Nasdaq Calypso

DTCC CTM Integration Guide

(Formerly OMGEO CTM)

Version 4.3.0

Revision 10.0
January 2024
Approved

Document History

Revision	Published	Summary of Changes
1.0	October 2014	First edition for version 1.0.1.
2.0	April 2015	Updates for version 1.0.10.
3.0	July 2015	Updates.
4.0	October 2015	Updates for version 1.1.1.
5.0	March 2019	Updates for version 2.3.0.
6.0	May 2020	Updates for version 2.4.0. Upgrade of OMGEO CTM library to version DCIWebSession1_1_11.jar.
7.0	February 2022	Updates for version 3.1.0 – Technical release only – Version 17 compatibility.
8.0	July 2022	Updates for version 3.3.0.
9.0	August 2023	Updates for version 3.8.0 – Added trade attribute TypeOfTransactionIndicator.
10.0	January 2024	Updates for version 4.3.0 – Compatibility for version 18

This document guides you through the setup, generation and integration of messages with DTCC CTM.

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

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Overview

DTCC CTM is a confirmation processing service and an automated central matching platform. It is dedicated to transactions made between Investment Managers and Broker/Dealers.

The DTCC CTM integration with Calypso is managed through a specific module, compatible with Version 13 onwards.

The communication channel is Internet using HTTPS protocol.

It covers the following products:

- Equities (Stocks, ADR, ETF...)
- Bonds, including CD / CP
- Repo / BSB (Fixed Rate, Term, Single Currency)
- Warrants

The format used for the Messages is Omgeo's Direct XML used in Query –Response configuration.

The following messages are supported:

- Trade Messages:
  - TradeLevel: notification of Block trade;
  - TradeLevelRepo: notification of Repo Block trade;
  - TradeDetail: allocation of Block trade to various client accounts. Each TradeDetail represents one allocation;
  - TradeDetailRepo: allocation of Repo Block trade to various client accounts. Each TradeDetailRepo represents one allocation;
  - Invalid: indication that Omgeo CTM could not process a message;
  - Valid: indication that the Omgeo CTM accepted a message for processing. It also provides the Omgeo CTM-generated CTMTradeSideId;
- Management Messages
  - Cancel: to cancel trade or accept cancellation from counterparty
  - RejectCancel: to reject a counterparty's request to cancel a trade that is MATCH AGREED
  - RejectComponent: to reject a counterparty's UNMATCHED or MISMATCHED trade that is alleged against them.
- Query-Response Messages
  - MultiTradeLevelRequest: request all of the TradeLevel components that meet specified criteria;
  - MultiTradeLevelResponse: response to the MultiTradeLevelRequest;

- MultiTradeDetailRequest: request all of the TradeDetail components that meet specified criteria;
- MultiTradeDetailResponse: response to the MultiTradeLevelRequest;
- InfoRequest: request the most recent data for a single trade side (used to retrieve Allocations);
- InfoResponse: response to an InfoRequest message;
- MultiTradeLevelRequestRepo: request all of the Repo TradeLevel components that meet specified criteria;
- MultiTradeDetailRequestRepo: request all of the Repo TradeDetail components that meet specified criteria;
- InfoRequestRepo: request the most recent data for a single trade side;
- InfoResponseRepo: response to an InfoRequestRepo message;
- MultiInfoResponseRepo: response to the MultiTradeLevelRequestRepo and MultiTradeDetailRequestRepo.
- FieldComparisonRequest: compare the L2 matching field values with values supplied by the counterparty;
- FieldComparisonResponse: response to the FieldComparisonRequest.

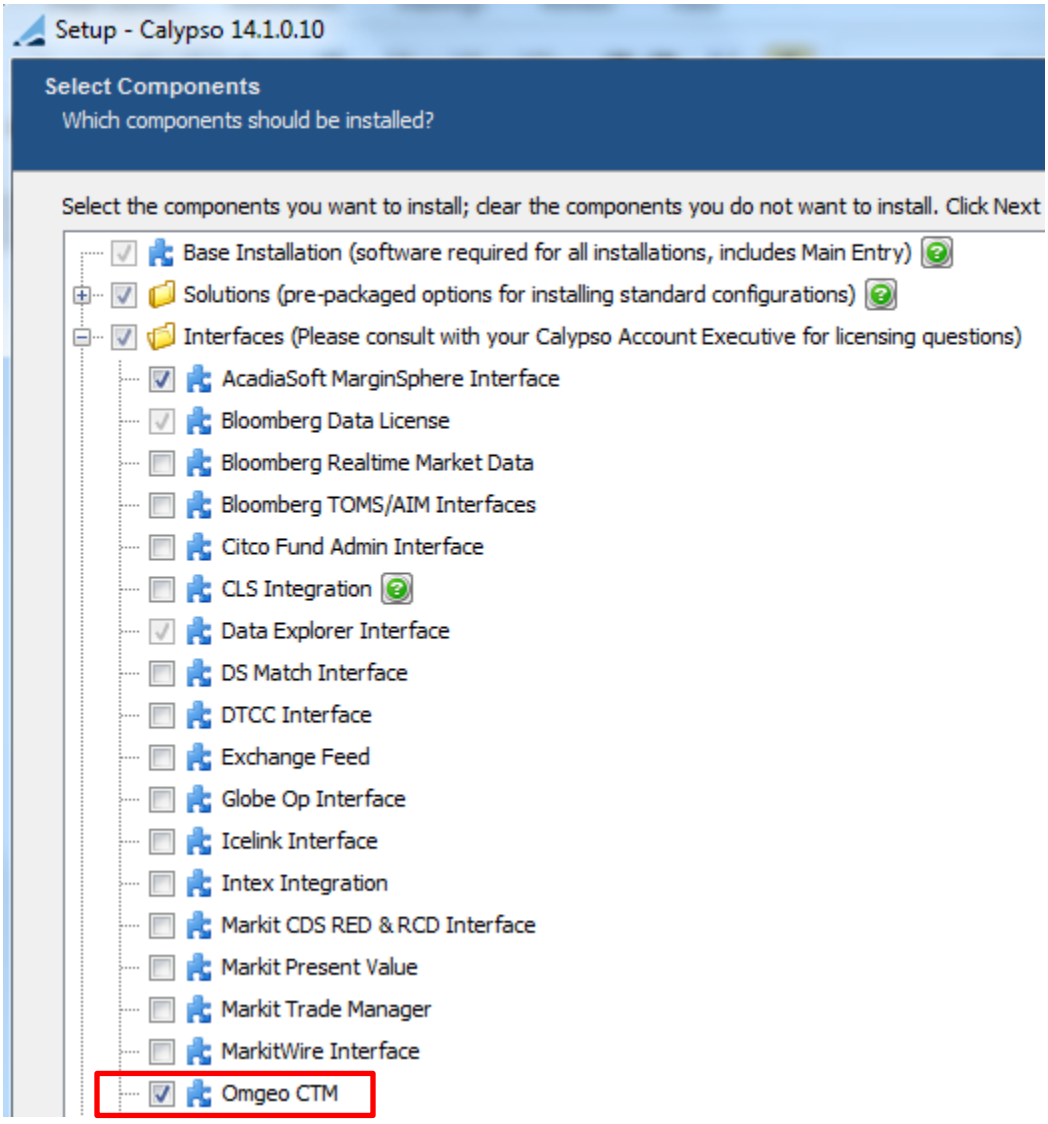
For the Outgoing Messages, only Mandatory Sequences and L2 pairing fields are managed in the Templates.

Installation

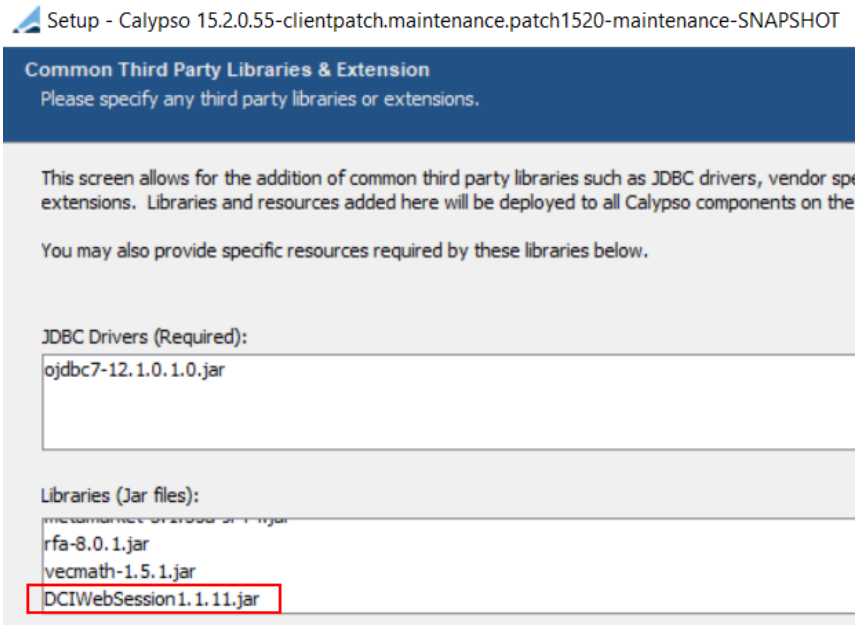
2.1 Interface Installation

The Omgeo CTM interface is installed as part of the Calypso Installer when you select the “Omgeo CTM” interface.

The Omgeo CTM module also requires the Data Uploader.



In the "Common Third Party Libraries & Extension" window, add the Omgeo CTM library. This library must be obtained from Omgeo CTM.



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

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

2.2 Database Upgrade

When you run Execute SQL as part of your installation, the Omgeo CTM files will be already loaded. You just need to check:

- OMGEO
- OMGEO Matching
- OMGEO Message Sender
- OMGEO Message Setup

It populates the following data.

2.2.1 "OMGEO" and "OMGEO Matching" Categories

Domain Values

Name	Value
addressMethod	OMGEOCTM
gateway	OMGEOCTM

Name	Value
formatType	OMGEOCTM
domainName	xmlFormatType OMGEOCTM.Templates OmgeoCTMRequestTemplates ExternalMessageField.MessageMapper OMGEOCTM.DenialReasons
xmlFormatType	OMGEOCTM
messageType	OMGEOCTM_TRADEDETAIL OMGEOCTM_TRADELEVEL OMGEOCTM_INFOREQUEST OMGEOCTM_INFORESPONSE OMGEOCTM_TRADELEVEL_ALLEGE OMGEOCTM_REJECTCANCEL OMGEOCTM_INFOREQUESTSETTLEMENT OMGEOCTM_FIELDCOMPARISON OMGEOCTM_FIELDCOMPARISONRESPONSE OMGEOCTM_TRADEDETAIL_ALLEGE OMGEOCTM_TRADELEVEL_ALLEGE OMGEOCTM_INFORESPONSESETTLEMENT OMGEOCTM_REJECTCOMPONENT OMGEOCTM_VALID OMGEOCTM_INVALID OMGEOCTM_INCOMING
OMGEOCTM.Templates	OMGEOCTM.selector OMGEOCTM_CASH_TRADE_LEVEL OMGEOCTM_CASH_TRADE_DETAIL OMGEOCTM_InfoRequest OMGEOCTM_Cancel OMGEOCTM_REPO_TRADE_LEVEL OMGEOCTM_REPO_TRADE_DETAIL OMGEOCTM_InfoRequestRepo

Name	Value
role	ExecutingBroker InstructingParty
leAttributeType	OmgeoCTMWorkflow OmgeoCTMAllocationUnknownCpty OmgeoCTMPriceDigits OmgeoCTMInflationBondPriceType
addressMethod	OmgeoCTMParticipant OmgeoCTMAlertAccessCode
sdiAttribute	OmgeoCTMAlertCountryCode OmgeoCTMAlertMethodType OmgeoCTMAlertSecurityType OmgeoCTMAlertSettlementModelName
tradeKeyword	OmgeoCTMTradeTransactionConditionIndicator OmgeoCTMSettlementTransactionConditionIndicator OmgeoCTMDetailLevelPartyCapacityIndicator PlatformCptyParticipant OmgeoCTMPartyCapacityIndicator OmgeoCTML2MatchingProfile
ExternalMessageField.MessageMapper	OMGEOCTM
OMGEOCTM.DenialReasons	Trade Not Recognized Duplicate Trade Incorrect Trade Direction Incorrect Instrument Incorrect Trade Date Incorrect Settlement Date Incorrect Trade Price Incorrect Trade Quantity
OmgeoCTMRequestTemplates	OMGEOCTM_MultiTradeDetailRequest.xml OMGEOCTM_MultiTradeLevelRequest.xml OMGEOCTM_MultiTradeDetailRequestRepo.xml

Name	Value
	OMGEOCTM_MultiTradeLevelRequestRepo.xml
eventType	REQUEST
scheduledTask	OMGEOCTM_IMPORT OMGEOCTM_REQUEST
rateIndexAttributes	OmgeoCTM
CalypsoMapping.Interfaces	OmgeoCTM
OmgeoCTMCalypsoMapping.Types	FinancialInstrument Commissions ChargesTaxes TradeLevelResultAction TradeDetailResultAction ProductCodes DayCount RateIndex
engineName	OMGEOCTMEngine
eventClass	PSEventOMGEOCTM
contactType	OMGEOCTM
keyword.OmgeoCTMTradeTransactionConditionIndicator	APAY, BCFD, BCPD, BKFM, BLKO, BLOT, BNAM, BRFM, BTEX, BTMI, BUTC, BUYF, BUYI, CARG, CASH, CBNS, CCPN, CDIV, CLEN, CLHS, CONT, COOR, CREO, CREP, CRST, CRTS, DDEL, DIOR, DIRT, DORD, DTRC, DUEB, EBAR, ESUB, ETTR, FCPA, FDSS, FFRE, FPRC, FRAC, GTDL, GTVO, HAND, HICU, IFRM IRSE, ISMA, ISSS, LDEL, LPAY, LTTR, NBUY, NCRS, NCST, NMRK, NPAY, NSTP, NTIM, NULL, ODEL, ONOR, OPAY, OPTC, OPTO, PAPP, PAYG, PPLC, RBFM, RDST, REDN, REEM, RFRE, ROPT, RPAY, RSTR, RTGS, SADE, SETI, SOUT, SPCU, SPEX, SPRC, SPSI, SSET, SSTI, TFOR, TREX, WEEK, XBNS, XCPN, XDIV, XENT, XPRI, XQBB, XREO, XREP, XRTS, XTKO, XXXX, 144A, BLCH, BLPA, BUTC, CLEN, COLA, COLN, CROS, DIRT, DOME, EXER, EXPI, FRCL, FUSD, GB2X, GB3X, GB4X, GB5X, GB6X, GB7X, GBAX, GBBX, GBCX, GBDX, GBEX, GBFX, GBGX, GBHX, GBIX, GBLX, GBMX, GBNX, GBOX, GBPX, GBRX, GBSX, GBTX, GBUX, GBVX, GBWX, GBXX, GROS, HASD, IE1X, IE8X, IEYX, IEZX, NBEN, NCCP, NETS, NLEG, NNET, NPAR, NREG, NRST, NRTG, NSET, PART, PHYS, RPTO, RSTR, SHOR,

Name	Value
	SPDL, SPST, TRIP, UNEX, USTN, YBEN, YCCP, YLEG, YNET, YREG, YRTG, YSET, ZENG
keyword.OmgeoCTMPartyCapacityIndicator keyword.OmgeoCTMDetailLevelPartyCapacityIndicator	AGEN BAGN CAGN CPRN CRST CUST LCHL OAGN PRAG PRIN PROA RLPN SAGE SCOM SPRI
workflowRuleMessage	RejectCancel FieldComparison UpdateInfoRequestSettlement MatchAlleged UpdateTradeDetailsToMatchAgree RemoveMismatchedFields MatchIncomingAllegeMessage RejectComponent SDIRetrieved supercedeLinkedMessage AllocateValidTrade UpdateValidInvalid UpdateInfoRequest
ExternalMessageField.MessageMapper	OMGEOCTM

Name	Value
MsgAttributes	CTM_Cpty_MasterReference CTM_Cpty_CTMTradeSideId CTM_MasterReference CTM_CTMTradeSideId CTM_Error

SD Filters

Name	Value
isOmgeoCTM_Trade	IN Static Data Filter ALL_IN isOmgeoCTM_TradeDetail,isOmgeoCTM_TradeLevel
isOmgeoCTM_TradeDetail	KEYWORD.AllocatedFrom IS_NOT_NULL Message Address Code IS_NOT_NULL Message Sender Address code IS_NOT_NULL
isOmgeoCTM_TradeLevel	IN Static Data Filter IN OmgeoCTM_CptyInstPartyBlock,OmgeoCTM_POInstructingPartyBlock KEYWORD.AllocatedFrom IS_NULL Message Address Code IS_NOT_NULL Message Sender Address code IS_NOT_NULL
isOmgeoCTM_TradeLevel_EB	IN Static Data Filter IN OmgeoCTM_CptyInstPartyBlock KEYWORD.AllocatedFrom IS_NULL Message Address Code IS_NOT_NULL Message Sender Address code IS_NOT_NULL
OmgeoCTM_POInstructingPartyBlock	PO_ATTRIBUTE.OmgeoCTMWorkflow LIKE Block
OmgeoCTM_CptyInstPartyBlock	PO_ATTRIBUTE.OmgeoCTMWorkflow LIKE Block Cpty Has Role IN InstructingParty

Calypso Mapping

Interface Name	Type Name	Calypso Value	Interface Value	Reverse Flag
OmgeoCTM	ChargesTaxes	CHAR	CHARGE	0
OmgeoCTM	Commissions	CLBC	CLEARING_FEE	0
OmgeoCTM	Commissions	EXEC	BRK	0
OmgeoCTM	FinancialInstrument	Equity.Standard	COMM	0
OmgeoCTM	FinancialInstrument	Bond.Generic	TBON	0
OmgeoCTM	FinancialInstrument	Warrant.TradingWarrant	WARR	0
OmgeoCTM	ProductCodes	ISIN	ISIN	0
OmgeoCTM	ProductCodes	CUSIP	CUSI	0
OmgeoCTM	ProductCodes	Common	COMM	0
OmgeoCTM	ProductCodes	Local	LOCA	0
OmgeoCTM	DayCount	A001	30/360	0
OmgeoCTM	DayCount	A001	30/360	0
OmgeoCTM	DayCount	A002	30/365	0
OmgeoCTM	DayCount	A003	30/ACT	0
OmgeoCTM	DayCount	A004	ACT/360	0
OmgeoCTM	DayCount	A005	ACT/365	0
OmgeoCTM	DayCount	A006	ACT	0
OmgeoCTM	DayCount	A007	30E/360	0
OmgeoCTM	RateIndex	LIBID	LIBOR	0
OmgeoCTM	TradeDetailResultAction	REMOVE	-CANA	0
OmgeoCTM	TradeDetailResultAction	REMOVE	-CAND	0
OmgeoCTM	TradeDetailResultAction	CANCEL_REJ	-CCRJ	0
OmgeoCTM	TradeDetailResultAction	CANCEL_REQ	MAGR-CCRQ	0
OmgeoCTM	TradeDetailResultAction	REMOVE	CMAG-	0

Interface Name	Type Name	Calypso Value	Interface Value	Reverse Flag
OmgeoCTM	TradeDetailResultAction	CANCEL_REJ	-CREJ	0
OmgeoCTM	TradeDetailResultAction	CANCEL_REQ	-CREQ	0
OmgeoCTM	TradeDetailResultAction	AUTOMATCH	-MATCH	0
OmgeoCTM	TradeDetailResultAction	MATCH_AGREE	MAGR-	0
OmgeoCTM	TradeDetailResultAction	MISMATCH	-MISM	0
OmgeoCTM	TradeDetailResultAction	UNMATCH	-NMAT	0
OmgeoCTM	TradeDetailResultAction	UNMATCH	-PEND	0
OmgeoCTM	TradeLevelResultAction	REMOVE	-CANA-	0
OmgeoCTM	TradeLevelResultAction	REMOVE	-CAND-	0
OmgeoCTM	TradeLevelResultAction	CANCEL_REJ	-CCRJ-	0
OmgeoCTM	TradeLevelResultAction	CANCEL_REQ	MAGR-CCRQ-COMP	0
OmgeoCTM	TradeLevelResultAction	REMOVE	CMAG--	0
OmgeoCTM	TradeLevelResultAction	CANCEL_REJ	-CREJ-	0
OmgeoCTM	TradeLevelResultAction	CANCEL_REQ	-CREQ-	0
OmgeoCTM	TradeLevelResultAction	MATCH_ALLOC	-MACH-COMP	0
OmgeoCTM	TradeLevelResultAction	AUTOMATCH	-MACH-INCP	0
OmgeoCTM	TradeLevelResultAction	MATCH_ALLOC	-MACH-OLCP	0
OmgeoCTM	TradeLevelResultAction	MATCH_AGREE	MAGR--	0
OmgeoCTM	TradeLevelResultAction	MISMATCH	-MISM-	0
OmgeoCTM	TradeLevelResultAction	UNMATCH	-NMAT-	0
OmgeoCTM	TradeLevelResultAction	UNMATCH	-PEND-	0

2.2.2 "OMGEO Message Sender" Category

Message Sender Setup

Product=ALL

Gateway=OMGEOCTM

Status	Advice Type	Address Type	Send	Save	By Gateway	By Method
TO_BE_SENT	OMGEOCTM_TRADELEVEL	OmgeoCTMParticipant	true	true	true	false
TO_BE_SENT	OMGEOCTM_INFOREQUEST	OmgeoCTMParticipant	true	true	true	false
TO_BE_SENT	OMGEOCTM_TRADEDETAIL	OmgeoCTMParticipant	true	true	true	false
TO_BE_SENT	OMGEOCTM_TRADEDELEVEL_REQ	OmgeoCTM	true	False	true	false
TO_BE_SENT	OMGEOCTM_TRADEDETAIL_REQ	OmgeoCTM	true	false	true	false
TO_BE_SENT	OMGEOCTM_FIELDCOMPARISON	OmgeoCTMParticipant	true	true	true	false
TO_BE_SENT	OMGEOCTM_REJECTCANCEL	OmgeoCTMParticipant	true	true	true	false

Setup Requirements

3.1 Configuration File

Rename the file calypso_omgeoctm_config.properties.sample to calypso_omgeoctm_config.properties under resources folder and set the connection configuration in the file calypso_omgeoctm_config.properties:

- omgeoctm.subscriber.id=
- omgeoctm.user.name=
- omgeoctm.user.password=

The configuration file needs to be copied to `<calypso home>/custom-extensions/custom-projects/custom-shared-lib/src/calypso/resources`.

You may need to create this folder if it does not already exist.

You will need to re-deploy your environment to your application servers so that it can be included.

Please refer to the Calypso Installation Guide for details on deployment.

3.2 Engines

The following engines need to be running:

- Message engine, for outgoing message generation
- Sender engine, to send message using Omgeo Web based API
- OMGEO CTM engine, to import messages received from Omgeo

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

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

It subscribes to PSEventOMGEOCTM events.

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

Please refer to Calypso Web Admin documentation for complete details.

3.3 Scheduled Tasks

From the Calypso Navigator, navigate to **Configuration > Scheduled Tasks > Scheduled Tasks** to create the Scheduled Tasks to generate the MultiTradeLevelRequest and MultiTradeDetailRequest Messages.

The Scheduled Task is named OMGEOCTM_REQUEST; three Attributes are defined:

- Template: mandatory –defines the OMGEO's CTM template to use;
- ByOrAgainst: mandatory – defines the type of Request By (our Side) / Against (Counterparties' side);
- MinLastUpdateDateTime: optional - can be filled with a Date in CCyyMMDDHHMMSS format (see 4.2.1 for details).

The ProcessingOrg should be set on the Scheduled Task to determine the Omgeo CTM Participant to use.

The Scheduled Tasks should be run on a regular basis using a Scheduler.

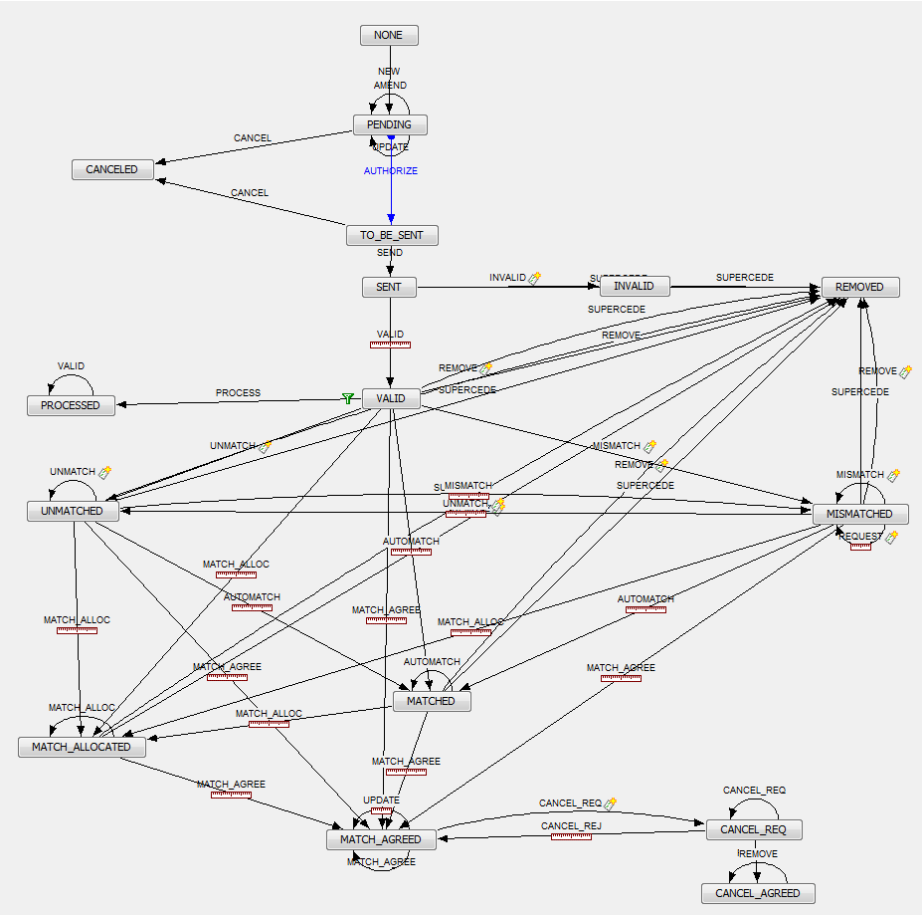
Our recommended setup is to create 6 Scheduled Tasks per Processing Org with the following setup:

Type	Template	ByOrAgainst	MinLastUpdateDateTime
OMGEOCTM_REQUEST	OMGEOCTM_MultiTradeLevelRequest.xml	B	
OMGEOCTM_REQUEST	OMGEOCTM_MultiTradeLevelRequest.xml	A	
OMGEOCTM_REQUEST	OMGEOCTM_MultiTradeDetailRequest.xml	B	
OMGEOCTM_REQUEST	OMGEOCTM_MultiTradeLevelRequestRepo.xml	B	
OMGEOCTM_REQUEST	OMGEOCTM_MultiTradeLevelRequestRepo.xml	A	
OMGEOCTM_REQUEST	OMGEOCTM_MultiTradeDetailRequestRepo.xml	B	

3.4 Workflows

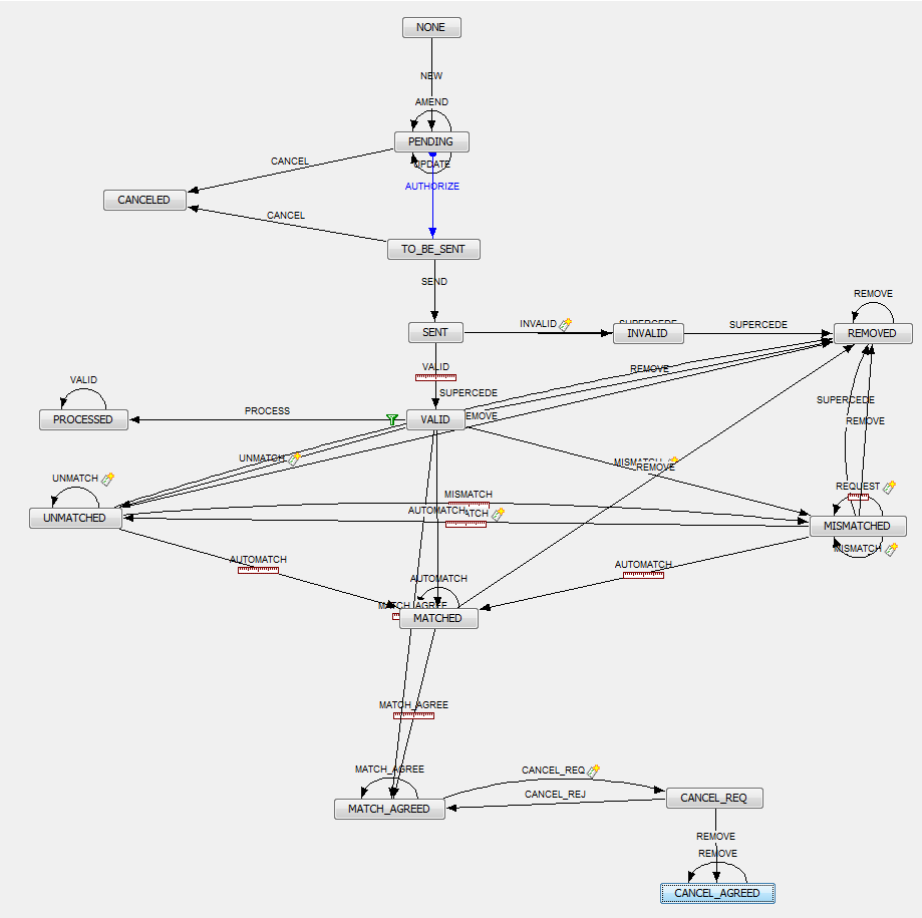
From the Calypso Navigator, navigate to **Configuration > Workflow > Workflow** to create the needed Message Workflows

3.4.1 TradeLevel Message



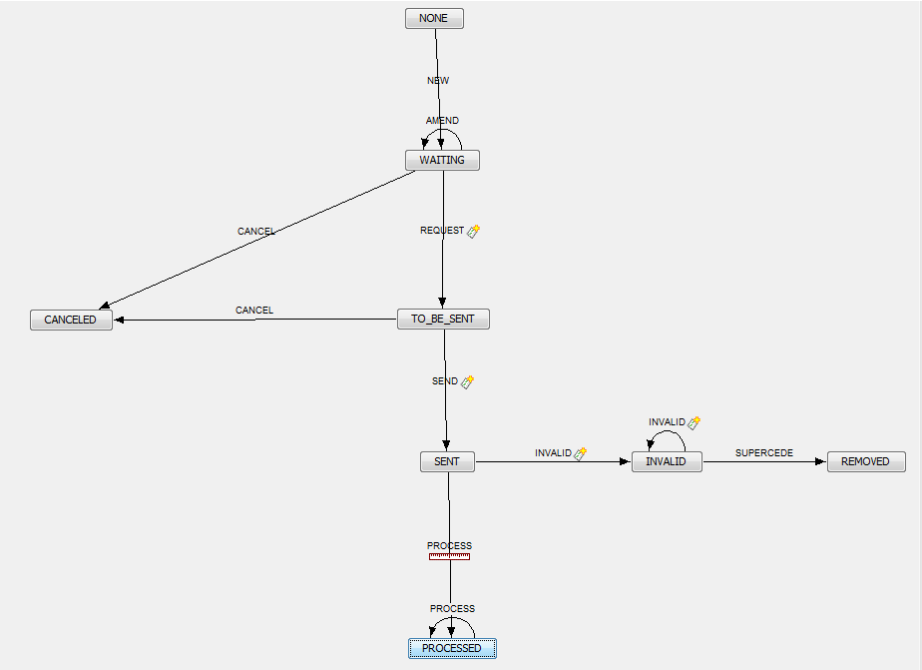
All workflow files are available in the OMGEOWorkflows ZIP file attached to the Documentation Portal.

3.4.2 TradeDetail Message



All workflow files are available in the OMGEOWorkflows ZIP file attached to the Documentation Portal.

3.4.3 InfoRequest Message



All workflow files are available in the OMGEOWorkflows ZIP file attached to the Documentation Portal.

3.4.4 Trades

An allocation workflow should be available at Trade Workflow level.

Please refer to documentation “Allocation.pdf” for further details and recommended workflow.

3.5 Message Setup

Messages need to be configured for the product types or groups as defined in your environment.

It is recommended to define separate messages configurations for the following groups of product types: Bond, Equity, Warrant and Repos.

For reference we are providing an additional schema file “`<calypso home>/client/bin/dbscripts/core/OMGEOMessageSetupSchemaData.xml`” that performs the message setup for product groups as defined in the Bank-in-a-box database. This file is optional and is not loaded by default in Execute SQL. If you want to use it, you need to manually add it to Execute SQL.

Receiver Role = CounterParty

Contact Type = OMGEOCTM

Receiver Contact Type = OMGEOCTM

Default Language = English

Gateway = OMGEOCTM

Format Type = OMGEOCTM

EventType	Product Type	Message Type	Address Method	Template Name	SD Filter
VERIFIED_TRADE	Equity	OMGEOCTM_TRADELEVEL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel
VERIFIED_TRADE	Bond	OMGEOCTM_TRADELEVEL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel
VERIFIED_TRADE	Warrant	OMGEOCTM_TRADELEVEL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel
VERIFIED_TRADE	Repo	OMGEOCTM_TRADELEVEL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel
TERMINATED_TRADE	Repo	OMGEOCTM_TRADELEVEL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel
VERIFIED_TRADE	Equity	OMGEOCTM_TRADEDETAIL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
VERIFIED_TRADE	Bond	OMGEOCTM_TRADEDETAIL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
VERIFIED_TRADE	Warrant	OMGEOCTM_TRADEDETAIL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
VERIFIED_TRADE	Repo	OMGEOCTM_TRADEDETAIL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
TERMINATED_TRADE	Repo	OMGEOCTM_TRADEDETAIL	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
VERIFIED_TRADE	Equity	OMGEOCTM_INFOREQUEST	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel_EB
VERIFIED_TRADE	Bond	OMGEOCTM_INFOREQUEST	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel_EB
VERIFIED_TRADE	Warrant	OMGEOCTM_INFOREQUEST	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel_EB
VERIFIED_TRADE	Repo	OMGEOCTM_INFOREQUEST	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeLevel_EB
VERIFIED_TRADE	Equity	OMGEOCTM_INFOREQUESTSETTLEMENT	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
VERIFIED_TRADE	Bond	OMGEOCTM_INFOREQUESTSETTLEMENT	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail

EventType	Product Type	Message Type	Address Method	Template Name	SD Filter
VERIFIED_TRADE	Warrant	OMGEOCTM_INFOREQUESTSETTLEMENT	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
VERIFIED_TRADE	Repo	OMGEOCTM_INFOREQUESTSETTLEMENT	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail
TERMINATED_TRADE	Repo	OMGEOCTM_INFOREQUESTSETTLEMENT	OmgeoCTMParticipant	OMGEOCTM.selector	isOmgeoCTM_TradeDetail

3.6 Calypso / Omgeo Mappings

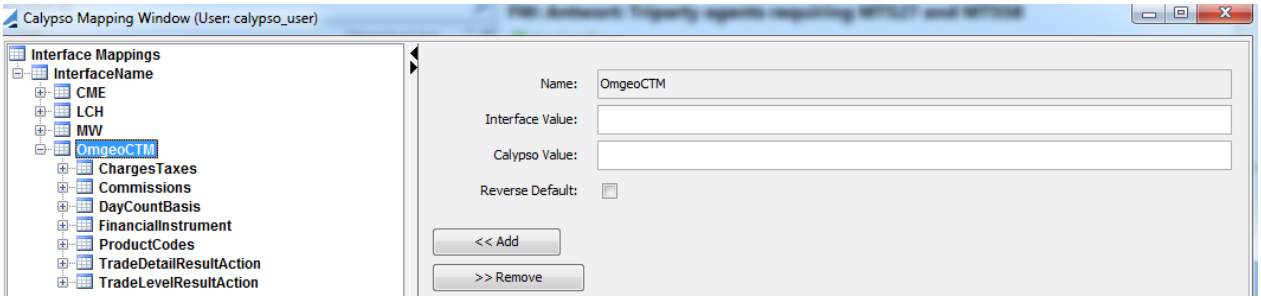
The transcodification provided in the SchemaData for the below Type Names are just examples:

- ChargesTaxes
- Commissions
- FinancialInstrument
- ProductCodes
- DayCountBasis

It is client's responsibility to fill them accurately based on its specific setup and Omgeo guidelines (see below).

3.6.1 ProductCodes

From the Calypso Navigator, navigate to Processing > Tools > Calypso Mapping to configure this Calypso / Omgeo CTM mapping.

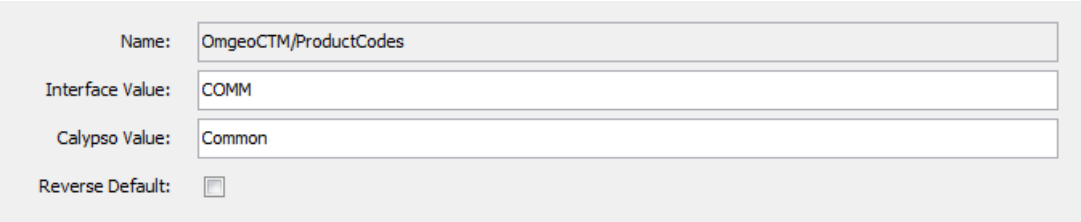


Four Types of SecurityCodeType are managed with the following priority:

- ISIN: ISIN Code
- CUSI: CUSIP
- COMM: Common Code
- LOCA: Local Code.

The Calypso Value should be set with the value of the Product Code.

Ex: If the Common Code is stored in the Product Code Common, Calypso Value for COMM should be set with Common.



3.6.2 Financial Instrument

From the Calypso Navigator, navigate to Processing > Tools > Calypso Mapping to configure this Calypso / Omgeo CTM mapping.

The Financial Instruments should be transcoded using Omgeo accepted values 'list:

Omgeo Value	Description	Asset Class
ABSS	Asset-Backed Securities (ABS)	Debt
AGDT	Agency Debt	Debt
BANK	Bankers Acceptances (BAs)	Debt
CDEP	Certificates of Deposit (CDs)	Debt
COMM	Common Stock/Ordinary Share	Equity
COND	Convertible Bond (Debt)	Debt
CONV	Convertible Bond (Equity)	Equity
CORP	Corporate Debt	Debt
CPAP	Commercial Paper (CP)	Debt
DEPR	Depository Receipts	Equity
LIMP	Limited Partnership	Equity
MBSS	Mortgage-Backed Securities (MBS)	Debt
MTNT	Medium Term Notes	Debt
MUNI	Municipal Debt	Debt
PREF	Preferred Stock/Preference Share	Equity
RGHT	Right	Equity
SVDT	Sovereign Debt	Debt
SWAP	Equity Swap	Equity
TBAN	To Be Announced (TBA) Mortgage-Backed Security	Debt
TBIL	Treasury Bill	Debt
TBON	Treasury Bond	Debt
TECP	Tax Exempt Commercial Paper	Debt
TNOT	Treasury Note	Debt
WARR	Warrant	Equity

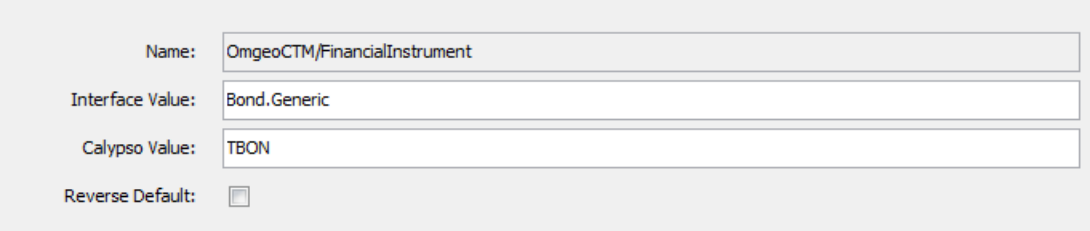
The Interface Value should be set with Calypso's Type and Calypso Value should be set with corresponding Omgeo's Code.

Interface Value could be set as:

- A Product Family (ex: Bond, Equity, Warrant)
- A Product Type.ProductSubtype (ex: Bond.BTAN, BondFRN.Standard).

Ex: If Calypso Bond.Generic is equivalent to TBON; it should be set as follows:

- Interface Value: Bond.Generic
- Calypso Value: TBON



3.6.3 ChargesTaxes

From the Calypso Navigator, navigate to **Processing > Tools > Calypso Mapping** to configure this Calypso / Omgeo CTM mapping.

Trade Fees representing Charges or Taxes should be transcoded using Omgeo accepted values' list.

Omgeo Value	Description
CHAR	Charges/Fees
COUN	Country/National Fed Tax
LADT	Local Tax (country specific 1)
LEVY	Payment Levy
LIDT	Local Tax - DE (German) Specific 2
LOCL	Local Tax
LOTE	Local Tax - DE (German) Specific 3
LYDT	Local Tax - DE (German) Specific 4
OTHR	Other Amount
REGF	Regulatory Amount

Omgeo Value	Description
SHIP	Shipping Amount
STAM	Stamp Duty
STEX	Stock Exchange Tax
TCHA	Total Charge
TFEE	Total Charges/Taxes and Fees
TRAN	Transfer Tax
TRAX	Transaction Tax
VATA	Value Added Tax

The Interface Value should be set with Calypso's Fee Name and Calypso Value should be set with corresponding Omgeo's Code.

Ex: If Calypso VAT is equivalent to VATA; it should be set as follows:

- Interface Value: VAT
- Calypso Value: VATA

3.6.4 Commissions

From the Calypso Navigator, navigate to **Processing > Tools > Calypso Mapping** to configure this Calypso / Omgeo CTM mapping.

Trade Fees representing Commissions should be transcoded using Omgeo accepted values' list:

Omgeo Value	Description
CLBC	Clearing Broker's Commission
EXEC	Executing Broker's Commission

Omgeo Value	Description
LOCO	Local Broker's Commission
SPCN	Special Concessions Amount
TCOM	Total Commissions Amount
RSCH	Research Commission

The Interface Value should be set with Calypso's Fee Name and Calypso Value should be set with corresponding Omgeo's Code.

Ex: If Calypso BRK is equivalent to EXEC; it should be set as follows:

- Interface Value: BRK
- Calypso Value: EXEC

3.6.5 TradeLevelResultAction

From the Calypso Navigator, navigate to Processing > Tools > Calypso Mapping to configure this Calypso / Omgeo CTM mapping.

This mapping is used to define which Action has to be applied when a MultiTradeLevel/MultiInfoResponseRepo is received from Omgeo. Interface Value defines the criteria; Calypso Value defines the Workflow Action.

Three Tags of the IncomingMessage can be used as criteria:

- MatchAgreeStatus
- TLMatchStatus
- CompleteStatus.

Dashes are used to denote which tag an Interface Value is from, e.g.

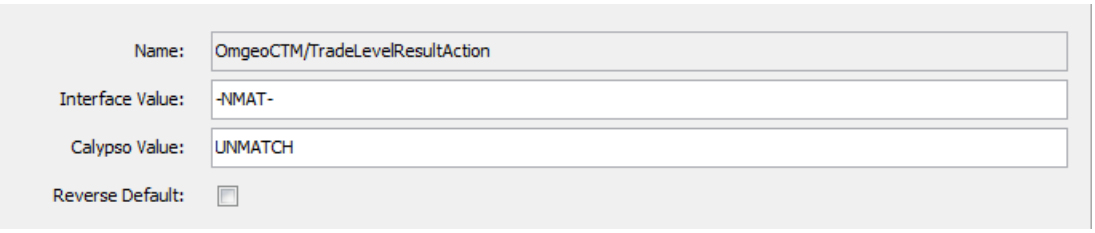
- Value from MatchAgreedStatus tag will be mapped as "XXXX--" (ex.: MAGR--)
- Value from TLMatchStatus will be mapped as "-XXXX-" (ex.: -NMAT-)
- Value from CompleteStatus will be mapped as "--XXXX" (ex.: --COMP)

The following Rule is applied to determine the Action to use:

- Matching the value of the combination of the three Tags MatchAgreedStatus / TLMatchStatus / CompleteStatus with the Incoming Status
- If no match found, matching the value the Tag MatchAgreedStatus with the Incoming Status
- If no match found, matching the value of the combination of the two Tags TLMatchStatus / CompleteStatus with the Incoming Status
- If no match found, matching the value the Tag TLMatchStatus with the Incoming Status.

Ex: To apply the action UNMATCH, when the TLMatchStatus is NMAT, it should be set as:

- Interface Value: -NMAT-
- Calypso Value: UNMATCH



3.6.6 TradeDetailResultAction

From the Calypso Navigator, navigate to **Processing > Tools > Calypso Mapping** to configure this Calypso / Omgeo CTM mapping.

This mapping is used to define which Action has to be applied when a MultiTradeDetail / MultiInfoResponseRepo is received from Omgeo. Interface Value defines the criteria; Calypso Value defines the Workflow Action.

The Tags of the IncomingMessage can be used as criteria:

- MatchAgreeStatus
- TDMatchStatus

It should be set in Interface Value separated by "-", as MatchAgreedStatus - TDMatchStatus; ex: MAGR-, -MAT...

3.6.7 DayCount (for Repo only)

From the Calypso Navigator, navigate to **Processing > Tools > Calypso Mapping** to configure this Calypso / Omgeo CTM mapping.

Calypso Day Count Basis should be transcoded using Omgeo accepted values' list:

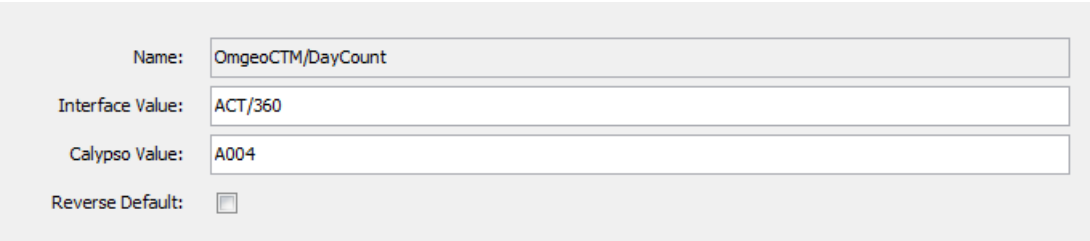
Omgeo Value	Description
A001	30/360 (ISDA) or 30/360 (American Basic Rule)

Omgeo Value	Description
A002	30/365
A003	30/Actual
A004	Actual/360
A005	Actual/365 (Fixed)
A006	Actual/(ICMA)
A007	30E/360 or Eurobond basis
A008	Actual/(ISDA)
A009	Actual/365L or Actual/(basic rule)
A010	Actual/(AFB)
A011	30/360 (ICMA) or 30/360 (basic rule)
OTHR	Other—Method other than A001-A011

The Interface Value should be set with Calypso's DayCount and Calypso Value should be set with corresponding Omgeo's Code.

Ex: Calypso ACT/360 is equivalent to Omgeo A004; it should be set as follows:

- Interface Value: ACT/360
- Calypso Value: A004



3.6.8 RateIndex (for Repo only)

From the Calypso Navigator, navigate to **Processing > Tools > Calypso Mapping** to configure this Calypso / Omgeo CTM mapping.

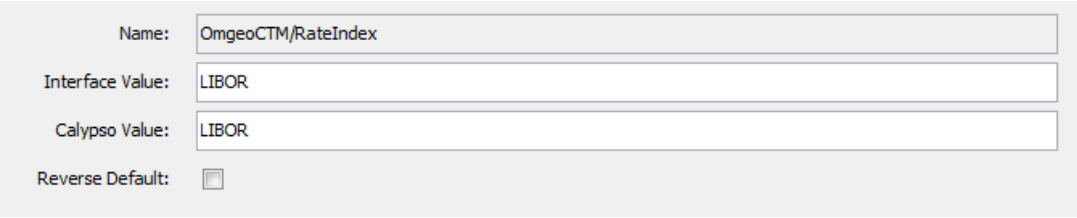
Calypso Index should be transcoded using Omgeo accepted values' list:

Omgeo Value	Description
EONIA	Euro OverNight Index Average
EUREPO	A single reference rate for a unified Euro G.C. (General Collateral) Repo Market
EURIBOR	Euro Interbank Offered Rate
FEFUND	Federal Funds Rate
HIBOR	Hong Kong Interbank Offered Rate
JIBAR	Johannesburg Interbank Agreed Rate
LIBID	London Interbank Bid Rate
LIBOR	London Interbank Offered Rate
MIBOR	Mumbai Interbank Offered Rate
SHIBOR	Shanghai Interbank Offered Rate
SIBOR	Singapore Interbank Offered Rate
SONIA	Sterling OverNight Index Average
TIBOR	Tokyo Interbank Offered Rate
UNKNOWN	Unknown Reference Rate

The Interface Value should be set with Calypso's Rate Index and Calypso Value should be set with corresponding Omgeo's Code.

Ex: Calypso LIBOR is equivalent to Omgeo LIBOR; it should be set as follows:

- Interface Value: LIBOR
- Calypso Value: LIBOR

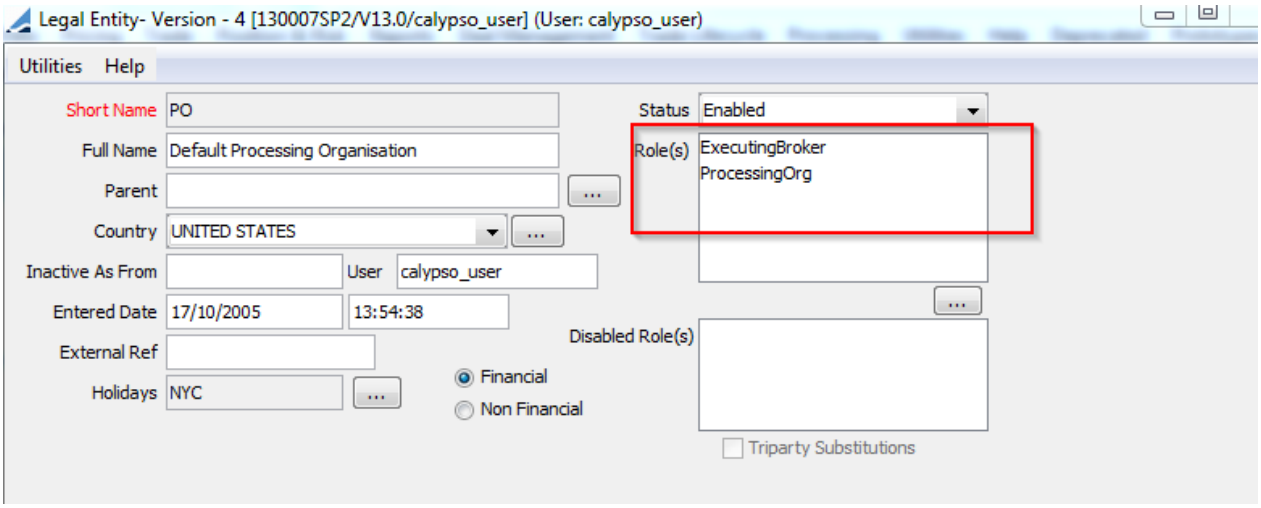


3.7 Legal Entities

3.7.1 Roles

Participants in Omgeo CTM are either Instructing Party or Executing Broker.

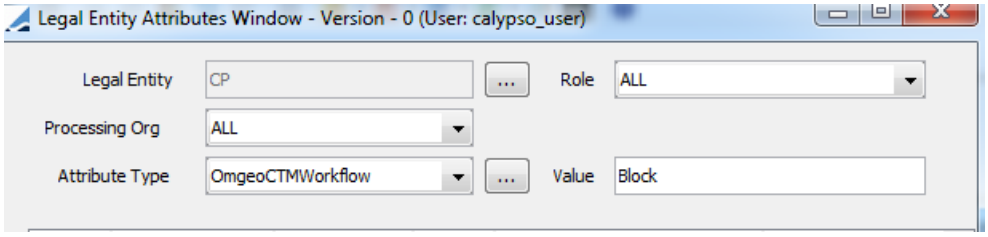
One of the Roles InstructingParty / ExecutingBroker should be added on Legal Entities for which Omgeo CTM Messages should be used.



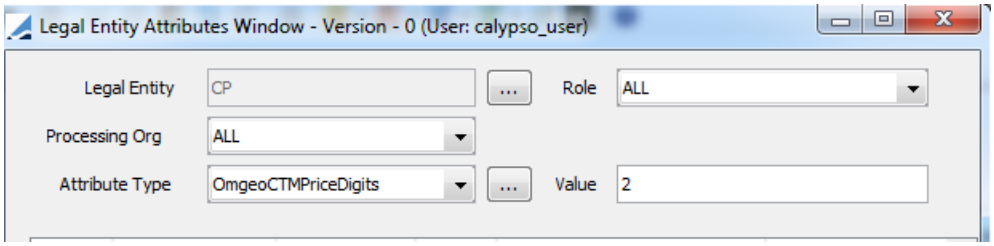
3.7.2 Attributes

The following Legal Entity Attributes are used for InstructingParty Legal Entities:

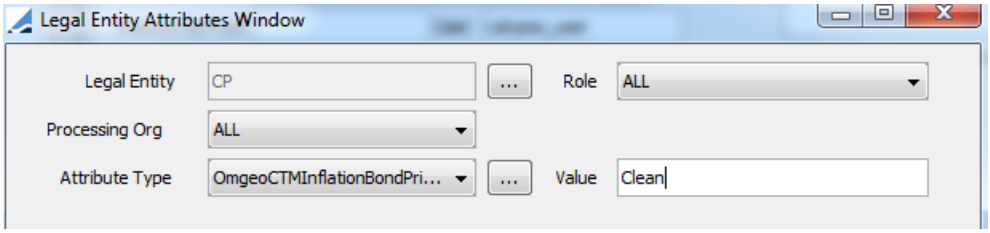
- OMGEOCTMWorkflow: Mandatory – Block or ACWF; it determines if the Legal Entity uses Block or ACWF Workflow



- OMGEOCTMPriceDigits: Optional – Number of digits to be used for display of Prices in TradeLevel / TradeDetail Messages.



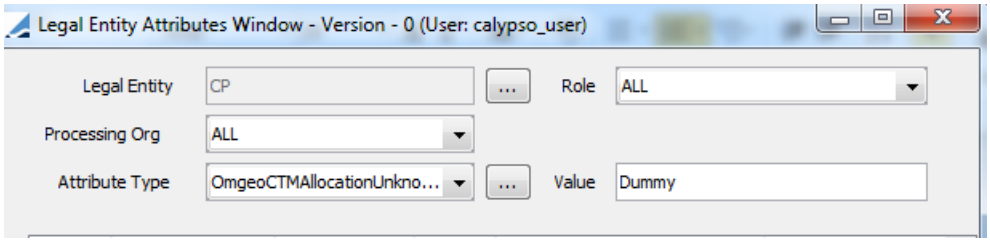
- OmgeoCTMInflationBondPriceType: Optional – Clean or Gross; it determines the Price Type to be used for Inflation Linked Bonds in TradeLevel / TradeDetail Messages. The Default Value is Gross.



- OmgeoCTMConvertibleBondPriceType: Optional – Clean or Dirty/empty – The default value is empty.
  - If OmgeoCTMConvertibleBondPriceType = “Clean”, the price sent to Omgeo is the Trade price (corresponding to Unit price/Clean price field)
  - If OmgeoCTMConvertibleBondPriceType is “Dirty” or empty, the price sent to Omgeo is the trade keyword DirtyPrice.

One Legal Attribute is used for ExecutingBroker Legal Entities:

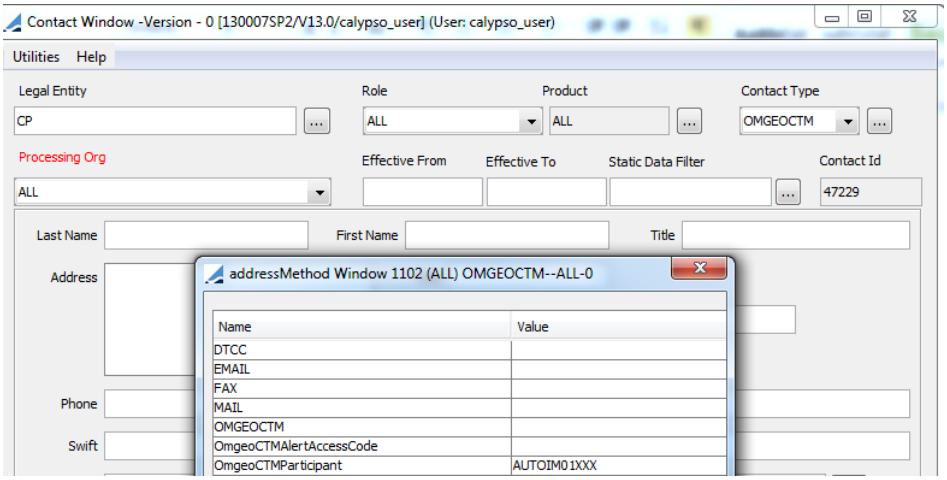
- OMGEOCTMAllocationUnknownCounterparty: Optional – to be set with a Legal Entity Short Name; it determines which Dummy Legal Entity to be used in case of Allocation on an unknown counterparty (see below).



3.7.3 Contacts

Participant Codes should be set as Attributes of the Contact used in the Message Setup for TL/TD Messages:

- OmgeoCTMParticipant: Omgeo BIC Code;
- OmgeoCTMAlertAccessCode: Omgeo Alert Access Code.

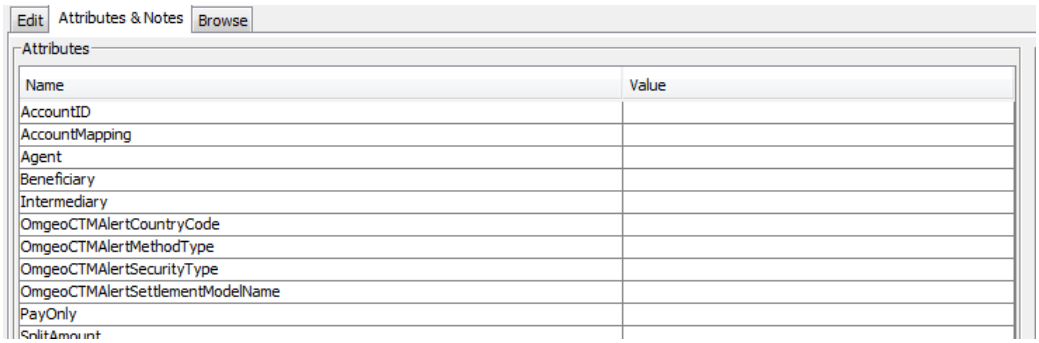


3.7.4 Settlement Instructions

When the Participants are Omgeo Alert subscribers, the SDI can be set in Alert's format to be reported in TL / TD messages.

They should be set as SDI Attributes:

- OmgeoCTMAlertCountryCode
- OmgeoCTMAlertMethodType
- OmgeoCTMAlertSecurityType
- OmgeoCTMAlertSettlementModelName



Process Description

4.1 Workflow

Two different processes can be used in Omgeo CTM:

- Block Level Workflow: use when trading with Investment Managers who match on both Block and Allocation information.
- Allocation-Confirmation Workflow (ACWF): use when trading with Investment Managers who match Allocations without requiring Block

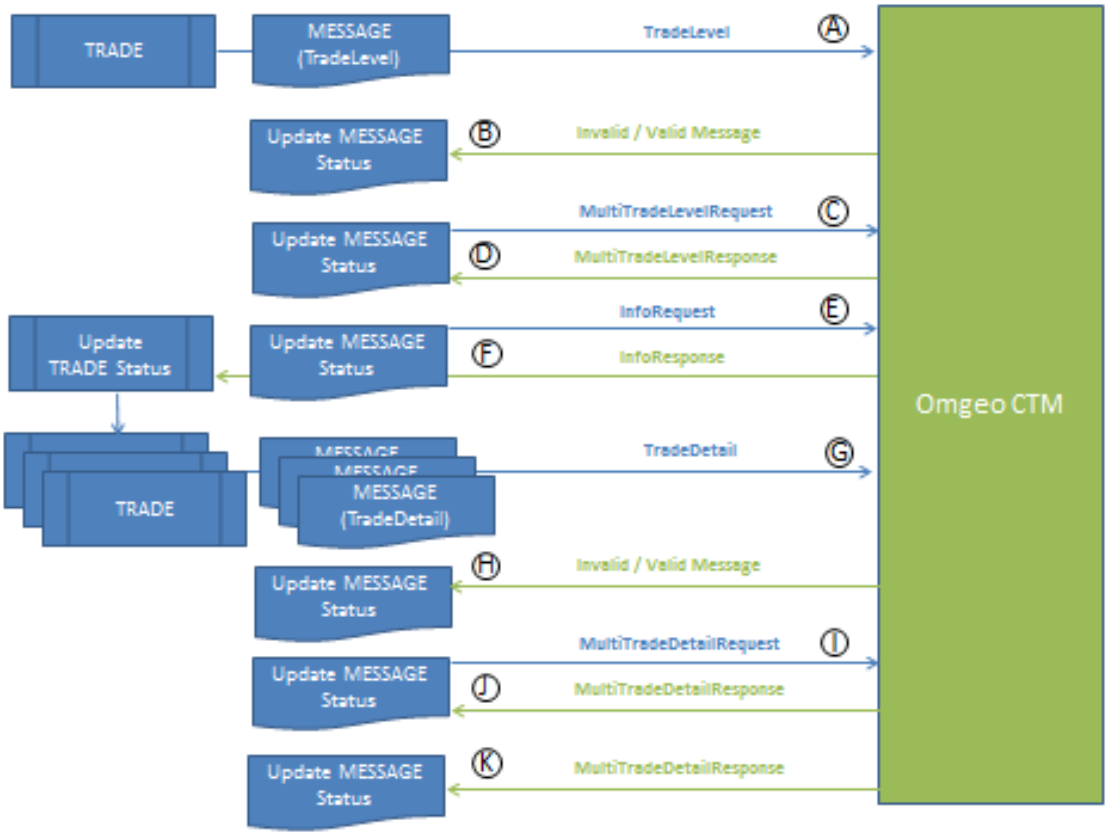
The Workflow to be used is determined at InstructingParty level, based on the LE Attribute OMGEOCTMWorkflow.

4.1.1 Block Level Workflow

Scope: Equity, Bond, Warrant, Repo, BSB

[NOTE: The process is described using the Bond / Equity templates. It is similar for Repo/BSB, the only difference being the Messages'names:

- TradeLevelRepo instead of TradeLevel
- TradeDetailRepo instead of TradeDetail
- MultiTradeLevelRequestRepo instead of MultiTradeLevelRequest
- MultiTradeDetailRequestRepo instead of MultiTradeDetailRequest
- MultiInfoResponseRepo instead of MultiTradeLevelResponse and MultiTradeDetailResponse
- InfoRequestRepo instead of InfoRequest
- InfoResponseRepo instead of InfoResponse]



Step	Originator	Calypso	Omgeo CTM
A	Calypso	A Trade is input. A Message is created using TradeLevel XML format and sent to Omgeo CTM	The received TradeLevel Message enters the Validation process
B	Omgeo CTM	Case 1: The Valid Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated The CTMTradeSideId is input at Trade level	Case 1: A Valid Message is sent informing of message acceptance
		Case 2: The Invalid Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated; a task is created with Error message provided by Omgeo	Case 2: An Invalid Message is sent informing of message rejection

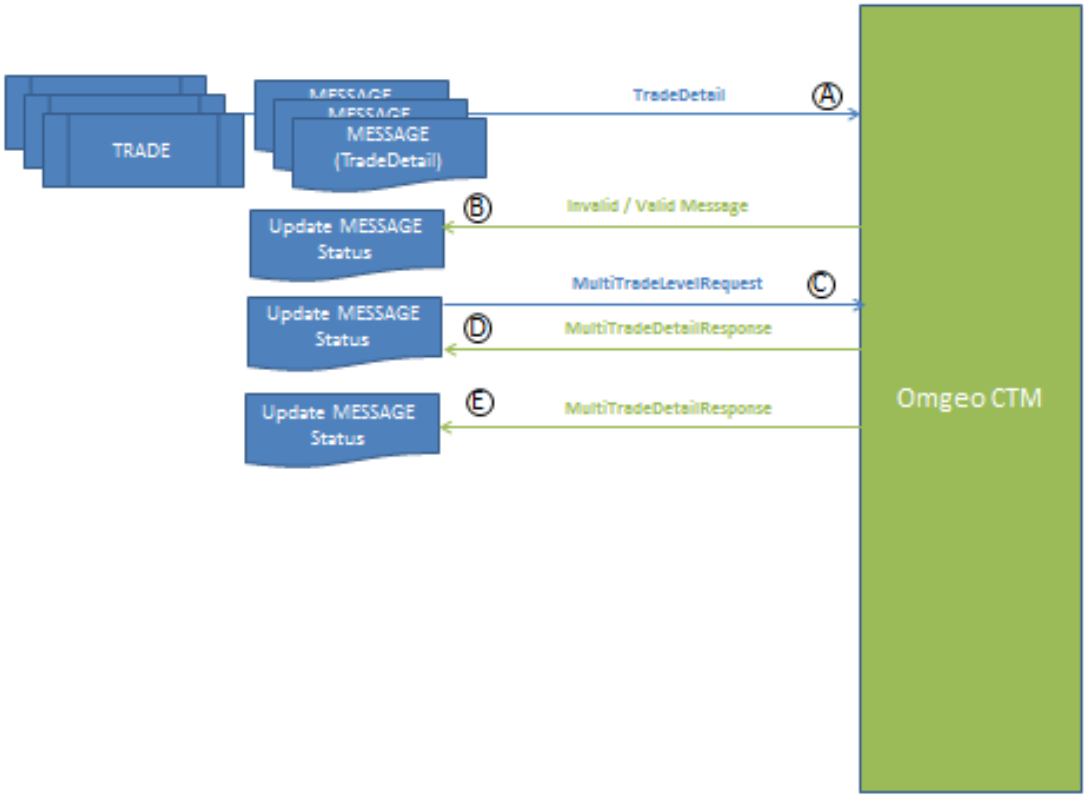
Step	Originator	Calypso	Omgeo CTM
C	Calypso	A MultiTradeLevelRequest Message is sent requesting for Status change of open Trades	The received MultiTradeLevelRequest Message is integrated
D	Omgeo CTM	The MultiTradeLevelResponse Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated	A MultiTradeLevelResponse Message is sent informing of a Status change
E	Calypso	When the Block is MATCHED and the Investment Manager's trade side is COMPLETE, an InfoRequest Message is sent requesting for Trade's Allocation	The received InfoRequest Message is integrated
F	Omgeo CTM	The InfoResponse Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated The Trade is ALLOCATED through ALLOCATE process and Allocations are created as Trades	An InfoResponse Message is sent informing of Investment Manager's Allocation
G	Calypso	A Message per Allocation is created using TradeDetail XML format and sent to Omgeo CTM	The received TradeDetail Message enter the Validation process
H	Omgeo CTM	Case 1: The Valid Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated The CTMTradeDetailID is input at Trade level	Case 1: A Valid Message is sent informing of message acceptance
		Case 2: The Invalid Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated; a task is created with Error message provided by Omgeo	Case 2: An Invalid Message is sent informing of message rejection
I	Calypso	A MultiTradeDetailRequest Message is sent requesting for Status change of open Trades	The received MultiTradeDetailRequest Message is integrated
J	Omgeo CTM	The MultiTradeDetailResponse Message is integrated in Calypso as an IncomingMessage	A MultiTradeDetailResponse Message is sent informing of a Status change

Step	Originator	Calypso	Omgeo CTM
		The status of the Outgoing message is updated	
K	Omgeo CTM	The MultiTradeDetailResponse Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated till its final Status MATCH_AGREED	A MultiTradeDetailResponse Message is sent informing of Matching Agreement

4.1.2 ACWF

Scope: Equity, Bond, Warrant

Omgeo CTM does not support ACWF for Repo / BSB.



Step	Originator	Calypso	Omgeo CTM
A	Calypso	A Block Trade is input.	The received TradeDetail Message enter the Validation process

Step	Originator	Calypso	Omgeo CTM
		Allocation Trades are created by Allocation process. A Message per Allocation is created using TradeDetail XML format and sent to Omgeo CTM	
B	Omgeo CTM	Case 1: The Valid Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated The CTMTradeDetailID is input at Trade level	Case 1: A Valid Message is sent informing of message acceptance
		Case 2: The Invalid Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated; a task is created with Error message provided by Omgeo	Case 2: An Invalid Message is sent informing of message rejection
C	Calypso	A MultiTradeDetailRequest Message is sent requesting for Status change of open Trades	The received MultiTradeDetailRequest Message is integrated
D	Omgeo CTM	The MultiTradeDetailResponse Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated	A MultiTradeDetailResponse Message is sent informing of a Status change
E	Omgeo CTM	The MultiTradeDetailResponse Message is integrated in Calypso as an IncomingMessage The status of the Outgoing message is updated till its final Status MATCH_AGREED	A MultiTradeDetailResponse Message is sent informing of Matching Agreement

4.1.3 Additional Processes

Match Agreed Messages Cancellation Process

When a Trade is MATCH AGREED, the Cancel message is considered as a request to cancel to Trade. When the Cancel is issued:

- The requesting party's component is put into CANCEL REQUESTED status;
- The Counterparty's component to COUNTERPARTY CANCEL REQUESTED status.

The Counterparty can accept the cancellation by submitting a Cancel message or reject it by submitting a RejectCancel.

- If the Counterparty accepts the cancellation, both MATCH AGREED trade sides become CANCEL MATCH AGREED;
- If the Counterparty rejects the cancellation, both parties' trade sides stay MATCH AGREED. The Counterparty's components become CANCEL REJECTED, and the Originator's components Match Status become COUNTERPARTY CANCEL REJECTED.

Mismatching Trades Processing

When a TradeLevel / TradeDetail is MISMATCHED, a FieldComparisonRequest message can be send to compare the L2 Matching Field values with the values supplied by the Counterparty. It enables to identify fields that caused a L2 matching failure because they are outside the specified match tolerance range

The Non-Matching fields will be retrieved and stored as Message Attributes on the Outgoing Message.

Settlement Instructions Integration

Settlement Instructions can be provided by Trade Participants in Omgeo CTM but are not mandatory.

When a Trade is MATCH AGREED, a InfoSettlementResponse is requested.

- If SDI can be retrieved, the Message status is set to SDI_RETRIEVED and the SDI can be displayed through the attached Advice Document.
- If SDI cannot be retrieved, the Message status is set to SDI_NOT_RETRIEVED.

4.2 Messages

4.2.1 Outgoing Messages

TradeLevel / TradeDetail / TradeLevelRepo / TradeDetailRepo

These Messages are Confirmation messages:

- TradeLevel/TradeLevelRepo for Block Trades
- TradeDetail/TradeDetailRepo for Allocation Trades.

A New Message is generated every time the Trade goes in one the of the status specified in the Message Setup. The Original Message will have the Tag "FunctionOfTheMessage", filled with "NEWM"; if validated by OMGEO CTM, the next one will be "REPC".

Some fields have default values and can be modified based on trade attributes:

- TradeTransactionConditionIndicator - Defaulted to “BPCA” except if the Trade Attribute OmgeoCTMTradeTransactionConditionIndicator is filled
- TypeOfTransactionIndicator – Defaulted to “TRAD” except if the Trade Attribute TypeOfTransactionIndicator is filled
- SettlementTransactionConditionIndicator - Defaulted to “BLCH” except if the Trade Attribute OmgeoCTMSettlementTransactionConditionIndicator is filled
- PartyCapacityIndicator - Omitted expect if the Trade Attribute OmgeoCTMPartyCapacityIndicator is filled
- DetailLevelPartyCapacityIndicator - Omitted expect if the Trade Attribute OmgeoCTMDetailLevelPartyCapacityIndicator is filled.

The valid values can be found in Appendix.

Only the Alert format is supported in the Templates to report SDIs; they have to be setup as shown above.

Cancel

A specific format has to be used to cancel a previously sent TradeLevel / TradeDetail / TradeLevelRepo / TradeDetailRepo. Depending on the Matching Status, the Cancellation request may have to be agreed by the Counterparty.

RejectCancel

This message is used to reject the cancellation request submitting by the counterparty on a Match Agreed Trade.

RejectComponent

This message is used to reject a TradeLevel or TradeDetail with an UNMATCHED Status submitted by the Counterparty.

FieldComparisonRequest

The FieldComparisonRequest message is used to Compare the L2 Matching Field values with the values from the Counterparty.

MultiTradeLevelRequest / MultiTradeDetailRequest / MultiTradeLevelRequestRepo / MultiTradeDetailRequestRepo

These messages are generated by the OMGEOCTM_REQUEST Scheduled Task; it should be run frequently to request the changes of Status of the Trades.

A BOMessage is created for each combination of OmgeoCTMRequestTemplate / BuyAgainst, the first time the Scheduled Task is run for this combination. The BOMessage is then updated.

The Tag MinLastUpdateDateTime is used to define the Update Start Date Time. For example, when set with 20140830130000, you request all updates having happened since August 30th 2014, 1PM, and the time of the request.

This Tag is populated following the below logic:

- For the first request, the Scheduled Task Execution Datetime;
- Then, the value of the BOMessage Attribute MinLastUpdateDateTime (this BO Message Attribute is updated by the Response Messages).

Nevertheless, this can be overridden if the Scheduled Task Attribute MinLastUpdateDateTime is filled; in this case, it will be used in every case.

InfoRequest / InfoRequestRepo

These messages are used for different purposes:

- For EB on all Products: Retrieve the Allocation from Omgeo CTM. When the Block Trade is Matched and the Counterparty Allocation is Complete, an InfoRequest / InfoRequestRepo Message is automatically sent, requesting the detail of the Allocation;
- For EB/IP on Repo: Compare the L2 Matching Field values with the values from the Counterparty. It is similar to FieldComparisonRequest message on Bonds/Equities;
- For EB/IP on all Products: Retrieve the Settlement Instructions supplied by the Counterparty.

4.2.2 Incoming Messages

Valid / Invalid

These messages are used to update the status of the outgoing TradeLevel / TradeDetail messages.

With a Valid message, Omgeo CTM accepts the message and gives it a specific identifier TradeSideId; this Id will be stored in a Message Attribute of the outgoing message.

An Invalid message means that the outgoing message contains an error (format issue, unknown counterparty...); the reason of the rejection can be found in the core of the message.

Invalid messages can be received on TradeLevel, TradeDetail, RejectCancel, RejectComponent and InfoRequest messages.

FieldComparisonResponse

The Mismatching fields (FieldLevelMatchStatus = MISM) are retrieved from the Message and the values sent by the Counterparty are stored as BO Message Attributes.

[NOTE: For Repo, FieldComparisonResponse message does not exist and a InfoResponse Repo is used instead.]

MultiTradeLevelResponse / MultiTradeDetailResponse / MultiInfoResponseRepo

Depending of the type of Request, two different usages are made of these messages:

- Buy Request: an action will be performed on the related outgoing message; the action to be applied is defined in the TradeLevelResulAction / TradeDetailResultAction mappings;
- Against Request: two different cases are managed:
  - Unmatched Status: if an Unmatched Trade can be found in one Response message, an Exception is thrown explaining that a Trade has been alleged against you (NOTE: The incoming message is attached to the Exception);
  - Matched / Complete Status: if an Allocation is completed by the Counterparty, an action is performed on the waiting InfoRequest / InfoRequestRepo to retrieve the detail of the allocation.

InfoResponse / InfoResponseRepo

These messages are used in different cases:

- Allocation Process - They are used to automatically performed the ALLOCATE action on the Block Trade and create the Allocation Trades.

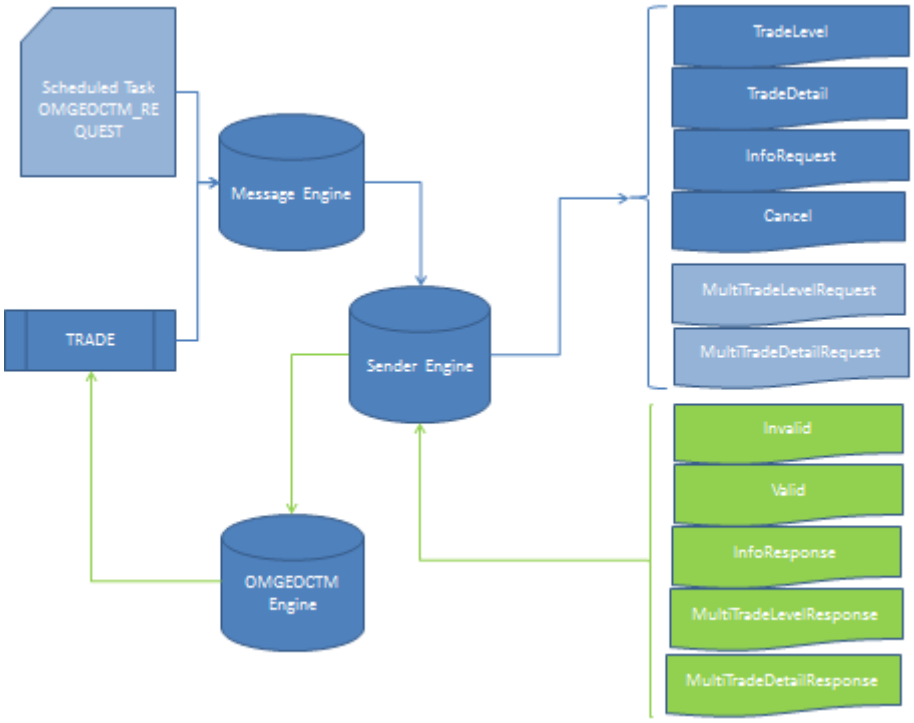
  The Counterparty of each Allocation Trade is determined by the combination of OmgeoCTMParticipant / OmgeoCTMAlertAccessCode listed in the message.

  If no Legal Entity can be retrieved based on these criteria, the following logic applies:

  - If a value is set in the Processing Org's Legal Entity Attribute OmgeoCTMAllocationUnknownCpty, Allocation is booked with the value of this Attribute; the actual Counterparty being be stored in the Trade Attribute PlatformCptyParticipant;.
  - If not, the Allocation is not booked and an exception is thrown.
- Settlement Allocation Process

They are used to automatically retrieve the SDI from the Counterparty, when they have been provided.

4.2.3 Summary: Logical Architecture



Monitoring and Matching

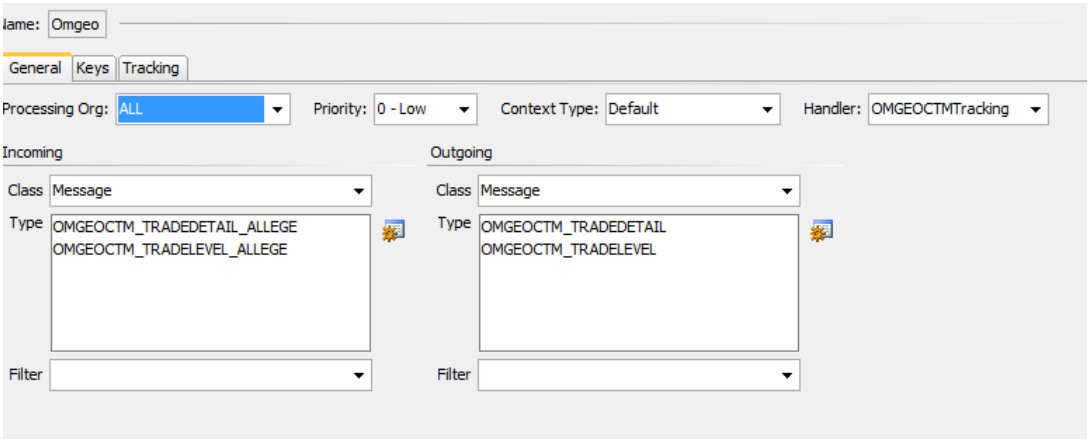
Omgeo CTM module benefits from Calypso's matching framework to investigate the trades alleged by counterparties and the unmatched submitted trades.

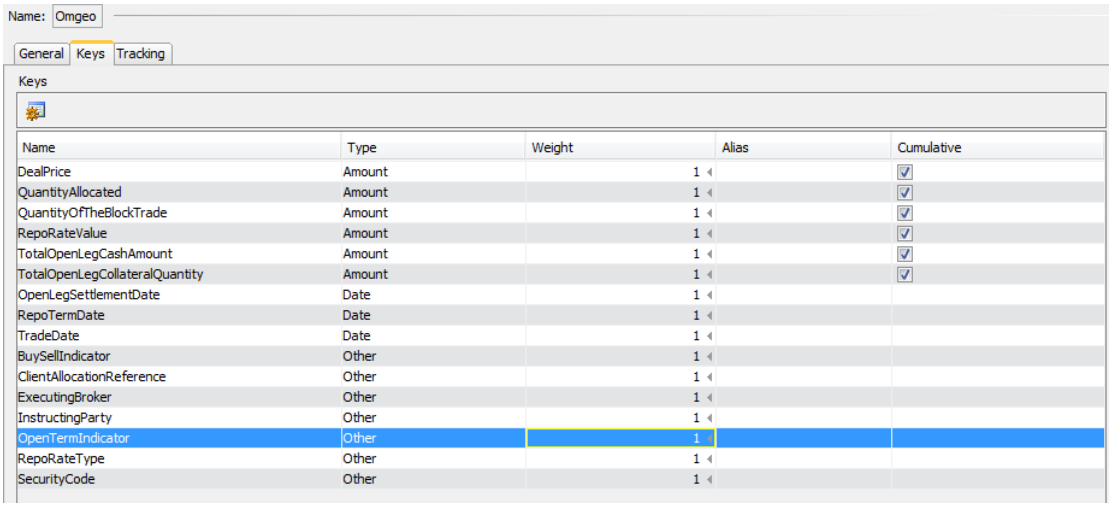
5.1 Configuration

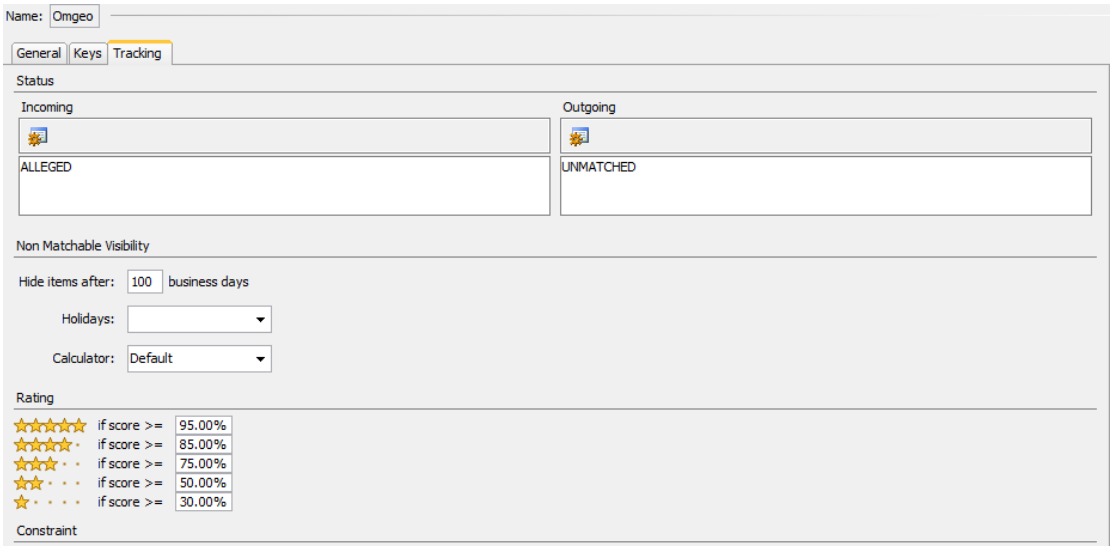
A Omgeo CTM matching context should be created using OMGEOCTMTracking Handler. The matching is not really performed as it is the role of CTM; the purpose is to track the alleged messages and the unmatched messages to match them and see what differences may explain that TRAX does not match the messages.

Any L1 Pairing fields can be used as Matching Keys and depending on the Message workflow, any status can be monitored.

The below setup is recommended:

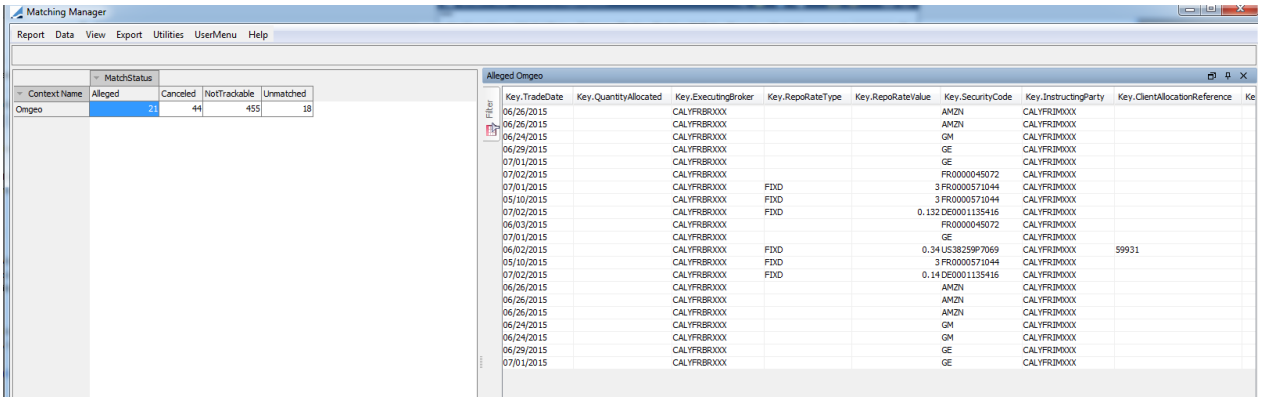




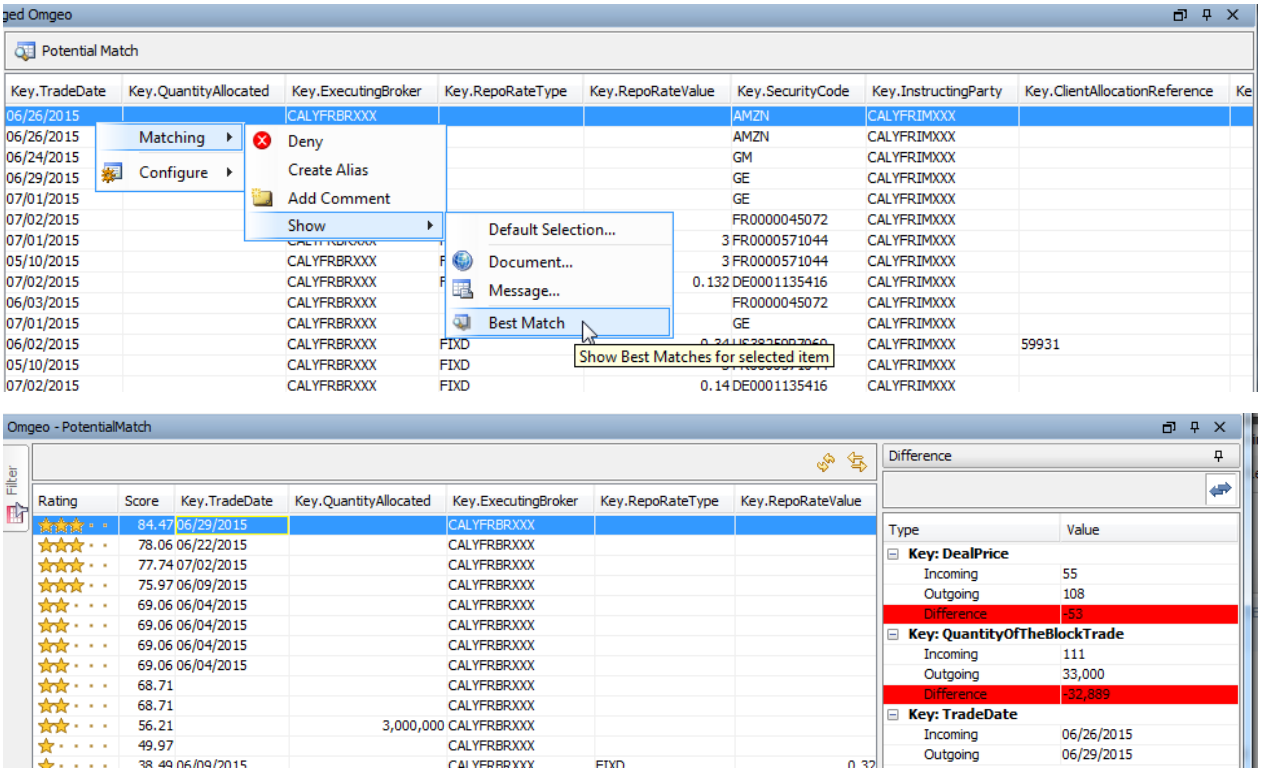


5.2 Investigating Alleged messages

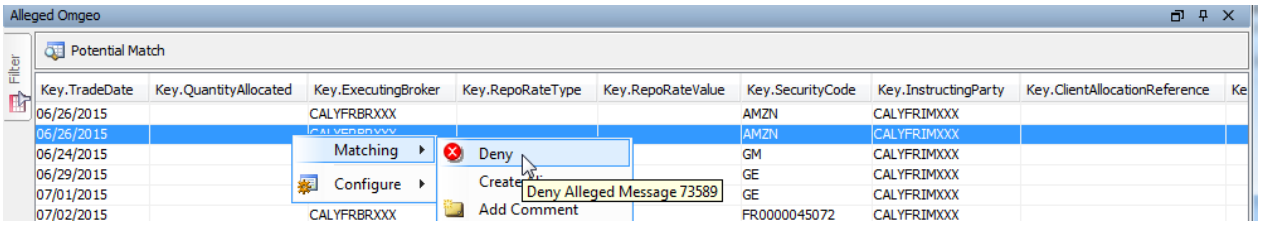
Once your matching context is configured, the Matching Engine and the Matchable Builder Engine should be run to start the tracking process. The result can be seen in real-time from the Matching Manager Window.



When bringing up the Details panel for Alleged items, you can click Best Match to search for the best match for this item. The Best Match is computed based on the matching context configuration.



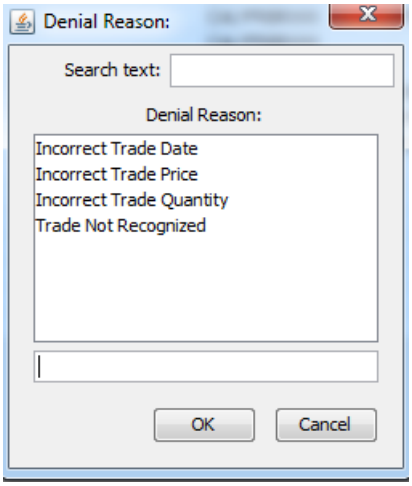
To reject an Alleged trade, select the corresponding incoming message in the detail view or the best match view. A Deny button will appear in the Matching Window toolbar. A Deny menu item is also available in the context menu appearing when right-clicking on the incoming message.



When clicking on Deny, the following pop-up window will appear. This window contains a list of the denial reasons as defined in OMGEOCTM.DenialReasons Domain Value.

5.3 Matching Alleged messages

When an Alleged Message is matched through CTM, the MATCH action is applied on it and it is remove from the Matching Manager.


Denial Reason:
Search text:
Denial Reason:
Incorrect Trade Date
Incorrect Trade Price
Incorrect Trade Quantity
Trade Not Recognized
OK
Cancel

Appendix

6.1 SettlementTransactionConditionIndicator

Value	Description
144A	Unregistered Security Issued Pursuant to Rule 144A
BLCH	Transaction is a block trade child
BLPA	Transaction is a block trade parent
BUTC	Buy to Cover
CLEN	Settlement of tax-exempt financial instruments
COLA	Security eligible for collateral purposes
COLN	Security not eligible for collateral purposes
CROS	Indicates that the trade is cross-border
DIRT	Settlement of taxable financial instruments
DOME	Indicates that the trade is domestic
EXER	Exercised
EXPI	Expired
FRCL	Free Clean Settlement
FUSD	Full Payment
GB2X	No Stamp Duty Reserve Tax (SDRT) liability, transfer result of corporate action
GB3X	No SDRT liability, intra-group transfer, a letter of direction executed
GB4X	No SDRT liability, stock loan return or transfer DBV collateral, relating to loans
GB5X	No SDRT liability, letter of direction executed
GB6X	No SDRT liability, AUT merger, or AUT/OEIC conversion/amalgamation
GB7X	No SDRT liability, security on an overseas register
GBAX	No SDRT liability, change of trustee

Value	Description
GBBX	No SDRT liability, transfer to beneficiary
GBCX	No SDRT liability, transfer intestate
GBDX	No SDRT liability, appropriation on death
GBEX	No SDRT liability, confirmation of traditional option
GBFX	No SDRT liability, hedge against traditional option
GBGX	No SDRT liability, transfer on marriage
GBHX	No SDRT liability, transfer on divorce
GBIX	No SDRT liability, transfer on liquidation
GBLX	No SDRT liability, gift to living recipient
GBMX	No SDRT liability, death (varying disposition)
GBNX	No SDRT liability, result of automatic transformation
GBOX	No SDRT liability, transfer to/from nominee, with no change of beneficial owner
GBPX	0.5% ad Valorem SDRT
GBRX	1.5% ad Valorem SDRT
GBSX	No SDRT liability, transfer to exempt charity
GBTX	No SDRT liability, SDRT paid inside CREST on another CREST transaction
GBUX	No SDRT liability, stamp duty paid outside CREST
GBVX	No SDRT liability, NCBO-NCLO
GBWX	No SDRT liability, issuing house exemption on new issue
GBXX	No SDRT liability, synthetic SLR
GROS	Gross settlement system
HASD	Half Payment
IE1X	Irish 1% ad Valorem
IE8X	Irish exempt, new issue

Value	Description
IEYX	Irish exempt, NCBO
IEZX	Irish exempt, other reason than NCBO
NBEN	Do Not Change
NCCP	Settlement Instruction is not CCP eligible
NETS	Net settlement system
NLEG	Letter of guarantee is not accepted
NNET	Not eligible for netting
NPAR	Partial Settlement Not Allowed
NREG	Hold in Street Name
NRST	Ownership/Transfer Not Subject to Restrictions
NRTG	Settle through the Non-RTGS System
NSET	Settle through the Default Settlement System/Method
PART	Partial Settlement
PHYS	Physical Settlement
RPTO	Relates to a transaction that is for reporting purposes only
RSTR	Ownership/Transfer Subject to Restrictions
SHOR	Short Sale Indicator
SPDL	Special Delivery
SPST	Split Settlement
TRIP	Tri-party collateral segregation
UNEX	Unexposed
USTN	Uncertified Securities Tax not applicable
YBEN	Change
YCCP	Settlement Instruction is CCP eligible

Value	Description
YLEG	Letter of guarantee is accepted
YNET	Eligible for netting
YREG	Register Securities
YRTG	Settle through the RTGS System
YSET	Settle through the Alternate Settlement System/Method
ZENG	Zengin (JP)

6.2 PartyCapacityIndicator / DetailLevelPartyCapacityIndicator

Value	Description
AGEN	Trading as Agent
BAGN	Acting as Agent for Customer and Other Person
CAGN	Crossing as Agent
CPRN	Crossing as Principal
CRST	CrestCO (UK)
CUST	Settling as a Custodian
LCHL	The London Clearing House Ltd. (UK)
OAGN	Acting as Agent for Person Other than Customer
PRAG	Acting as Agent for Some Executions and Principal
PRIN	Trading as a Principal
PROA	Principal, Agent, and Agent for Others
RLPN	Trading as a Riskless Principal
SAGE	Settling as an Agent
SCOM	SIS - Sega/Intersettle (Switzerland)
SPRI	Settling as a Principal