

Nasdaq Calypso DSMatch Integration Guide

Version 5.5.0

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Revision	Published	Summary of Changes			
1.0	June 2013	Initial Version			
2.0	December 2013	Added changes for November service pack and added legal entity screenshots			
3.0	December 2013	Added changes for December service pack			
4.0	April 2014	Added changes for April 2014 service pack 1.3.7			
5.0	July 2014	Added changes for July 2014 service pack 1.3.8			
6.0	August 2014	Added changes for August 2014 service pack 1.3.9			
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8.0	September 2015	Added changes for September 2015 service pack 1.4.0			
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10.0	May 2019	Added changes for May 2019 service pack 3.3.1			
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12.0	December 2021	Version 3.5.0 – Technical release only			
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15.0	January 2024	Version 5.4.0 - Technical release only – Version 18 compatibility			



Revision	Published	Summary of Changes
16.0	February 2024	Version 4.2.0 – Technical release only Version 5.5.0 - – Technical release only



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Release Notes

1.1 Important notes

Please note that the current DSMatch interface supports the FPML-5.3 format only.

1.2 August 2022 – Version 4.1.0

Dependencies

• Calypso 17 September 2022 MR

Component	HD/Case	RPM	lssue	Туре	Description
DSMatch 4.1.0		RPM- 10844	DSM-194	Sec	Issue – Secure JaxbUnmarshaller. Fix – Addressed security issue with JaxbUnmarshaller.

1.3 August 2022 – Version 3.6.0

Dependencies

• Calypso 16.1 August 2022 MR

Component	HD/Case	RPM	lssue	Туре	Description
DSMatch		RPM-10795	DSM-196	Sec	Issue – Secure JaxbUnmarshaller.
3.6.0					Fix – Updated Infosec library to version 4.1.19 to address security issue with JaxbUnmarshaller.

1.4 August 2021 – Version 3.4.0

Dependencies

• Calypso 16.1 September 2021 MR

Component	HD/Case	RPM	Issue	Туре	Description
DSMatch 3.4.0		RPM-4313	DSM-181	Enh	Issue – Technical issue - Changes for using "internal" Data Uploader module.
DSMatch 3.4.0			DSM-174	Enh	Issue – Technical issue - Remove all instances of e.printStackTrace() and replace with log.



Component	HD/Case	RPM	Issue	Туре	Description
DSMatch 3.4.0	172099		DSM-170	lssue	Issue - Trade is created but TradeID and DSMATCHMSG are missing from message report. Already in 3.3.1.
DSMatch 3.4.0			DSM-167	Enh	Issue - Support int and long for the trade ID for the CalypsoTrade and CalypsoTradeKeywords. Already in 3.3.1.

1.5 May 2019 service pack 3.3.1

HD172099 / DSM-169 – Trade is created but TradeID and DSMATCHMSG are missing from message report.

DSM-166 - Support int and long for the trade ID for the CalypsoTrade and CalypsoTradeKeywords.

1.6 March 2019 service pack 3.3.0

HD172098 / DSM-152: Add rule SendNotification to the DSMatch jar.

DSM-164: DSMatch unable to apply action on trade with workflow rule UpdateLinkedToKeyword.

DSM-155: SQL Binding Implementation.

1.7 September 2015 service pack 1.4.0

Please run Execute SQL for DSMatch interface.

HD121925 / DSM-101: Add support for USI/UTI reporting keywords coming in the incoming message as trade keywords and adding the reporting keywords in the acknowledgement sent to DSMatch.

See Support for Reporting Keywords for details.

1.8 November 2014 service pack 1.3.10

HD112234: Trade Allocation support in DSMatch interface in CCP mode: We have fixed an issue reported for a negative test case in the HD for Allocated trades where multiple client/fund legal entities are configured with same DSMatch participant attribute and different clearing brokers as Calypso legal entity parent.

1.9 August 2014 service pack 1.3.9

HD112234: Trade Allocation support in DSMatch interface in CCP mode: We have tested the working of allocation in CCP mode for the DSMatch interface. The fund entity comes as an account reference in the incoming message from DSMatch and needs to be configured as a DSMatchParticipant attribute in one of the calypso legal entity. This



legal entity will be connected to the block or the client entity in Calypso via the PlatformParent attribute. If there are multiple funds configured in calypso with the same BIC code from DSMatch then the corresponding Client entity needs to be also set as a Calypso Legal entity parent on the fund entity.

1.10 July 2014 service pack 1.3.8

This is an internal release done for the Calypso version 14 compatibility.

1.11 April 2014 service pack 1.3.7

Please update the latest dsmatchconfig.properties while installing the interface.

HD107125: Client clearing trade booking through DSMatch interface is now supported with the same client setup as segregated with one clearing broker and Omnibus with another clearing broker. We now support multi-level hierarchy for Client-ClearingBroker configuration. In below configuration, if we select DSM_CLI_BIC1 as a client and DSM_BRK_BIC2 as a clearing broker in DSMatch trade then in calypso trade we will have the counterparty as C2 and clearing broker as CB2 respectively.



In the figure above:

- DSM_BRK_BIC1 / DSM_BRK_BIC2 DSMatch Clearing Broker BIC codes
- DSM_CLI_BIC1 DSMatch Client BIC code
- C1 / C2 Calypso legal entities for client
- CB1/CB2 Calypso legal entities for clearing brokers
- OMNI Calypso legal entity for Omnibus (No DSMatch BIC associated)

HD107125 / DSM-81: DSMatchOriginalCounterparty trade keyword is now set properly in case the same client is configured as segregated with one clearing broker and Omnibus mode with another clearing broker.



1.12 December 2013 service pack

Changes in December service pack

HD104251 / DSM-76: Incorrect rejection format is getting generated for trades getting rejected at message level. The acknowledgement format for rejections at message level has been changed to ClearingRefused as expected by DSMatch.

HD102112: Different rejection reason for pair of trade issue. We have resolved this issue in the current service pack.

1.13 November 2013 service pack

Changes in November service pack

HD97848 / DSM-64 / DSM-51: Client clearing trade support. We have added the support for affiliate and client clearing trades submitted through DSMatch. The LE attribute PlatformRole having values HOUSE/CLIENT is introduced at the parent most entity to identify the client versus house clearing. We now the legal entity combinations like:

- Client Client
- House House
- Affiliate Affiliate
- Fund Fund
- Client House
- Client Affiliate
- Client Fund
- House Affiliate

ا 🗸	Legal Entity Attributes Window - Version - 0									
	l	Legal Entity HOUSE_PARTY1 Role ALL								
F	Proce	ssing Org	ALL		•					
	Attr	ibute Type	PlatformRole		▼ Value	HOUSE				
_										
	Id	Processing Org	Legal Entity	Role	Attribute Type	Attribute Value				
	6602	ALL	HOUSE_PARTY1	ALL	PlatformRole	HOUSE				
. (6603	ALL	HOUSE_PARTY1	ALL	DSMatchParticipant	house_counterparty1				
(6604	ALL	HOUSE_PARTY1	ALL	CCPHouseBook	TRADINGA				



Introduction

This document describes the Calypso DSMatch Interface setup. The DSMatch interface is used to clear / declear FX trades.

The interface is comprised of the DSMatch engine which listens to a Message Queue (MQ). It subscribes to Message and Trade events. The events are triggered as soon as a message is posted into the input queue.

The engine is also responsible to send out acknowledgements back to MQ depending on the status / state of the message / trade.

The DSMatch message flows through the configured workflows that route the message to appropriate stages until completion.

The document describes the configuration required to setup the workflows, engine etc. for the DSMatch interface to run successfully.

2.1 Product Coverage

The DSMatch interface supports following FX products:

• FXNonDeliverableForward (FXNDF)

2.2 Software Requirements

2.2.1 Supported JDK Versions

JDK (based on the core Calypso version).

2.2.2 Supported FPML versions

Table 1-1 lists the FPML versions for assets supported by Calypso's

DSMatch interface:

Assets	FPML Version
FX Non Deliverable Forward (FXNDF)	5.3



Installation Instructions

3.1 Data Uploader Installation

Refer to the Data Uploader Integration Guide for installation and configuration information. You must install and configure the Calypso Data Uploader prior to configuring the DSMatch. The use of the DSMatch interface requires the Data Uploader.

3.2 Installation

When installing Calypso, select the DS Match Interface in the Calypso Installer.



When you run Execute SQL as part of your installation, the DSMatch files will be already loaded. You just need to check "dsmatch" and "gateway" (in addition to you other modules).



Setup Requirements

4.1 Importing Message Workflows

You can import the workflows from the Workflow window: UPLOADSOURCEMSG.wf", "DSMATCHMSG.wf" and "FXNDF.wf". This gives the standard workflow for Gateway BO Messages.

Choose **Workflow > Import Current**. The following window appears.

Select Workflow To Process	X
Processing Org ALL	
Event Class PSEventMessage 💌 Subtype UPLOADSOUR 💌 Product ALL	•
Apply	Cancel

Select the Event class as "PSEventMessage", Subtype as "UPLOADSOURCEMSG" and click Apply.

You will be prompted to confirm:

Question
This will import Workflow for : Event Class:PSEventMessage Product Type: ALL Type: UPLOADSOURCEMSG Processing Org: ALL Do you want to continue ? Yes

Click Yes.

You will then be prompted to select the workflow file:





The system prompts to remove the current workflow. Click No.



The following window appears indicating that workflow import is successful.



Repeat the above steps for the DSMATCHMSG workflow.



UPLOADSOURCEMSG Workflow



Make sure that the workflow rule SendNotification is added on the transition PENDING – PROCESS – RECEIVED:

🛃 WorkFlow Action (User:)					_ 🗆 🗙
Id 1027			Action PROCES	ŝS	
Orig Status PENDING		Result	Status RECEIVE	ED	
Event Class PSEventMessage		S	ubtype UPLOAD	SOURCEMSG	
Product ALL		Processir	ng Org ALL		
Different User	reate Task	⊡ Use S	TP	🗌 Use Kicko)ff/Cut Off
ELog Completed	referred Action	∏Updat	te Only	□Generate	Intermediary
				⊡Needs ma	an, Auth,
Rules SendNotification				Hel.	
Filter		Cu	stom Rules Def	inition	
Comment					
		Save	Delete	Close	



DSMATCHMSG Workflow



4.2 Importing Trade Workflow

Please make sure that you have the processing org HKEX already setup.

For the trade workflow, the first step changes as shown in the screenshot below:

Select Workflow To Process	X
Processing Org HKEX	
Event Class PSEventTrade Subtype ALL Product FXNE)F 🔻
Apply	Cancel

The FXNDF trade workflow: Make sure all the rules are present and the PO is HKEX (The one that has book mapping) is also configured.





Id	Orig Status	Action	Resulting Status	Different User	Use STP	Log	Subtype	Product Type	Rules	Processing Org	Kick Off/ Cut Off
37435	5 CLEARED	DECLEAR	DECLEAR_MARGIN				ALL	FXNDF		HKEX	
37436	DECLEAR_MARGIN	DECLEAR_ACCEPT	DECLEARED				ALL	FXNDF	ApplyLinkedTradeAction,DeclearAction	HKEX	
37437	DECLEAR_MARGIN	DECLEAR_REJECT	CLEARED				ALL	FXNDF	ApplyLinkedTradeAction	HKEX	
37438	BLINKED	AMEND	PENDING				ALL	FXNDF	ApplyLinkedTradeAction	HKEX	
37439	LINKED	MARGIN_CHECK	MARGIN_CHECKED				ALL	FXNDF	ApplyLinkedTradeAction	HKEX	
37440	MARGIN_CHECKED	CLEAR	CLEARED				ALL	FXNDF	ApplyLinkedTradeAction	HKEX	
3744:	MARGIN_CHECKED	CLEAR_REJECT	CLEAR_REJECTED				ALL	FXNDF	ApplyLinkedTradeAction	HKEX	
37442	2 NONE	NEW	PRICING				ALL	FXNDF		HKEX	
37443	PENDING	AMEND	PENDING				ALL	FXNDF		HKEX	
37444	1 PENDING	CANCEL	CANCELED				ALL	FXNDF	Cancel	HKEX	
37445	5 PENDING	LINK	LINKED		1		ALL	FXNDF	UpdateLinkedToKeyword	HKEX	
37446	5 PRICING	AMEND	PRICING				ALL	FXNDF		HKEX	
37447	PRICING	CANCEL	CANCELED				ALL	FXNDF		HKEX	
37448	PRICING	EXECUTE	PENDING		1		ALL	FXNDF	UpdateLinkedToKeyword	HKEX	
3744, 37448	PRICING PRICING	EXECUTE	PENDING		7		ALL	FXNDF	UpdateLinkedToKeyword	HKEX	

4.3 Task Station Setup

The DSMatch interface creates task station entries for all the messages and exceptions that are encountered. The user can view / reprocess the messages that are failed in validation from the task station.

Add DSMatchMessages and DSMatchExceptions tabs in the Task Station as shown below.

DSMatch Messages



🥖 User Task St	tation Defaults [120000/12/ca	ilypso_user]		
User Name	calypso_user calyps	o_user ▼ Config Na	ame Settleme	nts
Start Days	0 End Days 2	Filter		
Date Type	TaskDatetime 🔻			
Books		Book Attrs		
Inherit				
	Merge To Group	Duplicate To User	Duplicate	To Grou
Tab Name	DSMatch Messages			List of Defined Tabs
Event Class	Message 🔹			SDI Assign Auth Queue
Event Types	ACKED UNMATCHED_DSMATCH	/ISG		Transfers in Netting Queue
	ACKED_DSMATCHMSG		>>	Pay/Rec Msg for Man Relea Up
				Edited Messages Auth Que
All	BACKLOAD_DSMATCHMSG			Held Messages
Clear	CANCELED_DSMATCHMSG	ic.		Confirmation Matching Actic
Color	COMPLETED DSMATCHMSG	9		Nacked Pay/Rec Messages 😑
	CONFIRMED DSMATCHMSG			Other Exceptions
Set	DK_ACKNOWLEDGED_DSMATCH	MSG		Credit Event Monitor
Remove	DK_DSMATCHMSG			Alleged Sec Settlements
	DK_ERROR_DSMATCHMSG			Gateway Messages
Priority	EDITED_DSMATCHMSG			Gateway Exceptions
	ERROR_DSMATCHMSG			DSMatch Exceptions
	EX_DSMATCHMSG		-	DSMatch Messages
A A A	EX DSMATCHMSG ERROR			
Internal Defer		>>		

DSMatch Exceptions

🔀 User Task St	ation Defaults [120000/12/ca	alypso_user]
User Name Start Days Date Type	calypso_user calyps 0 End Days 2 TaskDatetime	o_user ▼ Config Name Settlements
Books		Book Attrs
Tab Name Event Class Event Types All Clear Color	Merge To Group DSMatch Exception Exception EX_DSMATCHMSG EX_DSMATCHMSG_ERROR EX_DSMATCHMSG_REJECT EX_DSMATCHMSG_WARNING	Duplicate To User Duplicate To Grou List of Defined Tabs Transfers for SDI Assigned SDI Assign Auth Queue Transfers in Netting Queue Pay/Rec Msg for Man Relea Pay/Rec Messages to be sei Edited Messages Auth Queu Held Messages Confirmation Matching Actic Nacked Pay/Rec Messages Up



The exceptions can be viewed in the task station. The below screen shot displays exceptions:

🛃 Task Statio	n//	/Settleme	nts (User: calypso_user)								
Configure A	nfigure ApplyStatus Priority Action Inspect Utilities Find Help										
From 05/20/2 To 05/25/2	012	2 Date Tyj 2 Time Zo	pe TaskDatetime Vere Ever	nt Class Trade ID Load Process	▼ Fre	e F	LoadRei Pass Over	f Local filter None Complete			
+ root)	Trade wit	hout SDI Trade with SDI Char	nged Transfers for SDI Assi	ined SDI A	issign Auth Que	eue Transfe	rs in Netting Queue Pay/Rec Msq for Man Release Pay/Rec Messages to be sent Edited Messages Auth Queue Held Messages			
		Confirm	ation Matching Actions Nac	cked Pay/Rec Messages 01	her Exception	s Credit Ev	ent Monitor	Alleged Sec Settlements Gateway Messages Gateway Exceptions USMatch Messages [1/]			
		FI UM U3/2	0/2012 10 05/25/2012								
		Task Id	Trade Id / Status	Date & Time	Book	Task Status	Task Owner	Comment			
		86376	0 PENDING_TRADE	5/21/12 4:18:45.214 PM IST		NEW		Amount is not equal to Price * Quantity. Secondary amount is not valid for the given Primary Amount, Spot and Forward point. : 1000000			
		86373	0 PENDING_TRADE	5/21/12 4:18:31.379 PM IST		NEW		Amount is not equal to Price * Quantity. Secondary amount is not valid for the given Primary Amount, Spot and Forward point. : 1000000			
		85866	0 PENDING_VALID	5/21/12 3:44:15.471 PM IST		NEW		Invalid FX Reset Rate. : KRW-USD-BLOOMBERG			
		85863	OPENDING_VALID	5/21/12 3:44:03.574 PM IST		NEW		Invalid FX Reset Rate, : KRW-USD-BLOOMBERG			
		86368	O PENDING_VALID	5/21/12 4:12:25.006 PM IST		NEW		Currency should be deliverable. : KRW			
		86365		5/21/12 4:12:01.385 PM IST	TRADING	NEW		Currency should be deliverable, : KRW			
		84303	21228 COMPLETED	5/21/12 12:45:45.479 PM IST	TRADINGB	NEW		type=waming~subtype=waming~tem=isvalio~msg=irade isvalio has returned wamings~value=USMATCH_DEVISCHE BANK NY_MSEF https://ligning.eu/btwp=//ligning.ittmp=is/alid_msg=Trade is/alid_bas returned warnings~value=USMATCH_DEVISCHE BANK NY_MSEF			
		04000	21229 COMPLETED	5/21/12 12:30:10:742 FM 131	TRADINGC	NEW		iype=waining~subype=waining~iem=isyaing~mag=made isyaing has returned warnings~value=bowaitoH_cALiF30_MoEry2347A12 type=Warning-subype=Warning-ittem=isyaing-mag_Trade isyaing has returned warnings-walue=bowaitoH_CALiF30_MoEry2347A12			
		85366	21720 COMPLETED	5/21/12 3:06:49 444 PM IST	TRADINGD	NEW		type=waining*soutype=waining*tem=svaiu*msg=nade isvaiu*nas returned warnings*value=bowartch_bcv/socie brink tri_mscr tyne=Warning*si htyne=Warning*tem=isValid-wen=Trade isValid has returned warnings*value=DGM&TCH_C&/VPGO_MSERV234EV12			
		87368	22728 PENDING VALID	5/22/12 5:16:36.479 PM IST	TRADINGE	NEW		reported in the state of the st			
		87375	22729 PENDING VALID	5/22/12 5:26:00.789 PM IST	TRADINGC	NEW		type=invalidData~subtype=~item=Trade Action~mso=Trade Already exists with External Reference~value=DSMATCH_DSM_CLIENT_AC(
		87371	22729 PENDING_VALID	5/22/12 5:16:51.651 PM IST	TRADINGC	NEW		Trade Already exists with External Reference : DSMATCH_DSM_CLIENT_ACCOUNT_MSERV234FX1234			
			· · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·			

4.4 Calypso Mapping Window Setup

Mapping from Calypso values to the MarkitServ-DSMatch values.

All the columns / types of calypso that have different values at MarkitServ-DSMatch side need to be mapped with corresponding calypso values from the Calypso Mapping Window (menu action mapping.CalypsoMappingWindow).

Add the mapping for the currency pair and the fx-reset name. The Mapping window will look like as shown below:



4.5 DSMatch Engine Setup

The DSMatch engine is responsible for both getting messages from sender MQ and also sending back the acknowledgements to the recipient MQ.

The engine handles the Message and Trade events.

4.5.1 Setup the Queue Config File

If the config name passed to the engine is set to "DSMatchFX", then there should be a config file existing with the name "calypso_dsmatchfx_config.properties".

This file contains the properties used to identify the input and output queues. The following are the properties in the config file:

```
# DSMatch Import Message Engine (MQ)
```

#Inbound queue details
input.queue.name=dynamicQueues/InputQ
dynamicQueues/InputQ.queue.setContext=true

```
#For ActiveMQ
jms.url=tcp://localhost:61616
jms.modetypeclass=org.apache.activemq.jndi.ActiveMQInitialContextFactory
jms.queue.connectionFactory=ConnectionFactory
```

#Qutbound queue details
output.queue.name=dynamicQueues/OutputQ
dynamicQueues/OutputQ.queue.ackType=auto
dynamicQueues/OutputQ.queue.persist=true
dynamicQueues/OutputQ.queue.transacted=false

4.5.2 Configure the properties for 2 CCP-ID Mode

We can configure the DSMatch interface to work with 2 CCP ID generation in the acknowledgements or single Id depending upon the requirements.

The property file to edit for this is "dsmatchconfig.properties".

The below is the snapshot of the property file. We can set the "twoCCPIdMode" flag as true/false as per the requirement.





```
# Map DSMatch products to <u>Calvpso Identifers</u>.
# DO NOT MODIFY.
fxNDF=FXNDF
# This flag is used to generate XML files from the FPML Messages. Two XML files are generated for every FPML
# message. One file is the FPML message itself, the other is <u>Calvpso</u> Data Upload XML (which is the <u>Calvpso</u>
# representation of the FPML. Please refer to documentation for more details.
# The files are generated in USER_HOME\<u>Calvpso\dsmatch</u>
DEBUG_XML=true
# This flag indicates the 2 ccp id to be sent in the acks if true, else the engine will send only 1 ccp id
```

twoCCPIdMode=false

Please note that the "DEBUG_XML" property can be set if we need the incoming messages to be archived for debugging / retesting purposes.

4.5.3 Configuring DSMatch Engine

The DS Match 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 DSMatchFXDSMatchImportMessageEngine with class name com.calypso.tk.engine.ImportMessageEngine.

It subscribes to PSEventTrade and PSEventMessage events.

The "config" engine parameter is config = DSMatchFX

Filter = DSMatchImportEngineEventFilter

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

Please refer to Calypso Web Admin documentation for complete details.

4.6 Legal Entity Mapping for Member

Given the party information, the Legal Entity (Counterparty) will be identified in calypso using the Legal Entity attribute DSMatchParticipant and the value would match the party ID given in FPML.

The fetching logic will first search for the attribute and if not found then it will search for an entity having a matching shortname.

The PlatformRole attribute identifies the LE being in hierarchy of HOUSE / CLIENT.

HOUSE Entities:



🖊 Legal Entity- 🛛	Versio	n - 2 [130	0035P1/133sp1	l/calypso_u	ser]			
Utilities Help					-			
Short Name	HOUSE	E_PARTY1			Status	Enabled	d	-
Full Name	HOUSE	E_PARTY1			Role(s)	Counte	rParty	-
Parent	í –					Process	singOrg	
Country		D STATES		·				
Inactive As From	i—		User calvp	so user	<u></u>			
Entered Date	09/16	/2013	6:00:42 AM					
External Ref					Disabled Role(s)			
Holidays	-		_	Financial				
riolidays	1			C Non Final	ncial			
						Πī	riparty Substitutions	
🗾 Legal Entity	Attrib	utes Win	dow				_ □	×
Legal Er	ntity	HOUSE P	PARTY1		Role ALL		_	
Processing O	rg							,
Attribute T	ype	ACCOUN	TING	•	Value			
					1 .			_
Id	Process	ing Org	Legal Entity	Role	Attribute Ty	pe	Attribute Value	- 1
6603 ALL			HOUSE_PARTY1		DSMatchParticipa	nt	house counternarty1	- 1
6604 ALL			HOUSE PARTY1	ALL	CCPHouseBook		TRADINGA	
					1	1		
🟒 Legal Entity- 🛛	Versio	n - O [130	0035P1/133sp1	L/calypso_u	ser]			
Legal Entity- Utilities Help	Versio	n - 0 [130	0035P1/133sp1	L/calypso_u	ser]		_	
Legal Entity- Utilities Help Short Name	Version HOUS	n - 0 (130 E_PARTY2	0003SP1/133sp1	L/calypso_u	ser] Status	Enable	d	-
Utilities Help Short Name Full Name	Version HOUSI	n - 0 [130 E_PARTY2 E_PARTY2	00035P1/133sp1	l/calypso_u	ser] Status Role(s)	Enable	d rParty	Ŧ
Utilities Help Short Name Full Name Parent	Version HOUSE HOUSE	n - 0 [130 E_PARTY2 E_PARTY2	00035P1/133sp1	l/calypso_u	ser] Status Role(s)	Enable Counte Process	d rParty singOrg	•
Utilities Help Short Name Full Name Parent Country	HOUSI HOUSI HOUSI	n - 0 [130 E_PARTY2 E_PARTY2 ED STATES	00035P1/133sp1	L/calypso_u	ser] Status Role(s)	Enable Counte Process	d rParty singOrg	•
Utilities Help Short Name Full Name Parent Country Inactive As From	HOUSI HOUSI HOUSI	n - 0 [130 E_PARTY2 E_PARTY2 ED STATES	0003SP1/133sp1	L/calypso_us	ser] Status Role(s)	Enable Counte Process	d rParty singOrg	T
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date	HOUSE HOUSE HOUSE UNITE	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013	00035P1/133sp1	L/calypso_u	ser] Status Role(s)	Enable Counte Process	d ırParty singOrg	•
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref	HOUSI HOUSI HOUSI UNITE	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013	00035P1/133sp1	L/calypso_u	ser] Status Role(s) Disabled Role(s)	Enable Counte Process	d rParty singOrg	••••
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	HOUSI HOUSI UNITE	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013	00035P1/133sp1	L/calypso_us	ser] Status Role(s) Disabled Role(s)	Enable Counte Process	d rParty singOrg	•
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	HOUSI HOUSI UNITE	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013	00035P1/133sp1	L/calypso_u 	ser] Status Role(s) Disabled Role(s)	Enable Counte Process	d :rParty singOrg	
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	HOUSI HOUSI UNITE	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013	User calyp 6:05:05 AM	L/calypso_us iso_user C Financial C Non Fina	ser] Status Role(s) Disabled Role(s)	Enable Counte Process	d rParty singOrg	
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	Version HOUSI HOUSI UNITE 09/16,	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013	00035P1/133sp1	L/calypso_us	ser] Status Role(s) Disabled Role(s)	Enable Counte Process	d rParty singOrg	····
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	HOUSI HOUSI UNITE 09/16,	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 Ites Wind HOUSE P/	00035P1/133sp1	L/calypso_user	ser] Status Role(s) Disabled Role(s) ncial	Enable Counte Process	d rParty singOrg	×
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	HOUSI HOUSI UNITE 09/16, 09/16, ity	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 ttes Wind HOUSE_P/	00035P1/133sp1	L/calypso_us so_user Non Fina	ser] Status Role(s) Disabled Role(s) Role Role Role ALL	Enable Counte Process	d rParty singOrg	• •••
Legal Entity Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	HOUSI HOUSI UNITE 09/16, 09/16, ity	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 HOUSE_P/ ALL	00035P1/133sp1	L/Calypso_us 	ser] Status Role(s) Disabled Role(s) Role Role ALL	Enable Counte Process	d rParty singOrg	• •••
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	Attribu g pe	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013	00035P1/133sp1	L/Calypso_us 	ser] Status Role(s) Disabled Role(s) ncial Value Value	Enable Counte Process	d rParty singOrg	×
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	HOUSI HOUSI UNITE 09/16, 09/16, ity g	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 ttes Wind HOUSE_P/ ALL ACCOUNT	00035P1/133sp1	L/calypso_us 	ser] Status Role(s) Disabled Role(s) Role Value	Enable Counte Process	d rParty singOrg riparty Substitutions 	×
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	Version HOUSI HOUSI UNITE 09/16, 09/16, 109/10	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2014 /201	User calyp 6:05:05 AM low ARTY2 ING Legal Entity	I/calypso_us	ser] Status Role(s) Disabled Role(s) Colored Role(s) Role ALL Value Attribute Typ	Enable Counte Process	d rParty singOrg riparty Substitutions	
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	Version HOUSI HOUSI UNITE UNITE O9/16, O9/16, o	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2014 /201	User calyp 6:05:05 AM 6:05:05 AM low ARTY2 ING Legal Entity HOUSE_PARTY2	L/calypso_us	ser] Status Role(s) Disabled Role(s) ncial Role ALL Value Attribute Typ PlatformRole		d rParty singOrg riparty Substitutions	
Legal Entity- Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays Legal Entity Legal Entity Legal Entity Inactive As From Entered Date External Ref Holidays	Version HOUSI HOUSI UNITE UNITE 09/16, 09/16, g tity g pe	n - 0 [130 E_PARTY2 E_PARTY2 D STATES /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2013 /2014 /201	ING Legal Entity HOUSE_PARTY2 HOUSE_PARTY2	L/calypso_us	ser] Status Role(s) Disabled Role(s) Disabled Role(s) Role ALL Value Attribute Typ PlatformRole DSMatchParticipar CCPUHaueParticipar CCPUHaueParti	Enable Counte Process	d rParty singOrg riparty Substitutions	×



4.7 Legal Entity Mapping for Client

🗾 Legal Entity- V	ersion - 1 [13	00035P1/133sp1/	calypso_us	er]	
Utilities Help					
Short Name	CLIENT_PARTY	1		Status Enable	ed 💌
Full Name	CLIENT_PARTY	1		Role(s) Count	erParty
Parent	CLIENT_BROKE	R1		Proces	ssingOrg
Country	UNITED STATES	5	•		
Inactive As From		User calypso	_user		
Entered Date	09/16/2013	6:11:52 AM			
External Ref				Disabled Role(s)	
Holidays			Financial Non Financial	ncial	
					Triparty Substitutions
Legal Entity A	ttributes Win	dow	_	<u> </u>	
Legal Entit	ty CLIENT_F	PARTY1		Role ALL	_
Processing Org	ALL		-		
Attribute Typ	e ACCOUN	TING	▼	Value	
Id Pro	ocessing Org	Legal Entity	Role	Attribute Type	Attribute Value
6617 ALL		CLIENT_PARTY1	ALL	PlatformRole	CLIENT
🟒 Legal Entity- V	ersion - 0 [13	00035P1/133sp1/	calypso_us	ser]	
Utilities Help					
Short Name	CLIENT_PARTY	2		Status Enab	led 💌
Full Name	CLIENT_PARTY	2		Role(s) Coun	terParty
Parent					ssingorg
Country	UNITED STATES	5	▼		
Inactive As From		User calypso	_user		
Entered Date	09/16/2013	6:17:37 AM			
External Ref			Einandial	Disabled Role(s)	
Holidays			C Non Finar	ncial	
				, 	Triparty Substitutions
📕 Legal Entity A	ttributes Win	dow			
Legal Enti	ty CLIENT F	PARTY2		Role ALL	-
Drocessing Ora				- 1	
Processing Org	ALL				
Attribute Typ	e ACCOUN	TING	• •••	Value	
Id Pr	ocessing Org	Legal Entity	Role	Attribute Type	Attribute Value
6623 ALL	occosing org	CLIENT_PARTY2	ALL	DSMatchParticipant	client_counterparty2
6624 ALL		CLIENT_PARTY2	ALL	PlatformRole	CLIENT



4.8 Legal Entity Mapping for Broker

	/ersion - 0 [1]	300035P1/133sp1	1/calypso_u	ser]	
Utilities Help					
Short Name	CLIENT_BROK	ER1		Status	Enabled
Full Name	CLIENT_BROK	ER1		Role(s)	Broker
Parent					CounterParty ProcessingOrg
Country	UNITED STATE	ES	•		
Inactive As From		User calyp	so_user		<u> </u>
Entered Date	09/16/2013	6:31:35 AM	1		
External Ref				Disabled Role(s)	
Holidays			Financial O Non Eina	ncial	
			O NOTTING	ndar	Triparty Substitutions
Legal Entity A	ttributes Wir	ndow			
Legal Enti	ty CLIENT_	BROKER1		Role ALL	<u> </u>
Processing Org	ALL		T		
Attribute Typ	e ACCOUN	ITING	▼	Value	
Id Pro	ocessing Org	Legal Entity	Role	Attribute Typ	e Attribute Value
6635 ALL		CLIENT_BROKER1	ALL	CCPClientBook	TRADINGA
		·			
∠ Legal Entity- V	/ersion - 0 [13	30003SP1/133sp1	/calypso_us	er]	
Legal Entity- V Utilities Help	/ersion - 0 [13	30003SP1/133sp1	/calypso_us	er]	
Legal Entity- V Utilities Help Short Name	/ersion - 0 [13 CLIENT_BROKE	300035P1/133sp1 ER2	/calypso_us	er] Status	Enabled
Legal Entity- V Utilities Help Short Name Full Name	/ersion - 0 [13 CLIENT_BROKE CLIENT_BROKE	300035P1/133sp1 FR2 FR2	/calypso_us	er] Status Role(s)	Enabled
Legal Entity- V Utilities Help Short Name Full Name Parent	/ersion - 0 [13 CLIENT_BROKE CLIENT_BROKE	800035P1/133sp1 ER2 ER2	/calypso_us	er] Status Role(s)	Enabled Broker CounterParty ProcessingOrg
Legal Entity- V Utilities Help Short Name Full Name Parent Country	CLIENT_BROKE	300035P1/133sp1 FR2 FR2 FS	/calypso_us	er] Status Role(s)	Enabled 💌 Broker CounterParty ProcessingOrg
Legal Entity- V Utilities Help Short Name Full Name Parent Country Inactive As From	(ersion - 0 [13 CLIENT_BROKE CLIENT_BROKE UNITED STATE	300035P1/133sp1 ER2 ER2 SS User Calyps	/calypso_us	er] Status Role(s)	Enabled Broker CounterParty ProcessingOrg
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date	CLIENT_BROKE CLIENT_BROKE UNITED STATE	800035P1/133sp1 ER2 ER2 S User Calyps 6:32:23 AM	/calypso_us	er] Status Role(s)	Enabled Broker CounterParty ProcessingOrg
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013	300035P1/133sp1 ER2 ER2 SS User calyps 6:32:23 AM	/calypso_us	er] Status Role(s) Disabled Role(s)	Enabled Broker CounterParty ProcessingOrg
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE	800035P1/133sp1 ER2 ER2 S User calyps 6:32:23 AM	/calypso_us so_user Financial C Non Finar	er] Status Role(s) J Disabled Role(s) ucial	Enabled Broker CounterParty ProcessingOrg
Legal Entity- V Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013	300035P1/133sp1 ER2 ER2 SS User calyps 6:32:23 AM	/calypso_us so_user Financial Non Finar	er] Status Role(s) Disabled Role(s)	Enabled Triparty Substitutions
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013	800035P1/133sp1 ER2 ER2 S User calyps 6:32:23 AM	/calypso_us so_user Financial Non Finar	er] Status Role(s) Disabled Role(s) ncial	Enabled Broker CounterParty ProcessingOrg Triparty Substitutions
Legal Entity- V Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013	800035P1/133sp1 ER2 ER2 S User calyps 6:32:23 AM	/calypso_us so_user Financial Non Finar	er] Status Role(s) Disabled Role(s) ncial	Enabled Broker CounterParty ProcessingOrg Triparty Substitutions
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013 CLIENT_BROKE UNITED STATE	800035P1/133sp1 ER2 ER2 ER2 SS G:32:23 AM G:32:23 AM SROKER2	/calypso_us so_user C Financial C Non Finar	er] Status Role(s) Disabled Role(s) ncial	Enabled Broker CounterParty ProcessingOrg Triparty Substitutions Triparty Substitutions Triparty
Legal Entity- V Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013 CLIENT_ ty CLIENT_ ALL	800035P1/133sp1 ER2 ER2 S User calyps 6:32:23 AM Mow BROKER2	/calypso_us so_user Financial Non Finar 	er] Status Role(s) Disabled Role(s) ncial	Enabled Broker CounterParty ProcessingOrg Triparty Substitutions Triparty
Legal Entity- V Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013 ttributes Win ty CLIENT_ ALL ALL ACCOUN	800035P1/133sp1 ER2 ER2 SS User calyps 6:32:23 AM 6:32:23 AM 	/calypso_us v so_user O Financial Non Finar v v	er] Status Role(s) Disabled Role(s) ncial Role ALL	Enabled Broker CounterParty ProcessingOrg Triparty Substitutions Triparty Substitutions Triparty
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays Legal Entity A Legal Entity Processing Org Attribute Typ	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013 CUIENT_ CLIENT_ ALL ACCOUN	800035P1/133sp1 ER2 ER2 S User calyps 6:32:23 AM S BROKER2 ITING	/calypso_us value	er] Status Role(s) Disabled Role(s) ncial Role ALL Value	Enabled Broker CounterParty ProcessingOrg Triparty Substitutions Triparty Substitutions
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013 09/16/2013 ty CLIENT_ ALL ACCOUN Decessing Org	BROKER 2	/calypso_us	er] Status Role(s) IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Enabled Froker CounterParty ProcessingOrg Triparty Substitutions Triparty Substitutions Attribute Value t client clearinghroker 2
Utilities Help Short Name Full Name Parent Country Inactive As From Entered Date External Ref Holidays Legal Entity A Legal Entity A Legal Entit Processing Org Attribute Typ Id Pro 6637 ALL 6638 ALL	CLIENT_BROKE CLIENT_BROKE UNITED STATE 09/16/2013 ttributes Win ty CLIENT_ ALL ACCOUN Decessing Org	BOOD35P1/133sp1	/calypso_us	er] Status Role(s) Disabled Role(s) dial Role ALL Value Attribute Type DSMatchParticipan CCPClientBook	Enabled Broker CounterParty ProcessingOrg Triparty Substitutions Triparty Substitutions Attribute Value Client_clearingbroker2 TRADINGB



4.9 Legal Entity Mapping for Affiliates

Add the DSMatchParent attribute to identify the legal entity code of the affiliate.

🗾 Legal Entity- Ver	sion - 0 [1300035P1/133sp1/ca	alypso_user]	
Utilities Help			
Short Name HC	DUSE_PARTY1_AFFILIATE		Status Enabled
Full Name HO	DUSE_PARTY1_AFFILIATE	F	Role(s) CounterParty
Parent			ProcessingOrg
Country UN	NITED STATES	▼	
Inactive As From	User calypso_	user	
Entered Date 09	0/16/2013 6:03:21 AM		
External Ref		Disabled	Role(s)
Holidays		Financial	
,		Non Financial	
			Triparty Substitutions
Legal Entity Attrib	utes Window		_ 🗆 ×
Legal Entity	HOUSE_PARTY1_AFFILIATE	Role ALL	
Processing Org			
riocessing org			
Attribute Type	ACCOUNTING	··· Value	
Id Processing C	Drg Legal Entity	Role Attribute	Type Attribute Value
6606 ALL	HOUSE_PARTY1_AFFILIATE	ALL DSMatchParti	icipant house_counterparty1_affiliate
6607 ALL	HOUSE_PARTY1_AFFILIATE	ALL PlatformParer	nt house_counterparty1

Similarly, you can cofigure for the other party.





	Caliba M		0[100000	n1/1001/		1		
Legar	Help	ersion -	0[1300035	P1/133Sp1/Ca	iypso_u	serj		
oundes	nap					_		
Sho	ort Name	HOUSE_F	PARTY2_AFFIL	IATE			Status	Enabled 💌
F	ull Name	HOUSE_F	PARTY2_AFFIL	IATE			Role(s)	CounterParty
	Parent							ProcessingOrg
	Country	UNITED	STATES		•			
Inactive	As From			User calypso_u	iser	_		
Enter	red Date	09/16/20	13	6:06:38 AM	_			
Exte	ernal Ref			_		Disable	ed Role(s)	
	Holidays			··· °	Financial Non Fina	ancial		
								Triparty Substitutions
📕 Legal	Entity A	ttribute	s Window					Triparty Substitutions
🥖 Legal	Entity A	ttribute				Pole		Triparty Substitutions
<mark> Legal</mark>	Entity Al	t tribute y HO	s Window	AFFILIATE		Role	ALL	Triparty Substitutions
Legal L L	Entity At .egal Entit	ttribute: y HO ALL	s Window USE_PARTY2_	AFFILIATE		Role	ALL	Triparty Substitutions
Legal L Proce Attr	Entity Al .egal Entit ssing Org ibute Type	ttribute y HO ALL e AC	s Window USE_PARTY2_ - COUNTING	AFFILIATE	 	Role Value	ALL	Triparty Substitutions
Legal L Proce Attr	Entity Al Legal Entit Issing Org ibute Type	ttribute: y HO ALL ≘ AC	s Window USE_PARTY2_ - COUNTING	AFFILIATE		Role Value	ALL	Triparty Substitutions
Legal L Proce Attr	Entity A egal Entit ssing Org ibute Type Process	y HO ALL a AC	s Window USE_PARTY2_ - COUNTING	AFFILIATE		Role Value Attribu	ALL Jte Type	Triparty Substitutions
Legal L Proce Attr Id 6613	Entity Al Legal Entit ssing Org ibute Type Process ALL	y H0 ALL ≥ AC	s Window USE_PARTY2_ - COUNTING Lega HOUSE_PART	AFFILIATE AFFILIATE AFFILIATE	Role ALL	Role Value Attribu DSMatchP	ALL ute Type 'articipant	Triparty Substitutions

If one of the parties in the trades is an Affiliate entity, then the parent entity is stored as the trade counterparty and the affiliate entity is stored in a trade keyword – "PlatformCP".

Please refer the screenshot below, showing the keyword on the trade:

Keywords	
Q.→ Filter Keywords	
DSMatchTradeRefNbr	TW9679
CCPGroupId	
CCPTradeID	
CCPAccount	HOUSE
CCPOriginCode	HOUSE
CCPRejectReason	
CCPFCM	
CCPMessageTimestamp	2010-10-31T18:08:40.335-05:00
CCPClientTradeType	
CCPFund	
CCPClearedVer	
CCPExecutionSource	
CCPClearedDatetime	
CCPClearingBroker	
CCPClearedDate	
CCP	
DSMatchPayerPartyRef	MSERV_BIC00009999
DSMatchReceiverPartyRef	MSERV_BIC00001111
DSMatchOriginalCounterparty	DEALERCORP
DSMatchMatchId	MSERV234FX122222Samb
PlatformCP	OMNIBANK_AFFILIATE



4.10 Legal Entity Mapping for Funds

∠ Legal Entity- Ve	ersion - O	[1300035P1/133	sp1/caly	ypso_u	ser]		
Utilities Help							
Short Name	CLIENT_P/	ARTY1_FUND1			_	Status	Enabled _
Full Name	CLIENT_P/	ARTY1_FUND1				Role(s)	CounterParty
Parent							ProcessingOrg
Country	UNITED ST	TATES	-	•			
Inactive As From		User c	alypso_us	er			
Entered Date	09/16/201	3 6:16:30	AM				
External Ref					Disable	d Role(s)	
Holidays 🛛			0	Financial Non Fina	ancial		
						I	Trinarty Substitutions
			_				
🔀 Legal Entity At	tributes	Window					<u>X</u>
Legal Entity		NT_PARTY1_FUND1			Role	ALL	•
Processing Org	ALL		-				
Attribute Type		OUNTING			Value		
Attribute Type		CONTING			Value		
Id Process	sing Org	Legal Entity		Role	Attribu	ite Type	Attribute Value
6620 ALL		CLIENT_PARTY1_FU	ND1 A	LL I	DSMatchPa	articipant	client_counterparty1_fund1
6621 ALL		CLIENT_PARTY1_FU	ND1 A	LL	PlatformPa	arent	client_counterparty1

4.11 Book Mapping

The FpML message is modeled as two trades. The CCP is the PO for both the trades. The Members are counterparty to the trades. Each member's trade is stored in their own books.

Once the legal entity (Counterparty) is identified as shown above, the book will be identified using the attribute CCPHouseBook on the chosen legal entity, the value of this attribute will give the Book to be used in Calypso and the PO of this book will be the CCP. For Client clearing the book is stored on the Broker legal entity with the attribute – CCPClientBook.



🗾 Legal Entity	y Attrib	utes Windov	w - Version - O					<u> </u>
Legal B	Entity	OMNIBANK			Role ALL		•]
Processing	Org	ALL		-				
Attribute	Туре	CCPHouseBo	ook 🔹	•	Value TRAD	INGC		
Id	Proce	essing Org	Legal Entity	Role	Attribute	Туре	Attribute Value	9
47971	ALL		OMNIBANK	ALL	DSMatchPartici	pant	MSERV_BIC00009999	9
47972	ALL		OMNIBANK	ALL	CCPHouseBook		TRADINGC	

w Help								
Book I	d 37			Attributes				
Nam	e TRADINGC		_		Name			Value
Activit	y DEBT			AccAdjustment(AccDateRule	Days		v	
Accounting Lin	K TRADING2		-	AccReversalRul BookBundle	e		*	
Legal Entit	y HKEX			CAMoneyDiff Bo CTC Compound	ook ing			
Locatio	n GMT		•	CTC Consolidat	or		v 	
End Of Da	y 23 Hour	r 59 Min		CTC Role	V V			
Base Co	e Ccy USD		DayChangeRule	e e				
Holiday	's			Domiciliation Drawn MM Book	(v v	
Commer	t Testing only							
Id 🔬 🔰 I	Vame	Legal Entity		Location	Activity	Accounting Link	Base Currency	End Of Day Tim
1 NONE		NONE	GMT			NONE	USD	
32 TRADINGA		BRANCHE1	GMT		DEBT	TRADING1	USD	
33 PLACEMA		BRANCHE1	GMT		DEBT	PLACEM1	USD	
34 INVESTA		BRANCHE1	GMT		DEBT	INVEST1	USD	
35 TRADINGB		HKEX	GMT		DEBT	TRADING1	USD	23
37 TRADINGC		HKEX	GMT		DEBT	TRADING2	USD	23

🖊 Legal Entit	y Attrib	utes Windo	w - Version - O			
Legal I	Entity	DEALERCOR	(P		Role ALL	Y
Processing	Org	ALL	•	·]		
Attribute	Туре	CCPHouseB	ook 💌	·	Value TRADINGB	
Id	Proce	essing Org	Legal Entity	Role	Attribute Type	Attribute Value
47969	ALL		DEALERCORP	ALL	DSMatchParticipant	MSERV_BIC00001111
47973	ALL		DEALERCORP	ALL	CCPHouseBook	TRADINGB



Book Window - Version -2 [13	0000/1300/adr	nin]					
View Help							
				- 1			
Book Id 35			Attributes				
		_				1	Uniter
				Name			value
Octivity DERT		_	AccAdjustmentD	ays			
ACTIVICY [DEBT			AccDateRule			v	
Accounting Link TRADING1		-	AccReversalRule			v	
		_	BOOKBUNDIE	-1.			
Legal Entity HKEX			CAMONEYDITT BO	DK.			
		-	CTC Compoundin	ig		*	
Location GMT		Ψ.	CTC Consolidato	r		*	
			CTC Orrset			* 	
End Of Day 23 Hour	59 Min		CIC Role			* _	
Dava Carl UCD			Can Take Positio	ns		*	
base CCV OSD		<u> </u>	DayChangeRule			-	
Holidays		l l	Drawp MM Rook			* -	
10.000/01		<u> </u>	JDrawn MM DOOK			1*	
Comment Testing only							
1 .							
Id 🔬 Name	Legal Entity		Location	Activity	Accounting Link	Base Currency	End Of Day Time
1 NONE	NONE	GMT			NONE	USD	0
32 TRADINGA	BRANCHE1	GMT		DEBT	TRADING1	USD	0
33 PLACEMA	BRANCHE1	GMT		DEBT	PLACEM1	USD	0
34 INVESTA	BRANCHE1	GMT		DEBT	INVEST1	USD	0
35 TRADINGB	HKEX	GMT		DEBT	TRADING1	USD	2359

4.12 Mapping for Acknowledgements

The following domain values needs to be mapped for sending RECEIVED/CLEARED/DECLEARED/REJECTED acknowledgements back to MARKITSERV.

Domain Values:

Clearing.Trade.RejectStatus

Clearing.Trade.RejectAction

DeClearing.Trade.RejectStatus

DeClearing.Trade.RejectAction

Clearing.Trade.AcceptStatus

Clearing.Trade.AcceptAction

DeClearing.Trade.AcceptStatus

DeClearing.Trade.AcceptAction

Clearing.Trade.ParkedStatus

Clearing.Trade.ParkedAction

Clearing.Message.RejectStatus

Clearing.Message.ReceivedStatus



🔎 Domain Values Window (User: calypso_user)	
Search: RECEIVED Find 🗖 Value	
Search: RECEIVED Find Value Image: CFDRiskArbitrage.Pricer Image: CFDRiskArbitrage.subtype Image: CFDRiskArbitrage.subtype Image: CFDRiskArbitrage.subtype Image:	Name: Clearing.Trade.RejectAction Value:
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MQ Setup

The DSMatch interface reads messages from a JMS Provider (like IBM MQ) via the DSMatch engine and translates them into CalypsoUploadDocument format. This is then passed to the Data Uploader for validation/upload into calypso.

The Following are the steps to be followed to support real time messaging via IBM MQ or any other JMS Provider like Apache Active MQ.

5.1 Pre Requisites

- Installation IBM MQ / Active MQ (or another JMS Provider)
- Queues / Queue manager should already be created by customer
- Calypso with DSMatch & DataUploader configured.

5.2 DSMatch Configuration for JMS Support

This section covers installation and configuration of JMS Support in DSMatch.

5.2.1 Installation

Ensure that appropriate jars are set in the Classpath. Each JMS provider will have different jars required. We are providing an example for Websphere MQ and Active MQ below.

DSMatch

The dsmatch jar should already be in classpath.

For IBM WebShere MQ:

com.ibm.mq.commonservices.jar

com.ibm.mq.headers.jar

com.ibm.mq.jar

com.ibm.mq.jmqi.jar

com.ibm.mq.jms.Nojndi.jar

com.ibm.mq.pcf.jar

com.ibm.mqjms.jar

connector.jar

fscontext.jar



jms.jar jndi.jar providerutil.jar com.ibm.mq.jmqi.jar dhbcore.jar

For Active MQ

activemq-core-5.5.0.jar (or whatever version the customer is using)

kahadb-5.5.0.jar

5.2.2 Calypso Configuration

The following configuration needs to be done in Calypso

- DSMatch engine for Receive Messages (Receiver Queue)
- Acknowledgements: DSMatch engine to send ACK / NACK messages to Sender Queue.

The DSMatch engine listens to JMS Queue (Receiver Queue) based on the Message engine configuration. Any SOAP (having FPML embedded) message placed on the queue is read by the engine and then translated to CalypsoUploadDocument and finally Uploaded into Calypso. Acknowledgements generated are sent back to the Sender Queue using the same Engine.

5.2.3 Configuring DSMatch Engine

To configure the DS Match engine, please change the following in the calypso_uploader_config.properties.

1. Connection Details for the JMS

Please uncomment the appropriate block for Active MQ or Websphere MQ. The sample below shows the connection for Active MQ, where as Websphere MQ is commented. So, please keep one of the blocks below

```
# Connection Details for JMS
# Start Connection Details for ActiveMQ
jms.url=tcp://localhost:61616
jms.modetypeclass=org.apache.activemq.jndi.ActiveMQInitialContextFactory
jms.queue.connectionFactory=ConnectionFactory
# End Connection Details for ActiveMO
```

```
# Start Connection Details for IBM Websphere MQ
```



Please see documentation (appendix) on how to generate

this bindings files

#jms.url=file://localhost/usr/local/calypso/resources/dsmatch/binding

#jms.modetypeclass=com.sun.jndi.fscontext.RefFSContextFactory

#jms.queue.connectionFactory=QueueConnectionFactory

End Connection Details for IBM Websphere MQ

2. Input Queue Name. Please keep one of the blocks below based on the JMS provider.

Input Queue Name (Active MQ)
Note that for ActiveMQ the queue name has to prefix with
'dynamicQueues/', so the following is needed for Active MQ
input.queue.name=dynamicQueues/inputqueue
dynamicQueues/inputqueue.gueue.setContext=true

Input Queue Name (Websphere MQ)
input.queue.name=inputqueue

inputqueue.queue.setContext=true

3. Output Queue Name: Please keep one of the blocks below based on the JMS provider.

Output Queue Name (Active MQ)
Note that for ActiveMQ the queue name has to prefix with
'dynamicQueues/', so the following is needed for Active MQ
output.queue.name=dynamicQueues/outputqueue
dynamicQueues/outputqueue.queue.ackType=auto
dynamicQueues/outputqueue.queue.persist=true
dynamicQueues/outputqueue.queue.transacted=false

Output Queue Name (Websphere MQ)
output.queue.name=outputqueue
outputqueue.queue.ackType=auto
outputqueue.queue.persist=true
outputqueue.queue.transacted=false

4. MQ user name

The below step is to be done for connecting to a remote queue manager having the user configuration done as previously mentioned.



Set the following property having the username of the MQ user setup on remote queue manager.
jms.queue.connectionUserName=mq user

5. MQ user password

Set the following property having the password of the MQ user setup on remote queue manager.

jms.queue.connectionPassword=<password>

6. App Id Data user and password

Set the following properties having the username and password given by DTCC which will be set as ApplIdenttityData field in the message header.

<OutputQueueName>.queue.appiddatauser=<username>

<OutputQueueName>.queue.appiddatapass=<password>

5.2.4 Start the DSMatch Engine

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



Appendix: Websphere MQ Setup

The following steps are to be performed only when using IBM MQ Series.

IBM WebSphere MQ Installation

1. Install IBM MQ Series.

2. Create Queues.

- Launch MQ Explorer and create the following
- Queue Manager
- Input Queue
- Output Queue

3. Create Binding File for JMS Connectivity.

Binding File for JMS Connectivity

Websphere MQ requires a bindings file to be created for JMS usage. This file has configuration which allows Java to connect to Websphere as a MQ. The process is as follows

- Generate Bindings file as explained below, which is used as PROVIDER_URL to connect to the Middleware.
- Link the Bindings file in the DSMatch Import Message Engine for JMS Provider setup. E.g. see the line below to be changes in the DSMatch Import Message Engine configuration file.

#jms.url=file://localhost/usr/local/calypso/resources/dsmatch/binding

6.1 Generating Bindings

• Backup your JMSAdmin.config file if already present in environment. Rename the file src/main/resources/dsmatchJMSAdmin.config to JMSAdmin.config

This is required since IBM tools to generate bindings only read JMSAdmin.config. So, please be sure to backup any earlier JMSAdmin.config file so that it can be restored.

• Edit the file src/main/resources/JMSAdmin.config and change the following properties

PROVIDER_URL=file:/usr/local/calypso/resources/dsmatch/binding (this indicates the path to the bindings file and the name of the file will be ".bindings";)

SECURITY_AUTHENTICATION=none (authentication model)

• Edit the file **src/main/bin/dsmatchMQSeries.bat** and change the highlighted text (which are the Queue Manager Name, Input queue name and Output queue name).



@echo off

_____ rem rem this batch file is used to generate the bindings that are used by the connection factory. rem replace InputQueueName with the name of the input queue rem replace OutputQueueName with the name of the output queue rem replace QM Name with the name of the Queue Manager rem change the classpath to the appropriate path rem -----echo + Creating script for object creation within JMSAdmin echo del qcf(QueueConnectionFactory) > dsmatchmqsetup.scp echo del q(<mark>CalypsoToClient</mark>) >> dsmatchmqsetup.scp echo del q(<mark>ClientToCalypso</mark>) >> dsmatchmqsetup.scp echo def qcf(QueueConnectionFactory) TRAN(CLIENT) HOST(127.0.0.1) PORT(1414) qmgr(QM.JM) CHANNEL(SYSTEM.ADMIN.SVRCONN)>> dsmatchmqsetup.scp echo def q(<mark>CalypsoToClient</mark>) qu(<mark>CalypsoToClient</mark>) qmgr(<mark>QM CALYPSO</mark>) tc(JMS)>> dsmatchmqsetup.scp echo def q(<mark>ClientToCalypso</mark>) qu(<mark>ClientToCalypso</mark>) qmgr(<mark>QM CALYPSO</mark>) tc(JMS)>> dsmatchmqsetup.scp echo end >> dsmatchmqsetup.scp set CLASSPATH="D:\\calypso\\software\\rel12sp6\\mq-jars\\com.ibm.mq.jar;D:\\calypso\\software\\rel12sp6\\mqjars\\com.ibm.mqjms.jar"

echo + CLASSPATH=%CLASSPATH%

echo + Calling JMSAdmin in batch mode to create objects

java -DMQJMS_LOG_DIR="%MQ_JAVA_DATA_PATH%"\log -DMQJMS_TRACE_DIR="%MQ_JAVA_DATA_PATH%"\errors -DMQJMS_INSTALL_PATH="%MQ_JAVA_INSTALL_PATH%" com.ibm.mq.jms.admin.JMSAdmin < dsmatchmqsetup.scp</pre>

echo + Administration done; tidying up files

del dsmatchmqsetup.scp

where

- QM_CALYPSO is Queue Manager
- CalypsoToClient is Input Queue
- ClientToCalypso is Output Queue

We are giving a sample for Windows. Please create a similar script for Unix and change to Unix format (% should change to \$ for variable names, change CLASSPATH to use Unix syntax).

Sample script for linux environment:



#!/bin/sh

#This script is used to create a MQ binding file. Please make sure that the directory specified in JMSAdmin.config PROVIDER URL exists in the disk. The usages of the script is as below: # sudo -u <user> ./createMQbinding.sh QM TEST.SENDQ TEST.RECVQ <hostname> <port> <client name> <client env name> QUEUE MANAGER=\$1 INPUT QUEUE=\$2 OUTPUT QUEUE=\$3 MQ HOST=\$4 MQ PORT=\$5 CLIENT=\$6 ENV=\$7 USER NAME=\$USER #USER_NAME=who BINARY_PATH="/usr/local/calypso/clients/\${CLIENT}/\${ENV}/jars" SCP FILE="\${ENV} `date +'%Y%m%d%H%M%S'`.scp" echo "del q(\$INPUT_QUEUE)" >> \$SCP_FILE echo "del q(\$OUTPUT QUEUE)" >> \$SCP FILE echo "def qcf(QueueConnectionFactory) TRAN(CLIENT) HOST(\$MQ HOST) PORT(\$MQ PORT) qmgr(\$QUEUE MANAGER) CHANNEL(SYSTEM.ADMIN.SVRCONN)" >> \$SCP FILE echo "def q(\$OUTPUT_QUEUE) qu(\$OUTPUT_QUEUE) qmgr(\$QUEUE_MANAGER) tc(JMS)" >> \$SCP_FILE echo "def q(\$INPUT_QUEUE) qu(\$INPUT_QUEUE) qmgr(\$QUEUE_MANAGER) tc(JMS)" >> \$SCP_FILE echo "end" >> \$SCP FILE CLASSPATH="\${BINARY PATH}/com.ibm.mq.jar:\${BINARY PATH}/com.ibm.mqjms.jar" echo "+ CLASSPATH=\$CLASSPATH" echo "+ Calling JMSAdmin in batch mode to create objects" java -cp \$CLASSPATH -DMQJMS LOG DIR="/home/\$USER NAME" -DMQJMS TRACE DIR="/home/\$USER NAME" -DMQJMS INSTALL PATH="/home/\$USER NAME" com.ibm.mq.jms.admin.JMSAdmin < \$SCP FILE echo "+ Administration done; tidying up files"

rm \$SCP FILE



- This batch file or the shell scipt calls the IBM JMSAdmin tool that looks for the property file JMSAdmin.config in the current directory. So, please run the script in the same directory where the JMSAdmin.config is present. This will create the binding file.
- After generating the bindings you can set the DSMatch Import Message Engine configuration appropriately.
- Run the batch file dsmatchMQSeries.bat as shown below

C:\calypso\software\dsmatch\src\main\resources>C:\calypso\software\dsmatch\src\main\bin\dsmatchMQSeries.ba

- + Creating script for object creation within JMSAdmin
- + Calling JMSAdmin in batch mode to create objects

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Starting Websphere MQ classes for Java(tm) Message Service Administration

JNDI initialization failed, please check your JNDI settings and service.

For additional information on the cause of this problem run with the -v argument

- + Administration done; tidying up files
- + Done!

t



Support for Reporting Keywords

DSMatch sends the USI/UTI values in the incoming trade, and we add the same on the Calypso trade as trade keywords.

As part of the acknowledgement, we send out the CCP generated USI/UTI back to DSMatch.

7.1 Incoming Messages

We support the following keywords from the incoming messages for the CFTC (DoddFrank) jurisdiction and the HKMA jurisdiction respectively:

- ReportingCFTCUSIPrefix
- ReportingCFTCUSIValue
- ReportingHKMAUTIPrefix
- ReportingHKMAUTIValue

These are the Alpha or bilateral USI/UTI which CCP receives from the platform. Both are populated if received in the incoming message.

7.2 Outgoing Ack message

CCP generates a Cleared USI / UTI and performs the following:

The following is the process to be followed:

1. Incoming message comes from DSMatch for Clearing to the CCP for both sides.

2. We save the USI/UTI values on the Calypso trade as indicated above.

3. The CCP will generate the new USIPrefix/USIValue for each side. CCP will move the current values in ReportingHKMAUTIPrefix and ReportingHKMAUTIValue into the ReportingHKMAPriorUTIPrefix and ReportingHKMAPriorUTIValue respectively and ReportingCFTCUSIPrefix and ReportingCFTCUSIValue into ReportingCFTCPriorUSIPrefix and ReportingCFTCPriorUSIValue respectively.

4. The CCP will populate the ReportingHKMAUTIPrefix, ReportingHKMAUTIValue, ReportingCFTCUSIPrefix and ReportingCFTCUSIValue with the new values that are generated by the CCP.

5. CCP will clear the trade which will make the new values to be sent to DSMatch platform as part of the Clearing accepted acknowledgement. The acknowledgement will have keywords from both sides of the trades.



The picture below shows the list of keywords on Calypso trade:

ReportingCFTCPriorUSIPrefix	1030338961
ReportingCFTCPriorUSIValue	MSFX201302040000000000000138381
ReportingCFTCUSIPrefix	1030338963
ReportingCFTCUSIValue	MSFX201302040000000000000138383
ReportingHKMAPriorUTIPrefix	1030338962
ReportingHKMAPriorUTIValue	MSFX201302040000000000000138382
ReportingHKMAUTIPrefix	1030338964
ReportingHKMAUTIValue	MSFX201302040000000000000138384