ESA are not defined in Param_LocalRegSIMM. In this case, EQOVA trades are excluded from ALL regulators for CSA2, i.e. no risk factors will be included.
- **Neither SIMM nor SCHEDULE for certain regulators** - For account CSA1, EQOVA is defined at account level LocalRegSIMM. By comparing the regulators list under Param_Regulation and Param_LocalRegSIMM, APRA and JFSA are defined in both lists while ESA and USPR are only defined in Param_Regulation. In this case, EQOVA trade is SIMM under APRA and JFSA, and it's excluded from ESA and USPA.

See the sample import file for importing accounts and regulators on the Documentation Portal.

MARGIN ENGINE

Bilateral Margins (Non-cleared Trades)

Supported functions: Margin Calculation, What-If Trades

 [Bilateral Margin \(ISDA SIMM\)](#)

 [Bilateral Margin Sample Files](#)

OTC Clearing Margins

Clearing Member - Supported functions: Margin Calculation, Limits, Expiry t

2.3 Margin Accounts Setup

The Margin accounts can be created and uploaded via the UI, and further edited via the UI, or can be uploaded via the MARGIN_INPUT scheduled task in IMPORT ACCOUNTS mode.

- Before importing or creating user need to have knowledge of :
 - the list of Margin accounts, i.e. the list of all CSA agreements subject to BCBS/IOSCO
 - for each account, review the regulator add-ons, multipliers, and product specific requirements

Each account should be uploaded with the associated regulator parameters.

Upload Accounts via UI

Open the *Onboarding New Account* file in the Bilateral Margin sample files folder and change the account names and parameters.

Upload the account file in the Margin Accounts page.

MARGIN v6.2.0

Dashboard

Initial Margin

Exposures

Threshold Monitoring

What-If IM

Simulations

Static Backtesting

Dynamic Backtesting

Reference Data

Margin Accounts

Regulators

Risk Inputs

Risk Factors

Admin

UMR Configuration

Back Edit Margin Account

Name

BACKTEST01

Pre-CSA

CSA In Place

Margin Group

BACKTEST

Threshold Group

Processing Org

Counterparty

Start Date

Pay

Threshold

Currency

Regulators

Parameters

Type	Criteria	Amount	Regulators
Type	Criteria	Amount	Regulators
NotionalFactor	CheesyOption	3	Regulator
NotionalFactor	SWAP	2	Regulator
ScheduleProduct	FXOption_Sche	-	Regulator
ScheduleProduct	SCHEDULE	-	Regulator

Receive

Threshold

Currency

Regulators

Parameters

Type	Criteria	Amount	Regulators
NotionalFactor	CheesyOption	3	Regulator
NotionalFactor	SWAP	2	Regulator
ScheduleProduct	FXOption_Sche	-	Regulator
ScheduleProduct	SCHEDULE	-	Regulator

Cancel

Save

View Account Information

Click on the Account Name to view all the parameters for the selected account. The Account Group and Threshold Group information are also shown. The user can filter the accounts based on account name or account group name.

Margin Accounts

Visualizing 5 Margin Accounts

Threshold Group

Account Group

Group Thresholds

Group: All

Account: CSA1

(+4)

CSA1 UMR CSA In Place

ThresholdGroup1

CSA1_SWAP

Receive

Pay

Methodology

SIMM

SIMM

Threshold

100,000,000,000.00

100,000,000,000.00

Currency

USD

USD

Regulators

APRA,CFTC

APRA,JFSA

CSA2 UMR CSA In Place

ThresholdGroup2

CSA2_SWAPTION

Receive

Pay

Methodology

SIMM

SIMM

Threshold

100,000,000,000.00

100,000,000,000.00

Currency

USD

USD

Regulators

CFTC,JFSA

APRA

CSA3 UMR CSA In Place

ThresholdGroup1

CSA3_FRA

Receive

Pay

Methodology

SIMM

SIMM

Threshold

100,000,000,000.00

100,000,000,000.00

Currency

GBP

GBP

Regulators

APRA,CFTC

APRA,JFSA

Upload

● Threshold Group ● Account Group | Group Thresholds

Account: All

Start Date

1

 Receive

Parameters

Type	Criteria	Amount	Regulator
NotionalFactor	CheesyOption	3	APRA
NotionalFactor	SWAP	2	APRA
ScheduleProduct	FXOption_Sche	-	APRA
ScheduleProduct	SCHEDULE	-	APRA

Edit

The user also has an option to edit the accounts using the 'Edit' button at the bottom. After editing and resaving, the account appears with an 'Updated' tag.

Margin Accounts							New Upload	
Visualizing 3 Margin Accounts							● Threshold Group ● Account Group Group Thresholds	
Group: All Account: CSA10 (+2)								
> CSA10 UMR CSA In Place Updated								
● No threshold group ● CSA10_XCCYSWAP			Receive	Methodology	Threshold	Currency	Regulators	
			Pay	SIMM	0.00	EUR	APRA	
				SIMM	0.00	EUR	APRA,CFTC	
> CSA11 UMR CSA In Place								
● No threshold group ● CSA11_IMPORT			Receive	Methodology	Threshold	Currency	Regulators	
			Pay	SIMM	0.00	USD	APRA,CFTC	
				SIMM	0.00	USD	APRA,JFSA	

New margin accounts can be created from the Margin user interface using the New option shown below:

Margin Accounts

Visualizing 10 Margin Accounts

● Threshold Group

● Account Group

✎

Group Thresholds

Group: All

Account: All

➤ AUDCSA UMR Pre-CSA

● No threshold group

● No account group

Receive

Pay

Methodology

SIMM

SIMM

Threshold

0.00

0.00

Currency

AUD

AUD

Regulators

USPR

USPR

➤ BACKTEST01 UMR Pre-CSA

● No threshold group

● BACKTEST

Receive

Pay

Methodology

SIMM

SIMM

Threshold

0.00

0.00

Currency

USD

USD

Regulators

APRA

APRA

➤ BACKTEST02 UMR Pre-CSA

● No threshold group

● BACKTEST

Receive

Pay

Methodology

SIMM

SIMM

Threshold

0.00

0.00

Currency

USD

USD

Regulators

APRA

APRA

When the user clicks the [New](#) button, the screen below appears where the new account information can be entered and saved. The user can select the account name, whether it is Pre-CSA or CSA in Place and select the threshold, margin currency and regulator information. It also allows the users to create an asymmetric account by selecting different margin currency and regulator parameters for Pay and Receive directions.

Once the user selects the regulators for a direction, the parameters already selected for those regulators are automatically added. The user can add more parameters by clicking on the [+New](#) option on the top.

When the account has been saved, the user is able to view the account under Margin Accounts in the Reference Data section. The accounts can also be edited as explained above.

In addition to the above fields, there are optional fields for PO, Counterparty and Start Date to support the UMR trade tagging as explained in the coming section [Trade Keywords Tagging](#). The user can add a PO and counterparty that are valid legal entities defined in Calypso. These values are available for selection from a drop-down list.

Back
New Margin Account

Name
Account 100

☒ Pre-CSA
☐ CSA In Place

Margin Group
MG1

Processing Org
CALYPSO

Counterparty
AA123

Start Date
3/4/2021

Pay

Threshold
50,000,000

Currency
USD

Regulators
CFTC

Parameters

Type
Criteria
Amount
Regulators

NotionalFactor
CheesyOption
4
Regulator

ScheduleProduct
FlexiCallOption
Regulator

Receive

Threshold
60,000,000

Currency
AUD

Regulators
ESMA
APRA

Parameters

Type
Criteria
Amount
Regulators

NotionalFactor
CheesyOption
3
Regulator

NotionalFactor
SWAP
2
Regulator

Margin Accounts							Upload	Create
Visualizing 10 Margin Accounts								
<div> <div> Group: All </div> <div> Account: All </div> </div>							Add filters	
		Pay	SIMM	0	USD	APRA,FM		
<div> <div>AA2</div> <div>UMR CSA In Place</div> </div>	<div> <div>Margin Account Group</div> <div>MG11</div> </div>	<div> <div>Receive</div> <div>Pay</div> </div>	<div> <div>Methodology</div> <div>SIMM</div> <div>SIMM</div> </div>	<div> <div>Threshold</div> <div>2,000,000</div> <div>1,000,000</div> </div>	<div> <div>Currency</div> <div>CHF</div> <div>AUD</div> </div>	<div> <div>Regulatory</div> <div>CFI</div> <div>APRA</div> </div>		
<div> <div>ABC</div> <div>UMR Pre-CSA</div> </div>	<div> <div>Margin Account Group</div> <div>No margin account group</div> </div>	<div> <div>Receive</div> <div>Pay</div> </div>	<div> <div>Methodology</div> <div>SIMM</div> <div>SIMM</div> </div>	<div> <div>Threshold</div> <div>600,000,000</div> <div>500,000,000</div> </div>	<div> <div>Currency</div> <div>AUD</div> <div>USD</div> </div>	<div> <div>Regulatory</div> <div>ESM</div> <div>APRA,CFI</div> </div>		
<div> <div>ABC5</div> <div>UMR Pre-CSA</div> </div>	<div> <div>Margin Account Group</div> <div>No margin account group</div> </div>	<div> <div>Receive</div> <div>Pay</div> </div>	<div> <div>Methodology</div> <div>SIMM</div> <div>SIMM</div> </div>	<div> <div>Threshold</div> <div>60,000,000</div> <div>5,000,000</div> </div>	<div> <div>Currency</div> <div>AUD</div> <div>USD</div> </div>	<div> <div>Regulatory</div> <div>ESM</div> <div>APRA,CFI</div> </div>		
<div> <div>Account 1</div> <div>UMR Pre-CSA</div> </div>	<div> <div>Margin Account Group</div> <div>GROUP12,GROUP2</div> </div>	<div> <div>Receive</div> <div>Pay</div> </div>	<div> <div>Methodology</div> <div>SIMM</div> <div>SIMM</div> </div>	<div> <div>Threshold</div> <div>50,000,000</div> <div>50,000,000</div> </div>	<div> <div>Currency</div> <div>AUD</div> <div>AUD</div> </div>	<div> <div>Regulatory</div> <div>APRA,ESM</div> <div>CFI</div> </div>		
<div> <div>Account 100</div> <div>UMR Pre-CSA</div> </div>	<div> <div>Margin Account Group</div> <div>MG1</div> </div>	<div> <div>Receive</div> <div>Pay</div> </div>	<div> <div>Methodology</div> <div>SIMM</div> <div>SIMM</div> </div>	<div> <div>Threshold</div> <div>50,000,000</div> <div>50,000,000</div> </div>	<div> <div>Currency</div> <div>USD</div> <div>USD</div> </div>	<div> <div>Regulatory</div> <div>CFI</div> <div>APRA</div> </div>		

It is possible to run the MARGIN_INPUT scheduled task in IMPORT ACCOUNTS mode to import the regulators for each margin agreement instead of using the UI.

Task Attributes	
Mode	IMPORT ACCOUNTS
Account Groups	
Calculation Set	SIMM
Risk Factor Source	
File Location	C:\ImportAccounts.csv

Calypso supports importing asymmetric contracts where the user can define different parameters for pay and receive directions. The regulator import file has separate rows for Post and Collect and the configuration below are supported at pay/receive level instead of margin account level.

- Methodologies
- Currencies
- Multipliers / Add-Ons / Fixed Amounts

The account import can be done via Margin UI or the MARGIN_INPUT scheduled task. An example of an asymmetric contract imported via the Margin web UI is shown below.

Margin Accounts

Visualizing 10 Margin Accounts

Filters

Account: All

Clear all

Add filters

Account6

UMR Pre-CSA

Receive

Pay

Methodology

SIMM

SIMM

Currency

GBP

USD

Regulators

CFTC,JFSA

CFTC,JFSA

Regulators

Pay

CFTC

JFSA

Parameters

Type

Criteria

Amount

Regulator

NotionalFactor

CheesyOption

4

Regulator

ScheduleProduct

FlexiCallOption

Regulator

ScheduleProduct

SCHEDULE

Regulator

Receive

CFTC

JFSA

Parameters

Type

Criteria

Amount

Regulator

NotionalFactor

CheesyOption

4

Regulator

ScheduleProduct

FlexiCallOption

Regulator

ScheduleProduct

SCHEDULE

Regulator

After calculating margin, the IM results appear separately for Pay and Receive in the UI.

Calculation Set: SIMM

Valuation Date: 6/7/2017

Exposures

Visualizing 2 Exposures

Filters

Accounts: All

Direction: All

Status: All

Clear all

Add filters

Account	Currency	Total IM	Simm IM	Additional IM	Schedule IM	Regulators	Direction
CSA1	USD	5,659,083	813,867	0	4,845,216	APRA	Pay
CSA1	USD	2,969,867	813,867	0	2,156,000	APRA	Receive

The clients have the flexibility to have the same or different parameters for Pay and Receive in the same import file. For example, if they do not have a symmetric configuration account, they can have a single row for Pay and Receive regulators, like in the example below for CSA_ASY3. If any account has different currencies for Pay and Receive, they can configure like CSA_ASY2 in the example below. If any account has the same currency for Pay and Receive but different methodologies, they can configure like CSA_ASY6 in the example below.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
TRADE	UTI	PARTY	CP	ID	MARGIN_AGREEMENT_NAME	IM_MOD	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT	SOURCE	PRODUCT	END_DATE	COLLECT_REGULATION	POST_REGULATION
1		CALYPSOS CP_1	CP_1	CSA_ASY1			Param_Regulation					USD						CFTC,JFSA	APRA
2		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_Regulation					USD						APRA	
3		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_Regulation					EUR						CFTC,JFSA	
4		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_Schedule-Product	SWAP										CFTC,JFSA	
5		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_Schedule-Product	XccySwap										CFTC,JFSA	
6		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_ProductClassMultiplier	RatesFX				1.5						CFTC	
7		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_ProductClassMultiplier	RatesFX				1.1						APRA	
8		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_AddOnFixedAmount					5000	EUR					CFTC	
9		CALYPSOS CP_1	CP_1	CSA_ASY2			Param_AddOnFixedAmount					6000	USD					APRA	
10		CALYPSOS CP_1	CP_1	CSA_ASY3			Param_Regulation					USD						CFTC	APRA
11		CALYPSOS CP_1	CP_1	CSA_ASY3			Param_Schedule-Product	FlexiCallOption										CFTC	APRA
12		CALYPSOS CP_1	CP_1	CSA_ASY3			Param_Schedule-Product	XccySwap										CFTC	APRA
13		CALYPSOS CP_1	CP_1	CSA_ASY3			Param_Schedule-Product	CheesyOption										CFTC	APRA
14		CALYPSOS CP_1	CP_1	CSA_ASY3			Param_AddOnNotionalFactor	CheesyOption				3						CFTC	APRA
15		CALYPSOS CP_1	CP_1	CSA_ASY3			Param_AddOnNotionalFactor	CheesyOption				5						CFTC	APRA
16		CALYPSOS CP_1	CP_1	CSA_ASY4			Param_Regulation					USD						APRA,JFSA	
17		CALYPSOS CP_1	CP_1	CSA_ASY4			Param_Regulation					EUR						CFTC,JFSA	
18		CALYPSOS CP_1	CP_1	CSA_ASY4			Param_LocalRegSIMM	XccySwap										CFTC	
19		CALYPSOS CP_1	CP_1	CSA_ASY4			Param_LocalRegSIMM	XccySwap										APRA	
20		CALYPSOS CP_1	CP_1	CSA_ASY5			Param_Regulation					USD						APRA,JFSA	
21		CALYPSOS CP_1	CP_1	CSA_ASY5			Param_Regulation					EUR						CFTC,JFSA	
22		CALYPSOS CP_1	CP_1	CSA_ASY5			Param_AddOnNotionalFactor	XccySwap				2						JFSA	
23		CALYPSOS CP_1	CP_1	CSA_ASY5			Param_AddOnNotionalFactor	XccySwap				5						JFSA	
24		CALYPSOS CP_1	CP_1	CSA_ASY5			Param_Schedule-Product	XccySwap										APRA,JFSA	
25		CALYPSOS CP_1	CP_1	CSA_ASY5			Param_Schedule-Product	XccySwap										CFTC,JFSA	
26		CALYPSOS CP_1	CP_1	CSA_ASY6			Param_Regulation					USD						APRA	JFSA
27		CALYPSOS CP_1	CP_1	CSA_ASY6			Param_Schedule-Product	SWAP										APRA	
28		CALYPSOS CP_1	CP_1	CSA_ASY6			Param_AddOnNotionalFactor	SWAP				2						APRA,JFSA	
29		CALYPSOS CP_1	CP_1	CSA_ASY6			Param_ProductClassMultiplier	RatesFX				1.1						APRA	
30																			
31																			

2.4 Account Groups

An Account Group is defined at the account level where each account is linked to one or more account groups. This account group is used in the MARGIN_INPUT and MARGIN_CALCULATOR scheduled tasks to define the scope of accounts.

The Market Risk Hierarchy has been replaced by Account Group and margin calculation has no dependency on ERS.

Note: Legacy Market Risk hierarchies are still supported.

The Account Group can be defined via import of the account/regulator import file (sample below). A new column for Account_Group has been added to the account import .csv file. An account in the MARGIN_AGREEMENT_NAME column will be linked to one or more Account Groups in the corresponding ACCOUNT_GROUP column.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
TRADE	UTI	PARTY	CP	ACCOUNT_GROUP	MARGIN_AGREEMENT_NAME	IM_MOD	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT	SOURCE	PRODUCT	END_DATE	collect_regulation	post_regulation
1		MUTB_TKY	Cpty	MG1,MG2	C350		Param_Regulation	Pre-CSA				50000000	USD					CFTC,APRA	APRA,JFSA
2		MUTB_TKY	Cpty	MG1,MG2	C351		Param_Regulation	Pre-CSA				75000000	GBP					CFTC,APRA	APRA,JFSA
3		MUTB_TKY	Cpty	MG3	C352		Param_Regulation	Pre-CSA				50000000	EUR					CFTC,APRA	APRA,JFSA
4		MUTB_TKY	Cpty	MG3	C353		Param_Regulation	CSA In Place				1.5E+08	JPY					CFTC,APRA	APRA,JFSA
5		MUTB_TKY	Cpty	MG3,MG4	C354		Param_Regulation	CSA In Place				50000000	USD					CFTC,APRA	APRA,JFSA
6		MUTB_TKY	Cpty	MG1,MG3	C355		Param_Regulation	CSA In Place				75000000	GBP					CFTC,APRA	APRA,JFSA
7		MUTB_TKY	Cpty	MG2,MG4	C356		Param_Regulation	Pre-CSA				50000000	EUR					CFTC,APRA	APRA,JFSA
8		MUTB_TKY	Cpty	MG1,MG4	C357		Param_Regulation	Pre-CSA				1.5E+08	JPY					CFTC,APRA	APRA,JFSA
9		MUTB_TKY	Cpty	MG2,MG3	C358		Param_Regulation	Pre-CSA				50000000	USD					CFTC	CFTC
10		MUTB_TKY	Cpty		C359		Param_Regulation	CSA In Place				50000000	USD					CFTC,APRA	APRA,JFSA
11		MUTB_TKY	Cpty	MG5,MG6,MG7	C360		Param_Regulation	CSA In Place				50000000	USD					CFTC,APRA	APRA,JFSA
12		MUTB_TKY	Cpty	MG5,MG6,MG7	C361		Param_Regulation	CSA In Place				50000000	USD					CFTC,APRA	APRA,JFSA
13		MUTB_TKY	Cpty	MG6	C362		Param_Regulation	CSA In Place				50000000	USD					CFTC,APRA	APRA,JFSA
14		MUTB_TKY	Cpty	MG7	C363		Param_Regulation	Pre-CSA				50000000	USD					CFTC,APRA	APRA,JFSA
15		MUTB_TKY	Cpty	MG8	C364		Param_Regulation	Pre-CSA				50000000	USD					CFTC,APRA	APRA,JFSA
16		MUTB_TKY	Cpty	MG8,MG9	C365		Param_Regulation	Pre-CSA				50000000	USD					CFTC,APRA	APRA,JFSA
17		MUTB_TKY	Cpty	MG10,MG11,MG12	C366		Param_Regulation	Pre-CSA				50000000	USD					CFTC	CFTC
18		MUTB_TKY	Cpty	MG12	C367		Param_Regulation	Pre-CSA				50000000	USD					CFTC	CFTC
19		MUTB_TKY	Cpty	MG1,MG2	ASY_C1		Param_Regulation	Pre-CSA				50000000	USD					CFTC,APRA	
20		MUTB_TKY	Cpty	MG1,MG2	ASY_C1		Param_Regulation	Pre-CSA				50000000	EUR						APRA,JFSA
21		MUTB_TKY	Cpty		ASY_C2		Param_Regulation	Pre-CSA				75000000	GBP					CFTC,APRA	
22		MUTB_TKY	Cpty		ASY_C2		Param_Regulation	Pre-CSA				50000000	EUR						APRA,JFSA

The ACCOUNT_GROUP column is a mandatory column. Account Group should be provided only for RISK_TYPE= Param_Regulation; if specified for other risk types, it will be ignored.

The Account Group can also be defined via UMR Configuration page in UI.

UMR Configuration

Margin Account Group				+ Add New	
Margin Account Group *	Margin Account Group *	Margin Account Group *	Margin Account Group *		
ASYMMETRIC	AUDCSA	BACKTEST	BBVA_Swap		
Margin Account Group *	Margin Account Group *	Margin Account Group *	Margin Account Group *		
CSA10_XCCYSWAP	CSA11_IMPORT	CSA12_ALL	CSA13_ADD_CANCEL		
Margin Account Group *	Margin Account Group *	Margin Account Group *	Margin Account Group *		
CSA14_AMEND	CSA15_SOFR_SARON	CSA16_FXOPTION	CSA17_COMMODITYOPT		

Once imported, users can view the Account Group in the Margin user interface.

Sample views:

Margin Accounts

New

Upload

Visualizing 2 Margin Accounts

● Threshold Group

● Account Group

Group Thresholds

Group: Group_CSA

Account: All

<div>> CSA1 UMR CSA In Place</div> <div><div>● ThresholdGroup1</div><div>● Group_CSA</div></div>	<div></div> Receive	Methodology	Threshold	Currency	Regulators
	<div></div> Pay	SIMM	100,000,000,000.00	USD	APRA,CFTC
		SIMM	100,000,000,000.00	USD	APRA,JFSA

<div>> CSA2 UMR CSA In Place</div> <div><div>● ThresholdGroup2</div><div>● Group_CSA</div></div>	<div></div> Receive	Methodology	Threshold	Currency	Regulators
	<div></div> Pay	SIMM	100,000,000,000.00	GBP	CFTC,JFSA
		SIMM	100,000,000,000.00	GBP	APRA

Items per page: 10

Exposures filtered by Account Groups:

Exposures						
Visualizing 2 Exposures						
Group: CPTY1	Accounts: All	Direction: All	Status: All	Add filters	IM	
Account	Currency	Direction	Total IM	Regulators	Status	
CPTY1	USD	Pay	22,849,244,343	APRA	Check	
CPTY1	USD	Receive	22,849,224,382	APRA	Check	

Migration Impact of Account Groups

- As part of the upgrade process, the Market Risk hierarchy names are copied to Account Group names and all accounts under an existing Market Risk hierarchy are copied to an Account Group with the same name.
- The Trade Filter is a mandatory attribute in the MARGIN_INPUT (Calculate mode) and MARGIN_CALCULATOR scheduled tasks with the Account Group feature. The trade filter is used to define the trade scope, i.e. trade

status and product type. The user does not need to define the account attributes in the trade filter. The scope of accounts comes from the ACCOUNT_GROUP attribute in the scheduled tasks.

- After migration, the MARGIN_INPUT (calculate mode) scheduled task does not have a Trade Filter defined. A trade filter needs to be added to use the account group approach. In the absence of a trade filter, the scheduled task falls back to use the Account Group name as the Market Risk hierarchy name to look for accounts defined in Market Risk nodes for calculation. Once the user has defined trade filters in the scheduled task, Market Risk will not be referenced.

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	CSA12_ALL CALCULATE AUTOMATION
Comments:	8/4/2017
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time SLA:	1 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	134620
Processing Org	
Trade Filter	000_Test
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	CALCULATE
Account Groups	CSA12_ALL
Calculation Set	SIMM
Risk Factor Source	
File Location	/space/calypso/input
Risk Type Filter	
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	IgnoreCurve

2.5 Threshold Groups

Within the Margin Accounts page, the button at the top right of the screen will take the user to the Group Threshold Definition. Once grouped, the Threshold Group for each account is shown on the accounts page as well.

Margin Accounts						New	Upload
Visualizing 10 Margin Accounts						● Threshold Group ● Account Group	Group Thresholds
Group: All	Account: All						
> CAL5 UMR CSA In Place ● CalypsoGroup2 ● CAL GRP		Receive Pay	Methodology SIMM	Threshold 12,000,000.00 12,000,000.00	Currency USD USD	Regulators APRA CFTC	
> CAL6 UMR CSA In Place ● CalypsoGroup2 ● CAL GRP		Receive Pay	Methodology SIMM	Threshold 55,000,000.00 55,000,000.00	Currency EUR EUR	Regulators APRA CFTC	

Clicking the “New Group” button will expose a blank row at the top of the table. This row is the definition of the Threshold Group. The values here are independent of the margin accounts.

The screenshot shows the 'Group Threshold' configuration page in the Calypso Margin application. The main table lists threshold groups with the following columns: Name, Account, Currency, Pay Threshold, Receive Threshold, and Trigger Percentage. A 'New Group' button is located at the top right of the table. On the right side, there is a list of 'Ungrouped Margin Accounts' that can be dragged and dropped into the threshold groups. The list includes AUDCSA, BACKTEST01, BACKTEST02, BACKTEST03, BACKTEST04, Bank A, Bank B, CSA10, CSA11, CSA12, CSA13, CSA14, CSA15, CSA16, CSA17, CSA18, CSA19, and CSA20.

Once a Threshold Group is created, the user can drag and drop margin accounts from the list on the right into the account group. A margin account can only be part of one threshold group.

An Account Group can contain a combination of both Pre-CSA and CSA in Place accounts. The user can edit the account thresholds from this window as well.

It is not required that all accounts be part of a group. Any accounts that are not grouped will be reported as their own group in the threshold monitoring dashboard and excel export.

Group thresholds may also be uploaded with the account definitions. There are additional fields specifically for the group threshold monitoring.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
TRADE_ID	UTI	PARTY_ID	CP_ID	ACCOUNT_GROUP	THRESHOLD_GROUP	MARGIN_AGREEMENT_NAME	IM_MODEL	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT_BASE	SOURCE	PRODUCT_CLASS	END_DATE	COLLECT_REGULATIONS	POST_REGULATIONS	WARNING_LEVEL
		CALYPUS	CP_1	NH	Group1	CALYPUS@CP_1		Param_Regulation					5000000	USD					ESMA	ESMA	
					Group1			Param_Threshold_Group					44000000	EUR					ALL	ALL	44
					ExampleofanEmptyGroup			Param_Threshold_Group					44000000	EUR					ALL	ALL	44

THRESHOLD_GROUP: For Account level rows (designated with Param_Regulation as the RISK_TYPE) this is the Threshold Group name to which the account will belong. For Group level rows (designated with Param_Threshold_Group as the RISK_TYPE) this is the name of the account group itself.

WARNING_LEVEL: This is the threshold warning or trigger percentage level. This field only applies to threshold group definitions (designated with Param_Threshold_Group as the RISK_TYPE).

Under **Admin > UMR Configuration** there is a section for threshold monitoring. This section has two options which affect the threshold monitoring dashboard. By configuring these two settings, Threshold Monitoring is enabled. Threshold calculation will not occur if these settings are not defined.

UMR Configuration

> Risk Factors Sources

> Calculation Sets

< Threshold Monitoring

Trigger Percentage
60%

Drilldown Lookback Default Tenor
6M

- Trigger Percentage** – This is the percentage of the Threshold to be used to generate a trigger, or a point in which the user should be notified that a Pre-CSA account/group should start the negotiation process with their counterparty to put a real CSA in Place. $\text{Trigger} = \text{Threshold} * \text{Trigger Percentage}$
- Drilldown Lookback Default Tenor** – This defines the default lookback period for the historical drilldown of the threshold monitoring. This is defined as a Tenor.

2.6 UMR Configuration in UI

This page includes the configuration below displayed in alphabetical order.

UMR Configuration

> Additional CRIF File Columns	+ Add New	
> Backtesting	+ Add New	
> Calculation Sets	+ Add New	
> Exposure Monitoring		
> Margin Account Group	+ Add New	
> Product Class Mappings		
> Risk Factors Sources	+ Add New	
> Threshold Monitoring		

Calculation sets, margin account group and risk factor sources can be created here and will be available to the user on other pages. Backtesting can be configured here for hierarchies, currencies and parameters. Product class mapping will show all the hardcoded products in each product class and allow the user to add new custom products. This is explained in 'Product Class Mapping' section later in this user guide. Threshold monitoring and Exposure monitoring can also be configured from this page and the values saved here will be used to define the exposure and threshold monitoring statuses.

Additional CRIF File Column

This section can be used to define custom columns that will be output in the Calypso and Acadia risk factor exports. This is further explained in Set up in Risk Factor Export.

UMR Configuration

Additional CRIF File Columns						+ Add New
Column Name *	Trade Keyword	Format		Column Name *	Trade Keyword	Format
Underlying	PUACode	ALL	✕	usi_valueev	USIValue	ACADIA
uti_prefix	UTIPrefix	ACADIA	✕	uti_value	UTIValue	CALYPSO
trade_date	date_start	ACADIA	✕	notional_2	Notional_Amount	CALYPSO
usi_prefix	USIPrefix	ACADIA	✕	trade_curr_2	Ccy2	ACADIA

Backtesting

For static backtesting, the user can configure multiple Market Risk Hierarchy, currency and Market Risk parameter set combinations. This is further explained in Static Backtesting.

Backtesting

+

Add New

ERS Hierarchy

BACKTEST_H2

▼

Currency

EUR

▼

Parameter Attributes

BACKTEST_AUTO2

▼

✕

ERS Hierarchy

BACKTEST_H1

▼

Currency

USD

▼

Parameter Attributes

BACKTEST_AUTO1

▼

✕

Calculation Sets

A calculation set is an instance of inputs and results for margin calculation. Calculation sets allow a user to store several separate sets of margin inputs (risk factors) and margin results for a single valuation date. In the margin UI, the user can navigate through the various calculation sets. The official IM exposure is stored under the official calculation set, and the feed to Collateral Manager.

There can be multiple Official calculation sets, but each margin account is linked to a unique Official Calculation Set.

An account is not programmatically linked to a calculation set. For each Margin Account, the user should only generate IM Exposure in ONE single official calculation set.

Several official calculation sets are required in the case of a global book with several end of days based on multiple quote sets and Pricing Environments.

Non-official calculation sets can be used for intraday simulation. They will not generate IM Exposure PL Marks.

UMR Configuration

▼ Risk Factors Sources

+ Add New

Source Name *

Calypto

Source Name *

ISDA

Source Name *

ISDA2

Source Name *

Source1

Source Name *

Source2

▼ Calculation Sets

+ Add New

Calculation Set *

SIMM

☒ Official

Calculation Set *

SIMM_BpVol

☒ Official

Calculation Set *

SIMM_Copy

☐ Official

Calculation Set *

SIMM_Cpty

☒ Official

Calculation Set *

SIMM_SARON_SOFR

☐ Official

Calculation Set *

SIMM_Xccy

☒ Official

Calculation Set *

test1

☐ Official

Calculation set definition:

```
Name = String
```

Official flag = Yes/No

Upgrade Process - Calculation sets are automatically created via upgrade scripts, based on the Pricing Environment of the MARGIN_INPUT and MARGIN_CALCULATOR scheduled tasks.

Calculation sets are used in the MARGIN_INPUT scheduled task, MARGIN_CALCULATOR scheduled task and the Web UI.

The MARGIN_CALCULATOR ST will only generate Collateral Exposure Trades if the Calculation set is Official, the time horizon is 10D and account is CSA in Place.

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	TEST Calculate
Comments:	9/23/2020
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	1 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Task Attributes	
Pricing Environment	SIMM_EUR
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Mode	CALCULATE
Account Groups	TEST, CPTY1
Calculation Set	SIMM
Risk Factor Source	
File Location	/space/calypso/input
Risk Type Filter	
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	
XCcy Zero Curves	XccyCurveBasis
Grid: Dispatcher Name	default
Explode Trades	
Job Size	10
Stop on errors	true

Exposure Monitoring

IM exposures are monitored by thresholds for exposure, variation percentage and warning currency defined in UMR Configuration page. This is further explained in Viewing Exposures.

Default Values:

Warning currency = USD

Variation Percentage = 20%

Exposure = 1,000,000,000

UMR Configuration

▼ Exposure Monitoring

Warning CCY *

USD ▼

Variation Percentage *

80%














Exposure *

50,000,000

Margin Account Group

The Account Group can also be defined via UMR Configuration page in UI.

UMR Configuration

▼ Margin Account Group ⊕ Add New 			
Margin Account Group *	Margin Account Group *	Margin Account Group *	Margin Account Group *
ASYMMETRIC 	AUDCSA 	BACKTEST 	BBVA_Swap 
Margin Account Group *	Margin Account Group *	Margin Account Group *	Margin Account Group *
CSA10_XCCYSWAP 	CSA11_IMPORT 	CSA12_ALL 	CSA13_ADD_CANCEL 
Margin Account Group *	Margin Account Group *	Margin Account Group *	Margin Account Group *
CSA14_AMEND 	CSA15_SOFR_SARON 	CSA16_FXOPTION 	CSA17_COMMODITYOPT 

Product Class Mapping

The product class mappings here show five product classes – Commodity, Credit, Equity, FX and Rates. User can add additional product mappings if product type is not included as default. This is further explained in IMPORT RISK FACTORS Mode.

Risk Factor Sources

UMR Configuration

UMR Configuration

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» Select “Add New” to add a new source.

Threshold Monitoring

This section has two options which affect the threshold monitoring dashboard. By configuring these two settings, Threshold Monitoring is enabled. Threshold calculation will not occur if these settings are not defined. This is further explained in [Threshold Groups](#).

UMR Configuration

> Risk Factors Sources

+ Add New

> Calculation Sets

+ Add New

< Threshold Monitoring

Trigger Percentage

60%

Drilldown Lookback Default Tenor

6M

2.7 Trade Keywords & Trade Filters

2.7.1 Trade Keywords

Each trade needs to have a value in **IM_PORTFOLIO_NAME** and **IM_MODEL** trade keywords. A trade can only be associated with one value for each of the following (e.g., it is a one-to-one mapping):

IM_PORTFOLIO_NAME represents a Margin account name and therefore forms the netting set for which initial margin will be calculated.

IM_MODEL represents the margin model that will be used for the trade, this must be set to “**SIMM**”. This keyword does not determine whether the trade IM is calculated via SIMM or SCHEDULE, that is done via the Param_Schedule-Product on the margin account definition.

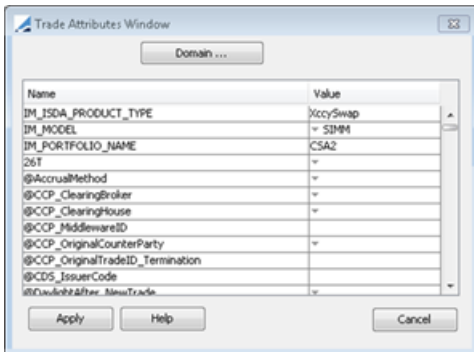
IM_ISDA_PRODUCT_TYPE is an optional field and represents what product type this will be treated as within the margin account parameters.

This keyword is used to trigger Schedule calculation when ISDA_PRODUCT_TYPE matches one of the Param_Schedule-Product values on the margin account. This is a free text field, and it does not have to be a Calypso product type. For example, the keyword IM_ISDA_PRODUCT_TYPE is set to XccySwap in the example below. So all trades that have Param_Schedule-Product Qualifier set to XccySwap, will use schedule methodology.

Example of account import file below with Param_Schedule-Product parameter:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	TRADE_ID	UTI	PARTY_ID	CP_ID	MARGIN_J	IM_MODE	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT	SOURCE	PRODUCT	END_DATE	COLLECT	POST	REGULATIONS	
2			MUTB_TK	Cpty	BOA		Param_Regulation						USD					CFTC	APRA	APRA	IFSA
3			MUTB_TK	Cpty	BOA		Param_Schedule-Product	XccySwap													

Example:



The **IM_ISDA_PRODUCT_TYPE** keyword is also used for assigning a product class to trades which are not covered in the existing product class mapping. This is further explained in section IMPORT RISK FACTORS Mode.

Same keyword is used when running MARGIN_INPUT in Calculate mode. The MARGIN_INPUT scheduled task will identify the product class based on the following criteria:

- Map the product family of the trade with the mapping list.
- If the product family is not found in the mapping, map the product type of trade with the product type mapping from user interface. The product class mapping in the user interface is explained later in this user guide.

2.7.2 Trade Filters

There are two use cases of how to define trade filters and run margin scheduled tasks to calculate risk factors and margin.

When user uses legacy Market Risk hierarchies, trade filters must be defined per margin account. When user uses account group, trade filter can be defined per margin account as well as globally cross margin accounts.

Trade Filters for Market Risk hierarchy

When using Market Risk hierarchy configuration, each hierarchy leaf stands for a margin account and trade filter must be created for each margin account (i.e. IM_PORTFOLIO_NAME).

The trade filter criteria **MUST** contain the following two criteria ("IM_PORTFOLIO_NAME=XXX, and IM_MODEL = SIMM). Missing these two criteria will result in incorrect results and errors when the process is running.

When running MARGIN_INPUT and MARGIN_CALCULATOR scheduled tasks using Market Risk hierarchy, user must select Market Risk hierarchy name in attribute Account Groups and leave trade filter **empty**. In this case tasks will look at Market Risk hierarchy and find its trade filter to calculate results. If Market Risk hierarchy name is not in the list of account groups, user can add it in UMR configuration page.

Samples of Market Risk hierarchy, trade filter and MARGIN_INPUT scheduled task are shown below:

< All Hierarchies

CSA_ALL

CSA201 [CSA201]

CSA202 [CSA202]

Trade Filter [17230501/MARGINV17/calypso_user]

Name CSA201 Time Zone NONE

Comment Holidays ...

☐ Use SQL Generate SQL Parent NONE

☐ Check Holidays

☐ Cache trades on load ☐ Set as default parent

Custom Criteria	Post Processing	Position Spec	Counterparty	Portfolio Hierarchy	Diary Criteria
Ranges	Date / Time	Product Criteria	Trade Criteria	Underlying Security	

☒ BUY ☒ SELL

Internal Reference ☒ IN

Bundle ... Id ...

Bundle Attribute ...

Book ☒ IN CSA201 ...

Trader ☒ IN ...

Status ☒ IN ...

Sales ☒ IN ...

Book Attribute ...

Keyword Value (IM_MODEL = "SIMM" and IM_PORTFOLIO_NAME = "CSA201") ...

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	CSA_ALL RF calc
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	2 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	191120
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	CALCULATE
Account Groups	CSA_ALL
Calculation Set	SIMM
Risk Factor Source	
File Location	
Risk Type Filter	
Trade Id Filter	
Include Zero Sensitivities	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	
XCcy Zero Curves	
Grid: Dispatcher Name	default
Explode Trades	
Job Size	10
Stop on errors	true

Trade Filters for Account Group

When using Account group configuration, trades in trade filter must have IM_PORTFOLIO_NAME keywords and values can be same or different. It may contain additional filtering like product type or trade status.

When running MARGIN_INPUT and MARGIN_CALCULATOR scheduled tasks using Account Groups, user must select account group name in attribute Account Groups and **must** define trade filter. In this case tasks will load trades of accounts from selected account groups to calculate. If account group name is not in the list of account groups, user can add it in UMR configuration page.

In example showed below, account group CSA_ALL has account CSA_201 and CSA_202, and trade filter contains trades with IM_PORTFOLIO_NAME CSA_201, CSA202 and CSA_203, results will be calculated for CSA_201 and CSA_202.

Samples of margin accounts, trade filter and MARGIN_INPUT scheduled task are shown below:

Margin Accounts

Visualizing 2 Margin Accounts

Group: **CSA_ALL**
Account: **All**

> **CSA201** UMR CSA In Place

No threshold group CSA_ALL

> **CSA202** UMR Pre-CSA

No threshold group CSA_ALL

Trade Filter [17230501/MARGINV17/calypso_user]

Name
CSA_ALL
Time Zone
NONE

Comment
Holidays
...

☐ Use SQL
Generate SQL
Parent
NONE

☐ Cache trades on load
☐ Set as default parent

Custom Criteria
Post Processing
Position Spec
Counterparty
Portfolio Hierarchy
Diary Criteria

Ranges
Date / Time
Product Criteria
Trade Criteria
Underlying Security

☒ BUY
☒ SELL

Internal Reference
☒ IN

Bundle
...
Id
...

Bundle Attribute
...

Book
☒ IN
CSA203,CSA201,CSA202
...

Trader
☒ IN
...

Status
☒ IN
VERIFIED
...

Sales
☒ IN
...

Book Attribute
...

Keyword Value
...

Keyword
Has
IM_MODEL,IM_PORTFOLIO_NAME
...

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	CSA_ALL RF calc
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	2 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	191120
Processing Org	
Trade Filter	CSA_ALL
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	CALCULATE
Account Groups	CSA_ALL
Calculation Set	SIMM
Risk Factor Source	
File Location	
Risk Type Filter	
Trade Id Filter	
Include Zero Sensitivities	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	
XCcy Zero Curves	
Grid: Dispatcher Name	default
Explode Trades	
Job Size	10
Stop on errors	true

2.7.3 Trade Keywords Tagging

New or existing trades can be tagged with an **IM_PORTFOLIO_NAME** keyword.

To use the trade tagging, the following configuration is required:

- Add parameters to the Account definition
- Define Eligible Trade Tagging
- Review IM_ISDA_PRODUCT_TYPE keyword values
- Lifecycle Engine setup

Add Parameters to the Account Definition

The following columns need to be populated:

- counterparty (CP_ID)
- PO (PARTY_ID)
- Account start date (START_DATE)

The counterparty and PO defined in the file should be valid legal entities created in Calypso.

UTI	PARTY_ID	CP_ID	START_DATE	MARGIN_AGREEMENT_NAME	ACCOUNT_GROUP	IM_MODEL	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT_BASE	COLLECT_REGULATIONS	PO
CALYPSOSIMM	CP_1,CALYPSOSF		1/1/2020	CSA1	CSA1_SWAP		Param_Regulation	CSA In Place				USD			CFTC,APRA	API
CALYPSOSIMM	CP_2			CSA2	CSA2_SWAP		Param_Regulation	CSA In Place				USD			CFTC,APRA	API

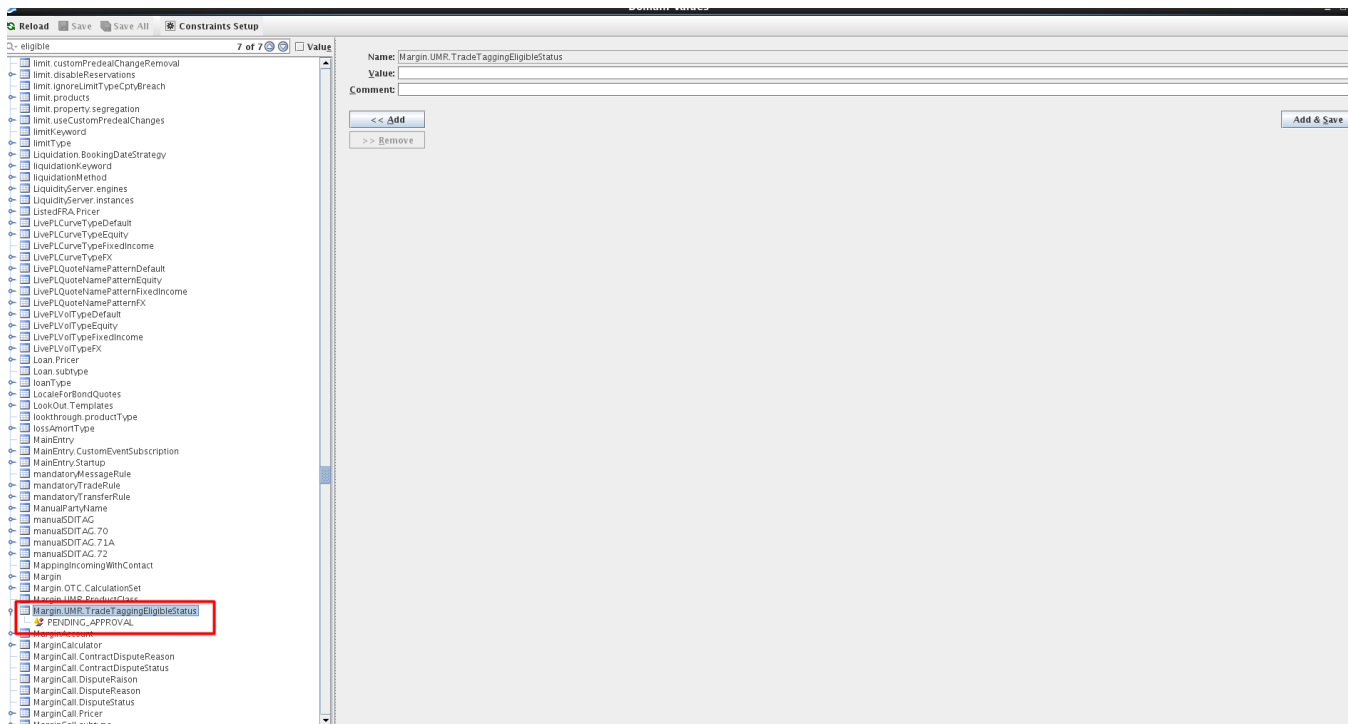
The account Start Date defines the trades in scope. Trades are tagged if the trade date is on or after the Start Date.

Define Eligible Status for Trade Tagging

It is defined in the *Margin.UMR.TradeTaggingEligibleStatus* domain value.

The default trade status is 'Pending'. If the domain value is not set, then only trades in status 'Pending' will be tagged. If the domain value is set to a particular status, then only trades with that status will be tagged.

Trade tagging can be disabled for a single trade by setting the keyword "UMR_TAGGING" to "False".



The keyword IM_ISDA_PRODUCT_TYPE needs to be defined in the trade and the value should be a valid product type defined in the product class mapping in the UMR configuration in Margin UI.

UMR Configuration					
<div> <div>Product Class Mappings</div> <div> <div>Commodity</div> <div>Credit</div> <div>Equity</div> <div>FX</div> <div>Rates</div> </div> <div> <div>+ Add New</div> <div>+ Add New</div> <div>+ Add New</div> <div>+ Add New</div> <div>+ Add New</div> </div> </div>					
Custom Product Type *	Custom Product Type *	Custom Product Type *	Custom Product Type *	Custom Product Type *	
CAOption	FlexiCallOption	FXOption_Sche	ScheduleRates	XccySwap	CancellableSwap
CancellableXCCySwap	CapFloor	CappedSwap	CappedSwapNonDeliv...	ExoticCapFloor	FRA
FRAInArrear	FRASstandard	IRStructuredOption	PreciousMetalDepositL...	PreciousMetalLeaseRa...	ScriptableOTCProduct
SingleSwapLeg	SpreadCapFloor	SpreadLock	SpreadSwap	StructuredProduct	Swap
SwapCrossCurrency	SwapNonDeliverable	Swaption	TriggerSwaption	VarianceSwap	XCCySwap

NOTE: The trade Counterparty and PO need to match the Counterparty and PO defined at the account level. If not, the trade tagging cannot be done.

The trade keyword UMR_TAGGING_TRADE_VERSION will show the version of the trade saved.

Swap/04/28/2027/P:GBP 0.80000 /R:GBP/LIBOR/6M -PO is CALYPSOSIMM (687514) - Versio

Trade Back Office Swap Cashflows Analytics Pricing Env Market Data View Utilities Help

Trade Details Cashflows Resets Fees (*) CSA Inv Attributes

Trader: NONE Trade Date: 04/03/2020 4:24:21 PM

Sales: NONE ☐ Current Trade DateTime

Action: AMEND Bundles... Remove From Bund... Show ...

Status: PENDING ☐ Mirror

Market Type: NONE

Subsidiary

StepIn Trans...

Calc Agent

Comment

BackOffi...

Trade At... Internal Ref. 687

Product ...

Trade Attributes

Setup ☆ ? Q Editable

Name	Value
IM_ISDA_PRODUCT_TYPE	Swap
IM_MODEL	▼ SIMM
IM_PORTFOLIO_NAME	CSA1
UMR_TAGGING_TRADE_VERSION	15
13CTimeIndication	
26T	▼
ACCOMMODATION_CHARGE_ID	
AccountNumber	
ADR Currency	
ADR Fee	
AFMAPricingCashRate	
AFMAPricingSwapRate	
AFMAPricingTM	
AfterSettlementCutoffTime	
Agent	
ALLEGED	

OK Cancel

Novations & IBOR Migration

The trade tagging solution will automatically work with the out of the box novation and IBOR migration processes.

If a trade novation occurs after the UMR compliance date, then the trade becomes eligible for UMR calculation. For Novations, the keyword tagging process will look at the greater of the "LastNovationDate" keyword or the trade start date to compare against the start of the margin contract. Nothing is configured by the user; this is all done automatically through the novation lifecycle.

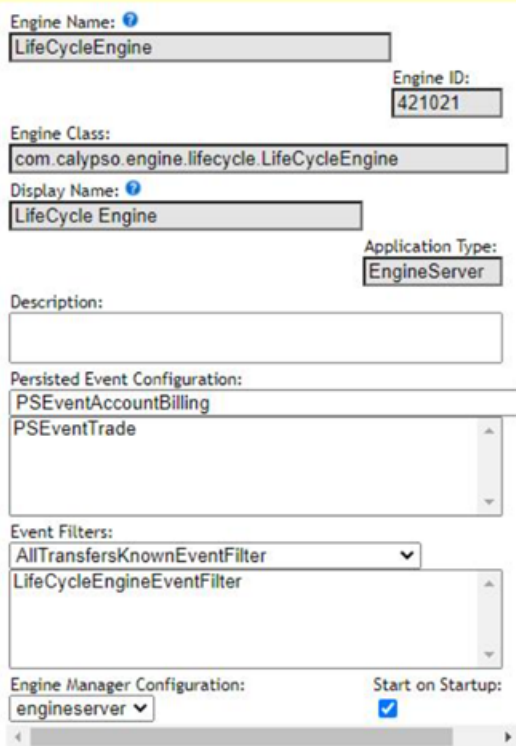
When a trade moves from an IBOR index to a replacement, the trade is then NOT eligible for UMR. To account for this the trade tagging process will look at keyword "TransferReason". The out of the box calypso IBOR transition process will set this keyword to "RateIndex_Update". When keyword "TransferReason" = RateIndex_Update, the UMR tagging will occur. Nothing is configured by the user; this is all done automatically through the RATEINDEX_UPDATE lifecycle.

Lifecycle Engine Setup

A LifecycleHandler for UMR is available in the *lifeCycleEntityType* domain value to enable it in the Lifecycle engine. Lifecycle Engine needs to be added manually for the trade tagging to work. If trade tagging is not desired, this engine is not required.

This feature is not activated out-of-the-box. To activate the *UMR* Tagging, a domain value of UMR needs to be added in the *lifeCycleEntityType* domain. The Lifecycle Engine also needs to be configured.

You can configure the Lifecycle Engine using the Engine Manager in Web Admin.



Engine Name:

Engine ID:

Engine Class:

Display Name:

Application Type:

Description:

Persisted Event Configuration:

Event Filters:

Engine Manager Configuration:

Start on Startup: ☒

2.8 Setup in Risk Factor Export


Match_ID in the Risk Factor Export





The column Match_ID can be populated when calculating risk factor, based on the 'Margin' domain value setup:

- Value: MATCHID.TradeKeyword
- Comment: keyword name

If this domain is not present or set to blank, then the Match_ID column is not populated.

Example:

 Domain Values

 Reload
  Save
  Save All
  Constraints Setup

Q- Margin
30 of 73
☐ Value

- Margin
 - ExportTemplate.AcadiaExposure
 - ExportTemplate.AcadiaRiskFactor
 - ExportTemplate.CalypsoExposure
 - ExportTemplate.CalypsoRiskFactor
 - MATCH_ID.TradeKeyword**
- Margin.OTC.CalculationSet
- Margin.UMR.ProductClass

Name: Margin

Value: MATCH_ID.TradeKeyword

Comment: TrioptimaMatchID


<< Add
>> Remove

	A	B	C	D	E	F	G	H
1	trade_id	match_id	party_id	counter	portfolio	im_moc	end_da	risk_type
35	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
36	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
37	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
38	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
39	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
40	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
41	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
42	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui
43	632003	WXYZ	CALYPSOS	CP_1	CSA1	SIMM		Risk_IRCui

Additional Columns in the Risk Factor Export

As part of the UMR configuration, the section “Additional CRIF File Columns” can be used to define custom columns that will be output in the Calypso and Acadia risk factor exports.

UMR Configuration

Additional CRIF File Columns						+	Add New	
Column Name *	Trade Keyword	Format		Column Name *	Trade Keyword	Format		
Underlying	PUACode	ALL	✕	usi_valueev	USIValue	ACADIA	✕	
Column Name *	Trade Keyword	Format		Column Name *	Trade Keyword	Format		
uti_prefix	UTIPrefix	ACADIA	✕	uti_value	UTIValue	CALYPSO	✕	
Column Name *	Trade Keyword	Format		Column Name *	Trade Keyword	Format		
trade_date	date_start	ACADIA	✕	notional_2	Notional_Amount	CALYPSO	✕	
Column Name *	Trade Keyword	Format		Column Name *	Trade Keyword	Format		
usi_prefix	USIPrefix	ACADIA	✕	trade_curr_2	Ccy2	ACADIA	✕	

These additional columns can be used for more accurate reconciliation and reporting.

The following parameters can be defined:

- Column Name: The name of the output Column (also can be used for importing risk factors)
- Trade Keyword: The calypso keyword name that maps to the column
- Format: ACADIA, CALYPSO or ALL.

When an additional column is configured, the system will automatically look up the trade keywords and populate the column for any risk factors from that trade in the risk factor export. Similarly, the user can then IMPORT risk factors with values in the defined column name. The final exported risk factors will homogenize keywords from calypso and imported column values.

If there is no keyword value or no imported column data, then the output column will be blank for the given trade.

2.9 Setup for Audit

The Audit mode can be set up for the Admin page (Calculation Sets, Margin Account Group, Exposure Monitoring, Product Class Mapping, Risk Factor Sources, additional CRIF file columns and Threshold Monitoring) and for the Reference Data (Margin Account, Group Threshold, Regulators). The following values need to be added to the domain "classAuditMode" as needed: *margin-simm*, *margin-manager*, *marginserver*.

- *margin-simm* and *margin-manager* – Audit records with this app name will be created only for v16.
- *marginserver* – In v17, both *margin-simm* and *margin-manager* are combined under *marginserver*. Audit records for margin will be created with the app name *marginserver*.

margin-simm and *margin-manager* can be configured in v17, only for backward compatibility support (such as for records created in v16).

For new records created in v17, *marginserver* should be added under the domain and configured under the audit report as filter criteria.

Below is a list of items mapped to *margin-simm* and *margin-manager*:

- **margin-simm**
 - *cvscolumnconfig*
 - *riskfactorsource*
 - *calculationset*
 - *im-monitoring-config*
- **margin-manager**
 - Margin Account
 - Account Group
 - Product mapping
 - Threshold-monitoring-config

Having selected audit types of *margin-manager* and/or *margin-simm*, the audit records for margin become visible in the Audit Report window.

Audit Report (10/20/22 10:31:20 AM)

Report Data View Export Utilities Help

Criteria

Type: margin-manager,mai Object Id: Start: 10/20/2021 End: 10/20/2022

Groups: Users: Legal Entity: EntityName: Include Archive: ☐

Class Name	Id	Name	Field Name	Date	User Name	Old Value	New Value	Version
FlatSIMMPParameter	b9a99fc8-73d7-4a6a-8dca-f2f3dfd3cc77		parameterType	11/29/21 6:29:42.922 PM PST	calypso_user		LocalRegSIMM	1
FlatSIMMPParameter	215a87f0-d195-459d-8302-717d28a8c59d		criteria	11/29/21 6:29:42.922 PM PST	calypso_user		CDSWP	1
FlatSIMMPParameter	7f900085-b959-4484-9748-fa2fa0010687		tenantId	11/29/21 6:29:42.938 PM PST	calypso_user		0	1
FlatSIMMPParameter	b5e49c2f-177f-472f-8609-9a242a185349		regulator	11/29/21 6:29:42.938 PM PST	calypso_user		APRA	1
FlatSIMMPParameter	0d2ce8fa-bb50-476f-b34a-6f4a94e4ffa0		id	11/29/21 6:29:42.938 PM PST	calypso_user		79e7c021-37ba-4114-a2f6-83993db73df0	1
FlatSIMMPParameter	48f86250-afa2-45d6-8a12-c95131ae8efd		version	11/29/21 6:29:42.938 PM PST	calypso_user		1	1
FlatSIMMPParameter	2a71c9fd-bae1-4e38-806b-8d2c8831795c		defaultParam	11/29/21 6:29:42.938 PM PST	calypso_user		false	1
FlatSIMMPParameter	686fc04b-467d-422c-8b51-f2c8723d0ca8		direction	11/29/21 6:29:42.938 PM PST	calypso_user		null	1
FlatSIMMPParameter	778c79ce-dc55-4ee9-b17f-3b446dc5cb9		parameterType	11/29/21 6:29:43.047 PM PST	calypso_user		LocalRegSIMM	1
FlatSIMMPParameter	226461a2-7292-4d47-8552-d2611ee88ed9		criteria	11/29/21 6:29:43.047 PM PST	calypso_user		CDSWP	1
FlatSIMMPParameter	4302adbb-8a46-4736-bfe8-4b21cdcb8988		tenantId	11/29/21 6:29:43.047 PM PST	calypso_user		0	1
FlatSIMMPParameter	96818857-f2e3-4b7c-90b5-a08321b4fd97		regulator	11/29/21 6:29:43.047 PM PST	calypso_user		OSF1	1
FlatSIMMPParameter	3acd1eee-506f-4c49-91fd-d5ef41edbd45b		id	11/29/21 6:29:43.047 PM PST	calypso_user		d824baec-184e-4166-9a2d-87a40c1c8a51	1
FlatSIMMPParameter	a73ebf18-7099-44e9-a0d7-3a86db65e78e		version	11/29/21 6:29:43.047 PM PST	calypso_user		1	1
FlatSIMMPParameter	4460de81-574c-438d-bd1d-3895abece33f		defaultParam	11/29/21 6:29:43.047 PM PST	calypso_user		false	1
FlatSIMMPParameter	90c5a771-fcd6-424d-b016-61626d14fc6e		direction	11/29/21 6:29:43.047 PM PST	calypso_user		null	1
FlatSIMMPParameter	8feef943-7dbe-4d5d-92a0-f58423573f95		parameterType	11/29/21 6:29:43.094 PM PST	calypso_user		LocalRegSIMM	1
FlatSIMMPParameter	bb376bd4-9e0a-4539-960c-63fdb613846		criteria	11/29/21 6:29:43.094 PM PST	calypso_user		CDSWP	1

2.10 Domain Values

Here is the list of domain names and values used in margin solution.

Domain Name	Domain Value	Domain Comment	Description
GENERATE_ALL_RF_SCHEDULE	true or false		Default value is true and all risk factors will be generated for Schedule trades
ISDASIMM.flipXccyBasisRisk.Currencies	Currency		
ISDASIMM.NonValidCurrency	blank or currency code	blank or currency code	To enable non-valid currency validation or conversion. Default value is blank/blank. This is further explained in CALCULATE Mode
ISDASIMM.treatIRCurveAsXccyBasis.Currencies	Currency		
lifeCycleEntityType	BackTesting		To enable UMR backtesting
lifeCycleEntityType	UMR		To enable UMR trade tagging

Domain Name	Domain Value	Domain Comment	Description
Margin	ExportTemplate.AcadiaExposure	Acadia IM file naming convention	Default value is MarginExporter-_-TIMEHORIZON-_-ACCOUNTGROUP-_-VALDATE This is further explained in Output File Names
Margin	ExportTemplate.AcadiaRiskFactor	Acadia CRIF file naming convention	Default value is ACCOUNTGROUP-IMRISK-_-VALDATE-_-ACADIA This is further explained in Output File Names
Margin	ExportTemplate.CalypsoExposure	Calypso IM file naming convention	Default value is MarginExporter-_-TIMEHORIZON-_-BilateralMargin_-TIMESTAMP This is further explained in Output File Names
Margin	ExportTemplate.CalypsoRiskFactor	Calypso CRIF file naming convention	Default value is ACCOUNTGROUP-IMRISK-_-VALDATE This is further explained in Output File Names
Margin	ExportTemplate.MarginAccount	Margin Account file naming convention.	Default value is MarginAccount-_-ACCOUNTGROUP-_-VALDATE This is further explained in Output File Names
Margin	ExportTemplate.MarginBackTest	Margin	Default value is

Domain Name	Domain Value	Domain Comment	Description
	ting	Backtesting file naming convention.	UMRBackTesting-_-ACCOUNTGROUP-_-VALDATE This is further explained in Output File Names
Margin	MATCH_ID.TradeKeyword	Keyword name	
Margin.PLMark.Optimization	true or false		When true, the performance for saving collateral exposures in MARGIN_CALCULATOR scheduled task is improved. Note - Error for single trade will result in failure of entire batch to save Collateral Exposures. By default, it is disabled (false).
Margin.UMR.TradeTaggingEligibleStatus	Trade Status		Used in trade tagging Default is PENDING if domain value is not defined
MarginEngine	SIMM_MARGIN_INPUT_ST_ID	Scheduled task IDs separated by commas	To define margin accounts to calculate what-if margin
MarginInput.AllowEmptyCRIF	true or false		Default value is false True to enable import a blank CRIF file or a file with headers but no rows
MarginInput.AnalysisParametersOverride	UseAlternateInterpolator	true or false	To enable UseAlternateInterpolator when calculating Risk factors. Default value is false

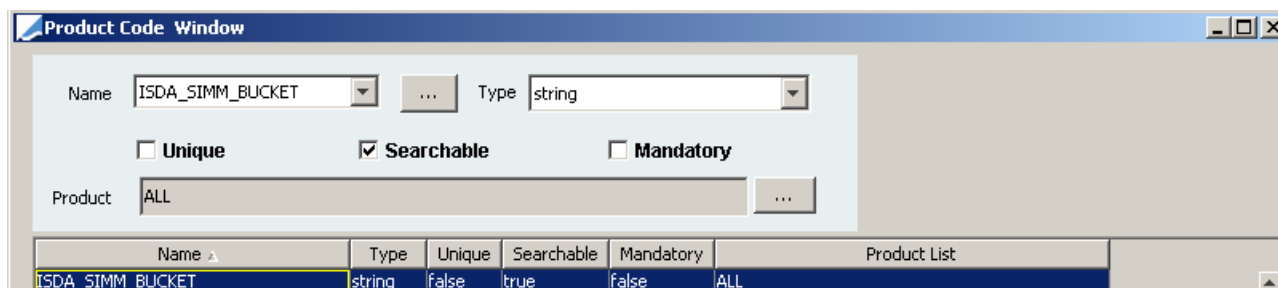
Domain Name	Domain Value	Domain Comment	Description
MarginInput.Inflation.Subtype	Product sub-type		
MarginInput.ProductFamily.Ignore	Product Family		To be ignored during risk factor calculation
MarginInput.RiskAnalysis.Parallelise	true or false		Default value is false
measuresForAdjustment	PM_SCHEDULE PM_SIMM		To enable PL marks of SIMM and SCHEDULE IM
MarginInput.ScheduleDuration	Swaption	Option/Underlying or blank	When comment is Option or blank, Swaption Expiry date will be used as "end_date" to calculate IM in Schedule methodology. Default behavior. When comment is Underlying, Swaption's Underlying maturity date will be used as "end_date" to calculate IM in Schedule methodology.

2.11 Product Data

The user is required to maintain an ISDA_SIMM_BUCKET product code for Credit and Equity.

2.11.1 Equity

The user needs to configure Product Code *ISDA_SIMM_BUCKET* according to the configuration below:



The screenshot shows the 'Product Code Window' with the following configuration for the product 'ISDA_SIMM_BUCKET':

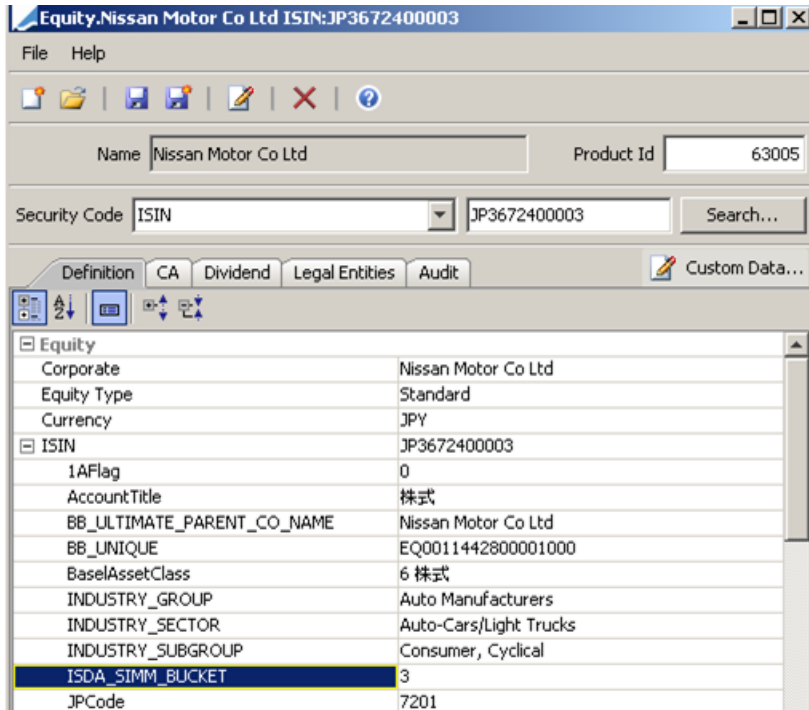
Name	Type	Unique	Searchable	Mandatory	Product List
ISDA_SIMM_BUCKET	string	false	true	false	ALL

Additional configuration details visible in the window:

- Name: ISDA_SIMM_BUCKET
- Type: string
- Unique: ☐
- Searchable: ☒
- Mandatory: ☐
- Product: ALL

For each Equity product, the user needs to assign a valid ISDA_SIMM_BUCKET.

[1,2,3,4,5,6,7,8,9,10,11,Residual]



Equity.Nissan Motor Co Ltd ISIN:JP3672400003	
Name	Nissan Motor Co Ltd
Product Id	63005
Security Code	ISIN JP3672400003
Definition	CA Dividend Legal Entities Audit Custom Data...
Equity	Nissan Motor Co Ltd
Corporate	Standard
Equity Type	JPY
Currency	JP3672400003
ISIN	0
IAFlag	株式
AccountTitle	Nissan Motor Co Ltd
BB_ULTIMATE_PARENT_CO_NAME	EQ0011442800001000
BB_UNIQUE	6 株式
BaseAssetClass	Auto Manufacturers
INDUSTRY_GROUP	Auto-Cars/Light Trucks
INDUSTRY_SECTOR	Consumer, Cyclical
INDUSTRY_SUBGROUP	3
ISDA_SIMM_BUCKET	7201
JPCode	

A valid ISIN is not mandatory for any product. If a trade has no valid ISIN, a dummy obligation can be defined in the trade screen as below and this dummy ISIN would be used as a qualifier.

Buy Protection on SNAME_IT_010525_CHU SENIOR_UNSECURED/Pay: JPY 1.00000 Maturing on 12/20/2025 -PO is Mitsubishi UFJ Trust and Banking

Trade Back Office CreditDefaultSwap Cashflows Analytics Pricing Env Market Data View Utilities Help

Buy Protection on SNAME_IT_010525_CHU SENIOR_UNSECURED/Pay: JPY 1.00000 Maturing on 12/20/2025

Trade Details Fees Cashflows Inv Attributes

Cpty SNAME_GO_010933_NYC CounterParty LNAME_010933

Book CSA1 Status PRICING ID 906501

Template NONE

Buy Credit Protection ☒ Standard Fixed Coupon

Reference Entity Details Cash

Notional JPY 1,500,000,000 Bullet

Issuer Name SNAME_IT_010525_CHU Show

Seniority SENIOR_UNSECURED

Market Standard Show...

Description LNAME_010525

Industry

Rating Baa1 (Moody), A (R&I), A- (S&P)

Ticker

Obligation Add Remove Show

Use Obligation

XSNOREFOBL00

Fix Pay JPY 1,500,000,000

Bullet

Start 11/16/2022 End 12/20/2025

Cpn. (bps) 100 First Accrual Begin 09/20/2022

Cash Settlement 01/15/2010 Settle Lag 0

First Cpn. Pay 12/20/2022 -3,791,666.00

Recovery Rate Show

Spread (bps) 0.0000 Upfront (%)

Upfront Fee USD Calc Add

MTM Accrued

2.11.2 Credit

The user needs to configure the Legal Entity Attribute *ISDA_SIMM_BUCKET* with a valid ISDA bucket for Credit for each Issuer.

[1,2,3,4,5,6,7,8,9,10,11,12,Residual]

Legal Entity Attributes Window

Legal Entity SNAME_CN_049117_CAP Role ALL

Processing Org MUTB_TKY

Attribute Type ISDA_SIMM_BUCKET Value 3

Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value
78413	ALL	SNAME_CN_049...	ALL	ISDA_SIMM_BUC...	3

Note: The Processing Org Role must be ALL.

The user can maintain a PRIMARY REFERENCE OBLIGATION for each issuer and a valid ISIN for each obligation.

Reference Entity Obligations

Issuer: SNAME_CN_049117_CAP

Currency: JPY Seniority: SENIOR_UNSECURED

Add Delete ?

Currency	Issuer	Seniority	Obligation	Primary Obligation
JPY	SNAME_CN_049117_CAP	SENIOR_UNSECURED	FRNAEON/50Y/LIBOR/09/29/2056	<input checked="" type="checkbox"/>

Code Window BondABIBB/0D/02/15/2016/2.875%

Product Code Name	Value
INDUSTRY_SUBGROUP	Brewery
INTERNAL_RATING_UPDATED_DATE	2013/08/13
ISIN	US03523TBA51
SecurityTypeCode	BD11

However, a valid ISIN is not mandatory. If a trade has no valid ISIN, a dummy obligation can be defined in the trade screen and this dummy ISIN would be used as a qualifier.

CDSIndex Definition

The user is required to maintain a valid CDSIndex Definition and reference basket.

ID:195038 Desc:CDX_NA_IG_5Y_S20.Jun.2018

Definition Reference Portfolio CashFlows Next Version

Issuer: SNAME_CD_010796_IG SecCode: Codes...

Name: CDX_NA_IG_5Y_S20 ISIN:

Description: CDX_NA_IG_5Y_S20 Series: 20 Version: 1

Reference Portfolio: CDX_NA_IG_S20 New

Notional: 25,000,000 Current Factor: 1.00000 Quote Type: Spread

Start Date: 03/20/2013 Maturity Date: 06/20/2018 5Y Annex Date:

USD Fixed 100.00000 bp

Pmt: QTR FOLLOWING R Day: ACT/360 LDN, NYC

Credit Event: FAILURE TO PAY, BANKRUPTCY

Settlement: CASH PAY_ACCRUAL Status:

Settlement Lag: 0 Bus Settle Fee Offset: 0 Bus ☒ Maturity Date Inclusive Default Event Settle Lag: 0 Bus

ID:195038 Desc:CDX_NA_IG_5Y_S20.Jun.2018

Definition Reference Portfolio CashFlows Next Version

Issuer SNAME_CD_010796__IG ... SecCode: Codes...

Name CDX_NA_IG_5Y_S20 ISIN ...

Description CDX_NA_IG_5Y_S20 Series 20 Version 1

Reference Portfolio CDX_NA_IG_S20 ... New

Notional 25,000,000 Current Factor 1.00000 Quote Type Spread

Start Date 03/20/2013 Maturity Date 06/20/2018 5Y Annex Date

USD Fixed 100.00000 bp

Pmt QTR FOLLOWING R Day ACT/360 LDN,NYC ...

Credit Event FAILURE TO PAY,BANKRUPTCY ...

Settlement CASH PAY_ACCRUAL Status

Settlement Lag 0 Bus Settle Fee 0 Bus Maturity Date Inclusive Default Event 0 Bus Settle Lag

CreditDefaultSwap

The user should make sure Obligation is populated on the CreditDefaultSwap trade. If Primary Obligation is defined for the issuer, it will be automatically populated in the trade.

Sell Protection on SNAME_IT_010525_CHU SENIOR_UNSECURED/Receive: JPY 0.32300 Maturing on 10/26/2020 -PO is Mitsubishi UFJ Trust and Bankin...

Trade Back Office CreditDefaultSwap Cashflows Analytics Pricing Env Market Data View Utilities Help

Sell Protection on SNAME_IT_010525_CHU SENIOR_UNSECURED/Receive: JPY 0.32300 Maturing on 10/26/2020

Trade Details Fees Cashflows

Cpty SNAME_GO_010933_NYC CounterParty LNAME_010933

Book TEST_IM_CDS_1 Status PRICING ID 888001

Template NONE

Sell Credit Protection ☐ Standard Fixed Coupon

Reference Entity Details Cash

Notional JPY 1,500,000,000 Bullet

Issuer Name SNAME_IT_010525_CHU Show

Seniority SENIOR_UNSECURED

Market Standa... Show...

Description LNAME_010525

Industry

Rating Baa1 (Moody), A (R&I), A- (S&P)

Ticker

Obligation Add Remove Show

Use Obligation

☒ BondTOSH_49/4Y/01/28/2014/1.18%

Premium PAY_ACCRUAL ☐ Single Pmt

☐ Maturity Date Inclusive

Fix Rec JPY 1,500,000,000

Bullet

Fun...

Start 10/26/2015 End 10/26/2020

0.32300 %

Cmp ☐

2.11.3 Inflation Swap

Inflation swaps are classified under product sub-types that can be defined in the domain *MarginInput.Inflation.Subtype* irrespective of the product type.

Domain Values Window

Search: margininput Find ☐ Value

- MarginCall.subtype
- MarginCallPositions
- MarginInput.Inflation.Subtype**
- American
- Inflation
- markAdjustmentReasonOTC
- markAdjustmentReasonPosition
- marketDataType

Name: MarginInput.Inflation.Subtype

Value:

Comment:

<< Add

Apart from the product subtype, the market data should have an inflation index for the trade to be classified under the Inflation sub-type and to calculate InflationVol sensitivities. If the subtype is classified as *Inflation* in the domain values but the market data is using rates index instead, it will calculate IRVol and not inflationVol irrespective of the product sub-type. The index can be defined in the rates index window in Calypso. ([Configuration > Interest Rates > Rate Interest Definition](#))

Rate Index Window [142007/NAB_VINCE/]

Rate Definition

Tenors

Index

CPI

Add

Currency

USD

Day Count

1/1

Sources

ISDA,Source

...

Add

Date Roll

NO_CHANGE

Time Zone

America/New_York

Hour

19

Period Rule

ADJUSTED

Publish Freq

MTH

Default Source

Source

Reference Day

1

Publication Lag

45

Publications

Pay Hol

NYC

...

Publication Hol

NYC

...

Pay Days

0

Index Lag

3

M

☒ Pay Bus Lag
 ☒ Pay In Arrears
 ☒ Reset Bus Lag
 ☒ Reset In Arrears

Compound Freq

NON

Calc Mtd

Interpolated

Interp Mtd

Weigh

Index Type

Inflation

...

Rate rounding

NONE

☐ No Auto. Interp.

Quote Type

Price

Parse

...

Comment

Formula

Currency	Code	DayCount	DateRoll	Sources
NZD	DEPO	ACT/365	MOD_FOLLOW	Source
NZD	LIBOR	ACT/360	MOD_FOLLOW	BBA,LIBOR01,Source
SEK	DEPO	ACT/360	MOD_FOLLOW	Source
SEK	LIBOR	ACT/360	MOD_FOLLOW	BBA,LIBOR01,Source
SEK	STIBOR	ACT/360	MOD_FOLLOW	Source,Reuters
SGD	DEPO	ACT/365	MOD_FOLLOW	Source
SGD	SIBOR	ACT/365	MOD_FOLLOW	Reuters,Source
THB	DEPO	ACT/365	MOD_FOLLOW	Source
THB	THBFIX	ACT/365	MOD_FOLLOW	Source,Reuters
USD	CPI	1/1	NO_CHANGE	ISDA,Source
USD	DEPO	ACT/360	MOD_FOLLOW	Source
USD	FEDFUNDS	ACT/360	MOD_FOLLOW	T120,Source
USD	FF	ACT/365	MOD_FOLLOW	Reuters
USD	LIBOR	ACT/360	MOD_FOLLOW	BBA,T3750,LIBOR01,Source,MUTB
USD	LV	ACT/360	MOD_FOLLOW	Ask,Bid
USD	UST	ACTB/ACTB	FOLLOWING	Source

Load

Save

Save As New

New

Delete

Average ...

Attributes

Rebase

☐ Authorization

Show Pending Modifications

Help

Close

An example of the multi-sensitivity output for different indices being used for product subtype defined for Inflation is below.

Trade Id	Risk Exploded Trade Id	Product Id	Measures	Values	Underlier Currency	Underlier Name	Underlier Market Data Name	Product Subtype
891301	891301	318501	rateVega(Base)	67,096.70	USD	USD CPI 0D	USD CPI CAP_CAPATM	Inflation
891301	891301	318501	rateVega(Base)	85,257.12	USD	USD CPI 0D	USD CPI CAP_CAPATM	Inflation
-2	891401	318602	rateVega(Base)	13,419.34	USD	USD CPI 0D	USD CPI CAP_CAPATM	Inflation
-2	891401	318602	rateVega(Base)	24,977.72	USD	USD CPI 0D	USD CPI CAP_CAPATM	Inflation
-5	891401	318901	rateVega(Base)	11.27	USD	USD LIBOR 3M	@TK_USD_LIBOR_Swptn_VolSurf	American
-5	891401	318901	rateVega(Base)	73.53	USD	USD LIBOR 3M	@TK_USD_LIBOR_Swptn_VolSurf	American
-8	891501	318705	rateVega(Base)	3,448.47	USD	USD CPI 0D	USD CPI CAP_CAPATM	Inflation
891601	891601	318801	rateVega(Base)	1.03	USD	USD LIBOR 3M	@TK_USD_LIBOR_Swptn_VolSurf	American
891601	891601	318801	rateVega(Base)	10.61	USD	USD LIBOR 3M	@TK_USD_LIBOR_Swptn_VolSurf	American

In the above case, trade 891301 has Vega with *Inflation* as subtype in MSA, and market data USD CPI CAP_CAPATM has inflation index CPI. So, this trade will have InflationVol sensitivities. While trade 891601 has Vega with *American* as subtype in MSA, and market data @TK_USD_LIBOR_Swptn_VolSurf has Rates index Libor. So, this trade will have IRVol sensitivities.

2.11.4 Interest Rate Index

Interest rate index mapping of Risk_IRCurve Label2 follows below rules.

- If index is PRIME, label2 is Prime
- If index is overnight index, label2 is OIS. Overnight index is one of below:
FED,ONIA,TONAR,CORRA,TOIS,HONIX,MIBOR,MITOR,NZIONA,SIOR,SONAR,TORF
- If index is neither PRIME nor overnight index and tenor is either 1D or 0D, label2 is OIS
- If index is not PRIME, not overnight and not OIS, it tries to use the value of UMR_Index_Mapping attribute of Calypso Rate Index Defaults as label2
- Otherwise, label2 is Libor*

Example of mapping with UMR_Index_Mapping attribute:

Rate Index Window [16221002/MARGIN-PROMOTION/calyp

Rate Definition

Index: **MUNIPSA** Currency: **USD**

Day Count: **ACT/ACT** Sources: **SIFMA**

Date Roll: **MOD_FOLLOW** Time Zone: **America/New...**

Period Rule: **ADJUSTED** Publish Freq: **WK**

Default Sou...: **SIFMA** Publish Dat...: ...

Pay Hol: **NYC** Reset Hol: **NYC**

Pay Days: **0** Reset Days: **1**

☒ Pay Bus... ☒ Pay In Arr... ☒ Reset Bus... ☐ Reset In A...

Compound ...: **NON**

Index Type: **Interest** te round...: **NONE**

☐ No Auto. ...

Comm...: ...

Quote Type: **Yield** Formula: ...

Rate Index Attributes Window

Name	Value
RATE_INDEX_CODE.T3750	
RateLookback	
RateLookbackDays	
SfrIndexName	
SpotDateCalculator	
SpotDateCalculatorForSource	
TRAXRateIndexCode	
UMR_Index_Mapping	Municipal
UNDERLYING_RATE_INDEX	
UNDERLYING_RATE_INDEX_NAME	
UNDERLYING_RATE_INDEX_TENOR	
USE_ARREAR_ADJ	
USE_INDEX_FREQUENCY	

Apply Refr... Clea... ...

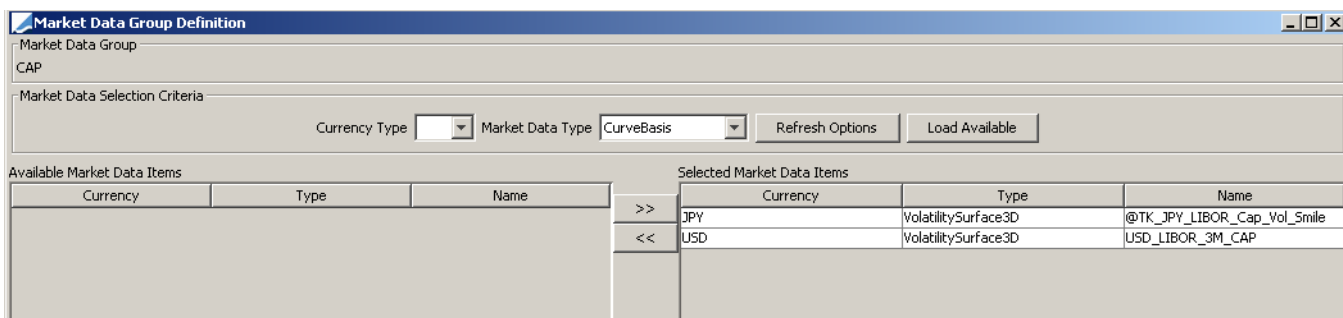
Curre...	Code	DayCount	DateRoll	Sources	Reset Holidays	Reset Days
USD	LIBOR	ACT/365	MOD_FOLLOW	LIBOR01,PAI,CMEPAI,USDPAL,CME,LCH,BBA	LON	1
USD	MUNIPSA	ACT/ACT	MOD_FOLLOW	SIFMA	NYC	1
USD	PRIME	ACT/360	FOLLOWING	H15,CITI,BTC,JPM,AVG	NYC	0
USD	PSA	ACTB/ACTB	FOLLOWING	PSA	NYC	1

2.12 Market Data Groups

Market data groups are used in the following functionalities (within the context of ISDA SIMM Margin):

ParRate Analysis

- Scheduled task MARGIN_INPUT – Ignore Curves, XCcy Zero Curves
- Scheduled task CREATE_CAPATM_SURFACE – Surfaces
- Scheduled task CREATE_ATM_SURFACE - Surfaces
- The Market Data Group window is accessed using the menu action `marketdata.MarketDataGroupWindow`.



Available Market Data Items			Selected Market Data Items			
Currency	Type	Name		Currency	Type	Name
			>>	JPY	VolatilitySurface3D	@TK_JPY_LIBOR_Cap_Vol_Smile
			<<	USD	VolatilitySurface3D	USD_LIBOR_3M_CAP

The user can select the currency and market data type of the market data items and click “Load Available”. The system will display the corresponding market data items on the left side of the window. The user can use the right arrow to move market data items into the right side of the window. Click “Save” or “Save as” to create/update a market data group.

3. Bilateral Margin Collateral Setup

3.1 Margin Call Contract

If the margin calculation is to be used by the Calypso collateral solution, margin call contracts must be configured.

To manually generate CSA agreements in Calypso, the user needs to create legal entities for each CSA agreement and create a margin call contract for the counterparty with 'IM_PORTFOLIO_NAME' under 'Additional Attributes'. IM_PORTFOLIO_NAME must be set to the CSA name. The contract type of the margin call contract must be set to ISDA.

Legal Entity- Version - 1 [160013/MARGINDEMO_V16_13/calypso_user]

Utilities Help

Short Name CSA1
Full Name CSA1
Parent
Country UNITED STATES
Inactive As...
Entered Date 10/09/2017 5:07:03 AM
External Ref
Holidays NYC

Sta... Enabled
Rol... Agent
CounterParty
ExtCounterParty

U... calypso_user

Fina...
Non Fina...

Attributes Legal Agree... Cont... Rating S... Netting Me...
Custom Registra... Relation Tolerance Account
Ref Ob LE Id 311220 Authoriz... Show Auth.

Loa... N... Del... Save Save ... Update Short ... Close

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Margin Call Config Util Help

Edit Browse

Name : CSA1 321300 0 Subtype : Master

Description : CSA1 Contract Parent : ...

Parties	Details	Dates & Times	Exposure Groups	Initial Margin
Independent Amount	Eligibility	Concentration & Limits	Optimization	Ratings
<p>Comment:</p>				
<p>Others</p> <p>ACCOUNT_NAME</p> <p>CCP</p> <p>CCP_ORIGIN_CODE</p> <p>CCP_REFERENCE</p> <p>CCP_REFERENCE_CME</p> <p>CCP_SEGREGATION_ACCOUNT</p> <p>CLIENT_TRANSFERS</p> <p>CLOUD_NET</p> <p>DISPUTE_COMMENT_MANDATORY</p> <p>EXCLUDE_ACCOUNT_FROM_INTERACCOUNTXFER</p> <p>EXCLUDE_REPO_INTEREST</p> <p>EXCLUDE_SECLENDING_INTEREST</p> <p>IGNORE_ALLOW_EX_DIVIDEND</p> <p>IM_IMPORT_CURRENCY</p> <p>IM_PORTFOLIO_NAME</p> <p>INCLUDED_VM_FLOWS</p> <p>INTEREST_DATE</p>				

CSA1

3.2 Exposure Group Configuration

To support Two-way IM, the concept of the Exposure Group was created on the Margin Call contract. For details of how exposure groups work, please refer to the Collateral module documentation. Here we are just focusing on how to configure exposure groups to see the collateral exposure trades which are created by the scheduled task MARGIN_CALCULATOR.

User needs to define below static data filters for incoming IM and outgoing IM, then define them into exposure groups in margin call contract.

Static Data Filter - Incoming IM

Static Data Filter Window [140022SP2/mtb/]

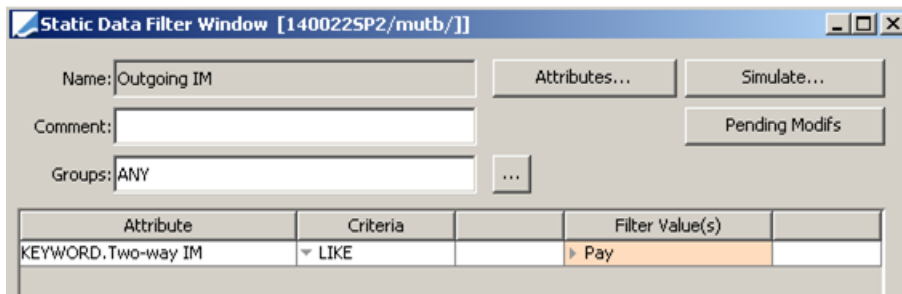
Name: Incoming IM Attributes... Simulate...

Comment:

Groups: ANY ...

Attribute	Criteria	Filter Value(s)
KEYWORD.Two-way IM	LIKE	Receive

Static Data Filter - Outgoing IM



Static Data Filter Window [140022SP2/mutb/]]

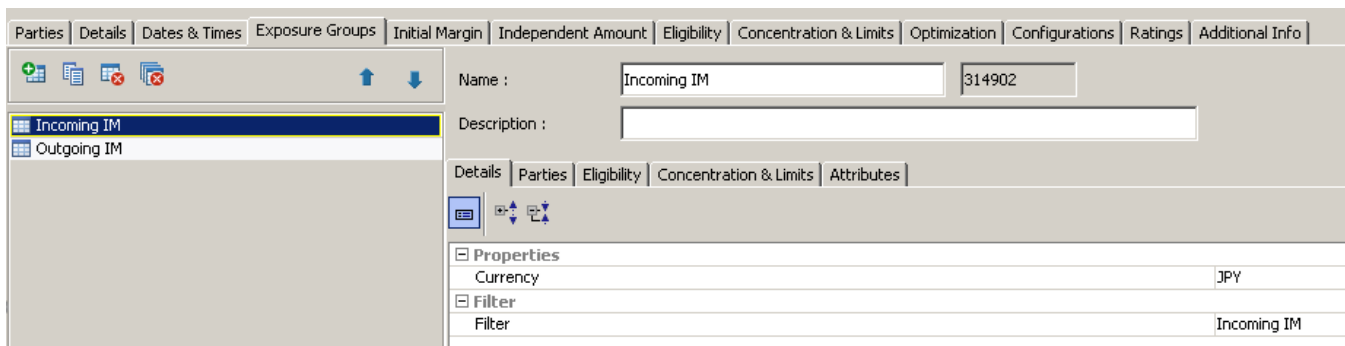
Name: Outgoing IM Attributes... Simulate...

Comment: Pending Modifs

Groups: ANY ...

Attribute	Criteria	Filter Value(s)
KEYWORD.Two-way IM	LIKE	Pay

Exposure Groups - Incoming IM



Parties | Details | Dates & Times | Exposure Groups | Initial Margin | Independent Amount | Eligibility | Concentration & Limits | Optimization | Configurations | Ratings | Additional Info

Name : Incoming IM 314902

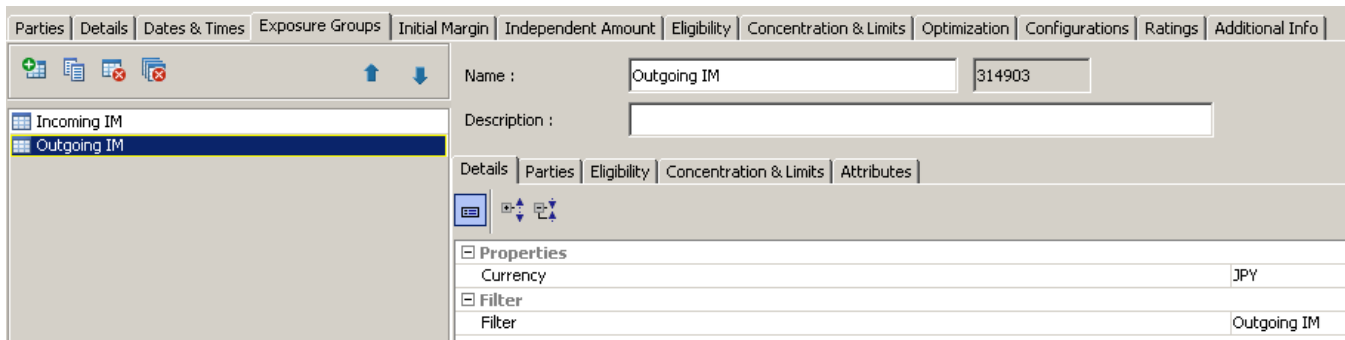
Description :

Details | Parties | Eligibility | Concentration & Limits | Attributes

Properties

Currency	JPY
Filter	Incoming IM

Exposure Groups - Outgoing IM



Parties | Details | Dates & Times | Exposure Groups | Initial Margin | Independent Amount | Eligibility | Concentration & Limits | Optimization | Configurations | Ratings | Additional Info

Name : Outgoing IM 314903

Description :

Details | Parties | Eligibility | Concentration & Limits | Attributes

Properties

Currency	JPY
Filter	Outgoing IM

4. Bilateral Margin Process

4.1 MARGIN_INPUT Scheduled Task

The MARGIN_INPUT scheduled task allows users to-

- Import/export accounts and regulators
- Calculate/import/export risk sensitivities
- Calculate IM

The user defined under CLIENTUSER is running the scheduled task and therefore needs proper permissions.

The configuration of the scheduled task is described below:

Attributes	Values
Pricing Environment	Pricing Env used for computation
Timezone	Timezone
Trade Filter	Trade filter is a mandatory field in Calculate mode in case of using margin group. The trade filter needs to define the trade status or product types in scope. The scope of accounts is defined by the Account Group. In calculate mode of using ERS hierarchy, the trade filter should leave as blank. This is further explained in Trade Filters
Undo Time Hour	Undo Time Hour – To roll back of trade population in CALCULATE mode
Undo Time Minute	Undo Time Minute – To roll back of trade population in CALCULATE mode
Mode	<p>CALCULATE – To calculate Risk Factors for all risk dimensions.</p> <p>IMPORT RISK FACTORS – To import Risk Factors.</p> <p>IMPORT ACCOUNTS – To import margin accounts and regulator information.</p> <p>IMPORT SIMM BUCKETS – To import bucket tagging of crowdsourcing utilities.</p> <p>EXPORT – To export Risk Factors (i.e. CRIF file).</p> <p>EXPORT ACADIA – To export Risk Factors (i.e. CRIF file), in a format compatible with the Acadia reconciliation tool.</p> <p>EXPORT ACADIA MARGIN CCY – To export Risk Factors (i.e. CRIF file), in a format compatible with the Acadia reconciliation tool in margin currency.</p> <p>EXPORT ACCOUNTS – To export margin accounts and regulator information.</p>
Risk Factor Source	If the attribute is empty, source will be retrieved from the risk file. If it is set, the source from the attribute will be used and when saving sensitivities, the source from the scheduled task will override

Attributes	Values
	the source from the file.
File Location	<p>Mode = IMPORT RISK FACTORS/ IMPORT ACCOUNTS/ IMPORT SIMM BUCKETS - The full path of the CSV file. (e.g. c:\data\ir_risk.csv). The File Location attribute can add a valuation date placeholder. It also allows for the loading of a file that contains a valuation date in its name.</p> <p>For example, JPM_CRIF_WSS_[yyyy-mm-dd].csv would allow JPM_CRIF_WSS_2020-06-21.csv to be loaded with the valuation date being 2020-06-21.</p> <p>Mode = CALCULATE - This field can be blank, or if it is not blank, it will not be used.</p> <p>Mode = EXPORT/EXPORT ACADIA/EXPORT ACADIA MARGIN CCY - The path where the CSV file will be saved (e.g. c:\data\)</p>
Account Groups	The name of Account Groups for which the schedule task will be run. The scheduled task is run for all accounts under the selected account groups.
Calculation Set	Choose the Calculation Set for which the risk factors will be saved to or exported from.
ParRate Analysis Parameter	<p>ParRate analysis parameters for CALCULATE mode.</p> <p>If Mode = IMPORT RISK FACTORS/IMPORT ACCOUNTS/EXPORT, this field can be blank, or if it is not blank, it will not be used.</p>
Risk Type Filter	<p>Type of sensitivity.</p> <p>Only used in Mode = IMPORT RISK FACTORS.</p> <p>Risk_IRCurve</p> <p>Risk_XccyBasis</p> <p>Risk_Inflation</p> <p>Risk_IRVol</p> <p>Risk_InflationVol</p> <p>Risk_FX</p> <p>Risk_FXVol</p> <p>Risk_CreditQ</p> <p>Risk_CreditVol</p> <p>Risk_BaseCorr</p> <p>Risk_Equity</p> <p>Risk_CreditNonQ</p> <p>Risk_CreditVolNonQ</p> <p>Risk_Equity</p> <p>Risk_EquityVol</p>

Attributes	Values
	Risk_Commodity Risk_CommodityVol Notional Param_AddOnNotionalFactor Param_AddOnFixedAmount Param_Regulation Param_ProductClassMultiplier Param_Schedule-Product Param_LocalRegSIMM PV
Trade Id Filter	Optional filter only for IMPORT RISK FACTORS. It excludes trades with Id in this filter (Trade Ids should be comma separated with no space). Default is blank which will not exclude any trade.
Ignore Curves	A market data group that contains curves to be ignored. This attribute is only used in CALCULATE mode. The risk of zero curves in the selected market data group will be ignored. For example, user might want to ignore the risk from basis curves according to the requirement from ISDA.
Grid: Dispatcher Name	Dispatcher configuration. If dispatcher is specified, risk analysis will be run on dispatcher.
Explode Trades	Only for CALCULATE mode. If set to <i>true</i> multi-sensitivity analysis will explode the structured trade. For SCHEDULE model, if set to <i>true</i> , CA_NOTIONAL pricer measure is used instead of NOTIONAL for IM calculation. No configuration change required.
Job Size	If analysis is run on dispatcher, specify how many trades per job. If this is not set, default is 0.
Stop on errors	This attribute is not used.
Include Zero Sensitivities	Adds dummy zero sensitivity for trades having no sensitivity. Default is false. This field will be used when Mode is set to Calculate.
Xccy Zero Curves	A market data group that contains curves (zero) which sensitivities are categorized as Risk_XCcyBasis instead of Risk_IRCurve.

When import modes are used, the user needs to specify the file location. Data is persisted at trade level.

The scheduled task imports only the selected risk type. Calypso only maintains a single set of data per margin agreement for a given value date. Therefore, upon running CALCULATE or import modes, existing data will be deleted and replaced by the new data for a given value date.

When the user uses the EXPORT mode, the file location also needs to be specified. The risk type filter does not apply on EXPORT mode. All data is exported as of the value date time.

If the user decides to use a dispatcher while running the risk sensitivity calculation, the dispatcher name and job size should be specified.

4.1.1 IMPORT ACCOUNTS Mode

IMPORT ACCOUNTS mode imports accounts and regulators information, as well as margin account groups and threshold groups. This is further explained in [Margin Accounts Setup](#).

Task Attributes	
Mode	IMPORT ACCOUNTS
Account Groups	
Calculation Set	SIMM
Risk Factor Source	
File Location	C:\ImportAccounts.csv

Note 1: Import File Format

Column Name	Type	Required	Description
PARTY_ID	String	Optional	Own Legal Entity (Processing Org)
CP_ID	String	Optional	CounterParty Legal Entity
START_DATE	String	Optional	yyyy-MM-DD format
ACCOUNT_GROUP	String	Mandatory	Account Group name to which the margin agreement name belongs. Can be one or more (comma separated).
THRESHOLD_GROUP	String	Optional	Threshold Group name to which the margin agreement name belongs.
MARGIN_AGREEMENT_NAME	String	Mandatory	Margin Agreement Name
RISK_TYPE	String	Mandatory	Param_Regulation Param_AddOnNotionalFactor Param_AddOnFixedAmount Param_ProductClassMultiplier Param_Schedule-Product Param_LocalRegSIMM Param_Threshold_Group
QUALIFIER	String	Mandatory	CSA type for Param_Regulation: CSA In Place or Pre-CSA Product class for Param_ProductClassMultiplier: RatesFX, Equity, Credit or Commodity Product type for Param_Schedule-Product, Param_LocalRegSIMM and Param_AddOnNotionalFactor: string Not required for Param_AddOnFixedAmount and Param_Threshold_Group

Column Name	Type	Required	Description
AMOUNT	Double	Mandatory	Threshold amount for Param_Threshold_Group Threshold amount for Param_Regulation, optional Multiplier for Param_ProductClassMultiplier Factor for Param_AddOnNotionalFactor Fixed Amount for Param_AddOnFixedAmount Not required for Param_Schedule-Product
CURRENCY	String	Mandatory	Required for Param_Regulation, Param_Threshold_Group and Param_AddOnFixedAmount
COLLECT_REGULATIONS	String	Mandatory	Regulators. Can be one or more (comma separated)
POST_REGULATIONS	String	Mandatory	Regulators. Can be one or more (comma separated)
WARNING_LEVEL	Double	Optional	Warning level percentage for Param_Threshold_Group, optional

Example of accounts import file.

MARGIN_	THRESHOLD_GROUP	ACCOUNT_GROUP	RISK_TYPE	QUALIFIER	AMOUNT	CURRENCY	COLLECT_REGULATIONS	POST_REGULATIONS	WARNING_LEVEL
CSA1	ThresholdGroup1	MarginGroup1	Param_Regulation	CSA In Place	5.00E+07	USD	APRA,CFTC,JFSA	APRA,CFTC,JFSA	
CSA2	ThresholdGroup2	MarginGroup1	Param_Regulation	Pre-CSA	5.00E+07	USD	APRA	APRA	
CSA3	ThresholdGroup1	MarginGroup2	Param_Regulation	CSA In Place	5.00E+07	GBP	APRA	APRA,JFSA	
CSA4	ThresholdGroup2	MarginGroup2	Param_Regulation	Pre-CSA		GBP	CFTC,APRA	JFSA	
CSA5		MarginGroup3	Param_Regulation	CSA In Place		USD	CFTC,JFSA	APRA	
CSA_ASY		MarginGroup3	Param_Regulation	CSA In Place		USD		APRA	
CSA_ASY		MarginGroup3	Param_Regulation	CSA In Place		EUR	CFTC,JFSA		
			Param_Schedule-Product	FXOption			APRA,JFSA	APRA,JFSA	
			Param_AddOnFixedAmount		1000	USD	APRA	APRA	
			Param_LocalRegSIMM	CDSWP			ESA,JFSA,USPR	ESA,JFSA,USPR	
			Param_AddOnNotionalFactor	Swap	2		APRA	APRA	
			Param_ProductClassMultiplier	RatesFX	1.1		CFTC	CFTC	
CSA1			Param_Schedule-Product	Swaption			APRA,JFSA	APRA,JFSA	
CSA1			Param_ProductClassMultiplier	Equity	1.1		CFTC	CFTC	
CSA3			Param_AddOnNotionalFactor	Swap	3		CFTC	CFTC	
CSA3			Param_AddOnFixedAmount		1000	GBP	JFSA	JFSA	
CSA3			Param_Schedule-Product	CDSWP			APRA	APRA	

4.1.2 IMPORT RISK FACTORS Mode

IMPORT RISK FACTORS mode imports risk factors from CRIF file.

Task Attributes	
Mode	IMPORT RISK FACTORS
Account Groups	
Calculation Set	SIMM
Risk Factor Source	
File Location	C:\RiskFactors.csv
Risk Type Filter	Risk_IRCurve, Risk_XCcyBasis, Risk_Inflation, Risk_IRVol, Risk_...

In CRIF file, SIMM risk factors have Risk_Type starts with 'Risk_' and IM_MODEL=SIMM. SCHEDULE risk factors have Risk_Type Notional and PV with IM_MODEL=SCHEDULE. All trades must have at least SCHEDULE risk factors. In most cases, trades have both SIMM and SCHEDULE risk factors.

The qualifier of SCHEDULE risk factors defines product type of the trades. While importing, SIMM and SCHEDULE risk factors are saved for different regulators based on accounts definition. This is further explained in [Reference Data](#)

The Amount_USD column can be empty. In that case, the system converts the amount in the Amount column into Amount_USD using the exchange rate from the quote set.

Note 1: Import File Format.

Column Name	Type	Required	Description
TRADE_ID	Integer	Mandatory	Trade ID
PARTY_ID	String	Mandatory	Own Legal Entity (Processing Org)
CP_ID	String	Mandatory	CounterParty Legal Entity
ACCOUNT_GROUP	String	Mandatory	Account Group name to which the margin agreement name belongs. Can be one or more (comma separated).
MARGIN_AGREEMENT_NAME	String	Mandatory	Margin Agreement Name
IM_MODEL	String	Mandatory	SIMM or SCHEDULE
END_DATE	String	Mandatory	Only required if IM_MODEL = Schedule, in the yyyy-MM-DD format. This value is mandatory for Schedule rows. If only SIMM risk factors are used, the user can input a dummy value for this field in the Schedule rows, such as 2021-01-01. (Do not use 0000-00-00.)
RISK_TYPE	String	Mandatory	Risk_IRCurve Risk_XCcyBasis Risk_Inflation Risk_IRVol Risk_InflationVol Risk_FX Risk_FXVol Risk_CreditQ Risk_CreditVol Risk_BaseCorr Risk_Equity Risk_CreditNonQ Risk_CreditVolNonQ

Column Name	Type	Required	Description
			Risk_Equity Risk_EquityVol Risk_Commodity Risk_CommodityVol Notional PV
QUALIFIER	String	Mandatory	Per ISDA definition for each Risk_TYPE
BUCKET	String	Mandatory	Per ISDA definition for each Risk_TYPE
LABEL1	String	Mandatory	Per ISDA definition for each Risk_TYPE
LABEL2	String	Mandatory	Per ISDA definition for each Risk_TYPE
AMOUNT	Double	Mandatory	The trade's sensitivity to the associated risk factor
CURRENCY	String	Mandatory	The currency in which the sensitivity AMOUNT is expressed
AMOUNT_USD	Double	Optional	If Amount_USD is not provided, system will convert Amount in CURRENCY into Amount_USD using the exchange rate from the quote set.
SOURCE	String	Mandatory	Source of the sensitivities
PRODUCT_CLASS	String	Mandatory	If IM_MODEL = SIMM <ul style="list-style-type: none"> • RatesFX • Credit • Equity • Commodity If IM_MODEL = Schedule <ul style="list-style-type: none"> • Rates • FX • Credit • Equity • Commodity • Other

Example of risk factors import file.

TRADE_ID	UTI	PARTY_ID	CP_ID	MARGIN_AGREE	IM_MODEL	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURRENCY	AMOUNT_USD	SOURCE	PRODUCT_CLASS	END_DATE
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_FX	EUR				8216.0186	EUR	9037.620508	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 3m	OIS		-1469.978	USD	-1469.977757	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 2w	OIS		0.376631	EUR	0.414294125	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 6m	OIS		0.2416323	EUR	0.265795582	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 5y	OIS		0.2244335	EUR	0.24687688	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 3y	OIS		13.67785	EUR	15.04563519	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 1y	OIS		4.7448314	EUR	5.219314491	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 10y	OIS		0.8174173	EUR	0.899159007	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 1m	OIS		5.6034626	EUR	6.163808856	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_IRCurve	EUR	1 2y	OIS		-0.311831	EUR	-0.34301419	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_CreditQ	ISIN:FR0000570541	10 2y	EUR		-15000000	USD	-15000000	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_CreditQ	ISIN:FR0000570541	10 1y	EUR		2.5860019	EUR	2.844602082	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_CreditQ	ISIN:FR0000570541	10 3y	EUR		1.4285031	EUR	1.571353429	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_CreditQ	ISIN:FR0000570541	10 10y	EUR		5.5896448	EUR	6.148609332	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SIMM	Risk_CreditQ	ISIN:FR0000570541	10 5y	EUR		6269.3135	EUR	6896.244878	ISDA	Credit	
711028		CALYPSOSII CP_1	CSA7		SCHEDULE	Notional	CreditDefaultSwap				-23000000	EUR	-25300000	ISDA	Credit	2030-11-02
711028		CALYPSOSII CP_1	CSA7		SCHEDULE	PV	CreditDefaultSwap				-151900.5	EUR	-167090.5	ISDA	Credit	2030-11-02

Note 2: The following format validation has been implemented for the import modes. If any data is invalid, the scheduled task will log an error in the log.

Column Name	Validation
TRADE_ID	String
PARTY_ID	String
CP_ID	String
MARGIN_ AGREEMENT_ NAME	String
IM_MODE	SIMM or SCHEDULE
END_DATE	yyyy-MM-DD
RISK_TYPE	Risk_IRCurve Risk_XCcyBasis Risk_Inflation Risk_IRVol Risk_InflationVol Risk_FX Risk_FXVol Risk_CreditQ Risk_CreditVol Risk_BaseCorr Risk_CreditNonQ Risk_CreditVolNonQ Risk_Equity

Column Name	Validation
	<p>Risk_EquityVol</p> <p>Risk_Commodity</p> <p>Risk_CommodityVol</p> <p>Notional</p> <p>PV</p>
QUALIFIER	<p>Risk_IRCurve, Risk_IRVol, Risk_FX - The ISO currency name, e.g., USD, EUR, SEK...</p> <p>Risk_FX - If Qualifier is equal to the base currency of the Pricing Env, the row is discarded and throws an exception.</p> <p>Risk_FXVol, Risk_CreditQ, Risk_Equity - String</p>
BUCKET	<p>Risk_IRCurve</p> <p>Bucket = [1,2,3] based on the volatility of the currency (Regular Volatility currency – Bucket 1, High volatility currency – Bucket 2, Low Volatility Currency – Bucket 3)</p> <p>Risk_IRVol & Risk_FX & Risk_FXVol</p> <p>Bucket = empty</p> <p>Risk_CreditQ, Risk_CreditVol</p> <p>Bucket = [1,2,3,4,5,6,7,8,9,10,11,12, Residual]</p> <p>Optional, the buckets in the import file will be retained.</p> <p>Risk_Equity, Risk_EquityVol</p> <p>Bucket = [1,2,3,4,5,6,7,8,9,10,11,12, Residual]</p> <p>Optional, the buckets in the import file will be retained.</p> <p>Risk_Inflation, Risk_XCcyBasis, Risk_IRVol, Risk_BaseCorr: Empty</p> <p>Risk_Commodity, Risk_CommodityVol</p> <p>Bucket = [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17]</p> <p>The buckets in the import file will be retained.</p> <p>Risk_CreditNonQ, Risk_CreditVolNonQ</p> <p>Bucket = [1,2,3,4,5,6,7,8,9,10,11,12, Residual]</p> <p>Optional, the buckets in the import file will be retained.</p>
LABEL1	<p>Risk_IRCurve, Risk_IRVol, Risk_InflationVol:</p> <p>ISDA standard risk tenor</p> <p>[2w,1m,3m,6m,1y,2y,3y,5y,10y,15y,20y,30y]</p> <p>Risk_FX, Risk_Equity, Risk_Commodity, Risk_Inflation, Risk_XCcyBasis, Risk_BaseCorr:</p> <p>Label1 = empty</p>

Column Name	Validation
	Risk_EquityVol, Risk_FXVol, Risk_CommodityVol: ISDA standard vol-tenor [2w,1m,3m,6m,1y,2y,3y,5y,10y,15y,20y,30y] Risk_CreditQ ISDA standard tenor [1y,2y,3y,5y,10y]
LABEL2	Risk_IRCurve [Libor1m,Libor3m,Libor6m,Libor12m,OIS*,Prime,Municipal] Risk_CreditQ Risk_CreditVol "Sec" or "CCY" Risk_CreditNonQ, Risk_CreditVolNonQ - String Any other risk type Label2 is empty.
AMOUNT	Double
AMOUNT_CURRENCY	The ISO currency name, e.g., USD, EUR, SEK... (use the list of currency defined in the system)
AMOUNT_USD	Double (can be empty)
PRODUCT_CLASS	SIMM: RatesFX Credit Equity Commodity SCHEDULE: Rates FX Credit Equity Commodity Other
SOURCE	String

The validation is use case-insensitive for all String type validation (both column name and its expected values).

- If any validation fails, the scheduled task logs the column name and input value for which the data is invalid.

- The scheduled task MARGIN_INPUT would fail and throw an error if it does not find the required ISDA sub-curve name.

PRODUCT CLASS MAPPING

By default, ISDA SIMM product classes are mapped to Calypso product types:

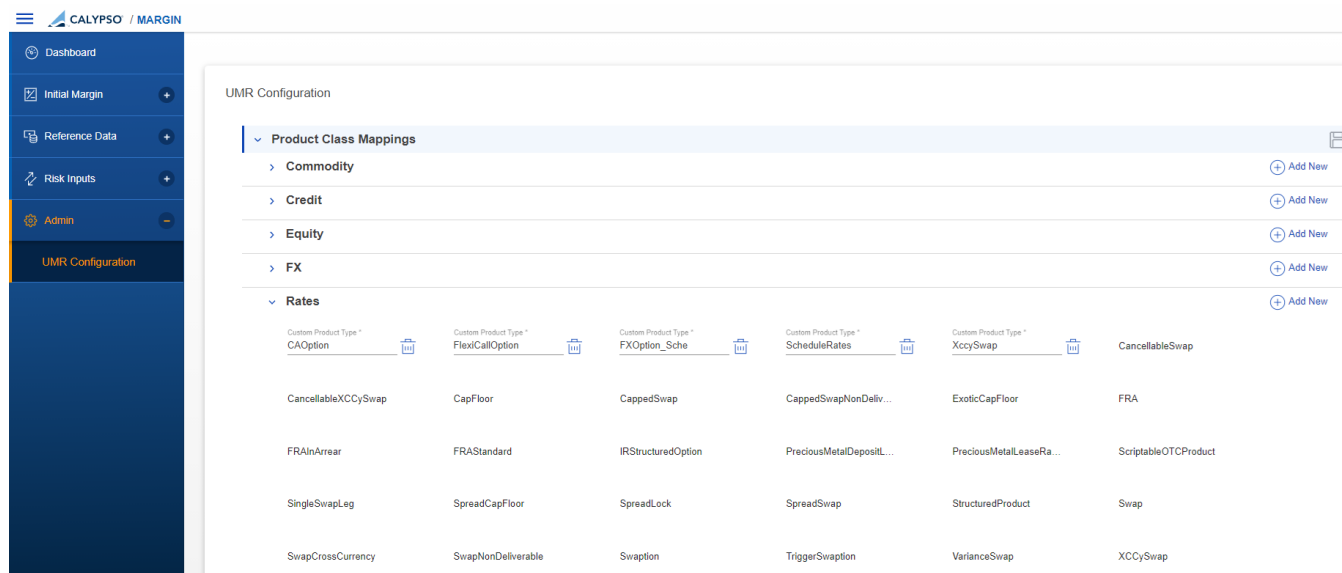
Product Class	Product Types
Commodity	Commodity CommodityCertificate CommodityForward CommodityIndexSwap CommodityOTCOption2 CommoditySwap CommoditySwap2 CommoditySwaption OTCCommodityOption
Credit	CancellableCDS CancellableCDSNthDefault CancellableCDSNthLoss CDSABSIndex CDSABSIndexTranche CDSIndex CDSIndexDefinition CDSIndexOption CDSIndexTranche CDSIndexTrancheOption CDSNthDefault CDSNthLoss ContingentCreditDefaultSwap CreditDefaultSwap CreditDefaultSwapABS CreditDefaultSwapLoan CreditDefaultSwaption ExtendibleCDS

Product Class	Product Types
	ExtendibleCDSNthDefault ExtendibleCDSNthLoss StructuredTranche
Equity	CFDCConvertibleArbitrage CFDDirectional CFDPairTrading CFDRiskArbitrage EquityCliquetOption EquityForward EquityIndex EquityLinkedSwap EquityStructuredOption OTCEquityOption OTCEquityOptionVanilla PerformanceSwap PortfolioSwap PortfolioSwapPosition QuotableStructuredOption TotalReturnSwap TRSBasket VarianceOption VolatilityIndex Warrant WarrantIssuance
FX	FXCompoundOption FXNDF FXNDFSwap FXOption FXOptionForward FXOptionStrategy FXOptionStrip

Product Class	Product Types
	FXOptionSwap
	FXSwap
	PositionFXExposure
	PositionFXNDF
Rates	CancellableSwap
	CancellableXCCySwap
	CapFloor
	CappedSwap
	CappedSwapNonDeliverable
	ExoticCapFloor
	FRA
	FRAInArrear
	FRAStandard
	IRStructuredOption
	PreciousMetalDepositLease
	PreciousMetalLeaseRateSwap
	ScriptableOTCProduct
	SingleSwapLeg
	SpreadCapFloor
	SpreadLock
	SpreadSwap
	StructuredProduct
	Swap
	SwapCrossCurrency
	SwapNonDeliverable
	Swaption
	TriggerSwaption
	VarianceSwap
	XCCySwap

All these product types are now listed on the UMR Configuration page in the Margin user interface.

For any product type outside this list, the user can add the product type in the user interface. These products can be edited or deleted in the user interface. The hard-coded product types in the list above are not editable and can only be viewed. The user is not able to add a new custom product if its already in the list.



Custom Product Type *	Custom Product Type *	Custom Product Type *	Custom Product Type *	Custom Product Type *	Custom Product Type *
CAOption	FlexiCallOption	FXOption_Sche	ScheduleRates	XccySwap	CancellableSwap
CancellableXCCySwap	CapFloor	CappedSwap	CappedSwapNonDeliv...	ExoticCapFloor	FRA
FRAInArrear	FRAStandard	IRStructuredOption	PreciousMetalDepositL...	PreciousMetalLeaseRa...	ScriptableOTCProduct
SingleSwapLeg	SpreadCapFloor	SpreadLock	SpreadSwap	StructuredProduct	Swap
SwapCrossCurrency	SwapNonDeliverable	SwapOption	TriggerSwapOption	VarianceSwap	XCCySwap

The product class mappings here show five product classes for SCHEDULE – Commodity, Credit, Equity, FX and Rates. The same product classes are used for SIMM as well. However, all products in FX and Rates defined here are assigned to product class 'RatesFX' for SIMM.

By default, Calypso will reject an attempt to import a blank CRIF file or a file with headers but no rows. To enable import of these files, set the domain MarginInput.AllowEmptyCRIF to *true*.

4.1.3 CALCULATE Mode

In CALCULATE mode, risk sensitivities are calculated for all the portfolios defined in the ERS hierarchy/Margin Groups using the pricing environment specified as of the valuation date time.

All trades must have a value in keyword IM_PORTFOLIO_NAME. If the value is empty, the scheduled task will fail. Before running, the user should ensure that all the market data required for pricing trades exist. If trades cannot be priced, the scheduled task will fail. The scheduled task calculates required risk sensitivity, transforms the data into ISDA format and persists the data for IM calculation. The user may use the export functionality to verify that the data persisted to the database.

Common Attributes	
Task ID	134620
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	23
Undo Time Minute	59
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	CALCULATE
Account Groups	CSA12_ALL
Calculation Set	SIMM
Risk Factor Source	
File Location	
Risk Type Filter	
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	IgnoreCurve
XCcy Zero Curves	
Grid: Dispatcher Name	default
Explode Trades	
Job Size	10
Stop on errors	true

Mandatory Attributes:

- Mode is CALCULATE
- Pricing Environment
- Timezone
- Account Groups and Trade Filter. Trade filter is not required when using ERS hierarchy.
- Calculation Set
- ParRate Analysis Parameter.

Optional Attributes:

- Undo Time Hour and Undo Time Minute
- Ignore Curves
- XCcy Zero Curves
- Grid: Dispatcher Name
- Explode Trades
- Job Size

Domain Values

MarginInput.RiskAnalysis.Parallelise

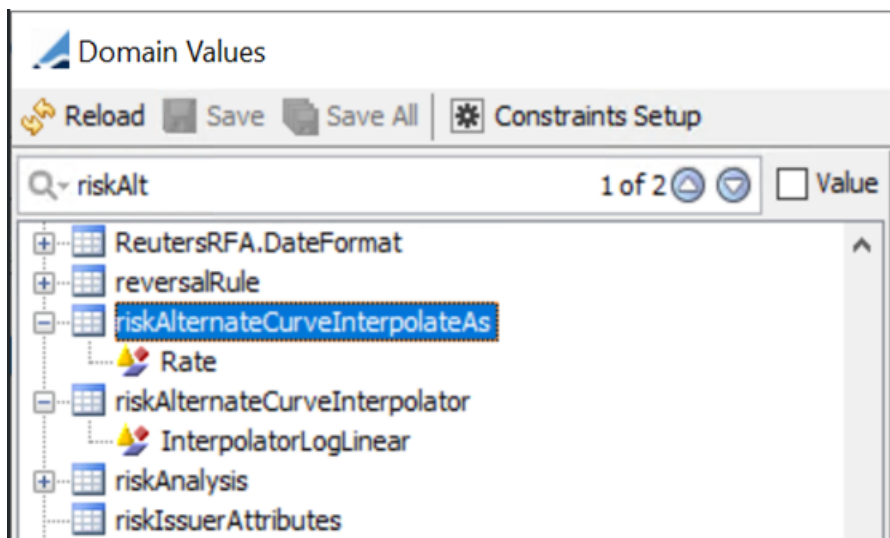
This domain value defaults to false.

When using the dispatcher/compute grid, and the new domain value is set to true, sensitivity analysis will be scheduled concurrently with scenario analysis (for IR_Vega). Assumes at least one margin specific market data set defined in Scenario Editor e.g. Vol_Rate_Pt_BpVol .

MarginInput.AnalysisParametersOverride

This domain value has a value named UseAlternateInterpolator (its comment defaults to false).

In some cases, MultiSensitivityAnalysis (MSA, launched by Margin_Input) could generate irrelevant (tenor greater than maturity) sensitivities. Set UseAlternateInterpolator of MarginInput.AnalysisParametersOverride to true will make MSA generate the expected results. Besides UseAlternateInterpolator, User will also need to set up riskAlternateCurveInterpolateAs and riskAlternateCurveInterpolator as shown in the following screenshot:



ISDASIMM.NonValidCurrency

This domain value will validate and convert non-valid currency risk factors in valid currency risk factors, while running MARGIN_INPUT scheduled task and uploading of risk factors from UI. By default, domain is set to blank/empty.

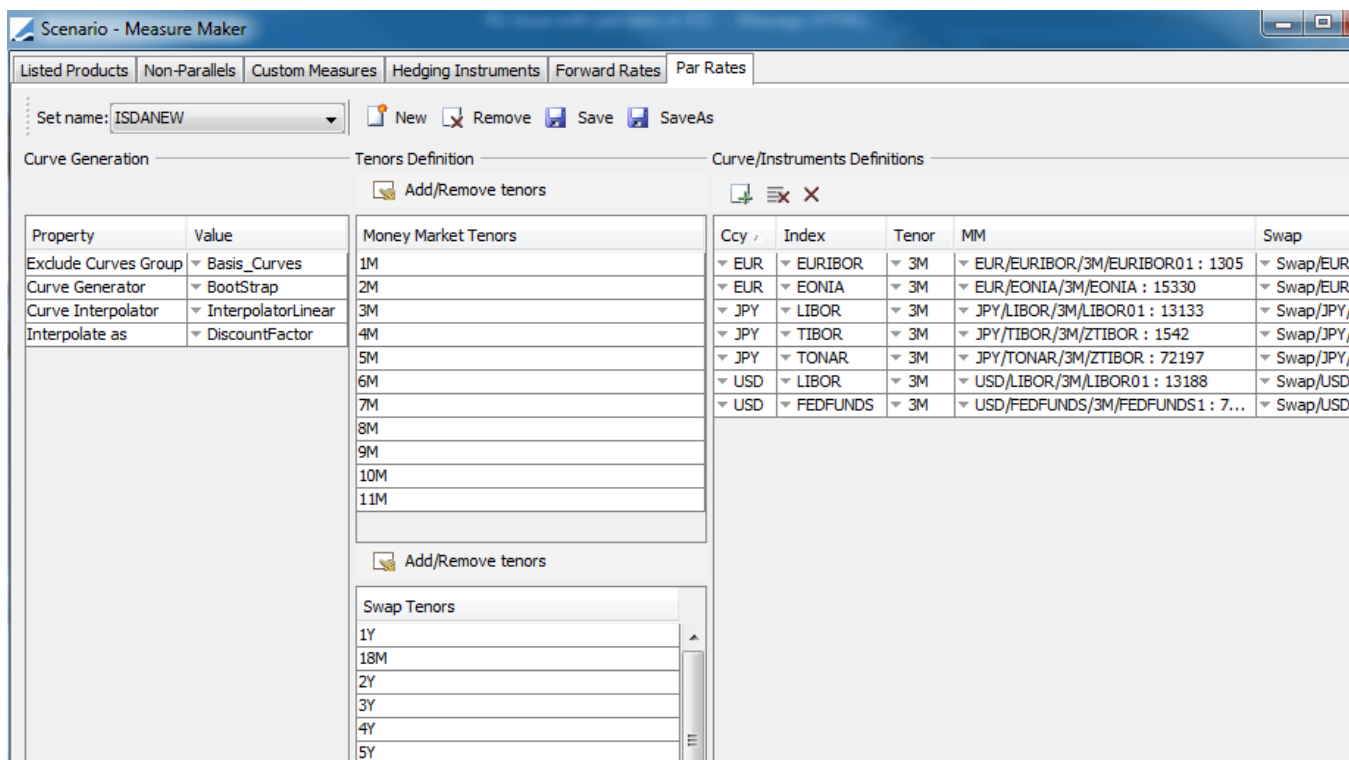
- Value = Blank, Comment = Blank - By default value will be blank/empty, this will generate risk factors without checking non-valid currency (default behavior)
- Value = Non-Valid Currency, Comment = Blank - If domain value has list of non-valid currencies in Value attribute, but Comment attribute is empty, risk factors for trades with non-valid currencies will not be generated and will be logged as warning in schedule task/Margin GUI.

- Value = Non-Valid Currency, Comment = Valid Currency- If domain value has list of non-valid currencies in Value attribute and Valid currency in Comment field risk factors with non-valid currencies will be converted to mapped valid currencies.”

4.1.4 ParRate Analysis

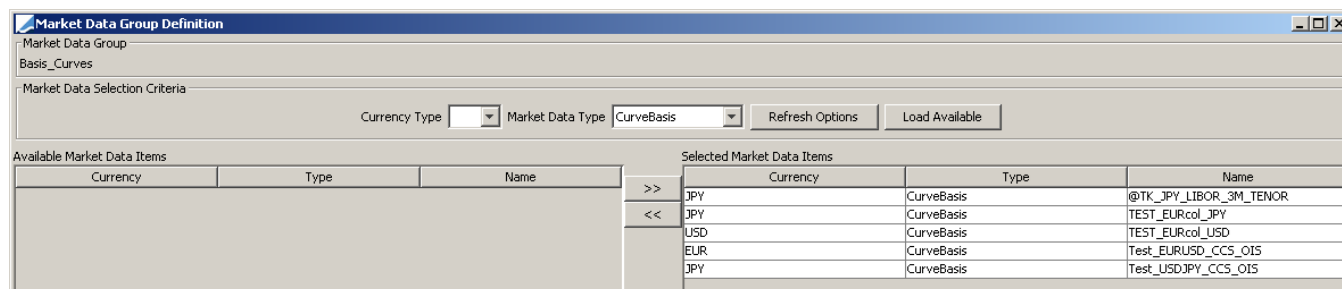
ParRate analysis is required for interest rate delta calculation, and it must be defined in MARGIN_INPUT scheduled task when mode is CALCULATE. User can define ParRate in Analysis Designer. This is used to create hard-coded MultiSensitivity analysis during task and calculate Risk_IRCurve results.

Sample ParRate analysis parameter:



NOTE: For ISDA-SIMM usage, the fields Index and Tenor should not be set to ANY, they should match those of the curves in the Pricing Environment that are meant to be replaced by ISDA-SIMM compliant curves. The MM and Swaps defined as instruments to build the ISDA-SIMM compliant curves should be consistent with these index and tenors. For example, if the Pricing Environment contains a EUR EURIBOR 3M curve and a EUR EURIBOR 6M curve, it is important that both curves are specifically mapped, because the EUR EURIBOR 3M curve that is ISDA-SIMM compliant needs to be built with EUR swaps EURIBOR 3M/fix while the EUR EURIBOR 6M curve needs to be built with EUR swaps EURIBOR 6M/fix. It is important that these two curves are each built with the right instruments.

Where Basis Curves market data group is defined as shown below:



Currency	Type	Name
JPY	CurveBasis	@TK_JPY_LIBOR_3M_TENOR
JPY	CurveBasis	TEST_EURcol_JPY
USD	CurveBasis	TEST_EURcol_USD
EUR	CurveBasis	Test_EURUSD_CCS_OIS
JPY	CurveBasis	Test_USDJPY_CCS_OIS

The exclude group should contain all the rate curves that are part of the Pricing Environment, but not part of ISDA-SIMM Risk_IRCurve. For example, it should contain all the cross-currency basis curves, triangulation curves, CTD Collateral curves, etc.... These curves can be of any rate curve type: CurveZero, CurveBasis, CurveFXDerived, etc....

4.1.5 Scenario Rule for IR VegaCalculation

Scenario Rule of IR Vega is required for Risk_IRVol calculation. User can define market data sets for specific volatility surfaces in Scenario Editor, which are used to create hard-coded scenario analysis during task and calculate Risk_IRVol results.

Calculation Formula

Risk_IRVOL is calculated as below:

$$\text{Risk_IRVOL} = \text{Vega} \times \text{ATM Vol}$$

The Vega is based on a Scenario rule output. As per the ISDA guidelines, it is based on 1% shift for log-normal volatility and 1bps for normal volatility.

The scenario rule is hard-coded and the user is not able to configure it. The user needs to select market data sets in the risk measure definition.

- The full Vol Surface for caps and swaptions need to be:
 - (1) defined in the pricer config in usage 'VOL'
 - (2) specified in the market data sets in scenario analysis
- The ATM vol for Cap/floors will be saved in usage 'SIMM'.

The 'SIMM' vol usage is used as a Vol input for cap/floors where $\text{Risk_IRVol} = \text{Vega} \times \text{Vol}$.

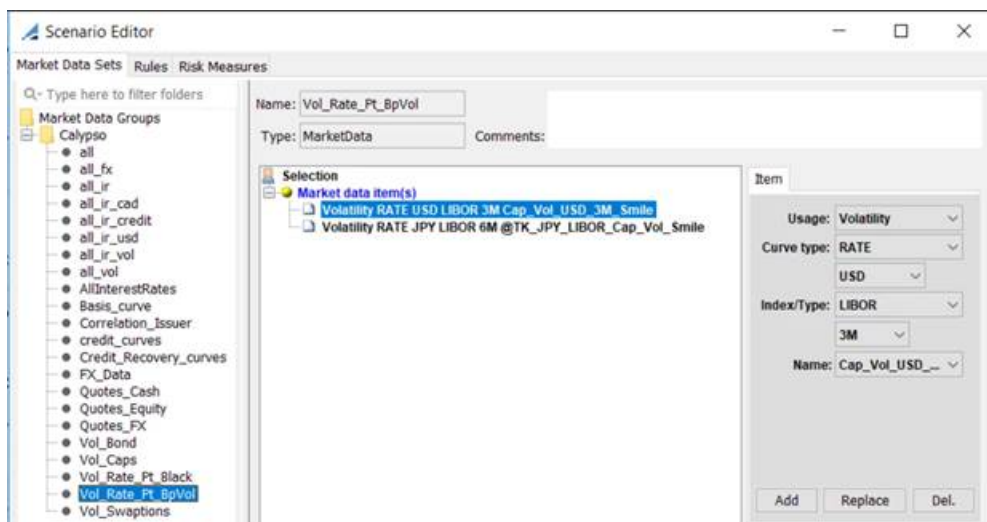
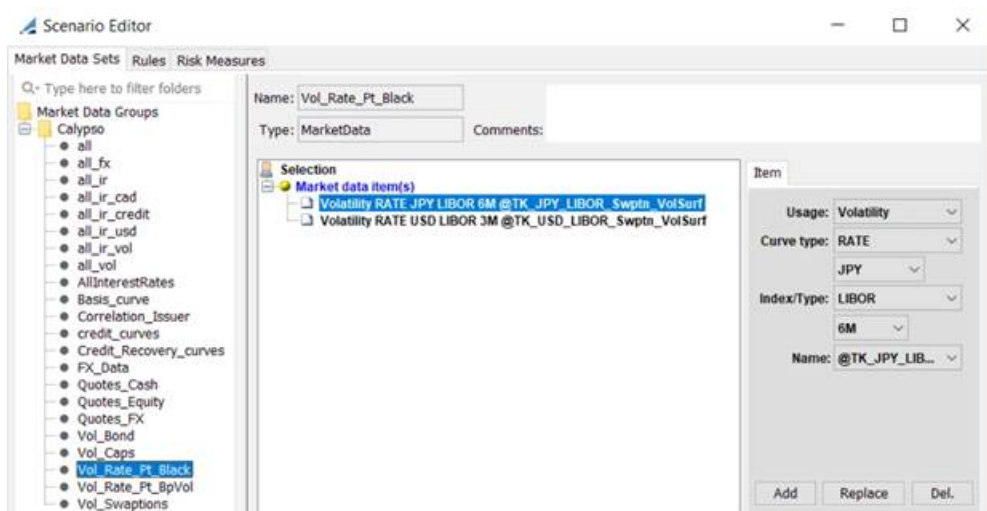
Scenario Editor Configuration of Market Data Sets

Separate market data sets need to be saved for each volatility type. Each market data needs to include the usage 'VOL', and the full surface vol for each product would be saved for each currency/ tenor.

Three different market data sets can be saved for:

- Black
- BpVol without shift adjustment
- BpVol with shift adjustment.

For caps if using BpVol surface, the user can use the market data set 'Vol_Rate_Pt_BpVol', if using BpVol surface for swaptions, the user can use the market data set 'Vol_Rate_Pt_Shift_Adj_BpVol' and if using black surface for either products, they can use the market data set 'Vol_Rate_Pt_Black'. If Vol surfaces use Offsets, user can use market data set 'Vol_Rate_Pt_BpVol' and 'Vol_Rate_Pt_Black' based on Vol Model.





In summary, the configuration would be as follows:

Product	Volatility Type	Surface Type	Quote Type	Usage	Market Data Set	Scenario Rule Applied	Scenario Shift Amount	Notes
Cap/Floor	LogNormal	Full Surface	Yield	VOL	Vol_Rate_Pt_Black	vol_1per_Black	1%	The vol surface with either be Normal or Lognormal for Caps/Floors, only one is required
Cap/Floor	Normal	Full Surface	BpVol	VOL	Vol_Rate_Pt_BpVol	vol_1bp_Bp	1bp	The vol surface with either be Normal or Lognormal for Caps/Floors, only one is required
Swaption	Normal	Full Surface	BpVol	VOL	Vol_Rate_Pt_Shift_Adj_BpVol	vol_1bp_Shift_Adj_BpVol	1%	
Swaption	LogNormal	Full Surface	Yield	VOL	Vol_Rate_Pt_Black	vol_1per_Black	1%	

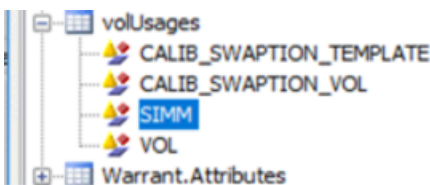
*If the user is using a CAPATM surface as usage VOL, then it should be defined under the Vol_Rate_Pt_Black market data set even if the source surface generator is BpVol. All CAPATM surface points are quoted in % and should be shifted 1%.

ATM Vol Surfaces

The ATM vol in the Risk_IRVOL formula is sourced from:

- for swaptions, of the vol surface saved in VOL usage of the pricer config. For BpVol surfaces, it comes from the MID_BpVol layer of the surface and for black, it comes from the points.
- for caps, from the 'SIMM' vol surface added to the same pricer configuration.

The below configuration is required to define this usage for the Caps ATM vol surface:



ATM Vol Surface for Caps will be saved in the same pricer config in usage 'SIMM'. If the ATM vol surface for CapFloors is not available in the pricer config with the SIMM usage, the scheduled task will fail and throw an error.

Example of pricer configuration:

Pricer Configuration Window

Name: ☐ Lazy Refresh

Parents: ...

Comment:

Currency: Vol Type: Index: ANY

Product: ANY ANY Put/Call: Add

Surface: ... Usage: Remove

Currency	Index/Vol Type	Tenor	Product	ExtendedType	Subtype	Put/Call	Usage	Surface
USD	LIBOR	ANY	Swaption	ANY	ANY	ANY	SIMM	USD_LIBOR_3M_Swptn_Black_SIMM(246131)
USD	LIBOR	ANY	CapFloor	ANY	ANY	ANY	SIMM	USD_LIBOR3M_CAPFLR_BpVol_CAPATM(248638)
USD	LIBOR	ANY	CapFloor	ANY	ANY	ANY	VOL	USD_LIBOR3M_CAPFLR_BpVol(248637)
USD	CPI	ANY	ANY	ANY	ANY	ANY	VOL	USD CPI CAP_ATM(258631)
USD	Commodity	3086:/USD/NYMEX WTI Crude Oil/CUSHING OK	ANY	ANY	ANY	CALL	CALIB_SWAPTION_TEMPLATE	WTI Crude Oil(274632)
USD	EQUITY	4103:/Equity/AMZN	ANY	ANY	ANY	PUT	CALIB_SWAPTION_TEMPLATE	AMZN VOLATILITY(2470)
USD	LIBOR	ANY	Swaption	ANY	ANY	ANY	VOL	USD_LIBOR_3M_Swptn_Black_SIMM(246131)
USD	Commodity	3086:/USD/NYMEX WTI Crude Oil/CUSHING OK	ANY	ANY	ANY	CALL	VOL	WTI Crude Oil(274632)
JPY	LIBOR	ANY	CapFloor	ANY	ANY	ANY	SIMM	JPT_LIBOR6M_CAPFLR_BpVol_CAPATM(249132)
JPY	LIBOR	ANY	CapFloor	ANY	ANY	ANY	VOL	JPT_LIBOR6M_CAPFLR_BpVol(249131)

Pricer Configuration Window

Name: ☐ Lazy Refresh

Parents: ...

Comment:

Currency: Vol Type: Index: ANY

Product: ANY ANY Put/Call: Add

Surface: ... Usage: Remove

Currency	Index/Vol Type	Tenor	Product	ExtendedType	Subtype	Put/Call	Usage	Surface
USD	LIBOR	ANY	CapFloor	ANY	ANY	ANY	SIMM	USD_LIBOR3M_CAPFLR_BpVol_CAPATM(248638)
USD	LIBOR	ANY	CapFloor	ANY	ANY	ANY	VOL	USD_LIBOR3M_CAPFLR_BpVol(248637)
JPY	LIBOR	ANY	CapFloor	ANY	ANY	ANY	VOL	JPT_LIBOR6M_CAPFLR_BpVol(249131)
JPY	LIBOR	ANY	CapFloor	ANY	ANY	ANY	SIMM	JPT_LIBOR6M_CAPFLR_BpVol_CAPATM(249132)
JPY	LIBOR	ANY	CapFloor	ANY	ANY	ANY	VOL	JPT_LIBOR6M_CAPFLR_BpVol(249131)

VolatilitySurface3D USD_LIBOR3M_CAPFLR_BpVol_CAPATM USD CLOSE LIBOR 3M User(calypso_user)(...

Surface Utilities Help

Name: CLOSE 08/18/2017 7:02:12 PM ☐ Current

Definition Offsets Points Graph

VolatilityModel: BpVol MID

Expiry/R Sprd	
08/17/2017	84.10000
11/17/2017	84.10000
02/19/2018	84.10000
05/17/2018	78.67900
08/17/2018	77.39600
11/16/2018	77.39600
02/18/2019	77.39600
05/17/2019	79.96100
08/16/2019	80.14000

Bid >> Ask

Ask >> Bid

Interpolate...

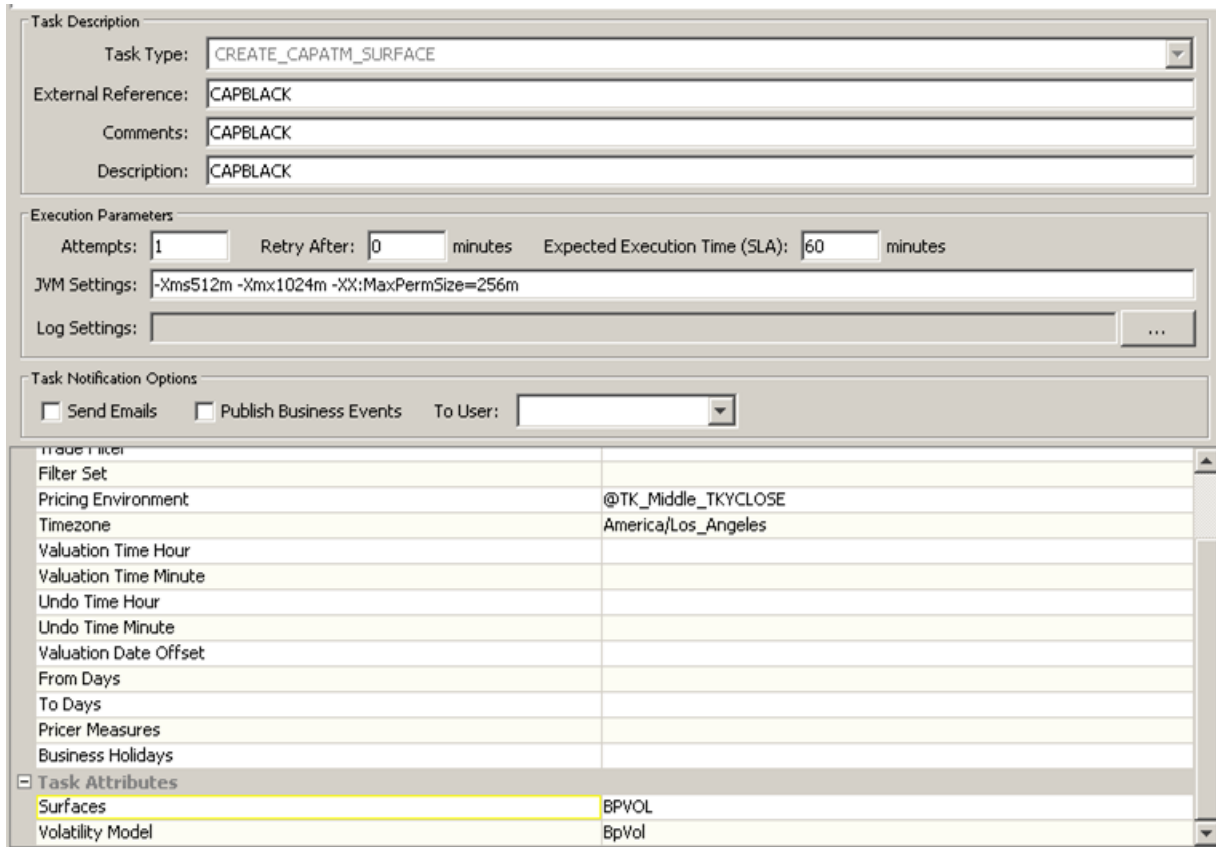
ACT/360

Generate

Scheduled Task CREATE_CAPATM_SURFACE

The scheduled task CREATE_CAPATM_SURFACE transforms a list of fixed strike interest rate cap volatility surfaces into relative strike (ATM) volatility surfaces. This allows users to meet the ISDA requirement for calculating interest rate Vega sensitivities with respect to the implied **at-the-money** volatility for interest rate cap instruments.

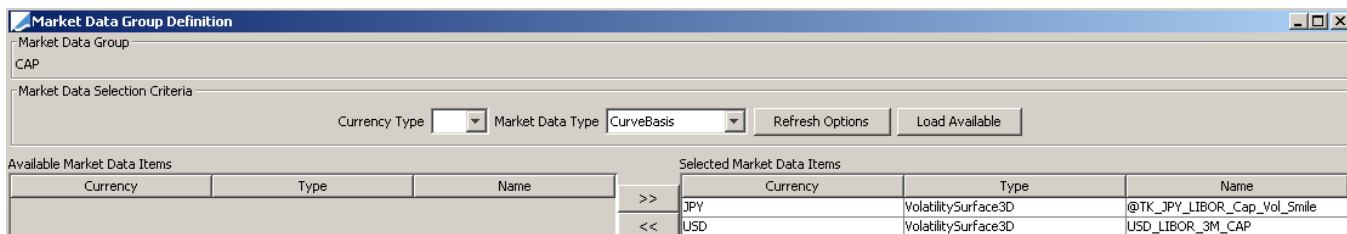
The configuration of the scheduled task is shown below.



The screenshot shows the configuration window for the scheduled task CREATE_CAPATM_SURFACE. The window is divided into several sections:

- Task Description:** Task Type is set to CREATE_CAPATM_SURFACE. External Reference, Comments, and Description are all set to CAPBLACK.
- Execution Parameters:** Attempts is set to 1, Retry After is 0 minutes, and Expected Execution Time (SLA) is 60 minutes. JVM Settings are -Xms512m -Xmx1024m -XX:MaxPermSize=256m. Log Settings are empty.
- Task Notification Options:** Send Emails and Publish Business Events are unchecked. To User is empty.
- Market Data:** A table lists various market data items. The 'Surfaces' item is highlighted in yellow, and its value is BPVOL. The 'Volatility Model' item is also highlighted, and its value is BpVol.

The user only needs to select the market data group which contains all the fixed strike cap volatility surfaces for which the user wishes to transform into a relative strike, as well as the volatility model used in those surfaces. The scheduled task creates (update if there is an existing one) a corresponding relative strike volatility surface. Using the below example, in the market data group CAP there are two items, {@TK_JPY_LIBOR_Cap_Vol_Smile, USD_LIBOR_3M_CAP}.



The screenshot shows the Market Data Group Definition window. The Market Data Group is set to CAP. The Market Data Selection Criteria section shows Currency Type as JPY and Market Data Type as CurveBasis. The Available Market Data Items table lists two items: JPY and USD. The Selected Market Data Items table lists two items: JPY and USD. The JPY item is selected, and its details are shown in the table below.

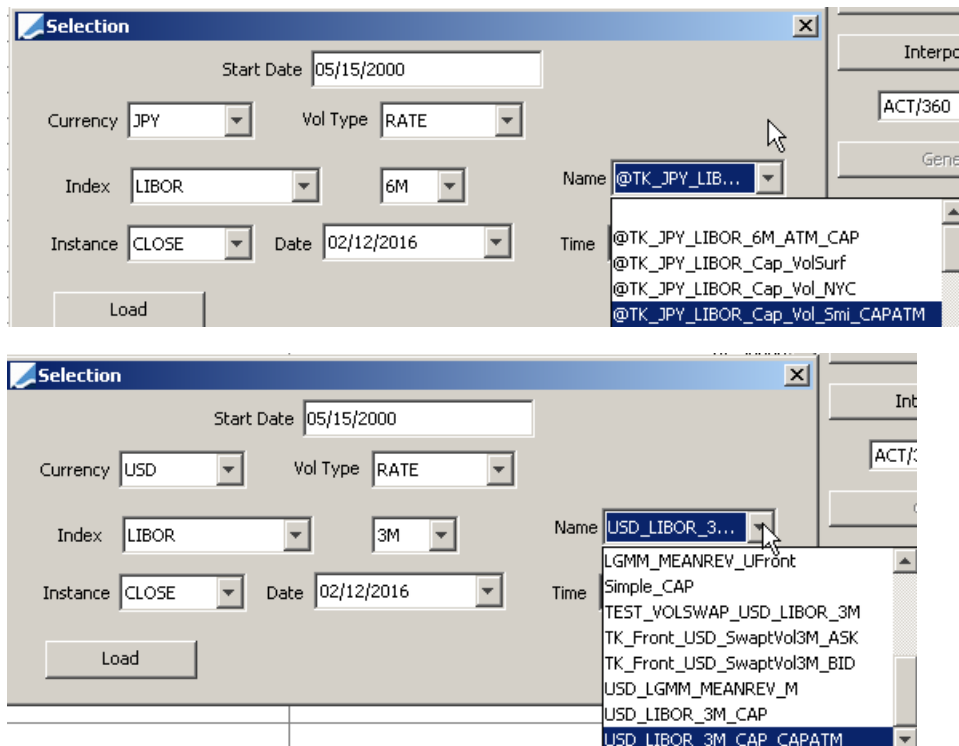
Currency	Type	Name
JPY	VolatilitySurface3D	@TK_JPY_LIBOR_Cap_Vol_Smile
USD	VolatilitySurface3D	USD_LIBOR_3M_CAP

The scheduled task automatically creates/updates a relative strike volatility surfaces with the following naming convention: “original name”_CAPATM

This means that the scheduled task automatically adds _CAPATM into the original name and makes it the new name for the output surface.

Note that Calypso only allows a maximum length of 32 characters for the surface name. Therefore, if adding _CAPATM makes the length of the new name more than 32 characters, the scheduled task will automatically truncate the name so that it fits within the maximum length.

Using the above example, the scheduled task creates/update the following surfaces:



The image contains two screenshots of the 'Selection' dialog box in Calypso. Both screenshots show the same fields: Start Date (05/15/2000), Currency, Vol Type (RATE), Index, 6M/3M, Instance (CLOSE), and Date (02/12/2016). The top screenshot is for JPY LIBOR 6M, and the bottom is for USD LIBOR 3M. Both show a dropdown menu for 'Name' with various surface names, including those ending in _CAPATM.

The scheduled task expects existing surfaces prior to the value date on which the scheduled task is run. If there is no existing surface, the scheduled task will not create/update any new surface.

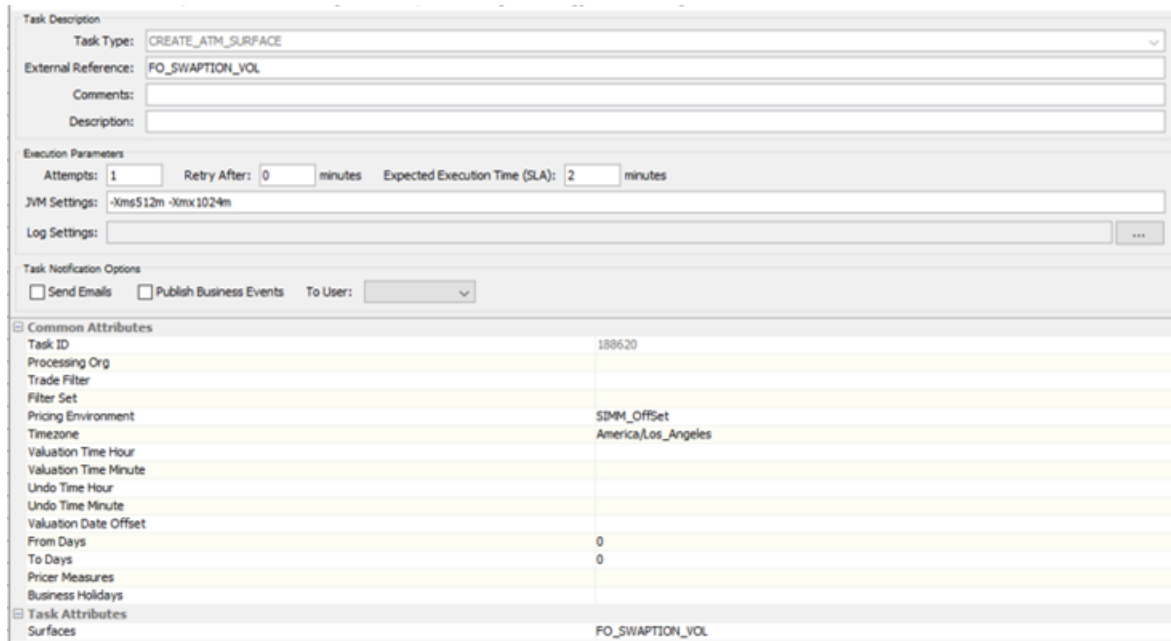
The user needs to assign the new surface into the pricing environment used by the scheduled task MARGIN_INPUT to generate the correct risk.

The resulting CAPTAM surface will be a surface that has points quoted in percent. Both Black and BPVol derived surfaces will be converted this way.

Scheduled Task CREATE_ATM_SURFACE

This scheduled task can be used when the Vega sensitivity/risk factor generation process is particularly computationally expensive e.g. for Bermudan swaption based trades.

The scheduled Task CREATE_ATM_SURFACE trims an offset-based volatility surface, by only keeping the ATM points (zero strike).

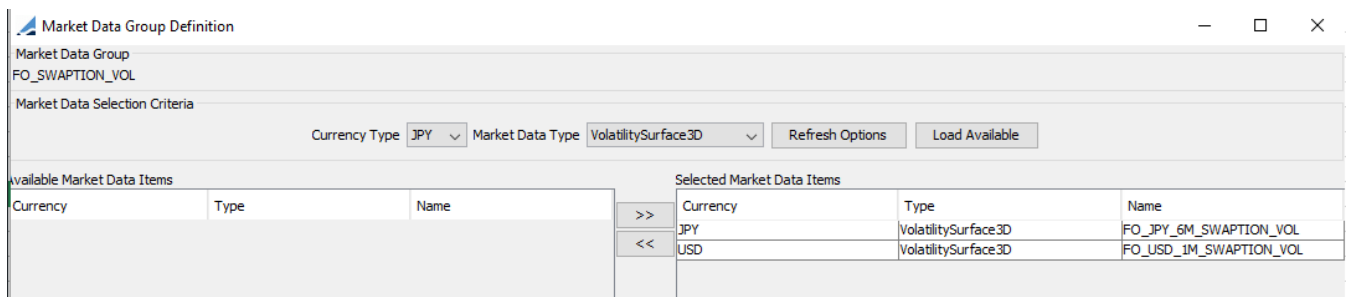


The screenshot shows the configuration for the task `CREATE_ATM_SURFACE`. The task type is set to `CREATE_ATM_SURFACE` and the external reference is `FO_SWAPTION_VOL`. The execution parameters are set to 1 attempt, 0 minutes retry after, and 2 minutes expected execution time (SLA). The JVM settings are `-Xms512m -Xmx1024m`. The task notification options are set to `Send Emails` and `Publish Business Events`. The task attributes are listed below:

Task ID	Value
Task ID	188620
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	SIMM_Offset
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricing Measures	
Business Holidays	
Task Attributes	
Surfaces	FO_SWAPTION_VOL

Select the market data group which contains all the volatility surfaces with offset strikes you wish to reduce to only ATM points (zero strike). The scheduled task creates a corresponding ATM (zero strike) surface or updates the surface if there is an existing one.

Using the below example, in the market data group `FO__SWAPTION_VOL` there are two items, `FO_USD_1M_SWAPTION_VOL` and `FO_JPY_6M_SWAPTION_VOL`.



The screenshot shows the `Market Data Group Definition` window for the group `FO_SWAPTION_VOL`. The market data selection criteria are set to `Currency Type: JPY` and `Market Data Type: VolatilitySurface3D`. The available market data items are listed below:

Currency	Type	Name
JPY	VolatilitySurface3D	FO_JPY_6M_SWAPTION_VOL
USD	VolatilitySurface3D	FO_USD_1M_SWAPTION_VOL

The scheduled task automatically creates/updates an ATM only surface with the following naming convention: *“original name”_ATM*, meaning the scheduled task automatically adds `_ATM` into the original name and makes it the new name for the output surface.

Using the above example, the scheduled task creates/updates the following surfaces: `FO_USD_1M_SWAPTION_VOL_ATM` and `FO_JPY_6M_SWAPTION_VOL_ATM`.

New surface(s) need to be assigned in the pricing environment used by the scheduled task `MARGIN_INPUT` to generate the correct risk.

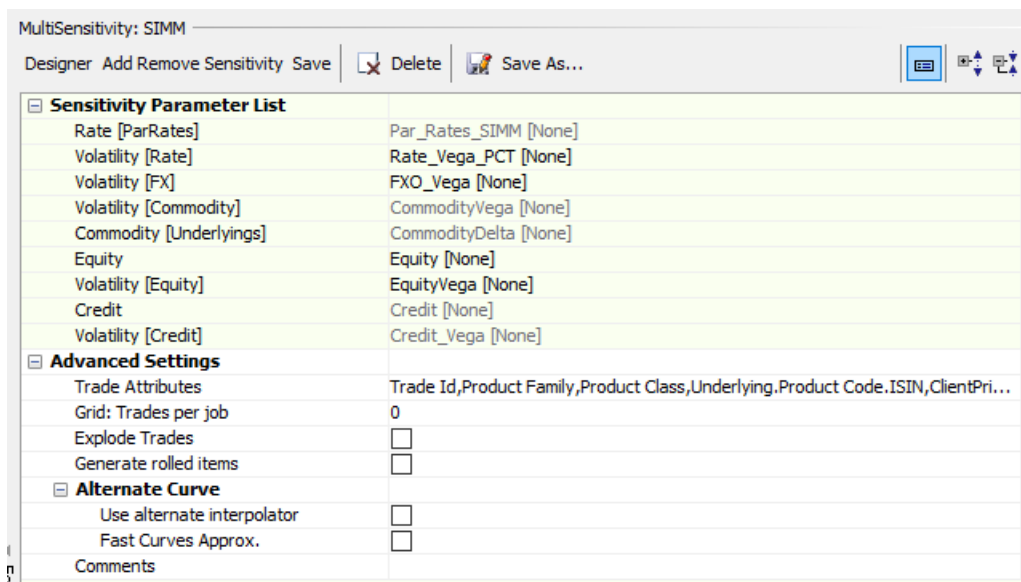
4.1.6 Risk Factor Validation

Users can use MultiSensitivity, Scenario and Pricing analysis to validate risk factor results from MARGIN_INPUT scheduled task.

Note that all the below analysis parameters except ParRate are hard coded in MARGIN_INPUT scheduled task, but can be replicated for validation purposes. The analysis parameters shown in this section are for informational purposes only.

- MultiSensitivity analysis validates results of Risk_IRCurve, Risk_FX, Risk_FXVol, Risk_XCcyBasis, Risk_InflationVol, Risk_Equity, Risk_EquityVol, Risk_CreditQ, Risk_Commodity and Risk_CommodityVol.
- Scenario analysis validates results of Risk_IRVol.
- Pricing analysis validates results of Notional, PV and Risk_Inflation.

Example of MultiSensitivity:



MultiSensitivity: SIMM

Designer Add Remove Sensitivity Save Delete Save As...

Sensitivity Parameter List	
Rate [ParRates]	Par_Rates_SIMM [None]
Volatility [Rate]	Rate_Vega_PCT [None]
Volatility [FX]	FXO_Vega [None]
Volatility [Commodity]	CommodityVega [None]
Commodity [Underlyings]	CommodityDelta [None]
Equity	Equity [None]
Volatility [Equity]	EquityVega [None]
Credit	Credit [None]
Volatility [Credit]	Credit_Vega [None]

Advanced Settings	
Trade Attributes	Trade Id,Product Family,Product Class,Underlying.Product Code.ISIN,ClientPri...
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input type="checkbox"/>
Alternate Curve	
Use alternate interpolator	<input type="checkbox"/>
Fast Curves Approx.	<input type="checkbox"/>
Comments	

Risk_IR Curve

Risk_IRCurve calculation can be simulated by using the following pre-defined ParRate sensitivity within MultiSensitivity.

Sensitivity: Par_Rates_SIMM

Designer... Delete Save Save As...

Market	
Type	Rate
Perturbation Type	ParRates
Par Rates	Par_Rates_SIMM
Exclude skipped curves	<input type="checkbox"/>
Amount	1
Amount Type	bps
Sensitivity As	Single Sided
Include Gamma	<input type="checkbox"/>
Settings	
Measures	rateDELTA
Custom Measures	
Advanced Settings	
Hedge Accounting	NONE
Scaling Factor	1
Trade Attributes	Trade Id
Aggregate Results	<input type="checkbox"/>
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input type="checkbox"/>
Alternate Curve	
Use alternate interpolator	<input type="checkbox"/>
Fast Curves Approx.	<input type="checkbox"/>
Comments	

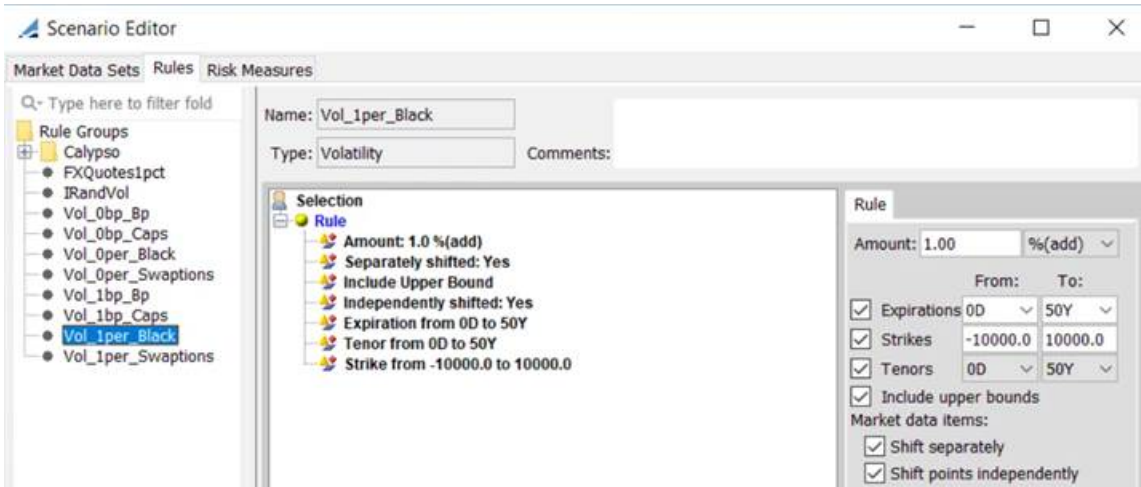
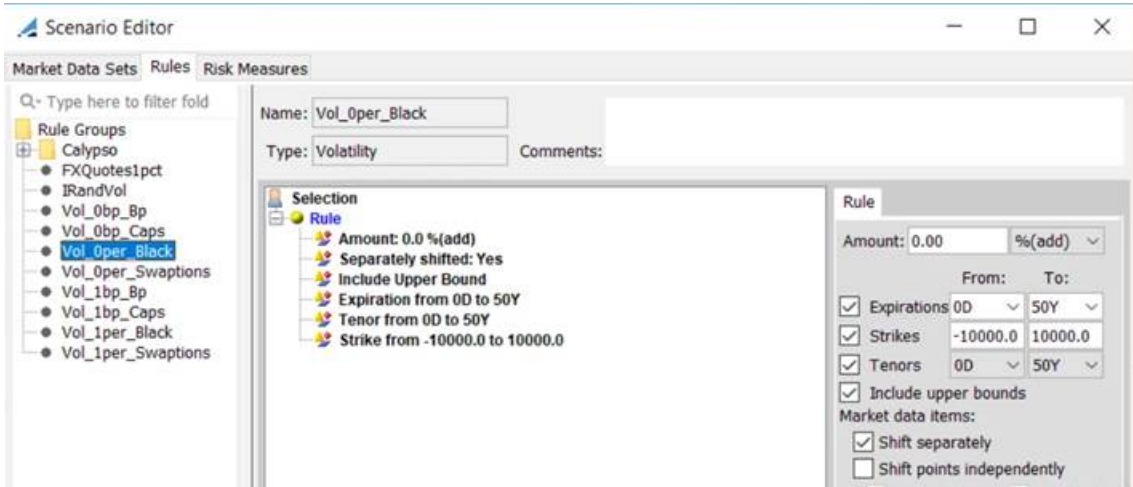
If Ignore Curves is defined, output results of curves defined in market data group are ignored.

Risk_IRVol

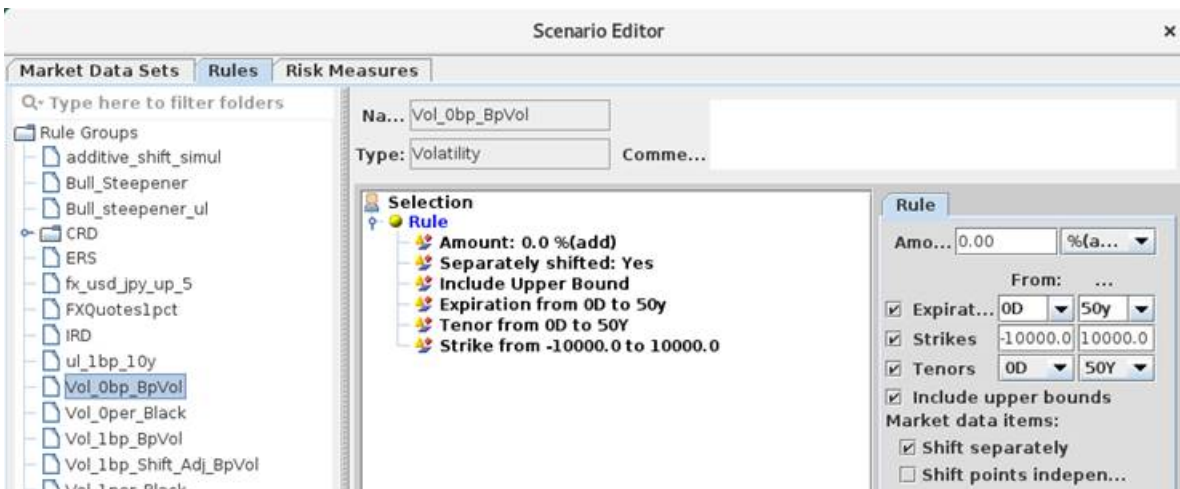
Risk_IRVol will be calculated using the following pre-defined scenario rules and risk measures.

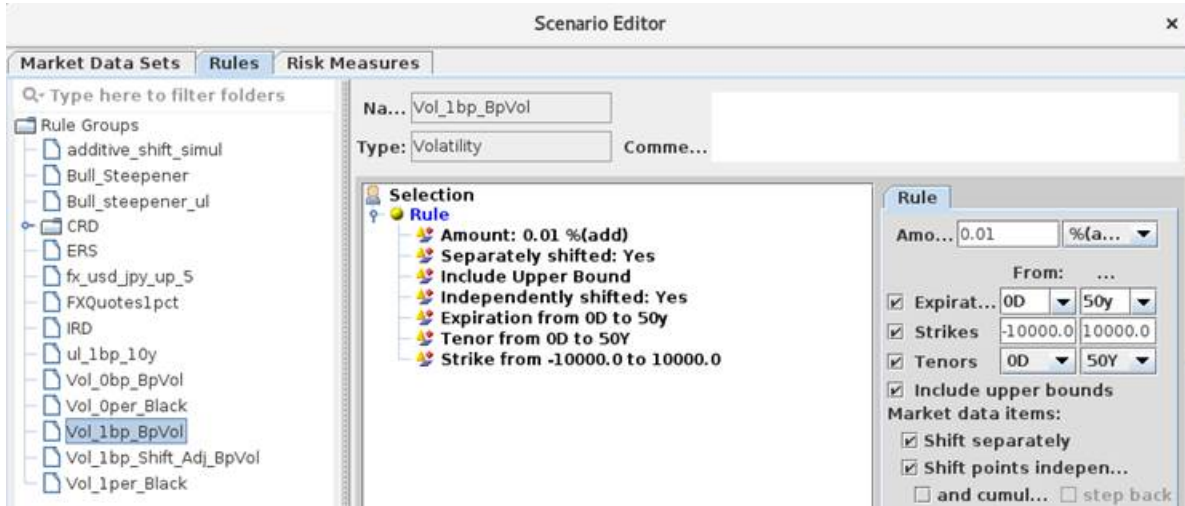
Scenario Rules: Scenario rule needs to be created for each volatility type separately if the rules are different. The shift applied to log-normal volatility with quote type 'Yield' is 1% and shift applied to normal volatility with quote type 'BpVol' is 1bps if no shift adjustment is applied. The shift applied to normal volatility with quote type 'BpVol' is 1% if shift adjustment is applied to MID_BpVol layer.

Scenario Rule for 1% shift in quote type 'Yield' for log-normal volatility

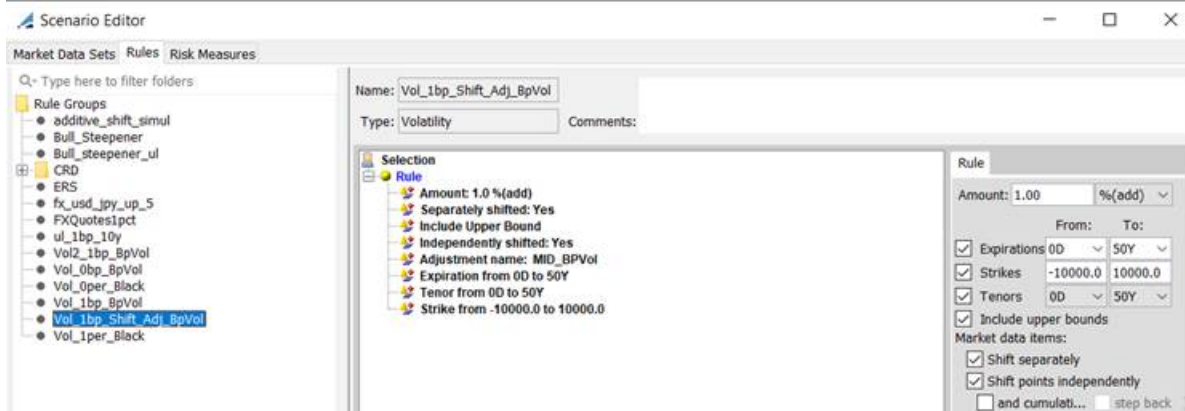


Scenario Rule for 1bp shift in quote type 'BpVol' for normal volatility:





Scenario Rule for 1% shift in quote type 'BpVol' for normal volatility with shift adjustment:



Scenario formula for Vega calculation – The rules for all different volatility types can be selected into one scenario risk measure to calculate the Vega for a portfolio of multiple product types. Different rules can be selected for each volatility type based on selected market data sets.

Scenario Editor

Market Data Sets Rules Risk Measures

Q- Type here to filter folk

Groups

- A_Gamma
- archeus
- Basis_shift
- Basket_Shock
- Bear_Flat
- Bear_steep
- Bull_Flattening
- Bull_steepening
- cds_multiplicative_shift
- Composite
- CRD
- CS01Up
- ERS
- FXTranslation
- IRD
- Up28p-2Up18p
- UpOneBp
- VEGA

Parameter set name: VEGA

Selection

- Risk Measures
 - Vol_BpVol [Vol_Rate_Pt_BpVol]
 - Vol_Black [Vol_Rate_Pt_Black]
 - Vol_Shift_Adj_BpVol [Vol_Rate_Pt_Shift_Adj_BpVol]
- Pricing Measures
- Display currency
- Base
- PreProcess
- PreShift
- Pricing Parameters
- As-Of Forward Date
- Configure columns
- Columns
 - Trade Id

☒ Convert to base currency
☐ Generate rolled cur... ☐ Use alternate interpolator
☐ Include probability
☐ Explode T... ☐ Optimiz...
☐ Look Through... ☐ Skip marketdata depen...
☐ Rollup Alloc... ☐ Approx. daily avg. instruments

Strategy: ☒ simple Viewer: Default

Nb trades per job: 0

Comments:

Risk Measure

Name: Vol_BpVol

Mkt Data Set: Vol_Rate_Pt_BpVol

Product type: ANY

Vol_1bp_BpVol(?) - Vol_0bp_BpVol

? Editor... Test Apply Remove

Scenario Editor

Market Data Sets Rules Risk Measures

Q- Type here to filter folk

Groups

- A_Gamma
- archeus
- Basis_shift
- Basket_Shock
- Bear_Flat
- Bear_steep
- Bull_Flattening
- Bull_steepening
- cds_multiplicative_shift
- Composite
- CRD
- CS01Up
- ERS
- FXTranslation
- IRD
- Up28p-2Up18p
- UpOneBp
- VEGA

Parameter set name: VEGA

Selection

- Risk Measures
 - Vol_BpVol [Vol_Rate_Pt_BpVol]
 - Vol_Black [Vol_Rate_Pt_Black]
 - Vol_Shift_Adj_BpVol [Vol_Rate_Pt_Shift_Adj_BpVol]
- Pricing Measures
- Display currency
- Base
- PreProcess
- PreShift
- Pricing Parameters
- As-Of Forward Date
- Configure columns
- Columns
 - Trade Id

☒ Convert to base currency
☐ Generate rolled cur... ☐ Use alternate interpolator
☐ Include probability
☐ Explode T... ☐ Optimiz...
☐ Look Through... ☐ Skip marketdata depen...
☐ Rollup Alloc... ☐ Approx. daily avg. instruments

Strategy: ☒ simple Viewer: Default

Nb trades per job: 0

Comments:

Risk Measure

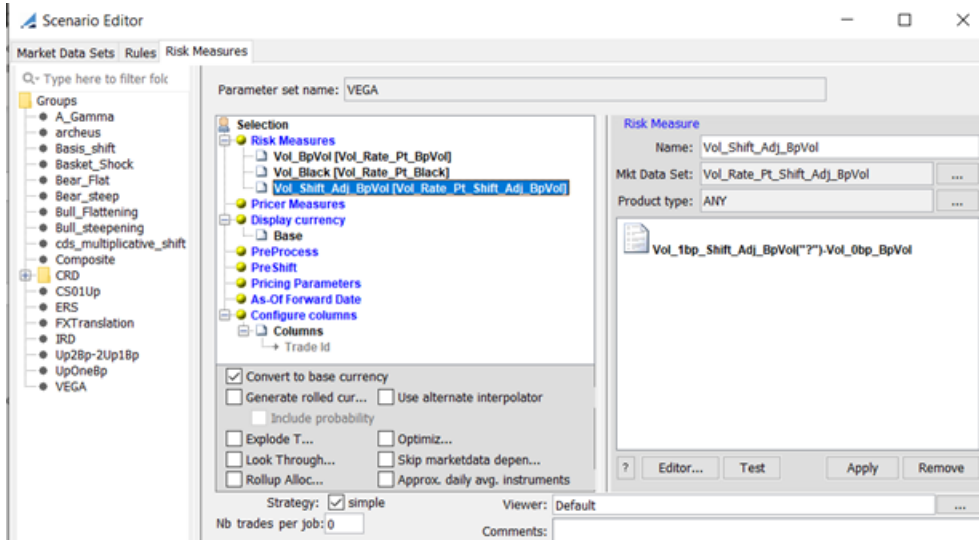
Name: Vol_Black

Mkt Data Set: Vol_Rate_Pt_Black

Product type: ANY

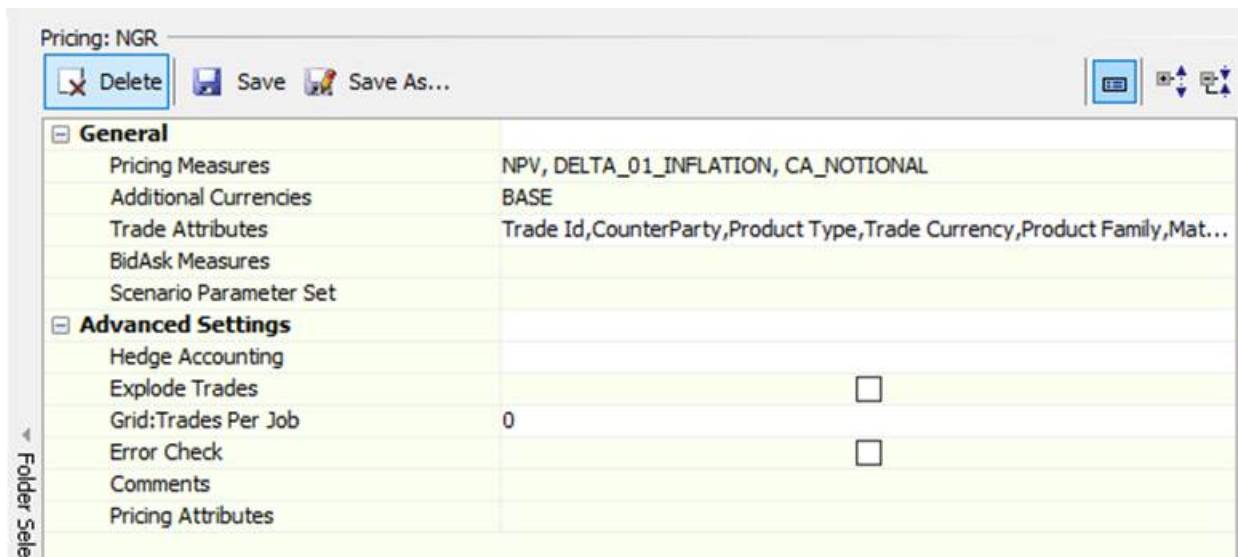
Vol_1per_Black(?) - Vol_0per_Black

? Editor... Test Apply Remove



Risk_Inflation

Risk_Inflation will be calculated using the following pre-defined pricing analysis. Risk_Inflation results are from DELTA_01_INFLATION.



Risk_InflationVol

Risk_InflationVol will be calculated using the following pre-defined sensitivity analysis in case of Inflation Cap trades. Product sub-type needs to be added to the trade attribute to identify this type of trade. Previously, Risk_IRVol was calculated for vega results. After this change, Risk_InflationVol will be calculated.

Sensitivity: Rate_Vega_PCT

Designer... Delete Save Save As...

Market	
Type	Volatility
Volatility Type	Rate
Perturbation Type	Points and Adjustments
Adjustment types	MID_BPVol
Shift Amount (abs)	1
Shift Type	Sequential
Include Volga	<input type="checkbox"/>
Settings	
Measures	Vega
Custom Measures	None
Advanced Settings	
Scaling Factor	1
Trade Attributes	Trade Id
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input type="checkbox"/>
Generate dependents	<input type="checkbox"/>
Comments	

Folder Selection

Risk_CreditQ

Risk_CreditQ will be calculated using the following pre-defined Credit sensitivity analysis.

Sensitivity: Credit

Designer... Delete Save Save As...

Market	
Type	Credit
Amount	1
Amount Type	bps
Sensitivity As	Single Sided
Include Gamma	<input type="checkbox"/>
Include Underlying Delta	<input type="checkbox"/>
Settings	
Measures	NPV,creditDELTA
Custom Measures	
Advanced Settings	
Trade Attributes	Trade Id,Trade Currency
Underlier Attributes	
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input type="checkbox"/>
Comments	

Folder Selection


For CDSIndexOption trade, it is required to use pricer PricerCDSIndexOptionSingleCurve and multi-sensitivity analysis calculates credit delta at index level. Per ISDA requirement, Risk_CreditQ risk factors calculated by MARGIN_INPUT will break down index level value for each single name based on defined weights.

Risk_CreditVol

$\text{Risk_CreditVol} = \text{Vega} * \text{Vol}$. This is the same idea as Risk_IRVol calculation in current solution. There are two inputs: Vega from credit volatility sensitivity and vol points from vol surfaces which used to price the trade.

Credit vega will be calculated using the following pre-defined Credit sensitivity analysis.

Sensitivity: Credit_Vega

Weightedvega Designer Save ☐ Delete  Save As...

Market	
Type	Volatility
Volatility Type	Credit
Perturbation Type	Points
Shift Amount (abs)	1
Shift Type	Sequential
Include Volga	<input type="checkbox"/>
Settings	
Measures	Vega
Custom Measures	None
Advanced Settings	
Scaling Factor	1
Trade Attributes	Trade Id
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input type="checkbox"/>
Generate dependents	<input type="checkbox"/>
Comments	

Credit Vol points are derived from volatility surface used to price the trade, using same date, tenor and strike.

VolatilitySurface3D CDX_Vol_Offset_Full USD CLOSE 0D User(calypso_user)(PE SIMM_Copy)

Surface Utilities Help


Name: CDX_Vol_Offset_Full CLOSE Date: 10/18/2022 2:41:15 PM ☐ Current

Definition Offsets Points Graph

☐ Tenor ☐ Expiry ☒ Strike Strike: 0.5 VolatilityModel: Black MID

Expiry/Tenor	0D	1Y	5Y	10Y
10/19/2022	503.86354	502.86354	504.86354	505.86354
11/16/2022	120.73963	119.73963	121.73963	122.73963
12/21/2022	90.51707	89.51707	91.51707	92.51707
01/18/2023	80.19378	79.19378	81.19378	82.19378
02/15/2023	73.81716	72.81716	74.81716	75.81716
03/15/2023	69.42095	68.42095	70.42095	71.42095
04/19/2023	65.51404	64.51404	66.51404	67.51404
05/17/2023	63.15822	62.15822	64.15822	65.15822
06/21/2023	60.88340	59.88340	61.88340	62.88340
07/19/2023	59.44919	58.44919	60.44919	61.44919
08/16/2023	58.26277	57.26277	59.26277	60.26277
09/20/2023	57.01751	56.01751	58.01751	59.01751
10/18/2023	56.19144	55.19144	57.19144	58.19144
11/15/2023	55.47630	54.47630	56.47630	57.47630

Bid >> Ask
Ask >> Bid
Interpolate...
ACT/360
Generate


Interpolate Surface
×

Name: CDX_Vol_Offset_Full 10/18/2022 2:41:15 PM

Interpolator Interpolator3DLinear

End Date 10/18/2023

Tenor 0D

Strike 0.00500

☒ Call ☐ Put

Bid 56.19144

Mid 56.19144

Ask 56.19144

Interpolate
Close

For CDSIndexOption trade, it is required to use pricer PricerCDSIndexOptionSingleCurve and multi-sensitivity analysis calculates credit delta at index level. Per ISDA requirement, Risk_CreditVol risk factors calculated by MARGIN_INPUT will be at index level.

Risk_Equity

Risk_Equity will be calculated using the following pre-defined Equity sensitivity analysis.

Sensitivity: Equity

Designer... Delete Save Save As...

Market	
Type	Equity
Beta Matrix	None
Shift Amount (%rel)	1
Sensitivity As	Single Sided
Cross Gamma	<input type="checkbox"/>
Settings	
Measures	equityDELTA
Custom Measures	
Advanced Settings	
Scaling Factor	1
Trade Attributes	Trade Id
Underlier Attributes	
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input checked="" type="checkbox"/>
Comments	

Folder Selection

Risk_EquityVol

Risk_EquityVol will be calculated using the following pre-defined equity volatility sensitivity analysis.

Sensitivity: EquityVega

Designer... Delete Save Save As...

Market	
Type	Volatility
Volatility Type	Equity
Perturbation Type	Points
Shift Amount (abs)	1
Shift Type	Sequential
Include Volga	<input type="checkbox"/>
Settings	
Measures	Vega
Custom Measures	
Advanced Settings	
Scaling Factor	1
Trade Attributes	Trade Id,Product Description
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input checked="" type="checkbox"/>
Generate dependents	<input checked="" type="checkbox"/>
Comments	

Folder Selection

Risk_Commodity

Risk_Commodity will be calculated using the following pre-defined commodity sensitivity analysis.

Sensitivity: CommodityDelta

Designer... Delete Save Save As...

Market	
Type	Commodity
Perturbation Type	Underlyings
Sensitivity As	Single Sided
Include Gamma	<input type="checkbox"/>
Settings	
Measures	commodityDELTA
Custom Measures	
Advanced Settings	
Trade Attributes	Trade Id,Rate Index Tenor
Commodity Hierarchy	
Commodity Risk Units	
Underlier Attributes	
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input checked="" type="checkbox"/>
Comments	

Folder Selection

Risk_CommodityVol

Risk_CommodityVol will be calculated using the following pre-defined commodity volatility sensitivity analysis.

Sensitivity: CommodityVega_Points

Designer... Delete Save Save As...

Market	
Type	Volatility
Volatility Type	Commodity
Perturbation Type	Points
Shift Amount (abs)	1
Shift Type	Sequential
Include Volga	<input type="checkbox"/>
Settings	
Measures	Vega
Custom Measures	
Advanced Settings	
Scaling Factor	1
Trade Attributes	Trade Id
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input checked="" type="checkbox"/>
Generate dependents	<input checked="" type="checkbox"/>
Comments	

Folder Selection

Risk_FX

Risk_FX is calculated using the currency exposure approach in sensitivity analysis. The Currency Exposure analysis generates complete FX risk including FX Delta and FX Translation Risk. The below sensitivity rule is used for calculation.

Sensitivity: FX_CurrencyExposure_1pc

Designer... Delete Save Save As...

Market	
Type	Currency Exposure
Shift Amount (%rel)	1
Settings	
Measures	ccyExposureBase,ccySplitBase,ccyExposure,ccySplit
Custom Measures	None
Advanced Settings	
Trade Attributes	Trade Id
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input checked="" type="checkbox"/>
Comments	

Folder :

The results from column ccyExposureBase are used to populate the Amount column in CRIF file.

Note that the sensitivities that have a qualifier currency the same as the pricing env base currency are filtered out from the CRIF file. The sensitivities for a currency pair where none of the currencies match the trade currency, are also filtered out in the CRIF. The Risk_FX for each trade currency is reported as is in the CRIF file without flipping the sign.

Risk_FXVol

Risk_FXVol will be calculated using the following pre-defined FX volatility sensitivity analysis.

Sensitivity: FXO_Vega

Designer... | Delete | Save | Save As...

Market	
Type	Volatility
Volatility Type	FX
Perturbation Type	Points
Shift Amount (abs)	1
Shift Type	Sequential
Include Volga	<input type="checkbox"/>
Settings	
Measures	Vega
Custom Measures	
Advanced Settings	
Scaling Factor	1
Trade Attributes	Trade Id
Grid: Trades per job	0
Explode Trades	<input type="checkbox"/>
Generate rolled items	<input type="checkbox"/>
Generate dependents	<input checked="" type="checkbox"/>
Comments	

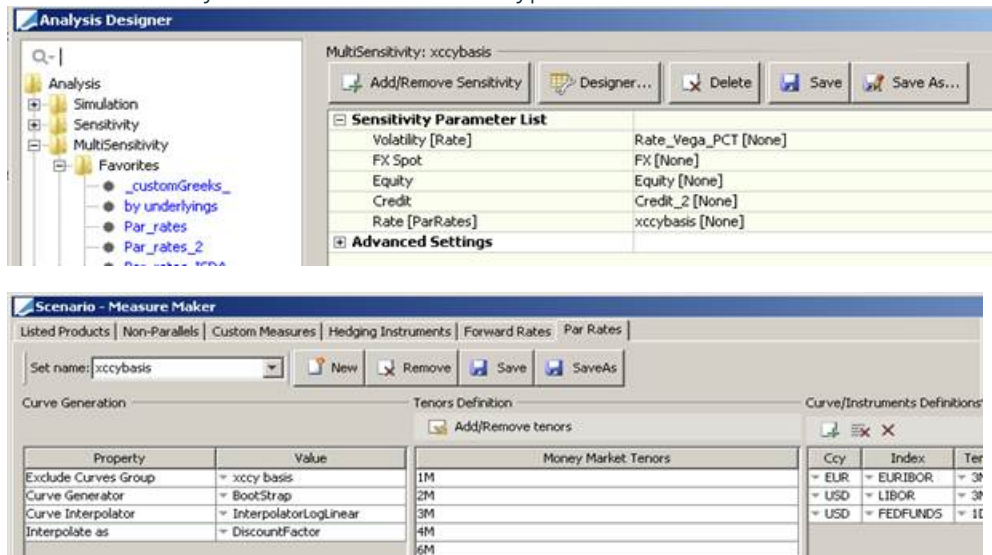
Folder Selection

You can use the domain "MarginInput.FXVegaScalingFactor" to allow scaling of FXVega in multi sensitivity analysis.

If not set, FXVega uses scaling factor 1 when running sensitivities. You can set Value = <scaling factor> as needed. For example Value = 0.1.

Risk_XccyBasis

Risk_XCcyBasis will be calculated using same pre-defined ParRate sensitivity analysis, and results are from CurveBasisXCcy Underlier Market data Type.



Configurable Risk_XCcyBasis Calculation

In some markets, certain currencies are priced differently. To accommodate this difference, the user can configure a list of currencies that will be handled by this exception.

To allow users to change the list of currencies where Risk_IRCurve will be treated as Risk_XCcyBasis, the domain value *ISDASIMM.treatIRCurveAsXccyBasis.Currencies* should be used. For ISDA case "Quote is for fixed rate against USD Libor Flat", the desired currencies should be added to this domain.

For currencies where the sign of the risk will be flipped, the domain *ISDASIMM.flipXccyBasisRisk.Currencies* should be used. For ISDA case "Quote is non-USD Libor plus spread", the desired currencies should be added to this domain.

The only trigger for using the special logic is that the domain contains a list of currencies. If the domain is empty, no special logic will be applied to any currency.

Handling of Cross Currency Swaps:

The "NPV_EXCLUDE_PRINCIPAL" Pricer Parameter supports the following logic for FX Resettable Principal Cashflows in calculating NPV Pricer Measure for PricerSwap and PricerXCcySwap.

For "regular" cross currency swaps (Fixed Principal):

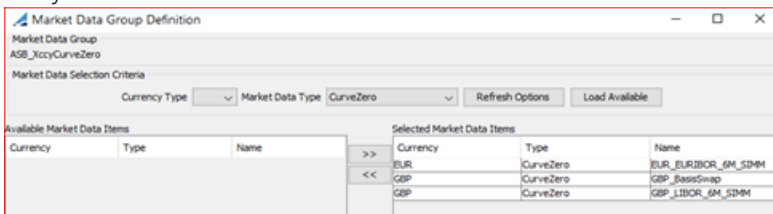
- All unsettled Principal cashflows are excluded from NPV calculation, resulting in an NPV that is simply the sum of discounted Interest cashflows only

For MTM (FX-Adjusted) cross currency swaps (FX Resettable Principal):

- The system identifies MTM cross currency swap trades via a flag called “Prin Adj”.
- All Principal cashflows are included in the NPV until they are reset.
- MTM cross currency swaps will be considered as a series of single-period swaps, where the principal exchange cash flows of the single period swaps will be removed if the FX reset has been fixed.

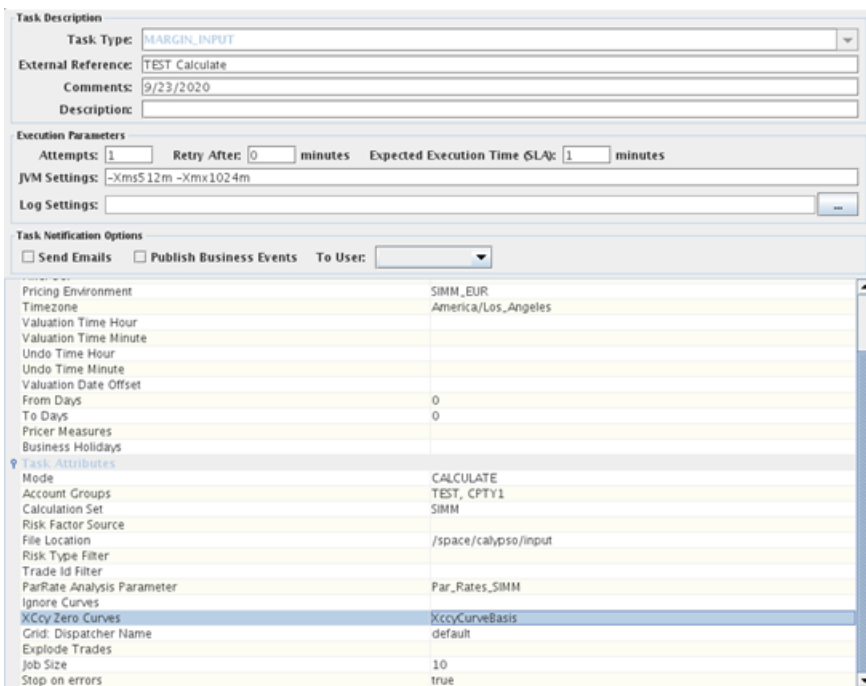
Curve configuration for Risk_XCcyBasis

For basis curves using both Curve Zero and Curve Basis, the curves need to be saved in a market data group. This market data group can be selected in the MARGIN_INPUT scheduled task. The curves in the market data group selected in the Xccy Zero curves scheduled task attribute are used to generate the sensitivities for calculation of Risk XccyBasis.



Market Data Group Definition window showing Market Data Group: ASB_XccyCurveZero. The Market Data Selection Criteria section shows Currency Type and Market Data Type set to CurveZero. The Available Market Data Items table lists Currency, Type, and Name. The Selected Market Data Items table lists Currency, Type, and Name for EUR, GBP, and USD.

Currency	Type	Name
EUR	CurveZero	EUR_EURIBOR_6M_SIMM
GBP	CurveZero	GBP_Basismap
USD	CurveZero	USD_1BOR_6M_SIMM



Task Configuration window showing Task Description, Execution Parameters, Task Notification Options, and Task Attributes.

Task Description

Task Type: MARGIN_INPUT
External Reference: TEST Calculate
Comments: 9/23/2020
Description:

Execution Parameters

Attempts: 1 Retry After: 0 minutes Expected Execution Time (SLA): 1 minutes
JVM Settings: -Xms512m -Xmx1024m
Log Settings:

Task Notification Options

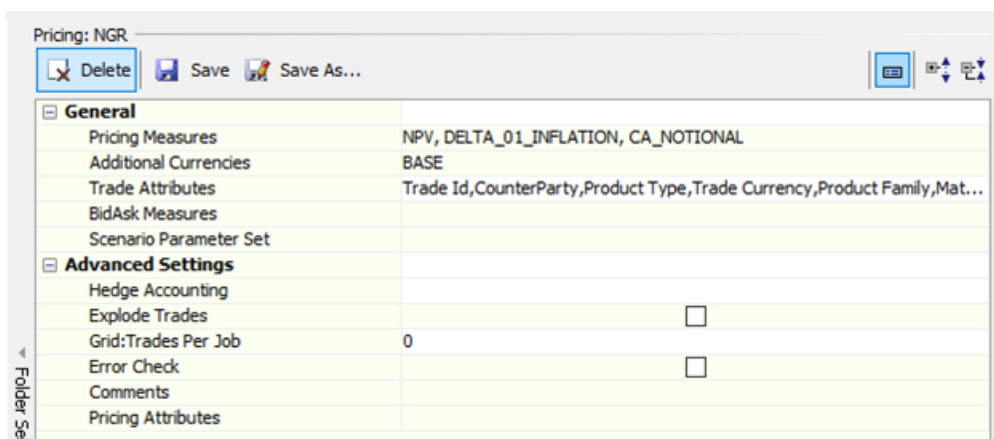
☐ Send Emails ☐ Publish Business Events To User:

Task Attributes

Pricing Environment	SIMM_EUR
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricing Measures	
Business Holidays	
Mode	CALCULATE
Account Groups	TEST, CPTY1
Calculation Set	SIMM
Risk Factor Source	
File Location	/space/calypso/input
Risk Type Filter	
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	
Xccy Zero Curves	XccyCurveBasis
Grid: Dispatcher Name	default
Explode Trades	
Job Size	10
Stop on errors	true

Notional and PV

Notional and PV will be calculated using the following pre-defined pricing analysis. Notional results are from CA_NOTIONAL, and PV results are from NPV.



4.1.7 Risk Factor Enrichment

Tenor Normalization

Calypso permits a non-ISDA SIMM tenor on a risk factor input. Whether imported or calculated, risk factors which are non-standard will then be split into two risk factors and allocated to the two surrounding SIMM buckets using linear interpolation. These split risk factors will then be saved in the database.

The ISDA SIMM standard tenors per risk type are hardcoded and cannot be amended by a user. Tenor normalization is done automatically and there is no flag or setting controlled by the user.

Market Data Provider Crowdsourcing

To help facilitate the bucket tagging of certain instruments, market data providers (for example, ICE) provide crowdsourcing utilities which provide the bucket values each day for instruments. Calypso natively supports import of these files to be used for enriching the bucket field of risk factors. Note that crowdsourcing data requires a license and agreement through other vendors, not through Calypso.

For supported risk types, the risk factors may be uploaded or created without a bucket value. The bucket value will then be populated at the time of IM calculation or export using the imported values from crowdsourcing. For any risk factor that does have a bucket value, it will not be over-ridden by this process. This process does not check for correctness of existing buckets against the crowdsourced data. Note that if the user attempts to calculate IM with missing bucket information and no crowdsourcing data, the process will throw an error, as bucket data is required for IM calculation.

The supported Risk Types are:

- RiskEquity
- RiskCreditQ
- RiskCreditNQ

Commodity buckets need to be uploaded by the client and tagged as a product code.

Process

The crowdsourcing data is uploaded using the MARGIN_INPUT scheduled task in “IMPORT SIMM BUCKETS” mode.

When using this mode, a directory is provided in the “File Location” field which points to one of the enrichment xml files (no naming conventions are required). Crowdsourcing data comes in 1 file per risk type, so multiple IMPORT SIMM BUCKET type tasks will need to be created. It does not matter if the bucket data is imported before or after the risk factors, as it is an independent process.

Calculation Set and Risk Factor Source can be left empty in the scheduled task definition.

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	Import Eqty Bucket Data
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	5 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	139621
Processing Org	CALYPUS
Trade Filter	
Filter Set	
Pricing Environment	OFFICIAL
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricing Measures	
Business Holidays	
Task Attributes	
Mode	IMPORT SIMM BUCKETS
Hierarchy Name	
Calculation Set	
Risk Factor Source	
File Location	C:\CrowdSourcing\ISDASIMM_RESULT_20191112_EQTY.XML
Risk Type Filter	
Trade Id Filter	
ParRate Analysis Parameter	
Ignore Curves	
Grid: Dispatcher Name	
Explode Trades	
Job Size	
Stop on errors	

Once the files are uploaded, they are stored as a single set of bucket enrichment data. This means that any imported data will be used on any valuation date. It also means that when you import a new file, it deletes the existing data then creates new entries. There is no history of bucket data and valuation date does not matter.

The bucket enrichment will occur only when loading/exporting risk factors. Any risk factors that are imported will not be amended and then saved in the database. The original risk factors that were imported are saved in the database. The enrichment process only tags the appropriate data upon retrieving the risk factors for either calculation or viewing. This is automatically done, there is no setting or switch to control this.

4.1.8 EXPORT Mode

There are three EXPORT modes in MARGIN_INPUT scheduled task to export risk factors into CRIF files. Account groups is optional fields. CRIF file only contains risk factors from selected margin account group when Account groups is defined.

- EXPORT mode exports risk factors CRIF file in Calypso format.
- EXPORT ACADIA mode exports risk factors CRIF file in Acadia format and amount_currency is qualifier currency.
- EXPORT ACADIA MARGIN CCY mode exports risk factors CRIF file in Acadia format and amount_currency is margin currency.

Task Attributes	
Mode	EXPORT ACADIA
Account Groups	CSA12_ALL
Calculation Set	SIMM
Risk Factor Source	
File Location	C:\temp\bilateralmargin\TradeLevelExportAcadia
Risk Type Filter	

4.1.9 EXPORT ACCOUNTS Mode

The MARGIN_INPUT scheduled task run in EXPORT ACCOUNTS mode will export a .csv file which contains account and regulator parameters. This is used to help manage the data outside of the UI if required.

The user is required to configure the File Location for export and can optionally add an account group to export only some accounts.

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	EXPORT ACCOUNTS AND REGULATORS
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	1 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	197621
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	EXPORT ACCOUNTS
Account Groups	MarginGroup1
Calculation Set	SIMM
Risk Factor Source	
File Location	/space/calypso/output
Risk Type Filter	Param_Regulation, Param_Schedule-Product, Param_AddOnNotionalFactor...
Trade Id Filter	
ParRate Analysis Parameter	
Ignore Curves	
XCcy Zero Curves	
Grid: Dispatcher Name	

4.2 MARGIN_CALCULATOR Scheduled Task

Configure the MARGIN_CALCULATOR scheduled task . This scheduled task is used to calculate the margin amounts once the risk factors have been imported or calculated.

Task Description	
Task Type:	MARGIN_CALCULATOR
External Reference:	Margin Calculator
Comments:	Margin Calculator
Description:	Margin Calculator
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	225 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	3asedMargin,UPLOADER,com.calypso.clearing.log.default,Monitoring.ServerRequest,Monitoring.IncomingServerRequest,com.calypso.TYPESIMMMargin
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	<input type="text"/>
Common Attributes	
Task ID	203622
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Account Groups	CSA_IMEM
Calculation Set	SIMM
Time Horizon	10D
Trade IM	Calculate and Export
IM File Location	Calculate and Export

Required Attributes:

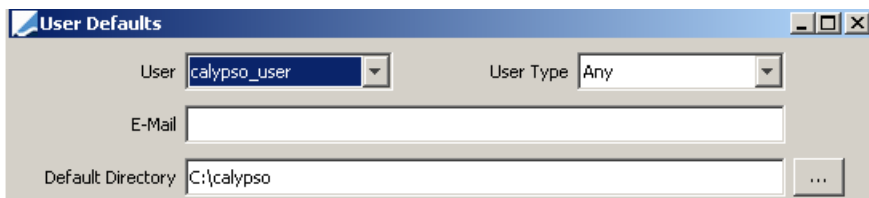
- Pricing Environment
- Timezone
- Account Groups – This attribute has replaced the Hierarchy attribute. All accounts under the selected account groups will be included in the IM calculation.
- Calculation Set – This is a mandatory attribute

Optional Attributes:

- Time Horizon – This is an optional attribute with two available values: 10D and 1D. It allows the user to select the time horizon for calculation of SIMM. The default value is 10D. 1D can only be used to generate a margin csv file. No IM Exposure PL Marks will be generated with 1D setup.
- IM File location
- Trade IM - This is a single value attribute. The available values are: blank, Calculate Only, Calculate and Export. Trade IM is calculated based on the risk factors at trade level/ sub-trade level.
 - blank (not defined) - MARGIN_CALCULATOR calculates account IM and generates csv files.
 - Calculate Only - MARGIN_CALCULATOR not only calculates IM and generates csv at account level, but also calculates Trade level IM with results saved in DB tables and Margin web UI. No trade level IM csv is generated.
 - Calculate and Export- MARGIN_CALCULATOR calculates IM and generates csv for both account level and trade level with results saved in DB tables. Output trade level result file name will contain _Trade_ along with the name defined in output file names domains described below.

Exposures will be generated for CSA In Place margin accounts if the selected calculation set is an Official calculation set and the time horizon is 10D. Exposures will not be generated if margin account is Pre-CSA, or calculation set is unofficial, or time horizon is 1D. This way was previously controlled by the *Generate Exposure Trades* attribute, but the attribute is no longer supported.

The scheduled task identifies the margin model to be used based on the trade filter criteria. Both PO and Counterparty view will automatically be calculated. The output directory can be defined in the scheduled task or in the User Defaults (user for which the scheduled task is triggered). If it is defined in the scheduled task, that location will override the User Default location. Below is an example of overriding the output directory:



The screenshot shows a 'User Defaults' dialog box with the following fields:

- User:
- User Type:
- E-Mail:
- Default Directory:

4.2.1 Output File Names

You can use a set of domains to configure the name of the output files for MARGIN_CALCULATOR and MARGIN_INPUT (EXPORT mode). These domains contain the configurable file names and can use the following keywords:

- TIMESTAMP - Generation timestamp
- VALDATE – Valuation date (yyyy-mm-dd)
- PRICINGENV - Pricing Env name
- HIERARCHY - Hierarchy name
- ACCOUNTGROUP – Account Group name
- TIMEHORIZON - 1D or empty

Each element in the file name must be separated by an hyphen “-”.

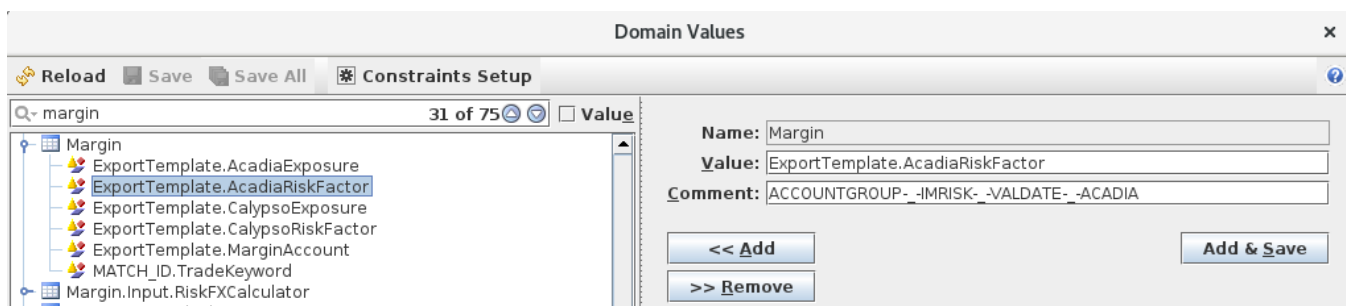
Any character other than those keywords is considered as String.

Example: “MarginExporter-_-TIMEHORIZON-_-BilateralMargin-_-PRICINGENV-_-VALDATE-_-TIMESTAMP” will generate file names like:

```
MarginExporter_1D_BilateralMargin_PENAME_2012-05-16_20120515191059000.csv
```

There is one domain per type of file:

- ExportTemplate.AcadiaExposure - Acadia IM exposure file name
- ExportTemplate.AcadiaRiskFactor - Acadia risk factor file name
- ExportTemplate.CalypsoExposure - Calypso IM exposure file name
- ExportTemplate.CalypsoRiskFactor - Calypso risk factor file name
- ExportTemplate.MarginAccount – Margin Account file name
- ExportTemplate.MarginBackTesting – Margin Backtesting file name



Domain "ExportTemplate.CalypsoRiskFactor" supports both HIERARCHY and ACCOUNTGROUP.

Example of export file name with account group below –

Name:	Margin
Value:	ExportTemplate.AcadiaRiskFactor
Comment:	ACCOUNTGROUP-_-IMRISK-_-VALDATE-_-ACADIA

Although the domains are not defined out-of-the-box, the default values before overriding are:

ExportTemplate.AcadiaExposure - MarginExporter-_-TIMEHORIZON-_-ACCOUNTGROUP-_-VALDATE

ExportTemplate.AcadiaRiskFactor - ACCOUNTGROUP-IMRISK-_-VALDATE-_-ACADIA

ExportTemplate.CalypsoExposure - MarginExporter-_-TIMEHORIZON-_-BilateralMargin-_-VALDATE

ExportTemplate.CalypsoRiskFactor - ACCOUNTGROUP-_-IMRISK-_-VALDATE

ExportTemplate.MarginAccount - MarginAccount-_-ACCOUNTGROUP -_-VALDATE

ExportTemplate.MarginBackTesting - UMRBackTesting-_-ACCOUNTGROUP-_-VALDATE


4.2.2 Generating the Initial Margin File

Margin Exposures can be generated once risk factors have either been calculated by the MARGIN_INPUT scheduled task, imported via the user interface or imported via the MARGIN_INPUT scheduled task.

The Initial Margin can be generated at account or trade level with scheduled task MARGIN_CALCULATOR.

Task Description	
Task Type:	MARGIN_CALCULATOR
External Reference:	Margin Calculator
Comments:	Margin Calculator
Description:	Margin Calculator
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	225 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	3asedMargin,UPLOADER,com.calypso.clearing.log.default,Monitoring.ServerRequest,Monitoring.IncomingServerRequest,com.calypso.TYPESIMMMargin
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	203622
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Account Groups	CSA_IMEM
Calculation Set	SIMM
Time Horizon	10D
Trade IM	Calculate and Export
IM File Location	Calculate and Export

The output will be available in defined IM File Location or otherwise in user default folder.

 MarginExporter_1D_BilateralMargin_20181031040059346.csv	10/30/2018 12:00 ...	Microsoft Excel C...	18 KB
 MarginExporter_1D_UT_ISDA2-1_2018-10-25.csv	10/30/2018 12:00 ...	Microsoft Excel C...	6 KB
 MarginExporter_BilateralMargin_20181030041045766.csv	10/29/2018 12:10 ...	Microsoft Excel C...	18 KB
 MarginExporter_UT_ISDA2-1_2018-10-25.csv	10/29/2018 12:10 ...	Microsoft Excel C...	6 KB

The *MarginExporter_BilateralMargin* file reports the margin calculation under the various regulator combinations. The file name would also display if the var is calculated over 1-day horizon or 10-day horizon. The highest margin is reported on the first row and will be used to generate the MARGIN_CALL PL_Mark.

This report includes the additional margin calculation, as well as the schedule margin if some trades in the portfolio are subject to schedule-based margin. Below is the example for Account Level IM

AutoSave Off

MarginExporter_BilateralMargin_2022-11-03_20230110173809925.csv

Search

FileHomeInsertPage LayoutFormulasDataReviewViewAutomateHelp

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Portfolio	Currency	Total Initi.	IM_DIRECT	REGULATC	IM Schedu	Positive	Negative	IMGR	Gross Not	IM SIMM	Additional	Product C	RISK_IM	RISK_FX	RISK_FXV	RISK_FXC	RISK_FXIN	RISK_IRCU
2	CSA1	USD	1.01E+09	Pay	JFSA		0	0	0	1	0	1.01E+09	2.34E+08	RatesFX	7.8E+08				7.8E+08
3	CSA1	USD	1.01E+09	Pay	JFSA								Credit	0					
4	CSA1	USD	1.01E+09	Pay	JFSA								Equity	0					
5	CSA1	USD	1.01E+09	Pay	JFSA								Commodi	0					
6	CSA1	USD	7.8E+08	Pay	APRA		0	0	0	1	0	7.8E+08	0	RatesFX	7.8E+08				7.8E+08
7	CSA1	USD	7.8E+08	Pay	APRA								Credit	0					
8	CSA1	USD	7.8E+08	Pay	APRA								Equity	0					
9	CSA1	USD	7.8E+08	Pay	APRA								Commodi	0					
10	CSA1	USD	7.8E+08	Receive	CFTC		0	0	0	1	0	7.8E+08	10000	RatesFX	7.8E+08				7.8E+08
11	CSA1	USD	7.8E+08	Receive	CFTC								Credit	0					
12	CSA1	USD	7.8E+08	Receive	CFTC								Equity	0					
13	CSA1	USD	7.8E+08	Receive	CFTC								Commodi	0					
14	CSA1	USD	7.8E+08	Receive	APRA		0	0	0	1	0	7.8E+08	0	RatesFX	7.8E+08				7.8E+08
15	CSA1	USD	7.8E+08	Receive	APRA								Credit	0					
16	CSA1	USD	7.8E+08	Receive	APRA								Equity	0					
17	CSA1	USD	7.8E+08	Receive	APRA								Commodi	0					
18	CSA2	GBP	1.42E+09	Pay	APRA		0	0	0	1	0	1.42E+09	0	RatesFX	7.09E+08				7.09E+08
19	CSA2	GBP	1.42E+09	Pay	APRA								Credit	7.09E+08					7.09E+08
20	CSA2	GBP	1.42E+09	Pay	APRA								Equity	0					
21	CSA2	GBP	1.42E+09	Pay	APRA								Commodi	0					

For Trade level IM, output file names are below by default.

MarginExporter_Trade_BilateralMargin_2022-11-22_20221122163646696.csv

MarginExporter_Trade_1D_BilateralMargin_2022-11-22_20221122163646696.csv

This report includes IM generated for all trades for defined account groups as per the example below:

MarginExporter_BilateralMargin_Trade_2025-02-20_20250220110402555.csv

Search

FileHomeInsertPage LayoutFormulasDataReviewViewAutomateHelp

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	A	B	C	D	E	F	G	H	I	J	K	
1	Valuation_date	Trade_id	Portfolio	IM_DIRECT	Margin Cur	Total Initial	IM_Model	REGULATC	PARTY_ID	CP_ID	SOURCE	
2	2/20/2025	734021	CSA_IMEM	Pay	USD	69562.35	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
3	2/20/2025	734021	CSA_IMEM	Receive	USD	69562.35	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
4	2/20/2025	734044	CSA_IMEM	Pay	USD	208687	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
5	2/20/2025	734044	CSA_IMEM	Receive	USD	208687	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
6	2/20/2025	734045	CSA_IMEM	Pay	USD	27824.94	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
7	2/20/2025	734045	CSA_IMEM	Receive	USD	27824.94	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
8	2/20/2025	734046	CSA_IMEM	Pay	USD	41737.41	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
9	2/20/2025	734046	CSA_IMEM	Receive	USD	41737.41	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
10	2/20/2025	734047	CSA_IMEM	Pay	USD	13912.8	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
11	2/20/2025	734047	CSA_IMEM	Receive	USD	13912.8	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
12	2/20/2025	734048	CSA_IMEM	Pay	USD	20868.7	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
13	2/20/2025	734048	CSA_IMEM	Receive	USD	20868.7	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
14	2/20/2025	734049	CSA_IMEM	Pay	USD	42542.3	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	
15	2/20/2025	734049	CSA_IMEM	Receive	USD	42542.3	SIMM	APRA	CALYPSOSIMM	CP_1	ISDA-BENCHMARK	

The *MarginExporter_AccountGroups* file (compatible with Acadia) only reports the highest margin calculation:

MarginExporter_Group_CSA_2022-11-03.csv																		
File	Home	Insert	Page Layout	Formulas	Data	Review	View	Automate	Help									
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	valuation_date	portfolio	im_role	base_curr	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos	im_expos
2	11/3/2022	CSA1	Pledgor	USD	7.8E+08	0	1.01E+09	7.8E+08	0	0	0	0	7.8E+08	0	0	0	0	0
3	11/3/2022	CSA1	Secured P	USD	7.8E+08	0	7.8E+08	7.8E+08	0	0	0	0	7.8E+08	0	0	0	0	0
4	11/3/2022	CSA2	Pledgor	GBP	1.42E+09	0	1.42E+09	7.09E+08	7.09E+08	0	0	0	7.09E+08	0	0	0	0	0
5	11/3/2022	CSA2	Secured P	GBP	1.42E+09	0	1.63E+09	7.09E+08	7.09E+08	0	0	0	7.09E+08	0	0	0	0	0

The *ThresholdExporter* file reports threshold monitoring results based on threshold group and account definition. ThresholdExporter file is generated only when below conditions are satisfied.

- Threshold Monitoring is configured in UI UMR Configuration page
- Calculation set is official
- Time Horizon is 10D

ThresholdExporter_2025-01-21_20250124052002775.csv										
File	Home	Insert	Draw	Page Layout	Formulas	Data	Review	View	Automate	Help
A	B	C	D	E	F	G	H	I	J	
1	Threshold Group	Margin Account	Direction	Currency	Exposure	Warning Level	Threshold	Utilization	Status	Completion
2	ThresholdGroupA		Pay	USD	2745000000	95%	1E+11	2.74%	Below Threshold	Completed
3		CSA1	Pay	USD	915000000	95%	1E+11	0.92%	Below Threshold	
4		CSA2	Pay	GBP	1830000000	95%	1E+11	1.83%	Below Threshold	
5	ThresholdGroupA		Receive	USD	2745000000	95%	1E+11	2.74%	Below Threshold	Completed
6		CSA1	Receive	USD	915000000	95%	1E+11	0.92%	Below Threshold	
7		CSA2	Receive	GBP	1830000000	95%	1E+11	1.83%	Below Threshold	
8	ThresholdGroupB		Pay	USD	2745000000	85%	1E+11	2.74%	Threshold Breached	Completed
9		CSA3	Pay	USD	1830000000	85%	1E+11	1.83%	Below Threshold	
10		CSA4	Pay	GBP	915000000	85%	10	9150000000%	Threshold Breached	
11	ThresholdGroupB		Receive	USD	2745000000	85%	1E+11	2.74%	Threshold Breached	Completed
12		CSA3	Receive	USD	1830000000	85%	1E+11	1.83%	Below Threshold	
13		CSA4	Receive	GBP	915000000	85%	10	9150000000%	Threshold Breached	
14										
15										

- The output file will display IM numbers only up to 6 decimal places to meet with the Acadia guidelines.
- The calculator will filter out the sensitivities if the base amount is 'zero' or its smaller than 10^{-9} .

4.2.3 Generate the Initial Margin PL Marks

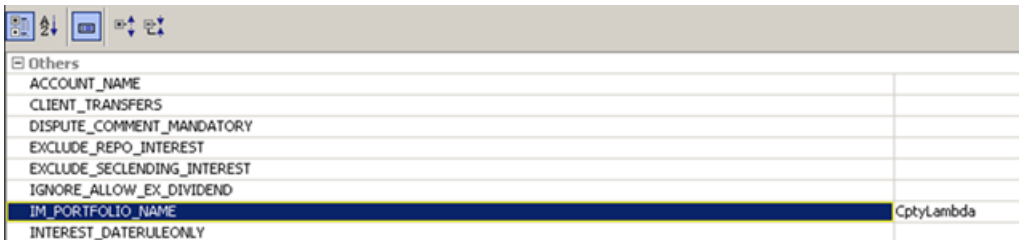
The PL marks will be used by the Collateral Manager to calculate the IM Exposures of each Margin Call Contract.

While running the scheduled task MARGIN_CALCULATOR, if the corresponding margin call contract is configured, a Collateral Exposure trade with type *Initial Margin* and currency equal to contract currency will be created automatically if:

- The calculation set is an OFFICIAL calculation set

- The Time horizon is 10D
- The Margin Account has the attribute CSA-In-Place
- No errors occur during calculation of Exposure

Collateral Exposure trades are saved into the default eligibility book defined in the margin call contract. In addition, the associated PL Mark *MARGIN_CALL* will be created, and the value will be the Initial Margin calculated by the scheduled task *MARGIN_CALCULATOR* for a given portfolio and value date. The system identifies the margin call contract according to the attribute *IM_PORTFOLIO_NAME* defined in the *ADDITIONAL_INFO* tab in the Margin Call contract (see below).

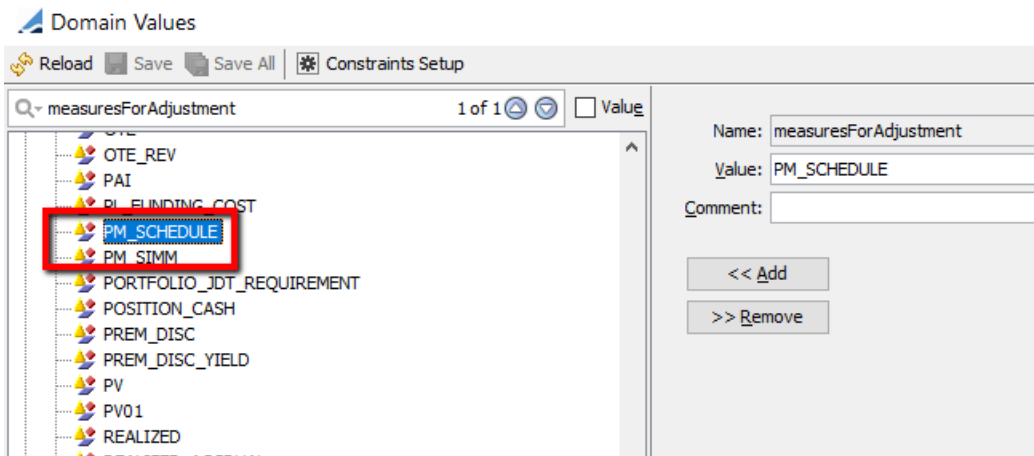


Others	
ACCOUNT_NAME	
CLIENT_TRANSFERS	
DISPUTE_COMMENT_MANDATORY	
EXCLUDE_REPO_INTEREST	
EXCLUDE_SECLENDING_INTEREST	
IGNORE_ALLOW_EX_DIVIDEND	
IM_PORTFOLIO_NAME	CptyLambda
INTEREST_DATERULEONLY	

If the *IM_PORTFOLIO_NAME* on the margin call contract matches with the Margin Account Name, the Collateral Exposure trade and its PL Marks will be created/updated.

Please note these are two different Collateral Exposure trades, one represents Receive IM and the other represents Pay IM. For Receive IM collateral exposure trade, the trade keyword Two-way IM will be set to Receive. For Pay IM collateral exposure trade, the trade keyword Two-way IM will be set to Pay.

For each CSA agreement, two PL marks will be generated for Pay and Rec. To generate separate PL marks for SIMM and SCHEDULE, the below domain values need to be configured –



Domain Values

Reload Save Save All Constraints Setup

Search: measuresForAdjustment 1 of 1 Value

Measure	Value	Comment
OTE_REV		
PAI		
PL_FUNDING_COST		
PM_SCHEDULE	PM_SCHEDULE	
PM_SIMM		
PORTFOLIO_JDT_REQUIREMENT		
POSITION_CASH		
PREM_DISC		
PREM_DISC_YIELD		
PV		
PV01		
REALIZED		

<< Add >> Remove

With the above config, *PM_SIMM* and *PM_SCHEDULE* measures will be generated for SIMM and SCHEDULE margins.

PLMark Report (3/25/20 1:03:43 PM)											
Report Data View Export Utilities Help											
Criteria											
Name				Value				Name			
Book				ALL				Pricing Environment			
Include Trades				<input checked="" type="checkbox"/>				SIMM			
Include Positions				<input checked="" type="checkbox"/>				From Date			
Trade ID								To Date			
External Reference								Adjustments Only			
								Adjustment Type			
								<input type="checkbox"/>			
Position/Trade	Position or Trade Id	Type	Pricing Env	Val Date	Book	Currency	Measure Name	Sub Id	Measure Value	Original Curr	
Trade	615023	NONE	SIMM	Mar 23, 2020	CSA12	USD	MARGIN_CALL		(93,193,510,705.5780)	USD	
Trade	615023	NONE	SIMM	Mar 23, 2020	CSA12	USD	PM_SIMM		(93,193,510,705.5780)	USD	
Trade	615023	NONE	SIMM	Mar 23, 2020	CSA12	USD	PM_SCHEDULE		0.0000	USD	
Trade	615024	NONE	SIMM	Mar 23, 2020	CSA12	USD	MARGIN_CALL		90,505,697,968.5812	USD	
Trade	615024	NONE	SIMM	Mar 23, 2020	CSA12	USD	PM_SIMM		90,505,687,968.5813	USD	
Trade	615024	NONE	SIMM	Mar 23, 2020	CSA12	USD	PM_SCHEDULE		10,000.0000	USD	

The purpose of generating those Collateral Exposure trades and its PL Marks is to be used in the Collateral Manager and manage the initial margins.

Note 1: It is assumed that there will only be one Margin Call contract with each IM_PORTFOLIO_NAME. The system does not expect two or more Margin Call contracts with the same IM_PORTFOLIO_NAME value.

Note 2: PL Marks are saved with two pricing environments: The END OF DAY PRICING ENV defined on the Margin Call contract, and the pricing environment used by the scheduled task MARGIN_CALCULATOR.

Note 3: The value date of the PL Marks is defined by the “End of Day” time of the default eligibility book defined in the Margin Call contract. For example, if the user runs the scheduled task MARGIN_CALCULATOR as of 6PM and “End of Day” time of the book is 5PM, the value date will be T+1. On the other hand, if the user runs the scheduled task MARGIN_CALCULATOR as of 4PM, the value date will be T. It is a good practice to define the “End of Day” time and time zone on the default eligibility book to be the same as the valuation time and time zone on the Margin Call contract.

4.3 MARGIN_SIMULATION Scheduled Task

4.3.1 FX Simulation Mode

This Scheduled Task (ST) generates simulated ISDA SIMM Risk FX risk factors based on the Pricing Environment base currency, providing users with an option to simulate risk factors for selected based currencies, independent of the margin currency. In addition, the other ISDA SIM Risk factors are also generated, and are like the official MARGIN_INPUT/Calculate risk factors.



The output is generated as a csv file, in the defined "File Location".

This scheduled task is for simulation purposes only.

Task Description	
Task Type:	MARGIN_SIMULATION
External Reference:	Margin Input FX Simulation
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	2 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	183620
Processing Org	
Trade Filter	CSA12_ALL_SIMM
Filter Set	
Pricing Environment	SIMM_EUR
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	23
Undo Time Minute	59
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	MARGIN INPUT FX
Account Groups	CSA12_ALL
Include Baseline	
Margin Account	
Acadia Output Currency	
Risk Factor Source	
File Location	C:\temp\BilateralMargin\TradeLevelExport
IM File Location	
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	
XCcy Zero Curves	
Grid: Dispatcher Name	default
Explode Trades	

The standard CRIF files will be provided and will be appended with "_FX_SIMULATION".

Example:

Name	Date modified
 CSA12_ALLIMRISK_2017-08-04_ACADIA_FX_SIMULATION.csv	3/29/2023 4:04 PM
 CSA12_ALLIMRISK_2017-08-04_FX_SIMULATION.csv	3/29/2023 4:04 PM

Users can run this scheduled task for multiple pricing environments in separate runs.

Mandatory Attributes

- *Pricing Environment*: the PE base ccy defines the base ccy of the Risk_FX calculation.
- *Mode*: MARGIN INPUT FX
- *Account Groups*: to define Account Groups or ERS hierarchy
- To use ERS hierarchies, it is required to use similar names for Account Groups and ERS Hierarchies
- *Trade Filter*: only required if using Account groups. If no trade filter is selected, ERS hierarchies will be used.
- *File Location*: csv output destination
- *Acadia Output Currency*: to select the amount currency in the Acadia output, i.e. qualifier currency or margin currency.

4.3.2 Schedule Simulation Mode

When the task is in MARGIN CALC SCHEDULE mode, the system will calculate schedule margin for every account loaded with existing risk factors calculated or imported from MARGIN_INPUT scheduled task in official calculation sets. The account parameters are over-written during this task and all products will go through Schedule calculation. The results will not be sent to Acadia IMEM.





Task Attributes	
Mode	MARGIN CALC SCHEDULE
Account Groups	CSA12_ALL
Include Baseline	
Margin Account	
Acadia Output Currency	
Risk Factor Source	
File Location	
IM File Location	C:\Users\admin\Calypso\JMRExport
Trade Id Filter	
ParRate Analysis Parameter	
Ignore Curves	
XCcy Zero Curves	
Grid: Dispatcher Name	default
Explode Trades	
Job Size	10
Stop on errors	
Time Horizon	

Mandatory Attributes:

- *Mode*: MARGIN CALC SCHEDULE
- *Account Groups*: to define Account Groups or ERS hierarchy
- To use ERS hierarchies, it is required to use similar names for Account Groups and ERS Hierarchies

- *Trade Filter*: only required if using Account groups. If no trade filter is selected, ERS hierarchies will be used.
- *File Location*: csv output destination

The standard IM output files and CRIF files will be provided and will be appended with “_SCHEDULE_SIMULATION”.
Example:

Name	Date modified
 CSA12_ALLIMRISK_2017-08-04_ACADIA_SCHEDULE_SIMULATION.csv	3/29/2023 11:33 AM
 CSA12_ALLIMRISK_2017-08-04_SCHEDULE_SIMULATION.csv	3/29/2023 11:33 AM
 MarginExporter_BilateralMargin_2017-08-04_SCHEDULE_SIMULATION.csv	3/29/2023 11:33 AM
 MarginExporter_CSA12_ALL_2017-08-04_SCHEDULE_SIMULATION.csv	3/29/2023 11:33 AM

4.3.3 SIMM Simulation Mode





When the task is in MARGIN CALC SIMM mode, the system calculates SIMM margin for every account loaded with existing risk factors calculated or imported from MARGIN_INPUT scheduled task in official calculation sets. The account parameters are overwritten during this task and all products will go through SIMM calculation.

Task Attributes	
Mode	MARGIN CALC SIMM
Account Groups	CSA12_ALL
Include Baseline	
Margin Account	
Acadia Output Currency	
Risk Factor Source	
File Location	
IM File Location	C:\Users\admin\Calypso\JMRExport
Trade Id Filter	
ParRate Analysis Parameter	
Ignore Curves	
XCcy Zero Curves	
Grid: Dispatcher Name	default
Explode Trades	
Job Size	10
Stop on errors	
Time Horizon	

Mandatory Attributes:

- *Mode*: MARGIN CALC SIMM
- *Account Groups*: to define Account Groups or ERS hierarchy
- To use ERS hierarchies, it is required to use similar names for Account Groups and ERS Hierarchies
- *Trade Filter*: only required if using Account groups. If no trade filter is selected, ERS hierarchies will be used.
- *File Location*: csv output destination

The standard IM output files and CRIF files will be provided and will be appended with “_SIMM_SIMULATION”.

Name	Date modified
 MarginExporter_BilateralMargin_2017-08-04_SIMM_SIMULATION.csv	3/29/2023 11:44 AM
 MarginExporter_CSA12_ALL_2017-08-04_SIMM_SIMULATION.csv	3/29/2023 11:44 AM
 CSA12_ALLIMRISK_2017-08-04_ACADIA_SIMM_SIMULATION.csv	3/29/2023 11:44 AM
 CSA12_ALLIMRISK_2017-08-04_SIMM_SIMULATION.csv	3/29/2023 11:44 AM

When the domain value `GENERATE_ALL_RF_SCHEDULE` is set to `true`, all risk factors will be generated for Schedule trades. This behavior can be avoided by setting the domain value to `false`. Default is `true` if empty.

4.3.4 Bulk Trades Simulation Mode

When the task is in BULK TRADES SIMULATION mode, the system will add risk factors to the existing OFFICIAL risk factors for a given margin account, then Exposure is calculated. The added risk factors will either be calculated from trades in the selected trade filter, and/or uploaded from the selected file. These results will not be sent to Acadia IMEM.

This mode is designed to satisfy three business use cases:





- Cleared trades simulation – What if these cleared trades are margined under an existing account?
- Legacy trades simulation – What if these legacy trades become eligible for UMR in a new account?
- Bulk trade simulation – What will the exposure look like if I booked these trades in an existing account?

In Bulk trades mode, there are some additional parameter usages:

- *Trade Filter* – This can contain any trades that should create risk factors which will be added to the calculation.
- *Include Baseline* – If set to true, the baseline official risk factors will be included in the calculation. If false, only the newly calculated/imported risk factors during the task will be used.
- *Margin Account* – The account to be used for calculation.
- *Account Groups* – NOT used for bulk trades mode.
- *File Location* – The location of the risk factor file to import

Common Attributes	
Task ID	187624
Processing Org	
Trade Filter	CSA12_ALL_SIMM
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	23
Undo Time Minute	59
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	BULK TRADES SIMULATION
Account Groups	
Include Baseline	Yes
Margin Account	CSA12
Acadia Output Currency	
Risk Factor Source	
File Location	C:\Users\Calypso\ImportRF_TradeLevel_Simulation_CSA12.csv
IM File Location	C:\Users\Calypso
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	
XCCy Zero Curves	
Grid: Dispatcher Name	
Explode Trades	

The standard IM output files and CRIF files will be provided and will be appended with “_BULK_TRADE_SIMULATION”.
















Name	Date modified
 MarginExporter_ALL_2017-08-04_BULK_TRADE_SIMULATION_BASELINE.csv	3/29/2023 4:08 PM
 MarginExporter_BilateralMargin_2017-08-04_BULK_TRADE_SIMULATION_BASELINE.csv	3/29/2023 4:08 PM
 ALLIMRISK_2017-08-04_ACADIA_BULK_TRADE_SIMULATION.csv	3/29/2023 4:08 PM
 ALLIMRISK_2017-08-04_BULK_TRADE_SIMULATION.csv	3/29/2023 4:08 PM

For any uploaded risk factors:

- Calypso overrides any account values in the import file so that they are automatically mapped to the account selected in the ST.
- The same validation that occurs for normal risk factors will be done here upon upload.

4.3.5 Margin Simulation Dashboard

As part of the margin user interface, there is a new page which will contain results for simulations run across accounts.

Simulations								
Displaying 20 Simulations								
	Account Group: All	Accounts: All	Currencies: All		Add filters			
Account Group	Account	Margin CCY	Direction	Baseline	Schedule	1D IM	Incremental 10D IM	Simulated 10D IM
Calypso Global	Calypso NH @ BOFA NA	USD	 Pay	124,362,823	0	35,070,733	-	-
Calypso Global	Calypso NH @ BOFA NA	USD	 Receive	124,964,852	0	35,670,903	-	-
Calypso Global	Calypso NH @ BOFA Sec	USD	 Receive	20,021,445	0	6,416,410	-	-
Calypso Global	Calypso NH @ BOFA Sec	USD	 Pay	19,817,318	0	6,398,965	-	-
Calypso Global	Calypso NH @ Barclays Cap	EUR	 Receive	3,523,072	0	1,332,507	74,716,271	78,239,343
Calypso Global	Calypso NH @ Barclays Cap	USD	 Pay	4,102,386	0	1,595,622	78,734,266	82,836,653
Calypso Global	Calypso NH @ Barclays Ltd	USD	 Receive	7,957,006	0	2,460,335	-	-
Calypso Global	Calypso NH @ Barclays Ltd	USD	 Pay	8,135,014	0	2,750,087	-	-
Calypso Global	Calypso NH @ CITI	USD	 Receive	2,449,742	2,400,000	720,787	4,830,331	7,280,072
Calypso Global	Calypso NH @ CITI	USD	 Pay	2,449,742	2,400,000	720,787	4,830,331	7,280,072
Calypso Global	Calypso NH @ NAB Cleared	AUD	 Receive	0	0	0	119,498,010	119,498,010
Calypso Global	Calypso NH @ NAB Cleared	AUD	 Pay	0	0	0	118,993,820	118,993,820

Data will be populated only if it has been calculated, therefore there may be empty cells in the results.

The following calculated data is shown:

- Baseline: This is the Official IM Exposure. (Official calculation set, 10D horizon)
- Schedule: This is the results of running the account in SCHEDULE SIMULATION mode
- 1D IM: This is the result of running the Exposure calculation in an official calculation se with 1D horizon
- Incremental 10D IM: This is the change in exposure from the baseline to the bulk trades simulation results.
- Simulated 10D IM: This is the result of the BULK TRADES SIMULATION calculation.

4.4 Collateral Integration

The user can use the PL Mark Report to view the PL Marks generated by the scheduled task MARGIN_CALCULATOR. To view the PL Mark Report, go to **Position & Risk > P&L Mark > P&L Mark Report**.

PLMark Report (10/20/15 12:49:42 PM)										
Report Data View Export Utilities Help										
Criteria										
Name		Value		Name		Value				
Book		ALL		Pricing Environment		@TK_Middle_TKYCLOSE				
Include Trades		<input checked="" type="checkbox"/>		From Date		10/19/2015				
Include Positions		<input checked="" type="checkbox"/>		To Date		10/21/2015				
Trade ID				Adjustments Only		<input type="checkbox"/>				
External Reference				Adjustment Type						
Position/Trade	Position or Trade Id	Type	Pricing Env	Val Date	Book	Currency	Measure Name	Sub Id	Measure Value	Original Currency
Trade	887602/NONE	@TK_Middle_TKYCLOSE	Oct 20, 2015	TEST_OIS_Collateral_CCY	JPY	MARGIN_CALL			(261,459,114)JPY	
Trade	887701/NONE	@TK_Middle_TKYCLOSE	Oct 20, 2015	TEST_OIS_Collateral_CCY	JPY	MARGIN_CALL			261,607,442JPY	
Trade	887703/NONE	@TK_Middle_TKYCLOSE	Oct 19, 2015	TEST_CPTYSIGMA	JPY	MARGIN_CALL			27,341,942JPY	
Trade	887704/NONE	@TK_Middle_TKYCLOSE	Oct 19, 2015	TEST_CPTYSIGMA	JPY	MARGIN_CALL			(27,467,462)JPY	

The user can select required criteria and query the values.

PL Marks are used to price the collateral exposure trades and the user can go to the Collateral Manager to perform the pricing task and execute the margin calls. For details of how to use collateral manager, please refer to the Collateral module documentation.

To view the Collateral Manager, go to **Processing > Collateral Management > Collateral Manager**.

Collateral Manager

Collateral ManagerCollateralMarket DataWindowHelp

LoadPriceDisputeAllocateActionContractOptimizeReconciliationMarket Data

Collateral FilterResults

Process Date/Time
Process Date10/19/2015
Collateral Context
Collateral Con... default
Filter
PO Name
LE Name
Contract Types
Contract Groups
Contract Filter
Contract Ids315003
Status
Optimization
Configuration

Results

Id	Contract Name	Status	Action	Contract Currency	Global Required Mrg	Dispute	Cpty Amount	Dispute Amount	Dispute Reason	Dispute Status	Acceptance Stat.
0	IM-CptySigma	NONE	NEW	JPY	-125,520		0	0		None	None
0	IM-CptySigma Incoming IM	NONE	NEW	JPY	27,341,942		0	0		None	None
0	IM-CptySigma Outgoing IM	NONE	NEW	JPY	-27,467,462		0	0		None	None

ResultsHistoryNotificationForwardWorkflow Events

Underlyings

Trade Id	Product Type	Description	Trade Date	Settle Date	End Date	Currency	Initial Value	FX Rate	NPV	Independent Amount	Net Balance
----------	--------------	-------------	------------	-------------	----------	----------	---------------	---------	-----	--------------------	-------------

Result Details

Contract Name
Status
Action
Contract Curr...
Global Requir...
Dispute
Cpty Amount
Dispute Amount
Dispute R...
Dispute St...
Acceptance S...
Dispute C...
Agreed A...
Direction

4.5 ARCHIVE_MARGIN Scheduled Task

UMR results including risk factors, IM results, and threshold monitoring results are saved in several database tables. The ARCHIVE_MARGIN scheduled task allows user to archive these results to history tables and restore them back to original tables.

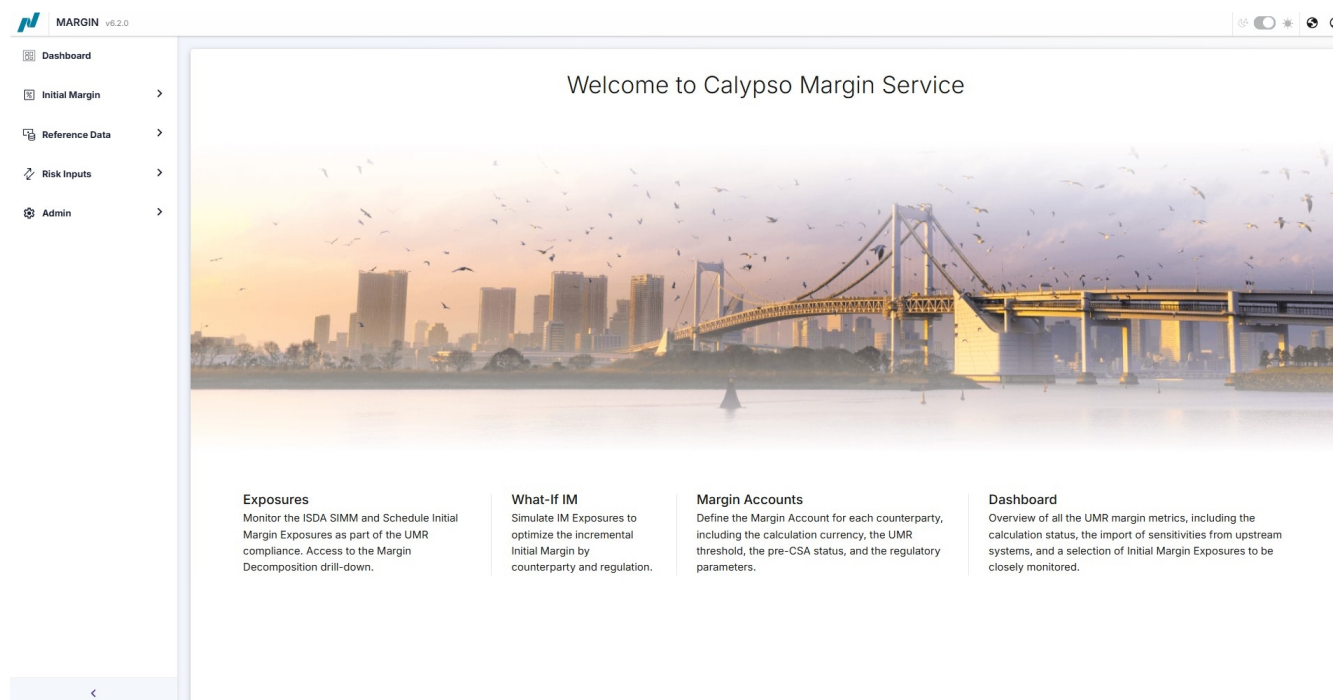
Task Description	
Task Type:	ARCHIVE_MARGIN
External Reference:	Archive Results
Comments:	Archive Results whose value date <(ST value date - From Days)
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	1 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	160123
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	1
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	Archive

Mandatory Attributes:

- Mode:** Archive/Restore. When it's Archive, results with value date < (ST value date – From Days) are archived to history tables. When it's Restore, results in history tables with value date >= (ST value date – From Days) are restored to original tables.

5. Bilateral Margin Dashboard and Reports

The margin UI allows the user to view the exposures in detail, as well as view high level information in the dashboard.



The UI is opened with the following URL:

<http://localhost:8800/margin-ui> or <http://localhost:9140/margin-ui> if API Gateway is disabled.

You can also use the Navigator Link previously created.

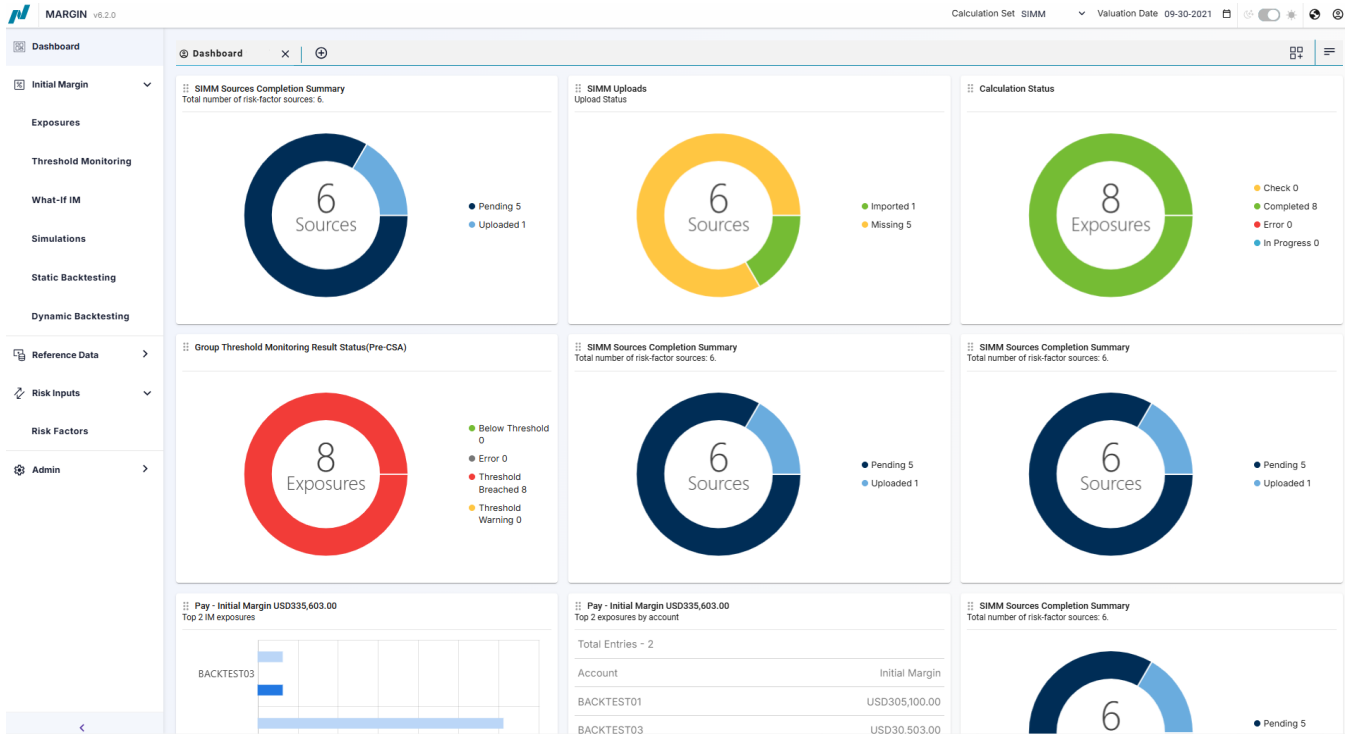
Make sure that you have started *marginserver.bat*\sh.

Also, please start *calypsoMessagingServer.bat*\sh. This service is needed to run the Margin scheduled tasks.

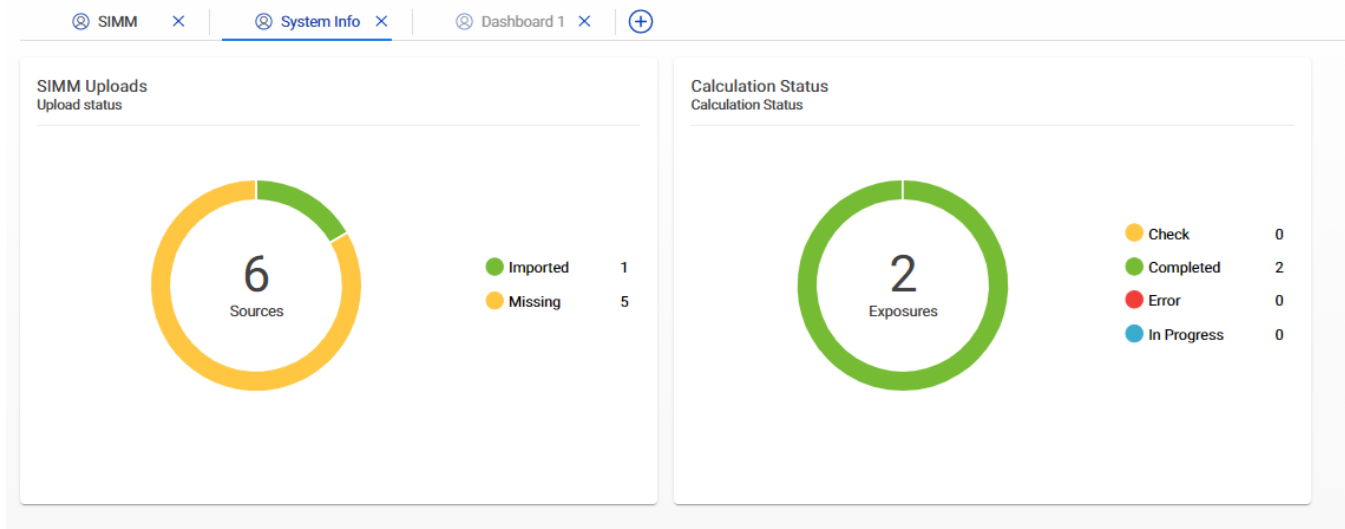
5.1 Margin Dashboard

The Margin Dashboard is a configurable page where the user can add or change widgets. The user can add, edit or delete pages. Each page may contain up to 6 widgets.

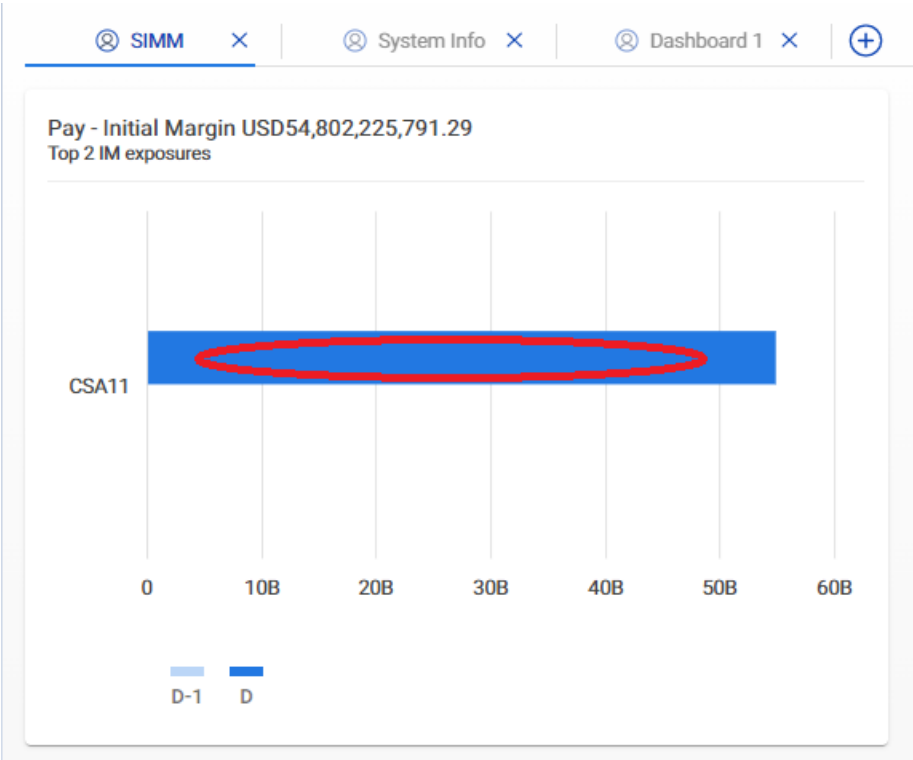
By default, the SIMM and System Info tabs are pre-configured.



The System info tab contains a widget which shows which of the sources have been successfully uploaded on the valuation date.



Drill-down into a selected exposure to review the margin decomposition (Click on the Blue line to open the drill down)



The drilldown displays the detailed Exposures page.

Back to Dashboard

Exposures

Visualizing 1 Exposures

Group: All

Accounts: CSA11

Direction: Pay

Status: All

Add filters

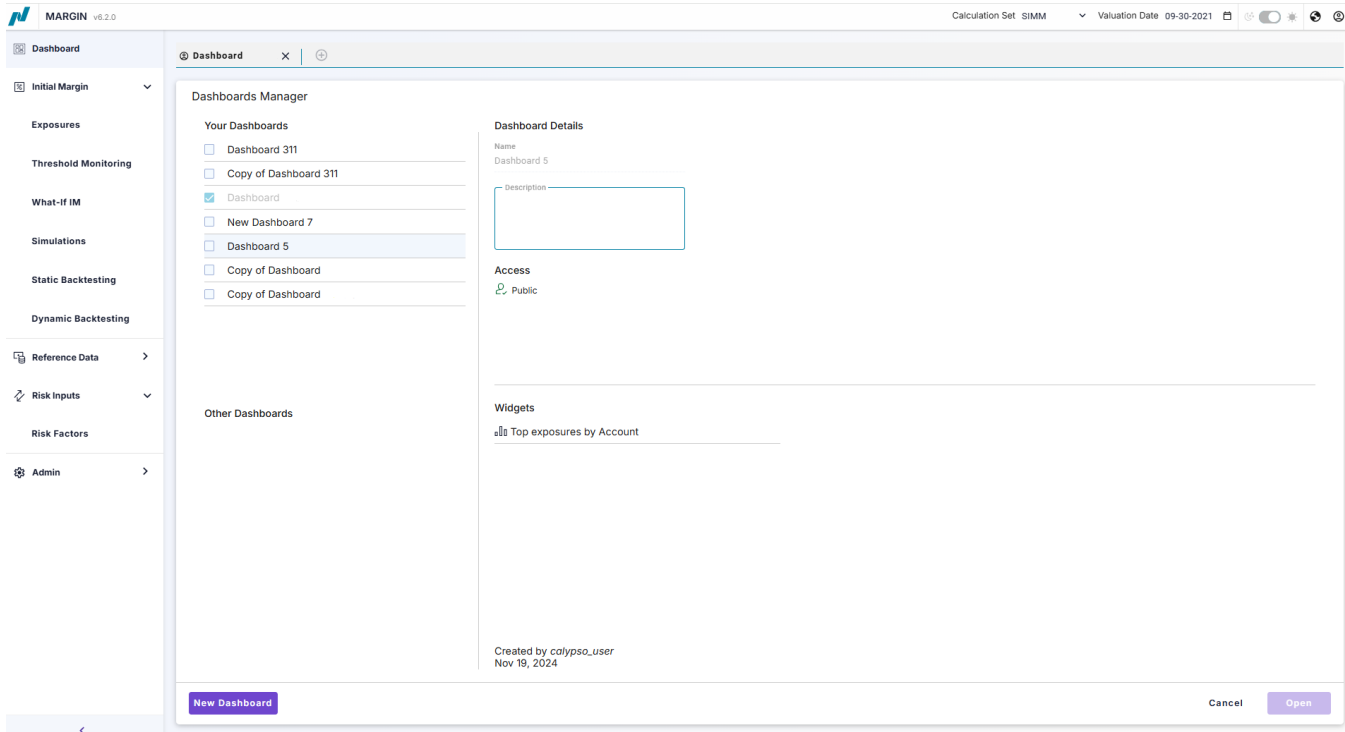
IM

Account Group	Account	Currency	Direction	Total IM (D-1)	Total IM	Regulators	Status
CSA11_IMPORT	CSA11	USD	<div><div></div>Pay</div>	-	54,802,225,791	JFSA	<div><div></div>Completed</div>

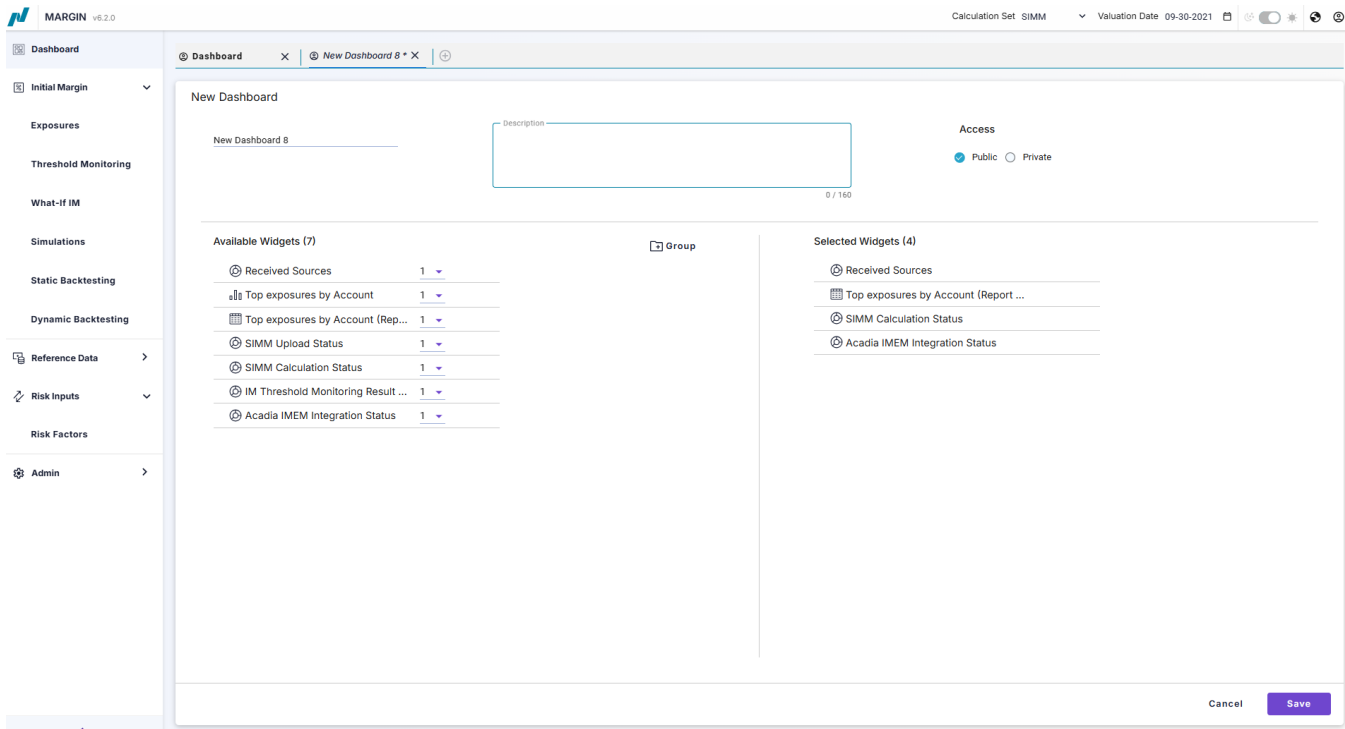
Dashboard Creation and Customization

To create a new dashboard, select Dashboard and click

If you already have existing dashboards, click and then select New Dashboard.

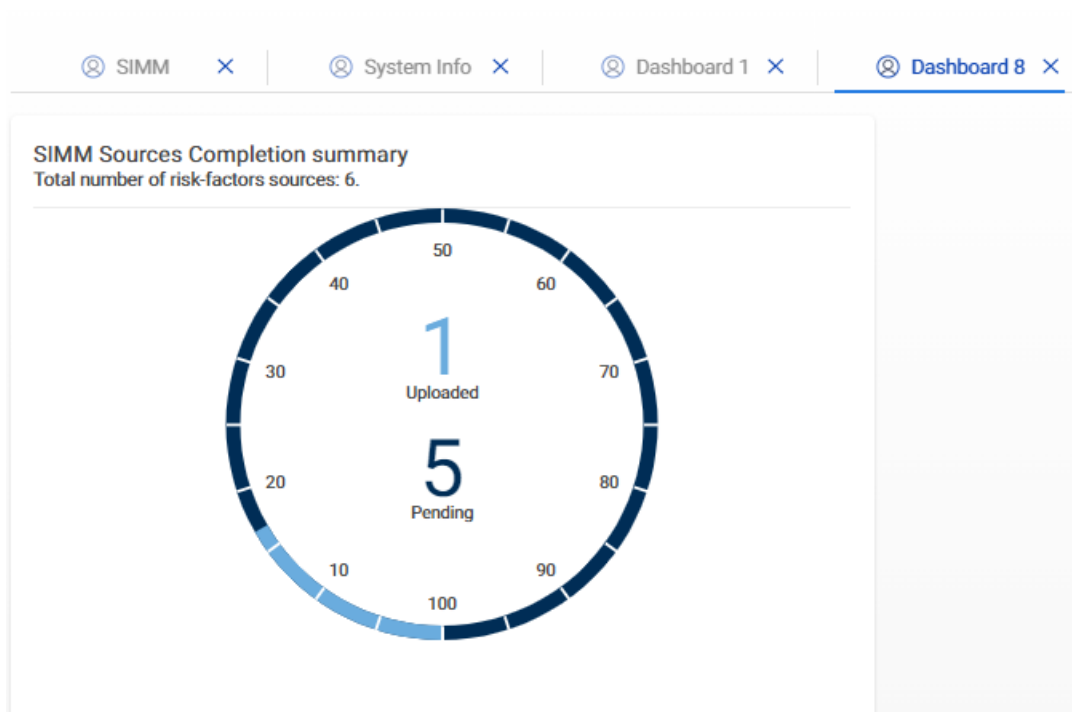



It brings up the New Dashboard window.



- » Enter the Dashboard name and description.
- » Choose the access permissions for the dashboard – Public or Private.
 - Public: The dashboard is accessible to all users.
 - Private: The dashboard is accessible only to the creator of the dashboard.
- » Select the widgets you want to display.
- » Click **Save**.

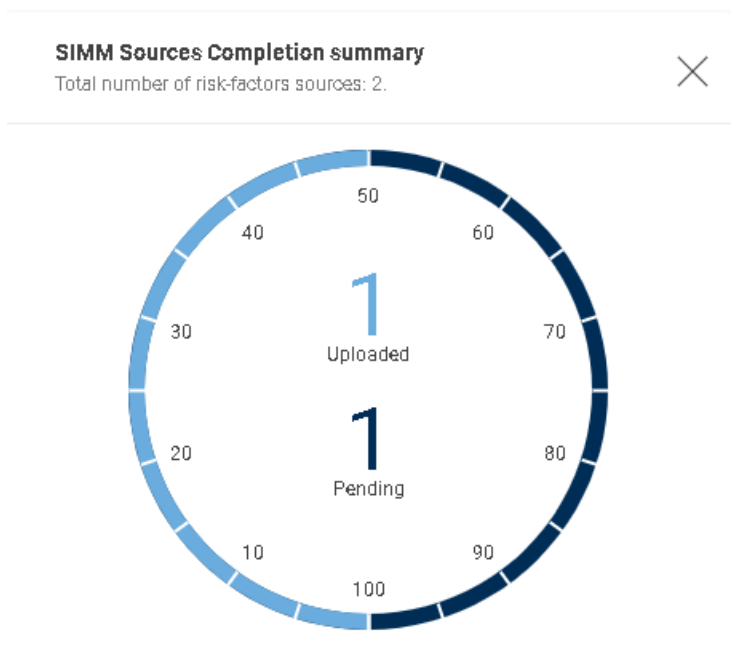
The resulting dashboard is available after clicking the Save button.



Additional widgets can be added by clicking on  button on the dashboard page.

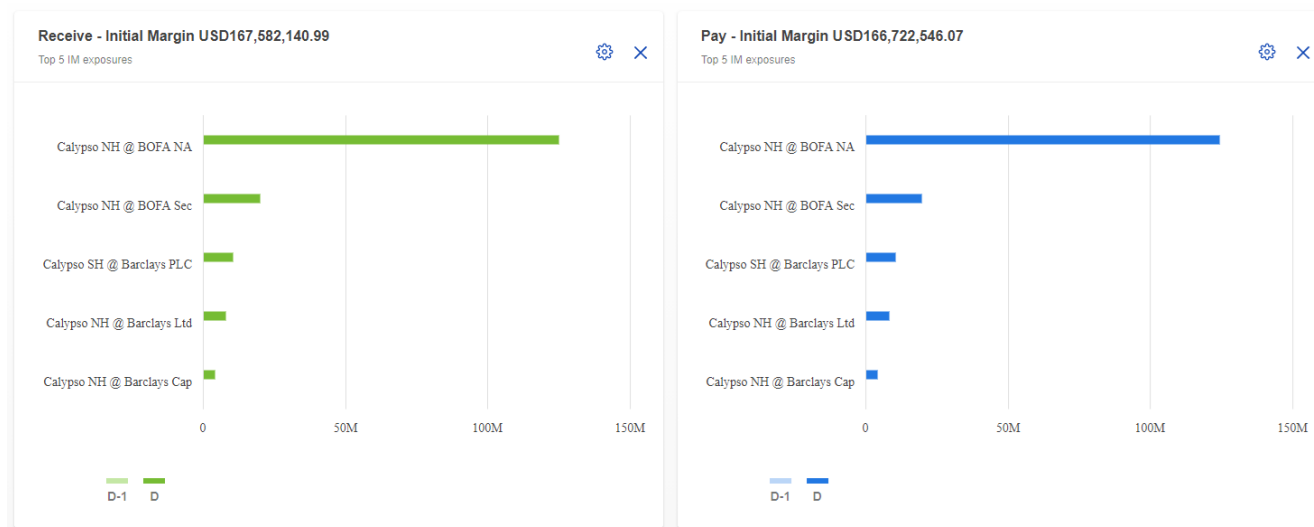
Received Sources

Shows if risk factors have been uploaded from each source on the valuation date.



Top Exposures by Account

Shows the Top pay or receive exposures by account.



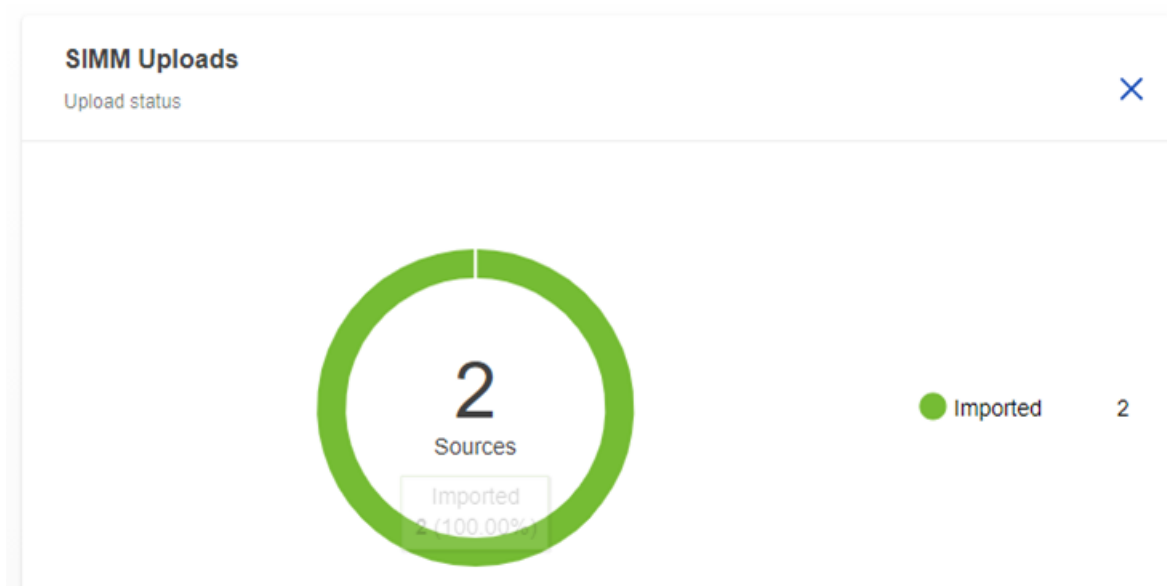
Top Exposures by Account (Report View)

This shows the top pay or receive exposures by value.

<div> <div> <div></div> <div>Pay - Initial Margin USD54,802,225,791.29</div> </div> <div> <div></div> <div>Top 2 exposures by account</div> </div> </div> <div> <div></div> <div></div> </div>	
Total Entries - 1	
Account	Initial Margin
CSA11	USD54,802,225,791.29

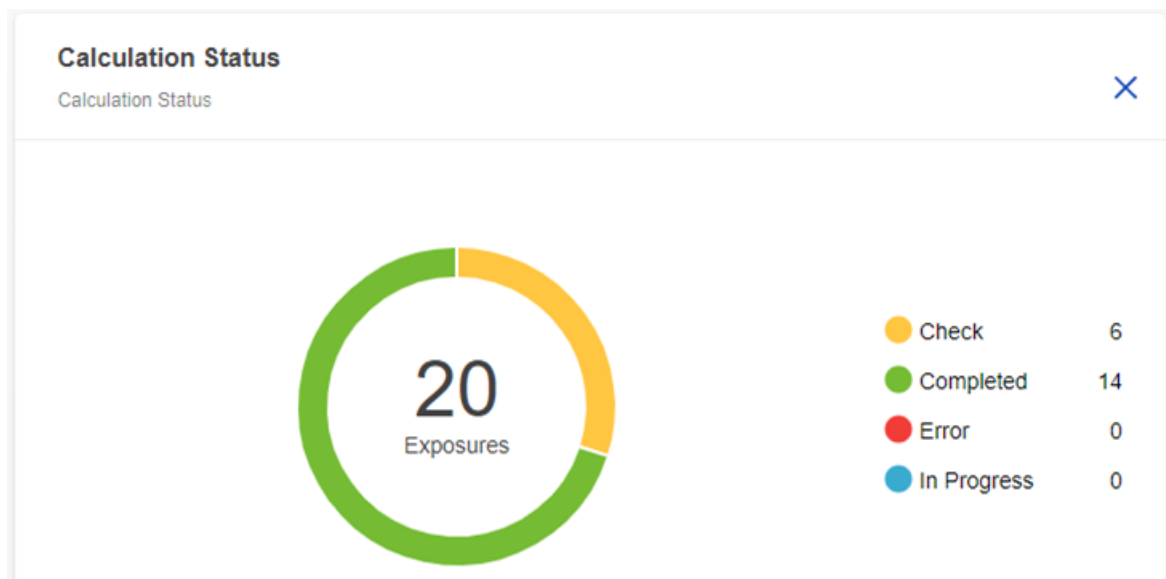
SIMM Upload Status

Shows if risk factors have been uploaded from each source on the valuation date.



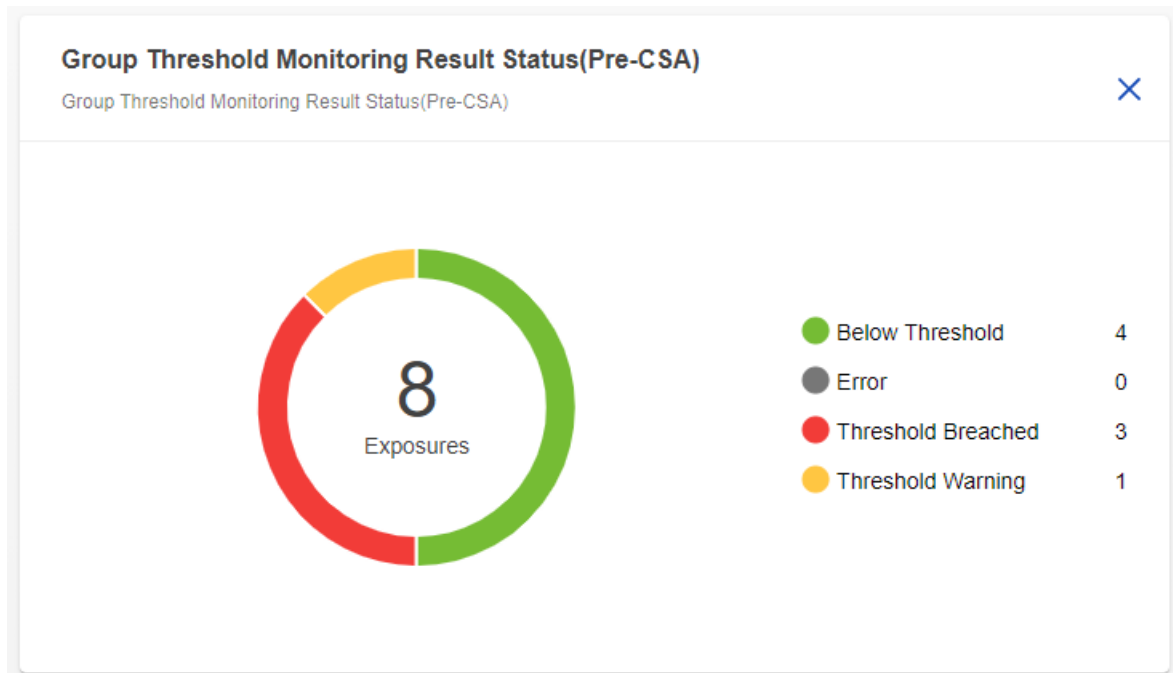
SIMM Calculation Status

This shows the number of accounts with successful IM calculation and the number of accounts with errors in the IM calculation.



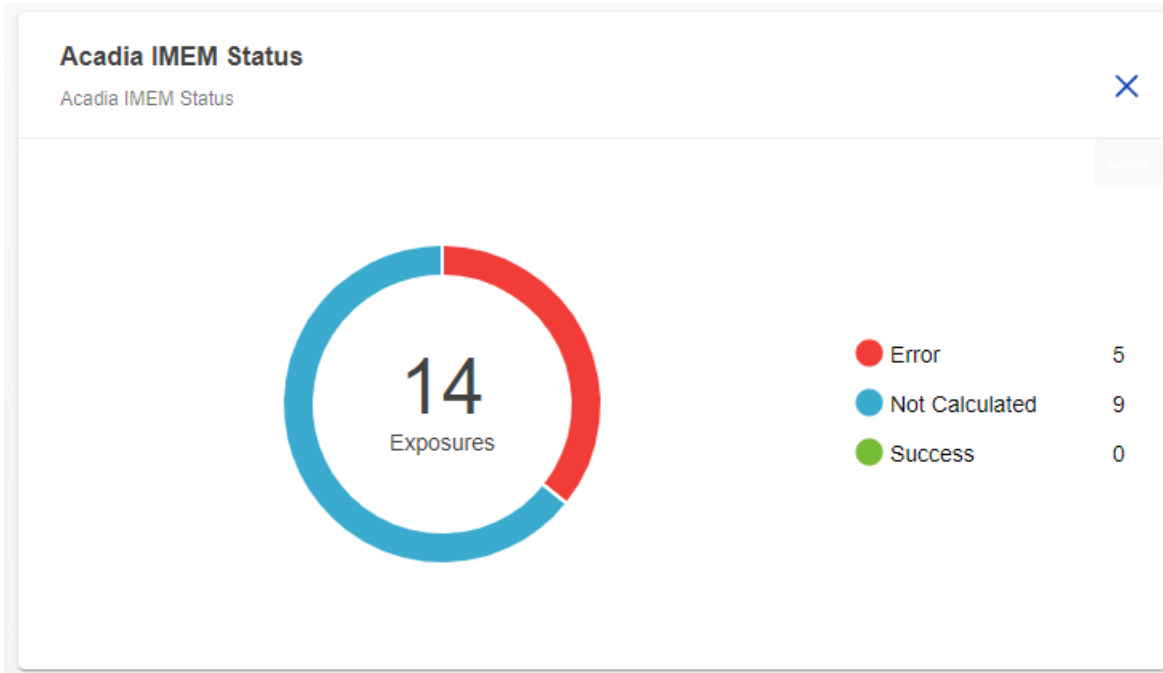
IM Threshold Monitoring Results

This shows the number of group threshold monitoring results in each status. Group and Account level thresholds are displayed.



Acadia IMEM Integration Status

This shows the number of exposures sent to IMEM in each status.



5.2 Viewing Exposures

MARGIN v6.2.0

Calculation Set: SIMM Valuation Date: 09-30-2021

Dashboard

Initial Margin

Exposures

Threshold Monitoring

What-If IM

Simulations

Static Backtesting

Dynamic Backtesting

Reference Data

Risk Inputs

Admin

UMR Configuration

Exposures

Visualizing 8 Exposures

Filters: Group: All Accounts: All Direction: All Status: All

Account Group	Account	Currency	Direction	Total IM	Regulators	Status
BACKTEST	BACKTEST01	USD	Pay	305,100	APRA	Completed
BACKTEST	BACKTEST01	USD	Receive	305,100	APRA	Completed
BACKTEST	BACKTEST02	USD	Pay	7,620	APRA	Completed
BACKTEST	BACKTEST02	USD	Receive	7,620	APRA	Completed
BACKTEST	BACKTEST03	EUR	Pay	27,730	APRA	Completed
BACKTEST	BACKTEST03	EUR	Receive	27,730	APRA	Completed
BACKTEST	BACKTEST04	EUR	Pay	16,362	APRA	Completed
BACKTEST	BACKTEST04	USD	Receive	17,998	APRA	Completed

NOTE : Only 10D exposures are viewable in the Web UI.

The user can also see the status of the exposures. The values in the Status column will be:

Completed: the IM calculation is completed without any errors.

In Progress: IM calculation is in progress.

Error: One or more errors were encountered while calculating IM.

Check: IM is calculated but does not meet the criteria defined under 'Exposure Management' criteria under UMR configuration explained below.

Exposure Monitoring:

Under **Admin > UMR Configuration** there is a section for exposure monitoring. This section has three options which determine the 'Check' status above in the exposure page.

The variation in the IM exposure from one day to the next is checked against the latest result found in the system based on the Account/ Direction/ Calculation Set of the results. The user can configure thresholds for exposure, variation percentage and warning currency in the exposure management panel shown in the screen above. Total IM exposure in the warning ccy will be configured under Exposure with no decimals and the percentage variation will be defined under Variation Percentage in % with two decimals. The warning ccy will be used to define the total amount to be used for warning. Any exposure will be converted to this ccy before being compared to the warning amount. If the IM results for a certain date does not meet this criterion, the user will see 'Check' in the status.

Example:

Warning is 1,000,000,000

Warning ccy is USD

Exposure is EUR 1,000,000,000- converted to warning currency is USD 1,200,000,000.

So, this exposure will go into **Check** status.

Default config:

In case there is no configuration for the currency, % and Amount, the below default values will be used:

Warning currency = USD

% variation = 20%

Total IM exposure = 1,000,000,000

Zoom in to the Margin Decomposition by clicking the Total IM value:

Details



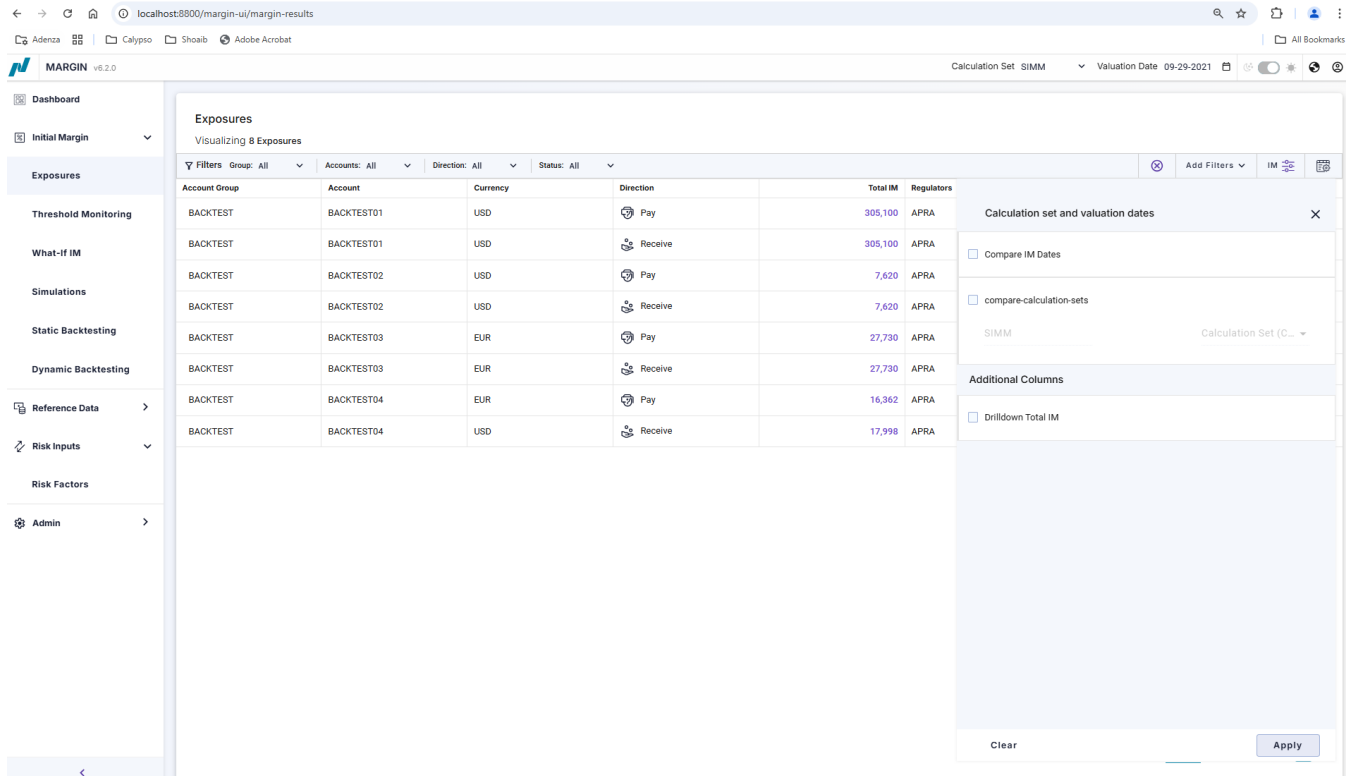
Account	SIMM IM	Additional IM	Schedule IM	Currency	Direction
IMEMBreak1	2,987,137,482.41	300,000	0	USD	Pay
IM RatesFX 1,037,701,125					
IR IM	1,037,696,588	FX IM	32,399		
IR	1,031,296,236	FX Delta	-		
IR Volatility	6,400,352	FX Volatility	32,399		
IR Curvature	-	FX Curvature	-		
IM Credit 263,005,279					
CreditNQ IM	259,750,000	Credit IM	14,970,000	IR IM	-
CreditNQ	250,000,000	Credit	970,000	IR Delta	-
CreditNQ Volatility	9,750,000	Credit Vega	-	IR Vega	-
CreditNQ Curvature	-	Credit Curvature	-	IR Curvature	-
		Credit BaseCorrelation	14,000,000	FX IM	-
				FX Delta	-
				FX Vega	-
				FX Curvature	-
IM Equity 1,518,655,618					
Equity IM	1,518,655,618	IR IM	-	FX IM	-
Equity	580,000	IR Delta	-	FX Delta	-
Equity Volatility	1,518,075,618	IR Vega	-	FX Vega	-

Select a specific account by opening the filter icon and typing in or selecting the Account names.

The screenshot shows the Nasdaq Calypso Margin UI. The top navigation bar includes the Nasdaq logo, "Bilateral Margin User Guide", and "Nasdaq Calypso ISDA SIMM and Schedule / Version 18". The main content area displays the "Exposures" table, which lists various accounts and their associated IM values. A filter icon is visible in the top right corner of the table, and a dropdown menu is open, showing a search bar and a list of filter options: "Group", "Accounts", "Direction", and "Status". The table columns include "Account Group", "Account", "Currency", "Direction", "Total IM", "Regulators", and "Status". The table is currently showing 8 exposures, all with a status of "Completed".

Export the Margin Files and CRIF files interactively by clicking on the Export icon

User can also view IM drilldown, IMEM status or compare IM results by dates and calculation sets.



The screenshot shows the Nasdaq Calypso MARGIN v6.2.0 interface. The sidebar on the left contains navigation links: Dashboard, Initial Margin, Exposures, Threshold Monitoring, What-If IM, Simulations, Static Backtesting, Dynamic Backtesting, Reference Data, Risk Inputs, Risk Factors, and Admin. The main content area is titled 'Exposures' and shows a table of exposures. The table has columns for Account Group, Account, Currency, Direction, Total IM, and Regulators. The data is filtered by Group: All, Accounts: All, Direction: All, and Status: All. The table shows 8 exposures, all with a Total IM of 305,100. A modal window titled 'Calculation set and valuation dates' is open on the right, showing options to compare IM Dates, compare calculation sets, and additional columns like Drilldown Total IM. The modal also includes a 'Clear' button and an 'Apply' button.

Account Group	Account	Currency	Direction	Total IM	Regulators
BACKTEST	BACKTEST01	USD	Pay	305,100	APRA
BACKTEST	BACKTEST01	USD	Receive	305,100	APRA
BACKTEST	BACKTEST02	USD	Pay	7,620	APRA
BACKTEST	BACKTEST02	USD	Receive	7,620	APRA
BACKTEST	BACKTEST03	EUR	Pay	27,730	APRA
BACKTEST	BACKTEST03	EUR	Receive	27,730	APRA
BACKTEST	BACKTEST04	EUR	Pay	16,362	APRA
BACKTEST	BACKTEST04	USD	Receive	17,998	APRA

5.3 Risk Factors Monitoring

Users can view the calculated and imported Risk Factors. Risk factors can also be imported by using the *Upload* button:

MARGIN v6.2.0

Dashboard

Initial Margin

Exposures

Threshold Monitoring

What-If IM

Simulations

Static Backtesting

Dynamic Backtesting

Reference Data

Margin Accounts

Regulators

Risk Inputs

Risk Factors

Admin

UMR Configuration

Calculation Set: SIMM

Valuation Date: 12-12-2024

Upload

Risk Factors

Uploaded Results

7 Sources

7 Files

1 Success

0 Errors

Source	Success/Failure	Errors
ISDA-BENCHMARK	Success	
ISDA2	Warning	
Source2	Warning	
Calypso	Warning	
Source1	Warning	
ISDA	Warning	
Source3	Warning	

Available Risk Factors

Filters: Accounts: All

Product Class: All

Risk Type: All

Add Filters

Trade ID	Sub ID	Margin Agreement	Product Class	Risk Type	Qualifier	Bucket	Label 1	Label 2	Amount	Amount USD	Source	Collect Regulators	Post Regulators	IM Model
C317-1000	-	ISDA-C317	RatesFX	Risk_InflationVol	CAD	-	10y	-	100000000 USD	100000000	ISDA-BENCHMARK	All	All	SIMM
C317-1000	-	ISDA-C317	Rates	Notional	-	-	-	-	0 USD	0	ISDA-BENCHMARK	-	-	SCHEDULE
C317-1000	-	ISDA-C317	Rates	PV	-	-	-	-	0 USD	0	ISDA-BENCHMARK	-	-	SCHEDULE
C433-1000	-	ISDA-C433	Commodity	Risk_CommodityVol	Coal Europe	1	2w	-	40000000 USD	40000000	ISDA-BENCHMARK	All	All	SIMM
C433-1000	-	ISDA-C433	Rates	Notional	-	-	-	-	0 USD	0	ISDA-BENCHMARK	-	-	SCHEDULE
C433-1000	-	ISDA-C433	Rates	PV	-	-	-	-	0 USD	0	ISDA-BENCHMARK	-	-	SCHEDULE
C67-1000	-	ISDA-C67	RatesFX	Risk_IRCurve	USD	1	2w	OIS	40000000 USD	40000000	ISDA-BENCHMARK	All	All	SIMM
C67-1000	-	ISDA-C67	Rates	Notional	-	-	-	-	0 USD	0	ISDA-BENCHMARK	-	-	SCHEDULE

5.4 Threshold Monitoring

The Threshold Monitoring dashboard allows users to monitor thresholds at the group level. Multiple Margin accounts can be grouped into a Threshold Group, which can have a separate threshold and status from the individual accounts.

The CSA Status column indicates if the account is CSA in Place or Pre-CSA. The view can be filtered to include only one type of account using the Csa Status filter.

All results come from the OFFICIAL calculation set for a given account. It is required that each account only have ONE official calculation set associated (this is not linked, but up to the user configuration). Threshold monitoring results are fetched at the [Group/Entity + direction] level and filtered by Official calculation sets. If multiple official results have been calculated for a single account, it may result in an error indicating "Duplicate IM group threshold monitoring results found."

A new attribute "Threshold Groups" introduced for the MARGIN_CALCULATOR Scheduled Task allows the user to filter the results in the output file by one or more threshold groups. This attribute is optional, and the user can add multiple values. The default value is empty when creating a new scheduled task. When the attribute value is empty, the threshold output file includes all available results, which is the same as current behavior.

MARGIN v6.2.0 Valuation Date 11-02-2023

Threshold Monitoring
Visualizing 10 Results

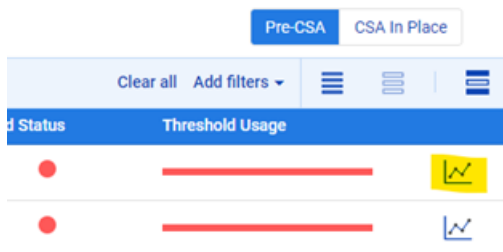
Filters: Threshold Group: All | Accounts: All | Direction: All | Csa Status: All | Threshold Status: All

Threshold Group	Account	Direction	Calculation CCY	Total IM	Threshold	Utilization	CSA Status	Threshold Status	Threshold Usage
ISDA-C1	ISDA-C1	Pay	USD	436,000,000	0	0%		●	<div></div>
ISDA-C1	ISDA-C1	Pay	USD	436,000,000	0	0%	Pre-CSA	●	<div></div>
ISDA-C1	ISDA-C1	Receive	USD	436,000,000	0	0%		●	<div></div>
ISDA-C1	ISDA-C1	Receive	USD	436,000,000	0	0%	Pre-CSA	●	<div></div>
ISDA-C10	ISDA-C10	Pay	USD	2,100,000,000	0	0%		●	<div></div>
ISDA-C10	ISDA-C10	Pay	USD	2,100,000,000	0	0%	Pre-CSA	●	<div></div>
ISDA-C10	ISDA-C10	Receive	USD	2,100,000,000	0	0%		●	<div></div>
ISDA-C10	ISDA-C10	Receive	USD	2,100,000,000	0	0%	Pre-CSA	●	<div></div>
ISDA-C100	ISDA-C100	Pay	USD	34,300,000	0	0%		●	<div></div>
ISDA-C100	ISDA-C100	Pay	USD	34,300,000	0	0%	Pre-CSA	●	<div></div>
ISDA-C100	ISDA-C100	Receive	USD	34,300,000	0	0%		●	<div></div>
ISDA-C100	ISDA-C100	Receive	USD	34,300,000	0	0%	Pre-CSA	●	<div></div>
ISDA-C101	ISDA-C101	Pay	USD	63,529,936	0	0%		●	<div></div>
ISDA-C101	ISDA-C101	Receive	USD	63,529,936	0	0%		●	<div></div>
ISDA-C102	ISDA-C102	Pay	USD	63,529,936	0	0%		●	<div></div>
ISDA-C102	ISDA-C102	Receive	USD	63,529,936	0	0%		●	<div></div>

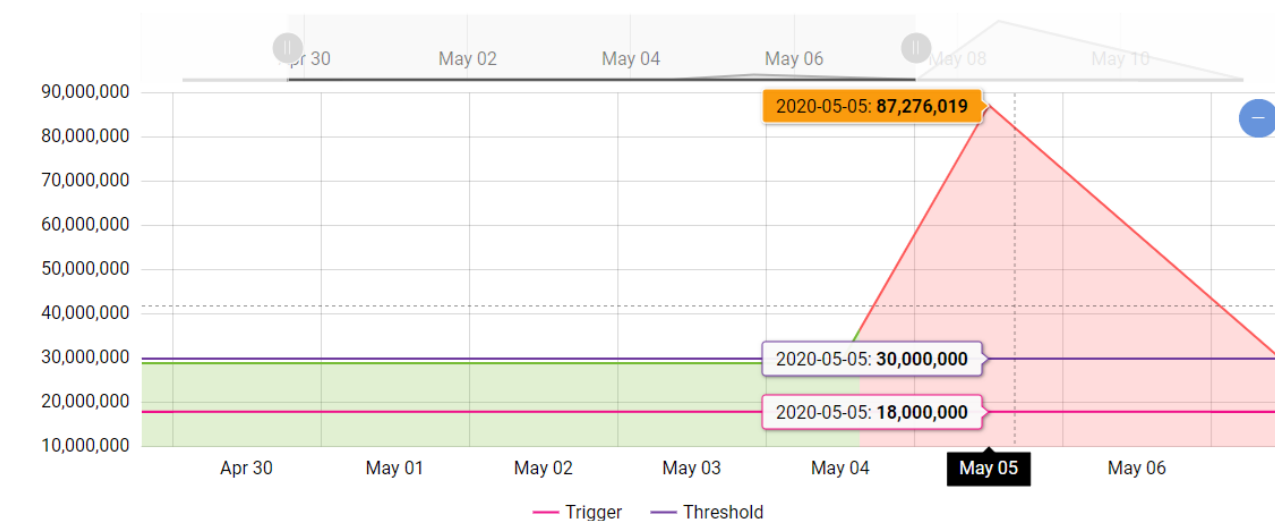
Items per page: 10 | 1 - 10 of 20 | 1 2

- **IM Exposure** – This is the exposure for the pay or receive side of the account/group for the valuation date and calculation set.
- **Threshold** – This is taken from the account/group definition.
- **Utilization** – This is the percentage of the threshold that is used, and is equal to Threshold / IM Exposure.
- **Threshold Status** – Only applies to Pre-CSA View. The group level status will be the worst of the underlying accounts and the group itself.
 - **Green** when IM Exposure < Trigger
 - **Yellow** when Trigger < IM Exposure < Threshold
 - **Red** when Threshold < IM Exposure
 - **Error** when the FX conversion rate is missing when converting account threshold to group threshold currency.
- **Threshold Usage** – Shows a quick indicator of utilization from 0 to 100%, where red is the portion that is used.

When the user clicks on the graph icon, they are presented with a historical drilldown of the IM Exposure, Trigger and Threshold over time.



Threshold vs. Exposure Over Time



The user can export the threshold monitoring results from the UI, as well as export them while running the MARGIN_CALCULATOR scheduled task.

In the UI, the export button is the in the top right:

Threshold Monitoring

Visualizing 6 Results

Threshold Group: TH Group CSA (+2)

Accounts: All

Direction: All

Csa Status: All

+1
⊗
Add filters
📄
🕒

Threshold Group	Account	Direction	Calculation CCY	Total IM	Threshold	Utilization	CSA Status	Threshold Status	Threshold Usage
▼ TH Group CSA		🔄 Pay	USD	266,640	5,000,000,000	0.0053%		●	██████████
	CSA1	🔄 Pay	USD	260,100	100,000,000,000	0%	CSA In Place	●	██████████
	CSA2	🔄 Pay	USD	6,540	100,000,000,000	0%	CSA In Place	●	██████████

The MARGIN_CALCULATOR scheduled task will automatically output the threshold monitoring results when threshold monitoring is enabled.

The output file will populate group and account level information along with the new column *Completion* which indicates the completion status of the margin calculation for each threshold group.

Threshold results are accumulative results when accounts in the same threshold group are from different margin account groups. In this case, threshold results will be completed once IM is calculated for all accounts, and this will be done through running multiple MARGIN_CALCULATOR scheduled tasks.

When the results are incomplete, the Completion column displays the status as "In-Progress" at group level. Once the results are completed, the Completion column displays the status as "Completed".

An example of "In-Progress" completion status -

Threshold Group	Margin Account	Direction	Currency	Exposure	Warning Level	Threshold	Utilization	Status	Completion
ThresholdGroupX		Pay	USD	915000000	95%	1E+11	0.92%	Below Threshold	In-Progress
	CSA1	Pay	USD	915000000	95%	1E+11	0.92%	Below Threshold	
ThresholdGroupX		Receive	USD	915000000	95%	1E+11	0.92%	Below Threshold	In-Progress
	CSA1	Receive	USD	915000000	95%	1E+11	0.92%	Below Threshold	
ThresholdGroupY		Pay	USD	1830000000	85%	1E+11	1.83%	Below Threshold	In-Progress
	CSA2	Pay	GBP	1830000000	85%	1E+11	1.83%	Below Threshold	
ThresholdGroupY		Receive	USD	1830000000	85%	1E+11	1.83%	Below Threshold	In-Progress
	CSA2	Receive	GBP	1830000000	85%	1E+11	1.83%	Below Threshold	

An example of "Completed" completion status -

Threshold Group	Margin Account	Direction	Currency	Exposure	Warning Level	Threshold	Utilization	Status	Completion
ThresholdGroupB		Pay	USD	2745000000	85%	1E+11	2.74%	Threshold Breached	Completed
	CSA3	Pay	USD	1830000000	85%	1E+11	1.83%	Below Threshold	
	CSA4	Pay	GBP	915000000	85%	10	9150000000%	Threshold Breached	
ThresholdGroupB		Receive	USD	2745000000	85%	1E+11	2.74%	Threshold Breached	Completed
	CSA3	Receive	USD	1830000000	85%	1E+11	1.83%	Below Threshold	
	CSA4	Receive	GBP	915000000	85%	10	9150000000%	Threshold Breached	

Group level rows will not be populated with "Margin Account".

6. ACADIA IMEM Connectivity

Acadia IMEM is commonly used for reconciliation of Risk factors and IM exposure. Calypso can automatically send both risk factors and the IM Exposures to Acadia via API.

To enable this functionality, the connection information must be set in the environment properties file. The related environment properties are: (The values are just examples. Please replace with your Acadia URL, username and password).

- ACADIA_SERVER_URL=https://uat.acadiahub.com/
- ACADIA_IMEM_USERNAME=CALYPSO.API@Calypso
- ACADIA_IMEM_PASSWORD=*****
- ACADIA_HTTP_READ_TIMEOUT=350000
- ACADIA_HTTP_CONNECT_TIMEOUT=35000

Make sure the margin account name is same in Calypso and in Acadia. Once these parameters are defined in the Environment Properties, then the CALCULATE_MARGIN scheduled task will automatically send Risk factors and exposures to IMEM if the following conditions are met:

- Calculation Set is an Official Calculation Set as defined in the margin UI
- Time Horizon is 10D

For accounts that are Pre-CSA, no margin call contract is required to be linked to send exposures to IMEM. The MARGIN_CALCULATOR scheduled task does not require a margin call contract as a mandatory attribute; it avoids creating collateral exposure trades for Pre-CSA accounts. It still allows the scheduled task to finish successfully for CSA in Place accounts.

IMEM In Margin User Interface

The IMEM related objects in the web UI will only be displayed when the IMEM connection is enabled. The enabling is driven by the environment properties. If there is connection information in the env property file, then IMEM is enabled. When enabled, the widget, and status columns in the exposure report are visible to the users. When disabled, the widget and status columns in the exposure report are hidden.

Calculation Set: SIMM Valuation Date: 8/4/2020

Exposures
Visualizing 2 Exposures

Filters: Accounts: All Direction: All Status: All Imem Status: All

Account	Currency	Direction	Total IM	Regulators
CPTY1	USD	Pay	1,823,026,629	APRA
CPTY1	USD	Receive	1,821,006,662	APRA

Calculation Set and Valuation Dates

☐ Compare IM Dates

☐ Compare Calculation Sets

Calculation Set (CS1): SIMM Calculation Set (CS2):

Additional Columns

☐ Drilldown Total IM

☒ Display IMEM Status

The sensitivities can be imported and when imported successfully, we can see the IMEM status as completed.

Calculation Set: SIMM Valuation Date: 6/7/2017

Exposures
Visualizing 6 Exposures

Filters: Accounts: All Direction: All Status: All Imem Status: All

Account	Currency	Direction	Total IM	Regulators	Status	IMEM
CPTY1	USD	Pay	0	APRA	Completed	
CPTY1	USD	Receive	0	APRA	Completed	
CSA1	USD	Pay	5,657,898	APRA	Completed	
CSA1	USD	Receive	2,968,682	APRA	Completed	

When we use calculate mode for native trades with Explode trades=true, exposures are generated in Calypso webui and also in Acadia.

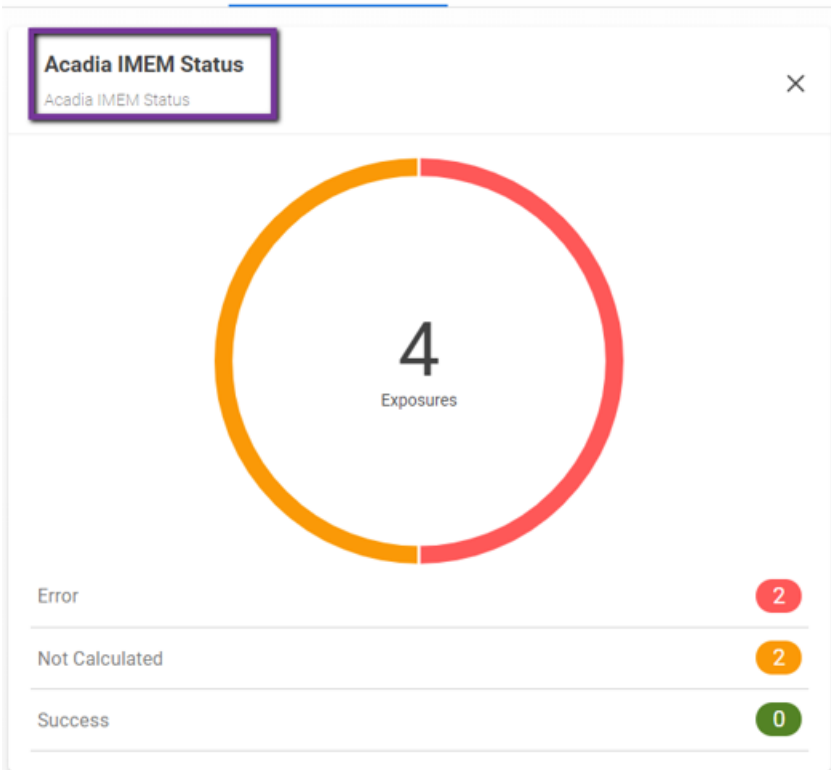
Calculation Set: SIMM Valuation Date: 8/4/2017

Exposures
Visualizing 2 Exposures

Filters: Accounts: All Direction: All Status: All

Account	Currency	Direction	Total IM	Regulators	Status	IMEM
CSA9	USD	Pay	241,021	APRA	Completed	
CSA9	USD	Receive	241,021	APRA	Completed	

We also have a dashboard widget for Acadia IMEM Status .



When the user clicks on each of these statuses, they can see the exposure results for those statuses. For example –

Calculation Set: SIMM Valuation Date: 8/10/2020

Exposures
Visualizing 2 Exposures

Filters: Accounts: All Direction: All Status: All Imem Status: Er... Clear all Add filters IM

Account	Currency	Direction	Total IM	Regulators	Status	IMEM
CPTY1	USD	Pay	1,823,026,629	APRA	Completed	
CPTY1	USD	Receive	1,821,006,662	APRA	Completed	

Calculation Set: SIMM Valuation Date: 8/10/2020

Exposures
Visualizing 2 Exposures

Filters: Accounts: All Direction: All Status: All Imem Status: Not Calcul... Clear all Add filters IM

Account	Currency	Direction	Total IM	Regulators	Status	IMEM
CSA_241	GBP	Pay	0		Error	
CSA_241	GBP	Receive	0		Error	

7. What-If Margin

7.1 Configuration

7.1.1 Domain Values

Add the list of Margin_Input scheduled task ID run in CALCULATE mode to generate sensitivities to the Comment of the domain *MarginEngine* for value SIMM_MARGIN_INPUT_ST_ID.

Example:

Domain = MarginEngine

Value = SIMM_MARGIN_INPUT_ST_ID

Comment = scheduled task IDs separated by commas

Name:	MarginEngine
Value:	SIMM_MARGIN_INPUT_ST_ID
Comment:	134620,146121

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	CSA12_ALL CALCULATE AUTOMATION
Comments:	8/4/2017
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	1 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	134620
Processing Org	
Trade Filter	CSA12_ALL_SIMM
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	CALCULATE
Account Groups	CSA12_ALL
Calculation Set	SIMM
Risk Factor Source	
File Location	/space/calypso/input
Risk Type Filter	
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	IgnoreCurve

7.1.2 Pricing Sheet Configuration

In the Pricing Sheet, activate the IM mode as shown below:

Configure	
Defaults Pricer Measures Events Toolbar Display Open Trades	
Name	
Default pricing output convention	1-way
Default Price Format	Non-risky
Default Price Rounding (FX Options)	
Default Price Rounding For Digitals (FX Options)	
Default Rounding Method (FX Options)	Neutral Rounding
Default Decimal Precision (Clean Price / Dirty Price)	Bond Default
Default Decimal Precision (Bond Yield)	Bond Default
Default Decimal Precision (Asset Swap Spread)	
<input type="checkbox"/> Risk Analysis	
Always Run Rate Delta Analysis	True
Rate Delta use Generate dependents	False
<input type="checkbox"/> Misc	
Premium Update Mode	Recalculate Sales Fee
<input type="checkbox"/> Sales Behavior	
Sales Fee Ccy	USD
Sales Fee Date	
On Sales Fee FX Rate change	Recalculate Sales Fee
Save as Sales Trades by default	False
Create Upfront Fee	True
<input type="checkbox"/> Option expiry	
Default Expiry Cut	
Pricing Sheet Expiry Cut	
Local Convention Holiday for Expiry Date	
<input type="checkbox"/> XVA	
Default XVA Mode	Off
<input type="checkbox"/> IM	
Default IM Mode	IM Strategy Mode
CCP/CB Pricer Measure Display	Cheapest
Default CCP/Clearing Broker	CSA1

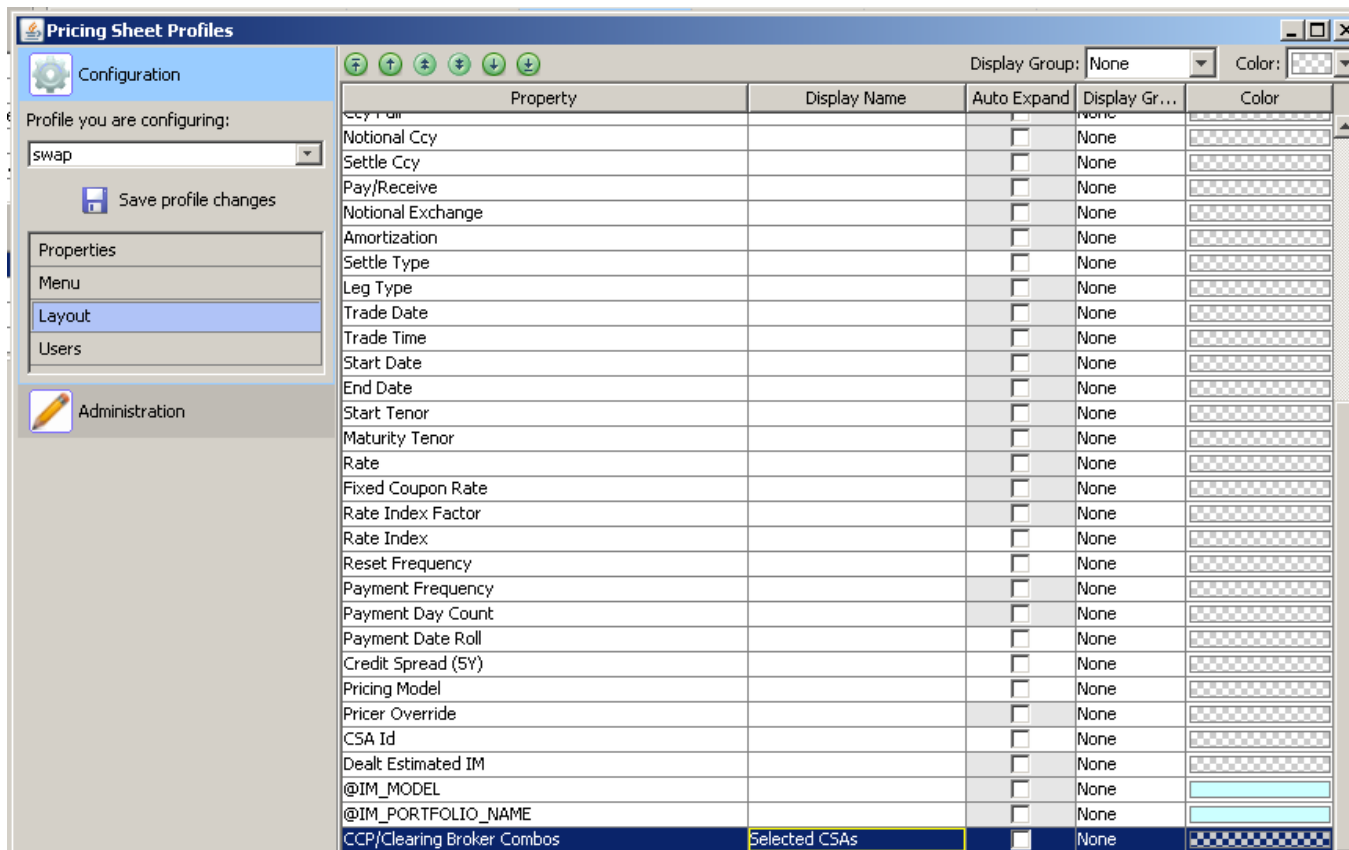
Default IM Mode - Select *IM Sheet Mode* or *IM Strategy Mode*. Sheet mode calculates incremental IM for all strategies on the active sheet collectively. Strategy mode calculates incremental IM for all strategies independently.

CCP/CB Pricer Measure Display – Select *Cheapest* or *Default*. Cheapest provides the cheapest IM across all available CSAs. Default provides the IM for the selected Default CCP/Clearing Broker (default CSA).

The CSAs are retrieved from the Comment for domain *MarginEngine* and value *SIMM_MARGIN_INPUT_ST_ID*.

Default CCP/Clearing Broker – Select the default CSA.

Rename the CCP/Clearing Broker Combos property:



Pricing Sheet Profiles

Configuration

Profile you are configuring: swap

Save profile changes

Properties

Menu

Layout

Users

Administration

Property	Display Name	Auto Expand	Display Gr...	Color
Notional Ccy		<input type="checkbox"/>	None	
Settle Ccy		<input type="checkbox"/>	None	
Pay/Receive		<input type="checkbox"/>	None	
Notional Exchange		<input type="checkbox"/>	None	
Amortization		<input type="checkbox"/>	None	
Settle Type		<input type="checkbox"/>	None	
Leg Type		<input type="checkbox"/>	None	
Trade Date		<input type="checkbox"/>	None	
Trade Time		<input type="checkbox"/>	None	
Start Date		<input type="checkbox"/>	None	
End Date		<input type="checkbox"/>	None	
Start Tenor		<input type="checkbox"/>	None	
Maturity Tenor		<input type="checkbox"/>	None	
Rate		<input type="checkbox"/>	None	
Fixed Coupon Rate		<input type="checkbox"/>	None	
Rate Index Factor		<input type="checkbox"/>	None	
Rate Index		<input type="checkbox"/>	None	
Reset Frequency		<input type="checkbox"/>	None	
Payment Frequency		<input type="checkbox"/>	None	
Payment Day Count		<input type="checkbox"/>	None	
Payment Date Roll		<input type="checkbox"/>	None	
Credit Spread (5Y)		<input type="checkbox"/>	None	
Pricing Model		<input type="checkbox"/>	None	
Pricer Override		<input type="checkbox"/>	None	
CSA Id		<input type="checkbox"/>	None	
Dealt Estimated IM		<input type="checkbox"/>	None	
@IM_MODEL		<input type="checkbox"/>	None	
@IM_PORTFOLIO_NAME		<input type="checkbox"/>	None	
CCP/Clearing Broker Combos	Selected CSAs	<input type="checkbox"/>	None	

7.2 What-If in the Pricing Sheet

7.2.1 Servers to Start

- Auth Server
- Event Server
- Data Server
- Discovery Server
- Gateway Server
- Shared Services
- Navigator
- Calypso Scheduler
- Dispatcher
- Data Grid Node and Data Grid Enabled Calculator

- Engine Server
- Risk Messaging Server
- Calypso Messaging Server
- Margin Server
- MarginEngineSIMM

7.2.2 EOD Scheduled Task to be Run: MARGIN_INPUT

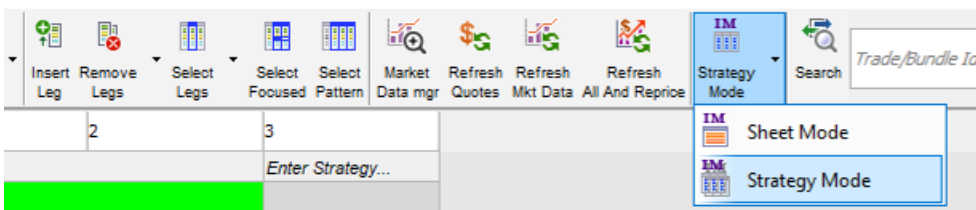
The MARGIN_INPUT scheduled tasks defined in domain value SIMM_MARGIN_INPUT_ST_ID need to be run for a valuation date for what if IM calculation in pricing sheet. When there are results from multiple dates, the latest valuation date is used when pricing what if trades and calculating what if IM.

Task Description	
Task Type:	MARGIN_INPUT
External Reference:	CSA12_ALL CALCULATE AUTOMATION
Comments:	8/4/2017
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	1 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	134620
Processing Org	
Trade Filter	CSA12_ALL_SIMM
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	CALCULATE
Account Groups	CSA12_ALL
Calculation Set	SIMM
Risk Factor Source	
File Location	/space/calypso/input
Risk Type Filter	
Trade Id Filter	
ParRate Analysis Parameter	Par_Rates_SIMM
Ignore Curves	IgnoreCurve

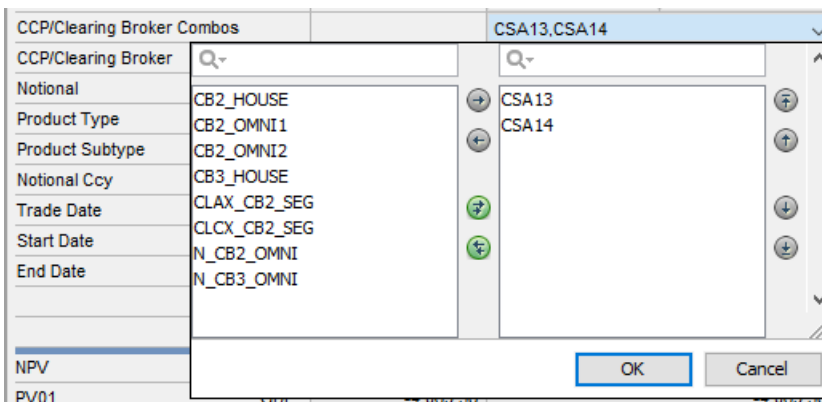
7.2.3 Pricing Sheet

- Once all required servers are started with proper configuration, what if IM can be calculated in pricing sheet.
- Input new trade information. Single or multiple trades. Note that what if is calculated for new unsaved trades (i.e. trade id is not created).
- Select IM calculation modes: Sheet mode and Strategy mode. Sheet mode calculates what if IM for selected CSA agreements for bulk trades. Strategy mode calculates what if IM for selected CSA agreements for each single trade.
- Select CSA agreements under field CCP/Clearing Broker Combos. The dropdown list of this fields come from margin accounts from MARGIN_INPUT scheduled task list defined in SIMM_MARGIN_INPUT_ST_ID domain value. In sheet mode, select CCP/Clearing Broker Combos in Total column. In strategy mode, select CCP/Clearing Broker Combos in each trade column.
- Trigger what if by clicking Price & Calc IM button.
- View returned what if IM as well as drill down of each CSA agreement.

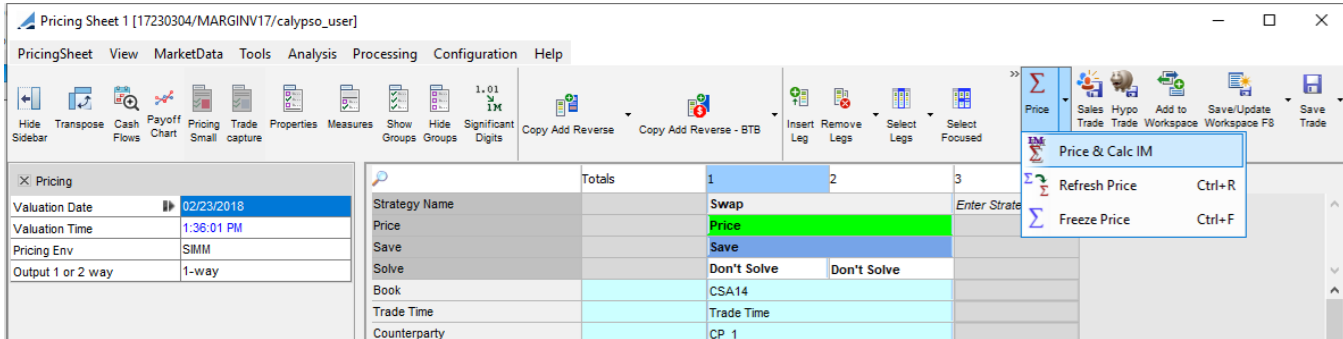
IM calculation modes button:



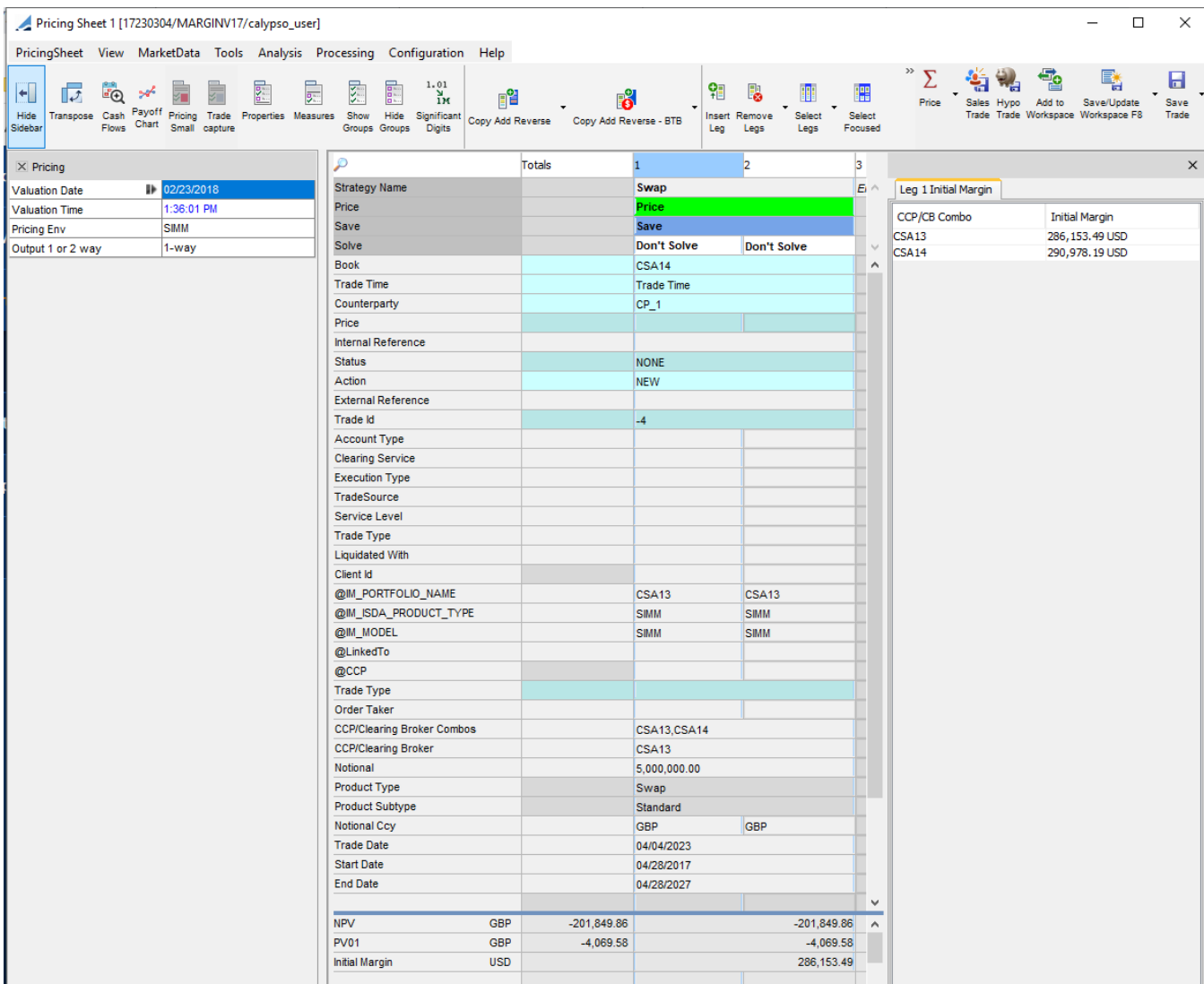
CCP/Clearing Broker Combos:



Price & Calc IM button:



View what if results:




Logging Categories

- INC_RISK
- INC_RISK_TRADE_CALC





7.3 What-If in the Web User Interface

In the Web UI, you can simulate the incremental margin based on imported sensitivities for new trades. In doing so, you can compare the results for various accounts to select the cheapest counterparty.

First, click on the New What-If button on top to open the 'New What-If simulation' panel. Then choose a set of accounts you want to compare across.


MARGIN v6.2.0

Valuation Date 12/20/2024

Dashboard

Initial Margin

Exposures

Threshold Monitoring

What-If IM

Simulations

What-If IM

New What-If

Visualizing 1 What-If IM results from 1

Account	Start IM	End IM	Threshold	Threshold Utilization	Incremental IM
ISDA-C104	-	3,960,000 USD	-	NAN%	3,960,000 USD

What-If Simulation



1 Select Accounts

Available (659)

AUDCSA
BACKTEST01
BACKTEST02
BACKTEST03
BACKTEST04
Bank A
Bank B
BBVA-Legacy
CSA1
CSA10
CSA11
CSA12
CSA13
CSA14
CSA15
CSA16
CSA17
CSA18
CSA19
CSA2
CSA20
CSA21
CSA22
CSA23

Selected (1)

Clear all

ISDA-C104

2 Upload your CSV file



Drag and drop your file here
or **Browse Files**

Calculate

Then, click the Upload your csv file option to select a file that contains sensitivities. A sample file called *What_if IM5* can be found in the Bilateral Margin Samples folder.

Sample File of Sensitivities

Once uploaded, the calculation occurs and you can view the results which show the change in IM at each account if these risk factors were used on top of the existing risk factors.

What If IM					
Visualizing 5 What If results from 5					
Account CSA2,CSA11,CSA1		Request Time 3:34:40 PM	Margin Account CSA2	Incremental IM 44,997,722,496 USD	
Account	Start IM	End IM	Threshold	Threshold Utilization	Incremental IM
CSA11	-	44,997,743,629 USD	50,000,000,000 USD	90%	-
CSA2	19,135 USD	44,997,741,632 USD	100,000,000 USD	44997.74%	44,997,722,496 USD
CSA1	7,757,748,036 NZD	90,689,460,991 NZD	-	NaN%	82,931,712,954 NZD
Account CSA1,A-NAB,CSA11		Request Time 3:34:13 PM	Margin Account	Incremental IM -	

UMR 50M Threshold

This functionality adds the UMR threshold to the what-if page. The threshold information needs to be uploaded as part of the Account csv file, where the threshold is modelled as the "Amount" for the param-regulator.

The "Account Threshold" is defined at the Margin Account level, for the Pay and Receive side.

Import sample:

TRADE	UTI	PARTY	CP_ID	MARGIN_AGREEMENT_NAME	IM_MO	RISK_TYPE	QUALIFIER	BUCKET	LABEL1	LABEL2	AMOUNT	CURREN	AMOUR	END_Dt	COLLEC	POST_R
MUTB_TC Cpty		CSA32				Param_Regulation					USD				CFTC/APR/APRA/IFSA	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	RateFX				1.4				CFTC	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	RateFX				1.25				APRA	APRA
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	RateFX				1.5				IFSA	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	Credit				1.2				CFTC	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	Credit				1.25				APRA	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	Credit				1.4				IFSA	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	Commodity				1.5				CFTC	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	Commodity				1.1				IFSA	
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	Equity				1.9				CFTC	IFSA
MUTB_TC Cpty		CSA32				Param_ProductClassMultiplier	Equity				1.8				APRA	APRA
MUTB_TC Cpty		CSA32				Param_Schedule-Product	FlexiCallOption								CFTC	
MUTB_TC Cpty		CSA32				Param_Schedule-Product	FXOption_Sche								APRA	IFSA
MUTB_TC Cpty		CSA32				Param_AddOnNotionalFactor	XccySwap				5				APRA	
MUTB_TC Cpty		CSA32				Param_AddOnNotionalFactor	CherryOption				3				CFTC	
MUTB_TC Cpty		CSA32				Param_AddOnNotionalFactor	CherryOption				4				IFSA	
MUTB_TC Cpty		CSA33				Param_Regulation					90000000 USD				CFTC/IFSA APRA	
MUTB_TC Cpty		CSA34				Param_Regulation					50000000 USD				CFTC/IFSA APRA	
MUTB_TC Cpty		CSA35				Param_Regulation					75000000 CAD				APRA	APRA

- If no threshold is defined at the account level, we will use the default of the ISDA Definition:

IM Threshold									
USA	Japan	Canada	Europe	Switzerland	Australia	Hong Kong	Singapore	Korea	Brazil
USD 50 million	JPY 7 billion	CAD 75 million	EUR 50 million	CHF 50 million	AUD 75 million	HKD 375 million	SGD 80 million	KRW 65 billion	BRL 150 million

- The currency of the threshold is the same as the currency of the Margin Account

The what-if IM calculation includes the UMR threshold in the what-if IM account selection:

What If IM						New What If
Visualizing 5 What If results from 5						
Account CSA2,CSA11,CSA1	Request Time 3:34:40 PM		Margin Account CSA2		Incremental IM 44,997,722,496 USD	
Account	Start IM	End IM	Threshold	Threshold Utilization	Incremental IM	
CSA11	-	44,997,743,629 USD	50,000,000,000 USD	90%	-	
CSA2	19,135 USD	44,997,741,632 USD	100,000,000 USD	44997.74%	44,997,722,496 USD	
CSA1	7,757,748,036 NZD	90,689,460,991 NZD	-	NaN%	82,931,712,954 NZD	

Error Messages in What-If

If there are any error in the what-if upload file, the users can view the number of errors in the What-if UI page and when they click on the number of errors, they can see the details of the errors in a pop-up box.

MARGIN v6.2.0	Valuation Date 09-30-2021			
Dashboard	What-If IM			
Initial Margin	Visualizing 1 What-If IM results from 1			
Exposures	Account ISDA-C104	Request Time 6:16:43 PM	Margin Account	Errors (1)
Threshold Monitoring	Error Details			
What-If IM	Type MissingColumn	Identifier TRADE_ID	Submitted -	Expected -

8. AANA Calculation

Regulators have defined a criterion based on the average notional of a portfolio which drives the need to comply to UMR. Each year the Average aggregate notional amount (AANA) is calculated over a specified period and used to determine if they need to be compliant for the following year.

8.1 Overview

8.1.1 In Scope

UMR eligible product types are in scope for the AANA calculation as well as FX trades

The scope of products varies with each jurisdiction and can be found here: https://www.isda.org/a/zUATE/ISDA-In-Scope-Products-Chart_UnclearedMargin_In-process-3.18.21.pdf

Trades within Calypso are eligible for Notional calculation, while trades outside of Calypso must have their Notional imported every day using the Risk Factor/CRIF format.

8.1.2 Out of Scope

The ISDA documents state that “The notional amounts for AANA-covered products between margin affiliates should only be counted once”. Given that Calypso will not have the ability to know what legal entities are affiliated in each jurisdiction, Calypso will take the more conservative approach. If there is a trade that is between margin affiliates, the notional will be counted under BOTH organizations.

Calypso will calculate AANA per processing organization, it is up to the user to add together AANA for legal entities that are part of a group.

8.2 AANA_CALCULATIONS Scheduled Task

The AANA calculation is done through two steps in the AANA_CALCULATIONS scheduled task. The first step is to calculate notionals, then the second step adds notionals across dates to get the average.

The task has the following attributes:

Attribute	Calculate Notional Mode	Calculate AANA Mode
Mode	“Calculate Notional”	“Calculate AANA”
Pricing Environment	Used to price trades and convert all notionals into Base Currency.	Not used
Holiday Calendar	A Calypso holiday calendar which will be used to determine what business days the scheduled task will be run on.	Holiday Calendar determines which dates to look for notionals on within the start and end date
Trade Filter	A user defined trade filter which will includes which PO's to	Not Used

Attribute	Calculate Notional Mode	Calculate AANA Mode
	process	
Import Notional File Location	Choose a location for a file upload of Notional information. This field supports date wildcards. For example: <code>\dir\AANANotionals_PO1_[yyyy-mm-dd].csv</code>	Not Used
Start Date	Not Used	Start Date of the calculation period
End Date	Not Used	End date of the calculation period
Averaging Methodology	Not Used	Select either Daily or Month End
Include Trades	Not Used	Default false. Set to true in order to calculate Average Trade level Notional as well as AANA.
AANA Output File Location	Not Used	Define the file path where the AANA calculation results will be written.

8.2.1 Calculate Notional

The calculate Notional mode will either import via .csv or calculate notionals from Calypso trades. One (1) Calculate Notional scheduled task should be configured for all PO's in the same jurisdiction (ie base currency). If there are PO's with differing jurisdictions, then one ST will be configured for each jurisdiction/base currency. The trade filters and uploaded notionals must be configured to appropriately filter the PO level information.

The Notional amounts can be sourced from trade calculation within Calypso and/or imported. A trade filter will define what trades are eligible within Calypso, and a file location will be used to define what is uploaded. Either one is required, but both may be used. If there are multiple sources to import, then multiple ST's with a file path defined must be configured.

Rerunning the scheduled task will delete all Notionals with the same Valuation Date/Source. Calypso trades are automatically tagged with source "Calypso".

Upon Calculation or import, the notionals will also be converted into pricing environment base currency and stored.

Standard Process

The standard procedure is to run the calculate notional scheduled task every business day. This will store the notional amounts for later use in AANA calculation. After the initialization, the scheduled task should be run daily.

Task Description	
Task Type:	AANA_CALCULATIONS
External Reference:	AANA_PO2_NOTIONAL_CALC
Comments:	
Description:	

Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	2 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	

Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	

Common Attributes	
Task ID	188621
Processing Org	
Trade Filter	AANA_TEST2
Filter Set	
Pricing Environment	SIMM_EUR
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	

Task Attributes	
Mode	Calculate Notional
Import notional file location	
Grid: Dispatcher Name	default
Job Size	10
Start Date	
End Date	
Averaging Methodology	Daily
Include trades	false
AANA Output File Location	

Initialization Process

To initialize, the user can use the TENOR_RANGE_EXECUTOR scheduled task. Configure this task to point to the calculate notional task, and it will run it over multiple days. Example:

Task Description	
Task Type:	TENOR_RANGE_EXECUTOR
External Reference:	AANA Initialize PO1
Comments:	6/1/2022-8/31/2022
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	20 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	206623
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	0
Undo Time Minute	0
Valuation Date Offset	
From Days	-91
To Days	0
Pricer Measures	
Business Holidays	NYC
Task Attributes	
TASK_ID	206620
HOLIDAY (Default is LON)	NYC
Exec on Holiday	false

Import Notionals

AANA_CALCULATIONS scheduled task can import trade notionals from csv file with same mode of Calculate Notional

Task Description	
Task Type:	AANA_CALCULATIONS
External Reference:	AANA_PO1_NOTIONAL_CALC
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	2 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	188620
Processing Org	AANA_PO1
Trade Filter	
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	0
Undo Time Minute	0
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Mode	Calculate Notional
Import notional file location	C:\AANA_PO1_[yyyy-mm-dd].csv
Grid: Dispatcher Name	default
Job Size	10
Start Date	
End Date	
Averaging Methodology	Daily
Include trades	false
AANA Output File Location	

The file upload will contain the following fields and they should be populated on each row.

Field	Optional/required	Format	Description
Source	Required	String	What source is the data coming from
Trade ID	Required	String	Unique per source
Processing Organization	Required	String	Must be a valid Calypso Short Name with role PO
Counterparty	Optional	String	Must be a valid Calypso Short Name with role Counterparty to filter out double counting of trades between affiliates
Product Type	Optional	String	Used for reporting
Notional	Required	Positive Number	

Field	Optional/required	Format	Description
Notional Currency	Required	Currency Code	Used to convert into base currency

For example,

	A	B	C	D	E	F	G
1	Source	Trade ID	Processing Orga	Counterparty	Product Ty	Notional	Notional Currency
2	External1	101	AANA_PO1	AANA_PO2	Swap	500000	USD
3	External1	102	AANA_PO1	AANA_PO2	Swap	500000	EUR
4	External2	103	AANA_PO1	AANA_PO2	Cap	1000000	GBP

8.2.2 Calculate AANA

Once Notionals are calculated for every day in the AANA calculation period the second stage, Calculate AANA, can be run.

The Calculate AANA mode of the scheduled task will load all Notionals and aggregate by PO. There is no distinction between jurisdiction here, notionals are summed by their base currency amount, so all Notional_Base values for a given PO must be in the same currency. All PO's will be calculated with the averaging methodology selected. If the user desires Daily for some PO's and Month End for others, the task can be run twice, once in each mode, and then filtered accordingly.

Task Description	
Task Type:	AANA_CALCULATIONS
External Reference:	AANA_PO1_AANA_CALC
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	2 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	100622
Processing Org	
Trade Filter	AANA_TEST1
Filter Set	
Pricing Environment	SIMM
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	
Undo Time Minute	
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	NYC
Task Attributes	
Mode	Calculate AANA
Import notional file location	
Grid: Dispatcher Name	default
Job Size	10
Start Date	2021-09-10
End Date	2021-10-10
Averaging Methodology	Daily
Include trades	true
AANA Output File Location	/space/calypso/output

The results of calculation are exported into a .csv file.

Processing Organization	Trade ID	Counterparty	Product Type	Source	Averaging Methodology	Start Date	End Date	Days	Avg Notional	Avg Notional Currency	AANA	AANA Currency	Status	Doc Notes
BRANCHE2					Daily	6/1/2020	6/1/2020	1			7,150,000.00	EUR	Completed	PO Level calculation. Note trade ID is empty
BRANCHE2	500	CUS02		ExtSys2	Daily	6/1/2020	6/1/2020	1	6,500,000.00	GBP	7,150,000.00	EUR	Completed	Trade Level calculation. Note trade ID is populated
BRANCHE1					Daily	6/1/2020	6/1/2020	1			6,500,000.00	USD	Completed	PO Level calculation. Note trade ID is empty
BRANCHE1	1002	CUS01	Swap	ExtSys	Daily	6/1/2020	6/1/2020	1	5,000,000.00	EUR	5,500,000.00	USD	Completed	Trade Level calculation. Note trade ID is populated
BRANCHE1	1001	CUS05	Swap	ExtSys	Daily	6/1/2020	6/1/2020	1	1,000,000.00	USD	1,000,000.00	USD	Completed	Trade Level calculation. Note trade ID is populated
PO2					Daily	6/1/2020	6/1/2020	1			2,009,090.91	EUR	Completed	PO Level calculation. Note trade ID is empty
PO2	709050	CP2	SwapXccy	Calypso	Daily	6/1/2020	6/1/2020	1	1,000,000.00	GBP	1,100,000.00	EUR	Completed	Trade Level calculation. Note trade ID is populated
PO2	709528	CP2	Swap	Calypso	Daily	6/1/2020	6/1/2020	1	1,000,000.00	USD	909,090.91	EUR	Completed	Trade Level calculation. Note trade ID is populated

Validation

One or more PO's may still have successful results, in this case the output file will still be written. PO's with errors can still show in the output but will have an AANA values of blank and the scheduled task will complete in status "Finished with Errors".

Validation 1: All sample data is present

AANA calculation requires a Sum of Notionals for sample days during the calculation period. If there is a missing value for a given PO, the calculation will be considered failed for that PO, and each missing date will be logged. For example:

AANA calculation failed for PO1. Missing sum of Notionals on 2020-06-01.

This will result in a failure calculation status for this PO's AANA in the results and will show a blank AANA for the given PO.

Validation 2: Trade Notional validation

AANA calculation at the trade level requires a sum of Notionals across the period for a given trade. A missing value may be valid (trade matured or started within the period for example). To ensure we have the correct data, some validation will occur:

Load Notionals per trade, sort by date. Compare to sample dates. If a sample date that occurs (before or equal to the last notional), or (after or equal to the first notional) does not exist, then we throw an error and do not calculate AANA for the trade. For example:

AANA calculation failed for Trade ID: 1001 from Source: ExtSys. Could not find Notional on 2020-05-07.

This will result in a failure calculation status for this Trades's AANA in the results and will show a blank AANA and average notional for the given Trade

Examples of where an error would be seen:

	Calc Start	5/1/2020							If missing, error									
	Calc End	5/17/2020																
		5/1/2020	5/2/2020	5/3/2020	5/4/2020	5/5/2020	5/6/2020	5/7/2020	5/8/2020	5/9/2020	5/10/2020	5/11/2020	5/12/2020	5/13/2020	5/14/2020	5/15/2020	5/16/2020	5/17/2020
Trade 1001		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Trade 1002							200	200	200	200	200	200	200	200	200	200	200	200
Trade 1003		300	300	300	300	300	300	300	300									
Trade 1004						400	400	400	400	400	400	400	400					

Validation 3: Currency of notional Sums per PO must be the same.

All the notional base values for a given PO must be in the same currency for each PO during the AANA calculation phase. If there are multiple currencies found and error is logged:

"Multiple Base currencies found for PO, data must be recalculated or imported in a single base currency"

This will result in a failure calculation status for this PO's AANA in the results and will show a blank AANA for the given PO.

9. Backtesting

9.1 Static Backtesting

9.1.1 Additional Configuration

The Gateway API needs to be enabled to perform backtesting. Users must set the environment property USE_GATEWAY to true and start the following servers:

- discoveryServer.sh/bat
- gatewayServer.sh/bat
- sharedServices.sh/bat

All microservice framework applications should use the API gateway URL (<http://localhost:8800> or <https://localhost:8801> if using SSL).

For example, to access the margin UI using SSL, user should use <https://localhost:8801/margin-ui> instead of <https://localhost:9141/margin-ui>.

9.1.2 Backtesting Process

Static backtesting can be performed in calypso using the MARGIN_BACKTESTING scheduled task –

Task Description	
Task Type:	MARGIN_BACKTESTING
External Reference:	Backtesting 200 Days
Comments:	
Description:	
Execution Parameters	
Attempts:	1
Retry After:	0 minutes
Expected Execution Time (SLA):	2 minutes
JVM Settings:	-Xms512m -Xmx1024m
Log Settings:	
Task Notification Options	
<input type="checkbox"/> Send Emails	<input type="checkbox"/> Publish Business Events
To User:	
Common Attributes	
Task ID	209620
Processing Org	
Trade Filter	
Filter Set	
Pricing Environment	
Timezone	America/Los_Angeles
Valuation Time Hour	
Valuation Time Minute	
Undo Time Hour	0
Undo Time Minute	0
Valuation Date Offset	
From Days	0
To Days	0
Pricer Measures	
Business Holidays	
Task Attributes	
Valuation Period	200
Results File Location	/space/calypso/output

The user will need to have access to the backtesting service to perform this function.

The backtesting is done at the margin account level where the portfolio is held static on a single date and we compare the IM Exposure on this date with 1 year of stressed PnL vectors and 3 recent years of historical PnL vectors (i.e. 1+3 ISDA Standard Backtest). The users will need to set up the ERS parameters to calculate the historical PL vectors. The scheduled task will then compare these PL vectors with the IM exposure for the selected valuation date for the selected valuation period and the results will be displayed in the Margin UI as well as in the form of a csv file.

The configuration can be defined in Margin UI as below –

UMR Configuration

Additional CRIF File Columns
Add New

Column Name	Trade Keyword	ACADIA	X	Column Name	Trade Keyword	ALL	X
MatchID	MatchID			PUACode	PUACode		
Column Name	Trade Keyword	CALYPSO	X				
UTI_value	UTIValue						

Static Backtesting
Add New

ERS Hierarchy	Currency	Parameter Attributes	X	ERS Hierarchy	Currency	Parameter Attributes	X
BACKTEST_H2	EUR	BACKTEST_AUTO2		BACKTEST_H1	USD	BACKTEST_AUTO1	

Dynamic Backtesting
Add New

Angular

Configuration Name

ERS Hierarchy

Discard

Calculation Set

Currency

Backtesting Days

Model Name

PL Model Type

PL Config

HPL_USD

Official HPL

HPL_USD

PL Model

The users can configure multiple ERS Hierarchy, currency and ERS parameter set combinations. The ST will run for all the saved configurations.

All Hierarchies
Expand nodes

BACKTEST_HIERARCHY1

Compare

Attributes

Node

BACKTEST01	[BACKTEST01]
BACKTEST02	[BACKTEST02]
BACKTEST04	[BACKTEST04]

Attributes
BackTesting

Name	Value
Scenario Set ID	5000
Attribution Type	Standard
Number of observations	300
Observation Start Date	Observation Start Date
Horizon	5
Confidence level	6
Confidence Type	Absolute
Credit Multiplier	1.05
Primary Analysis Configuration	Primary Analysis Configuration

The users can then select valuation period and output file location in the ST and run for a selected valuation date. The historical PL vectors for the selected valuation period will be compared to the IM exposure of the valuation date and if the PL vectors are more than IM, it'll be reported as a breach. The output in the Margin UI will show the results as below.

MARGIN v6.2.0

Valuation Date 09-29-2021

Dashboard
Initial Margin
Exposures
Threshold Monitoring
What-if IM
Simulations
Static Backtesting
Dynamic Backtesting
Reference Data

Static Backtesting

Visualizing 8 Results

Configuration

Valuation Period 200 days

Filters
Accounts: All
Direction: All
Currency: All

Account	Direction	Currency	Exposure	Breaches	Status	Basel II
BACKTEST01	Pay	USD	255,100	0	Completed	13.40%
BACKTEST01	Receive	USD	255,100	0	Completed	13.40%
BACKTEST02	Pay	USD	6,420	6	Completed	99.57%
BACKTEST02	Receive	USD	6,420	6	Completed	99.57%
BACKTEST03	Pay	EUR	23,185	9	Completed	100.00%
BACKTEST03	Receive	EUR	23,185	9	Completed	100.00%
BACKTEST04	Pay	EUR	13,680	12	Completed	100.00%
BACKTEST04	Receive	USD	15,048	4	Completed	94.83%

The number of breaches can be further drilldown into a complete list of PL vectors and IM exposure where the users can see the breaches in Red and filter the output for only breaches as below.

Details

X

Missing Data | Show only Breaches

Account	Direction	Currency	Breaches
BACKTEST04	Receive	USD	147

Date	PL Vectors	Total IM
2021-09-29	-57,162,257	5,200,000
2021-09-28	-20,414,292	5,200,000
2021-09-27	-6,175,263	5,200,000
2021-09-24	-6,961,708	5,200,000
2021-09-23	-2,529,407	5,200,000
2021-09-22	-40,842,786	5,200,000
2021-09-21	-48,029,776	5,200,000
2021-09-20	-39,789,308	5,200,000
2021-09-17	-41,410,247	5,200,000
2021-09-16	-21,194,827	5,200,000
2021-09-15	6,113,873	5,200,000
2021-09-14	-10,398,292	5,200,000
2021-09-13	-24,322,480	5,200,000

If PI vectors or IM for a certain date are missing, the results will show 'Missing Data' and the user can filter those rows in the drill down pop-up. For example, When IM results are available, but PL vectors results are not, the results will show Missing Data with empty PL vectors –

Valuation Date 9/29/2021

Backtesting

Visualizing 8 Results

[Configuration](#)

Valuation Period 500 days

Accounts: All Direction: All Currency: All

ⓧ Add filters

Account	Direction	Currency	Exposure	Breaches	Status	Basel II
BACKTEST01	Pay	USD	260,100	0	⚠ Missing Data	● 4.90%
BACKTEST01	Receive	USD	260,000	0	⚠ Missing Data	● 4.90%
BACKTEST02	Pay	USD	3,016,000	6	⚠ Missing Data	● 96.72%
BACKTEST02	Receive	USD	3,016,000	6	⚠ Missing Data	● 96.72%
BACKTEST03	Pay	EUR	11,818	61	⚠ Missing Data	● 100.00%
BACKTEST03	Receive	EUR	11,818	61	⚠ Missing Data	● 100.00%
BACKTEST04	Pay	EUR	4,727,273	0	⚠ Missing Data	● 4.90%
BACKTEST04	Receive	USD	5,200,000	147	⚠ Missing Data	● 100.00%

Items per page: 10 < >

Details

✕

☐ Missing Data

|

☐ Show only Breaches

Account
BACKTEST01

Direction
Pay

Currency
USD

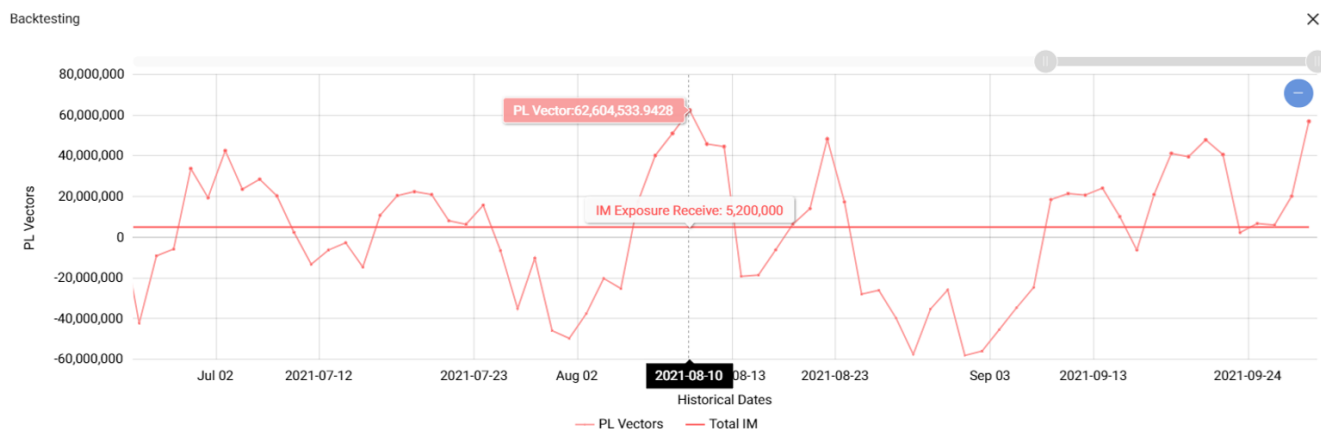
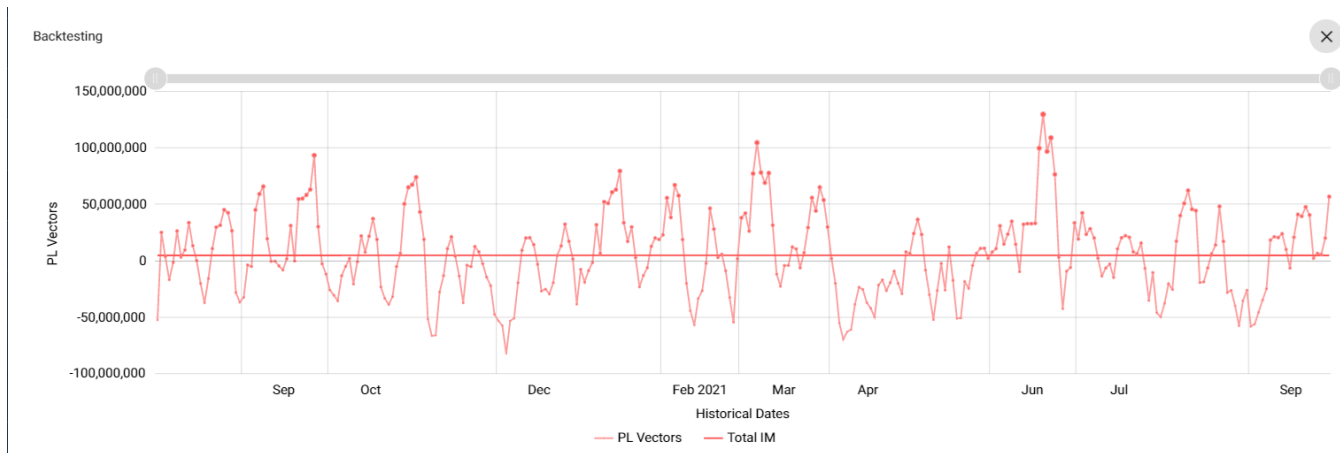
Breaches
0

Date	PL Vectors	Total IM
2021-09-28	-	260,100

The UI also shows the Basel II percentages and traffic lights based on the cumulative probabilities. When Basel II results is green when it's less than 95%, is amber when it's between 95% and 99.99%, is red when it's > 99.99%.

The breach results are also available in the form of a graph where x-axis shows the historical dates, Y – axis shows PL vectors and all PL vector points plotted above the IM exposure line are breaches. The users can zoom in using the

scroll bar above to look at the exact breaches and the dates. The date, PL vector amount and IM exposure can also be viewed by hovering over each point.



The scheduled task also generates a csv file (Example - UMRBackTesting_ALL_2021-09-29) with the Backtesting output including the drilldown into breaches –

Account	Direction	Currency	Exposure	Breaches	Date	PL Vector	IM Exposure	Basel II
BACKTEST02	Receive	USD	3016000	6				99.57%
					9/29/2021	2939988	3016000	
					9/28/2021	4622789	3016000	
					9/27/2021	3263850	3016000	
					9/24/2021	1703314	3016000	
					9/23/2021	1616426	3016000	
					9/22/2021	1198443	3016000	
					9/21/2021	1246944	3016000	
					9/20/2021	856288.9	3016000	
					9/17/2021	1711857	3016000	
					9/16/2021	789562.8	3016000	
					9/15/2021	-254546	3016000	
					9/14/2021	-1177464	3016000	
					9/13/2021	348493.5	3016000	
					9/10/2021	391589.7	3016000	
					9/9/2021	479599.8	3016000	
					9/8/2021	449200	3016000	
					9/7/2021	924934.1	3016000	
					9/6/2021	44752.22	3016000	
					9/3/2021	-697491	3016000	
					9/2/2021	-1441274	3016000	

9.2 Dynamic Backtesting

UMR Dynamic Backtesting is based on the existing Market Risk Official Backtesting Service.

Please refer to Calypso Backtesting Service documentation for details.

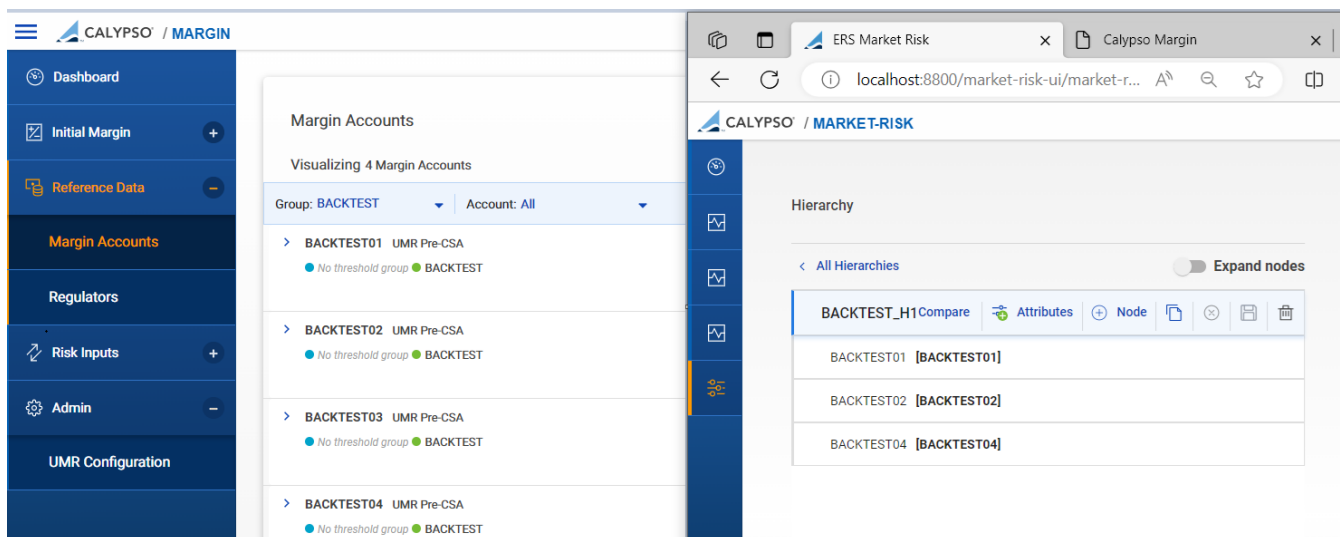
The Backtesting service allows testing different Models (Var, Param Var, IM) against a Reference (APL or HPL), based on a range of dates.

Note: More information on Actual P&L and Hypothetical P&L analysis could be found in Calypso Regulatory P&L documentation.

Dynamic Backtesting allows to compare one-day SIMM value to one-day Actual or Hypothetical P&L moves on the Margin Account level. The recommended observation period is the most recent twelve-month period available from the reference date but should not be less than 250 days. Any Backtesting assessment with fewer than 200 observations would be considered invalid.

To obtain reliable results, the user must respect certain configuration logics, mostly driven by the need to combine multicurrency calculations of different frameworks (IM, HPL/APL).

First step is the ERS hierarchy creation, where the names of its nodes must match exactly the names of the Margin Accounts. The recommendation is to include all the Margin accounts/Directions of the same currency within the same hierarchy. In case of asymmetric accounts, the user will have to save two separate BT configurations for the pay and receive currency. The Backtesting results will be generated for all accounts linked to the configured hierarchies, using the provided ccy and Calculation set.



The screenshot displays two side-by-side web application windows. The left window, titled 'CALYPSO / MARGIN', shows a sidebar with navigation options like 'Dashboard', 'Initial Margin', 'Reference Data', 'Margin Accounts', 'Regulators', 'Risk Inputs', 'Admin', and 'UMR Configuration'. The main content area is titled 'Margin Accounts' and shows 'Visualizing 4 Margin Accounts'. It includes filters for 'Group: BACKTEST' and 'Account: All'. Below, there are four entries: BACKTEST01, BACKTEST02, BACKTEST03, and BACKTEST04, each labeled 'UMR Pre-CSA' and showing status indicators for 'No threshold group' and 'BACKTEST'. The right window, titled 'CALYPSO / MARKET-RISK', shows a 'Hierarchy' section with a table of backtest configurations. The table has columns for the configuration name and its calculation set.

Configuration	Calculation Set
BACKTEST01	[BACKTEST01]
BACKTEST02	[BACKTEST02]
BACKTEST04	[BACKTEST04]

Next step is the Backtesting Configurations creation (currently in the Market Risk Web UI). A new environment property "IM_BACKTESTING_IN_MARKETRISK" must be set to "true" to make a new Var Model Type = Initial Margin available. When set to False, the feature will be disabled. The default value is False.

When "Initial Margin" Type is selected, a "Calculation Set" (that is defined in Margin UI), a "Currency" and a "Model Name" should be defined by the user.

It is expected to have only one Initial Margin model per Backtesting Configuration/Hierarchy/Currency/Calculation Set.

Attributes
NorthAmerica_BT

Name	Value
Hierarchy Name	NorthAmerica
Is Relative VaR	<input type="checkbox"/>
Benchmark	Value
Backtesting Days	10
One Tailed	<input type="checkbox"/>
Model Name	InitialMargin_USD
VaR Model Type	Initial Margin
Calculation Set	SIMM
Currency	USD
Model Name	HPL_USD
PL Model Type	Official HPL
PL Config	HPLConfig
Default	<input type="checkbox"/>

For each Backtesting Configuration several P&L models of types HPL and APL can be defined . To obtain consistent results, the Pricing Environment's base currency from HPL/APL configuration must match the Currency from the Initial Margin model (HPL/APL should be configured in different pricing environments per currency, depending on the Margin Account currency).

The results are displayed in the Official Backtesting of the Market Risk Web UI.

Date	Exceptions	VAR	Reference PL
2023-09-15	1	7,211,916	-26,833,154
2023-09-14	0	6,980,013	-1,609,924
2023-09-13	0	7,207,186	1,184,355
2023-09-12	0	10,098,113	25,986,103
2023-09-11	0	9,563,290	-6,420,766
2023-09-08	1	7,339,366	-19,579,143
2023-09-07	0	7,450,254	766,899
2023-09-06	0	7,644,349	3,417,475
2023-09-05	0	8,726,976	10,393,551
2023-09-04	0	7,436,458	

On the above example the VaR IM Model "InitialMargin_USD" is compared with the HPL Reference model "HPL_USD". Exception column reflects the presence of breaches for each valuation date of the backtesting period.

10. Technical Documentation

10.1 Installation


The Margin Calculators are installed as part of the Calypso Installer.

In addition to core Calypso, you need the following modules:

- Collateral
- Market Risk
- Margin Engine (If using MarginEngineSIMM for WhatIf IM and Intraday Trades Processing)

When you run Execute SQL, all necessary data files will be automatically loaded.

You may be prompted to confirm the installation of some margin modules for the first time.

 Calypso Execute SQL - env: CAL1610

Enter Installed Version

The schema versions of some of the previously installed modules could not be detected.
information can be found in:

margin-calculator-unrestricted	
<input checked="" type="checkbox"/> First Time Being Installed	<input type="text"/>
margin-engine	
<input checked="" type="checkbox"/> First Time Being Installed	<input type="text"/>
margin-simm	
<input checked="" type="checkbox"/> First Time Being Installed	<input type="text"/>

10.2 API Gateway Support

The Margin Server by default, requires the API Gateway to be running. This is used by both the Margin Web UI and Margin scheduled tasks.

The API Gateway provides unified access to Calypso REST APIs.

► See the Calypso Install Guide for more information on API Gateway.

10.3 Application Components to Start

The required processes to startup an environment to run margin are the following in order:

- authServer

- discoveryServer
- gatewayServer
- eventServer
- sharedServices
- dataServer
- dataGridNode (required if running ersRiskServer)
- dataGridEnabledCalculator (required if running ersRiskServer)
- dispatcher
- ersRiskServer (required when using ERS account hierarchy or Backtesting. If using account groups this service is not needed)
- engineServer (lifecycle engine is included here)
- calypsoMessagingServer (must be started to publish events i.e. saving accounts)
- marginServer (the margin web services, among others, are contained here)
- scheduler (to run the scheduled tasks)
- UI's (Navigator or the WebUI)

10.4 Environment Properties

10.4.1 Margin Calculator

MARGIN_CLOUD_RESULTS_TIMEOUT – Defines the max amount of time (in milliseconds) to wait for margin-results from the margin cloud services, default value is 10000.

MARGIN_CLOUD_HTTP_CONNECT_TIMEOUT – Defines the max amount of time (in milliseconds) to wait while attempting to connect the margin cloud services, default value is 30000.

MARGIN_CLOUD_HTTP_READ_TIMEOUT – Similar to **MARGIN_CLOUD_RESULTS_TIMEOUT**, but the read timeout for everything else other than margin results, default value is 30000.

10.4.2 ISDA SIMM Version

The environment property **ISDA_VERSION** can be set to switch the calculation methodology from ISDA SIMM 2.6 to ISDA SIMM 2.7.

To set the calculation model to 2.7, set **ISDA_VERSION=2_7**

It defaults to "2_6" if not set, which maps to ISDA SIMM 2.6 version.

Adenza can provide the users access to the full ISDA unit test cases for the latest ISDA version. The two files that can be shared are:

- file 1: account_27_10d.csv -> the account definition for all tests
- file 2: riskFactor_27_10d.csv -> the risk factors for all tests

All accounts can be added to the ISDA-BENCHMARK Group. It should be possible to run the MARGINCALCULATOR scheduled task for this Group only. These files are generated for QA purposes and will be available upon demand.

10.4.3 Margin Services Setup

Define the environment property *MARGIN_APP_URL* as:

`http://<calypso services host name>:<calypso services port number>/margin-ui/`

The default is <http://localhost:8800/margin-ui> or <http://localhost:9140/margin-ui> (if API gateway disabled).

The scheduled task MARGIN_INPUT requires access to the web services.

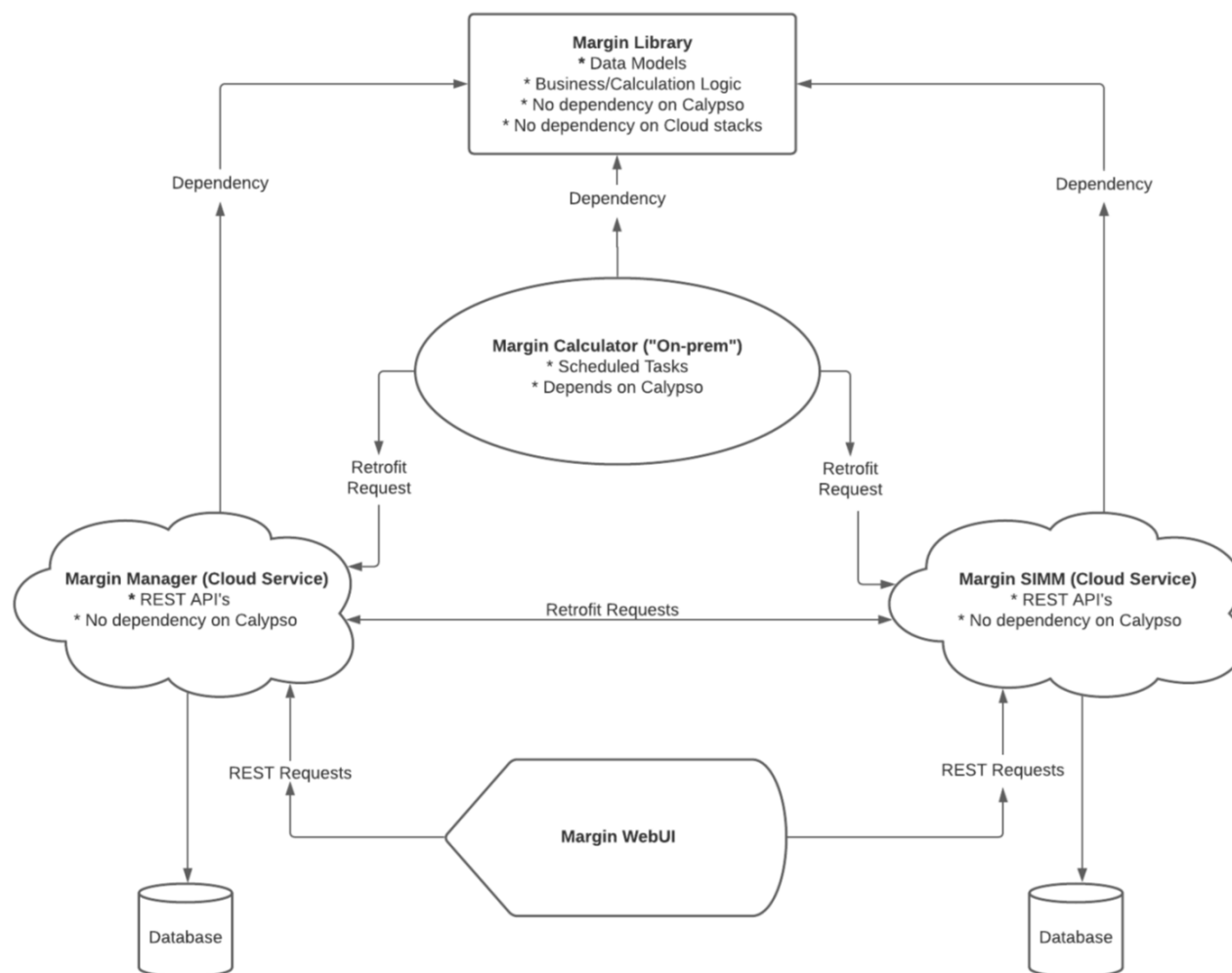
It is **mandatory** to define a Calypso user with *MARGIN_ADMINRole* permission and set this user in the environment properties.

10.4.4 Navigator Link

A navigator link or tile can be configured which will launch a web browser and direct the user to the Margin UI using the value of environment property *MARGIN_APP_URL*.

Set the action as *MarginBrowser*.

10.4.5 Architecture



Module Information

Service/Module	On-prem / Cloud	Patchable	Main Responsibilities	SQL (Schemas)	Comments
mgncl-javalib	Both	No	Margin shared code, including: Data models Calculator Implementations (SIMM, OTC, etc.)	No	No dependency on core calypso Dependents are margin-calculator, margin-simm, and margin-manager
margin-manager	Cloud	Yes	Backend for:	Yes	Depends on mgncl-

Service/Module	On-prem / Cloud	Patchable	Main Responsibilities	SQL (Schemas)	Comments
(aka margin-srv)			margin-accounts margin-results static data (product-mapping, domains, etc.)		javali Makes REST requests using retrofit to margin-simm-srv
margin-simm (aka margin-simm-srv)	Cloud	Yes	Backend for: risk factors SIMM calculations what-if calculations	Yes	Depends on mgnc-javali Makes REST requests using retrofit to margin-manager
Margin-calculator	On-prem	Yes (as jars in the on-prem lib directory)	Calypso on-prem specific layer for interacting with other modules/services including margin-simm and margin-manager. Responsibilities include: MARGIN_INPUT ST drives the risk analysis post accounts to margin-manager post RF's to margin-simm MARGIN_CALCULATOR ST triggers the margin-simm calculations	Yes	Most of the pre-cloud SIMM functionality has moved out of this module, and into mgnc-javali/margin-manager/margin-simm

10.4.6 Logging

Margin Calculator

Scheduled Task MARGIN_INPUT

- "ScheduledTask"
- "MARGIN_INPUT"

- "com.calypso.margin.simm.service.SIMMCloudMarginInputService"
- "Margin"
- "TYPESIMMMarginCalculator"
- "TYPEScheduleMarginCalculator"

Scheduled Task MARGIN_CALCULATOR

- "ScheduledTask"
- "MarginCalculator"

Margin Manager

- "com.calypso.cloud.margin.account.service.MarginAccountServiceImpl"
- "com.calypso.cloud.margin.account.service.SIMMRegulatorParameterServiceImpl"
- "com.calypso.cloud.margin.isda.service.ISDAStaticDataService"
- "com.calypso.cloud.margin.messaging.MarginResultTreeConsumer"
- "com.calypso.cloud.margin.fx.FXService"
- "com.calypso.cloud.margin.fx.DefaultPricingClient"
- "com.calypso.cloud.margin.collateral.client.DefaultMarginCollateralClient"
- "com.calypso.cloud.margin.acadia.service.AcadiaMEMIntegrationServiceImpl"
- "com.calypso.cloud.margin.acadia.messaging.AcadiaMarginResultsConsumer"
- "com.calypso.cloud.margin.acadia.client.DefaultAcadiaClient"
- "com.calypso.cloud.margin.acadia.configuration.AcadiaConfiguration"
- "com.calypso.cloud.margin.legalentity.client.DefaultLegalEntityClient"
- "com.calypso.cloud.margin.CollateralServiceConfiguration"
- "com.calypso.cloud.margin.results.service.MarginResultServiceImpl"
- "com.calypso.cloud.margin.results.service.WhatIfExposureServiceImpl"
- "com.calypso.cloud.margin.simm.client.DefaultMarginSIMMClient"

Margin SIMM

- "com.calypso.cloud.margin.calculation.consumer.AccountCalculationRequestConsumer"
- "com.calypso.cloud.margin.calculation.service.AccountCalculationRequestServiceImpl"
- "com.calypso.cloud.margin.collateral.CollateralServiceConfigurationImpl"
- "com.calypso.cloud.margin.legalentity.client.DefaultLegalEntityClient"

- "com.calypso.cloud.margin.simm.collateral.client.DefaultMarginCollateralClient"
- "com.calypso.cloud.margin.simm.service.AbstractSIMMCloudService"
- "com.calypso.cloud.margin.simm.service.CalculationRequestServiceImpl"
- "com.calypso.cloud.margin.simm.service.FXService"
- "com.calypso.cloud.margin.simm.service.RiskFactorServiceImpl"
- "com.calypso.cloud.margin.simm.service.SIMMAccountCalculationServiceImpl"
- "com.calypso.cloud.margin.simm.service.SIMMMarginCalculationServiceImpl"
- "com.calypso.cloud.margin.simm.service.WhatIfCalculationServiceImpl"

Log Locations

Scheduler

When running the on-prem scheduled tasks in the margin-calculator you can find the logs in the Calypso home directory. The log that is typically of interest shows up in the following format once the scheduled task has been executed:

CalypsoScheduler_<your_environment_name>_<calypso_version>.log

Margin Server

When running Margin Server you can find the logs in the Calypso home directory. The log that is typically of interest shows up in the following format once the scheduled task has been executed:

margin-service_marginserver_<your_environment_name>_<calypso_version>.log

Note: The same can be done for other services/processes (i.e. dataserver, engineserver, etc.)

10.5 Margin Messages

For certain actions performed by margin, there will be events published to the messaging server with a topic name. This standard practice typically when persisting any of our objects, in the case a "consumer" would like to perform some post processing after the persisting. For example:

Calculate margin results


Persist the margin results

Publish the event containing the results with a topic name ("margin_results"). See annotation `@MessageEmitter(topic = "some_topic", payloadType = "some_class.class")...`

Consume the message containing these results with a class annotated with the topic name it wants to consume. See annotation `@MessageConsumerService(topic = "some_topic", group = "some_group", payloadType = "some_class")...`

Message Topics

- "margin_results"*
- "what_if_margin_results"
- "results_topic_im_monitoring"*
- "margin_product_mappings"
- "margin_accounts"
- "imem"*
- "backtesting"*
- "margin_account_requests"*
- "margin_aana_po_requests"*
- "margin_aana_calc_result"

 **NOTE:** Means this topic has an existing consumer in either margin-simm or margin-manager.