Nasdaq Calypso

Eurex FCM Integration Guide

Version 6.3.0

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Approved

Document History

Revision	Published	Summary of Changes
1.0	January 2024	First edition for version 6.3.0 (compatibility with version 18)

This document describes the Calypso EUREXFCM Interface setup.

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Introduction

Calypso OTC derivatives clearing member solution offers a complete solution for entities offering OTC clearing services to their internal trading desks as well as to external clients. The primary activities that the clearing member will be relying on Calypso for are:

The use of connectivity and STP workflow to automatically accept or reject trades submitted for clearing by their customers.

Management of cash and collateral related to the clearing activities, and

Generating client statements for their customers to summarize the day's activity.

The clearing process is similar across all CCPs where the trades are cleared via STP and then margin requirements, account positions, generating client statement, etc. processes are performed. However, every CCP has certain reporting specifications, files specifications according to which the system has to be configured to run the clearing process.

This document describes the Calypso EUREXFCM Interface setup.

Product Coverage and Scope

The Scope of this project is to build an interface to EUREX and process the incoming messages and persist those as trades for Clearing.

The Following are the product types supported:

IRS (Vanilla/OIS/Basis/ZC)

FRA

Cross Currency Swap

Basis Cross Currency Swap

FX clearing (FX Swap, FX Spot, FX Forward)

NDF

The Following are the messages supported

- Request Consent (BS_WAIT_TAKEUP)
- Clearing Confirmed (VERIFIED)
- Clearing Refused (BS_REJECTED)
- Netting (Full / Partial)
- Termination (Full / Partial)
- Transfer (Trade / Account)
- Amendment

- Update (The request can be sent either by DC or CM to execute an update on the trade in VERIFIED status. Thereby netting string, internal reference, source system legal entity id (MarkitWire BIC) and the legal entity id (LEI) can be changed)

Setup Instructions

2.1 Software Requirements

The following libraries are required as dependency for the EUREX module, you need to download the required dependency libraries files from the download website:

- Calypso-datauploader
- Calypso-cal-upload
- Calypso-lowlatency
- Calypso-eurexfcm

Version 4.8.0 and under

The following third-party jars are needed and should be added to classpath. These jars can be downloaded from apache. These jars are runtime dependent and the client needs to download their own version of the jars from apache.

qpid-client-0.28.jar

qpid-common-0.28.jar

camel-amqp-2.10.0.jar

geronimo-jms_1.1_spec-1.0.jar

Version 4.9.0 and above

camel-amqp-3.4.2.jar

geronimo-jms_2.0_spec-1.0-alpha-2.jar

netty-buffer-4.1.48.Final.jar

netty-codec-4.1.48.Final.jar

netty-codec-http-4.1.48.Final.jar

netty-common-4.1.48.Final.jar

netty-handler-4.1.48.Final.jar

netty-resolver-4.1.48.Final.jar

netty-transport-4.1.48.Final.jar

netty-transport-native-epoll-4.1.48.Final-linux-x86_64.jar

netty-transport-native-kqueue-4.1.48.Final-osx-x86_64.jar netty-transport-native-unix-common-4.1.48.Final.jar

proton-j-0.33.4.jar

qpid-jms-client-0.51.0.jar

Version 5.6.2 and above

The following libraries are now included in Eurex FCM module:

org.apache.qpid:proton-j

org.apache.qpid:qpid-jms-client

org.apache.geronimo.specs:geronimo-jms_2.0_spec

org.apache.camel:camel-amqp

io.netty:netty-buffer

io.netty:netty-codec

io.netty:netty-codec-http

io.netty:netty-common

io.netty:netty-handler

io.netty:netty-resolver

io.netty:netty-transport

io.netty:netty-transport-native-epoll

io.netty:netty-transport-native-kqueue

io.netty:netty-transport-native-unixcommon

2.2 Installation Instructions

2.2.1 Setup Config Data using Execute SQL

Upgrading the DB and associated Domain Values.

Add the following schema files present in /bin/dbscripts folder to the Execute SQL to Synchronize the DB.

- “SchemaBase.xml”,
- “GatewaySchemaBase.xml”
- “EurexFCMSchemaData.xml”

- “FpMLSchemaData.xml”

2.2.2 Task Station Configuration

Users can view EX_INCOMINGFEEDMSG exceptions in the Task Station for exceptions related to the integration of INCOMINGFEEDMSG messages.

Users can view INCOMINGFEEDMSG messages using <status code>_INCOMINGFEEDMSG.

Users can view EX_OUTGOINGFEEDMSG exceptions in the Task Station for exceptions related to the integration of OUTGOINGFEEDMSG messages.

Users can view OUTGOINGFEEDMSG messages using <status code>_OUTGOINGFEEDMSG.

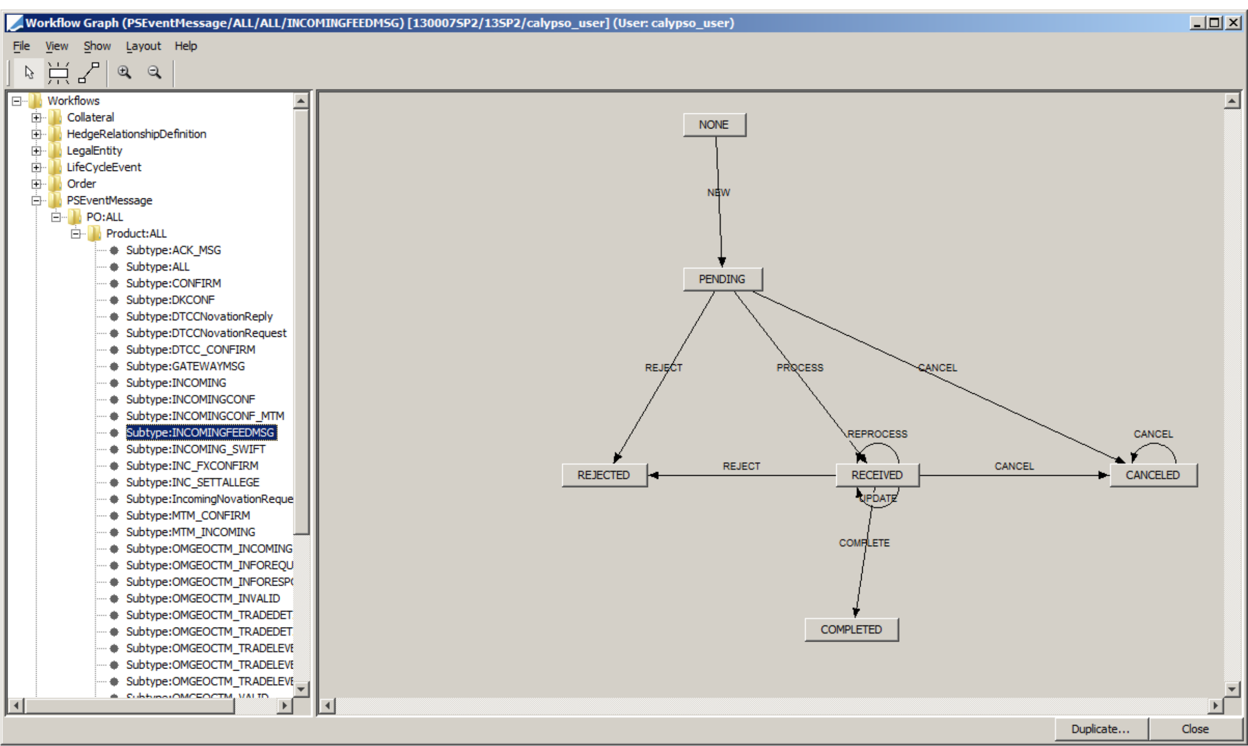
2.2.3 Workflow Setup

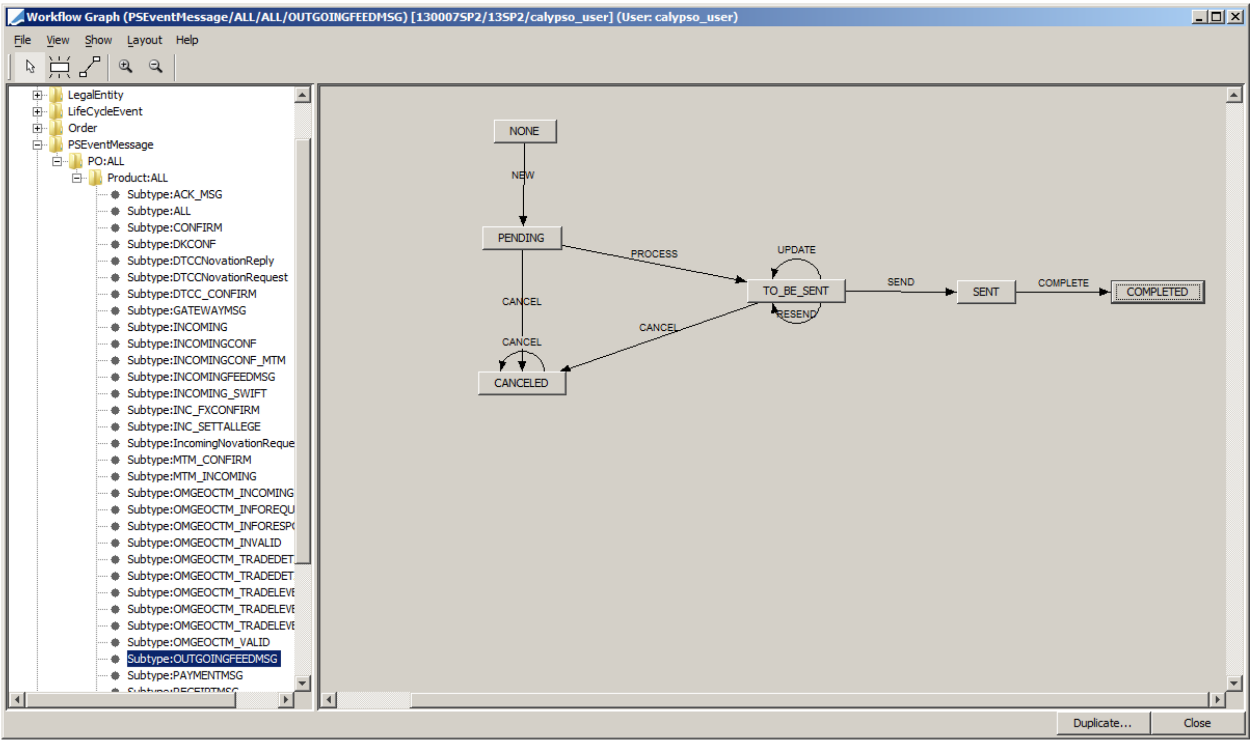
The following workflows should be imported:

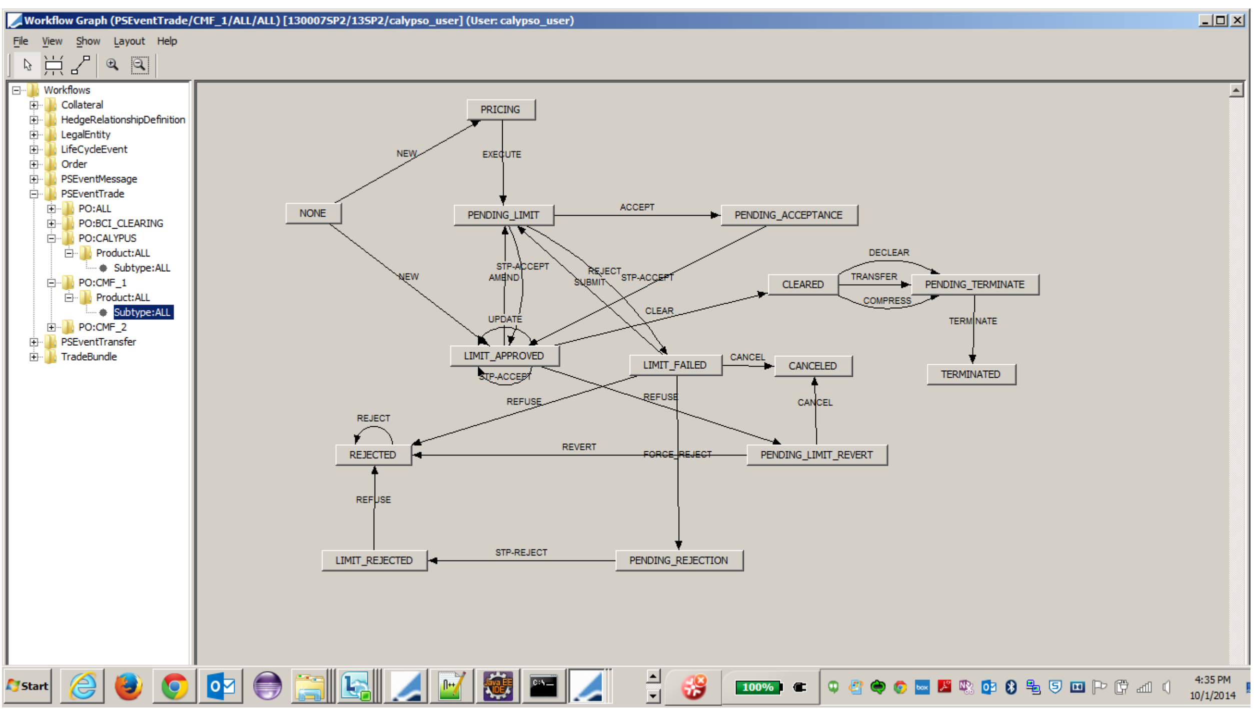
<calypso home>/resources/INCOMINGFEEDMSG.wf

<calypso home>/resources/OUTGOINGFEEDMSG.wf

<calypso home>/resources/TRADE_WORKFLOW_FCM_And_HRC.wf




Workflow Graph (PSEventMessage/ALL/ALL/OUTGOINGFEEDMSG) [130007SP2/13SP2/calypso_user] (User: calypso_user)
File View Show Layout Help
LegalEntity
LifeCycleEvent
Order
PSEventMessage
PO:ALL
Product:ALL
Subtype:ACK_MSG
Subtype:ALL
Subtype:CONFIRM
Subtype:DKCONF
Subtype:DTCCNovationReply
Subtype:DTCCNovationRequest
Subtype:DTCC_CONFIRM
Subtype:GATEWAYMSG
Subtype:INCOMING
Subtype:INCOMINGCONF
Subtype:INCOMINGCONF_MTM
Subtype:INCOMINGFEEDMSG
Subtype:INCOMING_SWIFT
Subtype:INC_FXCONFIRM
Subtype:INC_SETTALLEGE
Subtype:MTM_CONFIRM
Subtype:MTM_INCOMING
Subtype:OMGEOCTM_INVALID
Subtype:OMGEOCTM_VALID
Subtype:OUTGOINGFEEDMSG
Subtype:PAYMENTMSG
NONE
NEW
PENDING
PROCESS
UPDATE
TO_BE_SENT
RESEND
SEND
SENT
COMPLETE
COMPLETED
CANCEL
CANCELED
Duplicate...
Close


Workflow Graph (PSEventTrade/CMF_1/ALL/ALL) [130007SP2/13SP2/calypso_user] (User: calypso_user)
File View Show Layout Help
Workflows
Collateral
HedgeRelationshipDefinition
LegalEntity
LifeCycleEvent
Order
PSEventMessage
PSEventTrade
PO:ALL
PO:BCI_CLEARING
PO:CALYPUS
Product:ALL
Subtype:ALL
PO:CMF_1
PO:CMF_2
PSEventTransfer
TradeBundle
PRICING
NEW
EXECUTE
NONE
PENDING_LIMIT
ACCEPT
PENDING_ACCEPTANCE
STP-ACCEPT
AMEND
REJECT
SUBMIT
DECLEAR
TRANSFER
COMPRESS
CLEARED
PENDING_TERMINATE
CLEAR
UPDATE
TERMINATE
LIMIT_APPROVED
LIMIT_FAILED
CANCEL
CANCELED
TERMINATED
REFUSE
REJECTED
REVERT
FORCE_REJECT
PENDING_LIMIT_REVERT
STP-REJECT
LIMIT_REJECTED
PENDING_REJECTION
Start
4:35 PM
10/1/2014

2.2.4 Connectivity and Property Files

Calypso has direct connectivity with Eurex OTC Clear portal unlike other CCPs. To establish connectivity with Eurex Portal, user has to follow certain steps to capture the incoming feed from Eurex as well as support outgoing feed to Eurex.

Connectivity to EUREX is via JMS using the apache AMQP protocol.

All the connectivity details including the SSL parameters are maintained in property file eurex.properties which is used in various configuration files using JNDI.

The following properties files are provided under <calypso home>/client/resources and need to be modified. They are used by different incoming feeds to consume messages and send requests to from EUREX

Rename all the ".properties.sample" files in resources folder to ".properties".

datauploaderExternalURI.xml

This file contains the definition for connectivity using different messaging systems like JMS / IBM / AMQP.

User has to activate the Eurex settings by un-commenting the below section:

```
    <!-- EUREX SETTINGS -->
    <!--
    <bean id="eurexSource" parent="eurexamqp">
        <property name="concurrentConsumers" value="${INCOMING_CONS
        <property name="maxConcurrentConsumers" value="${INCOMING_C
    </bean>

    <bean id="eurexamqp" class="org.apache.camel.component.amqp.AMQ
        <property name="connectionFactory" ref="amqpConnectionFacto
    </bean>
    <bean id="amqpConnectionFactory" class="org.springframework.jnd
      <property name="jndiName" value="qpidConnectionfactory" />
      <property name="jndiTemplate" ref="jndiTemplate" />
   </bean>
   <bean id="jndiDestinationResolver" class="org.springframework.jm
      <property name="jndiTemplate" ref="jndiTemplate" />
   </bean>
    <bean id="jndiTemplate" class="org.springframework.jndi.JndiTem
      <property name="environment">
         <bean class="org.springframework.beans.factory.config.Prop
            <property name="location" value="classpath:eurex.proper
         </bean>
      </property>
   </bean>
  --!>
</beans>
```

Command has been activated as below:

```
<!--EUREX SETTINGS-->

<bean id="eurexSource" parent="eurexamqp">
    <property name="concurrentConsumers" value="${INCOMING_CONSUMERCOUNT:1}"/>
    <property name="maxConcurrentConsumers" value="${INCOMING_CONSUMERCOUNT:1}"/>
</bean>

<bean id="eurexamqp" class="org.apache.camel.component.amqp.AMQPComponent">
    <property name="connectionFactory" ref="amqpConnectionFactory"/>
</bean>
<bean id="amqpConnectionFactory" class="org.springframework.jndi.JndiObjectFactoryBean">
  <property name="jndiName" value="qpidConnectionfactory" />
  <property name="jndiTemplate" ref="jndiTemplate" />
</bean>
<bean id="jndiDestinationResolver" class="org.springframework.jms.support.destination.JndiDe
  <property name="jndiTemplate" ref="jndiTemplate" />
</bean>
<bean id="jndiTemplate" class="org.springframework.jndi.JndiTemplate">
  <property name="environment">
    <bean class="org.springframework.beans.factory.config.PropertiesFactoryBean">
      <property name="location" value="classpath:eurex.properties" />
    </bean>
  </property>
</bean>

</beans>
```

eurex.properties

(this will contain the connectivity details and the queue names to connect to)

The user of this interface has to get all the connectivity details, which includes the SSL certificates and the truststore keys.

This file contains the connection factory string with host and port and the SSL Parameters if required as shown below. (AMQP has a limitation where all the connectivity parameters have to be provided as part of the Connection factory shown below and xml based definition is not supported).

Version 4.8.0 and under

```
connectionfactory.qpidConnectionfactory =
amqp://:@client1/?brokerlist='tcp://90.162.253.111:18575?ssl='true'&sasl_mechs='EXTERNAL'&ssl_cert_alias='calvx_
calxvbocalypso'&trust_store='EUREX_TRUSTSTORE.jks'&trust_store_password='calypso'&key_store='EUREX_KEYSTORE.jks'
&key_store_password='calypso'
```

The user has to change the host name and port number and the certificate names.

Version 4.9.0 and above

```
connectionfactory.qpidConnectionfactory=amqps://90.162.253.111:18575?transport.verifyHost=false&transport.keySto
reLocation=<calypso
home>/client/resources/EUREX_KEYSTORE.jks&transport.keyStorePassword=calypso&transport.trustStorePassword=calyps
o&transport.trustStoreLocation=<calypso
home>/client/resources/EUREX_TRUSTSTORE.jks&transport.keyAlias=calxv_calxvbocalypso
```

The user has to change the host name and port number and the certificate names, as well as the location of the Eurex Truststore / Keystore files.

The other properties in the file represent the Queue names.

Broadcast Queues

Request Queue

Reply Queue

Response Queue

logMessages=true

messageFileDir=<UserDefinedLocation>

Queue Names

The FCM Connects to the following Queues to receive messages.

1. Trade Notification
   When the trade is submitted via the Platform (Markitwire) to the CCP (EUREX) there will be 2 trades created in EUREX. And these two trades (EB Trade and the Client Trade) are available in the TradeNotification Queue and TradeNotificationNCM Queue
   Eurex.properties defined above contains the definition of both the queues (The user has to just change the queue name part and leave the rest of the settings as is).
2. Request
   Request Queue is the Queue where the FCM will submit its requests and when sending the requests, the FCM should tell EUREX to place the response in the Reply Queue using the JMSReplyTo Header.
3. Reply
   The Reply Queue is the Queue where the responses are held
4. Response
   The FCM receives the responses to his requests in the Response Queue. The Response Queue is an on demand queue and is created when connected and deleted when the connection is terminated.
   The following property files are configured to receive messages and acknowledgements from the Client and EB perspective.
   Note that these files do not have to be changed, as the names referred by these files are the JNDI names defined in eurex.properties. Hence the user has to update the queue names assigned to them in that property file.

EUREXEBService.properties

Used by the Incoming Feed to consume messages from the EB Queue.

logMessages=true

messageFileDir=<UserDefinedLocation>

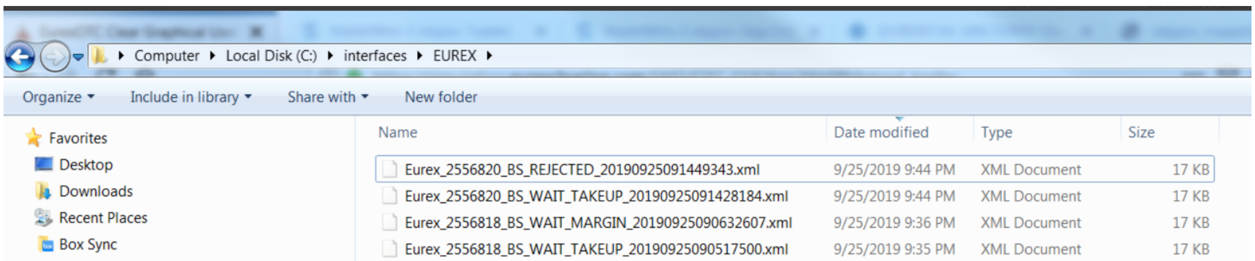
EUREXCLIENTService.properties

Used by the Incoming Feed to consume messages from the Client Queue.

logMessages=true

messageFileDir=<UserDefinedLocation>

You can see the messages received from Eurex as shown below:



EUREXACKService.properties

Used by the Incoming Feed to consume messages from the Response Queue.

Incoming Feed

EUREX sends messages in 3 Queues

TradeNotification

TradeNotificationNCM

ResponseQueue

This interface needs 3 incoming feeds for the following

a) Receive messages for role EB

b) Receive messages for role Client

c) Receive Responses for the requests made by the FCM

The following bat files are available to run these processes and the configuration required to connect to the Queues is also available in the respective configuration files.

EUREXEBService.properties

EUREXCLIENTService.properties

EUREXACKService.properties

The Incoming Feed receives the message sequence and the message, and sends to the Feed Translator.

Below changes should be done in eurexClientincomingfeed.bat file to establish connectivity with Eurex and the resp env.

```
:: SET JAVA_OPTS=%JAVA_OPTS% -Djavax.net.ssl.keyStorePassword=calypso -Djavax.net.ssl.keyStore=EUREX_KEYSTORE.jks -Djavax.net.ssl.trustStorePassword=calypso
-Djavax.net.ssl.trustStore=EUREX_TRUSTSTORE.jks -Djava.util.Arrays.useLegacyMergeSort=true %USER_HOME%

SET JAVA_OPTS=%JAVA_OPTS% -Djavax.util.Arrays.useLegacyMergeSort=true -Djavax.net.debug=ssl -Dhttps.protocols=TLSv1 %USER_HOME%

:: -env <CALYPSO_ENV>
::     To supply the name of the Env in which you wish to run.
::
:: -log
::     To log all tracing to a file in your USER_HOME/Calypso directory.
::
:: -user <USERNAME>
::     To supply the name of the Calypso user.
::
:: -password <PASSWORD>
::     To supply Calypso user's password.
::
:: -nogui
::     To run the application at the command line only, with no graphical user interface (GUI).
::
:: -logprefix <FILENAME>
::     To log all tracing to the file specified in the file_name argument. The file name can be a
::     complete path name. The application will create the file; it need not already exist. Use
::     this instead of the -log argument if you want to specify the path and file name.
::
:: -userhome <DIRECTORY>
::     To set your default directory.
::
:: -logdir <DIRECTORY>
::     To specify the directory for logs.
::

"C:\calypso\calypso-15.1.0.18-CP-SERNOVA-SNAPSHOT\client\bin\calypso.bat" com.calypso.apps.startup.StartUploaderMessagingNode -env SERNOVAENV -log -service
EUREXCLIENT -config EUREXCLIENT -appname IncomingFeed -module datauploader -user calypso_user -password calypso -keystore EUREX_KEYSTORE.jks -keystorePassword
calypso -trustStore EUREX_TRUSTSTORE.jks -trustStorePassword calypso%LOG_DIR% %*
```

2.2.5 Required Processes

Start the following servers under <calypso home>/deploy-local/<Environment>:

Please note that for Incoming and Outgoing the following runtime VM arguments are needed.

-Djavax.net.ssl.trustStore=<Name of TrustStore>
-Djavax.net.ssl.trustStorePassword=<password>
-Djavax.net.ssl.keyStore=<Name of the KeyStore>
-Djavax.net.ssl.keyStorePassword=<password>

There are 2 ways to run the Eurex related messaging components. Like other FCM modules all the Eurex related components can be combined into one java process or each process can be run independently as a separate java process.

Please refer to the **Messaging Framework Integration** document to see how all the components can be run in one java process.

Please follow the steps below for running the components individually.

- Messaging Server

  This server must be started first – The messaging server acts as Message bus providing queues to store messages for further processing. This can be started using the following script uploaderMessagingServer.bat

- Incoming Feed for EB - It takes messages from the EUREX EB queue and places them on the incoming queue

  This can be started using the following script

  ```
  eurexEbIncomingFeed.bat
  ```

- Incoming Feed for Client - It takes messages from the EUREX CLIENT queue and places them on the incoming queue

  This can be started using the following script

  ```
  eurexClientIncomingFeed.bat
  ```

- Incoming Feed for Acknowledgements - It takes messages from the EUREX RESPONSE queue and places them on the incoming queue

  This can be started using the following script

  ```
  eurexAckIncomingFeed.bat
  ```

- Feed Translator - It takes messages from the incoming queue, sends the message to the Persistor queue for audit purposes, translates the message into a trade, and sends the trade to the Outgoing

  This can be started using the following script

  ```
  feedTranslator.bat
  ```

- Data Persistor - It reads messages from the Persistor queue (incoming messages, Trade & outgoing messages) and saves them to the Database

  This can be started using the following script

  ```
  dataPersistor.bat
  ```

- Outgoing Feed:

  This process will send acknowledgement messages to EUREX.

  This can be started using the following script

  ```
  outgoingFeed.bat
  ```

- UpdateManagerEngine

Add PSEventTrade and PSEventMessage as events for this Engine using the Engine Manager in Web Admin.

Mapping

3.1 Legal Entity Mapping

In EUREX we have the following parties setup.

CALXV – is the Clearing Member

CAYXV - client

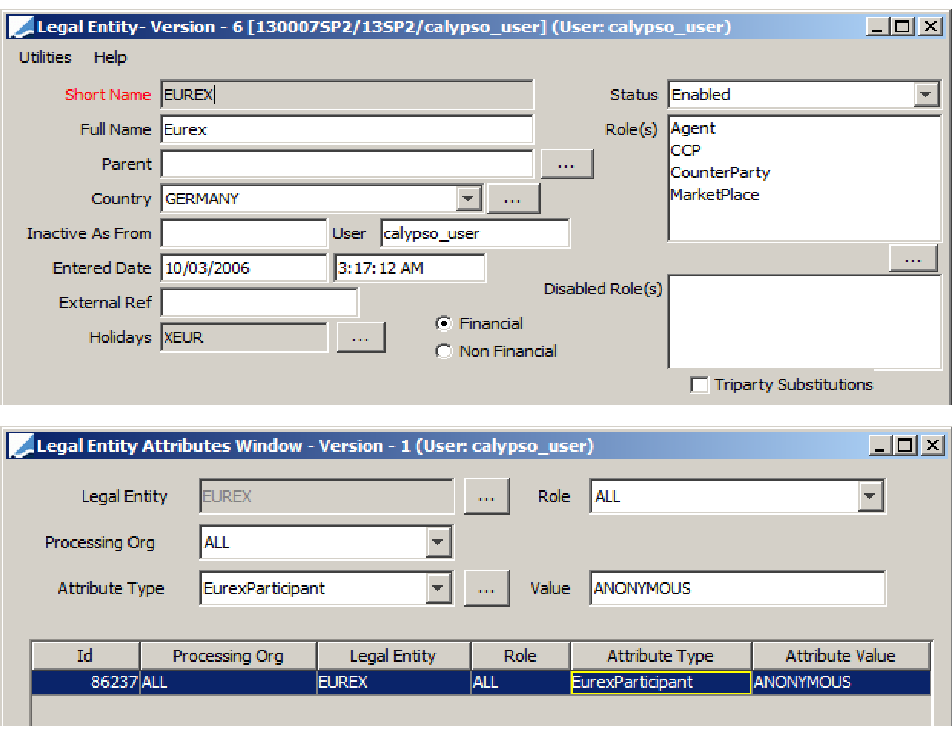
CAXXV – client

When we get the messages for Client the Account information will have the respective names.

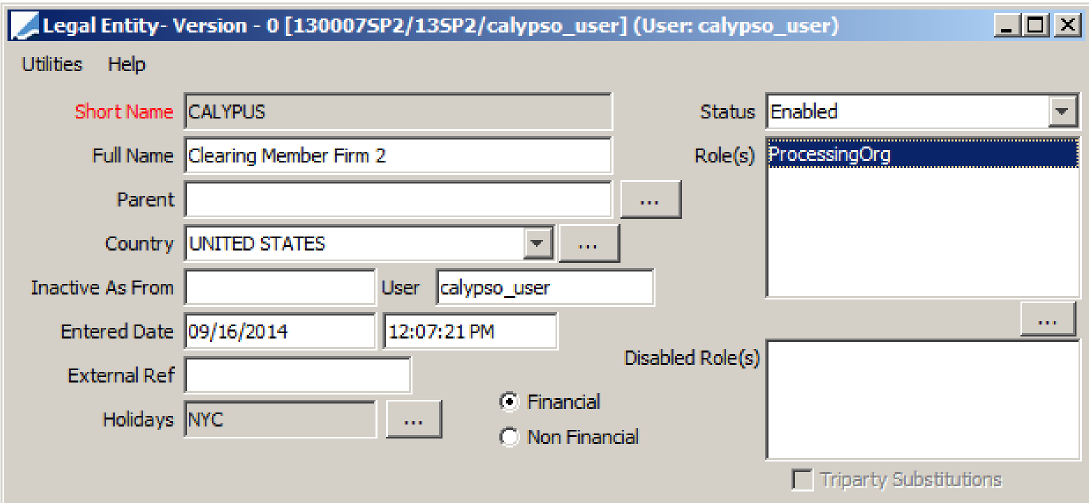
Message from CALXV would have account information as CALXV_P

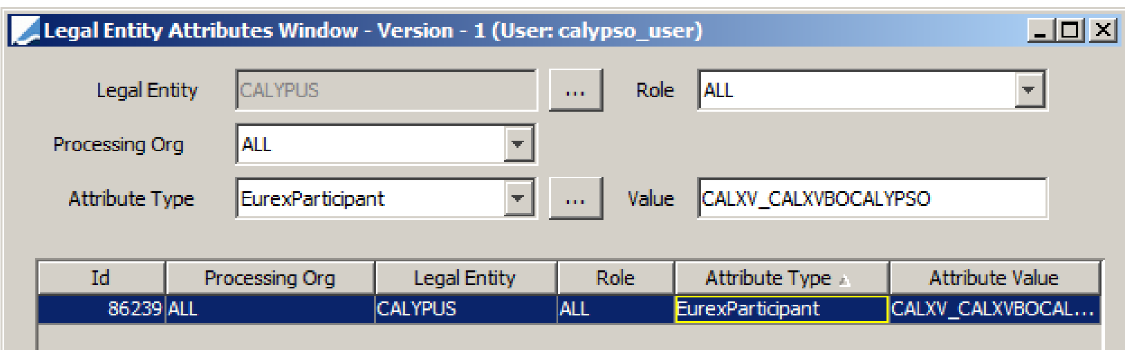
Message from CAYXV would have account information as CAYXV_P

Message from CAXXV would have account information as CAXXV_P



The EurexParticipant should match the Clearing House received in the incoming XML.





From EUREXFCM perspective, to upload a house and client trade via FPML message, system is configured with logic where trade keyword CCPAccountReference and external name on the clearing account should be updated in below specified format.

- If client trade then the Trade keyword CCPAccountReference and external name on the clearing A/c should be:

<membId> + '_'+<acctTypGrp Name> + '_'+ <srcSysClientId>

- If a house trade then the CCPAccountReference on trade keyword and external name on the clearing A/c should be :

<membId> + '_'+<acctTypGrp Name>+'_'++ <srcSysLEId>

Note: In case of client trades, srcSysLEId in Eurex EOD report (Variation Margin report (CC203)) is same as srcSysClientId in FPML message which is uploaded via DTUP.

Hence, the system first checks whether it is a client or house trade. Based on the type of trade, the system will search for clearing A/c set up as per above format.

House Trade

- If a house trade, then will locate srcSysLEId in the FPML
- CCPAccountReference trade keyword will be formed in format

<membId> + '_'+<acctTypGrp Name> + _ +< srcSysLEId>

Based on this keyword, it will search for clearing A/c with external name <membId> + '_'+<acctTypGrp Name> + _ +< srcSysLEId>

- If the tradekeyword and external name match, trade will be uploaded successfully.

Example:

```
<fpml:accountId> CALXV_P</fpml:accountId>
                              <EurexAPIXML: srcSysLEId > CALEUREXLXV</EurexAPIXML: srcSysLEId >
```

External name / CCPAccountReference should be : CALXV_P_CALEUREXLXV

Client Trade

- If a client trade, then will locate srcSysClientId in the FPML
- CCPAccountReference trade keyword will be formed in format

<membId> + '_'+<acctTypGrp Name> + _ +< srcSysClientId >

Based on this keyword, it will search for clearing A/c with external name <membId> + '_'+<acctTypGrp Name> + _ +< srcSysClientId >

(as mentioned above srcSysClientId in FPML is same as srcSysLEId in EOD report for client trades)

Example:

```
<fpml:accountId>CAXXV_P</fpml:accountId>
<EurexAPIXML:srcSysClientId>CALEUREXYXV</EurexAPIXML:srcSysClientId>
```

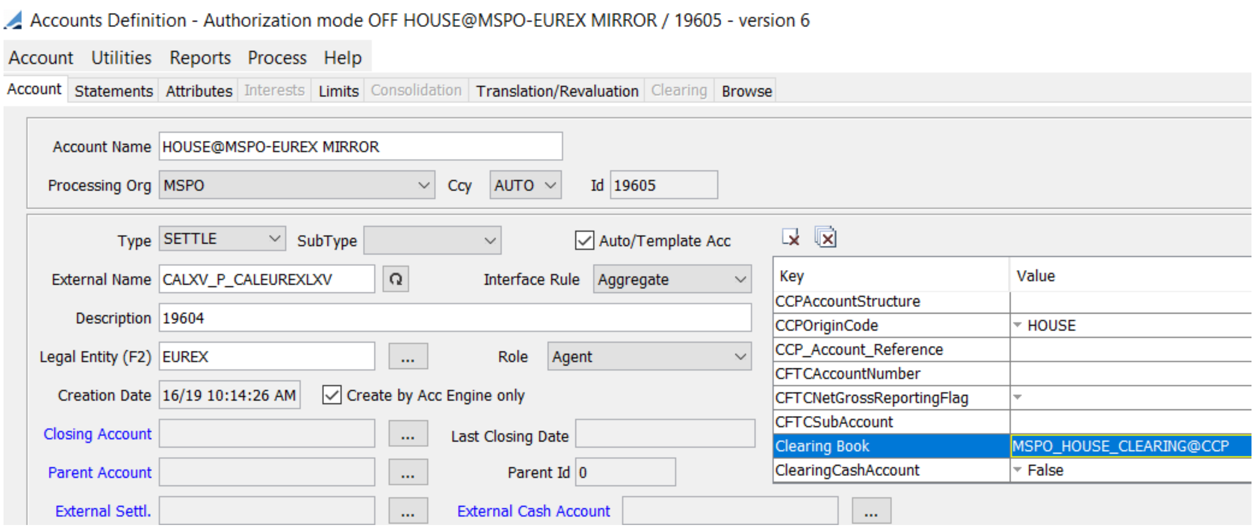
External name / CCPAccountReference should be: CAXXV_P_CALEUREXYXV

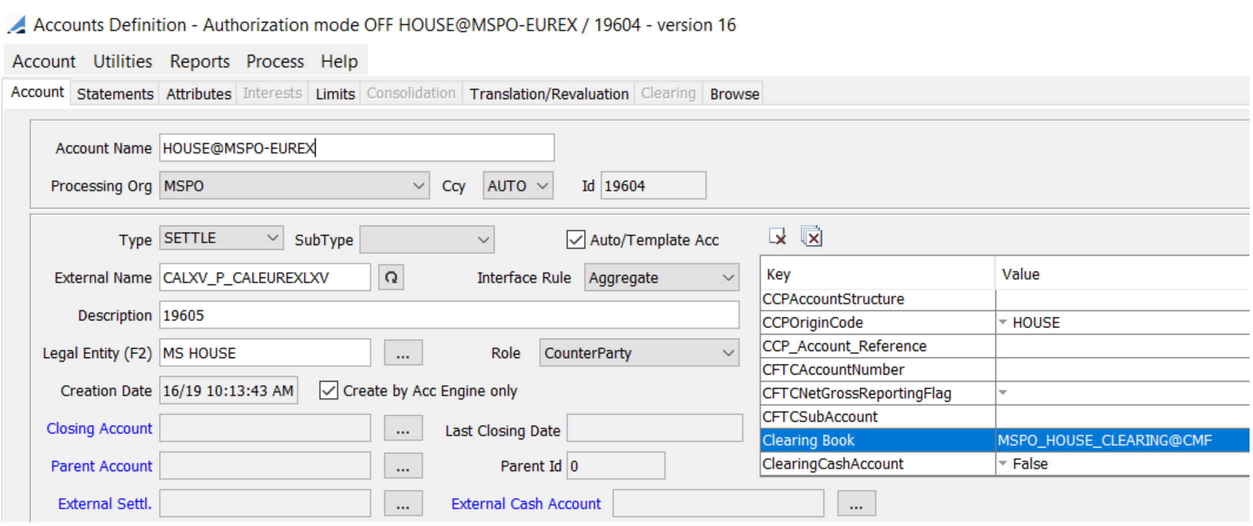
For the clearing account to be picked up correctly, below points should be noted:

- It is the External name i.e. position A/c ID which identifies the clearing A/c for the trades.
- Description tag on the clearing A/c creates the mirroring link between the 2 clearing A/c's
- Product_Account_Reference attribute differentiates the clearing A/c based on the product from a set of A/c's in the system
- InitialMarginAccount attribute helps linking the initial margin

360T Trade booking details are mentioned in the below Intraday Processing section.

3.2 House Account





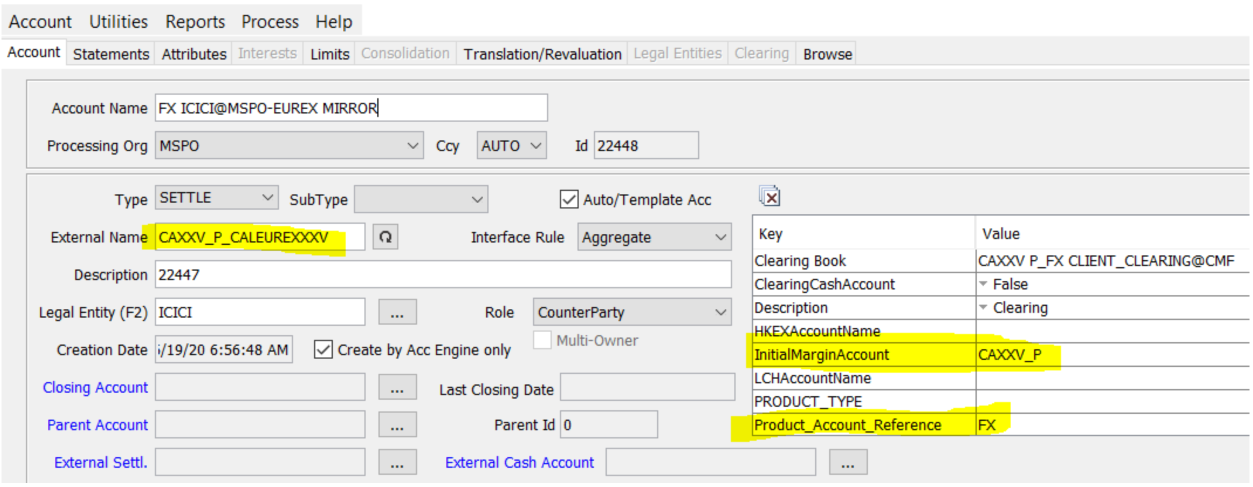
3.3 Client Account

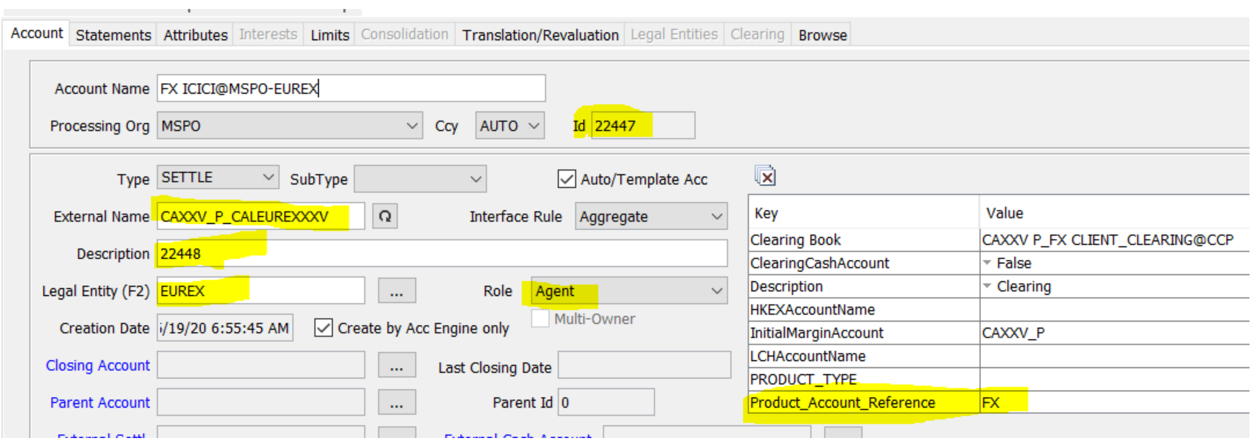
Note: FX trades are booked via 360T system whereas XCCY and IRS trades are booked with Markitwire.

Though the clearing service is updated as FX for both XCCY and FX, trade booking source system is different due to which external name for the clearing A/c's will be different based source system LE ID.

However, if the source LE ID in 360T is similar to the MW system then the external names will be same and one clearing A/c for FX trades is enough.

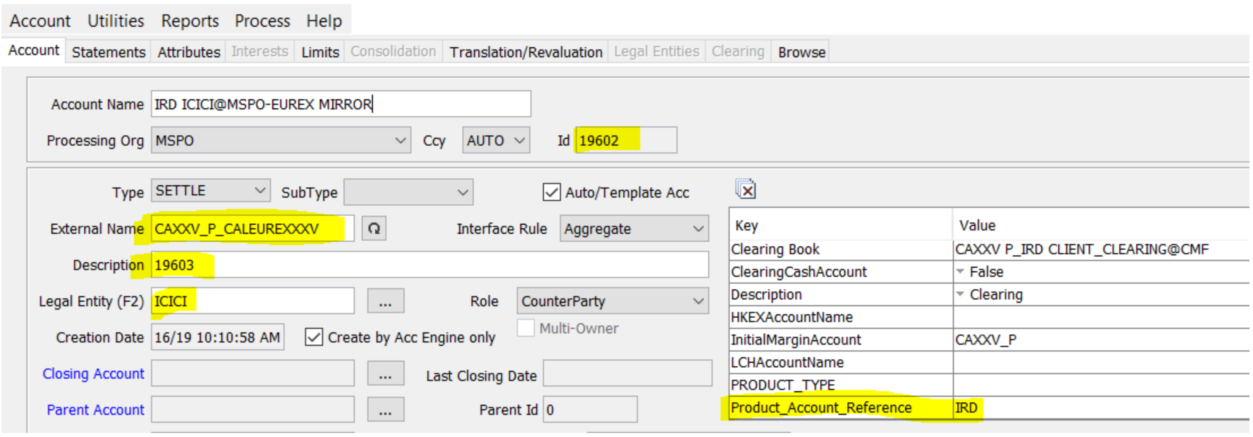
FX Trades

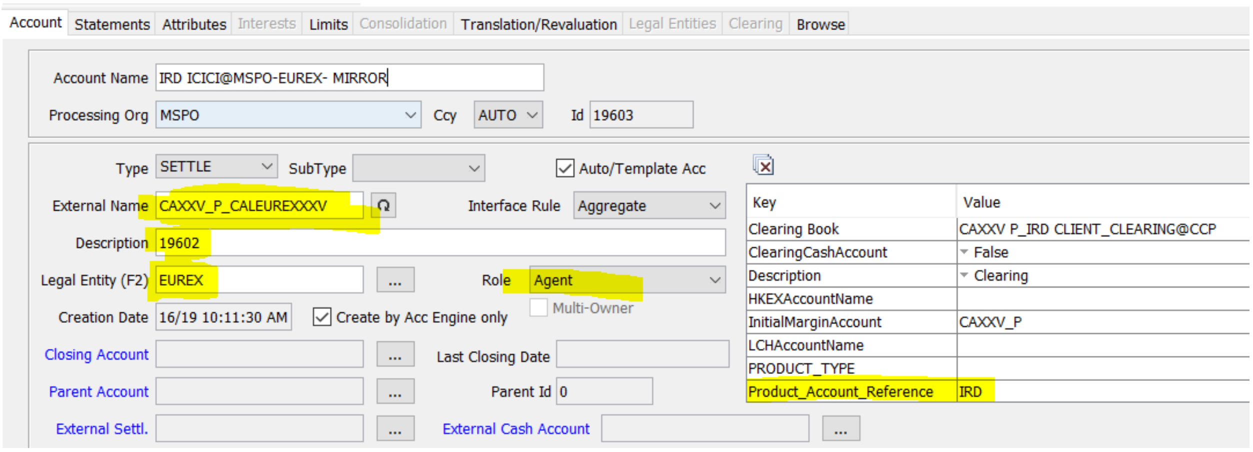




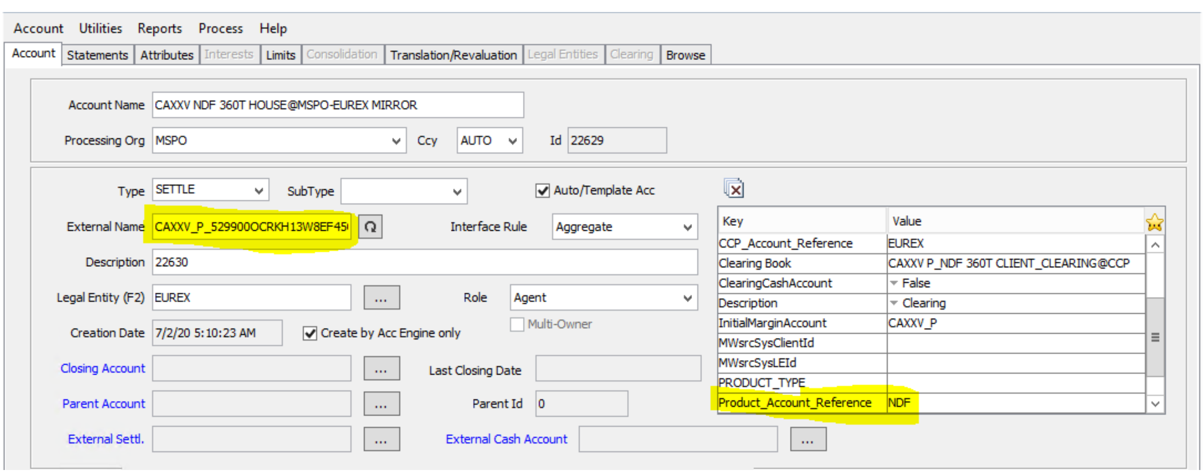
XCCY Trades

Only needed if source LE ID is different from source LE ID of 360T system.

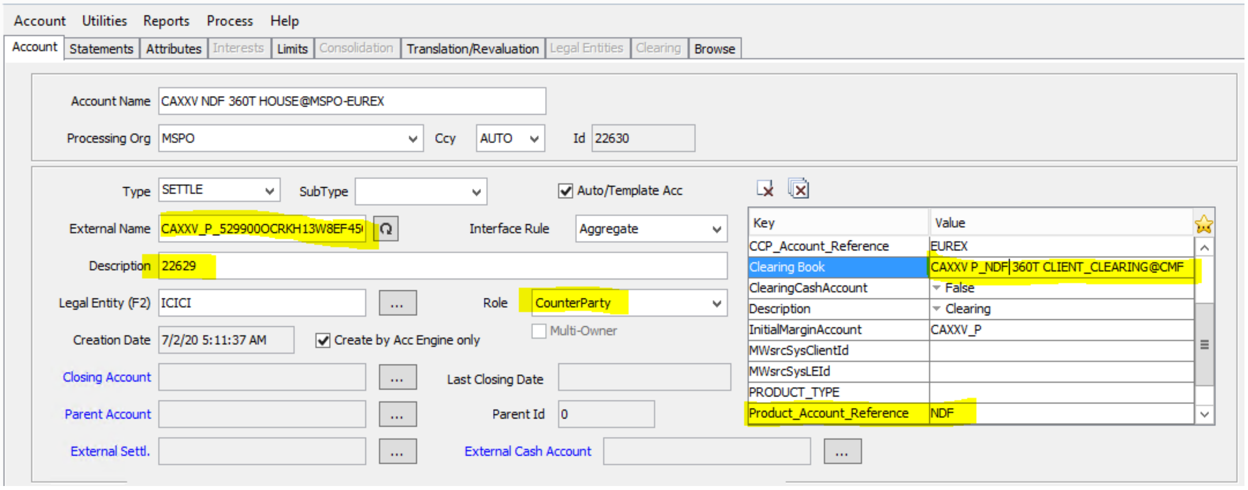




NDF Trades



To mirror clearing accounts, user has to mention the Account ID in Description tag as below



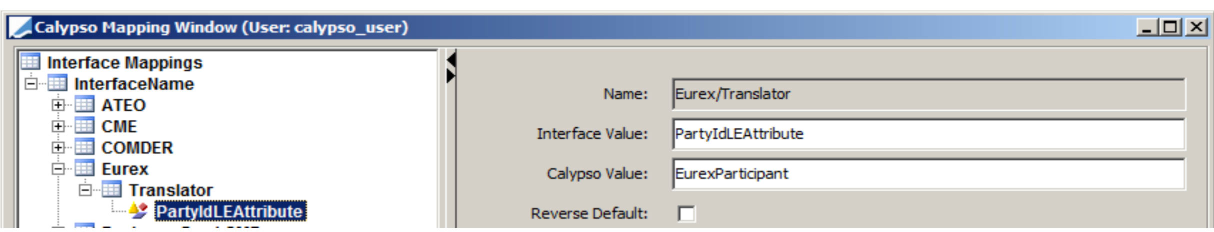
The above clearing account is for the NDF trades booked via 360T, hence, the source system LE ID will be different when compared with clearing A/c for NDF trades which are booked from any other source system than 360T. (Currently, Eurex only supports NDF trade booking from 360T)

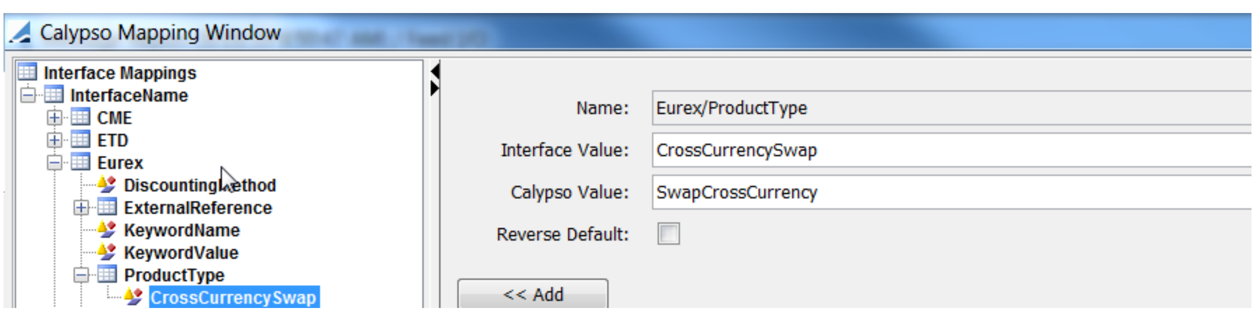
However, if the source LE ID in 360T is similar to any other source system then the external names will be same and one clearing A/c for NDF trades should suffice.

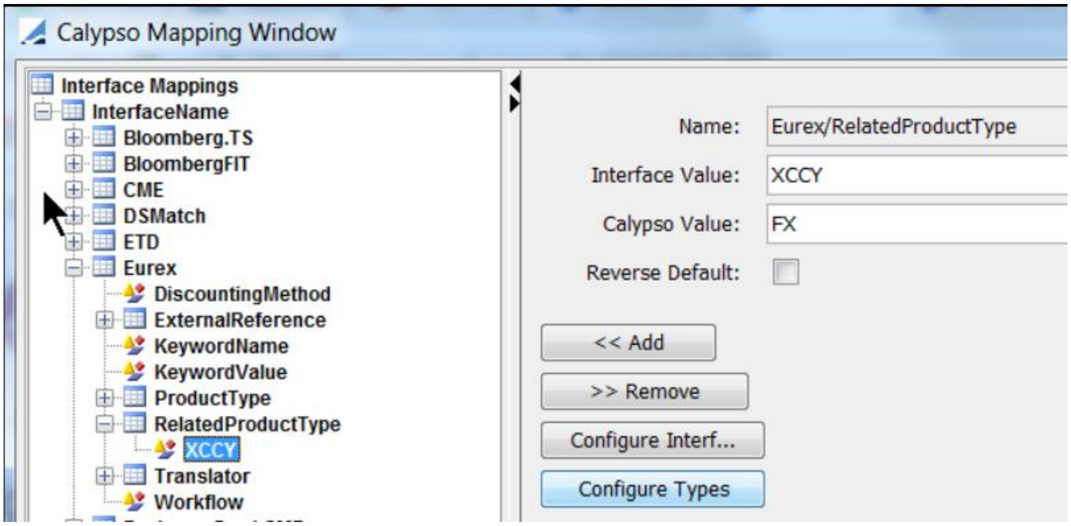
3.4 FpML Mapping

Eurex messages are FpML based hence all the mappings related to Holidays, Day Count, Date Roll and so on has to be present in the Calypso Mapping Window under Source FpML.

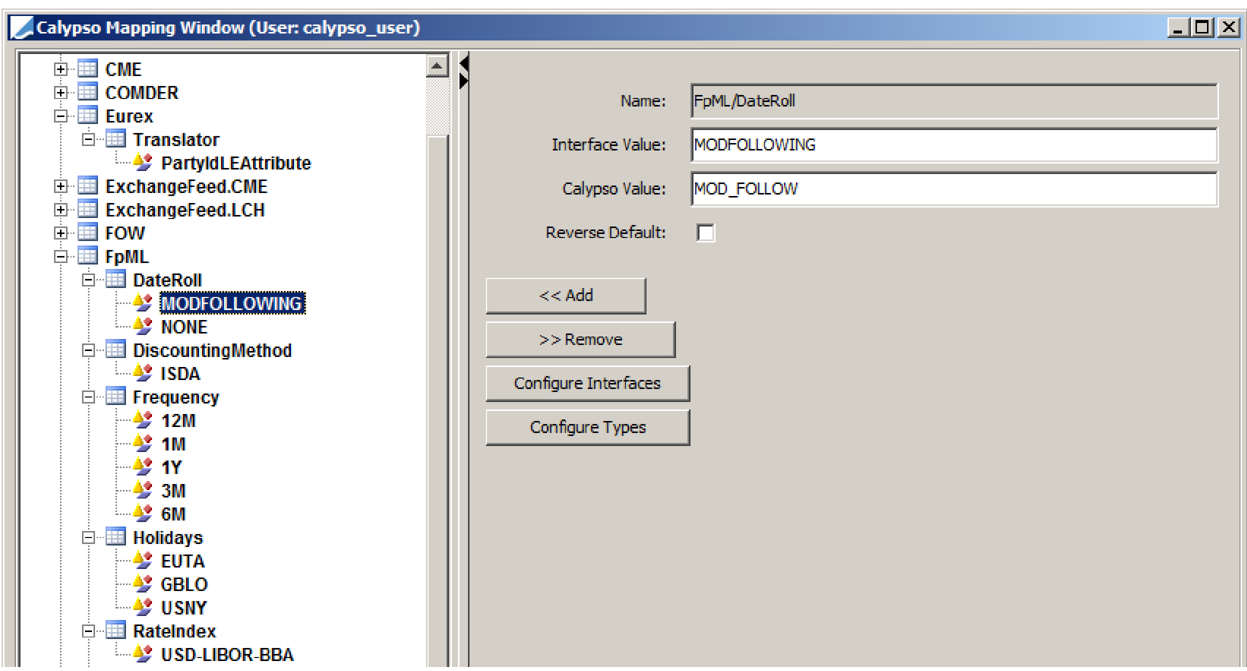
The Source Eurex will contain only Eurex specific mappings like the legal entity attribute to look up as shown below.







This mapping is used in Exchange feed in trade keyword RelatedProductType. This keyword matches with the Eurex Clearing Account attribute Product_Account_Reference to locate the correct Clearing Account.



You can add the following mapping to disable the validation of the FpML version:

Name = FpML/Translator

Interface Value = SkipFpMLVersionValidation

Calypso Value = true

Tade keyword InstrumentUPI and product code UPI contain tag UPI if provided in Eurex file on CCP facing trade.

Intraday Processing

After, completing the above setup, the user can then login to Markitwire via the Trader login and Cpty login. Calypso supports Incoming and Outgoing FPML messages for Eurex Clearing.

Incoming messages

- clearingAcknowledgement
- clearingRefused
- clearingStatus
- clearingConfirmed
- requestConsent
- consentAcknowledgement
- messageRejected

Outgoing messages

- requestClearing
- consentAcknowledgement
- consentGranted
- consentRefused
- messageRejected
- clearingAcknowledgment

Markitwire

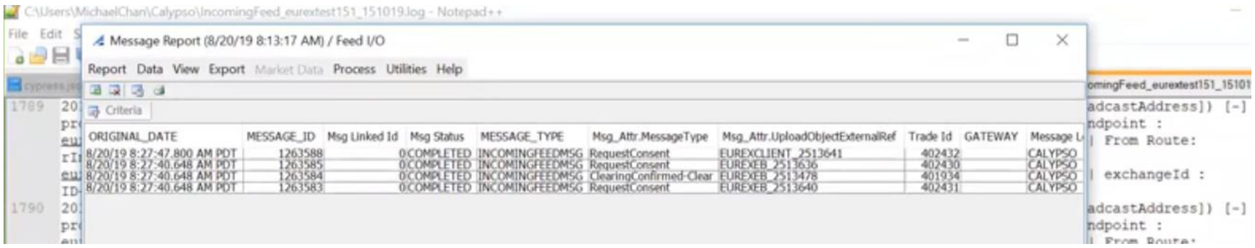
https://mw.uat.markit.com

EUREX GUI

https://simulation.eurexclearing.com:9443/OTC_GUI/#login

User should login to Eurex portal via with 2 users as it follows maker-checker process.

From the trade creation until the confirmed trade, calypso receives from Eurex as well as sends messages to Eurex which can be located in the Message report window.



For more details on the trade booking, user should refer the Eurex Clearing Training video on Calypso learning services as well as can refer below QA use case.

For the complete exchange feed set up guide, user should refer Exchange Feed Integration Guide on the Internal Documentation site

360T Login Process

To install 360T in the system, we only require latest Java version installed in the machine.

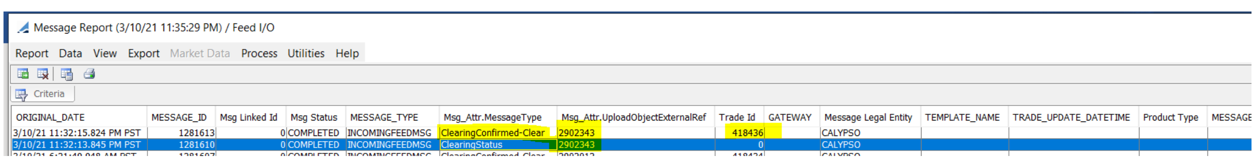
Click on the following link to install the web application - https://tex-int.360t.com/bridge-tex.jnlp

Post-installation, user will see the application installed on the Deskstop. Double-click on the icon to launch the system.

Apart from trade booking process for FX / NDF trades, we also see that FX /NDF trades are auto-cleared in Eurex, hence, we don’t see the take-up message flow for FX / NDF trades like Swap & XCCY trades.

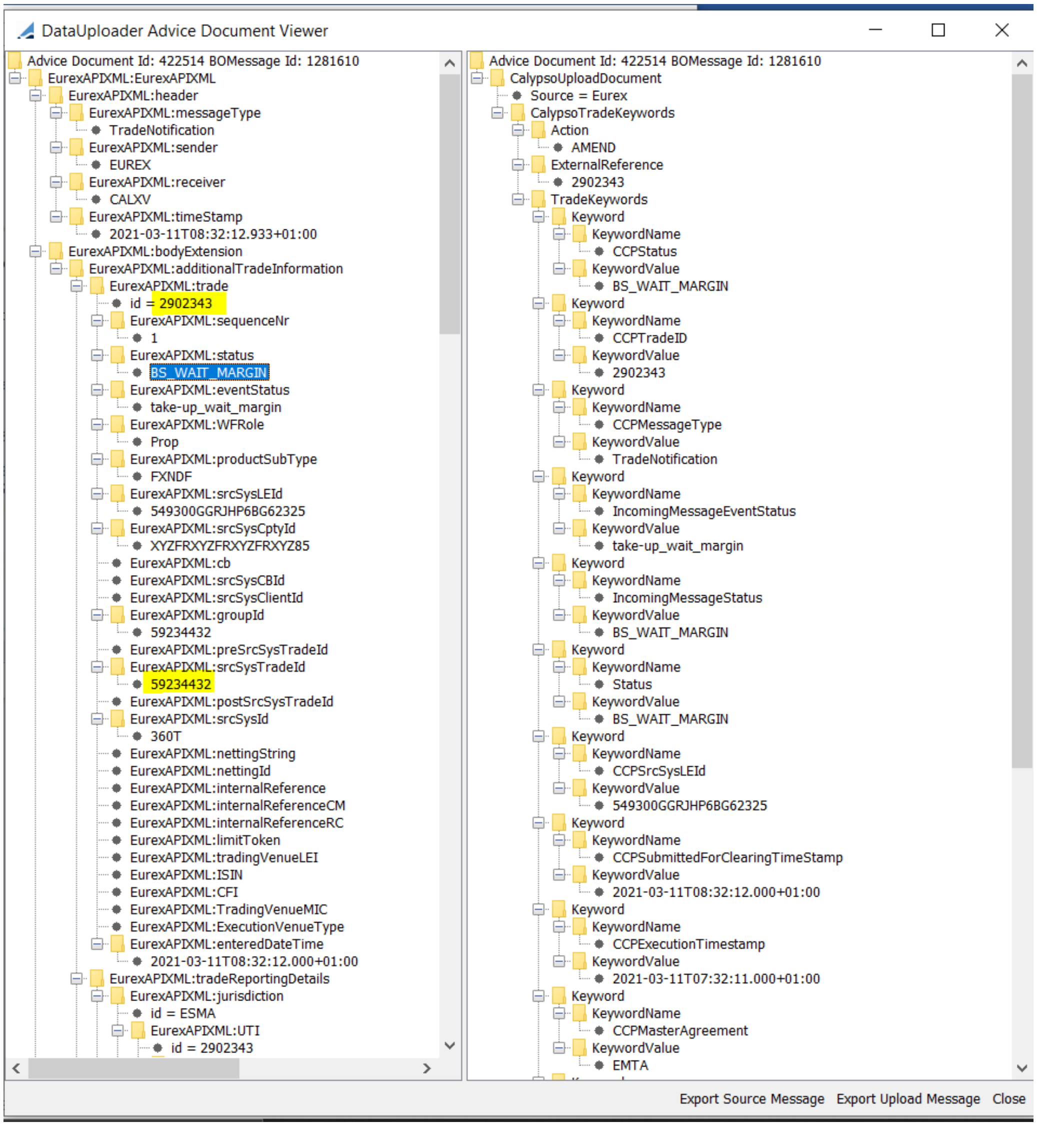
Once the trades are booked in 360T and pass the pre-check in 360T itself, trade is auto-cleared and available in Cleared trades tab with verified status. It is then eligible for PTE events and follows a similar process to XCCY / IRD.

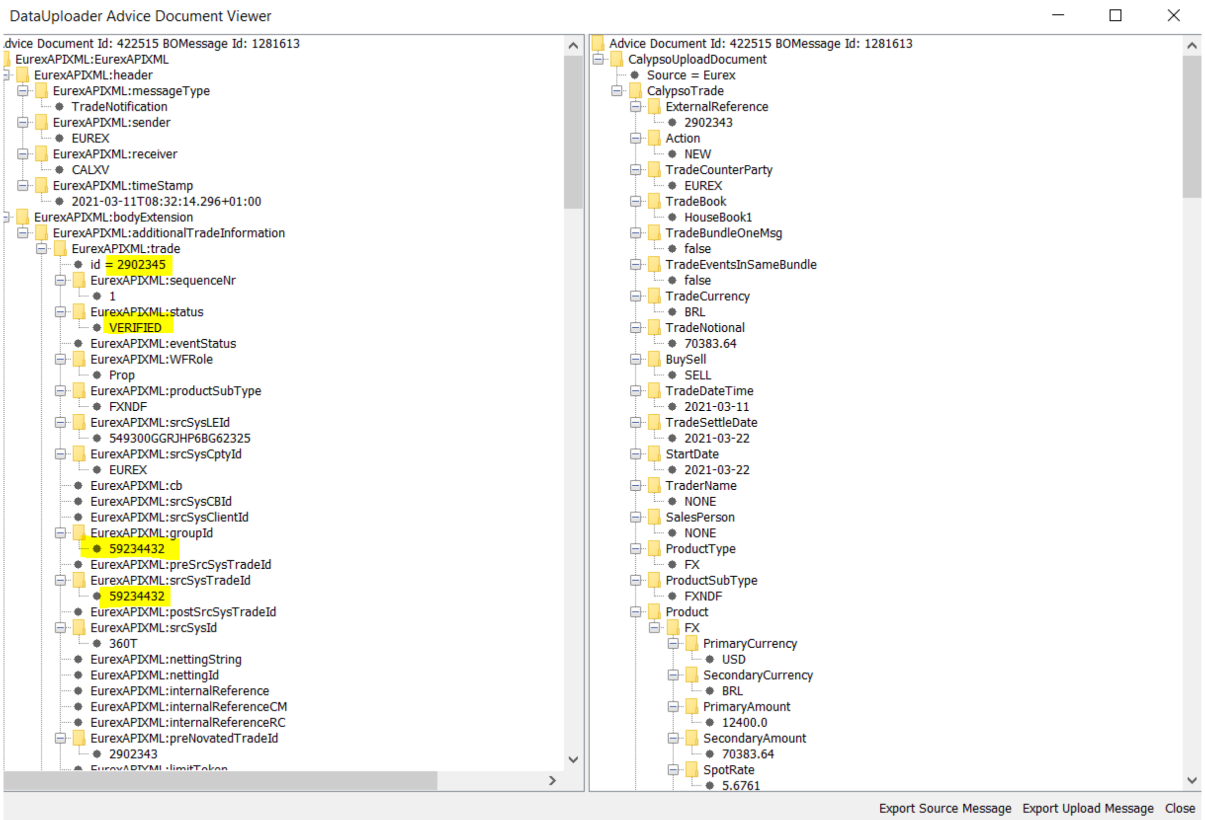
NDF trade is received via the FPML message and can be checked in the message report tab as below:



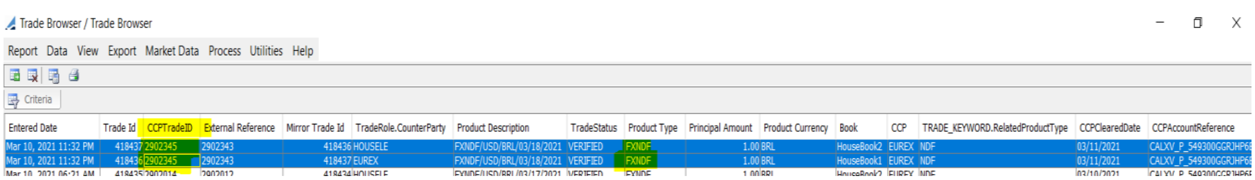
NDF trades are auto-cleared, thus, they do not follow the take-up process and we directly receive the FPML trade message with trade status as BS_WAIT_MARGIN followed by message with trade status VERIFIED.

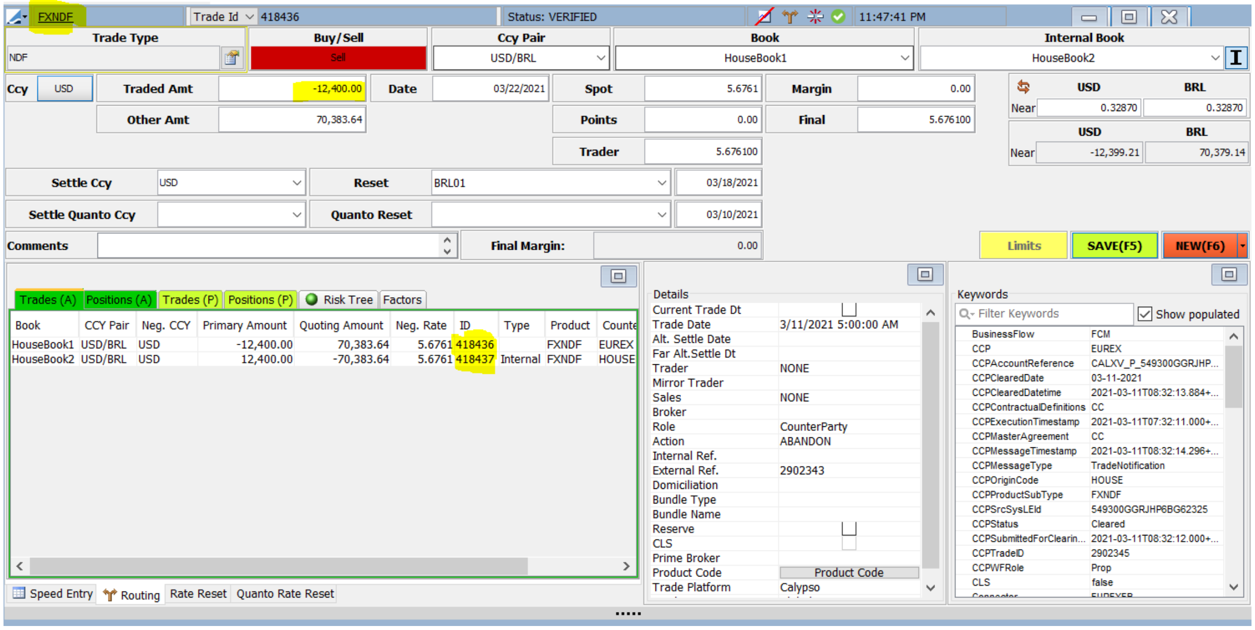
Below is the image for Calypso Upload Document that is created at the back of the received FPML message.

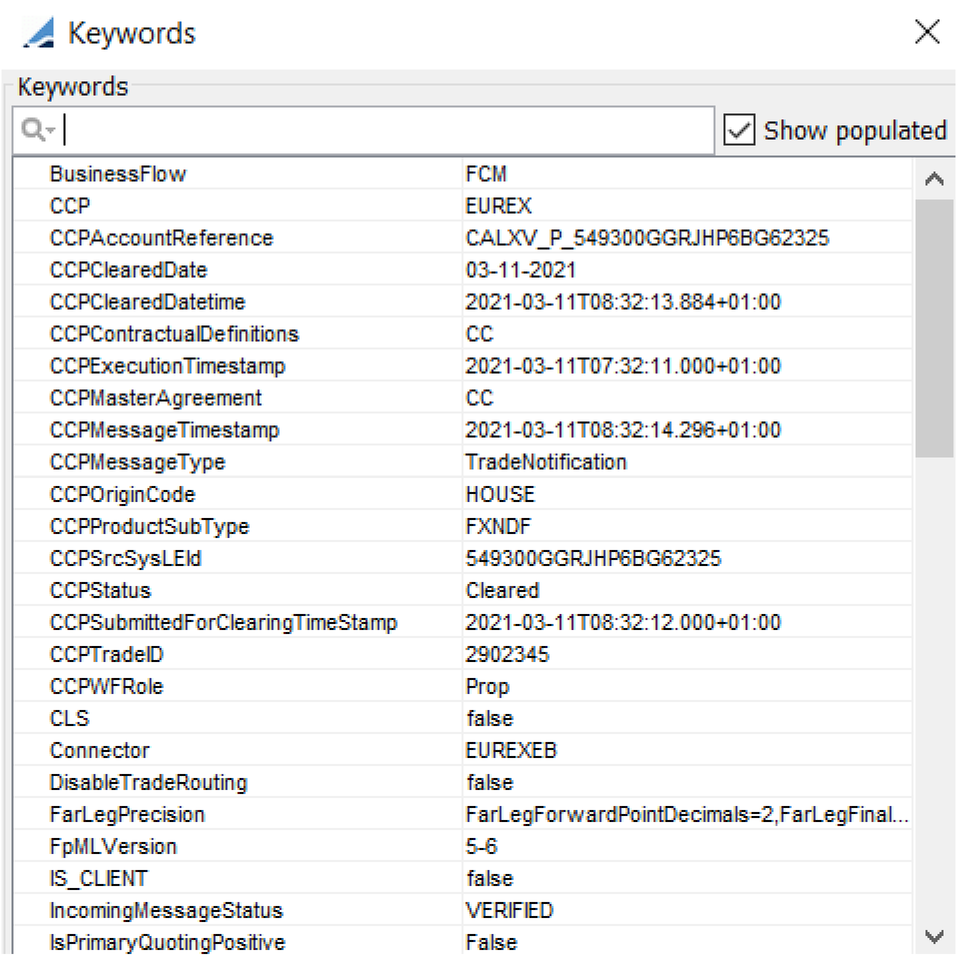

DataUploader Advice Document Viewer
Advice Document Id: 422514 BOMessage Id: 1281610
EurexAPIXML:EurexAPIXML
EurexAPIXML:header
EurexAPIXML:messageType
TradeNotification
EurexAPIXML:sender
EUREX
EurexAPIXML:receiver
CALXV
EurexAPIXML:timeStamp
2021-03-11T08:32:12.933+01:00
EurexAPIXML:bodyExtension
EurexAPIXML:additionalTradeInformation
EurexAPIXML:trade
id = 2902343
EurexAPIXML:sequenceNr
1
EurexAPIXML:status
BS_WAIT_MARGIN
EurexAPIXML:eventStatus
take-up_wait_margin
EurexAPIXML:WFRole
Prop
EurexAPIXML:productSubType
FXNDF
EurexAPIXML:srcSysLEId
549300GGRJHP6BG62325
EurexAPIXML:srcSysCptyId
XYZFRXYZFRXYZFRXYZ85
EurexAPIXML:cb
EurexAPIXML:srcSysCBId
EurexAPIXML:srcSysClientId
EurexAPIXML:groupId
59234432
EurexAPIXML:preSrcSysTradeId
EurexAPIXML:srcSysTradeId
59234432
EurexAPIXML:postSrcSysTradeId
EurexAPIXML:srcSysId
360T
EurexAPIXML:nettingString
EurexAPIXML:nettingId
EurexAPIXML:internalReference
EurexAPIXML:internalReferenceCM
EurexAPIXML:internalReferenceRC
EurexAPIXML:limitToken
EurexAPIXML:tradingVenueLEI
EurexAPIXML:ISIN
EurexAPIXML:CFI
EurexAPIXML:TradingVenueMIC
EurexAPIXML:ExecutionVenueType
EurexAPIXML:enteredDateTime
2021-03-11T08:32:12.000+01:00
EurexAPIXML:tradeReportingDetails
EurexAPIXML:jurisdiction
id = ESMA
EurexAPIXML:UTI
id = 2902343
Advice Document Id: 422514 BOMessage Id: 1281610
CalypsoUploadDocument
Source = Eurex
CalypsoTradeKeywords
Action
AMEND
ExternalReference
2902343
TradeKeywords
Keyword
KeywordName
CCPStatus
KeywordValue
BS_WAIT_MARGIN
Keyword
KeywordName
CCPTradeID
KeywordValue
2902343
Keyword
KeywordName
CCPMessageType
KeywordValue
TradeNotification
Keyword
KeywordName
IncomingMessageEventStatus
KeywordValue
take-up_wait_margin
Keyword
KeywordName
IncomingMessageStatus
KeywordValue
BS_WAIT_MARGIN
Keyword
KeywordName
Status
KeywordValue
BS_WAIT_MARGIN
Keyword
KeywordName
CCPSrcSysLEId
KeywordValue
549300GGRJHP6BG62325
Keyword
KeywordName
CCPSubmittedForClearingTimeStamp
KeywordValue
2021-03-11T08:32:12.000+01:00
Keyword
KeywordName
CCPExecutionTimestamp
KeywordValue
2021-03-11T07:32:11.000+01:00
Keyword
KeywordName
CCPMasterAgreement
KeywordValue
EMTA
Export Source Message
Export Upload Message
Close



Trade Browser




FXNDF
Trade Id 418436
Status: VERIFIED
11:47:41 PM
Trade Type
NDF
Buy/Sell
Sell
Ccy Pair
USD/BRL
Book
HouseBook1
Internal Book
HouseBook2
Ccy
USD
Traded Amt
-12,400.00
Date
03/22/2021
Spot
5.6761
Margin
0.00
Other Amt
70,383.64
Points
0.00
Final
5.676100
Trader
5.676100
Near 0.32870 0.32870
Near -12,399.21 70,379.14
Settle Ccy
USD
Reset
BRL01
03/18/2021
Settle Quanto Ccy
Quanto Reset
03/10/2021
Comments
Final Margin:
0.00
Limits
SAVE(F5)
NEW(F6)
Trades (A)
Positions (A)
Trades (P)
Positions (P)
Risk Tree
Factors
Book CCY Pair Neg. CCY Primary Amount Quoting Amount Neg. Rate ID Type Product Counte
HouseBook1 USD/BRL USD -12,400.00 70,383.64 5.6761 418436 FXNDF EUREX
HouseBook2 USD/BRL USD 12,400.00 -70,383.64 5.6761 418437 Internal FXNDF HOUSE
Speed Entry
Routing
Rate Reset
Quanto Rate Reset
Details
Current Trade Dt
Trade Date 3/11/2021 5:00:00 AM
Alt. Settle Date
Far Alt.Settle Dt
Trader NONE
Mirror Trader
Sales NONE
Broker
Role CounterParty
Action ABANDON
Internal Ref.
External Ref. 2902343
Domiciliation
Bundle Type
Bundle Name
Reserve
CLS
Prime Broker
Product Code
Trade Platform Calypso
Keywords
Filter Keywords
Show populated
BusinessFlow FCM
CCP EUREX
CCPAccountReference CALXV_P_549300GGRJHP...
CCPClearedDate 03-11-2021
CCPClearedDatetime 2021-03-11T08:32:13.884+...
CCPContractualDefinitions CC
CCPExecutionTimestamp 2021-03-11T07:32:11.000+...
CCPMasterAgreement CC
CCPMessageTimestamp 2021-03-11T08:32:14.296+...
CCPMessageType TradeNotification
CCPOriginCode HOUSE
CCPProductSubType FXNDF
CCPSrcSysLEId 549300GGRJHP6BG62325
CCPStatus Cleared
CCPSubmittedForClearin... 2021-03-11T08:32:12.000+...
CCPTradeID 2902345
CCPWFRole Prop
CLS false


Keywords
Keywords
Show populated
BusinessFlow FCM
CCP EUREX
CCPAccountReference CALXV_P_549300GGRJHP6BG62325
CCPClearedDate 03-11-2021
CCPClearedDatetime 2021-03-11T08:32:13.884+01:00
CCPContractualDefinitions CC
CCPExecutionTimestamp 2021-03-11T07:32:11.000+01:00
CCPMasterAgreement CC
CCPMessageTimestamp 2021-03-11T08:32:14.296+01:00
CCPMessageType TradeNotification
CCPOriginCode HOUSE
CCPProductSubType FXNDF
CCPSrcSysLEId 549300GGRJHP6BG62325
CCPStatus Cleared
CCPSubmittedForClearingTimeStamp 2021-03-11T08:32:12.000+01:00
CCPTradeID 2902345
CCPWFRole Prop
CLS false
Connector EUREXEB
DisableTradeRouting false
FarLegPrecision FarLegForwardPointDecimals=2,FarLegFinal...
FpMLVersion 5-6
IS_CLIENT false
IncomingMessageStatus VERIFIED
IsPrimaryQuotingPositive False

Post clearing, Cleared trade is eligible for below PTE events which are initiated from the Eurex Clearing GUI.

Trade transfer
Trade Amendment
Account Transfer
Netting / Accumulation
Termination
PTE Rejection

NDF PTE events also follow the maker-checker process where every PTE is authorized by the checker for the PTE event to be processed.

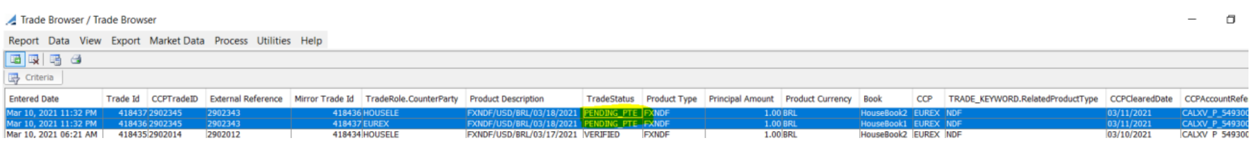
Once the clearing process starts, from the trade creation until the confirmed trade, calypso receives messages from Eurex as well as sends messages to Eurex until the clearing process is complete. All the messages can be located in the Message report window. This message flow is similar to IRD, XCCY, FX except that NDF and FX trades are auto-cleared so no take-up process is followed.

<u>Below is sample flow for Trade Termination</u>:

Terminate the trade in Eurex.

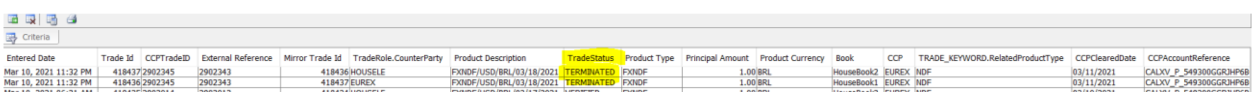
Trade moves to Trade Status : TO_BE_TERMINATED and event status as 'authorization_pending' from User : CALXVCLR002 GUI and moves to event status as 'authorization required' in CALXVCLR001 GUI (maker -checker process).

Trade moves to 'Pending_PTE' in Trade Browser as below:


Trade Browser / Trade Browser
Report Data View Export Market Data Process Utilities Help
Criteria

Entered Date	Trade Id	CCPTradeID	External Reference	Mirror Trade Id	TradeRole.CounterParty	Product Description	TradeStatus	Product Type	Principal Amount	Product Currency	Book	CCP	TRADE_KEYWORD.RelatedProductType	CCPClearedDate	CCPAccountRefe
Mar 10, 2021 11:32 PM	418437	2902345	2902343	418436	HOUSELE	FXNDF/USD/BRL/03/18/2021	PENDING_PTE	FXNDF	1.00	BRL	HouseBook2	EUREX	NDF	03/11/2021	CALXV_P_54930
Mar 10, 2021 11:32 PM	418436	2902345	2902343	418437	EUREX	FXNDF/USD/BRL/03/18/2021	PENDING_PTE	FXNDF	1.00	BRL	HouseBook1	EUREX	NDF	03/11/2021	CALXV_P_54930
Mar 10, 2021 06:21 AM	418435	2902014	2902012	418434	HOUSELE	FXNDF/USD/BRL/03/17/2021	VERIFIED	FXNDF	1.00	BRL	HouseBook2	EUREX	NDF	03/10/2021	CALXV_P_54930

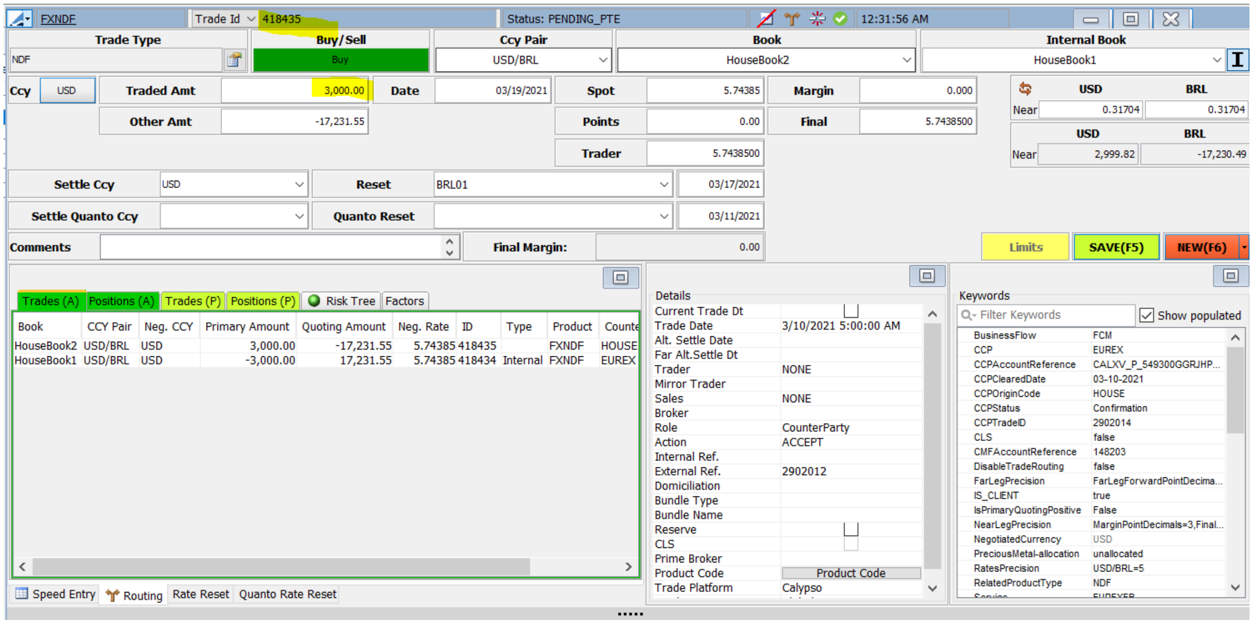
In message report, we see Termination granted message and Trades are Terminated in Trade Browser.

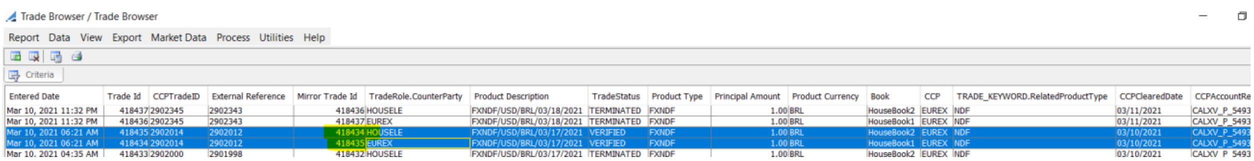

Criteria

Entered Date	Trade Id	CCPTradeID	External Reference	Mirror Trade Id	TradeRole.CounterParty	Product Description	TradeStatus	Product Type	Principal Amount	Product Currency	Book	CCP	TRADE_KEYWORD.RelatedProductType	CCPClearedDate	CCPAccountReference
Mar 10, 2021 11:32 PM	418437	2902345	2902343	418436	HOUSELE	FXNDF/USD/BRL/03/18/2021	TERMINATED	FXNDF	1.00	BRL	HouseBook2	EUREX	NDF	03/11/2021	CALXV_P_549300GGRJHP6B
Mar 10, 2021 11:32 PM	418436	2902345	2902343	418437	EUREX	FXNDF/USD/BRL/03/18/2021	TERMINATED	FXNDF	1.00	BRL	HouseBook1	EUREX	NDF	03/11/2021	CALXV_P_549300GGRJHP6B

Similarly, user can also perform PTE: Trade Amendment. In this event, user can only split the trades (notional should match the original trade, it cannot be amended) and internal reference can be changed.

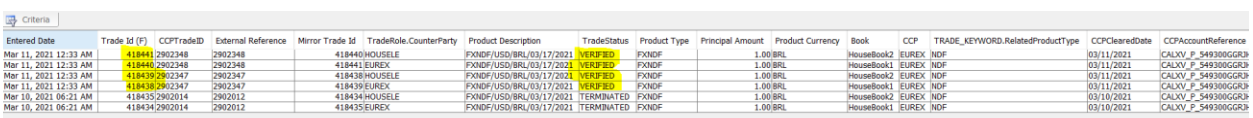
For example, below trade is for notional 3000 which has been split in 2 shapes : 1000 and 2000 resp.

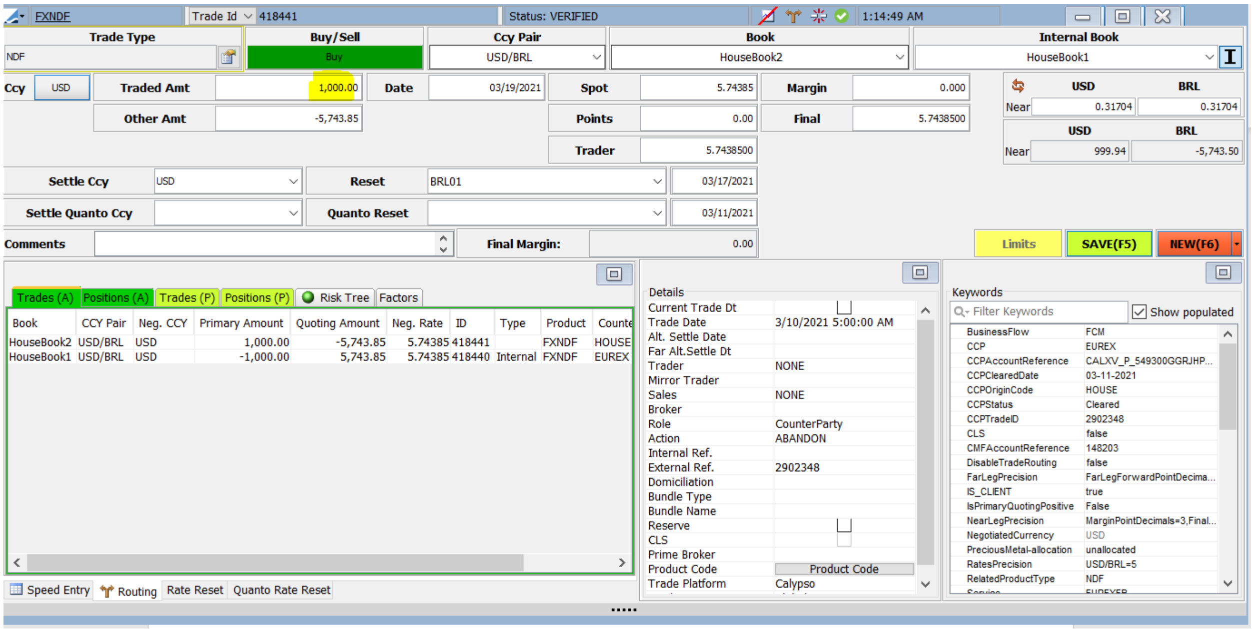


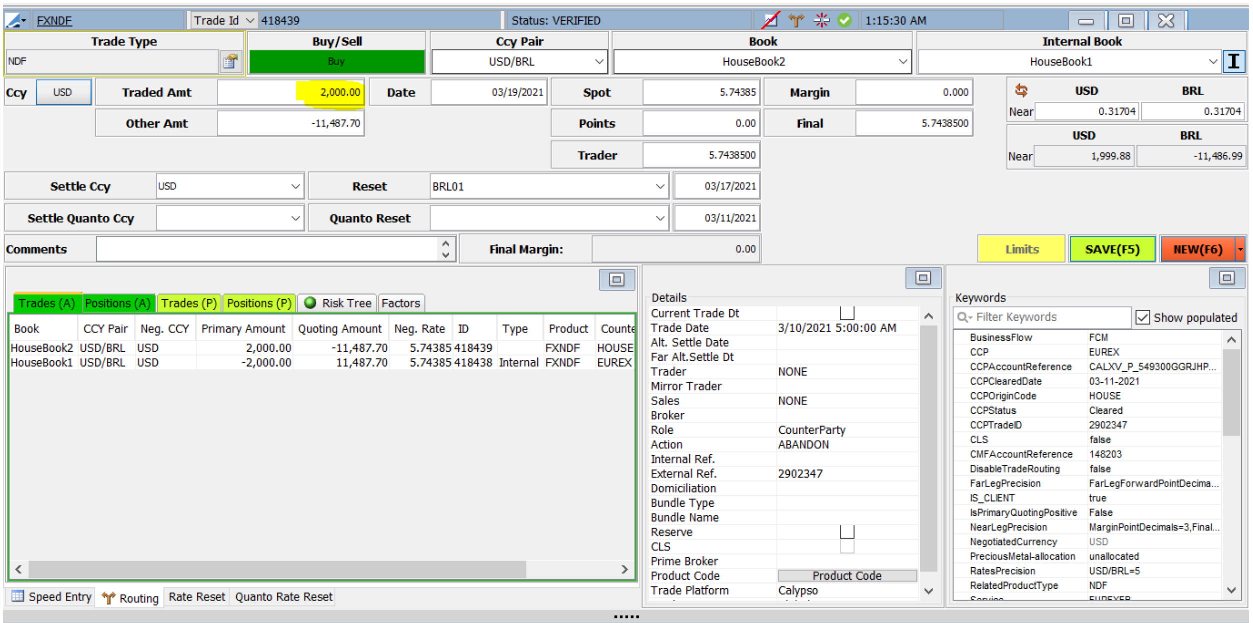


Post Trade amendment confirmation, trade moves in 'authorization_required' which is followed by maker -checker process to authorize the PTE.

In parallel, we see the original trade terminated and new trades created in the system with the split notionals as below:




FXNDF
Trade Id 418441
Status: VERIFIED
1:14:49 AM
Trade Type
NDF
Buy/Sell
Buy
Ccy Pair
USD/BRL
Book
HouseBook2
Internal Book
HouseBook1
Ccy
USD
Traded Amt
1,000.00
Date
03/19/2021
Spot
5.74385
Margin
0.000
Other Amt
-5,743.85
Points
0.00
Final
5.7438500
Trader
5.7438500
USD
BRL
Near
0.31704
0.31704
Near
999.94
-5,743.50
Settle Ccy
USD
Reset
BRL01
03/17/2021
Settle Quanto Ccy
Quanto Reset
03/11/2021
Comments
Final Margin:
0.00
Limits
SAVE(F5)
NEW(F6)
Trades (A)
Positions (A)
Trades (P)
Positions (P)
Risk Tree
Factors
Book CCY Pair Neg. CCY Primary Amount Quoting Amount Neg. Rate ID Type Product Counte
HouseBook2 USD/BRL USD 1,000.00 -5,743.85 5.74385 418441 FXNDF HOUSE
HouseBook1 USD/BRL USD -1,000.00 5,743.85 5.74385 418440 Internal FXNDF EUREX
Speed Entry
Routing
Rate Reset
Quanto Rate Reset
Details
Current Trade Dt
Trade Date 3/10/2021 5:00:00 AM
Alt. Settle Date
Far Alt.Settle Dt
Trader NONE
Mirror Trader
Sales NONE
Broker
Role CounterParty
Action ABANDON
Internal Ref.
External Ref. 2902348
Domiciliation
Bundle Type
Bundle Name
Reserve
CLS
Prime Broker
Product Code
Trade Platform Calypso
Keywords
Filter Keywords
Show populated
BusinessFlow FCM
CCP EUREX
CCPAccountReference CALXV_P_549300GGRJHP...
CCPClearedDate 03-11-2021
CCPOriginCode HOUSE
CCPStatus Cleared
CCPTradeID 2902348
CLS false
CMFAccountReference 148203
DisableTradeRouting false
FarLegPrecision FarLegForwardPointDecima...
IS_CLIENT true
IsPrimaryQuotingPositive False
NearLegPrecision MarginPointDecimals=3,Final...
NegotiatedCurrency USD
PreciousMetal-allocation unallocated
RatesPrecision USD/BRL=5
RelatedProductType NDF


FXNDF
Trade Id 418439
Status: VERIFIED
1:15:30 AM
Trade Type
NDF
Buy/Sell
Buy
Ccy Pair
USD/BRL
Book
HouseBook2
Internal Book
HouseBook1
Ccy
USD
Traded Amt
2,000.00
Date
03/19/2021
Spot
5.74385
Margin
0.000
Other Amt
-11,487.70
Points
0.00
Final
5.7438500
Trader
5.7438500
USD
BRL
Near
0.31704
0.31704
Near
1,999.88
-11,486.99
Settle Ccy
USD
Reset
BRL01
03/17/2021
Settle Quanto Ccy
Quanto Reset
03/11/2021
Comments
Final Margin:
0.00
Limits
SAVE(F5)
NEW(F6)
Trades (A)
Positions (A)
Trades (P)
Positions (P)
Risk Tree
Factors
Book CCY Pair Neg. CCY Primary Amount Quoting Amount Neg. Rate ID Type Product Counte
HouseBook2 USD/BRL USD 2,000.00 -11,487.70 5.74385 418439 FXNDF HOUSE
HouseBook1 USD/BRL USD -2,000.00 11,487.70 5.74385 418438 Internal FXNDF EUREX
Speed Entry
Routing
Rate Reset
Quanto Rate Reset
Details
Current Trade Dt
Trade Date 3/10/2021 5:00:00 AM
Alt. Settle Date
Far Alt.Settle Dt
Trader NONE
Mirror Trader
Sales NONE
Broker
Role CounterParty
Action ABANDON
Internal Ref.
External Ref. 2902347
Domiciliation
Bundle Type
Bundle Name
Reserve
CLS
Prime Broker
Product Code
Trade Platform Calypso
Keywords
Filter Keywords
Show populated
BusinessFlow FCM
CCP EUREX
CCPAccountReference CALXV_P_549300GGRJHP...
CCPClearedDate 03-11-2021
CCPOriginCode HOUSE
CCPStatus Cleared
CCPTradeID 2902347
CLS false
CMFAccountReference 148203
DisableTradeRouting false
FarLegPrecision FarLegForwardPointDecima...
IS_CLIENT true
IsPrimaryQuotingPositive False
NearLegPrecision MarginPointDecimals=3,Final...
NegotiatedCurrency USD
PreciousMetal-allocation unallocated
RatesPrecision USD/BRL=5
RelatedProductType NDF

EOD Processing

5.1 EOD Reports from EUREX CCP

EUREX reports House and Client trade details in one report. However, trade details/ margin requirements are segregated by Clearing Member (CM) and Client: Registered Customer (RC).

CM is denoted by membID ‘CALXV’ and RC is reported by CAXXV, CAYXV, CAXYV, etc.

Further, account structure reported under CM as well as RC is P, A1-A9 where P stands for Prop A/c and A1-A9 is for its Client A/c’s.

Also, Eurex has segregated products under Liquidation Groups in every file.

IRS product in Liq. Grp. PFI01

XCCY & FX (FX Swap, FX Forward, FX Spot) product in Liq. Grp. PFX01

NDF product in Liq. Grp. PNF01

Example:

```
<?xml version="1.0" encoding="UTF-8"?>

<Report xmlns="http://www.eurexchange.com/EurexIRSOverallM
<rptHdr>
<exchNam>ECAG</exchNam>
<rptCod>RPTCC204</rptCod>
<rptNam>Overall Margin Report</rptNam>
<membLglNam>MORGAN STANLEY PO</membLglNam>
<membId>CALXV</membId>
<rptPrntEffDat>2019-12-03T23:59:00.000+01:00</rptPrntEffDa
<rptPrntRunDat>2019-12-03</rptPrntRunDat>
</rptHdr>
<reportNameGrp>
<CM>
<rptSubHdr>
<membLglNam>MORGAN STANLEY PO</membLglNam
<membId>CALXV</membId>
<membRole></membRole>
<globalLEId></globalLEId>
</rptSubHdr>
<acctTypGrp Name="A1">
<LiquidationGrp Name="PFI01">
<currMarComp Name="EUR">
<MarketRisk_Aggr_T>40974.711971</MarketRisk_Aggr_T>
<MarketRisk_Aggr_T-1>39255.607339</MarketRisk_Aggr_T-1>
<MarketRisk_Aggr_T-2>40964.612640</MarketRisk_Aggr_T-2>

</currMarComp>
<LiquAdj currencyPair="EUR/USD" component="FX">8469866.72117
<LiquAdj currencyPair="GBP/USD" component="FX">0.000000</Liq
</LiquidationGrp>
</acctTypGrp>
</CM>
<RC>
<rptSubHdr>
<membLglNam>Calypso Fund 2</membLglNam>
<membId>CAXXV</membId>
<membRole></membRole>
<relCM>CALXV</relCM>
<globalLEId></globalLEId>
```

<CM> indicate CM trade details start

Account type Grp and Liquidation Group

/CM indicates Clearing member trade details closed

RC indicates Client CAXXV trade details start

Initial Margin EOD Reports

85RPT**CC204**CALXV20191203.XML

01RPT**CC750**CALXV20191204CALXV.XML

01RPT**CI050**CALXV20191205CALXV.XML

Note: System 1st looks for CC204, if this file is NA then it will look for CC750. Further, even CC750 is NA the system will pick up CI050.

Liquidation Group in CC750 and CI050 are different from CC204

IRS product is reported in OTCBE or PFI01

XCCY and FX product is reported under OTCFE or PFX01

NDF product is reported under **OTCNE or PNF01**

If "OTCBE" is found that means client is not Prisma client and is not doing cross margining so process its IM, If OTCBE is NOT found then IM will be reported in Grp PFI01 which indicated client is doing cross margining.

Similar, logic is applied for FX / NDF product, i.e. If "OTCFE" (for FX) and "OTCNE" (for NDF) is found that means client is not Prisma client and is not doing cross margining .

Therefore, If OTCFE is NOT found then IM will be reported in Grp PFX01 / if OTCNE is NOT found then IM will be reported in Grp PNF01 which indicates client is doing cross margining.

Example:

CM details in CC750/ CI050


```xml
<cc750Grp1>
  <cc750KeyGrp1>
    <membExchIdCod>CALXV</membExchIdCod>
    <membExchIdNam>MORGAN STANLEY PO</membExchIdNam
  </cc750KeyGrp1>

  <cc750Grp2>
    <cc750KeyGrp2>
      <currTypCod>EUR</currTypCod>
    </cc750KeyGrp2>

    <cc750Grp3>
      <cc750KeyGrp3>
        <acctTypFlexible>A1</acctTypFlexible>
      </cc750KeyGrp3>

      <cc750Rec>
        <mgnClsCod>OTCBE</mgnClsCod>
        <mgnPremiumAmnt>0.00</mgnPremiumAmnt>
        <mgnLiqDlvAmnt>0.00</mgnLiqDlvAmnt>
        <mgnSprdAmnt>0.00</mgnSprdAmnt>
```


Or

RC details in CC750 / CI050

```xml
<cc750Grp>
  <cc750KeyGrp>
    <membClgIdCod>CALXV</membClgIdCod>
    <membClgIdNam>MORGAN STANLEY PO</membClgIdNam>
  </cc750KeyGrp>

  <cc750Grp1>
    <cc750KeyGrp1>
      <membExchIdCod>CAXXV</membExchIdCod>
      <membExchIdNam>Calypso Test NCM</membExchIdNam>
    </cc750KeyGrp1>

    <cc750Grp2>
      <cc750KeyGrp2>
        <currTypCod>EUR</currTypCod>
      </cc750KeyGrp2>

      <cc750Grp3>
        <cc750KeyGrp3>
          <acctTypFlexible>A1</acctTypFlexible>
        </cc750KeyGrp3>

        <cc750Rec>
          <mgnClsCod>PFI01</mgnClsCod>
          <mgnPremiumAmnt>-64218.00</mgnPremiumAmnt>
          <mgnLiqDlvAmnt>0.00</mgnLiqDlvAmnt>
```



```xml
<cc750Rec>
  <mgnClsCod>OTCNE</mgnClsCod>
  <mgnPremiumAmnt>0.00</mgnPremiumAmnt>
  <mgnLiqDlvAmnt>0.00</mgnLiqDlvAmnt>
  <mgnSprdAmnt>0.00</mgnSprdAmnt>
  <mgnAddlAmnt>73060.20</mgnAddlAmnt>
  <unadjMgnReq>73060.20</unadjMgnReq>
</cc750Rec>
<cc750Rec>
  <mgnClsCod>PFI01</mgnClsCod>
  <mgnPremiumAmnt>0.00</mgnPremiumAmnt>
  <mgnLiqDlvAmnt>0.00</mgnLiqDlvAmnt>
  <mgnSprdAmnt>0.00</mgnSprdAmnt>
  <mgnAddlAmnt>210893712.30</mgnAddlAmnt>
  <unadjMgnReq>210893712.30</unadjMgnReq>
</cc750Rec>
```


OTCNE in P A/c


```xml
<cc750Rec>
  <mgnClsCod>OTCNE</mgnClsCod>
  <mgnPremiumAmnt>0.00</mgnPremiumAmnt>
  <mgnLiqDlvAmnt>0.00</mgnLiqDlvAmnt>
  <mgnSprdAmnt>0.00</mgnSprdAmnt>
  <mgnAddlAmnt>73060.20</mgnAddlAmnt>
  <unadjMgnReq>73060.20</unadjMgnReq>
</cc750Rec>
<cc750Rec>
  <mgnClsCod>PNF01</mgnClsCod>
  <mgnPremiumAmnt>0.00</mgnPremiumAmnt>
  <mgnLiqDlvAmnt>0.00</mgnLiqDlvAmnt>
  <mgnSprdAmnt>0.00</mgnSprdAmnt>
  <mgnAddlAmnt>210893712.30</mgnAddlAmnt>
  <unadjMgnReq>210893712.30</unadjMgnReq>
</cc750Rec>
```


PNF01 & OTCNE both are reported in P a/c. As per logic, OTCNE is picked up

In similar pattern, OTCNE and PNF01 are reported in CI050 report.

Along with the IM/ TV files, to source segregation ID file CD298 is mandatory file for translation. Translate ST will fail if this file is missing.

85RPT**CD298**CALXV20191203.XML

CD298 sample


```
<RC>
<rptSubHdr>
<membLglNam>Calypso Fund 2</membLglNam>
<membId>CAXXV</membId>
<relCM>CALXV</relCM>
<membStatus>Enabled</membStatus>
</rptSubHdr>
<acctTypGrp name="A1">
<nettingElig>Y</nettingElig>
<maxNettingLevel>3</maxNettingLevel>
<pricModelIRS>NP</pricModelIRS>
<pricModelZCIS>NP</pricModelZCIS>
<pricModelFX>NP</pricModelFX>
<feeWaiver>N</feeWaiver>
<feeWaiverZCIS>N</feeWaiverZCIS>
<feeWaiverFX>N</feeWaiverFX>
<SegregationID>CAXXVXCALXVSEG</SegregationID>
<MarkitWireId>CALEUREXYXV</MarkitWireId>
</acctTypGrp>
```


The system is configured to identify the membid and A/c in CC204/ CC203 and then search for the same combination in CD298. Once that is located, it will pick up the SegregationID from the resp tag as mentioned in above image.

CDML first tries to match srcSysLEId with MarkitWireId and retrieve Segregation A/c.

If srcSysLEId does not match MarkitWireId, it tries to match srcSysLEId with globalLEId and retrieve Segregation A/c.

If srcSysLEId does not match with either an error is raised.

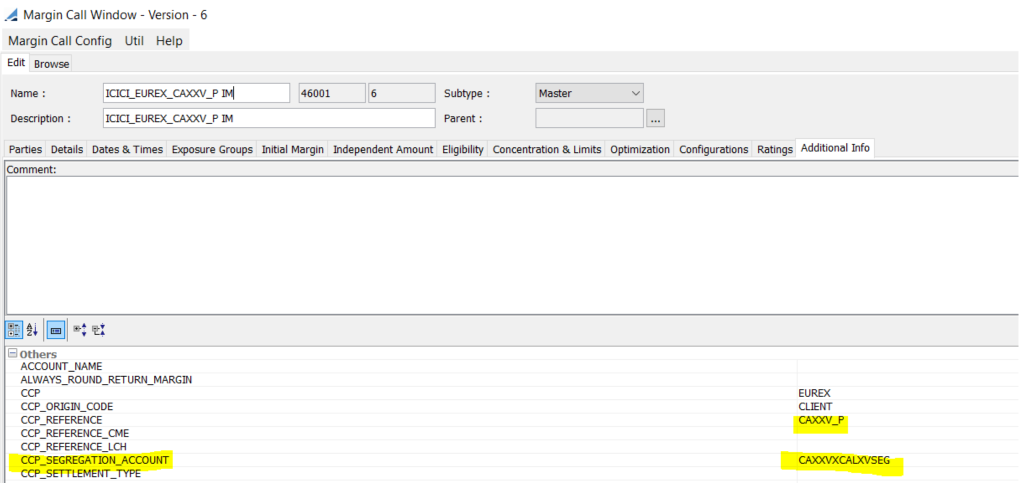
Trade Valuation EOD Reports

85RPT**CC203**CALXV20200128.XML

85RPT**CD220**CALXV20191203.XML

CD220 is for XCCY, FX and NDF trades to source Coupon, Upfront fees, FX Cashflows, NDF Cashflows

Segregation ID should be mentioned on the IM MCC as below:



Points to note in Trade Valuation file:

Upfront fee and coupon are denoted in the files with below tags:

OTC FEE PAYMENT RECEIVED

OTC FEE PAYMENT PAID

OTC COUPON PAID

OTC COUPON RECEIVED

FX Cashflows are denoted in the files with below tags

OTC FX SOLD or OTC FX PAID: represent FX payment

OTC FX RECEIVED or OTC FX BOUGHT: represent FX received

NDF Cashflows are denoted in the files with below tags

NDF SETTLEMENT PAID

NDF SETTLEMENT RECIEVED

Upfront fee / Coupon / FX cashflows will only be sourced when the below cashflow dates are greater than the filedate by 1 (default lag at the back end) and settlement tag is 'PaymentInstructed'

Therefore, if filedate is 09/09 and cashflow date is 09/10 then the upfront fee / coupon / FX cashflows will be captured.

```
acctTypGrp name="A1">
currTypCod value="EUR">
cashFlowDate value="2019-09-10">
trnTyp type="OTC COUPON PAID">
CCPTrade Id="2266293">
subtotal value="-10769.50"/>
/trnTyp>
trnTyp type="OTC FEE PAYMENT RECEIVED">
CCPTrade Id="2266299">
Leg>FloatPay</Leg>
idxName>EURIBOR</idxName>
idxTenor>6M</idxTenor>
idxSource>EURIBOR01</idxSource>
preSrcSysTradeId>33113094</preSrcSysTradeId
srcSysTradeId>33113101</srcSysTradeId>
srcSysGroupId>33113094</srcSysGroupId>
srcSysLEId>CALEUREXLXV</srcSysLEId>
tradeRefId>33113094-2</tradeRefId>
oldTradeRefId>33113094-2</oldTradeRefId>
effectiveDate>2017-02-27</effectiveDate>
maturityDate>2022-02-28</maturityDate>
CFNPV>12048.17</CFNPV>
setlAmnt>12032.22</setlAmnt>
settlement>PaymentInstructed</settlement>
setlLoc>TARGET2</setlLoc>
```


NDF Cashflows are reported as below:


```
</cashFlowDate>
<cashFlowDate value="2020-12-31">
<trnTyp type="NDF SETTLEMENT PAID">
<CCPTrade Id="2858056">
<Leg></Leg>
<idxName></idxName>
<idxTenor></idxTenor>
<idxSource></idxSource>
<preSrcSysTradeId></preSrcSysTradeId>
<srcSysTradeId>49713663</srcSysTradeId>
<srcSysGroupId>49713663</srcSysGroupId>
<srcSysLEId>549300GGRJHP6BG62325</srcSysLEId>
<tradeRefId></tradeRefId>
```

```
<cashFlowDate value="2020-12-31">
<trnTyp type="NDF SETTLEMENT RECEIVED">
<CCPTrade Id="2858056">
<Leg></Leg>
<idxName></idxName>
<idxTenor></idxTenor>
<idxSource></idxSource>
<preSrcSysTradeId></preSrcSysTradeId>
<srcSysTradeId>49713663</srcSysTradeId>
<srcSysGroupId>49713663</srcSysGroupId>
<srcSysLEId>549300GGRJHP6BG62325</srcSysLEId>
<tradeRefId></tradeRefId>
```


However, if any Clearing transfer settle lag is set in the Ccy defaults then cashflow date will be captured with that difference in the filedate

E.g. Fee cashflow date is 11/09 and settlelag is updated as 2 then coupon will be captured when the filedate is 09/09.

```
<acctTypGrp name="A1">
<currTypCod value="EUR">
<cashFlowDate value="2019-09-11">
<trnTyp type="OTC COUPON PAID">
<CCPTrade Id="2266293">
<subtotal value="-10769.50"/>
</trnTyp>
<trnTyp type="OTC FEE PAYMENT RECEIVED">
<CCPTrade Id="2266299">
<Leg>FloatPay</Leg>
<idxName>EURIBOR</idxName>
<idxTenor>6M</idxTenor>
<idxSource>EURIBOR01</idxSource>
<preSrcSysTradeId>33113094</preSrcSysTradeId>
<srcSysTradeId>33113101</srcSysTradeId>
<srcSysGroupId>33113094</srcSysGroupId>
<srcSysLEId>CALEUREXLXV</srcSysLEId>
<tradeRefId>33113094-2</tradeRefId>
<oldTradeRefId>33113094-2</oldTradeRefId>
<effectiveDate>2017-02-27</effectiveDate>
<maturityDate>2022-02-28</maturityDate>
<CFNPV>12048.17</CFNPV>
<setlAmnt>12032.22</setlAmnt>
<settlement>PaymentInstructed</settlement>
<setlLoc>TARGET2</setlLoc>
```

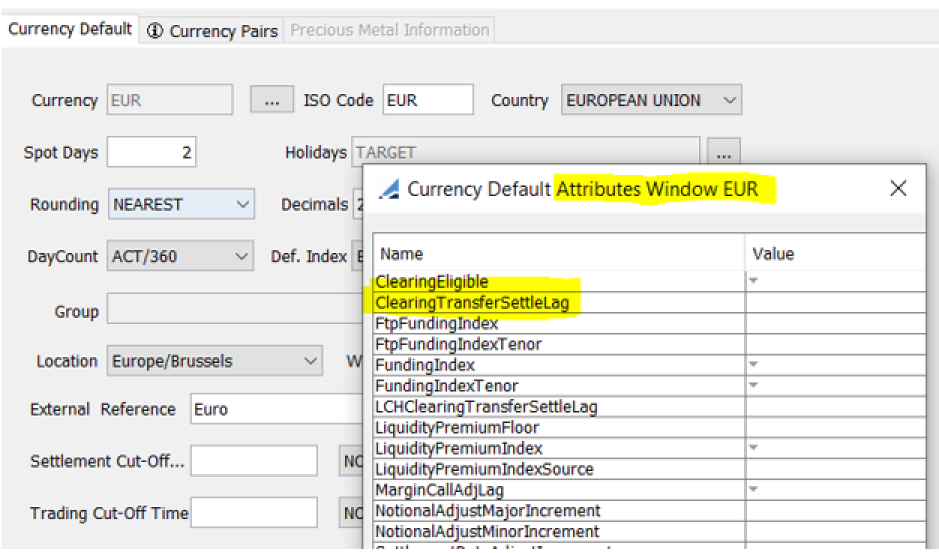

FX cashflows are reported as below:


```
</trnTyp>
<trnTyp type="OTC FX PAID">
<CCPTrade Id="2523142">
<Leg></Leg>
<idxName></idxName>
<idxTenor></idxTenor>
<idxSource></idxSource>
<preSrcSysTradeId>48429510</preSrcSysTradeId>
<srcSysTradeId>48429550</srcSysTradeId>
<srcSysGroupId>48429510</srcSysGroupId>
<srcSysLEId>MEGACALPCC</srcSysLEId>
<tradeRefId>48429510-2</tradeRefId>
<tradeRefIdCM>48429510-2</tradeRefIdCM>
<tradeRefIdRC></tradeRefIdRC>
<oldTradeRefId>48429510-2</oldTradeRefId>
<effectiveDate>2019-09-16</effectiveDate>
<maturityDate>2020-09-16</maturityDate>
<CFNPV>-80982473.17</CFNPV>
<setlAmnt>-81000000.00</setlAmnt>
<settlement>NotSettled</settlement>
```

```
<trnTyp type="OTC FX RECEIVED">
<CCPTrade Id="2747245">
<Leg></Leg>
<idxName></idxName>
<idxTenor></idxTenor>
<idxSource></idxSource>
<preSrcSysTradeId>53741611</preSrcSysTradeId>
<srcSysTradeId>53741935</srcSysTradeId>
<srcSysGroupId>53741611</srcSysGroupId>
<srcSysLEId>MEGACALPCC</srcSysLEId>
<tradeRefId>53741611-2</tradeRefId>
<tradeRefIdCM>53741611-2</tradeRefIdCM>
<tradeRefIdRC></tradeRefIdRC>
<oldTradeRefId>53741611-2</oldTradeRefId>
<effectiveDate>2020-06-08</effectiveDate>
```

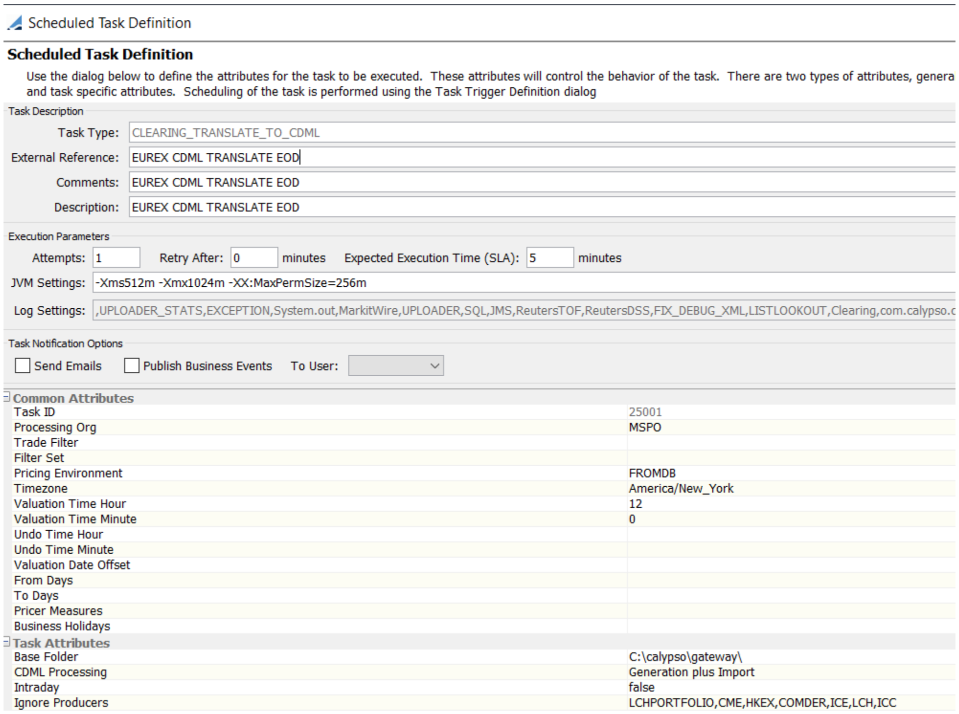
```xml
<cashFlowDate value="2020-12-21">
<trnTyp type="OTC FX BOUGHT">
<CCPTrade Id="2750543">
<Leg></Leg>
<idxName></idxName>
<idxTenor></idxTenor>
<idxSource></idxSource>
<preSrcSysTradeId></preSrcSysTradeId>
<srcSysTradeId>42983848</srcSysTradeId>
<srcSysGroupId>42983848</srcSysGroupId>
<srcSysLEId>549300GGRJHP6BG62325</srcSysLEId>
<tradeRefId></tradeRefId>
<tradeRefIdCM></tradeRefIdCM>
```

```xml
<subtotal value="28256.27"></subtotal>
</trnTyp>
<trnTyp type="OTC FX SOLD">
<CCPTrade Id="2750527">
<Leg></Leg>
<idxName></idxName>
<idxTenor></idxTenor>
<idxSource></idxSource>
<preSrcSysTradeId></preSrcSysTradeId>
<srcSysTradeId>42983256</srcSysTradeId>
<srcSysGroupId>42983256</srcSysGroupId>
<srcSysLEId>549300GGRJHP6BG62325</srcSysLEId>
<tradeRefId></tradeRefId>
<tradeRefIdCM></tradeRefIdCM>
<tradeRefIdRC></tradeRefIdRC>
```

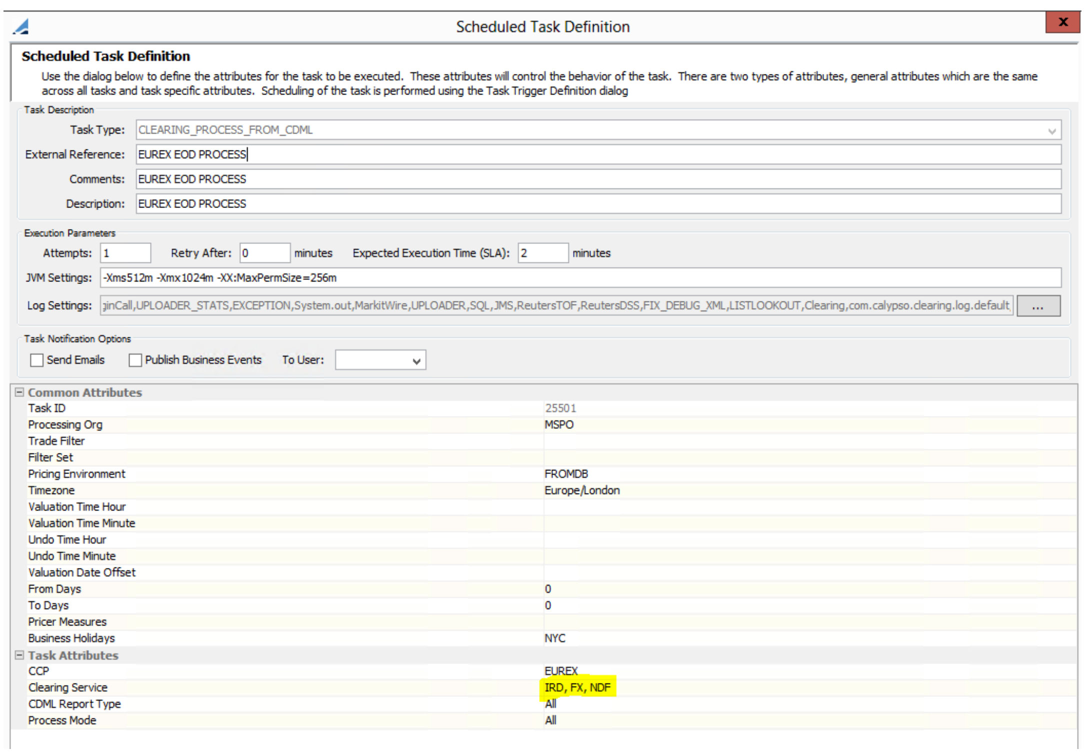


5.2 Scheduled Tasks Setup

Below is the CDML Translate ST used to import the CCP EOD reports into the system.



CDML Process ST Setup



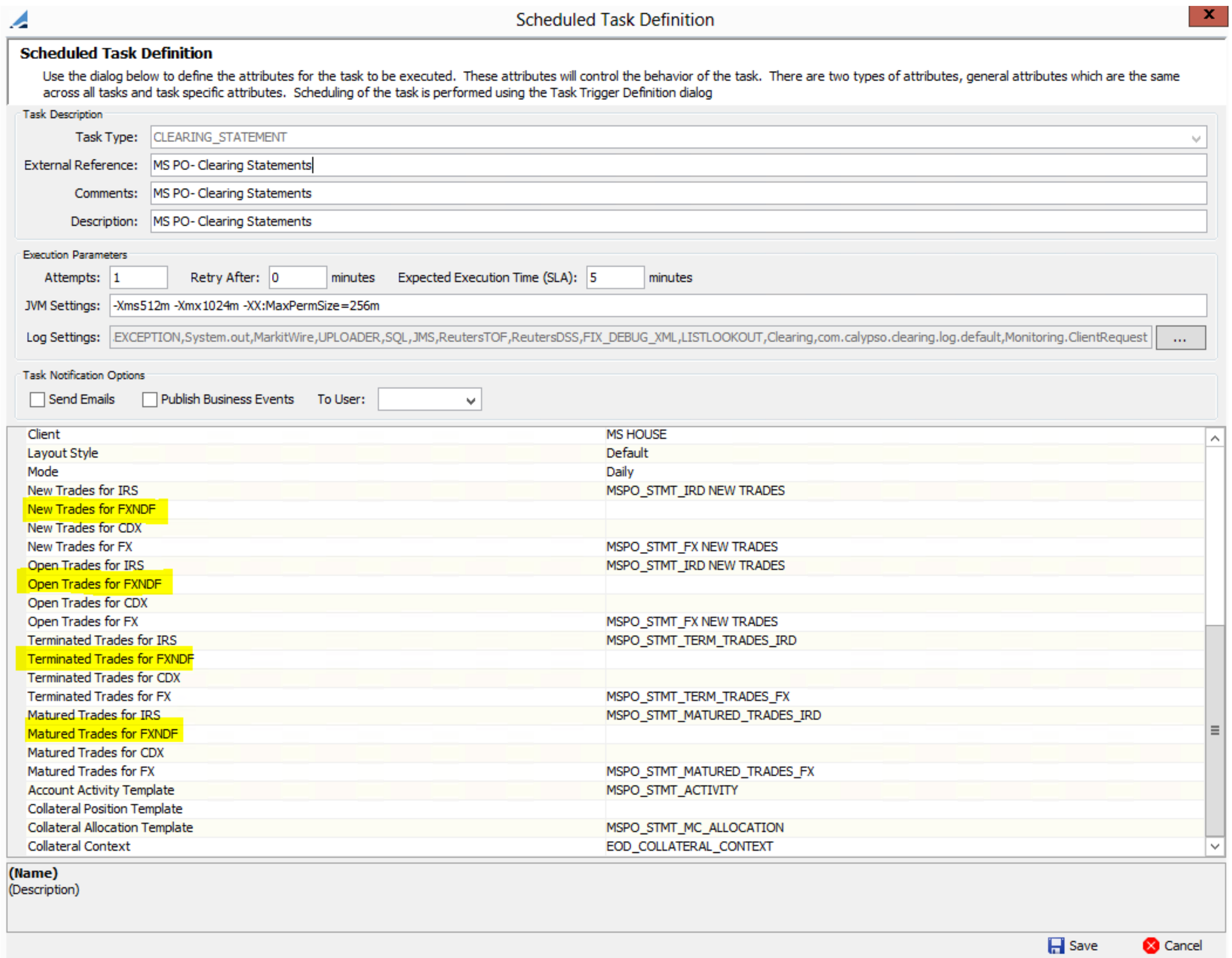
To process FX reports clearing service should be selected as FX along with IRD clearing service as highlighted above. To process NDF reports, you need to select NDF in the clearing service as well.

5.3 Post EOD File Processing

After the CDML ST are translated / processed, user should run the collateral manager and execute the margin calls.

After executing the margin calls, user has to run the ST for clearing statement which will summarize the margin requirements, cash balances, trading activity during the day, account activity details.

Below is a sample for Eurex XCCY EOD Processing / EUREX FX EOD Processing



Clearing Statement also updates FX Settlement cashflow tab / Eurex FX NPV cashflow tab / Eurex FX IM tab/ Trade details.

FX Settlement Tag includes FX and NDF cashflows.

Clearing Cash Flows Summary

	EUR	GBP	USD	Total (USD)
Beginning Cash Balance	0.00	0.00	0.00	0.00
Commissions/Fees	0.00	0.00	0.00	0.00
PAI	-36.32	0.00	13.82	-18.50
Coupons	-138,076.67	0.00	0.00	-122,888.24
FRA Settlements	0.00	0.00	0.00	0.00
FX Settlements	0.00	-12,300.00	0.00	-12,054.00
Upfront Fees	-210,646.67	-1,230.00	0.00	-188,680.94
Credit Premium	0.00	0.00	0.00	0.00
Credit Event	0.00	0.00	0.00	0.00
Credit Coupon	0.00	0.00	0.00	0.00
Credit Event Rebate	0.00	0.00	0.00	0.00
Cash Movements	0.00	0.00	0.00	0.00
Ending Cash Balance	-348,759.66	-13,530.00	13.82	-323,641.68
CME IRS NPV	0.00	0.00	0.00	0.00
CME NDF NPV	0.00	0.00	0.00	0.00
LCH IRS NPV	0.00	0.00	0.00	0.00
LCHSA CDX NPV	0.00	0.00	0.00	0.00
Eurex IRS NPV	-2,973,760.39	0.00	0.00	-2,646,646.75
Eurex NDF NPV	0.00	0.00	-2,167.25	-2,167.25
Eurex FX NPV	0.00	0.00	-8,483,531.06	-8,483,531.06

Initial Margin Summary

EUR

	EUREX NDF	EUREX FX	EUREX IRD	Total (EUR)
Margin Requirement	-26,798.33	-80,327,796.66	-2,716,490.12	-83,071,085.10
Cash Collateral (Cover Value)	0.00	0.00	0.00	0.00
Non Cash Collateral (Cover Value)	0.00	0.00	0.00	0.00
Total Collateral (Cover Value)	0.00	0.00	0.00	0.00
Excess/Deficit	-26,798.33	-80,327,796.66	-2,716,490.12	-83,071,085.10
Pending Cash Collateral (Cover Value)	0.00	0.00	0.00	0.00

EUREX SOD Margining Process

FCM needs functionality of passing through all the cash which they received from Clients to CCP (EUREX).

EUREX charges intraday margin (for IM) in EUR which FCM can charge to client. If the client does not pay then, FCM request for return of the EUR in the beginning of the day from EUREX, and post deficit balance in preferred currency which will be reflected in PPS Call amount.

Currently, this functionality is only for LCH, we will be extending this feature now for EUREX CCP.

FCM generally performs margin call processing in following manner:

- EOD Margin Call Process
- IM to VM (VM to IM) Sweeping excess cash balances
- Collateral Management Process for EOD
- SOD Process using CD042 vis-à-vis margin call position for cash facing to Client - Intraday Margin Call Processing

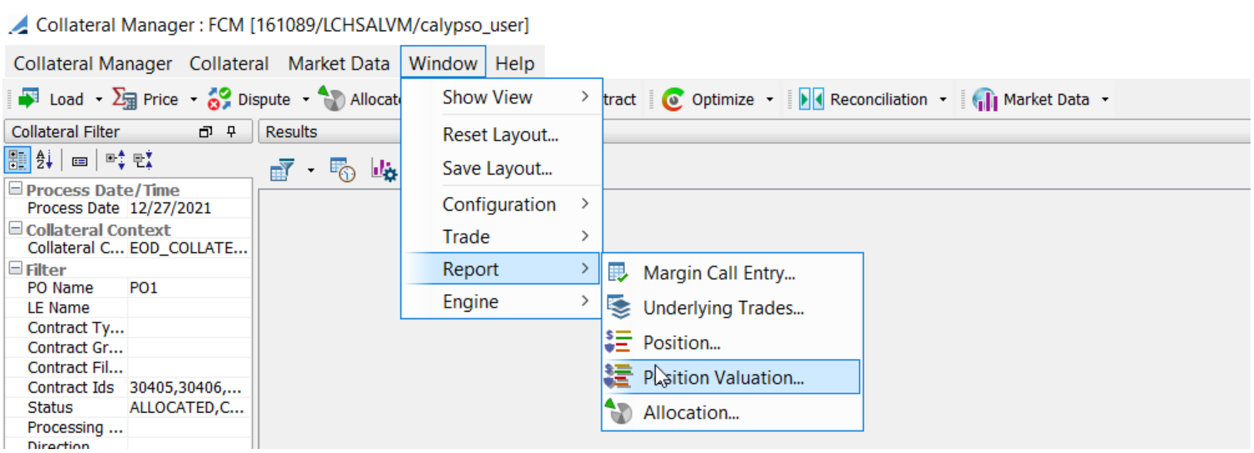
The EUREX SOD process currently only supports IRD products for Client accounts.

6.1 Setup Requirements

No specific setup is required for this process besides the scheduled task CLEARING_SOD_MARGINCALL which is executed at SOD after completing the EOD clearing process.

This process reconciles Initial margin positions between existing Client IM positions from Margin Call Position Valuation report (MCPV) and the CD042 Eurex file for that position A/c. If there is any difference between the file and MCPV positions then SOD call is generated between the FCM and the CCP.

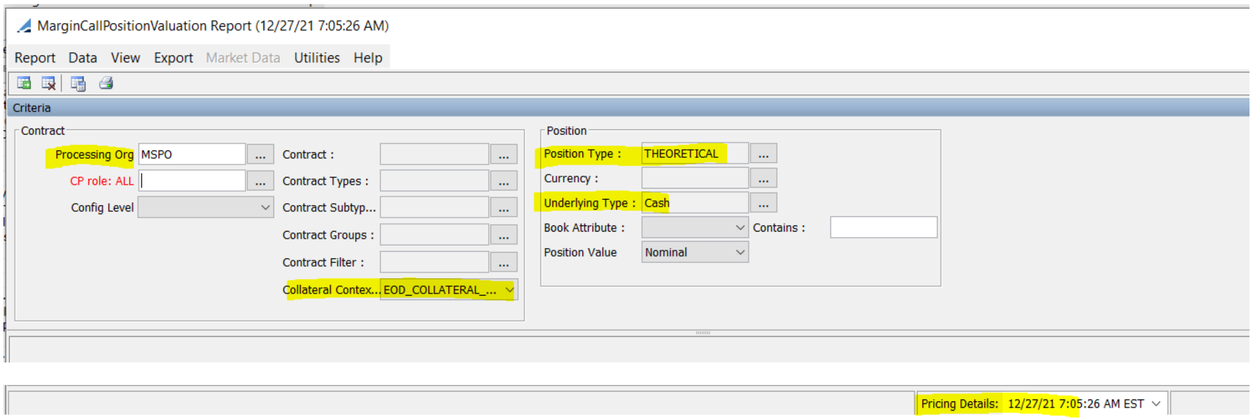
MCPV report can be located as below in Collateral Manager.



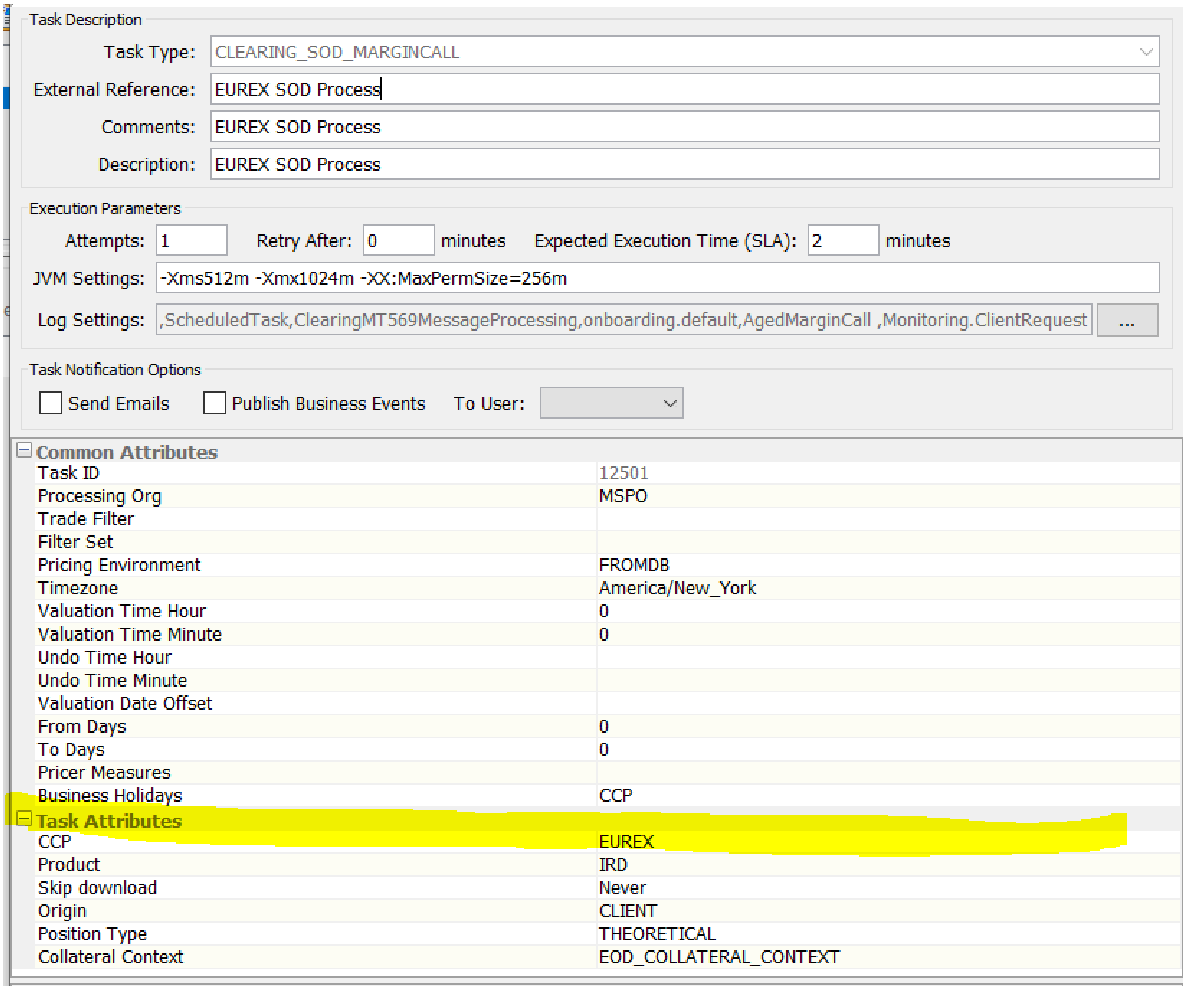
You can search for positions with below criteria:

Date in the Pricing Details must be updated for the relevant business date for which the position is to be searched.

The scheduled task extracts the positions from back end according to the setup, there is no requirement for the user to make any changes on the below report. Below is mentioned only for the user reference to identify positions from the report.



Scheduled Task Setup

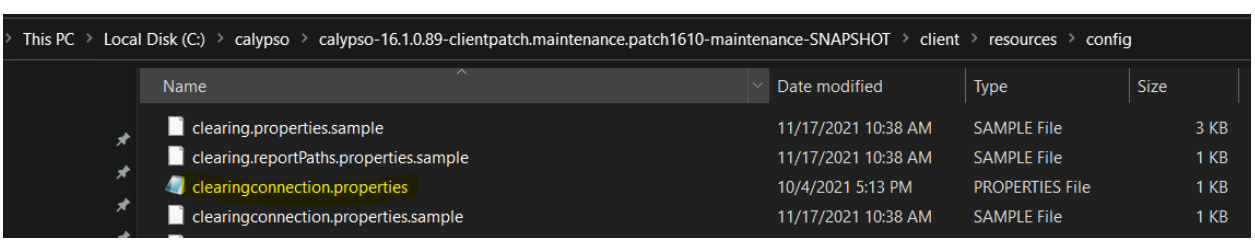


6.2 SOD File processing

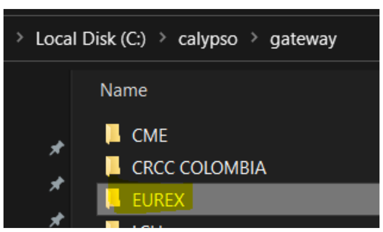
When executing the scheduled task for a specific valuation date, system will search for the specific CD042 file.

For system to locate the file, user will have to update the clearing connection properties file with the file location.

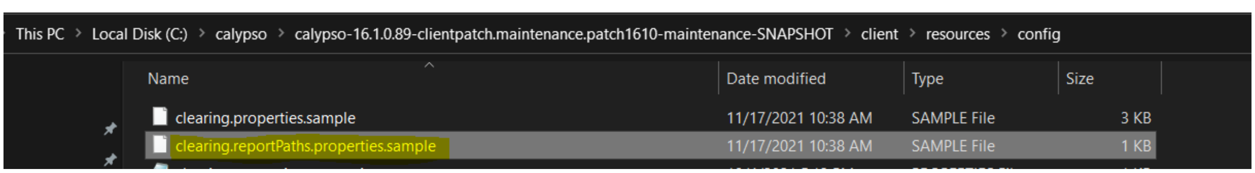
Clearing connection properties file is located at below location:



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

CME.4Q0.URI=sftp://sftpng.cmegroup.com:22
CME.4Q0.user=4Q0_SFTP_user
CME.4Q0.password=******

LCH.CC1.URI=sftp://195.246.228.9:6022
LCH.CC1.user=CC1_SFTP_user
LCH.CC1.key=/path/to/CC1/key

LCH.CC2.URI=sftp://195.246.228.9:6022
LCH.CC2.user=CC2_SFTP_user
LCH.CC2.key=/path/to/CC2/key
LCH.CC2.keyPassphrase=CC2_key_passphrase

EUREX.CALXV.URI=file://C:/calypso/gateway/EUREX
```



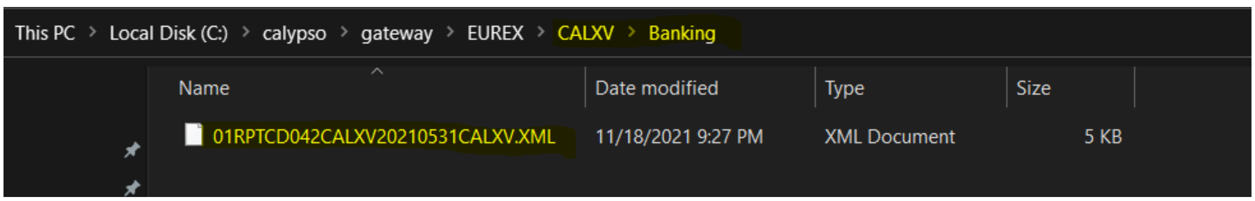
Further within the Eurex folder, we provide one more location step as per the below file 'clearing.reportPaths.properties.sample':



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

# EUREX.EUREXOvernightCoverDistributionReport = /${firmId}/Banking/[a-zA-Z0-9]*(CD042)[a-zA-Z0-9]*(.XML)
```

Thus, within the Eurex folder, system will refer the above highlighted location.

For example, Eurex firm ID is CALXV then we see the file located as below:



This is the default file location for SOD file as per the above property file, user can change it as per the requirement.

Sample Report Information for reference: Report CD042

```
<cd042Grp10>
<membClgIdCod>CALXV</membClgIdCod>
<clgMembCurrTypCod>EUR</clgMembCurrTypCod>
<cd042KeyGrp10>
<poolId>CALXVXSTANDARD</poolId>
</cd042KeyGrp10>
<cd042Grp11>
<cd042KeyGrp11>
<membExchIdCod>CALXV</membExchIdCod>
</cd042KeyGrp11>
<cd042RecA>
<currTypCod>EUR</currTypCod>
<mgnReqrAmnt>109523181.38</mgnReqrAmnt>
<cshCollAmnt>110630159.19</cshCollAmnt>
<secuTotBalAmnt>0.00</secuTotBalAmnt>
<guarTotBalAmnt>0</guarTotBalAmnt>
<ovrUndrCovAmnt>1106977.81</ovrUndrCovAmnt>
<adjExchRat>1.000000</adjExchRat>
<ovrUndrCovAmntClgCurr>1106977.81</ovrUndrCovAmntClgCurr>
</cd042RecA>
<cd042RecA>
<currTypCod>USD</currTypCod>
<mgnReqrAmnt>46423.80</mgnReqrAmnt>
<cshCollAmnt>0.00</cshCollAmnt>
<secuTotBalAmnt>0.00</secuTotBalAmnt>
<guarTotBalAmnt>0</guarTotBalAmnt>
<ovrUndrCovAmnt>-46423.80</ovrUndrCovAmnt>
<adjExchRat>1.178327</adjExchRat>
<ovrUndrCovAmntClgCurr>-39398.06</ovrUndrCovAmntClgCurr>
</cd042RecA>
<sumOvrUndrCovAmntClgCurr>1067579.75</sumOvrUndrCovAmntClgCurr>
</cd042Grp11>
</cd042Grp10>
```


- Pool Id tag denotes the segregation A/c for the resp client.

- EUR is the base ccy

- Net PPS call amount is captured from tag 'sumOvrUndrCovAmntClgCurr'

- Segregation A/c i.e. poolID is mentioned on Client and CCP IM MCC in below tags in 'Additional Info' section

MCC IM > Client facing would have CCP_SEGREGATION_ACCOUNT = CALXVXSTANDARD

MCC IM > EUREX facing would have CCP_REFERENCE= CALXVXSTANDARD