Nasdaq Calypso

Commodities Trading

Version 18

Revision 6.0

March 2025

Approved

Document History

Revision	Published	Summary of Changes
1.0	February 2024	First revision for version 18.
2.0	June 2024	Second revision for version 18 - Updates in Capturing Commodity Forward Trades. Also added Commodity Forward to Spot Migration details.
3.0	September 2024	Third edition for version 18 - Updates for Commodity Swap.
4.0	October 2024	Fourth edition for version 18 - Updates related to 'DLY - Future Contract Delivery Period' and Cashflow columns for Commodity Swap and Commodity OTC Option trades.
5.0	December 2024	Fifth edition for version 18 - Added ATC – End FX method in Commodity Averaging methods.
6.0	March 2025	Sixth edition for version 18 - Added support for Per Period 'DLY' frequency.

This document guides you through the setup and capture of commodity derivatives trades.

Table of Contents

1. Setup Requirements

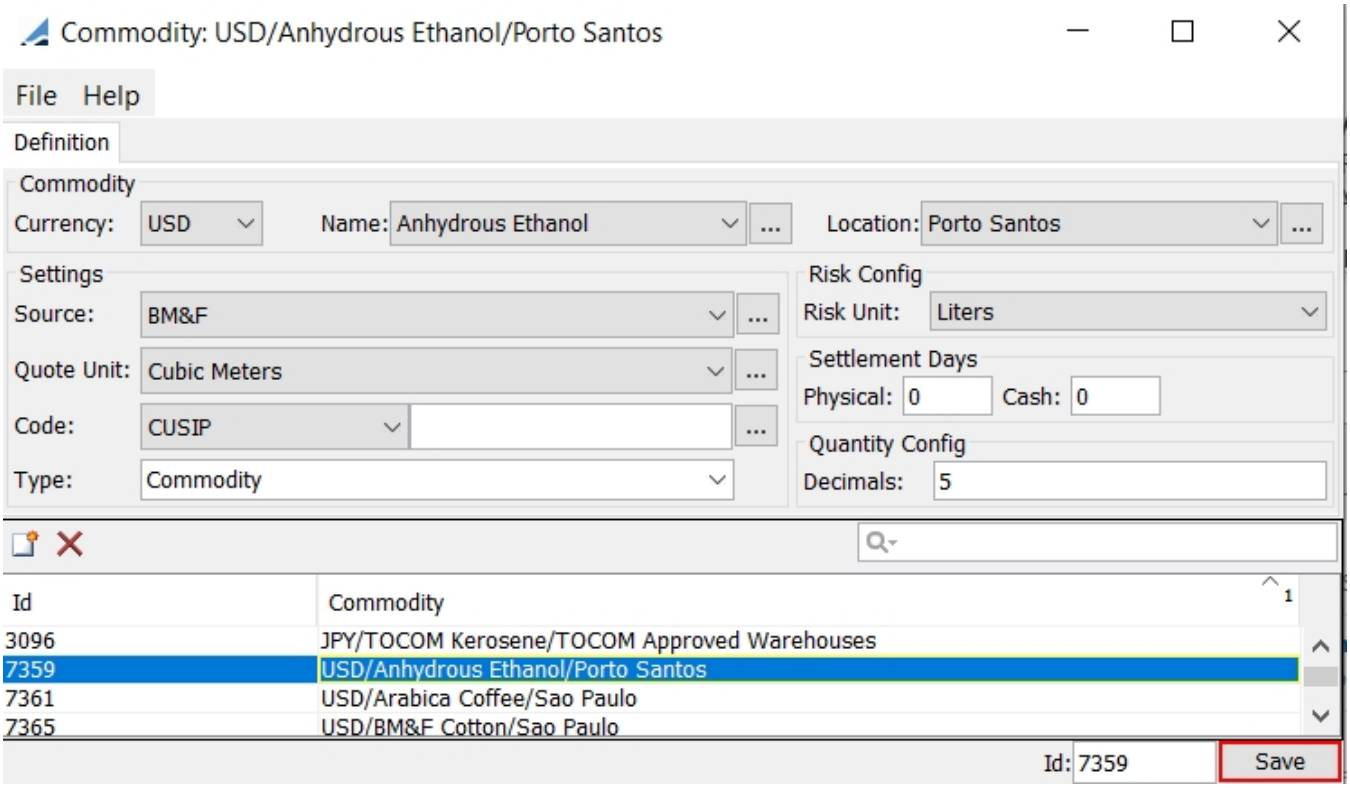
2. Commodity Product Definition

The commodity product stores information that is used to set defaults for trade capture and valuation. It links market data to pricing through its designation as an underlying in forward curves, volatility surfaces, future contracts and forward point instruments.

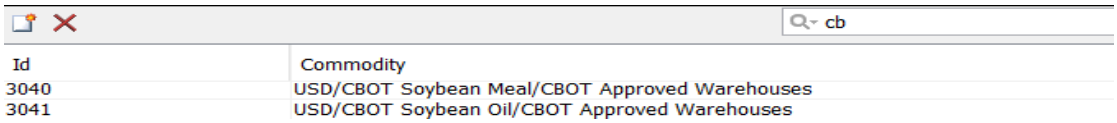
Commodities are typically referenced throughout the system using a naming convention of Currency/Name/Location.

[NOTE: The commodity trade windows require that you create the commodity product, and then create the commodity reset definition using Configuration > Commodities > Commodity Reset from the Calypso Navigator. Trade capture is based on the commodity reset definition]

From the Calypso Navigator, choose **Configuration > Commodities > Commodities**.



- Existing commodity products are loaded by default. Select a commodity product to view the product details in the fields described below. You can modify the details and click **Save** as needed.
- To search for a commodity product in the list, enter some letters in the search box. You can click the icon to specify the search.



» To create a new commodity product, click  or choose **File > New**, complete the details described below, and click **Save** to save the commodity product.

» Click ... to add values to the drop-down menus in the window.

Commodity Details

Field	Description
Currency	Select the currency in which the commodity is quoted. Note that the commodity currency and the future contract currency must be the same. The commodity currency and the commodity forward point currency must also be the same.
Name	Select a name for the commodity. You can click ... to add a new name as needed.
Location	Select the delivery location of the commodity. You can click ... to add a new location as needed.

Settings Details

Field	Description
Source	Select the entity responsible for releasing official prices for the commodity or for the associated future contract. Typically this would be a commodities exchange, but could also be a publication or an over the counter marketplace. You can click ... to add a new source as needed.
Quote Unit	Select the commodity unit of measure in which the price is given. Units can be converted using a conversion table, but values in the quote set will always be given in this unit. You can click ... to add a new quote unit as needed.
Code	You can select a product code from the drop down and view its value. Click ... to set product code values as needed. A variety of important defaults can be set from the code field including: Commodity Fixing Calendar, Commodity Decimal Precision, Commodity Family/Group, and Market and data feed codes. Example: COMM_FIX_PRICE_DEC — The number of decimal places to which the floating price of a commodity derivative will be rounded.
Type	Select the type of commodity. The default type is Commodity. Additional types are available out-of-the-box. They are associated with additional attributes used in pricing.

Field	Description
	• Electricity - Please refer to Calypso Electricity Commodity documentation for setup details • Storage Based - Please refer to Calypso Storage Based Commodity documentation for setup details • Emission - Please refer to Calypso Emission Commodity documentation for setup details • Freight - Please refer to Calypso Freight Commodity documentation for details

Risk Config Details

Field	Description
Risk Unit	Select the unit of risk for the commodity. You can click ... to add a new risk unit as needed.

Settlement Days Details

Field	Description
Physical Cash	Enter the number of lags days for physical and cash settlement. Lag information for Forward trade entry is taken from the underlying commodity on the reset. For emission resets where there are potentially multiple underliers, the lag information is taken from an arbitrarily chosen underlying.

Quantity Config Details

Field	Description
Decimals	Enter the number of decimals that can be captured in trade quantity. This field has no impact on rounding or any report displays.

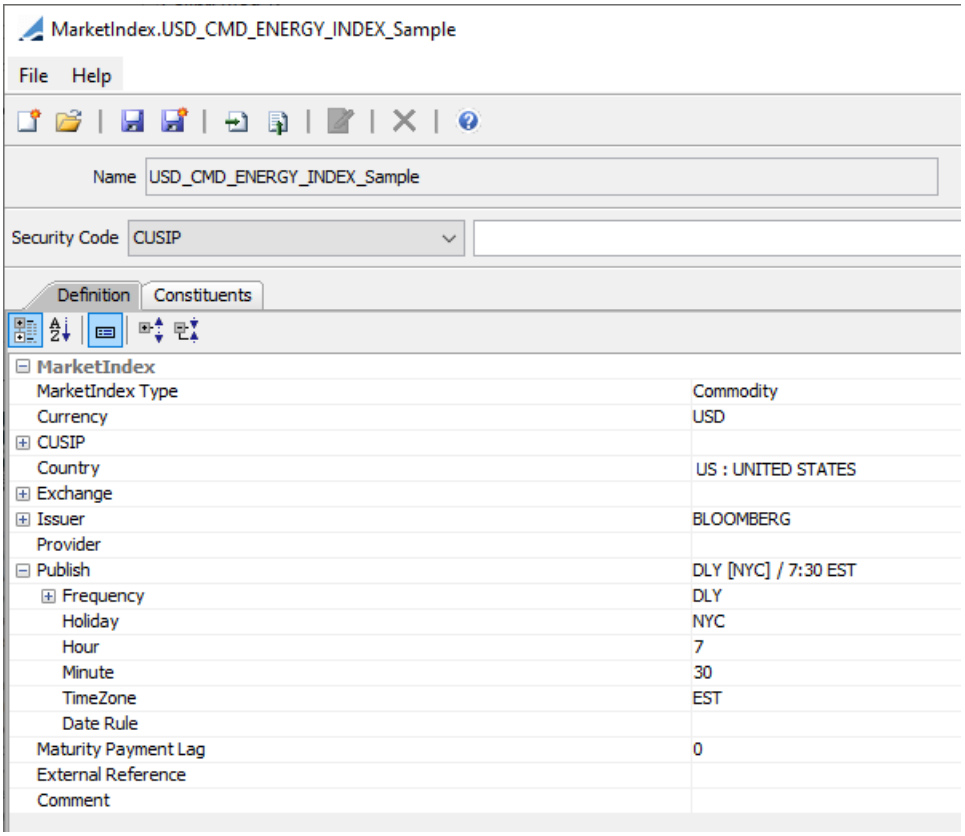
3. Commodity Index

Define the Commodity Index as a Market Index by choosing **Configuration > Product > Market Index** from Calypso Navigator. (`product.MarketIndexWindow`).

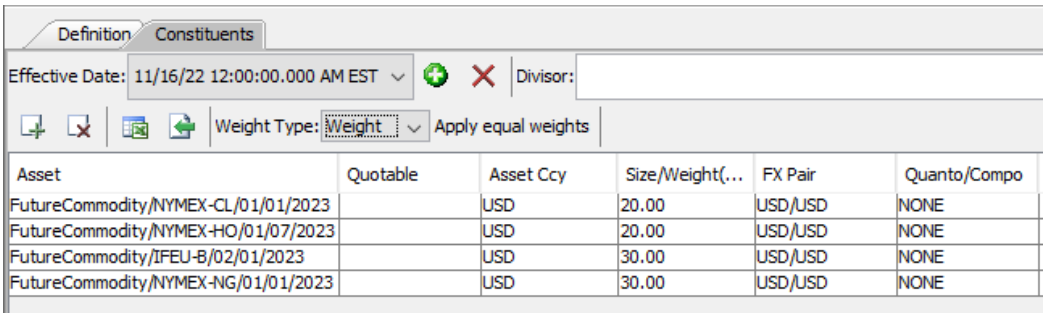
Commodity Market Index can have constituents - Commodity Spot and Commodity Futures.

Commodity Market Index can be of type Weight and Quantity.

Example:



You can define the basket of commodities in the Constituents tab:

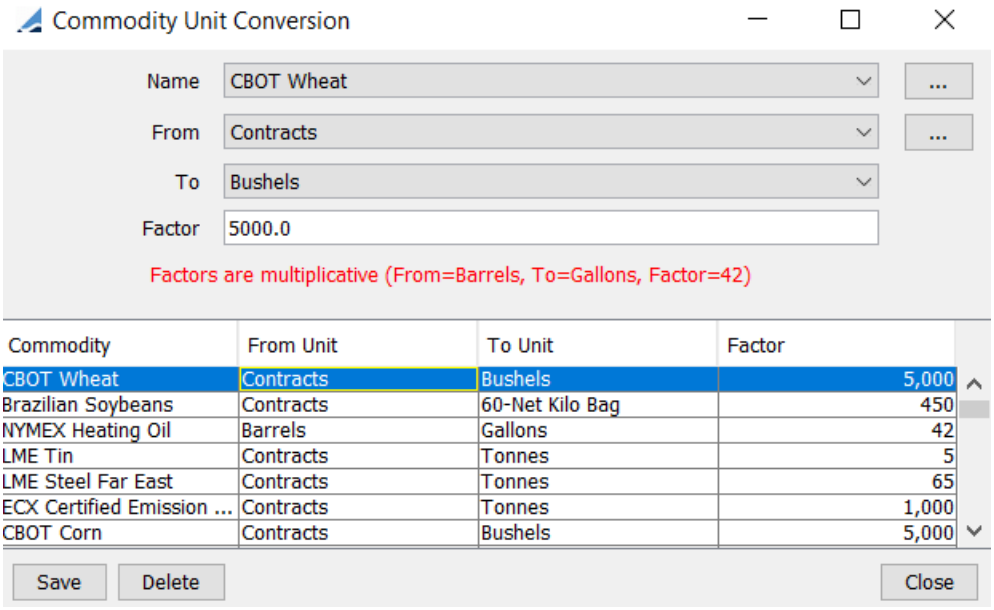


- Please refer to Calypso Getting Started documentation for details on defining market indices.

4. Commodity Unit Conversion

Throughout the system, commodities reference prices and quantities in particular commodity units. To be able to convert these values to other units, you must enter conversion factors into the Commodity Unit Conversion table.

Define the commodity unit conversions by choosing **Configuration > Commodities > Commodity Conversion** from Calypso Navigator (`product.CommodityUnitConversionWindow`).



» Enter the factor for converting a commodity from one unit type to another in the Commodity Unit Conversion window. The following equation describes the factor:

From Units * Conversion Factor = To Units

Note that the system also does the inverse conversion:

To Units * 1/Conversion Factor = From Unit

» Click **Save** to save the commodity unit conversion.

For example, if you define a conversion of Barrels * 42 = Gallons, then the system also calculates the inverse of Gallons * 1/42 = Barrels.

The commodity trade uses this conversion definition when you enter a trade and choose a quantity unit of measure that is different than the product definition quote unit.

Note that some risk analyses require a conversion of units to contracts. To do this, simply choose 'Contracts' as the commodity unit to convert to and enter the standard future contract size for the commodity as the conversion factor.

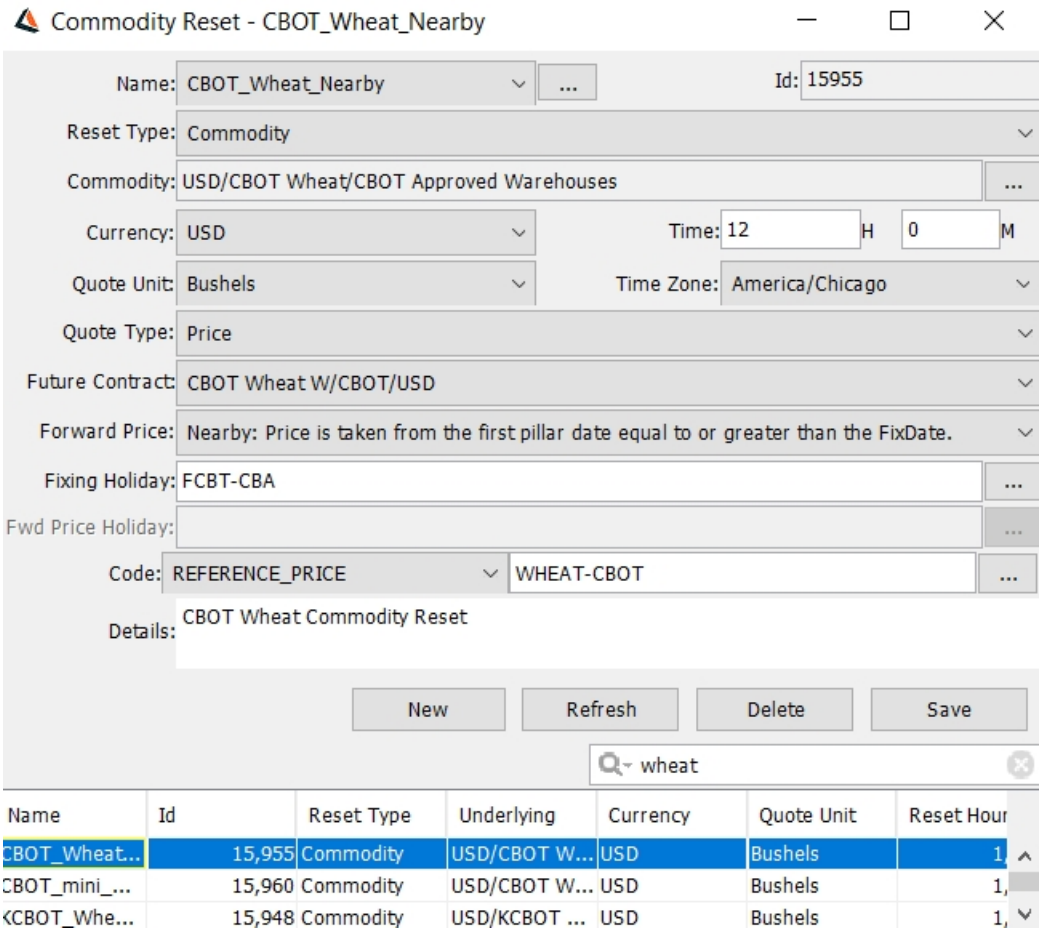
5. Commodity Reset Definition

The commodity reset represents the reference price against which a financial transaction is settled.

It designates which Forward Price Method will be used to project forward prices, and it is used to set the floating price for a commodity fixing that should have occurred.

You can select the commodity reset definition during trade capture, and define additional fixing details in the trade. The actual prices for commodity resets are set using **Trade Lifecycle > Reset > Price Fixing** from Calypso Navigator, or the PRICE_FIXING scheduled task.

Create the Commodity Reset Definition using **Configuration > Commodities > Commodity Reset** from Calypso Navigator (`refdata.CommodityResetFrame`).



- Existing commodity reset definitions are loaded by default. Select a reset to view the details. You can modify the details and click **Save** as needed.
- To create a new commodity reset definition, click **New**, complete the details described in the table below, and click **Save**.

Note that if the Authorization mode is enabled, an authorized user must approve your entry, provided that "CommodityReset" has been added to the "classAuthMode" domain. Click **Show Pending** to display any commodity reset definitions pending authorization.

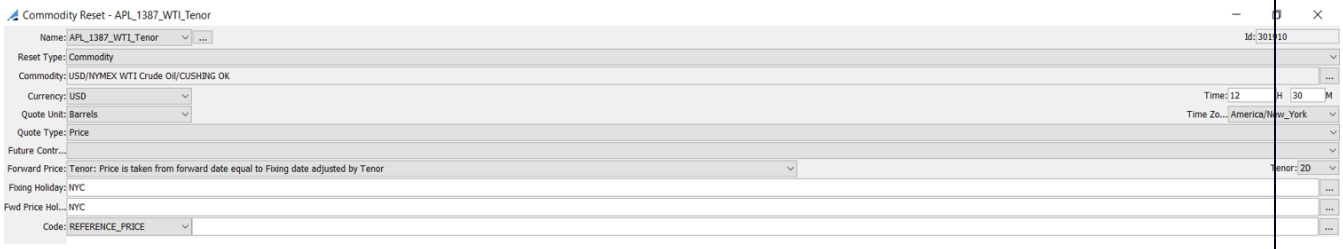
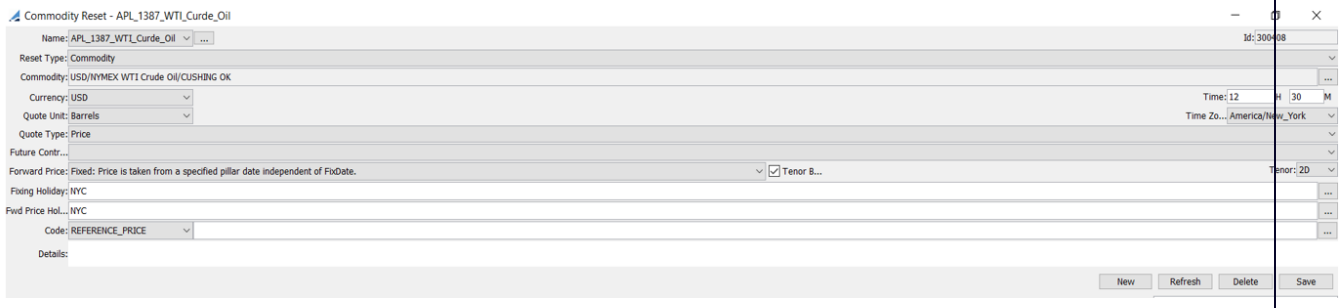
» Commodity Reset quotes are saved as *Commodity.<currency>.<commodity reset>*.

The following table describes the fields to complete in the commodity reset definition.

Field	Description
Name	Unique user defined name. Name should be descriptive to allow the selection of the proper reset without having to refer to the reset definition. Click ... to add a new commodity reset name to the drop-down menu.
Id	When you save the commodity reset definition, the system automatically assigns it an id and displays it in this field.
Reset Type	Select either Commodity or Emission. With the Emission reset type, you are able to specify multiple possible commodity underlyings, allowing for the capture of a trade where several different allowances are eligible for delivery.
Commodity	Link to the underlying commodity of the reference price. Click ... to select the underlying commodity product. The commodity reset definition requires a commodity product that you can create by choosing **Configuration > Commodities > Commodities** from Calypso Navigator.
Allowance Criteria	When Emission is selected as a Reset Type, select an allowance criteria for the reset. This criteria defines what type of allowances are designated in the commodities used for the reset. Only commodities using the selected allowance type are eligible. This list is populated from the *EmissionAllowanceType* domain.  After you have selected the Allowance Criteria, select the appropriate compliance and vintage information to further define the commodities contained in the reset.
Currency	The currency in which the reference price is quoted, i.e. USD/Barrel.
Quote Unit	The commodity unit in which the reference price is quoted, i.e. USD/Barrel.
Quote Type	The type of quote used, in most cases this will be Price.
Time / Time Zone	The global time that the commodity reset is expected to be known. This can be, but doesn't have to be, the time zone of the actual exchange or publication.
Future Contract	The future contract that is associated with this commodity. This information is used to determine the available futures for the forward price lookup logic described below. You can create future contracts by choosing **Configuration > Listed Derivatives > Future Contracts**. You can also create a commodity reset *without* an associated future contract. This allows creating

Field	Description
	resets for commodities that are traded OTC, and creating resets if not trading on an exchange.
Forward Price	Select a method for finding the forward price. For forward price methods intended to reference a futures contract price, the price method finds a single date. The logic looks for the expiry date of the next expiring future (using the future contract specified on the Commodity Reset), and requests a forward price from the curve. The curve logic then looks up a price on the curve for the requested date. For those price methods, it is necessary to specify the future contract series on the commodity reset. These methods are: *Nearby*, *IceNearby*, *SecondNearby*, *NearbyNonDelivered*, *FirstAndSecondNearby* and *Fixed*. If no future contract is selected on the Commodity Reset for any of these forward price methods, the curve will return prices for each of the fixing dates. The default interpolator on the Commodity Forward Curve is NONE. For all other methods, the forward price is retrieved from the forward curve. Calypso out-of-the-box provides the following forward price methods: Nearby — The Nearby (aka Prompt) future is the future in a given contract listing which is closest to expiration on a specified date. This future is typically the most liquid and contains the highest open interest, making it the primary choice for a derivative reference price. In Calypso, the projected price returned by the Nearby method is equal to the the price of the first sequentially available curve point on or after the fixing date. Lme3M — The LME 3 Month price is similar in concept to the LmeCash price. In Calypso, the projected price returned by the LME3M method is equal to the value on the curve which corresponds to the date 3 calendar months after the fixing date according to the Fixing Holiday Calendar subject to the Forward Price Holiday Calendar. Note: this value may correspond to an actual curve point, or may be interpolated using the interpolation method specified in the forward curve. LmeCash — Futures listed on the London Metals Exchange (LME) have daily expiries, whereas most other commonly traded commodity futures have monthly listings. Because of this, LME products tend to be quoted in terms of tenor-based futures such as Copper Cash Buyer's Price or Lead 3 Month Buyer's Price. In keeping with this convention, derivatives settled using the LME Cash reference price require a method which can project the price of the official cash settlement price on a given fixing date. In Calypso, the projected price returned by the LMECash method is equal to the value on the curve which corresponds to the date 2 business days after the fixing date according to the Fixing Holiday Calendar subject to the Forward Price Holiday Calendar. Note: this value may correspond to an actual curve point, or may be interpolated using the interpolation method specified in the forward curve. SecondNearby — The Second Nearby future on a given date is the future which is next to expire after the prompt. In Calypso, the projected price returned by the Second Nearby method is equal to the price of the second sequentially available curve point on or after the fixing date. NearbyNonDelivered — The projected price for a fixing date will be equal to the value of the chronologically closest point on the forward curve which is equal to or greater than the fixing date subject to the restriction that the fixing date is not after that underlying's first delivery date, or for commodity forward points, the pillar date. If the fixing date falls after the nearby underlying's first delivery (or pillar) date, but before the underlying's last trading date, the value of the next (chronologically) curve point will be used.

Field	Description
	Many agriculture future contracts have first delivery dates which fall BEFORE the last trading day, meaning that if you hold a short position in one of these contracts, even if the future is still trading, you may be notified by the exchange that you are required to deliver the physical commodity. Therefore, financial players in the agriculture markets always make sure that they exit future positions before the first delivery date to avoid that scenario. Likewise, financial derivatives, such as swaps and options, take a similar approach and will typically fix off of the nearest future which has not already passed its first delivery date. For example, look at 2 consecutive CBOT Wheat futures: Future First Delivery Dt Last Trade Dt MAR08 March 3, 2019 March 14, 2019 MAY08 May 1, 2019 May 14, 2019 For a commodity fixing on March 1, you would expect the NEARBY forward price method to use the LTD of 3/14/19 from the curve to project the price, and for a commodity fixing on March 5, you would STILL expect the NEARBY forward price method to use March 14, as the fixing has not passed the last trade date (aka the MAR08 curve date on the forward curve). In terms of the above example, for a commodity fixing on March 1, you would expect the NearbyNonDelivered forward price method to use the LTD of 3/14/19 from the curve to project the price since it is before the MAR19 future's first delivery date. For a commodity fixing on March 5, you would expect the NearbyNonDelivered forward price method to use May 14 as the curve date from which to project the price as it is after the first delivery date of the nearby curve point. Fixed — In some cases, derivatives are traded which agree upon a specific future as the reference price, regardless if that future is prompt, second prompt, etc. For these situations, we offer the Fixed forward price method. Using this method, the user must specify a date which corresponds to the date on the forward curve whose price will be used for all fixing dates for any derivative which uses that Commodity Reset. Any example would be a 3 month averaging swap over the months of Jan - Mar 2008 which references the Dec 2008 future. Each day of this swap will settle off of the price of the Dec 2008 future, therefore the projected price of all future fixing dates will be the same, based on the curve date chosen in the reset definition. IceNearby — The convention of many swaps traded on the The Intercontinental Exchange (ICE) is to fix off of the prompt future up to, but not including, that future's last trading day. On that day, the price will fix off of the second prompt contract. The theory behind this is that there is uncharacteristic volatility associated with a future on it's last trading day due to market forces trying to reconcile positions before the future ceases trading. In Calypso, the projected price returned by the ICENearby method is equal to the price of the first available curve point after, but not equal to, the fixing date. InterpolatedPrice — The forward price calculation is delegated to the interpolation method set on the underlying Market Data item, of which only curves are currently supported. If there is no interpolator set on the underlying market data item, "Nearby" forward price lookup method is used. FirstAndSecondNearby — Finds the expiry dates of the first and second nearby future contracts specified on the commodity reset, and request forward prices from the forward curve for both of these dates. The arithmetic average of the two prices is used as the fixing price.

Field	Description
	NearbyThirdWednesday — The forward price date one is the first curve point, which is the 3rd Wednesday after the fixing date. **NearbyAndSecondNearby** — The forward price is the average of the first and second expiries, equal to or greater than the fixing date. **LmeCashToday** - Specific to LME futures contracts. Price is taken on same day. **LmeCashTom** - Specific to LME futures contracts. Price is taken one business day ahead. Note: You can add custom methods by creating a class named `tk.product.commodities.priceselector.<ForwardPriceMethodName>` that implements `com.calypso.tk.product.commodities.priceselector.ForwardPriceMethod`. Compile the class, and register the method name in the "commodity.ForwardPriceMethods" domain. **Type:Tenor Based** - For the tenor based method, forward date will be equal to fixing date + tenor specified on the CMD Reset. On CMD reset, if the tenor based method is selected, a dropdown is provided where one can select the tenor such as - 0D, 1D, 2D etc. instead of dates. Tenor in the dropdown will be populated from the domain.  **Tenor Based under Type: Fixed** - If Fixed Method is selected and if tenor based checkbox is ticked, a dropdown is provided where one can select the tenor such as - 0D, 1D, 2D etc. instead of dates. Tenor in the dropdown will be populated from the domain. The Forward Date in this case would be the valuation date plus the tenor provided in the CM Reset. 
Fixing Holiday	The default calendar used to determine eligible commodity fixing dates for a derivative using the specified commodity reset. You can select a different calendar in the trade worksheet.
Fwd Price Holiday	For use with LMECash and LME3M fixing methods to determine the US holidays to be used to determine if a LME business day is also a good NY business day. Required since LME products are quoted in USD.

Field	Description
	Click ... to select a holiday calendar(s) for the forward price method.
Code	Select a Reset Code and a value for that code in this field. The reset code is used to generate confirmation keywords in the confirmation templates. These keywords are directly associated with a specific reset.  You can create a reset code by clicking on the ... and then adding a code name. This code is then added as a domain value in the "CommodityResetCode" domain. You can also add a reset code based on a confirmation keyword in the confirmation template by prepending the name of the reset with "COMMODITY_RESET_". This works the same way as the functionality for using trade keywords in a confirmation by appending KEYWORD_ to the beginning.
Details	Enter a description of the commodity reset to be used in confirmations.

NOTE: Commodity Linear pricers are able to price on the reset date without a reset.

If a commodity quote for the valuation date and fixing date is present, and if the valuation date is the same as the reset date then Calypso is taking that quote for further calculations from the environment, irrespective of time. If the commodity quote is not present in the environment, it is forecasted from the curve.

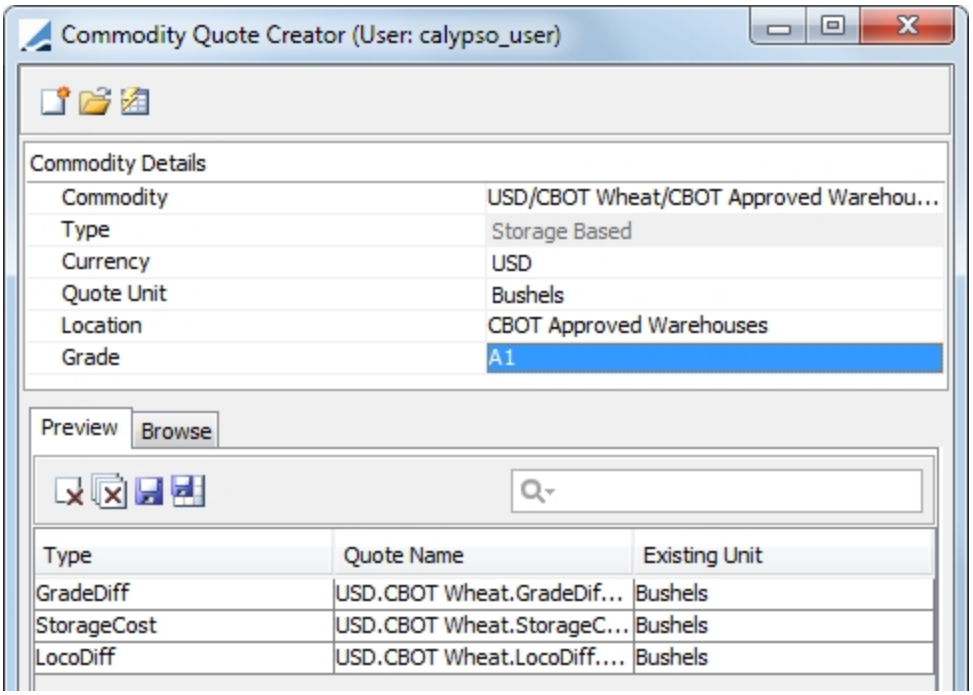
If the FX Reset quote for the valuation date and fixing date are present and if the valuation date is the same as the fixing date, Calypso takes that quote for further calculations, irrespective of time. If the FX Reset quote is not present in the environment, then the quote from the FX spot quote is used.

6. Commodity Quote Creator

Pricing commodity certificates requires a certain number of quotes such as the commodity quote, the location differential, the grade differential and the storage cost. These quotes are associated with a unit and a currency. The Quote Creator allows you to create quote names for commodities. In order for a certificate to use a particular commodity, a quote name for the commodity must have been specified in the Quote Creator prior to certificate creation.

Open the Commodity Quote Creator window (menu action `marketdata.CommodityQuoteNameCreationWindow`).

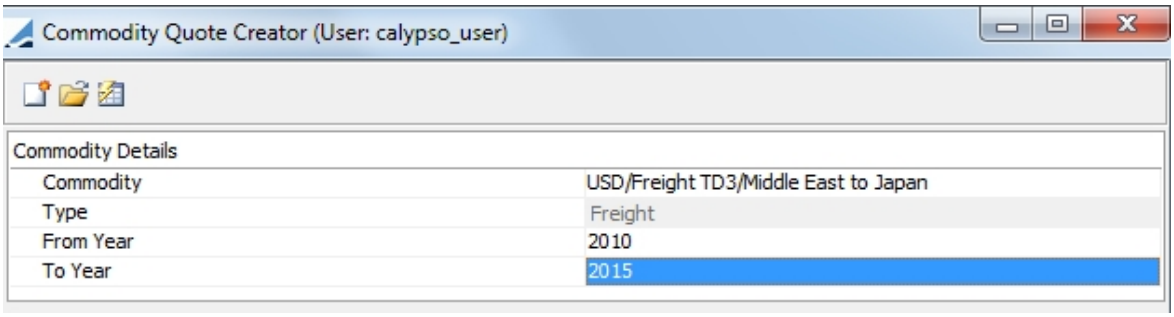
Storage Based Commodities



- Select a commodity from the Commodity field. When a commodity has been selected, the Currency and Quote Unit of the commodity is populated automatically. These two fields are editable though, if you wish to create a quote using something other than the currency and quote unit of the commodity.
- Click in the Location field to select as many locations as you would like. The available locations are populated from the *CommodityStorageLocation* domain.
- Click in the Grade field to select the desired grades for the quote. More than one grade can be selected. The available grades are populated from the *CommodityGrade* domain.
- Click . The quote names necessary for this quote are displayed below. There will be three quotes, a Grade Differential, Storage Cost and Location Differential. Click to save the quote names. They will be then displayed in the Quote window and you are able to enter quotes for these quote names.

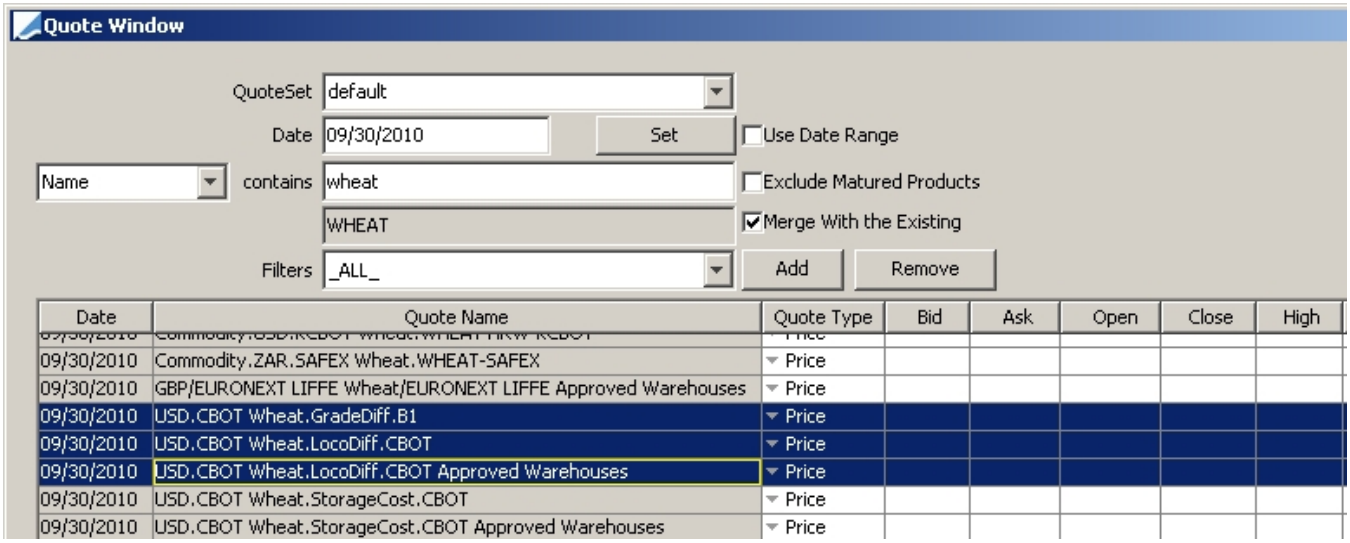
Freight Commodities

The window looks slightly different for freight commodities. You need only enter the From and To Years after selecting the Commodity since the rates for these commodity types are set for a year at a time.



Entering Quotes

You can enter quotes for the created quote names from the Quote Window (**Market Data > Market Quotes > Quotes**).



7. Commodity Fixing

7.1 Fixing Policies

Depending on the payment frequency, you can generally select one of the following types of fixing policies: date fixing or future fixing. You can create new fixing date policies for the FutureContractLTD payment frequency.

The calendar(s) used to determine the business days in the cash flow period are specified in the Swap Leg panel as described above.

After pricing the trade, in the Cashflows you can view the fixing dates for a cash flow period in the Commodity Fixings dialog window. Right-click the cash flow period and choose **Show Fixings** in the Cash Flow Menu. You can also customize the fixing dates in this dialog window.

Date Fixing

Determines which fixing dates to use during the cash flow period.

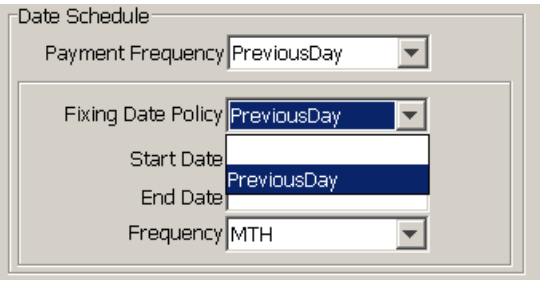
Policy	Description
Whole Period	There is a fixing date for each business day during the cash flow period. It is also supported for pay frequency FutureContractLTD/FND.
Last Day	The fixing date occurs on the last day of the cash flow period.
First Day	The fixing date occurs on the first day of the cash flow period.
Third Wednesday	This fixing date policy is used with the Periodic payment frequency. The Third Wednesday policy would be very commonly used for strips of LME bullet swaps due to the fact that the Third Wednesday future is the most liquid contract of each month. In order to replicate the physical market which would deliver on the Third Wednesday of each month, the fixing date should be set to the Monday before the Third Wednesday of the month, which would therefore result in the LMECash forward price method projecting the price for the cash date, which would be the Third Wednesday. If the Monday before the third Wednesday is a holiday according to the fixing date calendar, the fixing date should fall on the previous business day according to that same calendar. - No need to consider the FX holidays. - The fixing day is normally the third Monday of the Month, but could be the second Monday if the beginning of the Month is a Tuesday. - Partial month should give you a Warning, and if the end date is too short, an error message box.
Weekday	When selected, the Fixing Day of Week needs to be entered, which can be any of the seven days of the week. Additionally, Fixing Date Roll specifies what to do if the day of the week is a non-business day on the fixing calendar. This fixing policy is only available when the

Policy	Description
	Payment Frequency is set to Periodic.

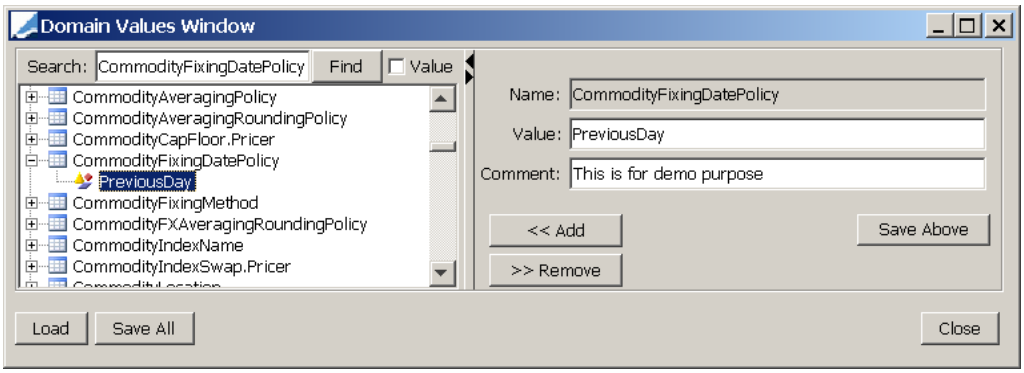
Custom Fixing Policy

You can code a custom fixing date policy class, and register it in the *CommodityFixingDatePolicy* domain, so that it appears in the Fixing Date Policy drop-down menu.

Step 1 - For the custom Fixing Date Policy, the code should reside in calypsox/tk/product/commodities/schedulegeneration/fixing and be compiled. For reference, please check: calypsox/tk/product/commodities/schedulegeneration/fixing/PreviousDayFixingDatePolicy.java



Step 2 - Add the custom fixing date policy name to the domain *CommodityFixingDatePolicy*.



Future Fixing

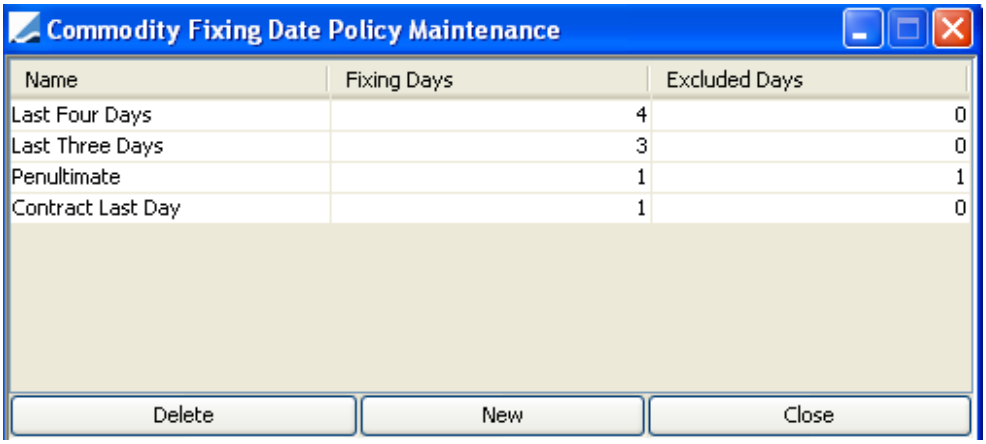
When you select a contract-based payment frequency, you can select the first and last named contract to determine the starting and ending fixing for the swap. There is a cash flow period for each contract between the start and end contract (inclusive). For the fixing date, you can select one of the following policies.

Policy	Description
Last Four Days	The fixing dates are the last four business days of the cash flow period.

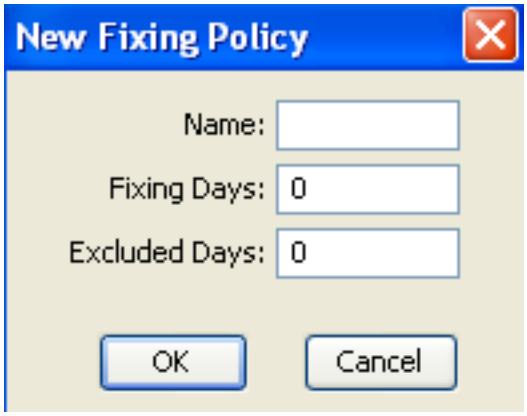
Policy	Description
Last Three Days	The fixing dates are the last three business days of the cash flow period.
Penultimate	The fixing date is the business day before the end of the cash flow period.
Contract Last Day	The fixing date is the last day of the cash flow period.

Custom Fixing

You can create new fixing policies for the FutureContractLTD payment frequency in the Commodity Fixing Date Policy Maintenance window. To display this window, from Calypso Navigator, choose **Configuration > Commodities > Fixing Date Policy** (`product.CommodityFixingDatePolicyWindow`).



» Click **New** to crate a new fixing policy.



» Define a name. The Fixing Days column represents how many total fixing dates per period you want, and the Excluded Days is the number of days, starting from the future expiration date, to shift those fixing dates backward.

» Click **OK** to save the policy. The new policy appears in the maintenance window, and in the Fixing Date Policy drop-down menu in the CommoditySwap2 and OTCCommodityOption2 trade worksheets.

For example, if you wanted to have prices fixed on the last three days of a future contracts listing, INCLUDING the day the future expires, you would set Fixing Days = 3 and Excluded Days = 0.

If you wanted to have fixings on the last four days before a future's expiration, NOT INCLUDING the expiration date itself, then you would set Fixing Days = 4 and Excluded Days = 1.

7.2 Fixing Panel

After pricing the trade, in the Cashflows you can view the fixing dates for a cash flow period in the Commodity Fixings dialog window. Right-click the cash flow period and choose **Show Fixings** in the Cash Flow Menu. You can also customize the fixing dates in this dialog window.

In this window, the Fixing Date, Forward Date, FX Fixing Date, Quote Name, Price, FX Quote and FX Spot Price are displayed.

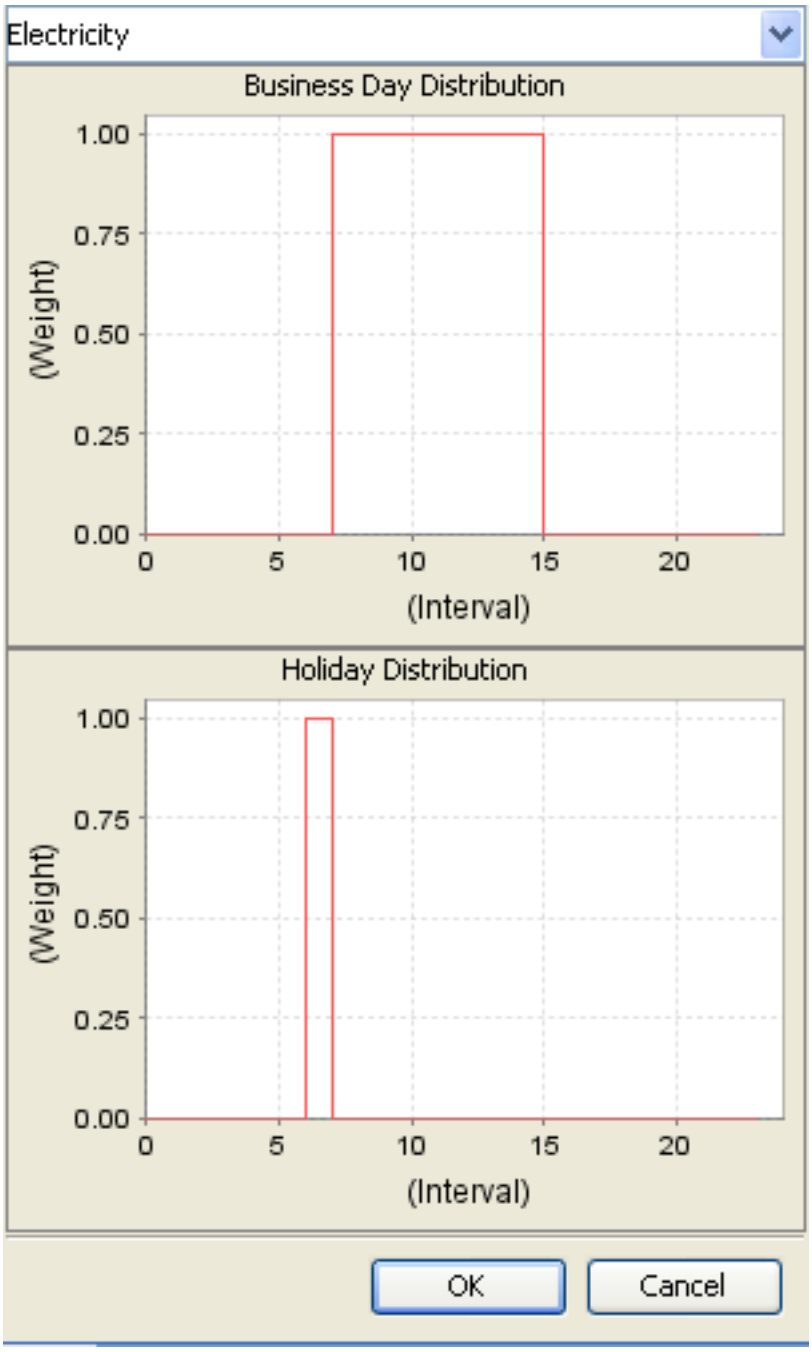
The FX Fixing Date is the date that is determined by the FX settlement information and used to calculate the forward FX rate. It is populated for future resets only, and only for floating legs.

The Forward Date is the date that is determined by the forward price method (which is selected in the Commodity Reset), and is used to look up the price on the curve. It is populated for future resets only, and only for floating legs. Below is a description of how each Forward Date is calculated based on the Forward Price Method.

Forward Price Method	Forward Date Calculation
Nearby	Expiry date of the next expiring future contract on or after the fixing date
Fixed	The date specified on the Commodity Reset
LME3M	Fixing date plus 3 calendar months rolled to the next business day
NearbyAndSecondNearby	The expiry date of the second expiring future contract
NearbyNonDelivered	The expiry date of the next expiring future contract on or after the fixing date
LMECash	Fixing date plus two business days
NearbyThirdWednesday	The next third Wednesday of the month on or after the fixing date
InterpolatedPrice	The fixing date
ICENearby	The expiry date of the next expiring future contract after the fixing date
SecondNearby	The expiry date of the second expiring future contract on or after the fixing date

8. Commodity Intraday Policies

Select the Intraday Policy, and you can view graphs of the Business Day Distribution and Holiday Distribution.



Click **OK** to select the Intraday Policy in the trade worksheet.

Period distributions are defined in the Period Distribution window. To view this window, from Calypso Navigator, choose **Configuration > Commodities > Period Distribution**.

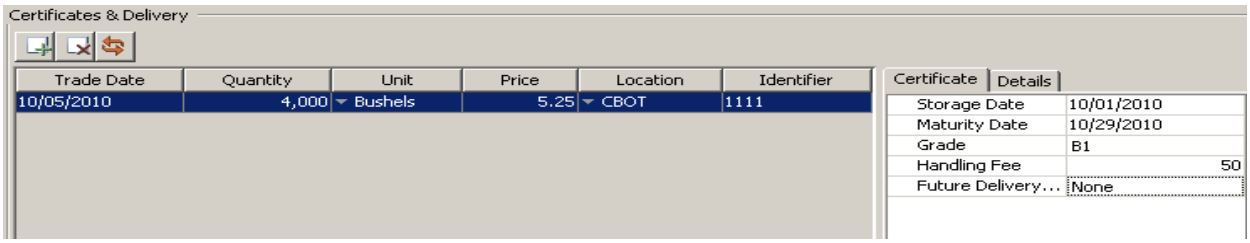
▶ See Setting up Electricity Commodities for details.

Intraday Policies are defined in the Intraday Configuration window. This window is viewed from Calypso Navigator by selecting **Configuration > Commodities > Intraday Configuration**.

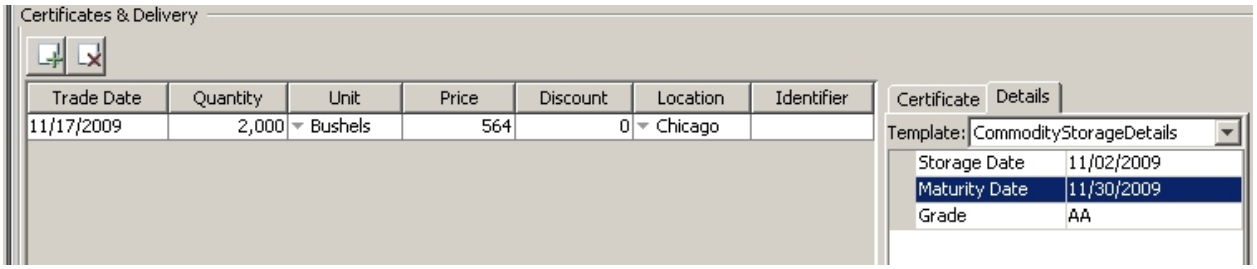
▶ See Setting up Electricity Commodities for details.

9. Certificate Template

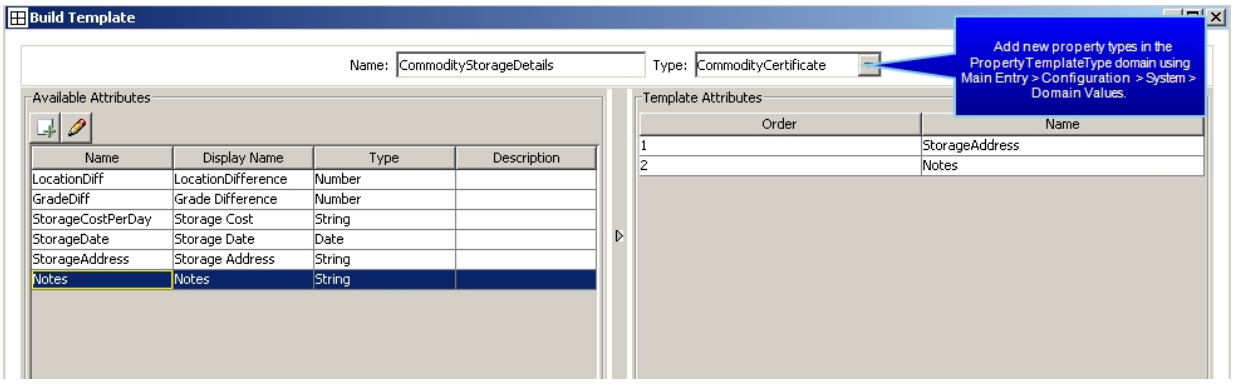
In the Commodity Forward trade worksheet you can enter details with the certificate, such as the Storage Date, Maturity Date, Grade of the commodity (for storage-based commodities), Handling Fee, and select the Future Delivery Set. These attributes are used to calculate the NPV and the Price of the forward itself. From Calypso Navigator, choose **Trade > Commodities > Forward** (`trading.TradeCommodityForwardWindow`).



If you want to add additional attributes to the certificates, then build a template to store the details of the certificate. You can select the template in the Commodity Forward trade worksheet in the Details panel.



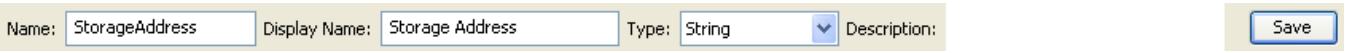
From Calypso Navigator, choose **Configuration > Commodities > Certificate Template** (`refdata.template.PropertyTemplateBuilder`).



Step 1 - Click **New** in the bottom of the window to start a new template.

Step 2 - Enter a Name for the template and select the property template type.

Step 3 - Click to add a new attribute.



Step 4 - Enter the attribute details in the input fields and click **Save** to add the attribute to the table on the left.

Step 5 - Set the order that the attributes appear in the template. Select an attribute and click to add it to the order list on the right.

Step 6 - You can edit the attributes. Select an attribute in the table on the left, and click to edit the attribute.

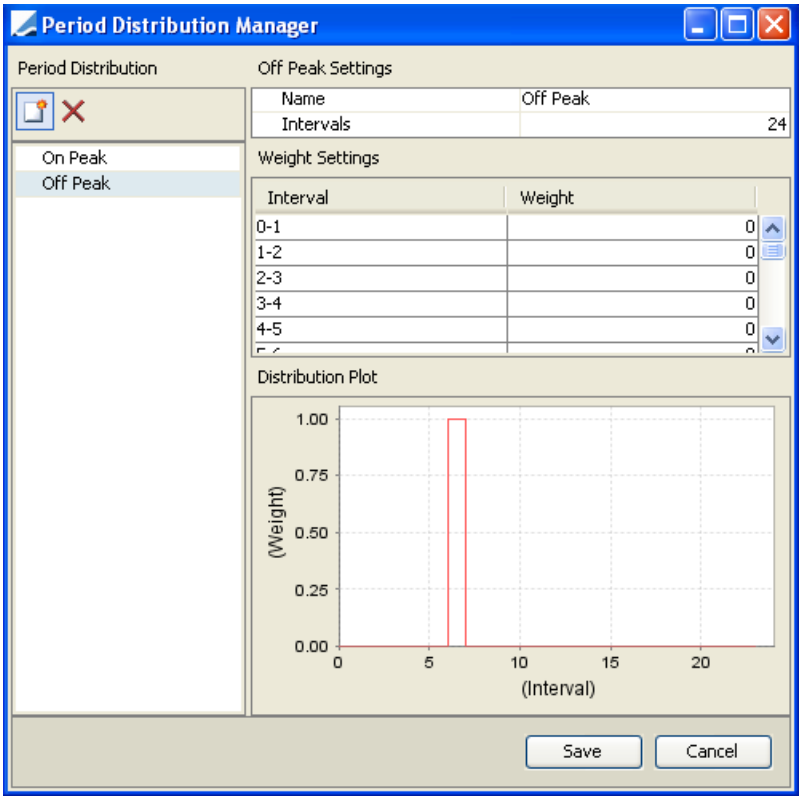
Step 7 - Click **Save** in the bottom of the window to save the template.

10. Period Distributions

Define period distributions to be used in building intraday policies.

For example, for electricity derivatives trading, define period distributions for on-peak and off-peak settings. Define an interval of 24 and assign weights to build the hourly reset support.

From Calypso Navigator, choose **Configuration > Commodities > Period Distribution** (`configuration.split.SplitConfigurationWindow$perioddistribution.PeriodDistributionConfigurableObjectLoader`).



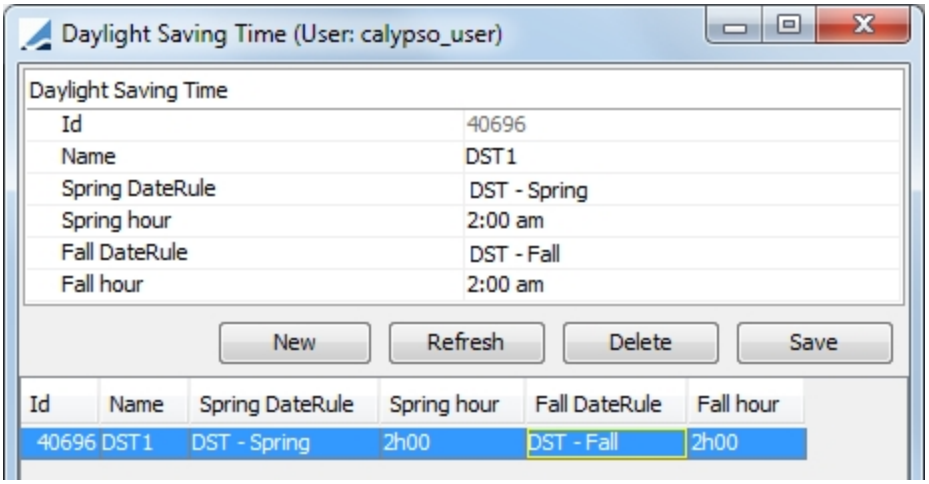
- Click and enter a name for the period distribution.
- Define the number of intervals.
- Enter a weight for each interval.
- Click **Save**.

  Note that if the Authorization mode is enabled, an authorized user must approve your entry.

11. Daylight Savings Time

For electricity swaps and futures, you have the option to create a daylight savings time rule. The purpose of this rule is to compensate for the hour that is gained or lost during spring and fall on an electricity swap that has hourly resets.

To create a daylight savings time rule, from Calypso Navigator, select **Configuration > Commodities > Daylight Savings Time**.



- Click **New** to create a new configuration and enter the fields describe below.
- Then click **Save** to save the configuration.

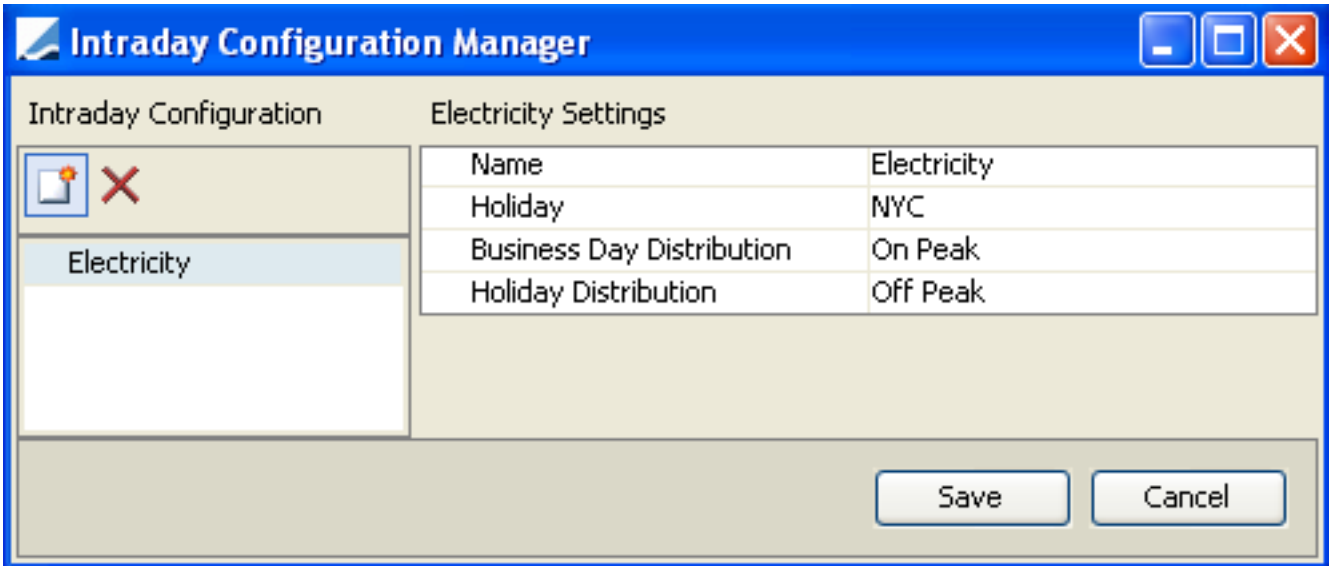
Field	Description
Id	System assigned id for the daylight savings time rule
Name	Enter a name for the rule
Spring DateRule	Enter a name for the date rule that applies to spring daylight savings time
Spring hour	Select the hour at which the spring date rule is to take effect
Fall DateRule	Enter a name for the date rule that applies to fall standard time
Fall hour	Select the hour at which the fall date rule is to take effect

12. Intraday Configuration

Define the intraday policies to be used in derivatives trading.

For example, for electricity derivatives trading, define the Electricity intraday policy.

From Calypso Navigator, choose **Configuration > Commodities > Intraday Configuration** (`configuration.split.SplitConfigurationWindow$intradayconfiguration.IntradayConfigurationconfigurableObjectLoader`).



- Click  and enter a name for the Intraday Configuration.
- Click the Holiday field to select a calendar to use in defining the business days and the holidays.
- Click the Business Day Distribution field to select a period distribution for business days. Period distributions are created in the Period Distribution window. From Calypso Navigator, choose **Commodities > Period Distribution**.
- Click the Holiday Distribution field to select a period distribution for holidays. Period distributions are created in the Period Distribution window. From Calypso Navigator, choose **Commodities > Period Distribution**.
- Click **Save**.

  Note that if the Authorization mode is enabled, an authorized user must approve your entry.

13. Future Delivery Set

Define a future delivery set to use in the valuation of certificates for physical commodities. You may select the future delivery set in the commodity forward trade in an attribute on the certificate.

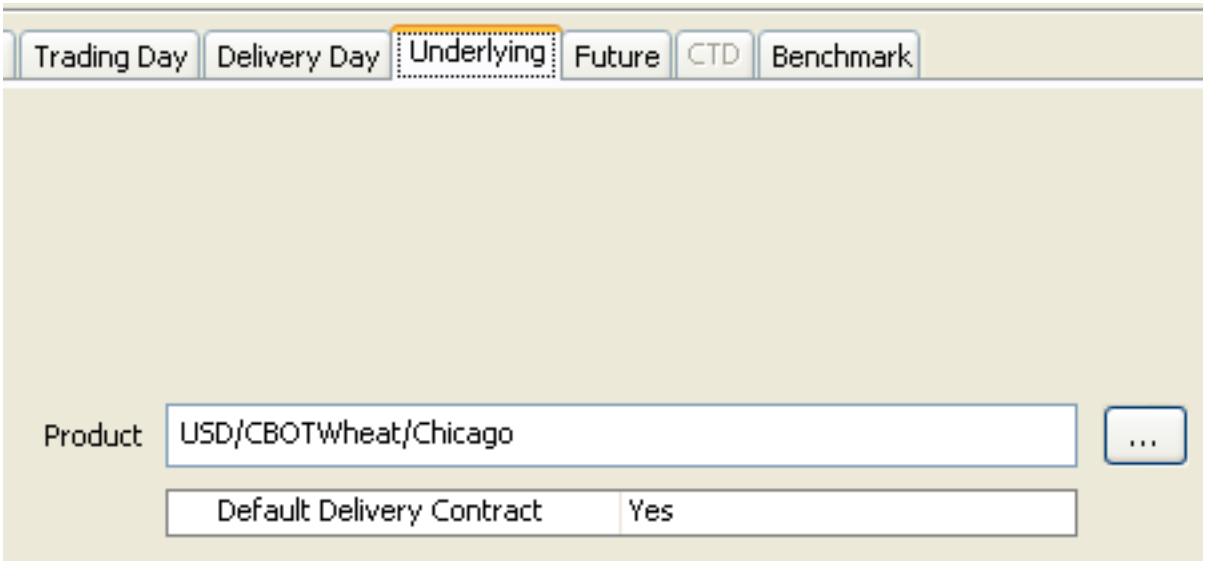
The valuation methodology is a standard cost-of-carry formula that adjusts the price of the future against which you could deliver the certificate by the cost of storing the commodity, the various discounts (location, grade, etc), and finally by the cost of the money required to purchase the certificate.

The futures that you select in the future delivery set should be ones that are generated by the future contract associated with the commodity reset selected in the commodity forward. You can select a single future, a set of consecutive futures, or a set of non-consecutive futures.

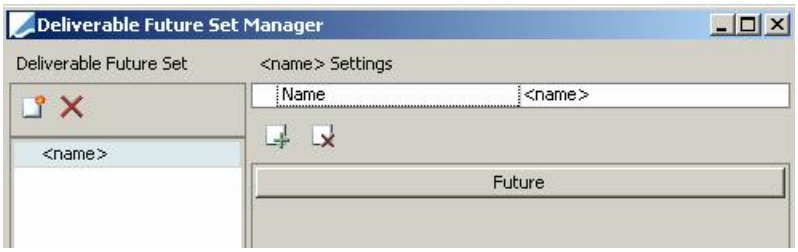
If the certificate is not associated with a future, then the pricer uses the future that is nearby on the value date, and continues to roll to the next nearby future as long as the certificate remains in inventory. The pricer also uses the nearby future if all of the futures that were originally associated with a given certificate have expired.

The pricer uses the futures from the Default Delivery Contract if futures in the future delivery set are not available. In the future contract for the physical commodity, you can set the Default Delivery Contract attribute to Yes to specify that the contract is the default one for that product.

Note: There is another configuration that exists in the Attributes part on the Definition tab. *IsDefaultDeliverableFutureContract* performs the same function as Default Delivery Contract. When one is set to Yes, the other is set to Yes as well.



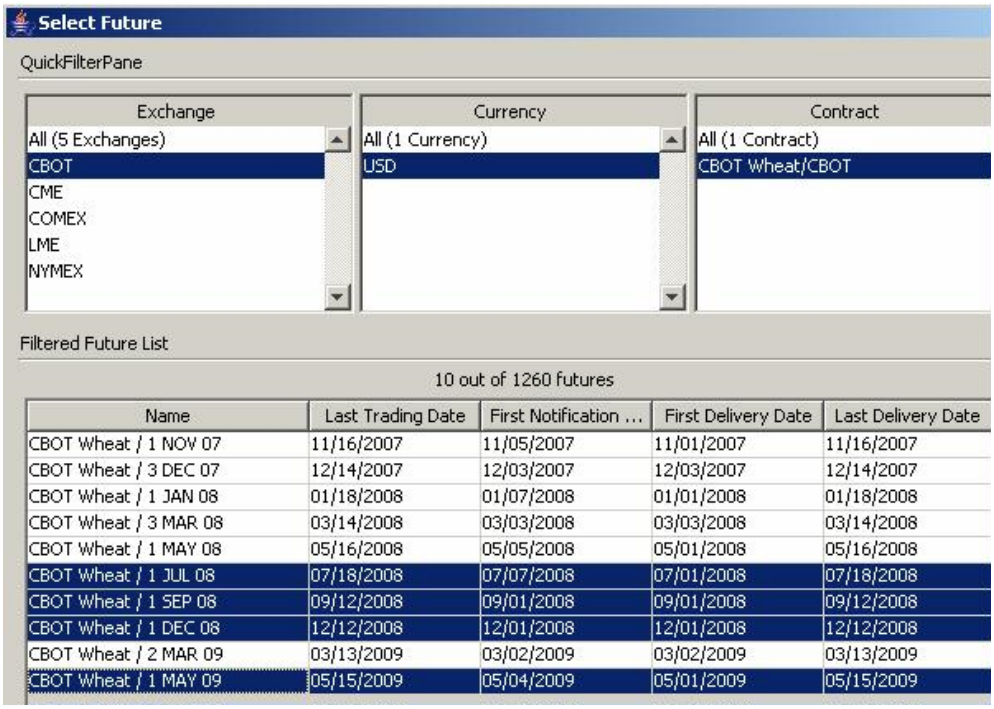
Define the future delivery sets by choosing **Configuration > Commodities > Future Delivery Sets** from Calypso Navigator (`configuration.split.SplitConfigurationWindow$futuredeliveryset.FutureDeliverySetConfigurableObjectLoader`).



» Click and enter a name for the set.

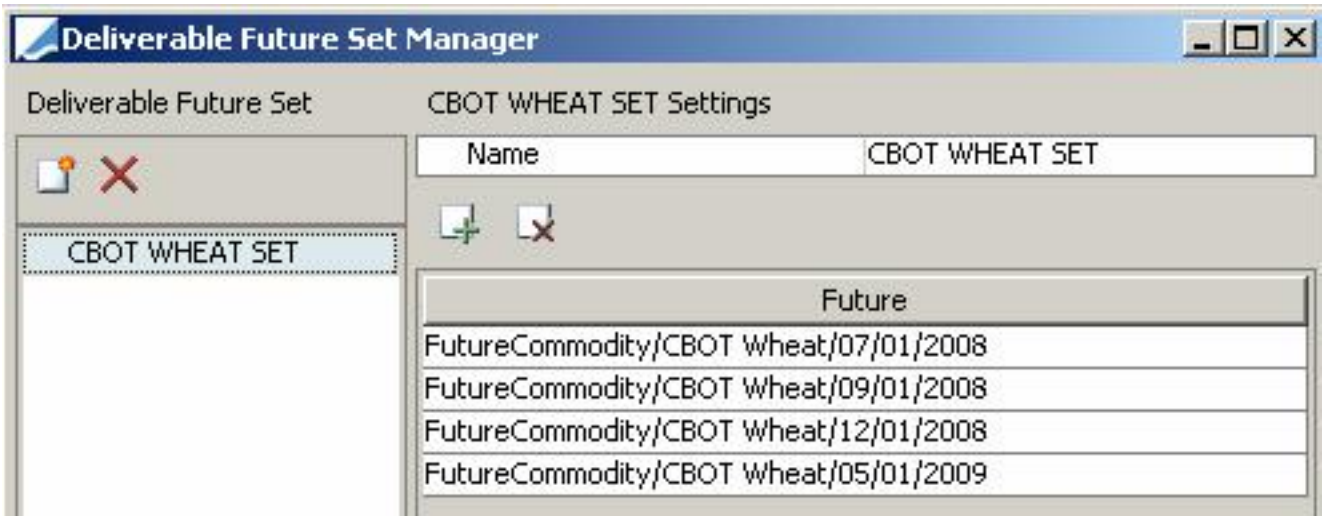
» Next, select the futures in the set. Click to select the futures in the Select Future window.

» Click on an exchange name, currency and contract name to sort the list of futures that display in the Filtered Future List.



Highlight the futures you would like to include in the set and click **Select Futures**.

» A list of the futures will then be displayed in the future set window. Click **Save** to save the set.


Deliverable Future Set Manager
Deliverable Future Set
CBOT WHEAT SET Settings
CBOT WHEAT SET
Name
CBOT WHEAT SET
Future
FutureCommodity/CBOT Wheat/07/01/2008
FutureCommodity/CBOT Wheat/09/01/2008
FutureCommodity/CBOT Wheat/12/01/2008
FutureCommodity/CBOT Wheat/05/01/2009

14. Commodity Futures Overview

In general, the contracts require the following configuration:

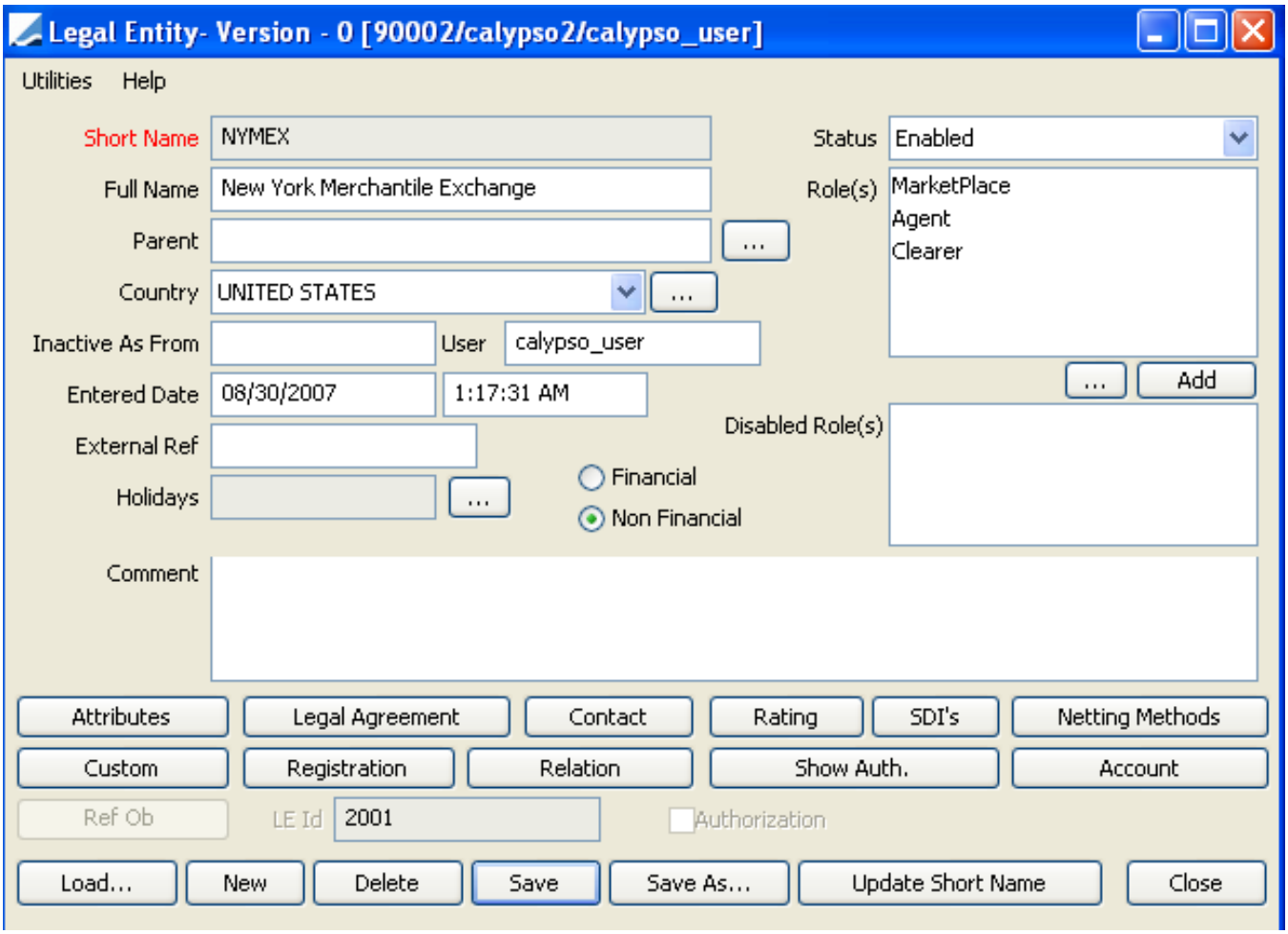
- Legal entity for the exchange where the futures and future options are listed.
- Holiday calendar to determine the business days of the exchange.
- Date rules (can be used for the expiration date, first delivery date, last delivery date, and first notification date).
- Underlying commodity or commodity index product.

Note: the following sections describe the basic requirements for setting-up future and future option contracts. Refer to Calypso Futures Documentation for complete details (including setting-up market places, brokers, clearers, accounts, SDIs, fees, workflow, contracts, processing, and account management).

Contents

14.1 Legal Entity

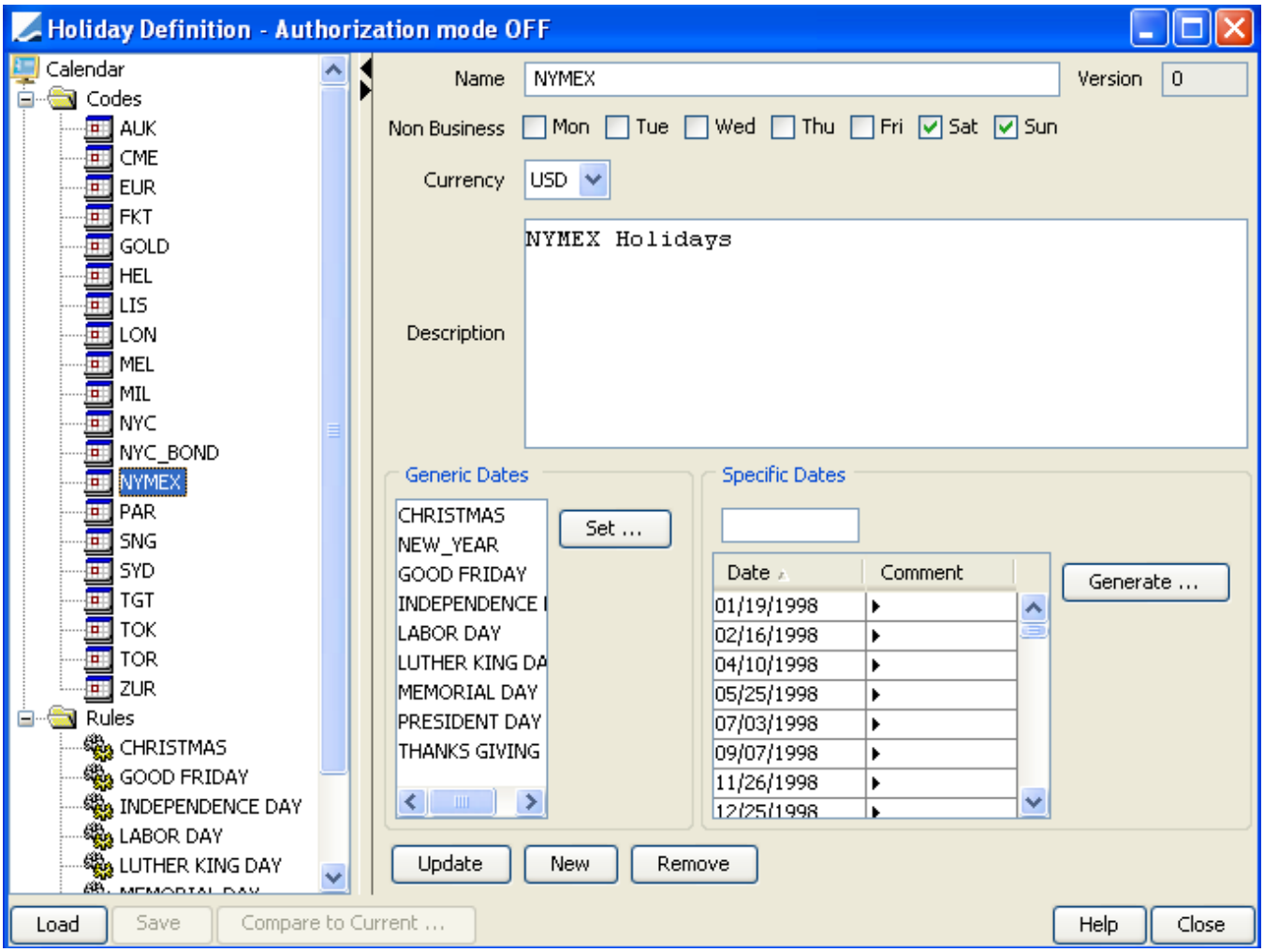
Define the market place where the futures and future options are listed as a legal entity with the roles MarketPlace, Agent, and Clearer by choosing **Configuration > Legal Data > Legal Entities** from Calypso Navigator. Help is available from that window.



» Choose **Help > Legal Entities** from Calypso Navigator for details.

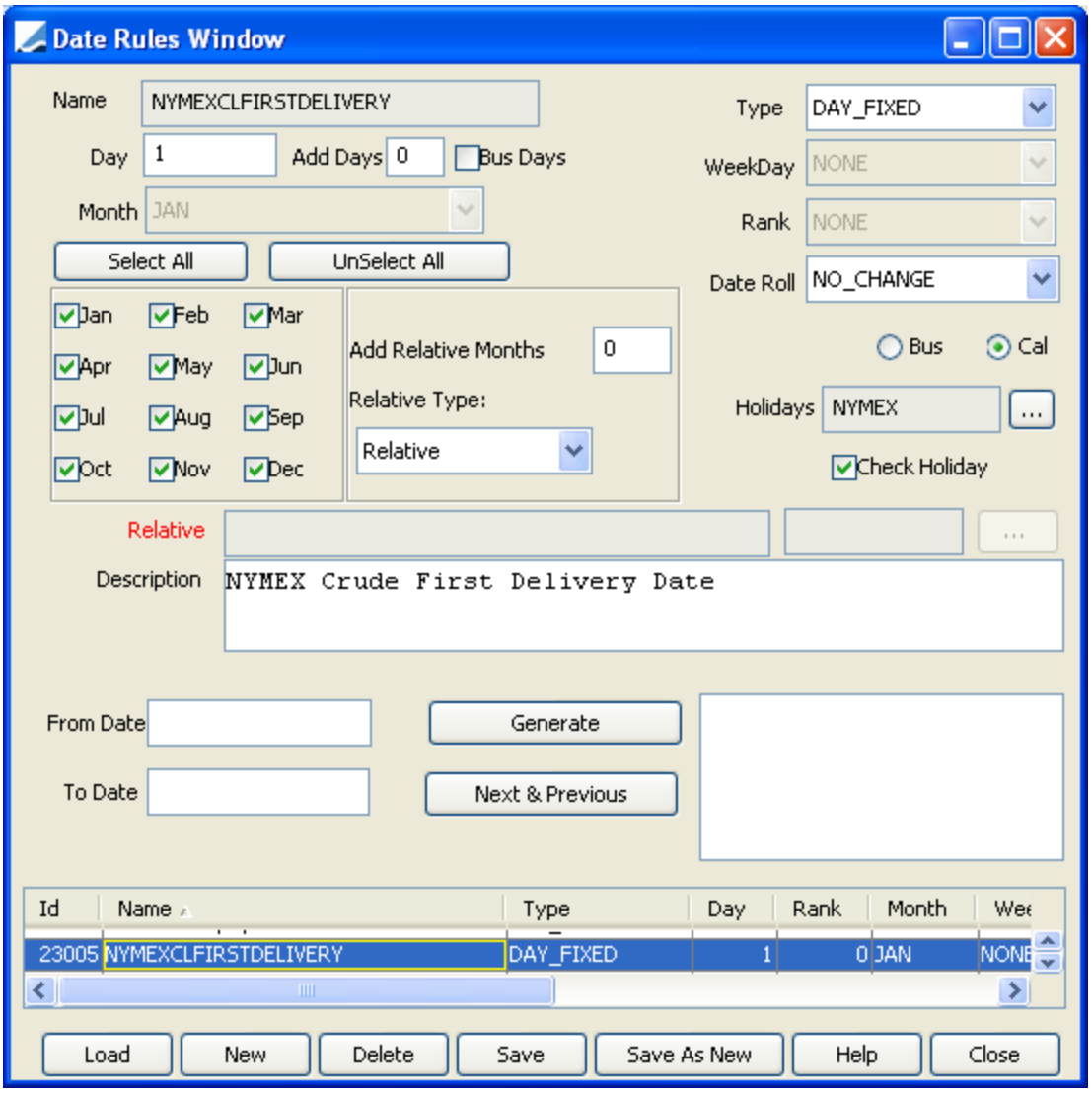
14.2 Calendar Definition

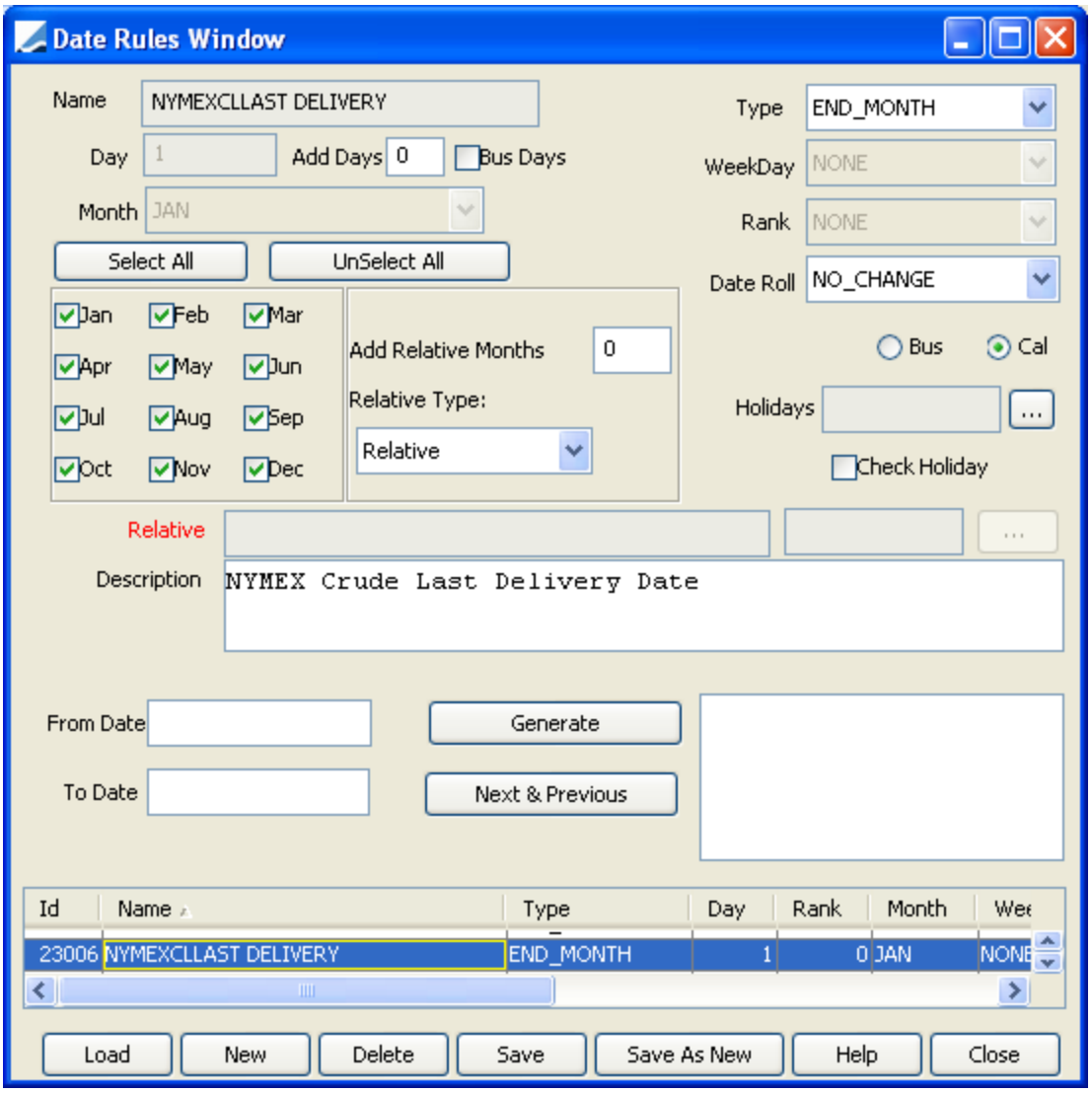
Define the holiday calendar for the exchange by choosing **Configuration > Definitions > Calendar Definition** from Calypso Navigator. Help is available from that window.



14.3 Date Rules

Define the date rules for the future contracts by choosing **Configuration > Definitions > Date Rule Definitions** from Calypso Navigator. Help is available from that window, it includes a list of out-of-the-box custom date rules for commodity products.

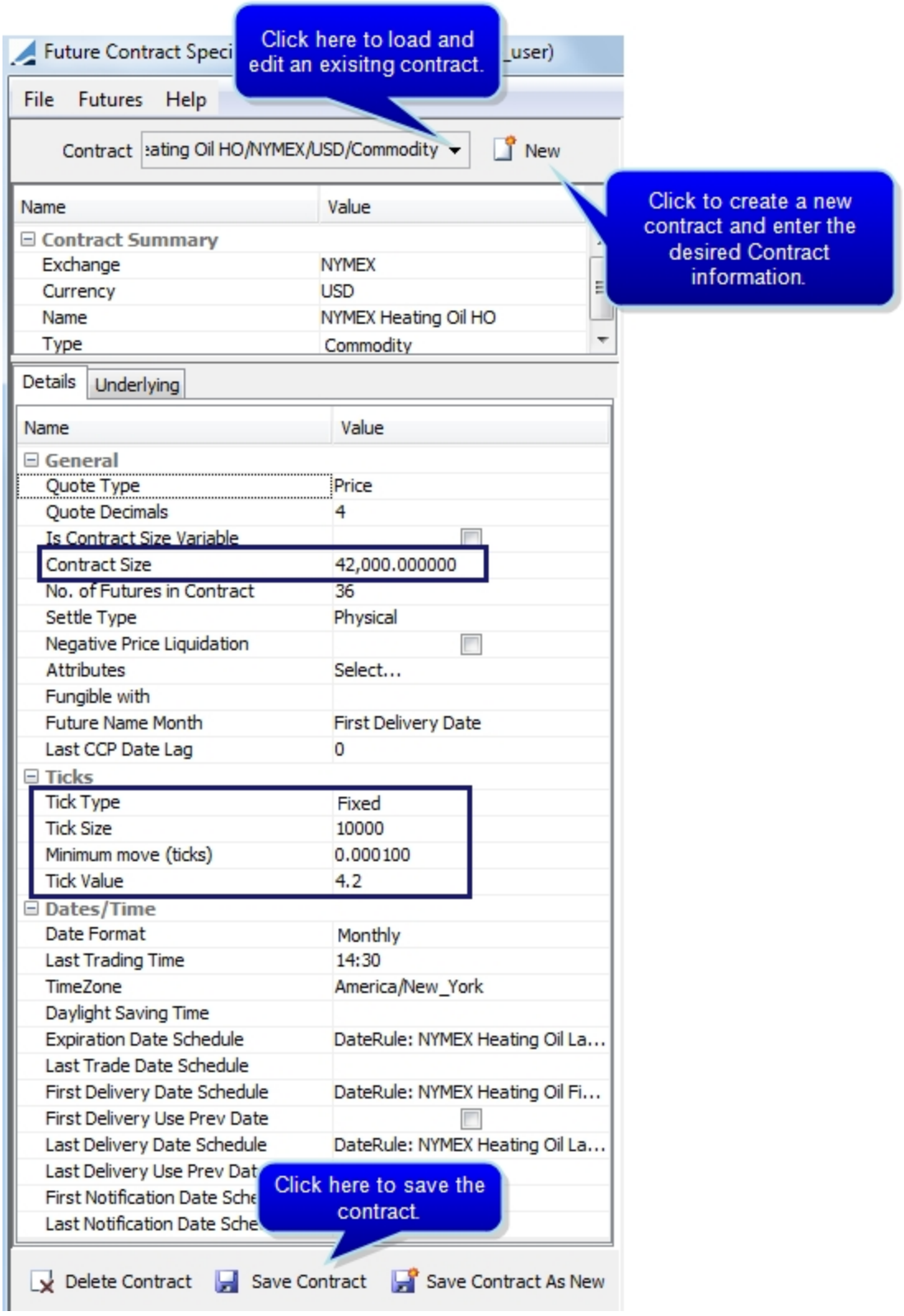

Date Rules Window
Name
NYMEXCLFIRSTDELIVERY
Type
DAY_FIXED
Day
1
Add Days
0
Bus Days
WeekDay
NONE
Month
JAN
Rank
NONE
Select All
UnSelect All
Date Roll
NO_CHANGE
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Add Relative Months
0
Relative Type:
Relative
Bus
Cal
Holidays
NYMEX
Check Holiday
Relative
Description
NYMEX Crude First Delivery Date
From Date
To Date
Generate
Next & Previous
Id
Name
Type
Day
Rank
Month
23005
NYMEXCLFIRSTDELIVERY
DAY_FIXED
1
0
JAN
Load
New
Delete
Save
Save As New
Help
Close


Date Rules Window
Name
NYMEXCLLAST DELIVERY
Type
END_MONTH
Day
1
Add Days
0
Bus Days
WeekDay
NONE
Month
JAN
Rank
NONE
Select All
UnSelect All
Date Roll
NO_CHANGE
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Add Relative Months
0
Relative Type:
Relative
Bus
Cal
Holidays
Check Holiday
Relative
Description
NYMEX Crude Last Delivery Date
From Date
To Date
Generate
Next & Previous
Id
Name
Type
Day
Rank
Month
23006
NYMEXCLLAST DELIVERY
END_MONTH
1
0
JAN
Load
New
Delete
Save
Save As New
Help
Close

15. Future Contracts

Define the commodity future contracts by choosing **Configuration > Listed Derivatives > Future Contracts** from Calypso Navigator (menu action `refdata.FutureDefinitionWindow`).

15.1 Creating & Editing Future Commodity Contracts


Click here to load and edit an exisitng contract.
Future Contract Speci
_user)
File
Futures
Help
Contract
:ating Oil HO/NYMEX/USD/Commodity
New
Click to create a new contract and enter the desired Contract information.
Name
Value
Contract Summary
Exchange
NYMEX
Currency
USD
Name
NYMEX Heating Oil HO
Type
Commodity
Details
Underlying
Name
Value
General
Quote Type
Price
Quote Decimals
4
Is Contract Size Variable
Contract Size
42,000.000000
No. of Futures in Contract
36
Settle Type
Physical
Negative Price Liquidation
Attributes
Select...
Fungible with
Future Name Month
First Delivery Date
Last CCP Date Lag
0
Ticks
Tick Type
Fixed
Tick Size
10000
Minimum move (ticks)
0.000100
Tick Value
4.2
Dates/Time
Date Format
Monthly
Last Trading Time
14:30
TimeZone
America/New_York
Daylight Saving Time
Expiration Date Schedule
DateRule: NYMEX Heating Oil La...
Last Trade Date Schedule
First Delivery Date Schedule
DateRule: NYMEX Heating Oil Fi...
First Delivery Use Prev Date
Last Delivery Date Schedule
DateRule: NYMEX Heating Oil La...
Last Delivery Use Prev Dat
First Notification Date Sche
Last Notification Date Sche
Click here to save the contract.
Delete Contract
Save Contract
Save Contract As New

- Contract size must equal Tick Value * Tick Size.

  Tick size must equal 1/Min Move (Ticks). To extend the Tick Size list, add new values to the *tickSize* domain by choosing **Configuration .> System > Domain Values**from Calypso Navigator.

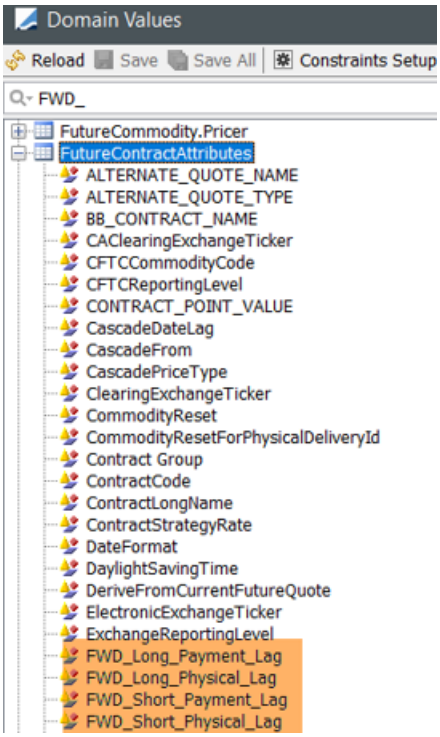
  Tick Value should be the absolute price change for one contract subject to the minimum price fluctuation as defined by the exchange.
- You can define how the Future and Future Option trade windows display the list of available contracts. Click Attributes and set the Date Format attribute to 'MMM yy' (the value is case sensitive) . to specify that the windows display a list of contracts by delivery month using the month and year format.
- The Last CCP Date is a reference date that indicates the last day the Clearinghouse will have any exposure to the future position. This date is represented by the Last CCP Date Lag, as a number of days after the expiration date. If you set a CCP Lag, the future maturity date is the last CCP date instead of the expiration date.
- You are able to select a Daylight Savings rule to be applied for electricity future contracts.

Out of the Box Attributes

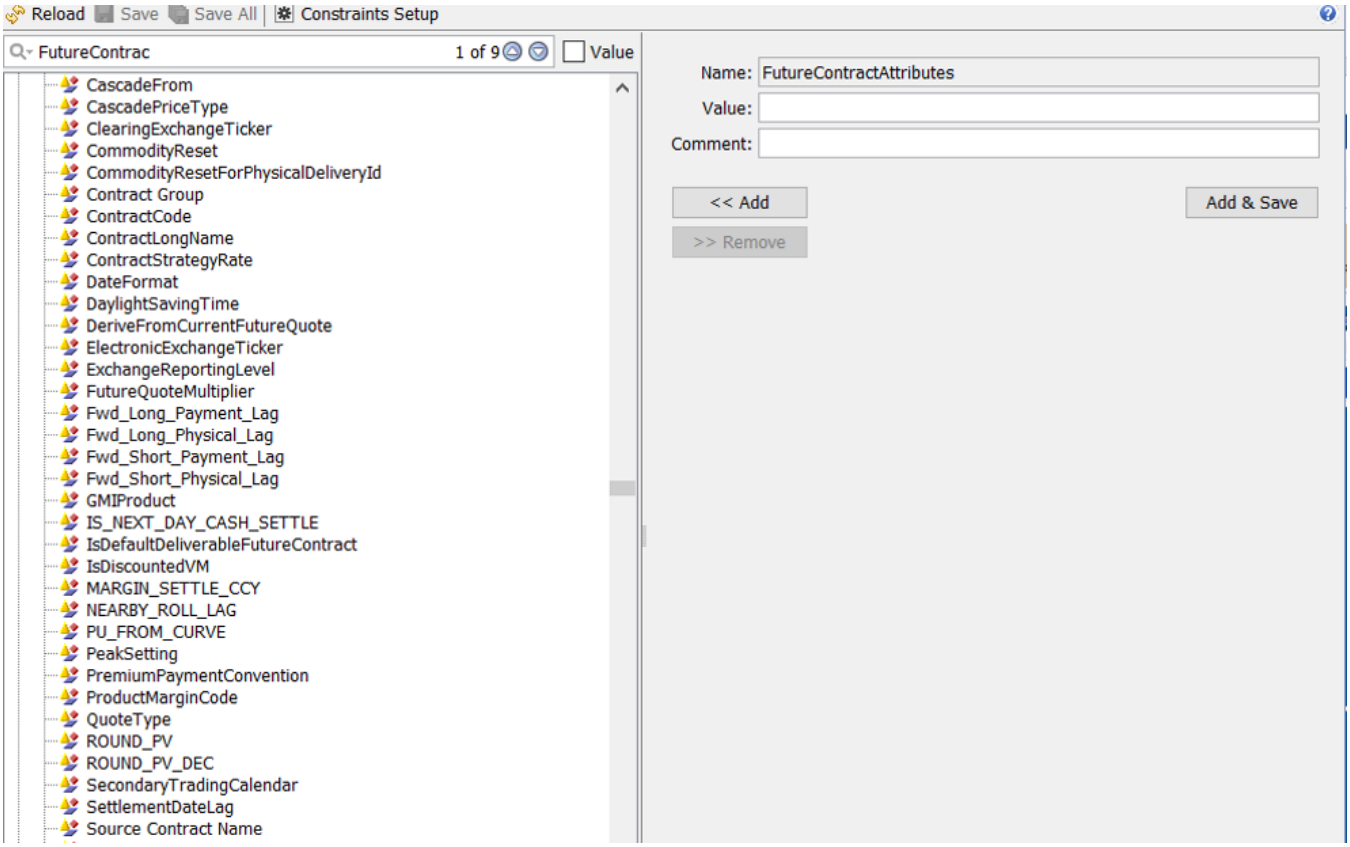
Added out of the box Attribute in Future contract specification window with 4 attributes; 2 attributes for long direction for Payment & Physical, similarly 2 attributes for short direction for Payment & Physical.

Ex., FWD_Long_Payment_Lag, FWD_Long_Physical_Lag, FWD_Short_Payment_Lag, FWD_Short_Physical_Lag.

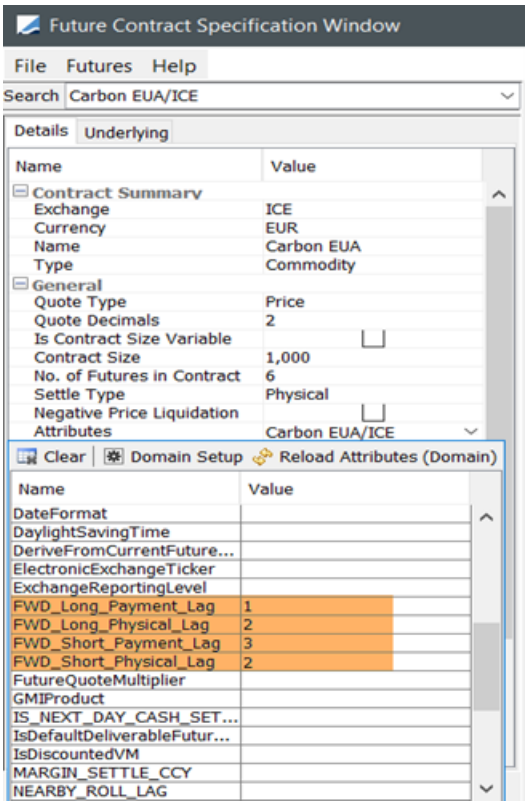
Attributes should be added in Domain value > FutureContractAttributes out of the box as can be seen in thebelow image:



The values will be available as shown below:



Values in these attributes should be used only while creating a commodity forward resulting out of expiration process of physical settling futures. Manual as well as via ST FUTURE_EXPIRY must use the values in attributes. E.g., of the Attribute, Future trade as well as resultant commodity forward trade with direction wise lag as below:

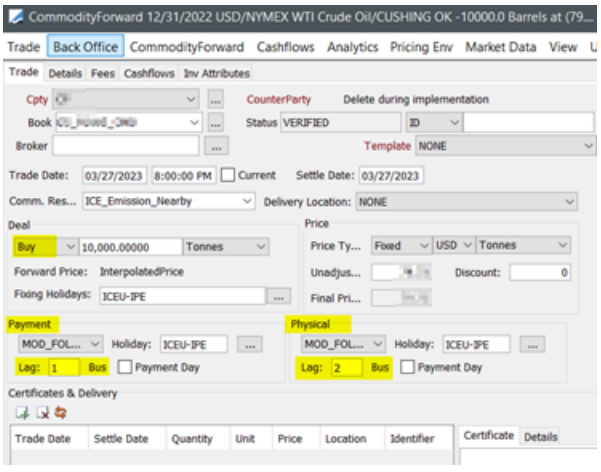


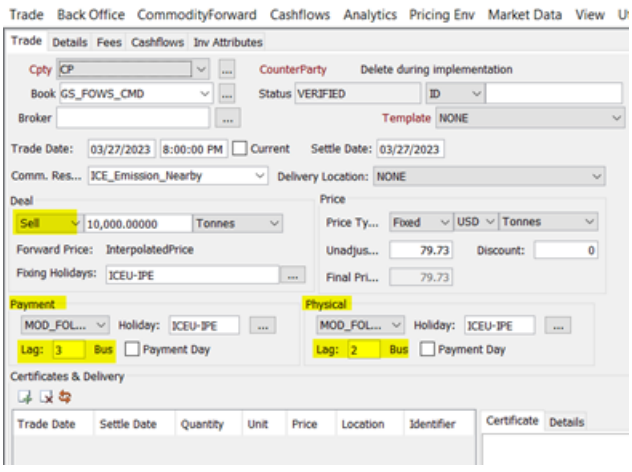
Contract Attribute Setup

Strategy Name		Future Commodity	Future Commodity
Price		Price	Price
Save		Save	Save
Solve		Don't Solve	Don't Solve
⊟ Underlying		EUR/Carbon/ICE Approv...	EUR/Carbon/ICE Ap...
Exchange		ICE	ICE
Contract		Carbon EUA	Carbon EUA
Contract Size		1,000	1,000
Product ID			
⊞ Bundle ID			
⊞ Notional		10,000	-10,000
Quantity		10	10
Buy/Sell		Buy	Sell
⊞ Settle Type		Physical	Physical
⊞ Strike		80.00	79.73
Settle Ccy		EUR	EUR
Product Type		FutureCommodity	FutureCommodity
Product Subtype		Carbon EUA	Carbon EUA
Notional Ccy		EUR	EUR
Ccy Pair			
Trade Date		03/01/2023	03/01/2023
Trade Time		06:57:24.000 AM	06:57:24.000 AM
Settlement Date		03/01/2023	03/01/2023
Expiry Date		03/27/2023	03/27/2023
Expiry		MON 26d 4W-2	MON 26d 4W-2
Delivery Date		04/01/2023	04/01/2023
Contract Date		Mar 23	Mar 23
Ccy1 Amount		10,000	-10,000
Contract Quote Type		Price	Price
Trader Price		80.00	79.73
Model Price		0.00	0.00
⊞ Pricing Model		FutureCommodity	FutureCommodity

Buy & Sell Trade

Below are examples of resultant commodity forward trade with different lags (Long and Short respectively) based on direction of future trade:





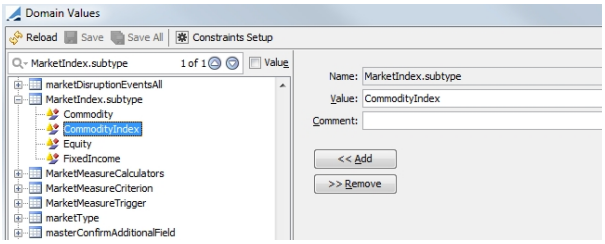
Note: All existing contracts physically settling are migrated with blank values in the attribute. For existing migration contract new attribute value will be reflected on trade window only after clearing cache of commodity reset from webadmin.

The solution may need one time setup in contract attributes which must be set by user manually as a one time process.

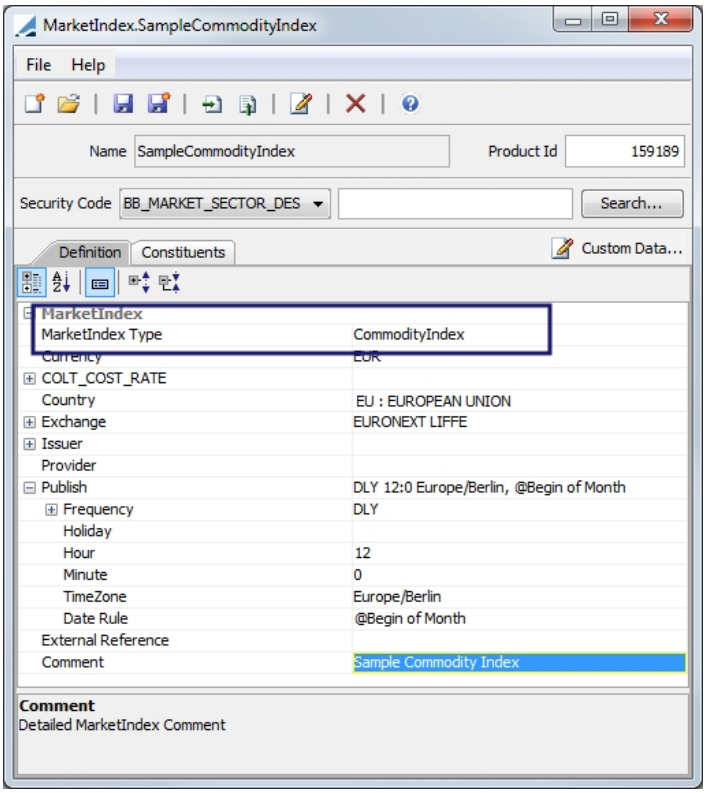
15.2 Commodity Index Futures

Complete the following steps to create a future contract based on a commodity index:

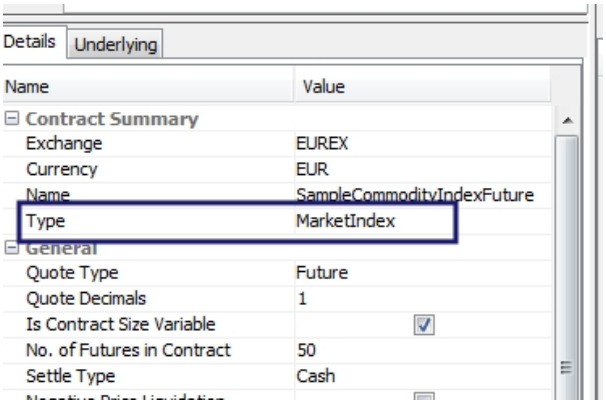
Step 1 - Add *CommodityIndex* to the *MarketIndex.subtype* domain value.

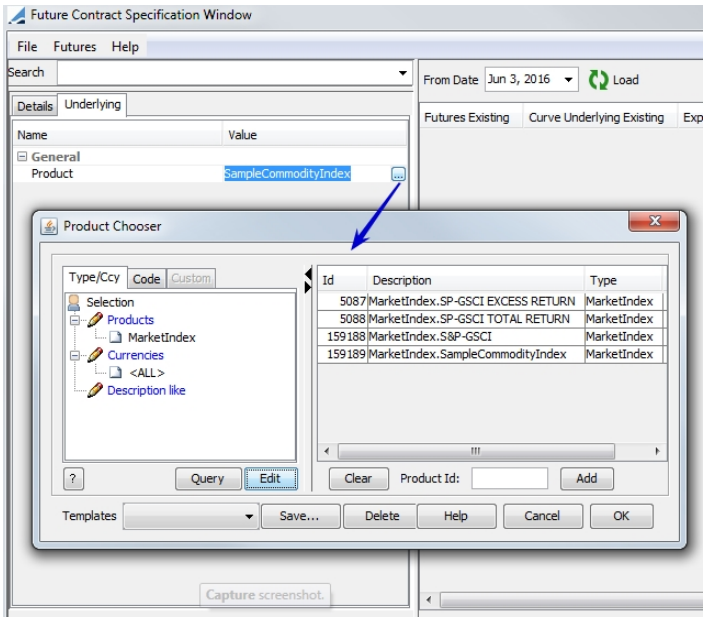


Step 2 - Create a new market index in the Market Index window (**Configuration > Product > Market Index**) using *CommodityIndex* as the Market Index Type.



Step 3 - Create a Futures contract, setting the Type to *MarketIndex*.



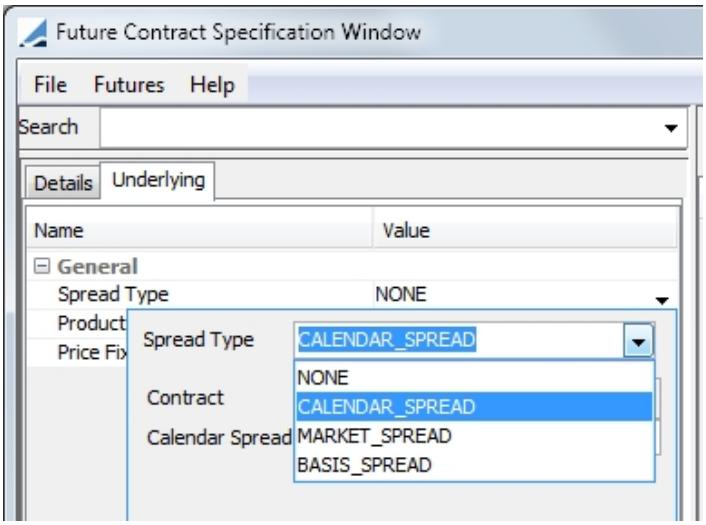


Commodity Index Future contracts can be traded using the Future trade window or the Pricing Sheet. When using the Pricing Sheet, us the *FutureMarketIndex* strategy. The only pricing implemented for Commodity Index Futures is FROM_QUOTE, therefore, the futures quote will need to be entered to get an NPV and generate numbers in Risk and PL.

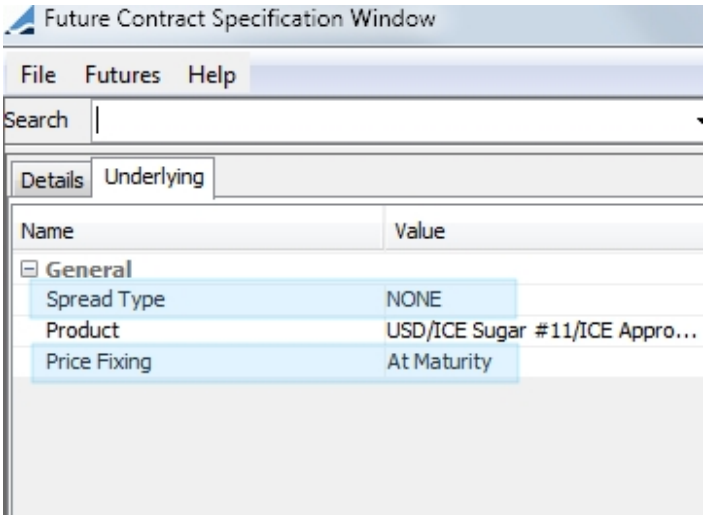
15.3 Commodity Spread Futures Contract Definition

Futures contracts can be configured for Market and Calendar spreads. These spreads are only applicable for futures contracts of Type *Commodity*. In the Underlying panel, designate which type of spread to use in the Spread Type field. The default setting is NONE.

NOTE: The BASIS_SPREAD option is informational only.



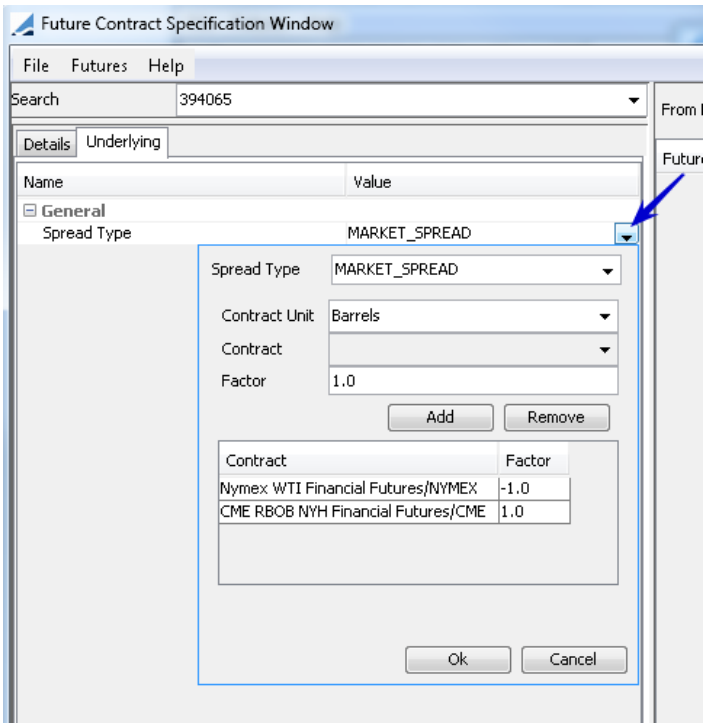
For MARKET_SPREAD and CALENDAR_SPREAD, an underlying futures contract must be specified rather than an underlying commodity or product. Price fixing for spread futures is always At Maturity, though the underlying futures contract can have Price Fixing set to Asian.



15.3.1 Market Spread

When a future contract is a Market Spread, it settles either physically by generating multiple future contracts on expiry, or financially by calculating a price based on the price of multiple future contracts on expiry.

For example, the most common market spreads in the commodities markets are crack spreads, where the settlement is based on the price of the underlying crude future contract. The market spread functionality allows for multiple contracts, each with its own factor. This makes up a formula for calculating the price of the future.



- The *Contract Unit* is the unit in which the price will be calculated. The Contract Unit must be the Quote Unit of one of the underlying future contracts that have been chosen in the Market Spread selection window. All chosen future contracts must be in the same currency.
- The price will be calculated as the sum of the prices for each row of the of the prices for each row of the formula. Where the price for each row of the formula will be calculated by:
  - Getting the market price for the underlying future contract
  - Converting the Unit of Measurement of the price into the Contract Unit
  - Multiplying the resulting price by the Factor
- The underlying future in each row is determined using the expiry date of the Market Spread Future. The underlying futures with an expiry date on or after the expiry date of the Market Spread Future will be used.

Curve Underlyings

Commodity Future curve underlyings cannot be created for Market Spread Futures.

Market Data Required to Price

If the future is priced with FUTURE_FROM_QUOTE = False, the pricer looks for forward price curves for each of the underlying future contracts in the market spread.

Futures Expiry

On expiry, an offsetting future trade to close out the original expiring trade is created using the closing quote on the value date for the fixed price. The logic for creating the offsetting future is no different from any other non-spread future.

On expiry, if Settlement Type of the market spread future is Physical, in addition to creating the offsetting future trade to close out the original expiring trade, futures trades are created for each o the underlying futures contracts.

The additional futures are created with a fixed price equal to the closing quote price for the future being created on the value date.

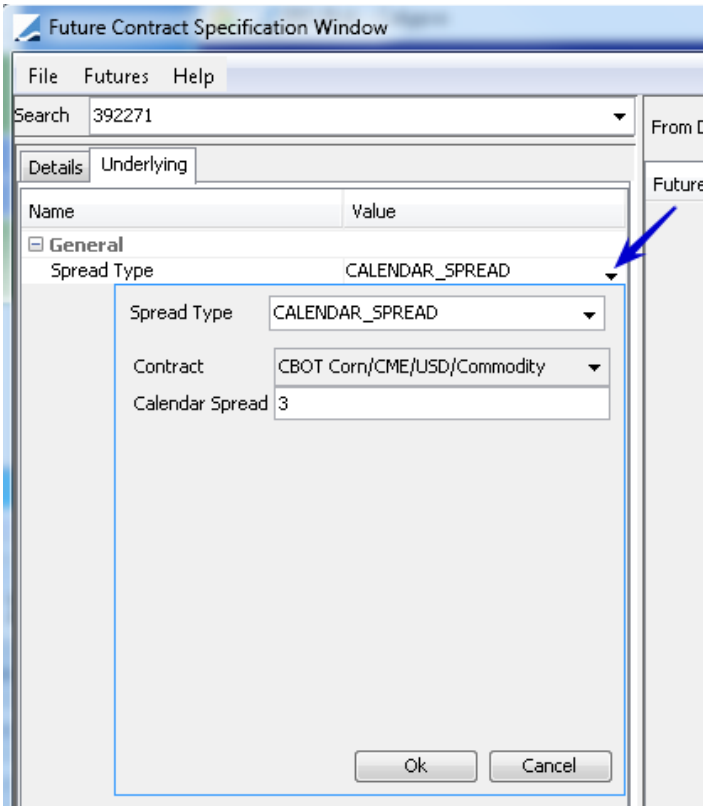
15.3.2 Calendar Spread

When a future contract is a Calendar Spread, it settles either physically by generating two future contracts on expiry, or financially by calculating a price based on the price of two future contracts on expiry. The two futures contracts will have the same contract specification, but different delivery dates.

Calendar Spread Futures are not very common in commodities. However, in order to create Calendar Spread Options wich are much more common, Calendar Spread Futures need to be created to define the underlying.

The Market Spread functionality, together with a Calendar Spread, which is an integer that determines the delivery period offset, allows for a single underlying future contract. This makes up a formula for calculating the price of the future.

So, if the Calendar Spread is 1, the price will be calculated as the price of the nearby future minus the price of the second nearby future.



Curve Underlyings

Commodity Future curve underlyings can be created for market spread futures, and forward curves can be created using these Calendar Spread underlyings.

Market Data Required to Price

If the future is priced with FUTURE_FROM_QUOTE = False, the price looks for forward price curves for both underlying future contracts in the market spread.

Futures Expiry

On expiry, an offsetting future trade to close out the original expiring trade is created. The logic for creating the offsetting future is no different from any other non-spread future.

On expiry, if the Settlement Type of the market Spread Future is Physical, in addition to creating the offsetting future trade to close out the original expiring trade, futures trades are created for both underlying futures contracts.

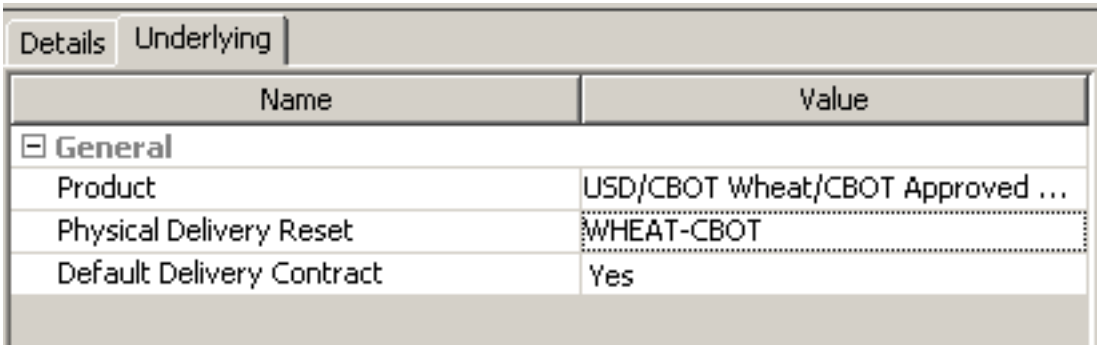
The additional futures are created with a quantity equal to the quantity of the original future trade. The nearest expiring future is in the same direction as the original future, and the second future is in the opposite direction.

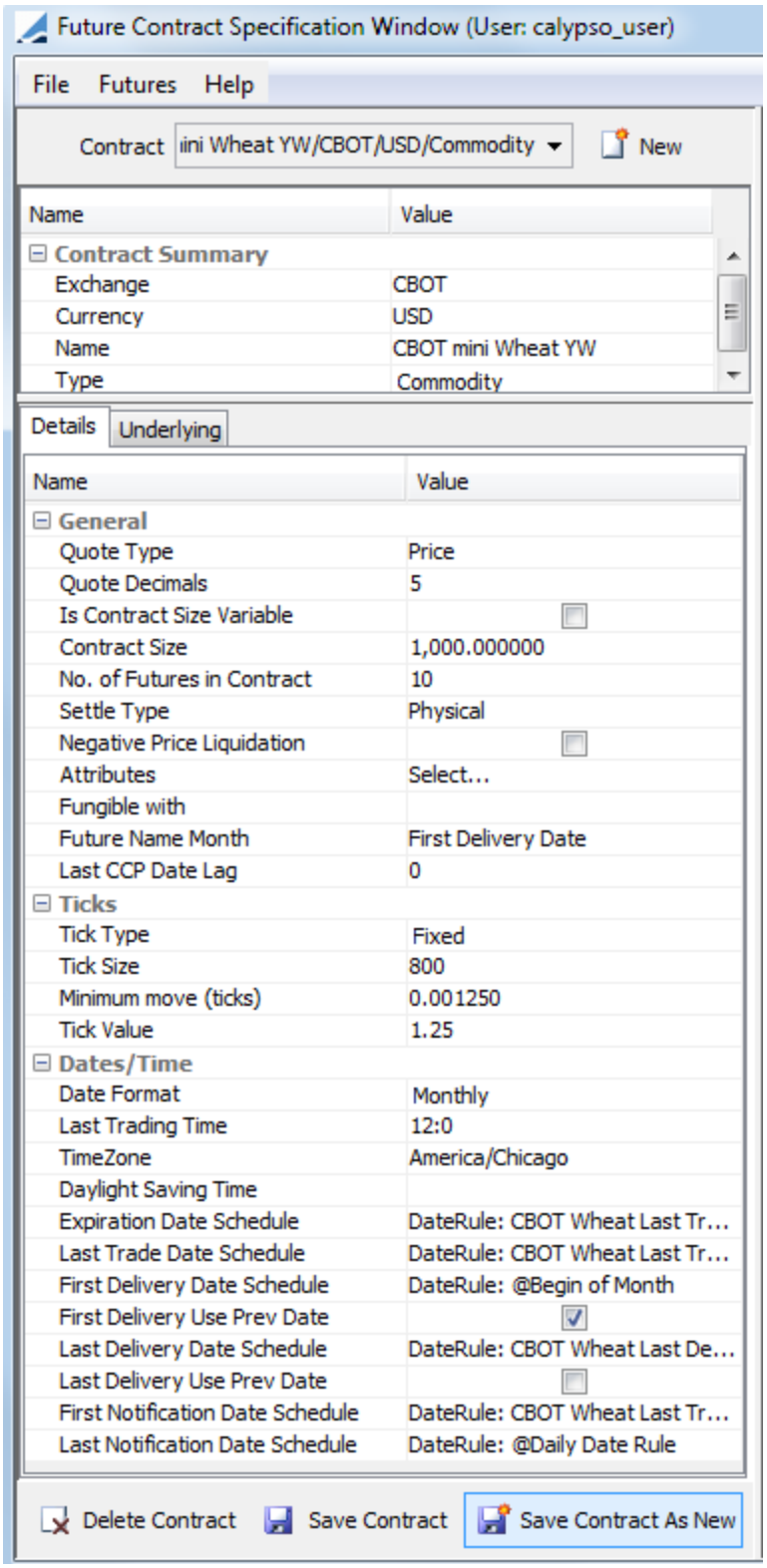
The additional futures are created with a fixed price equal to the closing quote price for the future being created on the Value Date.

15.4 Physical Commodity Contract Definition

In the Underlying panel, set the Default Delivery Contract attribute to Yes if this contract should be used as the default contract for delivery for valuing the commodity certificate. The nearby future will be used to value the certificate if a future not specifically associated with the certificate is available.

▶ See Future Delivery Sets for details.




Future Contract Specification Window (User: calypso_user)
File
Futures
Help
Contract
iini Wheat YW/CBOT/USD/Commodity
New
Name
Value
Contract Summary
Exchange
CBOT
Currency
USD
Name
CBOT mini Wheat YW
Type
Commodity
Details
Underlying
Name
Value
General
Quote Type
Price
Quote Decimals
5
Is Contract Size Variable
Contract Size
1,000.000000
No. of Futures in Contract
10
Settle Type
Physical
Negative Price Liquidation
Attributes
Select...
Fungible with
Future Name Month
First Delivery Date
Last CCP Date Lag
0
Ticks
Tick Type
Fixed
Tick Size
800
Minimum move (ticks)
0.001250
Tick Value
1.25
Dates/Time
Date Format
Monthly
Last Trading Time
12:0
TimeZone
America/Chicago
Daylight Saving Time
Expiration Date Schedule
DateRule: CBOT Wheat Last Tr...
Last Trade Date Schedule
DateRule: CBOT Wheat Last Tr...
First Delivery Date Schedule
DateRule: @Begin of Month
First Delivery Use Prev Date
Last Delivery Date Schedule
DateRule: CBOT Wheat Last De...
Last Delivery Use Prev Date
First Notification Date Schedule
DateRule: CBOT Wheat Last Tr...
Last Notification Date Schedule
DateRule: @Daily Date Rule
Delete Contract
Save Contract
Save Contract As New

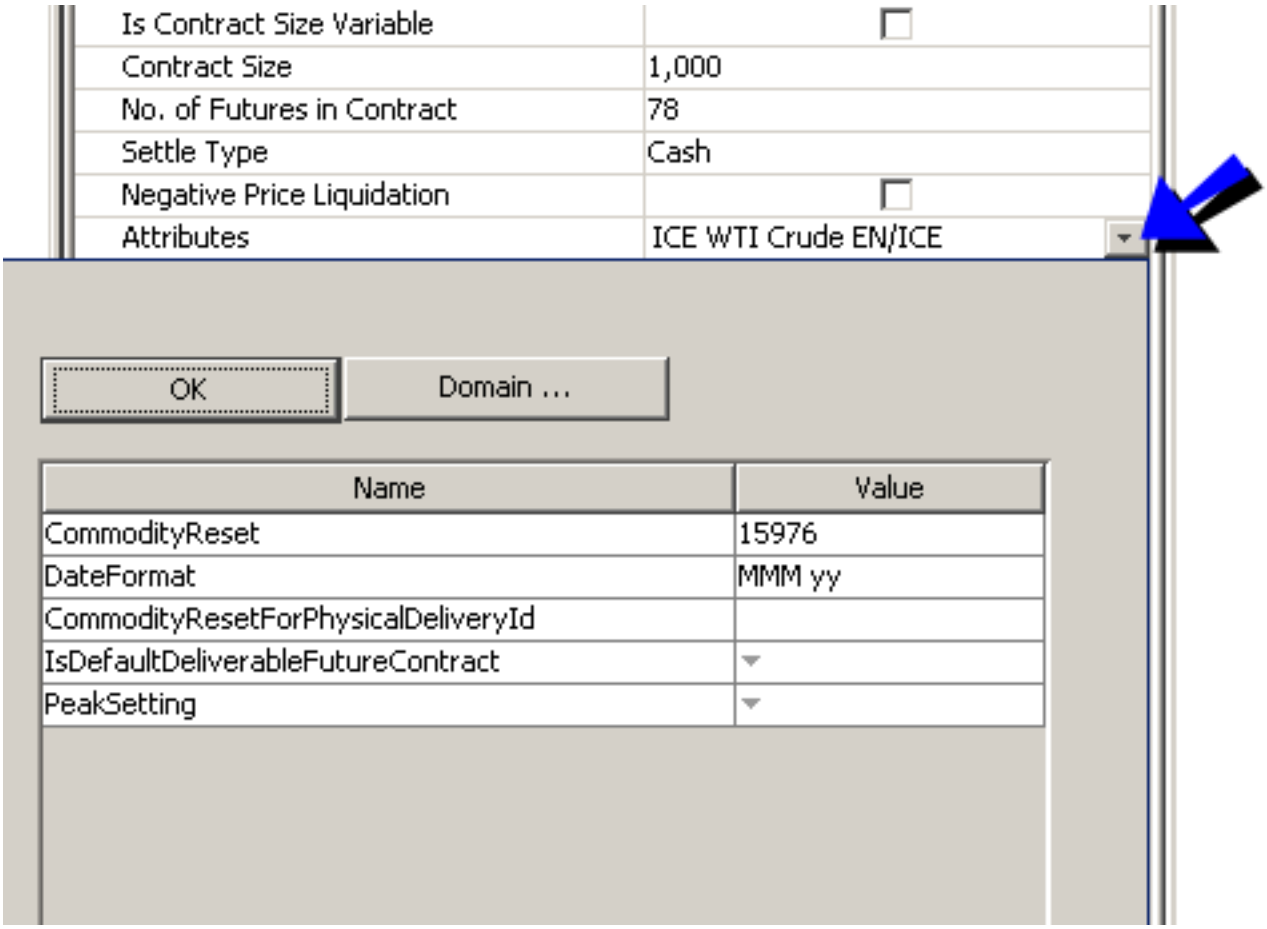
15.5 Asian Future Contract Definition

Examples include the First Line Brent and WTI Asian Swaps traded on the InterContinentalExchange (ICE). They are all cash settled, typically based on the average of a market price over a calendar month.

In the Underlying panel of the Future Contract Definition, when you select the “Commodity” type of future, you may select when the price fixing occurs: At Maturity (Vanilla) or Asian.

When you select the Asian price fixing, you can then double-click the Commodity Reset attribute value field to associate a Commodity Reset Definition with the contract.

Note that in the Underlying panel, the Commodity Reset attribute displays the name of the Commodity Reset Definition. However, in the Definition panel, if you click Attributes to open the future contract Attributes Window, the CommodityReset attribute displays the Commodity Reset Id.



Asian Averaging Period

The averaging period for an Asian settled future is determined by the First Delivery Date and Last Delivery Date of each future. These dates are set through the use of date rules, and can be further customized by overwriting the dates in the Future Definition if needed. The Averaging Period is inclusive of the first and last delivery dates.

Asian Fixing Calendar

The determination of business days during the Averaging Period of the future is based on the holiday calendar(s) associated with the commodity reset specified in the future contract definition. Daily observations will be expected on the business days according to that calendar.

15.6 Electricity Future Contract Definition

The commodity product should be defined as the Electricity commodity type. Cash and Physical settlement are now supported for electricity futures. Peak setting option along with delivery interval frequency is used to determine the contract size of the trade as per below.

When setting up the Future Contract Definition, check the Variable contract size, and define the PeakSetting attribute with one of the following: On Peak, Off Peak, Base Load.

In the Underlying panel:

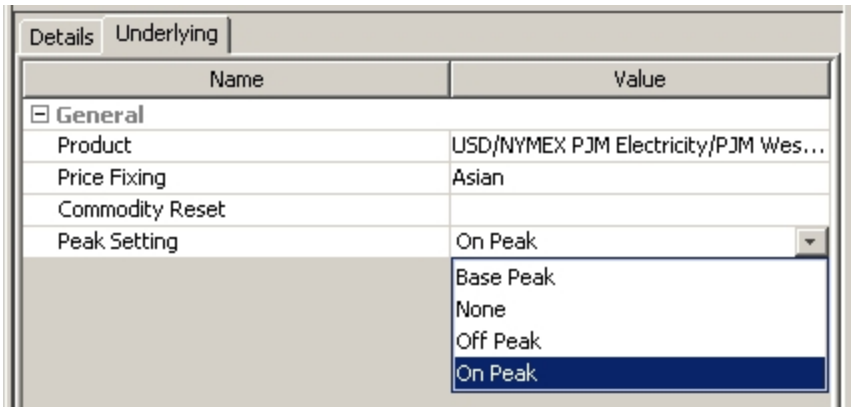
- Click ... to select the underlying commodity electricity product.
- Set the Peak Setting attribute to define the contract size. For Hourly delivery frequency, the following calculations are used to define the contract size:

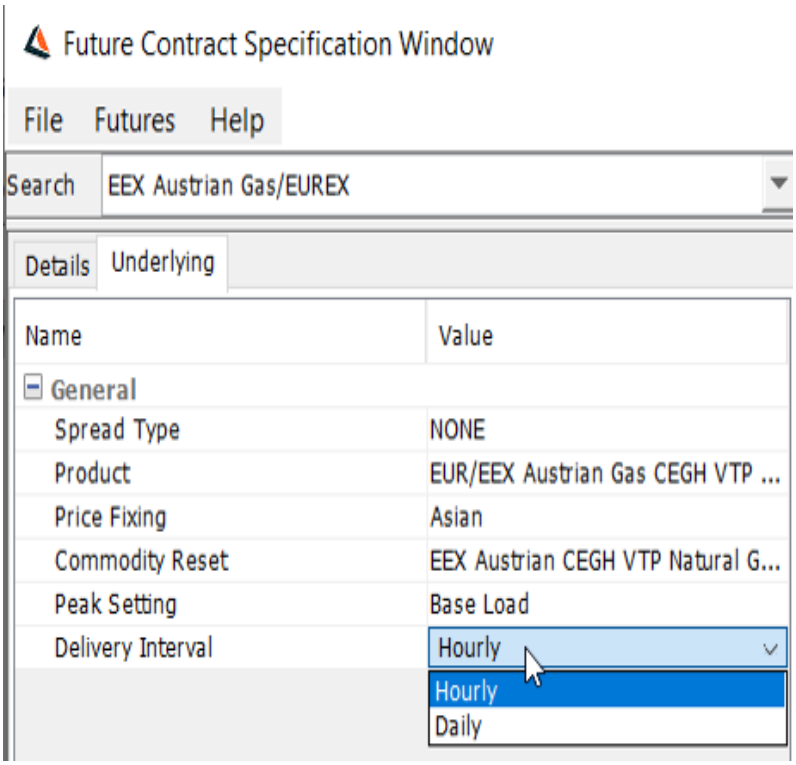
  On Peak - Contract Size = Hourly MWh Quantity * peak hours per bus day * No of bus day in Future Delivery Period (Hourly MWh Quantity is taken from Commodity Definition)

  Off Peak - Contract Size =Hourly MWh Quantity * Total Off Peak Hours in the Future Delivery Period. (To calculate off peak hours we use 24*(holiday and weekends) + (24-no of peak hours)*no of bus days.

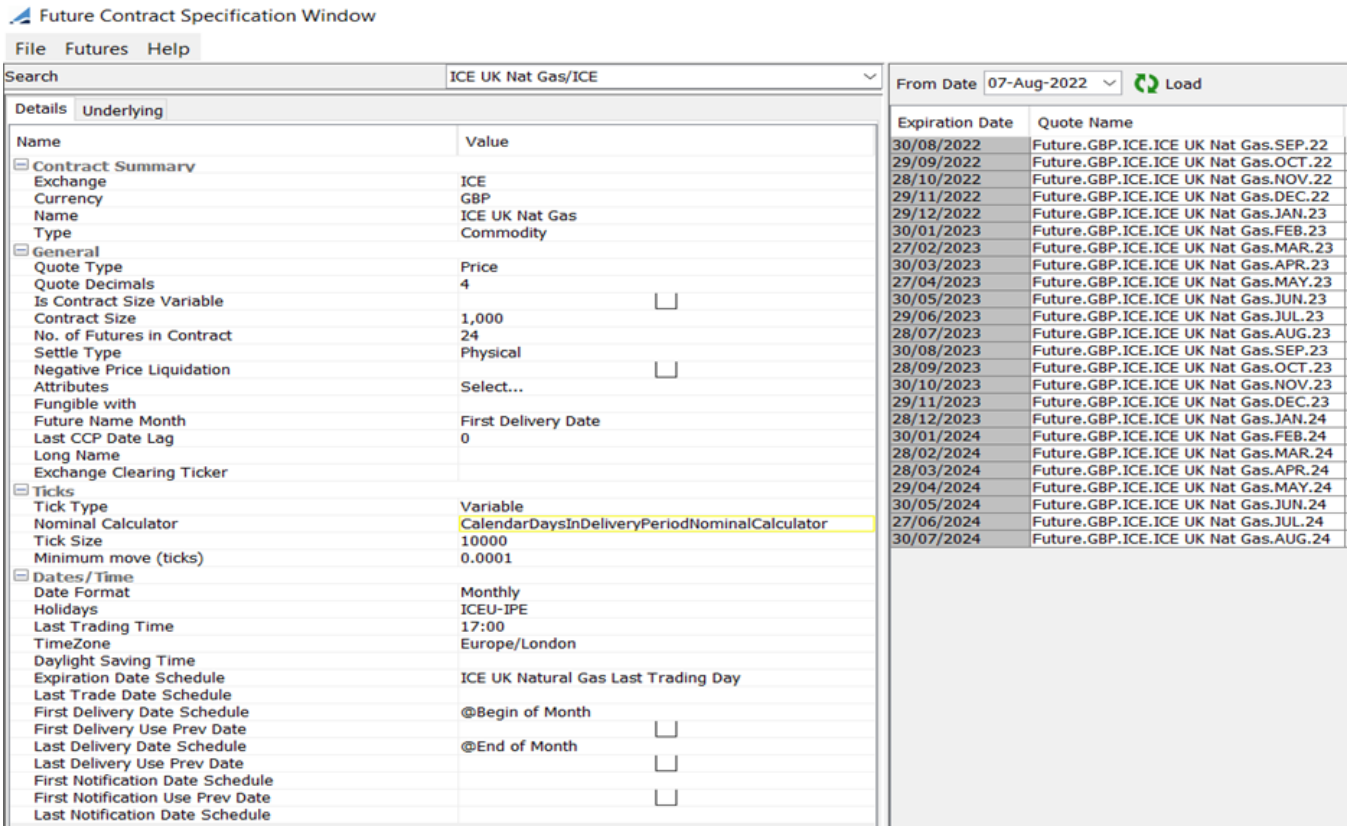
  Base Load Contract Size = Hourly MWh Quantity * 24 * No of days in future delivery period.
- For Daily delivery frequency, only base load peak setting is supported as of now. The calculation method of quantity with base load peak setting and daily delivery interval is as follows:

  Base Load Contract Size = Daily MWh Quantity * No of days in future delivery period.





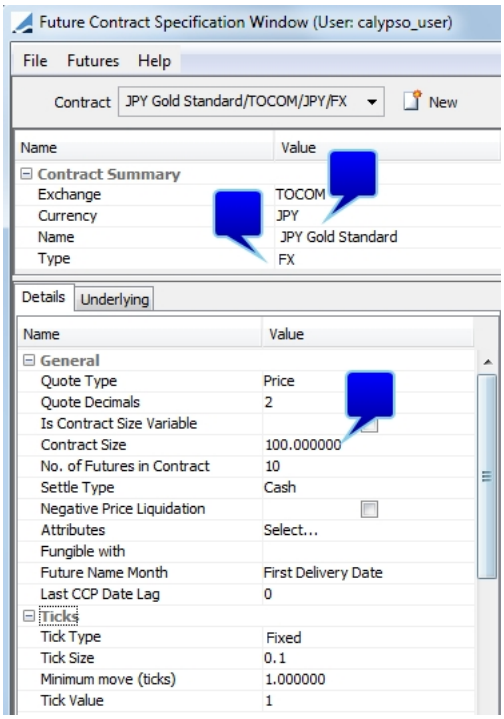
Sample Natural Gas Contract

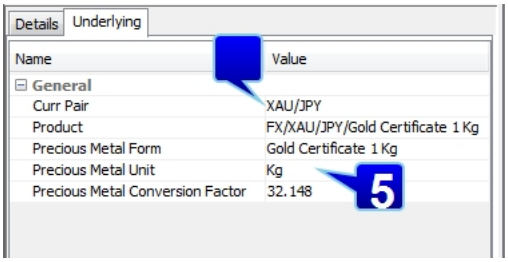


15.7 FX Future Contract Definition

The Standard convention for precious metals around the world is to quote a price in US dollars per Troy Ounce. However, it is not uncommon to quote metals in other currencies and units. Calypso gives you the ability to capture and price FX Future trades based on various quoting units and currency.

Described below are required fields in the precious metal future contract definition.





Step 1 - You must define all precious metal future contracts with the FX product type and with a currency pair as the underlying asset.

Step 2 - The settlement currency of the future contract can be either the quoting currency of the currency pair, or possibly a third currency. I can never be the precious metal currency.

Step 3 - The contract size of the FX future is denoted in the primary currency unites of the metal and is equal to the value entered into the contract size field in the future contract definition.

Step 4 - The currency pair used as an underlying in an FX future contract is the standard precious metal currency (i.e. XAU, XAG, XPT, etc...) along with any quoting currency.

Step 5 - Select the Precious Metal Unit in which the primary currency is to be measured. The conversion factor will automatically populate when the unit is selected.

NOTE: The price of the future is derived from the forward price of the underlying currency pair (in Troy Ounces) and then converted using the provided conversion factor. In cases where the secondary currency is not USD, the forward price is triangulated based on the Triangulation Currency Rule defined in the pricing environment.

15.8 LME Contracts

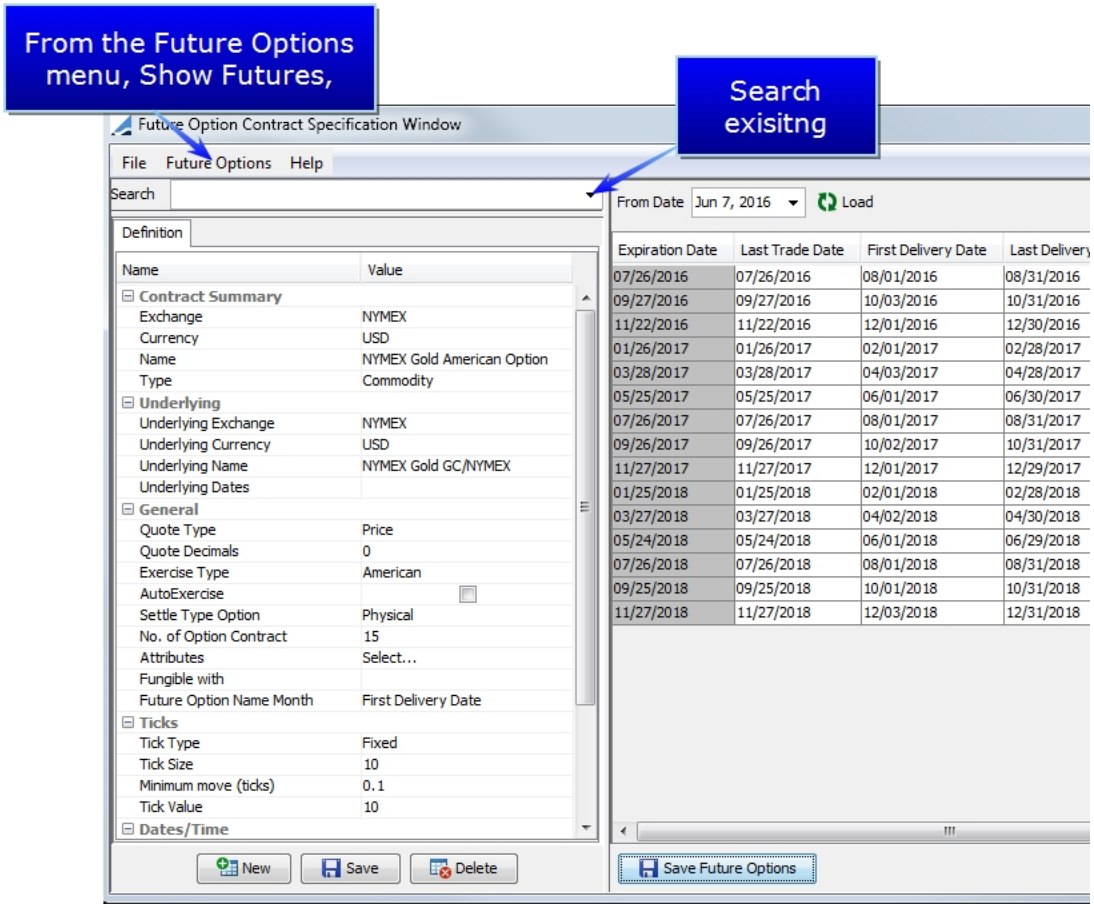
To distinguish between Forward and Future style contracts using LME, the contract attribute *isDiscountedVM* can be set to True. when this is set, the Pricer FutureCommodity will discount the VM using the native pricer from the imported Discount Curve.

Discounting will only take place if the FUTURE_FROM_QUOTE pricing parameter is set to True. In this case, Calypso uses prices from the exchange and discounts using the Discount Factors (DF) from the curve. (The curve is not used to price, only to apply the discount.)

For the above logic to take effect, in the Legal Entity Attributes window for LME, the attribute *MIC* must be set to *XLME*.

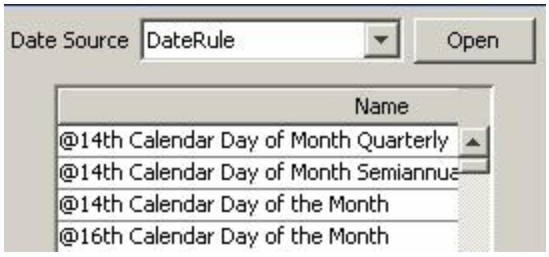
16. Future Option Contracts

Define the commodity future option contracts by choosing **Configuration > Listed Derivatives > Future Contracts Options** from Calypso Navigator (menu action `refdata.FutureOptionDefinitionWindow`).



Date Time Definition

Field	Description
Last Trading Time	Enter the time of day that trading will end on the last trading day. Use twenty-four hour time notation (for example 16:30 is four-thirty in the afternoon).
Time Zone	Select the time zone of the trade
Expiration Date Schedule Last Trade Date Schedule	You can select a date rule to generate the schedule corresponding to each date, or you can select a manual date schedule.

Field	Description
First Delivery Date Schedule Last Delivery Date Schedule First Notification Date Schedule Last notification Date Schedule	 » You can click **Open** to view the selected date rule or manual date schedule. Date rules are created by choosing **Configuration > Definitions > Date Schedule Definitions > Date Rule** from Calypso Navigator. Help is available from that window. Manual date schedules are created by choosing **Configuration > Definitions > Date Schedule Definitions > Manual Date Schedule** - Help is available from that window.

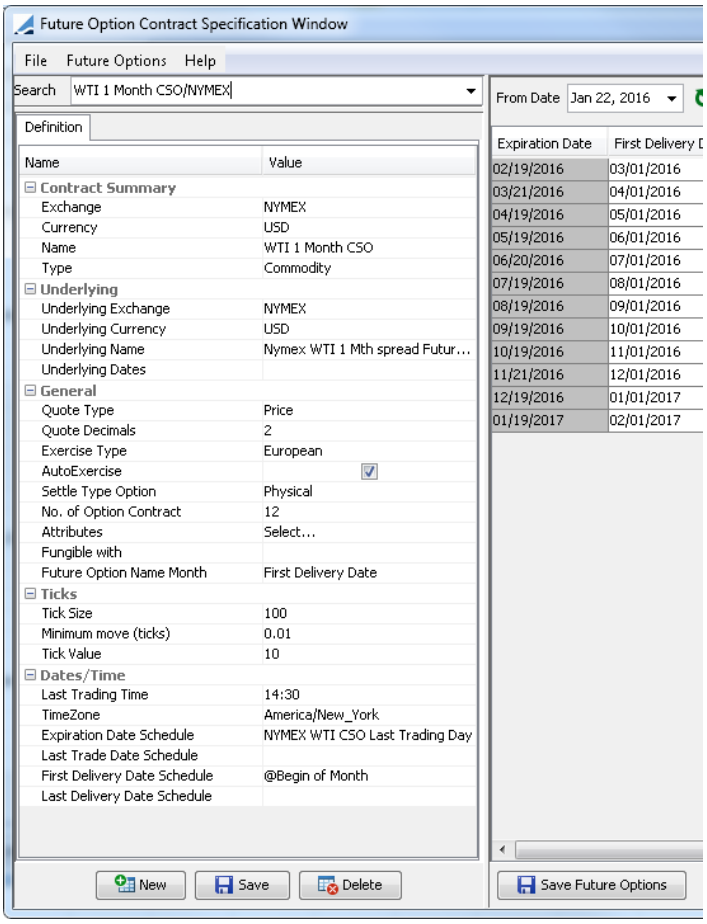
Define the option products by choosing **Configuration > Listed Derivatives > Future Options**from Calypso Navigator (menu action `product.FutureOptionWindow`).

Note: Add the product type FutureOptionCommodity to the *productType* domain by choosing **Configuration > System > Domain Values** from Calypso Navigator so that you can select the products in the Product Chooser Window

16.1 Spread Options

When the option's underlying future is a Calendar Spread or Market Spread, the option is called a Spread Option. An underlying future spread specification must be created for every spread option, even if the spread future is not listed on the exchange.

The option can be set up to settle either physically or financially. For financially settled options, the expiry logic is no different from any non-spread future option. For physically settled spread options, the expiry logic creates multiple futures upon exercising the option.



16.1.1 Spread Option Pricer

The *FutureOptionCommodity* pricer is used to price Calendar Spread Options. At this time, NPV is calculated but implied volatility and greeks are not. The volatility and underlying spot price of both the near and far expiry future can be overridden manually. The pricer uses the Kirk model to price Calendar Spread Options. The volatilities of the two underlying positions is not calculated and can be overridden as well.

The *FutureOptionCommodityMarketSpread* pricer is used to price Market Spread Options. At this time, NPV is calculated but implied volatility and greeks are not. The volatility and underlying spot price of both the futures can be overridden. The pricer uses the Kirk model to price Market Spread Options. the pricer looks for the correlation between the commodities of each future. The pricer limits the number of underlyings to two.

16.1.2 Spread Option Expiry

On expiry, an offsetting future option trade to close out the original expiring trade is created, using the close quote on the expiry process value date.

16.1.3 Spread Option Exercise

If an option is exercising into futures, the option exercise process creates new futures trades.

For Calendar Spreads, the exercise process creates a future trade for the near expiring contract, and a future trade for the far expiring contract.

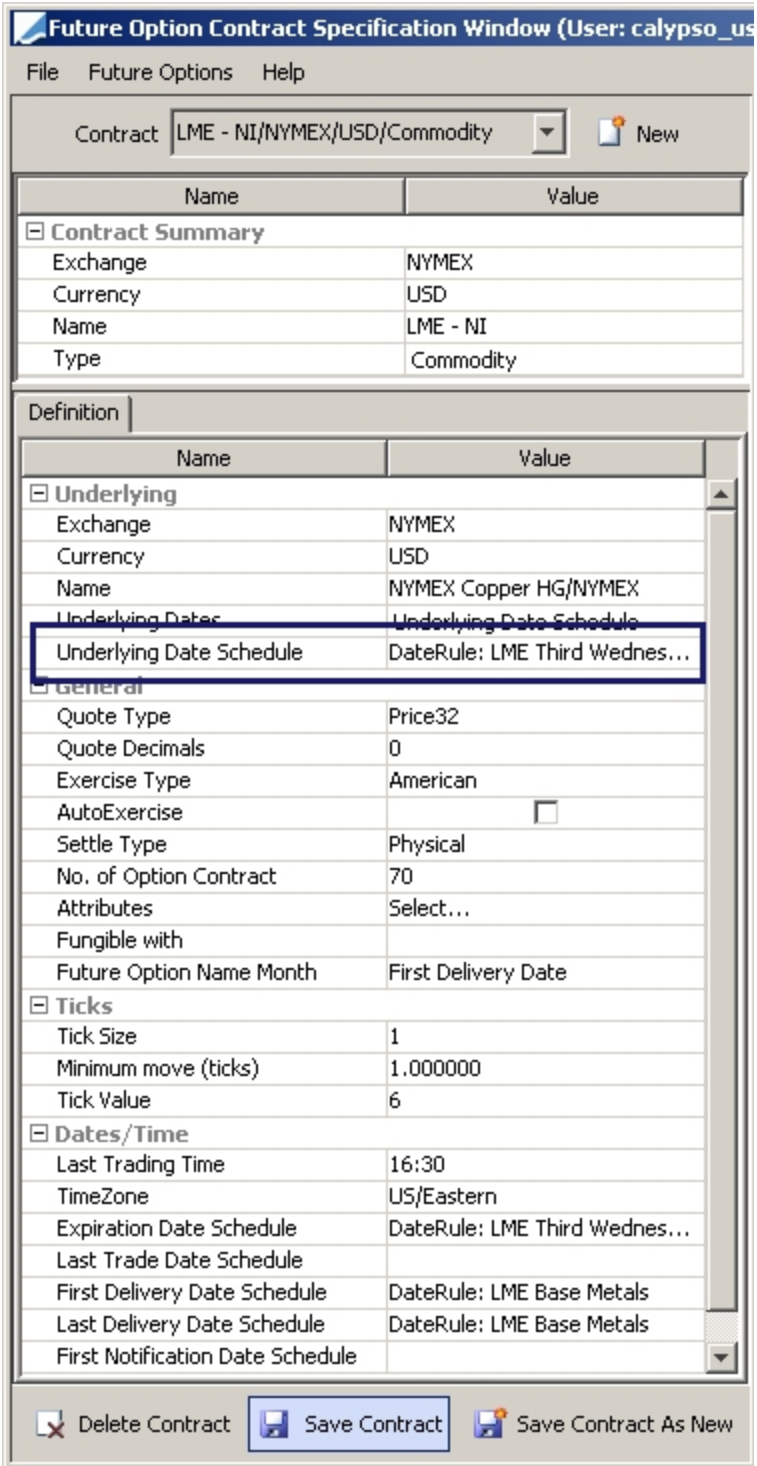
For Market Spreads, the exercise process creates a future trade for the near expiry contract of each underlying.

- To determine the quantity and trade price of the new future trades, the logic is the same for Calendar Spreads and Market Spreads. If a Market Spread Future has multiple underlyings, each with a factor, then the calendar spread is considered as having two underlyings, the first with a factor = 1 and the second with a factor = -1.
- Calculation of the quantity of a new future begins with the unsigned quantity of the option, multiplied b y the factor of the underlying. If the option is short, it should be multiplied by -1. Then, if the option is a put, it should be multiplied by -1. If the number is positive, the future is a buy. Otherwise, the future is a sell.
- The trade price of each new future except the last one being created is the closing price for that future on the process date. The trade price of the last future must take into account the strike of the option. First, the expected closing quote of the last future, given the closing quote of the spread, is calculated as well as all other futures. For example, if the spread is expected to equal (future1 closing price * future 1 factor) +...+ (future *n* closing price * future *n* factor), then the expected closing quote of the last future = [closing spread - (future 1 closing price * future 1 factor) - ... - (future *n-1* closing price * future *n-1* factor)] ÷ future *n* factor. With the closing price of the last future, it can be adjusted for the strike. Therefore, the trade price of the last future is equal to the expected closing quote of the last future - option strike ÷ future *n* factor.

16.2 Sample LME Option Contract

The convention for LME Vanilla Exchange Traded Options is for monthly option expiration occurring on the first Wednesday of the month with physical exercise into the Future with a delivery date of the Third Wednesday of the month. For most future option contracts, this is no problem, because the monthly option expirations match the monthly future expiries. However, due to the fact that the LME base metal future contracts have daily expirations, while the options have the monthly exercise described above, there needs to be a link between the future option to the correct underlying future.

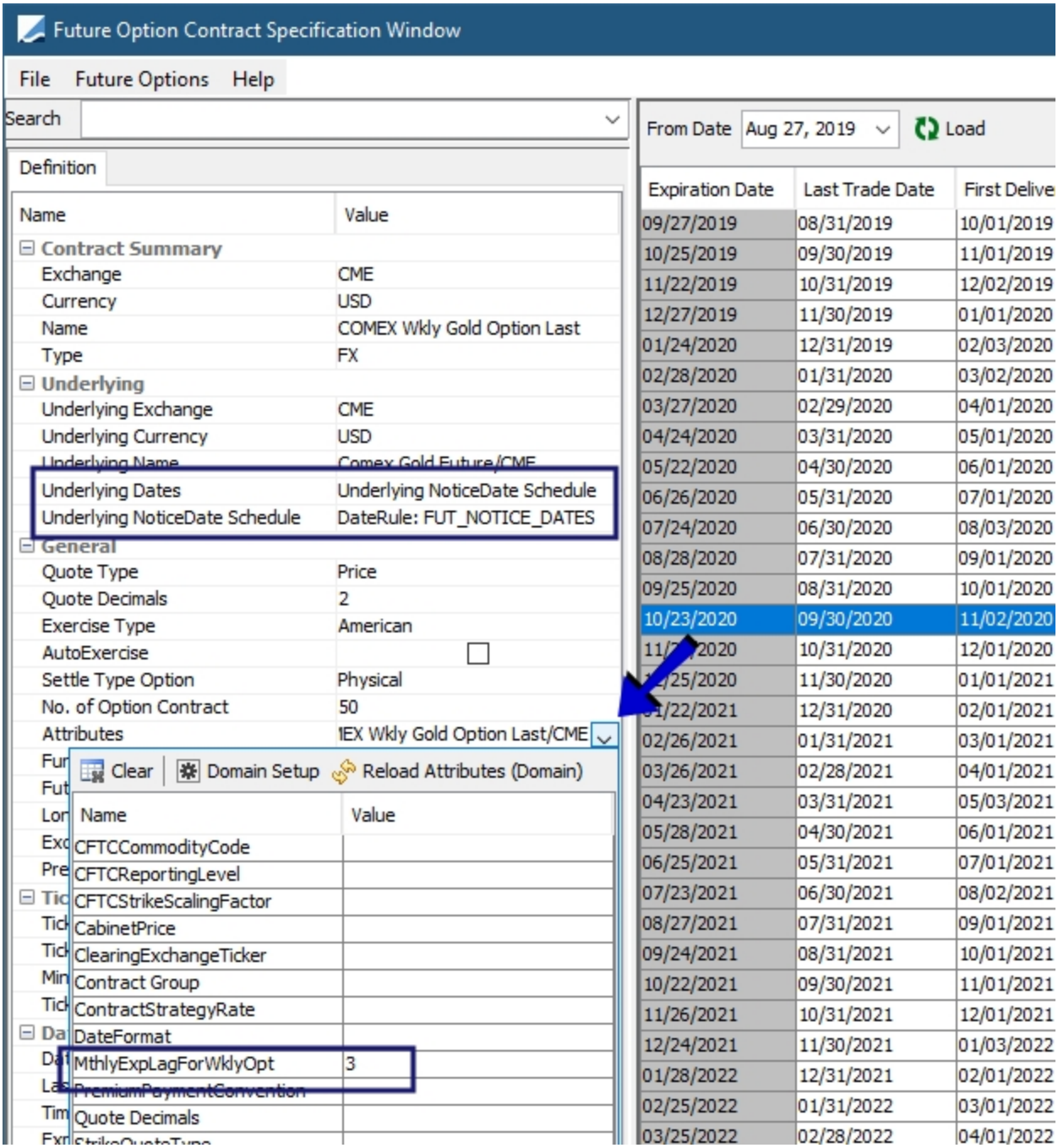
You can associate a date rule with the underlying future contract. Double-click in the Underlying Date Schedule field to select the date schedule.


Future Option Contract Specification Window (User: calypso_us
File
Future Options
Help
Contract
LME - NI/NYMEX/USD/Commodity
New
Name
Value
Contract Summary
Exchange
NYMEX
Currency
USD
Name
LME - NI
Type
Commodity
Definition
Name
Value
Underlying
Exchange
NYMEX
Currency
USD
Name
NYMEX Copper HG/NYMEX
Underlying Date Schedule
DateRule: LME Third Wednes...
Quote Type
Price32
Quote Decimals
0
Exercise Type
American
AutoExercise
Settle Type
Physical
No. of Option Contract
70
Attributes
Select...
Fungible with
Future Option Name Month
First Delivery Date
Ticks
Tick Size
1
Minimum move (ticks)
1.000000
Tick Value
6
Dates/Time
Last Trading Time
16:30
TimeZone
US/Eastern
Expiration Date Schedule
DateRule: LME Third Wednes...
Last Trade Date Schedule
First Delivery Date Schedule
DateRule: LME Base Metals
Last Delivery Date Schedule
DateRule: LME Base Metals
First Notification Date Schedule
Delete Contract
Save Contract
Save Contract As New

16.3 Weekly COMEX Future Options

It is possible to map a COMEX Gold weekly future option to its underlying future in the Future Option commodities contract. This logic is based on mapping the weekly future option expiry to the underlying future based on the expiration date of the future option and the first notice date of the underlying future series.

In the Future Option contract window, in the Underlying Dates field, the option *Underlying NoticeDate Schedule* should be chosen to generate futures for COMEX future contracts.



- The date schedule selected in the *Underlying NoticeDate Schedule* field should be that of the underlying Future Notice Dates.
- An additional attribute called *MthlyExpLagForWklyOpt* should be defined for weekly option mapping. A setting of *3* is suggested for COMEX weekly options.
- If the weekly expiry of the future option is mapped to a future with the First Notice Date greater and nearest to the Weekly Option Expiry, or greater than the First Notice Date of a future, it would map to the First Notice Dated future.

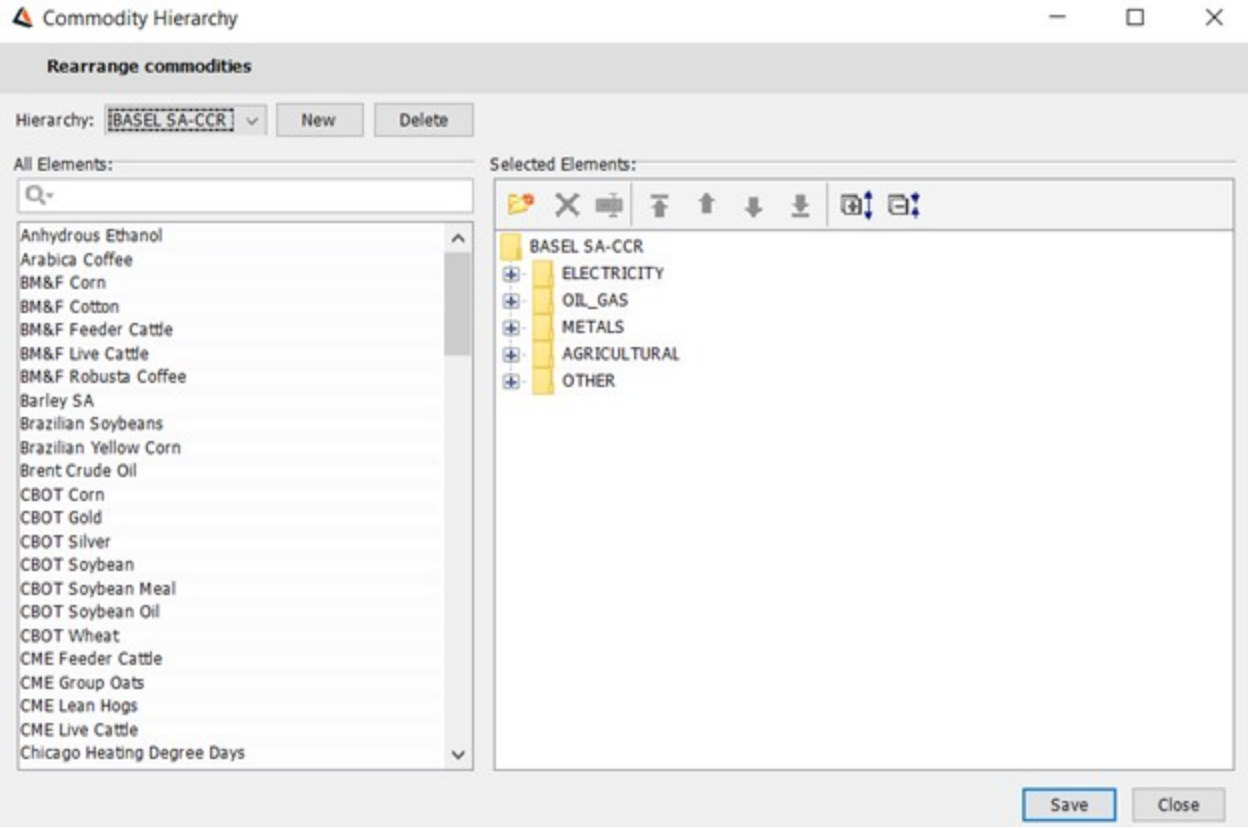
Logic is in place to prevent both the weekly and monthly gold options from mapping to the same underlying future:

- The nearest notice date that is greater than the Weekly Option Expiry is retrieved from the Future Notice Dates date rule (Date B)
- The *MthlyExpLagForWklyOpt* days attribute is subtracted from Notice Date B (this is Date A)
- If Date A >= the Weekly Option Expiry < Date B, then the Weekly Option Expiry maps to the next date in the Future Notice Dates date rule, greater than Date B
- I f the Weekly Option Expiry is < Date A, then the Weekly Option Expiry maps to Date B, First Notice Dated future from the Future Notice Dates date rule

17. Commodity Hierarchy

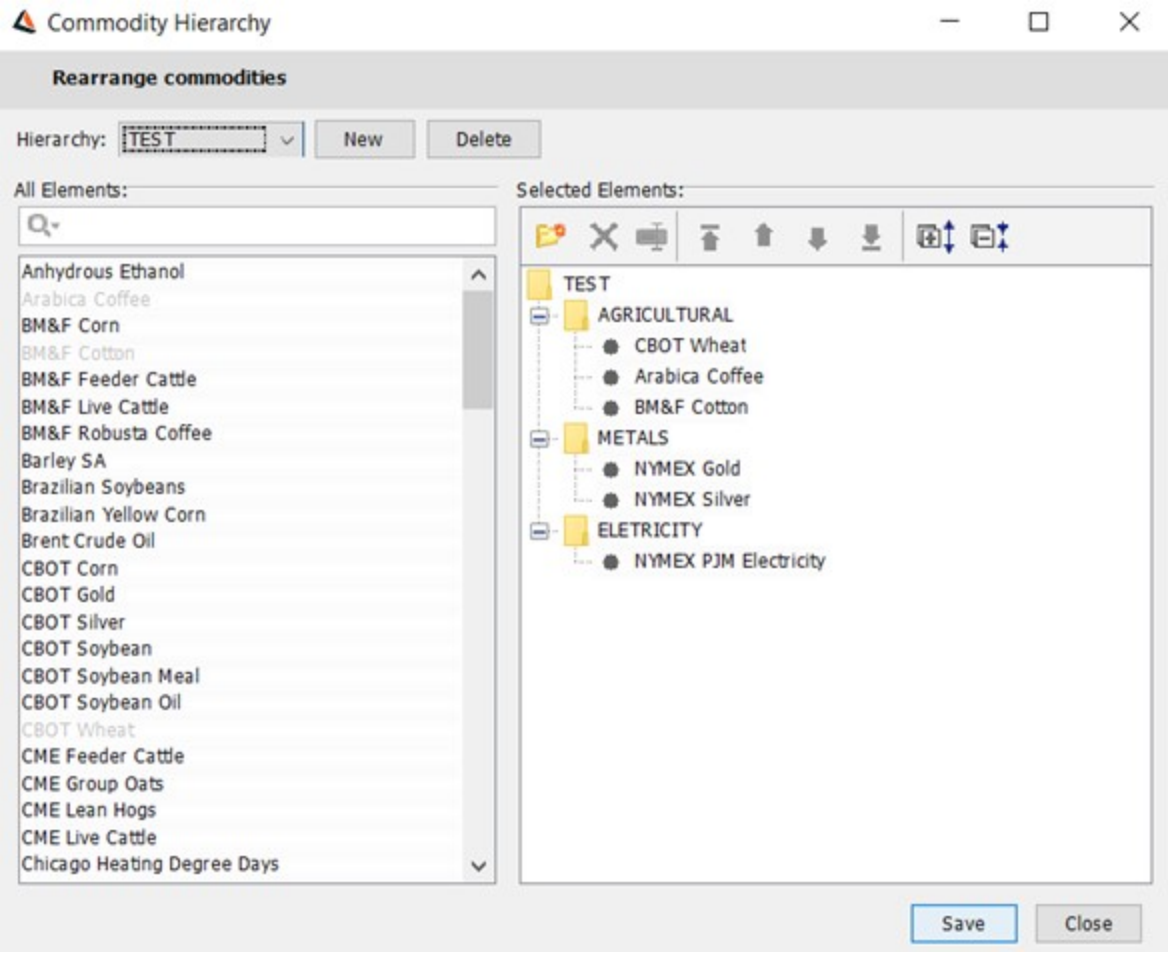
Commodity Hierarchy allows organization of commodity products in a hierarchical manner which can be used in various reports and modules (for example: Sensitivity report, DTCC modules, Regulatory Risk module).

To access the Commodity Hierarchy window from the Calypso Navigator, select **Configuration > Commodities > Commodity Hierarchy** (`gui.widget.CommodityCategorizer`).



- Existing hierarchies are loaded by default. Select the Dropdown Bar to view pre-configured hierarchies.
- To create a new hierarchy, click **New** and enter a name for your new hierarchy.
- To add a new folder in the hierarchy, click on  and enter the name of the folder.
- To add elements to the folder, drag the required elements from the All Elements panel and drop it in the required folder.
- Click on **Save** to save the hierarchy.

For example, in the following figure a new hierarchy TEST is created with various folders containing elements.



Additional configuration options:

- Click on **Delete** to delete a hierarchy.
-  - Delete a specific folder or element in a hierarchy.
-  - Rename a folder in a hierarchy.
-  - Re-arrange the order of folders or elements in a hierarchy.
-  - Expand or Collapse the hierarchy.

18. Capturing Commodity Derivatives Trades

19. Commodity Products Overview

The following types of commodity products are supported by Calypso.

It is recommended to use Pricing Sheet to book commodity trades. See Capturing CMD Trades.

Commodities — Derivatives

Product Name	Definition	Trade Worksheet
Swaps	The Commodity Swap product uses the Commodity Reset Definition to define what values to use for both known and projected commodity prices. You can select the commodity reset definition during trade capture, and define additional fixing details in the trade. A Commodity Swap is an exchange of payments between two parties based on either of the following: Asian Swaps, Lookalike Swaps — fixed commodity price versus a floating price, such as an index of futures contracts. Basis Swap — floating price versus floating price. The Commodity Swap can be a cross-currency deal where the payment currency is different than the underlying commodity product currency. To capture Commodity Swap Trades, please use the Pricing Sheet - Commodity Swap.	**Trade > Commodities > Swap** trading.TradeCommoditySwap2Window
OTC Options	The Commodity OTC Option product uses the Commodity Reset Definition. A Commodity OTC Option is a strip of Cash settled Asian or Average Rate Options. The payoff depends on an average of Reference Prices relative to a fixed Strike. You can capture one of the following option types: PUT, CALL, Put Spread, Call Spread, Straddle, Strangle, Risk Reversal, and Synthetic Forward, as described below. The physical exercise types American and European are	**Trade > Commodities > OTC Options** trading.TradeOTCCommodityOption2Window

Product Name	Definition	Trade Worksheet
	supported for PUT and CALL options. To capture Commodity OTC Option Trades, please use the Pricing Sheet - Commodity Vanilla.	
Listed Futures	A trade capturing commodity futures or commodity index futures that are listed on an exchange. Commodity exchange traded Asian products are supported. Note: the Future Commodity is now supported in exDesigner.	**Trade > Commodities > Listed Future** trading.TradeWindow$Future
Listed Future Options	A trade capturing options on commodity futures or options on commodity index futures that are listed on an exchange.	**Trade > Commodities > Listed Future Options** trading.TradeWindow$FutureOption
Forwards	A Commodity Forward Trade is a contract to buy or sell a fixed quantity and quality of a particular commodity for delivery at a fixed date in the future at a fixed price. A forward contract differs from a futures contract in that the former is a once-only deal, for example for an odd number of barrels which may not be available on an exchange, while futures contracts are standardized contracts. These contracts cannot be closed out by a matching transaction for hedging purposes. The Commodity Forward now supports cross commodity unit conversion of the price units, deal units, and units for the certificates. The valuation is supported. For example, the trade capture, valuation, and risk now support entering physically delivered commodity Forwards where the price is quoted in reference currency and reference units, but the quantity is entered in terms of the number of future contract equivalents. This is standard in the LME Base Metal OTC market, where OTC Forwards and Listed Futures are interchangeable. In the Commodity Forward trade worksheet, you can now set the Price currency and unit	**Trade > Commodities > Forward** trading.TradeCommodityForwardWindow

Product Name	Definition	Trade Worksheet
	independently from the currency of the underlying commodity and the deal units. Added the currency and units fields to the Price panel. For physical commodities, the storage certificate(s) may be entered in units that are different from the physical commodity. The conversion details should be configured in the commodity conversion table. You can enter a Commodity Forward, generate the proper valuation, then change the units of the price and quantity (while changing the values of the price and quantity such that the new value is the equivalent of the old value) and not see a change in trade value. You can enter Commodity Certificates in any unit which can be converted from the deal or strike units and compute the correct Discount Amount and generate the correct valuation. You can run the Certificate Stock Report and see the correct valuation of the commodity inventories, with prices in reference currency/reference unit and quantities in the units of the individual certificate quantity units. To capture Commodity Forward Trades, please use the Pricing Sheet - Commodity Forward.	
Index Swaps	A Commodity Index Swap is a swap in which the counterparties agree to exchange cash, based on a commodity index and a money market rate. Note: the Commodity Index Swap trade worksheet is deprecated. The Performance Swap trade worksheet should be used instead.	**Trade > Commodities > Index Swap** trading.TradePerformanceSwapWindow
Swaptions	The Commodity Swaption product uses the Commodity Reset Definition. Capture it in the Pricing Sheet. A Commodity Swaption is an option to enter into an underlying commodity swap at a future date. To capture commodity swaption trades, please use the Pricing Sheet - Commodity Swaption.	**Pricing > Pricing Sheet**

Product Name	Definition	Trade Worksheet
Cap Floors	Cap — See “Call” under OTC Options above. Floor — See “Put” under OTC Options above.	**Trade > Commodities > OTC Options** trading.TradeOTCCommodityOption2Window

Commodities — Exotic Structured Products

Product Name	Definition	Trade Worksheet
Swaps	An exotic swap is a swap where the structure of coupon and principal payments is customized using the Calypso eXSPress language. It allows you to define exotic payout formulas on the fly. The payout formulas require the definition of exotic variables. The Commodity Reset is supported as a quotable variable.	**Trade > Interest Rates > Swap** trading.TradeSwap

20. Capturing Commodity Forward Trades

▶ See Commodity Forwards Migration for details on Commodity Forwards to Spot Migration.

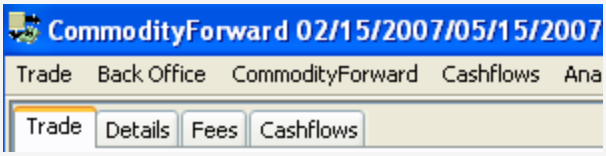
To capture Commodity Forward Trades, it is recommended to use the Pricing Sheet - Commodity Forward.

You can also choose **Trade > Commodities > Forward** to open the Commodity Forward worksheet, from the Calypso Navigator. The commodity forward trade is based on the commodity reset, not the commodity itself. You must define a commodity reset to construct a commodity forward trade.

Commodity forward trades without certificates do not update the position by default. You need to run the scheduled task CMD_FWD_SETTLE on the settlement date to terminate the commodity forward trade and create a commodity spot trade. If you want to update positions for commodity forward trades without certificates, you need to set the environment property NEW_CMD_FWD_NO_POSITION = false.

ⓘ **[NOTE: For transactions involving future physical deliveries of commodities, the Commodity Forward product is best suited.]**

Commodity Forward Quick Reference



When you open a Commodity Forward worksheet, the Trade panel is selected by default.

Configuration

» Define the commodity product by choosing **Configuration > Commodities > Commodities** from Calypso Navigator

» Define the commodity reset definition by choosing **Configuration > Commodities > Commodity Reset** from Calypso Navigator

Entering Trade Details

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly. They are described below, see Field Description.

Note that the Trade Date is entered in the Details panel.

» Proceed to the other panels as applicable.

Saving a Trade

» Hit F5 to save the trade, or choose **Trade > Save**.

You can also hit F3 to save the current trade as a new trade, or choose **Trade > Save As New**.

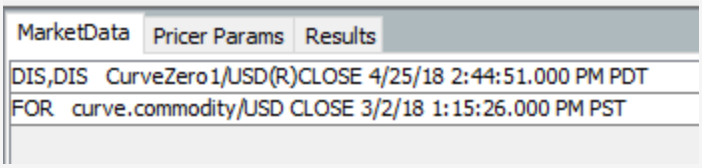
A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

» A commodity forward trade requires the following market data: a discount curve, a forecast curve, price quotes.

Note that a cross-currency commodity forward also requires an FX curve, an FX rate, and an FX reset.

» You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.



» Click **Price** to price the trade.

Trade Lifecycle

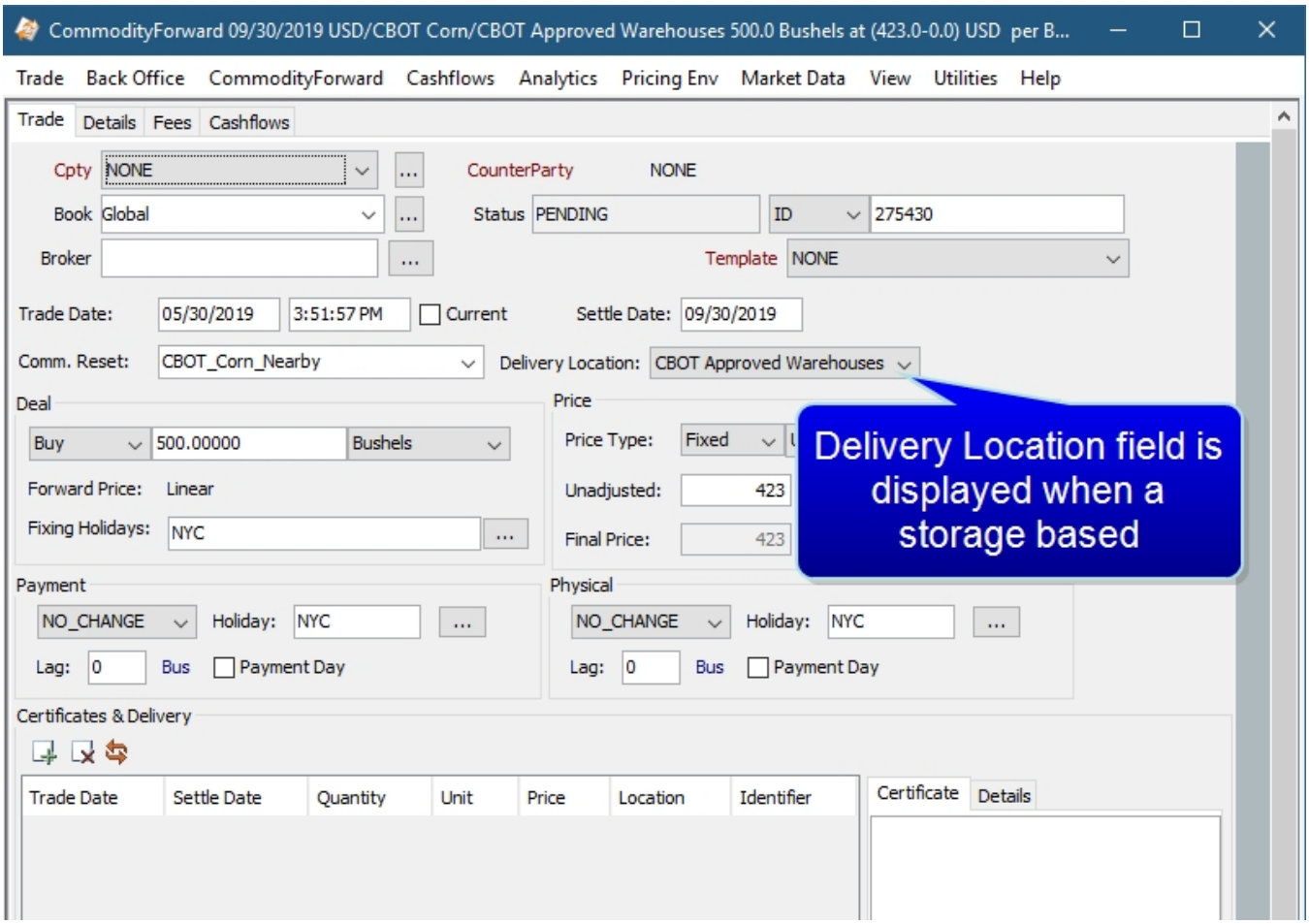
» You can allocate the trade using **Back Office > Allocate.** Allocation is not supported for a forward with a commodity certificate.

» You can terminate the trade using **Back Office > Terminate**

» You can fix the prices by choosing **Trade Lifecycle > Reset > Price Fixing** from Calypso Navigator

» Refer to Settlement Delivery Instructions for Physical Commodities to configure SDIs for Commodity Forwards.

Deal units are in reference units in trade window.



20.1 Field Descriptions

Fields	Description
Role/Cpty	The first two fields of the worksheet identify the trade counterparty. The first field identifies the trade counterparty's role. The default role is specified using **Utilities > Set Default Role**. However, you can change it as applicable. You can select a legal entity of specified role from the second field provided you have setup favorite counterparties. You can also type in a character to display the favorite counterparties that start with that character. Favorite counterparties are specified using **Utilities > Configure Favorite Counterparties**. Otherwise click ... to select a legal entity of specified role from the Legal Entity Chooser. You can also type [Ctrl-F] to invoke the Legal Entity Chooser, or directly enter a Legal Entity short name.
Book	Trading book to which the trade belongs. Defualts to the book selected in the User Defaults.

Fields	Description
	You can modify as applicable. You can select a book provided you have setup favorite books Favorite books are specified using **Utilities > Configure Favorite Books**. Otherwise, click ... to select a book. The owner of the book (a processing organization) identifies your side of the trade.
Id	Unique identification number of the trade. The trade id is automatically assigned by the system when the trade is saved. You can load an existing trade by typing the trade id into this field and press [Enter].
Ext Ref	You can also display the internal reference or external reference. The default trade reference to be displayed can be selected in the User Defaults.
Int Ref	The internal reference and external reference can be set in the Details panel of the trade worksheet.
Status	Current status of the trade. The status is automatically assigned by the system based on the workflow configuration. The status will change over the lifetime of the trade according to the workflow configuration and he actions performed on the trade.
Broker	Displays the broker if a broker fee is captured in the Fees panel.
Template	You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Dates Details

Fields	Description
Trade Date and Time	Enter the start date and time of the trade. The trade date defaults to the current date. Check Current to use the current system time.
Settle Date	Enter the maturity date for the trade. (For most emissions trades, the settle date is equal to the allowance delivery date.)

Commodity Details

Fields	Description
Comm. Reset	Select the commodity reset which will drive the forward. When the reset is selected, fields specific to the reset pre-fill with the appropriate information.
Delivery Location	This is the delivery location for storage based commodities. It is populated from the *CommodityLocation* domain value. The pricer recognizes the delivery location and prices

Fields	Description
	the forward according to the relevant location differentials. NOTE: The location spread of the location indicated is used to adjust the projected forward price of the commodity taken from the forward curve and will have a valuation impact on the trade. Changing the delivery location has a pricing impact but does not have an impact on the fixed price of the forward, which is a saved trade attribute.

Deal Details

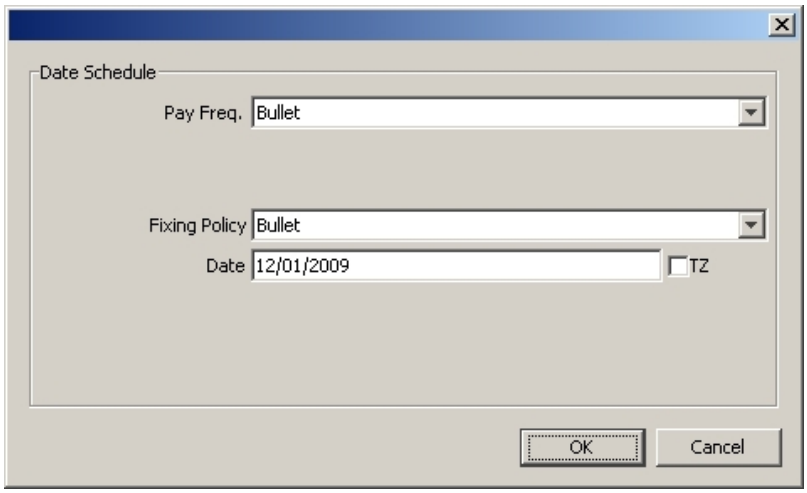
Fields	Description
Buy / Sell	Select the direction of the trade.
Quantity	The quantity of the certificate in commodity units.
Quantity Unit	Unit of measure that the quantity represents. You can use a different unit type than the unit in the product definition. The quantity unit defaults to the unit defined in the commodity definition. If a unit other than the default unit is chosen, the application requires a conversion definition to correctly convert the units for the cashflows. Commodity positions are always kept in the default unit in the Position Keeper. To define the conversion definition, from Calypso Navigator, choose **Configuration > Commodities > Commodity Conversion**.
Forward Price	The Forward Price is automatically displayed based on the commodity reset that has been chosen. Calypso out-of-the-box provides the following forward price methods: Nearby — The Nearby (aka Prompt) future is the future in a given contract listing which is closest to expiration on a specified date. This future is typically the most liquid and contains the highest open interest, making it the primary choice for a derivative reference price. In Calypso, the projected price returned by the Nearby method is equal to the the price of the first sequentially available curve point on or after the fixing date. Lme3M — The LME 3 Month price is similar in concept to the Cash price. In Calypso, the projected price returned by the LME3M method is equal to the value on the curve which corresponds to the date 3 calendar months after the fixing date according to the Fixing Holiday Calendar subject to the Forward Price Holiday Calendar. Note: this value may correspond to an actual curve point, or may be interpolated using the interpolation method specified in the forward curve. LmeCash — Futures listed on the London Metals Exchange (LME) have daily expiries, whereas most other commonly traded commodity futures have monthly listings. Because of this, LME products tend to be quoted in terms of tenor-based futures such as Copper Cash Buyer's Price or Lead 3 Month Buyer's Price. In keeping with this convention, derivatives settled using the LME Cash reference price require a method which can project the price of the official cash settlement price on a given fixing date. In Calypso, the projected price

Fields	Description
	returned by the LMECash method is equal to the value on the curve which corresponds to the date 2 business days after the fixing date according to the Fixing Holiday Calendar subject to the Forward Price Holiday Calendar. Note: this value may correspond to an actual curve point, or may be interpolated using the interpolation method specified in the forward curve. SecondNearby — The Second Nearby future on a given date is the future which is next to expire after the prompt. In Calypso, the projected price returned by the Second Nearby method is equal to the price of the second sequentially available curve point on or after the fixing date. NearbyNonDelivered — The projected price for a fixing date will be equal to the value of the chronologically closest point on the forward curve which is equal to or greater than the fixing date subject to the restriction that the fixing date is not after that underlying's first delivery date, or for commodity forward points, the pillar date. If the fixing date falls after the nearby underlying's first delivery (or pillar) date, but before the underlying's last trading date, the value of the next (chronologically) curve point will be used. Many agriculture future contracts have first delivery dates which fall BEFORE the last trading day, meaning that if you hold a short position in one of these contracts, even if the future is still trading, you may be notified by the exchange that you are required to deliver the physical commodity. Therefore, financial players in the agriculture markets always make sure that they exit future positions before the first delivery date to avoid that scenario. Likewise, financial derivatives, such as swaps and options, take a similar approach and will typically fix off of the nearest future which has not already passed its first delivery date. For example, look at 2 consecutive CBOT Wheat futures: Future First Delivery Dt Last Trade Dt MAR08 March 3, 2008 March 14, 2008 MAY08 May 1, 2008 May 14, 2008 For a commodity fixing on March 1, you would expect the NEARBY forward price method to use the LTD of 3/14/08 from the curve to project the price, and for a commodity fixing on March 5, you would STILL expect the NEARBY forward price method to use March 14, as the fixing has not passed the last trade date (aka the MAR08 curve date on the forward curve). In terms of the above example, for a commodity fixing on March 1, you would expect the NearbyNonDelivered forward price method to use the LTD of 3/14/08 from the curve to project the price since it is before the MAR08 future's first delivery date. For a commodity fixing on March 5, you would expect the NearbyNonDelivered forward price method to use May 14 as the curve date from which to project the price as it is after the first delivery date of the nearby curve point. Linear — The linear method is not a commonly used method. The projected price that it returns is the price from the curve for the date which is equal to the fixing date. For a curve which uses no interpolation between points, the Linear method will resemble the Nearby method.

Fields	Description
	Fixed — In some cases, derivatives are traded which agree upon a specific future as the reference price, regardless if that future is prompt, second prompt, etc. For these situations, we offer the Fixed forward price method. Using this method, the user must specify a date which corresponds to the date on the forward curve whose price will be used for all fixing dates for any derivative which uses that Commodity Reset. Any example would be a 3 month averaging swap over the months of Jan - Mar 2008 which references the Dec 2008 future. Each day of this swap will settle off of the price of the Dec 2008 future, therefore the projected price of all future fixing dates will be the same, based on the curve date chosen in the reset definition. **IceNearby** — The convention of many swaps traded on the The Intercontinental Exchange (ICE) is to fix off of the prompt future up to, but not including, that future's last trading day. On that day, the price will fix off of the second prompt contract. The theory behind this is that there is uncharacteristic volatility associated with a future on it's last trading day due to market forces trying to reconcile positions before the future ceases trading. In Calypso, the projected price returned by the ICENearby method is equal to the price of the first available curve point after, but not equal to, the fixing date. **InterpolatedPrice** — The forward price calculation is delegated to the interpolation method set on the underlying Market Data item, of which only curves are currently supported. If there is no interpolator set on the underlying market data item, "Nearby" forward price lookup method is used. Note: You cvan add custom methods by creating a class named `tk.product.commodities.priceselector.<ForwardPriceMethodName>` that implements `com.calypso.tk.product.commodities.priceselector.ForwardPriceMethod`. Compile the class, and register the method name in the *commodity.ForwardPriceMethods domain* by choosing **Configuration > System > Domain Values** from Calypso Navigator.
Fixing Holidays	Click ... to select the holiday calendar for the fixing method. It defaults to the holiday calendar defined for the deliverable reset.

Price Details

Fields	Description
Unadjusted	Enter the unadjusted price.
Discount	Enter any discount. The discount may be calculated in the case of storage-based commodities. Complete the certificate details as described below, and click Compute Certificate Discount. Note: The Final price is the only price used in the valuation of the commodity forward. Adding a discount only impacts the NPV of the trade if the discount is allowed to alter the final price.

Fields	Description
Final	The Final field displays the final price.
Price Type	Select either a Fixed or Floating price, the currency and the units. The Price currency and unit default to the currency and unit of the selected commodity. However, you can set these independently. The Commodity Forward supports cross commodity unit conversion of the price units, deal units, and units for the certificates. The valuation is supported. For example, the trade capture, valuation, and risk support entering physically delivered commodity Forwards where the price is quoted in reference currency and reference units, but the quantity is entered in terms of the number of future contract equivalents. This is standard in the LME Base Metal OTC market, where OTC Forwards and Listed Futures are interchangeable. The conversion details should be configured in the commodity conversion table.
Comm. Reset	Select a commodity reset. You are able to select a different reset than the one that is being used to book the Forward.
Spread	Enter a Floating price spread.
Date Schedule	Click the drop down box to display and select a desired date schedule for the float side of the forward.  The summary of what is chosen in the Date Schedule window is then displayed. 

Payment Details

Define the payment lag details for the cash payments (the COMMODITY flows).

Fields	Description
Date Roll	Select the date roll convention to roll the payment dates when they fall on non-business days. The payment calendar is used to determine business days. From Calypso Navigator, choose**Help > Date Roll Conventions** for a description of date roll conventions.
Holidays	Click ... to select the calendar(s) the application uses to determine the business days.
Lag	Specify lag days from the end date of the payment period (in business or calendar days) for the actual payment to take place. By default, business days are used to calculate the payment date. To specify calendar days, double-click the Bus label to toggle to Cal.
Payment Day	Select to enter a specific payment date.

Physical Details

Define the payment lag details for the security transfer (the SECURITY flows).

Fields	Description
Date Roll	Select the date roll convention to roll the payment dates when they fall on non-business days. The payment calendar is used to determine business days. From Calypso Navigator, choose**Help > Date Roll Conventions** for a description of date roll conventions.
Holidays	Click ... to select the calendar(s) the application uses to determine the business days.
Lag	Specify lag days from the end date of the payment period (in business or calendar days) for the actual payment to take place. By default, business days are used to calculate the payment date. To specify calendar days, double-click the Bus label to toggle to Cal.
Payment Day	Select to enter a specific payment date.

Certificates & Delivery

checkValidCertificate Workflow Rule

The checkValidCertificate workflow rule can be used for validation on commodity certificates for buying and selling on Commodity Forward trades.

For a Buy deal, this workflow rule checks:

- If there is an existing inventory with the same Identifier. If so, then:
  - if there is an open quantity on the existing inventory, the certificate is not valid and is rejected with a message, "Cannot amend inventory with the same certificate identifier on trade window."
  - if there is no open quantity, the trade is allowed if the *buyingSameCmdCertificate* keywoard is set to true.
- If there is no inventory with this existing name, then the new certificate is allowed.

For a Sell deal:

- When the certificate is selected to sell using the Certificate Selector window, all of the fields on the certificate are non.-editable except for the Price field. The price is automatically set as the contract/trade price when the certificate is selected.
- The *checkValidCertificate* workflow rule verifies the following for the sell deal:
  - if the quantity on the Commodity Forward trade matches the quantity on selected certificate. If it does not match, it is rejected with an error message.
  - if the price on the Commodity Forward trade matches the price on the selected certificate. If it does not match it is rejected with an error message.
  - if there is an existing inventory of the same identifier name. If not, it is rejected with an error message.

Additionally:

» When using this workflow rule for a Buy/Sell Commodity trade, if the Commodity Forward trade settle date plus the lag is not equal to the certificate settle date, an error message is received and the trade cannot be saved.

» The Delivery Location on the Commodity Forward trade should be the same as the location on the certificate attached to the Buy and Sell trade. This validation is part of this workflow rule.

Buying/Defining a Certificate - Storage Based

- Use with storage-based commodities.
- Buy trades require the user to create a new certificate. Sell trades require the user to select a certificate from the current certificate inventory.
- To add a certificate to the trade, the direction of the trade should be set to Buy.
- The valuation currency of the certificate is always the currency of the underlying commodity.
- You can save a trade without a certificate, and add the certificate later, as needed.
- When you save the trade without a certificate, the trade and associated transfers are promoted to the next status based on the workflow configuration. However, the transfers should not be authorized until the certificate is actually set on the trade. To prevent the authorization of the transfers, you can add the rule *CheckRealCommodityCertificate* to the transfer workflow transition PENDING – AUTHORIZED – VERIFIED.

NOTE: The Certificate & Delivery panel is not required for Emission commodities

The following is an example for storage-based commodities.

» Click  to add a certificate.

» Enter the certificate quantity, units, price, select the location, and enter the certificate details. Certificate details are:

Storage Date - The date through which storage has been paid.

Maturity Date - The end date of the storage contract.

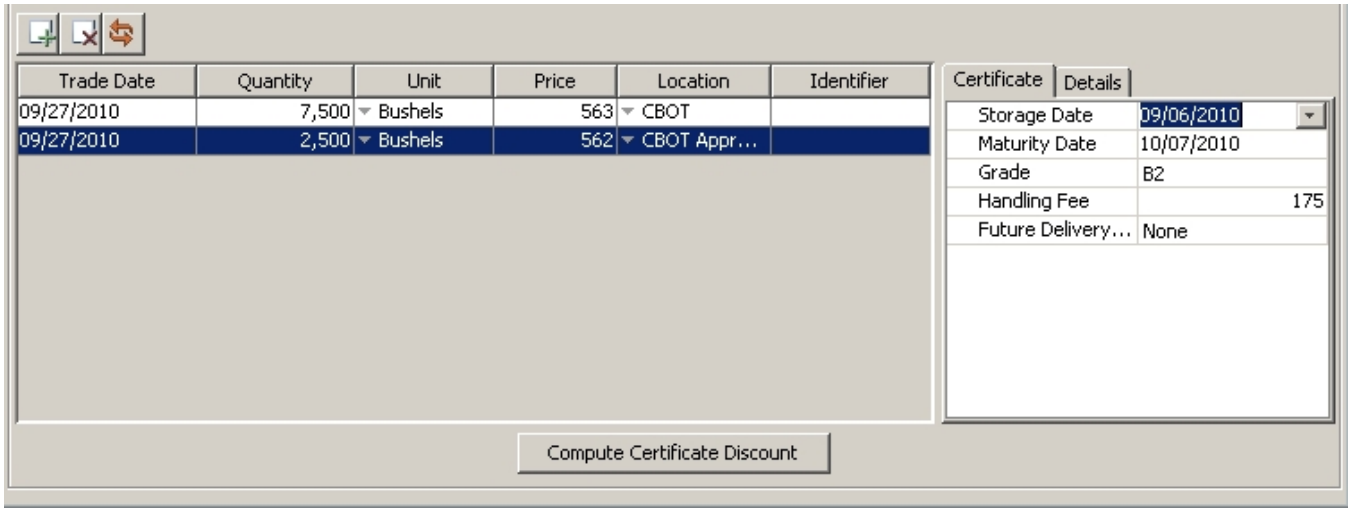
Grade - The quality rating of the commodity. Lower quality indicates lower value. This list is populated from the *CommodityGrade* domain value.

Handling Fee - This is a fee in the commodity currency, associated with the physical movement of the commodity.

Future Delivery Set - The future against which the certificate is eligible to be valued, for certificates hedged against a specific future delivery period.

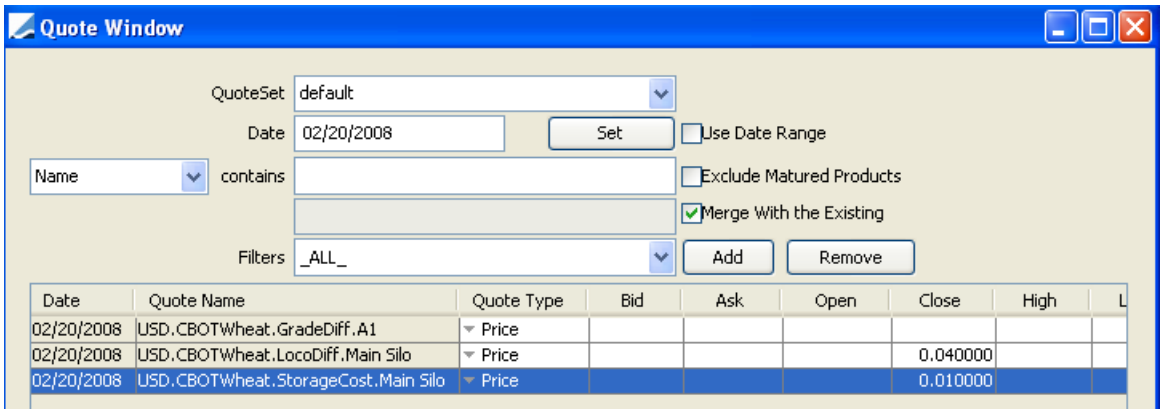
» Additional details may be recorded in the Details panel by selecting a custom-built template. See Certificate Templates for details.

NOTE: The Location field in the Certificates and Delivery panel is populated from the *CommodityLocation* domain value. (From Calypso Navigator, choose **Configuration > System > Domain Values**)



» Quote names for the location differential, storage cost and grade differential needed for the certificate are created in the Quote Creator.

» Choose **Market Data > Market Quotes > Quotes** or **Pricing Env > Check** and click **Get Quotes** to view or edit the quotes for the grade differential, location differential, and storage cost.



» In the forward trade, click **Compute Certificate Discount** to calculate the actual price that the bank is paying for the certificate. $NPV_Y = Q * [(F – SC– LD – GD- Handling)*df – SD]$, where

  - NPV_Y = The present value of the Certificate in Currency Y, which is the Trade Currency of the Certificate

- Q = Quantity of the commodity in unit X, which represents the unit of the Certificate
- F = Market price of the specified future in currency Y and commodity unit X
  - If the future quote is not in unit X, it should be converted using the value in the Commodity Conversion table.
  - If the future quote is not in currency Y, it should be converted to currency Y using the Forward FX Rate on the First Delivery Date of the future, unless the value date is between the first delivery date and the last trade date of the future, in which case the future price should be converted to currency Y using the spot rate.
- SC = Cost to store commodity from value date until first delivery date of F in Currency X and commodity unit Y
  - SC = 0, if no future is specified, AND there is no future contract which is defined as the "IsDefaultDeliverableFutureContract" (To define a default deliverable contract, set the IsDefaultDeliverableFutureContract attribute to Yes in the Future Contract window of the desired contract, accessible from Calypso Navigator by selecting **Configuration > Listed Derivatives > Future Contracts**),

    or
  - SC = 0, if no future is specified, AND the value date is between the First Delivery Date and the Expiry Date of the Nearby Future, otherwise,
  - $SC = (T_F – T_D) * S$, where
  - T_F = First Delivery Date of F, or the First Delivery Date of the Nearby Future if no future is specified, otherwise
  - $T_F = T_V$ if T_V is after the first delivery date and before the last trading date of F, otherwise
  - $T_F = T_V$ if there is no future specified and no future is define as "IsDefaultDeliverableFutureContract"
  - T_D = Value Date or Certificate Storage Date, whichever is greater
  - S = Storage rate in currency Y per commodity unit X

    If the storage rate is not in currency Y, then it needs to be converted at the forward FX Rate at T_F

    If the storage rate is not in commodity unit X, then it needs to be converted using the factor available in the commodity conversion table
- LD = Location Differential in currency Y per commodity unit X
  - If the Location Differential is not in currency Y, then it needs to be converted at the forward FX Rate at T_F (using definition of T_F above)
  - If the Location Differential is not in commodity unit X, then it needs to be converted using the factor available in the commodity conversion table
- GD = Grade Differential in currency Y per commodity unit X

  - If the Location Differential is not in currency Y, then it needs to be converted at the forward FX Rate at T_F (using definition of T_F above)
  - If the Location Differential is not in commodity unit X, then it needs to be converted using the factor available in the commodity conversion table
- Handling = Handling fee as defined above
- df = 1 if no future is specified, AND there is no future contract which is defined as the "IsDefaultDeliverableFutureContract", or
- df = 1, if no future is specified but there is a future defined as "IsDefaultDeliverableFutureContract", AND the value date is between the First Delivery Date and the Expiry Date of the Nearby Future, otherwise
- df = Discount factor from Tv to T_F from the zero curve of currency Y
- SD = Accrued storage cost in currency Y
  - SD = S * (Tv – Ts), if $T_S < T_V$
  - SD = 0 if Ts > Tv
  - T_V = Value date
  - T_S = Storage Date on the Certificate
  - S = Storage rate in currency Y per commodity unit X

    If the storage rate is not in currency Y, then it needs to be converted at the forward FX Rate at T_F

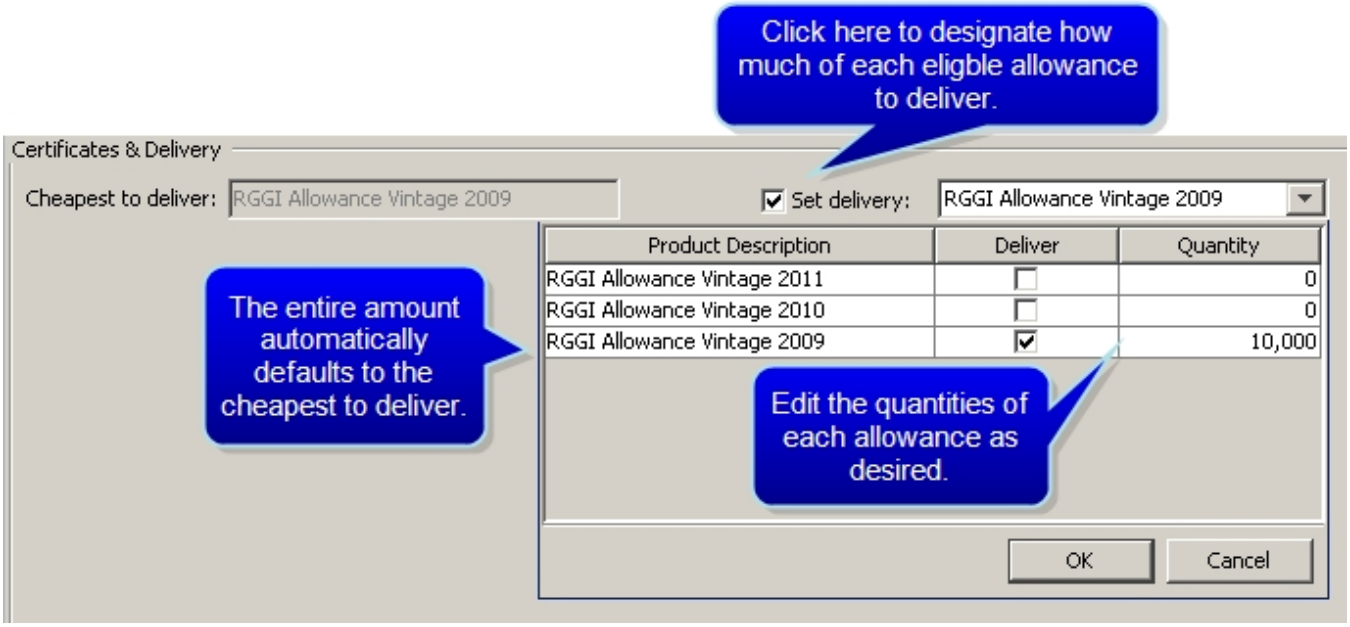
    If the storage rate is not in commodity unit X, then it needs to be converted using the factor available in the commodity conversion table

» Hit F5 to resave the trade with the certificate.

ⓘ **[IMPORTANT NOTE: If you want to remove a Certificate from a Commodity Forward trade, you need to cancel the trade and capture a new trade without the Certificate - It is not supported to remove a Certificate from an existing trade]**

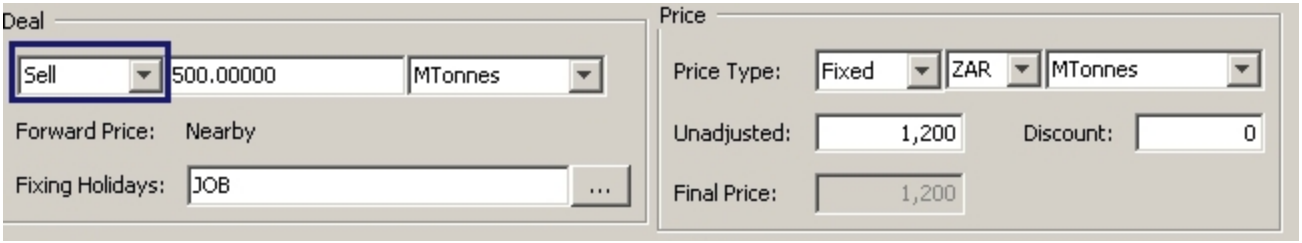
20.2 Defining an Emission Certificate

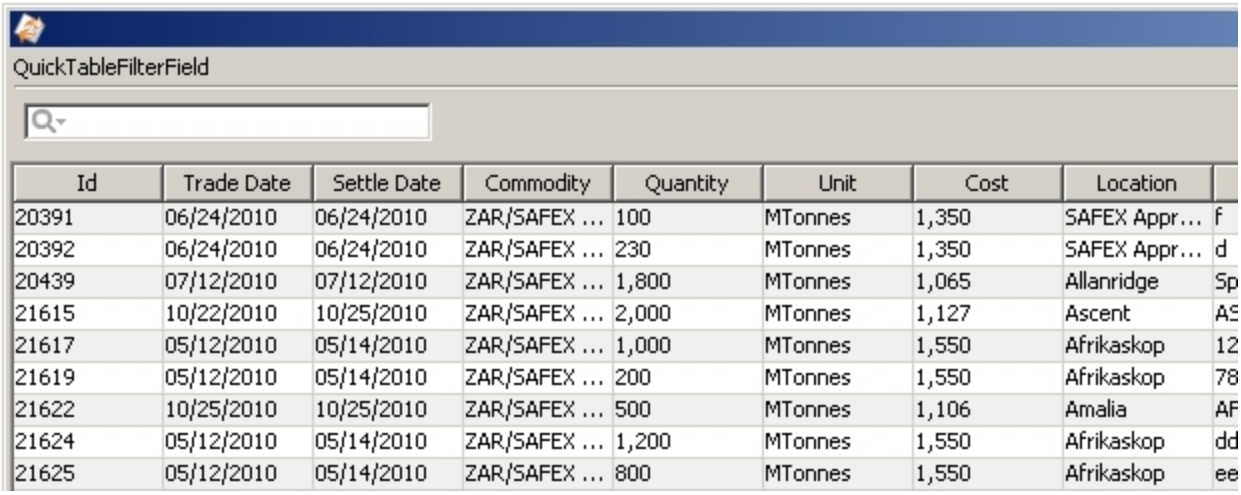
When an Emission commodity reset is chosen in the Comm Reset field, the Certificates and Delivery area reflects this type of trade. The pricer automatically calculates the cheapest allowance to deliver which becomes the default allowance type for delivery. This is displayed in the Cheapest to deliver field. When the time for delivery comes or when the actual delivery specifications are known, the user selects the Set delivery check box and is able to designate the actual number and allowances for delivery.



Selling a Certificate

Certificates may be sold when the direction of the deal is set to Sell. When a certificate is sold, it must be chosen from a list of certificates that are currently available.

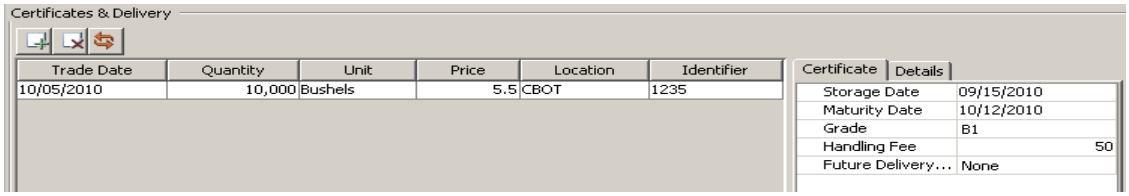




Id	Trade Date	Settle Date	Commodity	Quantity	Unit	Cost	Location	
20391	06/24/2010	06/24/2010	ZAR/SAFEX ...	100	MTonnes	1,350	SAFEX Appr...	f
20392	06/24/2010	06/24/2010	ZAR/SAFEX ...	230	MTonnes	1,350	SAFEX Appr...	d
20439	07/12/2010	07/12/2010	ZAR/SAFEX ...	1,800	MTonnes	1,065	Allanridge	Sp
21615	10/22/2010	10/25/2010	ZAR/SAFEX ...	2,000	MTonnes	1,127	Ascent	AS
21617	05/12/2010	05/14/2010	ZAR/SAFEX ...	1,000	MTonnes	1,550	Afrikaskop	12
21619	05/12/2010	05/14/2010	ZAR/SAFEX ...	200	MTonnes	1,550	Afrikaskop	78
21622	10/25/2010	10/25/2010	ZAR/SAFEX ...	500	MTonnes	1,106	Amalia	AF
21624	05/12/2010	05/14/2010	ZAR/SAFEX ...	1,200	MTonnes	1,550	Afrikaskop	dd
21625	05/12/2010	05/14/2010	ZAR/SAFEX ...	800	MTonnes	1,550	Afrikaskop	ee

- Load a forward trade in the worksheet.
- Set the deal direction to Sell, and click  to open the certificate selection window.
- Use the filter field at the top of the window to quickly find certificates that meet your desired criteria.
- Highlight a certificate and click **Select**.

  The certificate loads in the certificate panel.

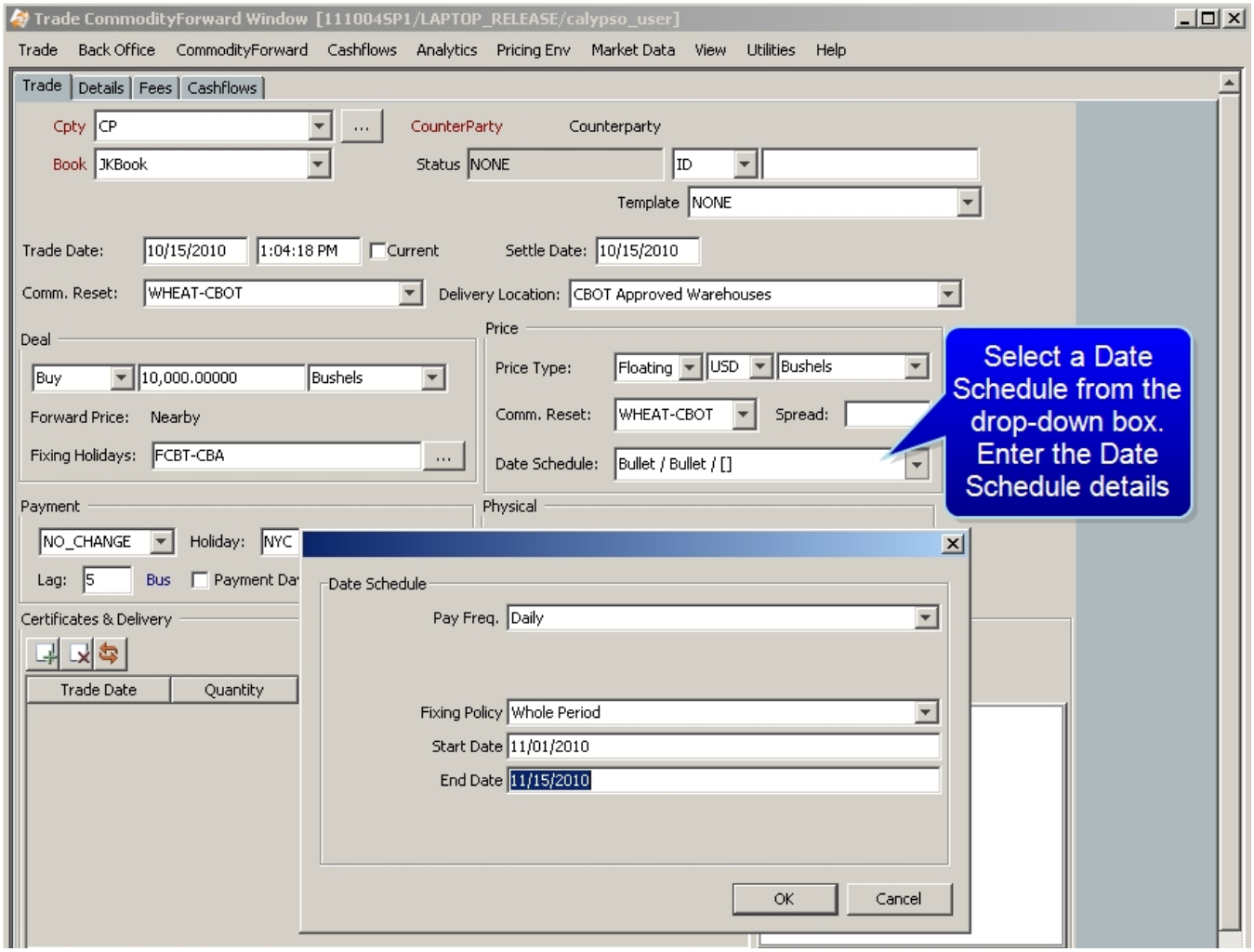


  Only the Price field is editable when selected and is automatically set as the contract/trade price.
- Save the trade.

You can amend, split and merge certificates from the Certificate Management window.

20.3 Floating Rate Forward

The Commodity Forward trade can be configured to use a floating price at which to purchase or sell the underlying commodity. This can be achieved by changing the Price Type from “fixed” to “floating”. The user can then choose a commodity reset as well as the date or dates over which that reset will be observed. If more than one date is chosen, the floating price will be calculated as an arithmetic average of the observed rates. Once all of the observations have occurred, the calculated price will now act as the fixed price for the transaction. The user has the ability to apply a fixed spread to the floating price if they desire.



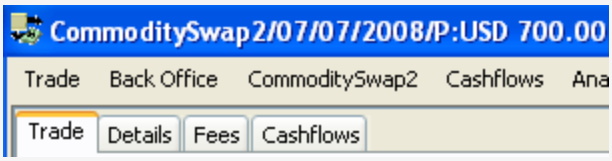
- Future FX cashflows for Commodity Forward trades are discounted using a zero curve for each currency. The result is converted to a single currency.
- When FX_POINTS is *False*, the discount curves for both the traded / deal currency and the settlement currency need to be configured.

21. Capturing Commodity Swap Trades

To capture Commodity Swap Trades, please use the Pricing Sheet - Commodity Swap.

Choose **Trade > Commodities > Swap** to open the Commodity Swap worksheet, from Calypso Navigator or from the Calypso Workstation.

Commodity Swap Quick Reference



When you open a Commodity Swap worksheet, the Trade panel is selected by default.

Configuration

- Define the commodity product by choosing **Configuration > Commodities > Commodities** from Calypso Navigator
- Define a commodity reset definition by choosing **Configuration > Commodities > Commodity Reset** from Calypso Navigator
- Define a future contract definition by choosing **Configuration > Listed Derivatives > Future Contracts** from Calypso Navigator

Entering Trade Details

- You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

  Or you can enter the trade fields directly. They are described below, see Field Description.

  Note that the Trade Date is entered in the Details panel.
- Proceed to the other panels as applicable.
- You can set up commodity confirmation keywords for disruption events via **Commodity Swap2 > Commodity Confirm Keywords** within the Commodity Swap window. For more information on this, see the Confirmation Messaging documentation.

Saving a Trade

- Hit F5 to save the trade, or choose **Trade > Save**.

  You can also hit F3 to save the current trade as a new trade, or choose **Trade > Save As New**.

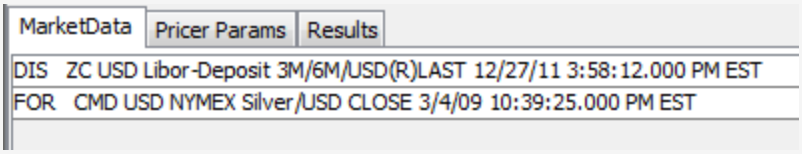
  A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

- A commodity swap trade requires the following market data: a discount curve, a commodity forward curve for forecasting the prices, and commodity reset quotes.

  Note that a cross-currency commodity swap also requires an FX curve, an FX rate, and an FX reset.

- You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.

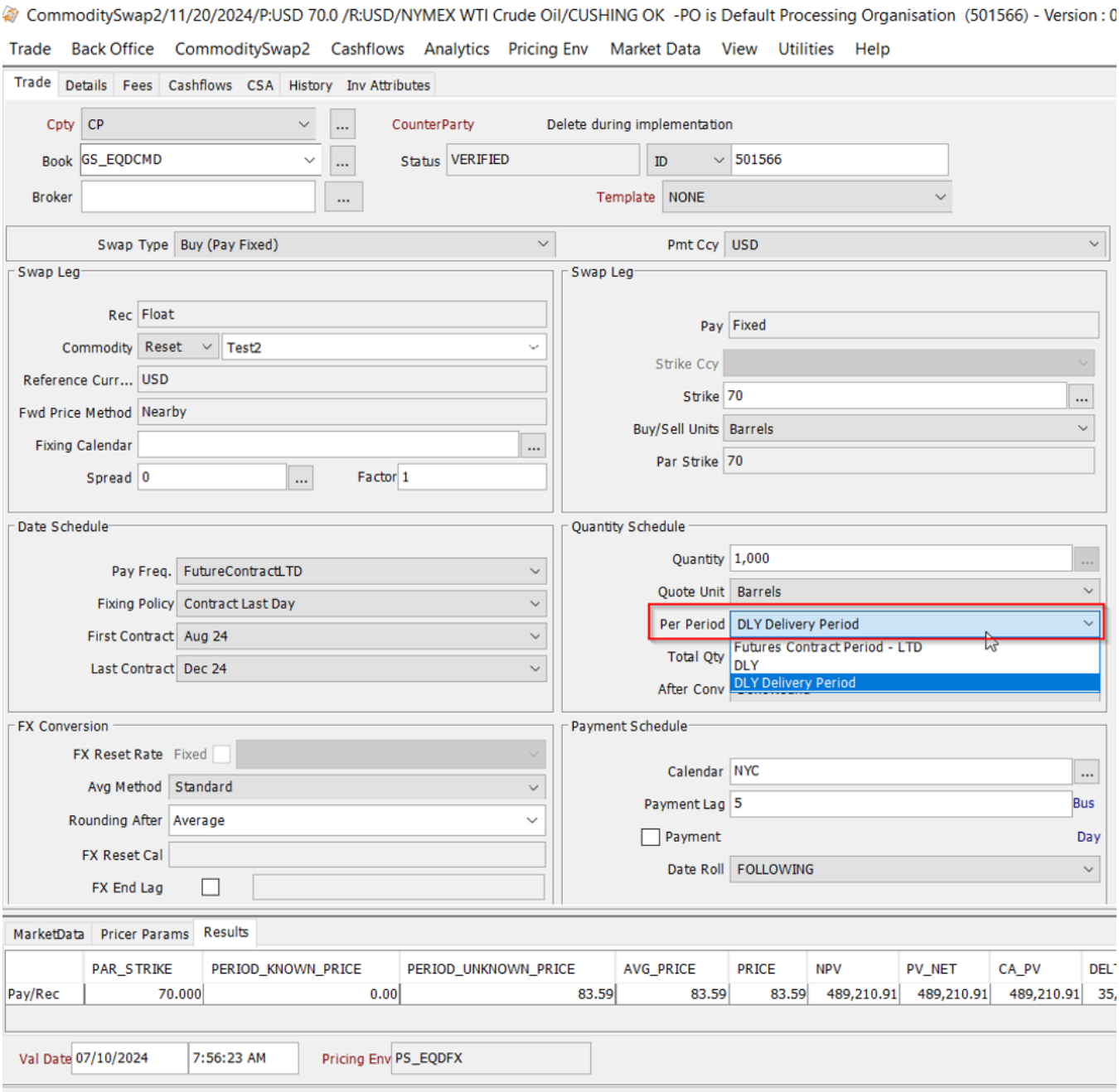


- Click **Price** to price the trade.

Trade Lifecycle

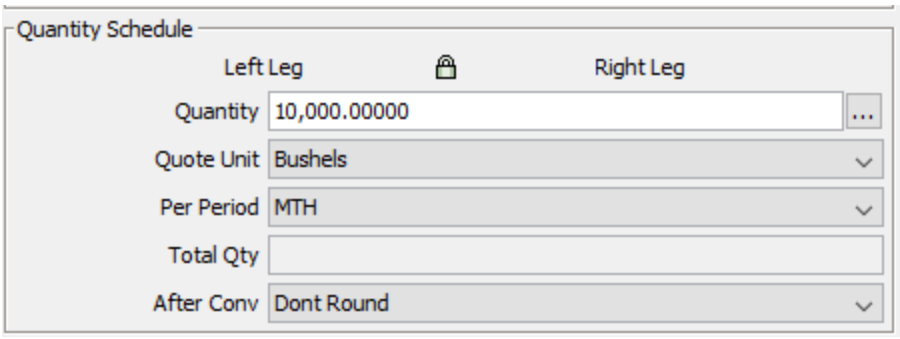
- You can allocate the trade to multiple books using **Back Office > Allocate**
- You can terminate and partially terminate the trade using **Back Office > Terminate**
- You can fix the prices by choosing **Trade Lifecycle > Reset > Price Fixing** from Calypso Navigator

21.1 Commodity Swap

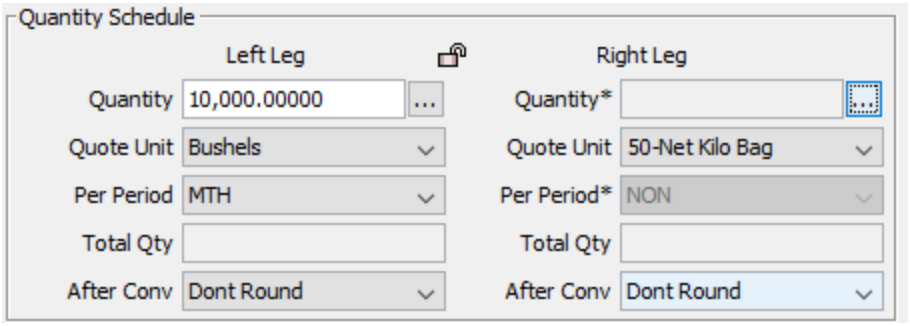


» When both legs are floating, the details for the Date Schedule, FX Conversion, Quantity Schedule, and Payment Schedule can either be the same for each floating leg, or you may define different details for each floating leg.

The locked padlock icon indicates both legs are the same.

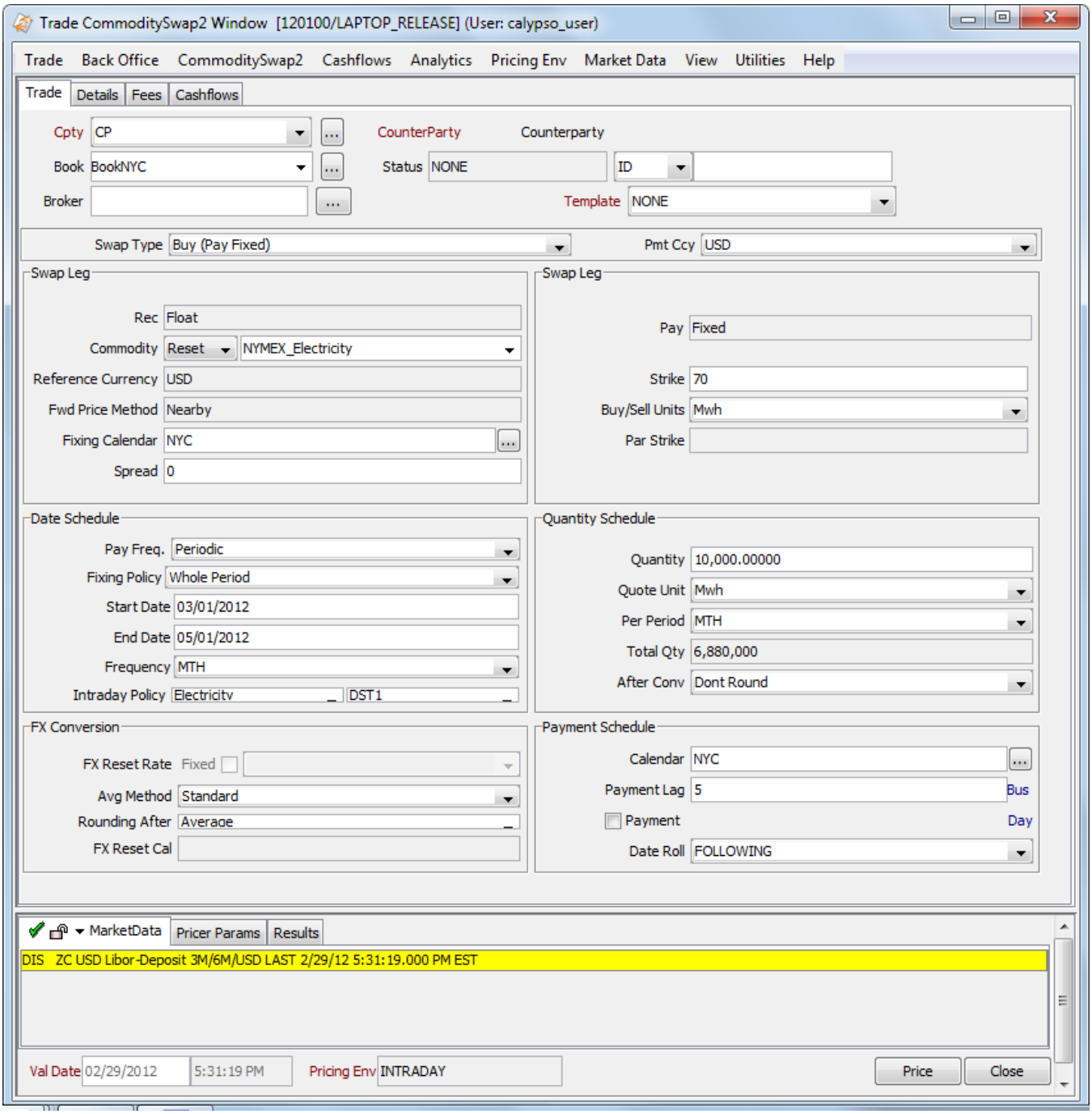


» Click the padlock icon to turn it to the unlocked position, and the trade worksheet opens separate entry fields for the left leg and the right leg, respectively. You can specify different details for each leg.

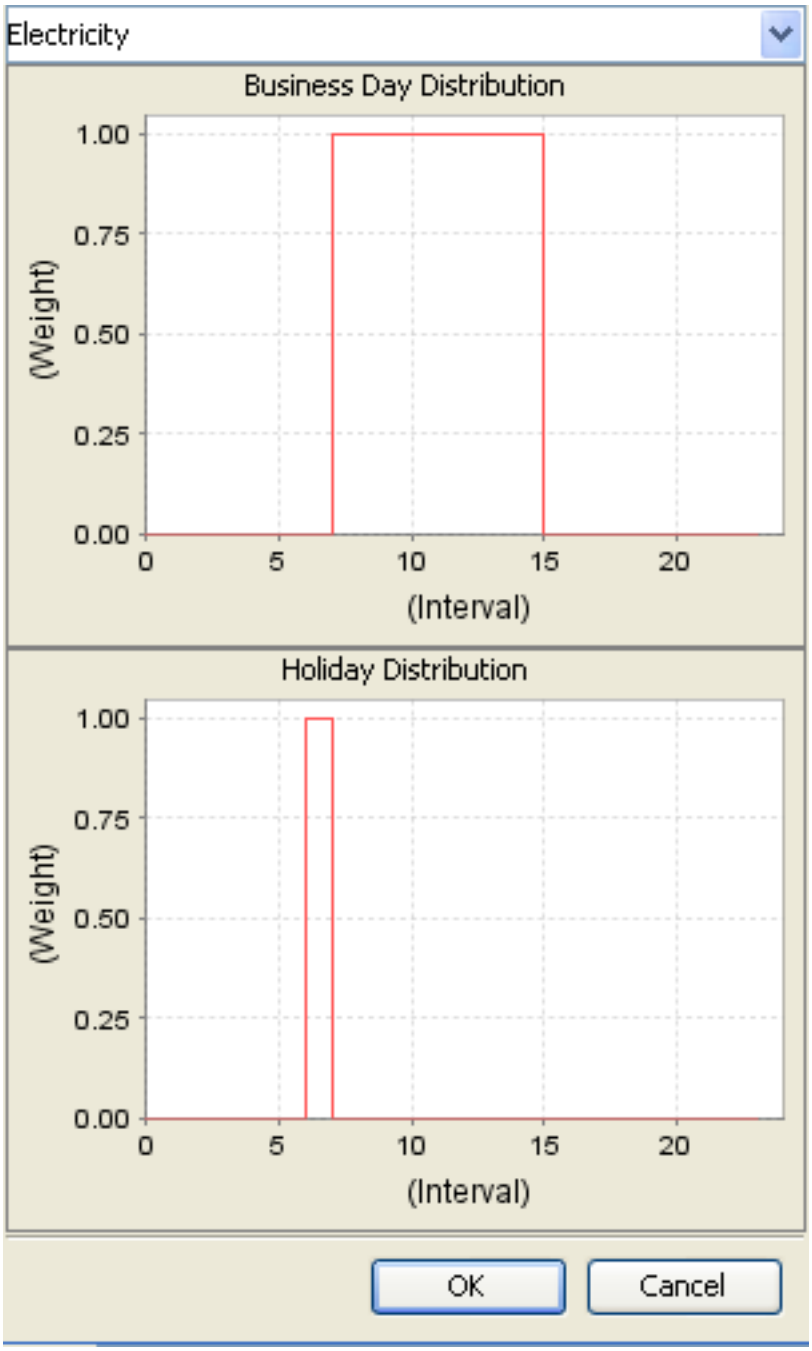


» Choose **Help > Trade Help** for complete details.

21.2 Electricity Swap



» View the Business Day and Holiday distributions when you pull down Electricity from the Intraday Policy menu. See Intraday Policies for details.



» With Electricity swaps, you are also able to select a Daylight Savings Time rule. The purpose of this rule is to compensate for the hour that is gained or lost during spring and fall on an electricity swap that has hourly resets.

21.3 Gas Oil Indexation Swap

Unlike other policies where the fixing dates are always within the range of the start and end date, fixing for natural gas is in the start and end date range of the days on which natural gas is delivered. Because of this, natural gas trades need to have their own fixing policy, payment frequency and averaging method.

The fixing dates for natural gas are generally offset by one day or by calendar month increments. A day-ahead trade will have fixing dates offset from the delivery dates by on one business day. A month-ahead trade will have fixing dates offset from the deliver dates by 1 calendar month. The number of fixing dates will not necessarily equal the number of delivery dates. Gas often prices every delivery day using the average of the prices for a calendar month. The total quantity of a gas swap is often expressed per day. The number of days refers to the number of delivery days, not fixing days.

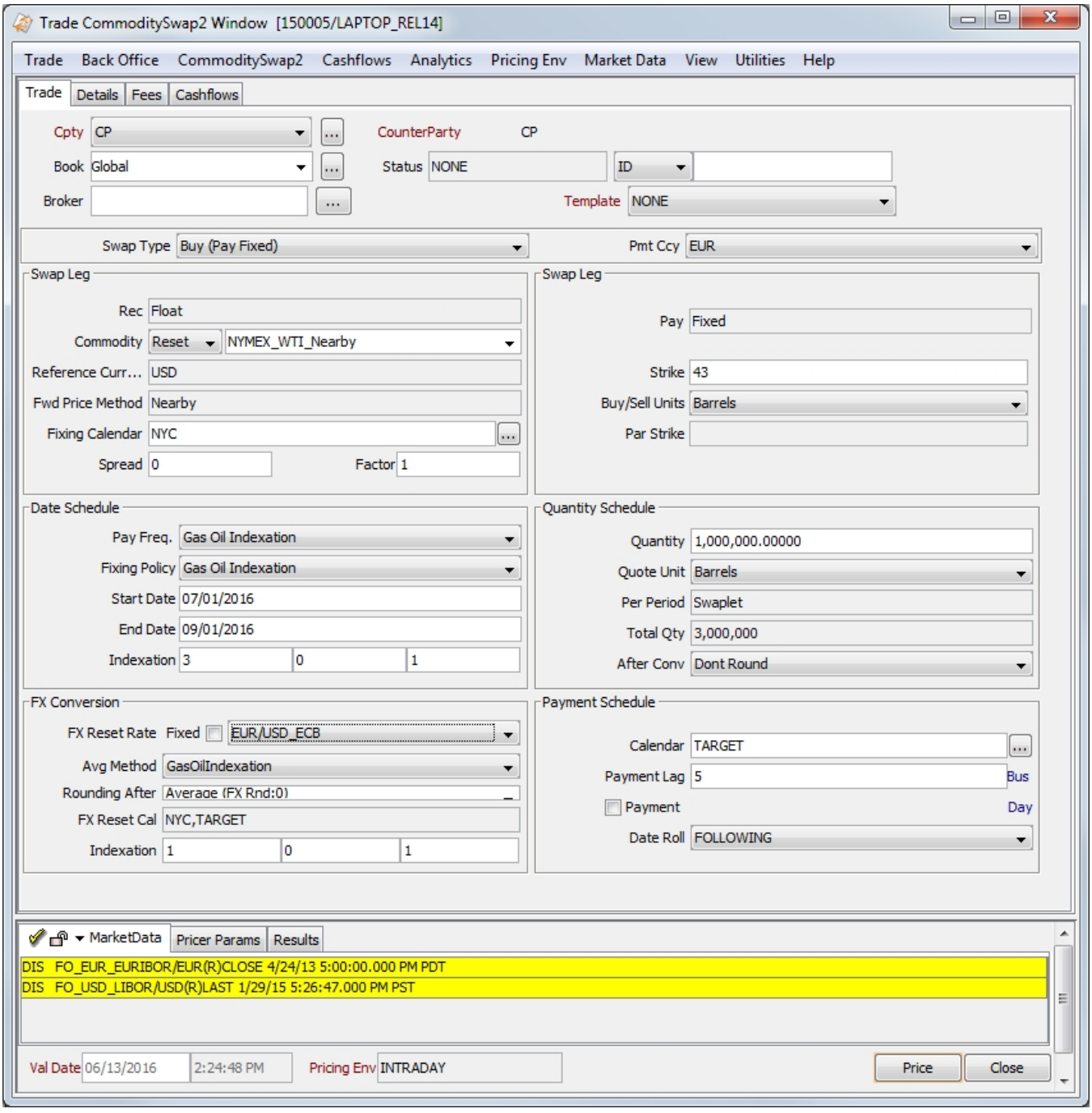
It is also common in Natural Gas contracts to price against the oil market. In this case, fixing dates can be several months prior to the delivery period. For example in [3,0,3] pricing, each month is priced using the average of three months average prices for three months prior to delivery. So a year-16 swap would have:

Jan-16, Feb-16 and Mar-16 pricing on average of Oct-15, Nov-15 and Dec-15 prices,

Apr-16, May-16 and Jun-16 pricing on average of Jan-16, Feb-16 and Mar-16 prices,

Jul-16, Aug-16 and Sep-16 pricing on average of Apr-16, May-16 and Jun-16 prices,

Oct-16, Nov-16 and Dec-16 pricing on average of Jul-16, Aug-16 and Sep-16 prices.

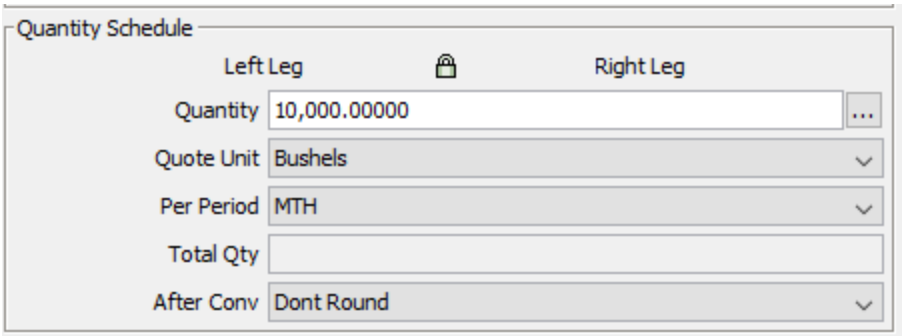


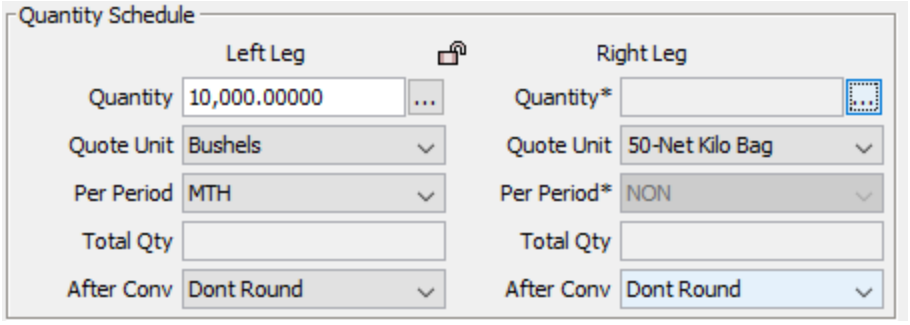
» The Gas Oil Indexation Payment Frequency specifies that there is a cash flow for every calendar month. It is possible that several calendar months will have the same payment due date. When using the Gas Oil Indexation Payment Frequency, the only Fixing Policy available is Gas Oil Indexation.

- When the Gas Oil Indexation Fixing Policy is selected, the trade window displays three additional Indexation fields for the Averaging Period, Time Lag and Recalculation. These are all required integer values with no default. Additionally, the settlement period must be monthly.
- The Gas Oil Indexation Averaging Method causes the commodity price fixings to be averaged for each calendar month. After that, the month averages are averaged. If the trade is settling in a different currency from the index currency, an FX Averaging Period, FX Indexation Lag and FX Recalculation are required. The FX resets are averaged in a similar way. Finally, the averaged commodity price is converted using the averaged FX rate.

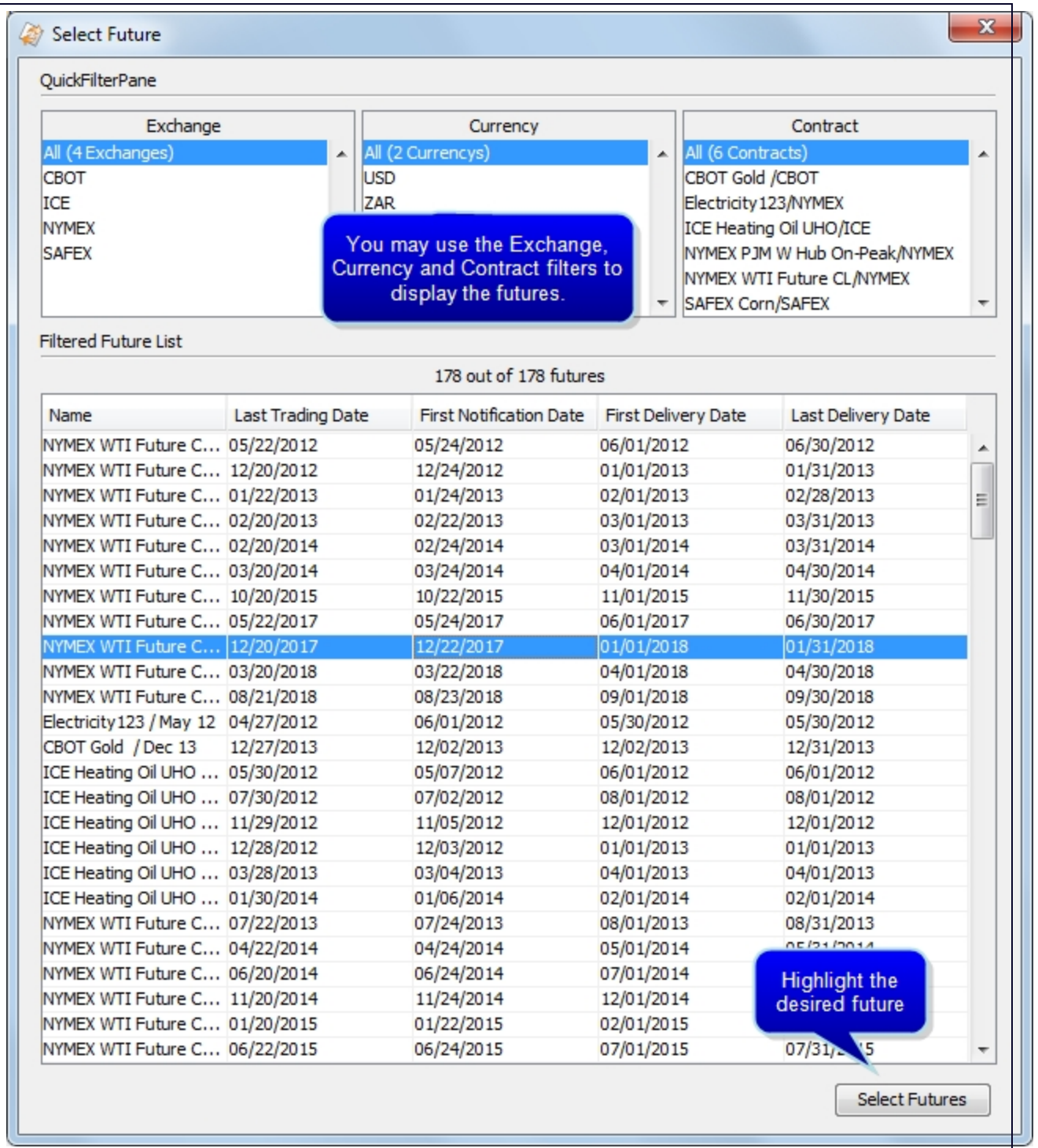
21.4 Fields Description

Fields	Description
Role / Cpty	The first two fields of the worksheet identify the trade counterparty. The first field identifies the trade counterparty's role. The default role is specified using Utilities > Set Default Role. However, you can change it as applicable. You can select a legal entity of specified role from the second field, provided you have setup favorite counterparties. You can also type in a character to display the favorite counterparties that start with that character. Favorite counterparties are specified using **Utilities > Configure Favorite Counterparties**. Otherwise, click ... to select a legal entity of specified role from the Legal Entity Chooser. You can also type [Ctrl-F] to invoke the Legal Entity Chooser, or directly enter a Legal Entity short name.
Book	Trading book to which the trade belongs. Defaults to the book selected in the User Defaults. You can modify as applicable. You can select a book provided you have setup favorite books. Favorite books are specified using **Utilities > Configure Favorite Books**. Otherwise, click ... to select a book. The owner of the book (a processing organization) identifies your side of the trade.
Id	Unique identification number of the trade. The trade id is automatically assigned by the system when the trade is saved.
Ext Ref Int Ref	You can load an existing trade by typing the trade id into this field and pressing [Enter]. You can also display the internal reference or external reference. The default trade reference to be displayed can be selected in User Defaults. The internal reference and external reference can be set in the Details panel of the trade worksheet.
Status	Current status of the trade. The status is automatically assigned by the system based on the workflow configuration. The status will change over the lifetime of the trade according to the workflow configuration and the actions performed on the trade.
Broker	Displays the broker if a broker fee is captured in the Fees panel.

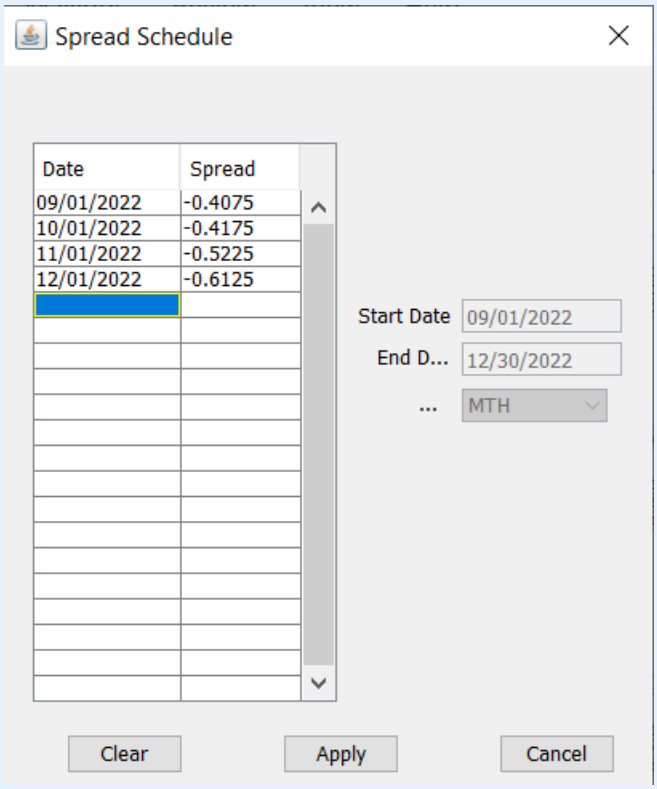
<table>
<tr><td>Template</td><td>You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.</td></tr>
<tr><td>Swap Type</td><td>Select the type of fixed/floating convention for the swap.
<table>
<tr><th>Type</th><th>Description</th></tr>
<tr><td>Buy (Pay Fixed)</td><td>The pay/floating leg is on the left, the receive/fixed leg on the right.</td></tr>
<tr><td>Sell (Rec Fixed)</td><td>The pay/rec labels switch positions. The receive/floating leg is on the left, the pay/fixed leg is on the right.</td></tr>
<tr><td>Float/Float</td><td>Both legs are floating. The details for the Date Schedule, FX Conversion, Quantity Schedule, and Payment Schedule can either be the same for each floating leg, or you may define different details for each floating leg.
The locked padlock icon indicates both legs are the same.
 

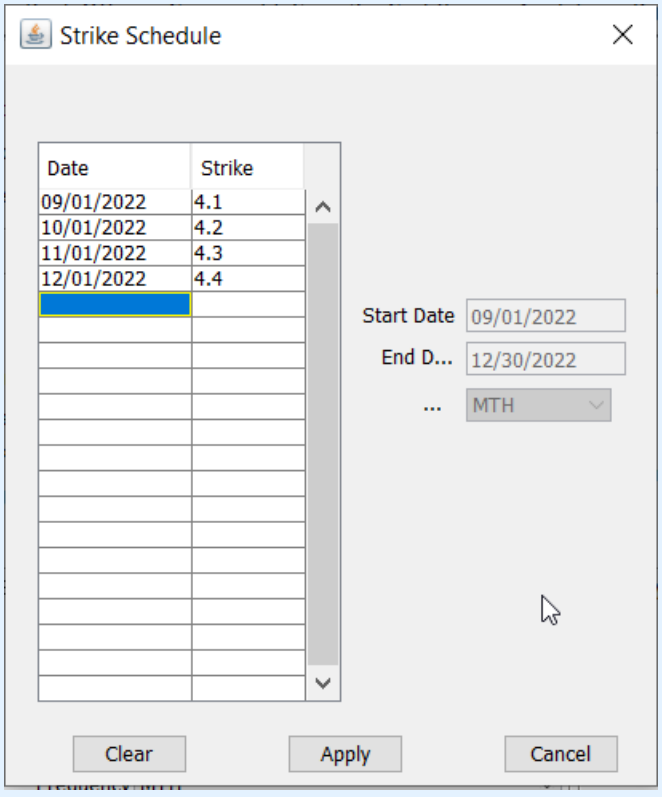
Click the padlock icon to turn it to the unlocked position, and the trade worksheet opens separate entry fields for the left leg and the right leg, respectively. You can specify different details for each leg.
 
</td></tr>
</table></td></tr>
<tr><td>Payment Currency</td><td>Select the currency in which the payments occur.
If the payment currency is different than the reference currency, you can enter details for the FX Conversion, as described below.</td></tr>
<tr><td colspan="2">Floating Swap Leg</td></tr>
<tr><td>Rec / Pay</td><td>The application automatically sets these labels based on the selected Swap Type.</td></tr>
</table>

Pay / Rec	
Commodity Reset / Future	Select either the commodity reset or future for the trade. When Reset is selected, you may select from available resets in the drop-down box to the right. When Future is selected, click the  to display the Select Future window and choose the future desired future.

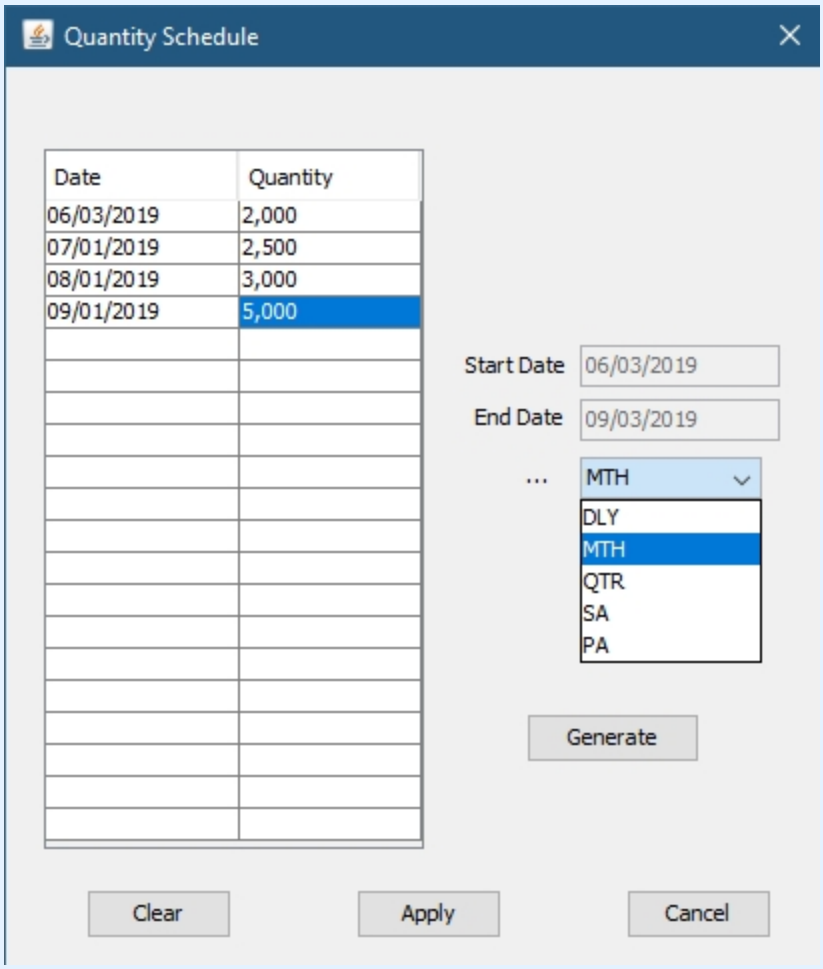


Reference Currency	Displays the reference currency as defined in the commodity reset definition. This field cannot be modified.
Fwd Price	Displays the forward price method as defined in the commodity reset definition.

Method	This field cannot be modified.
Fixing Calendar	Displays the calendar(s) to use when calculating the fixing dates. These default from the commodity reset definition. You can modify the calendars. Click ... to select the calendars.
Factor	This allows multiple swap legs to be structured to create a pricing formula with varying contributions from multiple index prices.
Spread	Optional. Enter a spread based on the delivery location. This spread is added directly to the fixing price in Payment CCY. The spread amount appears in the Spread Adjusted Price Diff column of the Cashflows tab of the trade window. The spread should be entered as a straight percentage rate. It is possible to specify a Spread Schedule by clicking the ellipsis button. This action displays a Spread Schedule window where you can designate specific spread for each time period. Note: Spread schedule is supported for Periodic, FutureContractFND, FutureContractLTD, Daily, Daily Rule and Third Wednesday Pay frequency only. 
Fixed Swap Leg	
Rec / Pay	The application automatically sets the Rec/Pay labels based on the selected Swap Type.

Strike Ccy	When Swap type is Buy (Pay Fixed)/Sell (Rec Fixed) and the Commodity Type is *Reset* or *Future*,this drop-down is available when the Payment currency selected is different from the Reference currency. The default value is the Reference currency. The drop-down menu consists of the Reference and Payment currencies. When the Payment currency is the same as the Reference currency, the Strike Currency is the Payment currency. If Swap type is Buy(Pay Fixed)/Sell(Rec Fixed) and Commodity Type is Future, the Strike Currency is the Payment Currency.
Strike	Enter the price per unit. You can enter as many decimal places as needed to get the payments to the desired amount. There is no rounding of the strike when calculating the payments. It is possible to specify a Strike Schedule by clicking the ellipsis button. This action displays a Strike Schedule window where you can designate specific strike for each time period. Note: Strike schedule is supported for Periodic, FutureContractFND, FutureContractLTD, Daily, Daily Rule and Third Wednesday Pay frequency only. 
Buy/Sell Units	Specifies the quote unit, which defaults from the commodity reset definition. However, you can select a different unit.

Par Strike	The Single Fixed Strike denominated in DealCurrency per StrikeUnit which would result in the same PV as the Strike(i). $$ParStrike = \frac{\sum_i df(i) \times Quantity(i) \times Strike(i)}{\sum_i df(i) \times Quantity(i)}$$
Date Schedule ***Define the fixing dates for the floating prices, settlement dates, and how many swaplets (swap periods) are valued over the life of the swap.***	
Pay Freq.	See Payment Frequencies for details.
Fixing Policy	See Fixing Policies for details.
Intraday Policy	See Intraday Policies for details. This field is displayed for swaps with Electricity resets. You need to enter an intraday policy for this type of swap, because resets can be at various times of the day, depending on the peak hour schedule.
Quantity Schedule ***Specify the details about the deal quantity schedule. Details about the deal quantity and the reference quantity can be viewed in the Cashflows.***	
Quantity	Specify the deal quantity to trade for a specified frequency. It is possible to specify a Quantity Schedule by clicking the ... . This action displays a Quantity Schedule window where you can designate specific quantities for each time period.

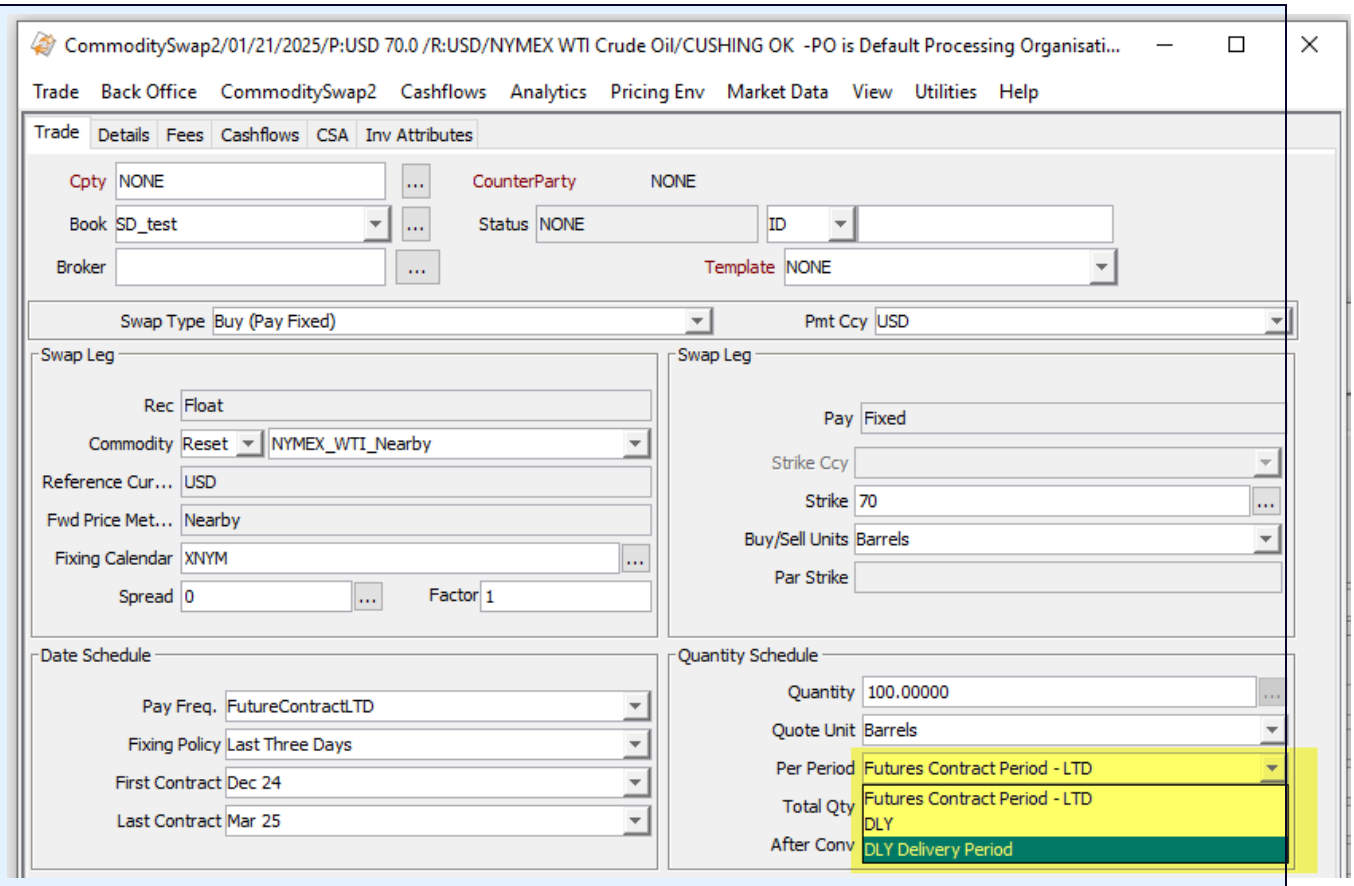


Click **Generate** to generate the dates after selecting the frequency from the drop-down menu. After entering the quantities, click **Apply**. When a Quantity Schedule is in place, an * will appear next to the Quantity field.

Bullet payment frequency is not supported with this feature.

[NOTE: For a Float/Float commodity swap, the quantity is displayed in absolute value, regardless of the trade direction]

Quote Unit	Unit of measure that the deal quantity represents.
Per Period	Specify the frequency that the deal quantity is traded. For Pay Frequency – Future Contract LTD/FND, user can select below options for 'Per Period': • Future Contract Period - Specified Quantity is applied to each period. • DLY - Specified Quantity is applied to each day in a period. Total Quantity for the period will be Quantity * Number of Days in the period. • DLY Delivery Period - Specified Quantity is applied to each day of Delivery period of Contract. Total Quantity for the period will be Quantity * Number of Days in Delivery period of Future Contract.



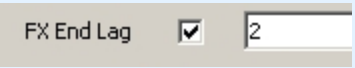
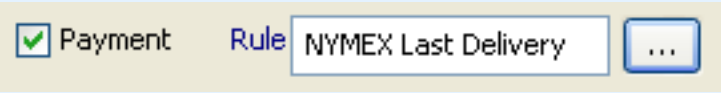
Total Qty	The total deal quantity traded for the swap.
After Conv	Set to 'Round' to indicate that the reference unit to deal unit conversion of the price should be rounded prior to calculating the amount for the cash flow. The default is 'Don't Round', which means the rounding occurs after the amount is calculated.

FX Conversion

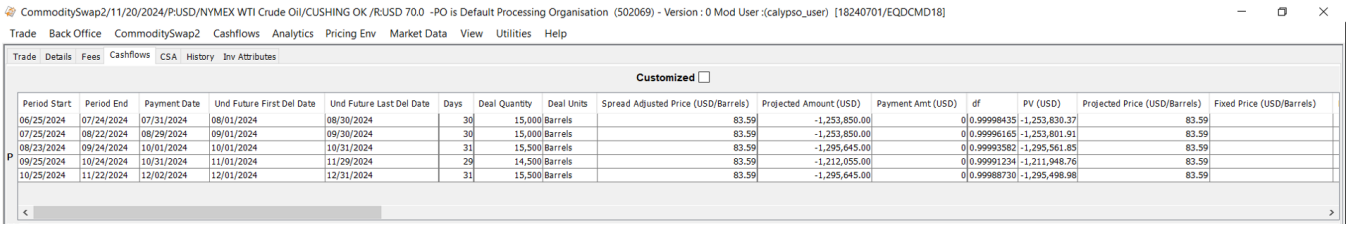
The FX Conversion is required when the payment currency is different than the reference currency.

You can select the rounding method for both cross currency and single currency deals in the FX Conversion panel.

FX Reset Rate	Select the FX Reset to use for conversion of prices from the reference currency to the payment currency.
Avg Method	See Averaging Methods for details.
Rounding After	See Rounding Policies for details.
FX Reset Cal	Displays the calendar(s) used to determine business days for the FX reset. The calendars are defined in the FX rate definition. You cannot modify this field.

FX End Lag	Used to price a quanto swap where the commodity average is calculated in the commodity reference currency and then converted to the settlement currency using a single FX reset observed on a date which is relative to the last commodity fixing date. The FX lag is the business day lag with respect to the last fixing date in the fixing period. All fixing days during this period will take this FX fixing. 
Payment Schedule ***Define when the payment occurs for each swaplet.***	
Calendar	Click ... to select the holiday calendar(s) used to determine the business days when calculating the payment date.
Payment Lag	Specify lag days from the end date of the swaplet (in business or calendar days) for the actual payment to take place. Enter N days for the payment to occur N days after the swaplet end date. Enter 0 for the payment to occur on the swaplet end date. Enter –N days for the payment to occur N days before the swaplet end date.
Payment	Select to enter payment details. This makes a field available next to the Day label where you can specify which day the payment should take place. For example, enter "5" to specify that the payment date occurs on the 5th of the month following the swaplet end date. Double-click the Day label to switch to Rule and select a date rule for determining the payment date if required. Click ... to select the payment date rule. 
Date Roll	Select the date roll convention to roll the payment dates when they fall on business days. The payment calendar is used to determine business days. For a description of date roll conventions, from Calypso Navigator, choose **Help > Date Roll Conventions**.

The cashflow column 'Days' is modified to store number of days in Delivery Period i.e. days in between cashflow column 'Und Future First Del date' and 'Und Future Last Del date' including first and last date in the period when Date Schedule Pay Frequency is FutureContractLTD or FutureContractFND and Per Period - 'DLY - Future Contract Delivery Period' is selected.



Period Start	Period End	Payment Date	Und Future First Del Date	Und Future Last Del Date	Days	Deal Quantity	Deal Units	Spread Adjusted Price (USD/Barrels)	Projected Amount (USD)	Payment Amt (USD)	df	PV (USD)	Projected Price (USD/Barrels)	Fixed Price (USD/Barrels)
06/25/2024	07/24/2024	07/31/2024	08/01/2024	08/30/2024	30	15,000	Barrels	83.59	-1,253,850.00	0	0.99998435	-1,253,830.37	83.59	
07/25/2024	08/22/2024	08/29/2024	09/01/2024	09/30/2024	30	15,000	Barrels	83.59	-1,253,850.00	0	0.99996165	-1,253,801.91	83.59	
08/23/2024	09/24/2024	10/01/2024	10/01/2024	10/31/2024	31	15,500	Barrels	83.59	-1,295,645.00	0	0.99993582	-1,295,561.85	83.59	
09/25/2024	10/24/2024	10/31/2024	11/01/2024	11/29/2024	29	14,500	Barrels	83.59	-1,212,055.00	0	0.99991234	-1,211,948.76	83.59	
10/25/2024	11/22/2024	12/02/2024	12/01/2024	12/31/2024	31	15,500	Barrels	83.59	-1,295,645.00	0	0.99988730	-1,295,498.98	83.59	

22. Capturing Commodity Index Swap Trades

Choose **Trade > Commodities > Index Swap** to open the Performance Swap worksheet, from the Calypso Navigator.

Two types of Total Return Swap on Market Index can be captured:

- Index level - the Fixing Type is Price. Performance is calculated as (end index level/start index level -1)*notional.
- Index spread – the Fixing Type is Spread. Performance is calculated as (end spread- start spread)*start modified duration*notional.

Commodity Market Index Level will be either calculated using its constituents or from quote.

Index Level depends upon Pricing parameter 'USE_BASKET_COMPONENT_PRICING' in conjunction with pricing parameters 'NPV_FROM_QUOTE' & 'FUTURE_FROM_QUOTE'.

When USE_BASKET_COMPONENT_PRICING (default = false) is set to False, Market index level is equal to MarketIndex Quote from Quoteset.

When USE_BASKET_COMPONENT_PRICING is set to True, Market index level is calculated using sum of weighted price of the constituent and divided by divisor set on Market Index definition. Index level is calculated using latest effective date's constituents' weight as per Value Date.

1. NPV_FROM_QUOTE (default = false)

   Applicable when MarketIndex constitutes a Commodity Spot, if the Parameter is set to true, spot quote from Quoteset will be used, else price from commodity forward curve will be used.

2. FUTURE_FROM_QUOTE (default = false)

   Applicable when MarketIndex constitutes a Commodity Future, if the Parameter is set to true, future quote from QuoteSet will be used, else price from commodity forward curve will be used.

Note: Recommended pricer is PerformanceSwapAccrual for Swap on Commodity Market Index.

Commodity Index Swap Quick Reference

When you open a Performance Swap worksheet, the Trade panel is selected by default.

Configuration

» Define the exchange where the commodity index trades by choosing **Configuration > Legal Data > Entities** from Calypso Navigator

» Define the holiday calendar by choosing **Configuration > Definitions > Calendar Definitions** from Calypso Navigator

» Define the commodity index as a market index by choosing **Configuration > Product > Market Index** from Calypso Navigator. A basket of commodities may be attached to the index to model the index. Click **...** next to the Basket field to define the basket.

▶ See Commodity Index for a sample commodity index.

» Define the reference index by choosing **Configuration > Interest Rates > Rate Index Definitions** from Calypso Navigator. For the TBILL index, the TBillDailyCompound and LiborDailyDecompound calculators are available out-of-the-box

» Define the management fee types in the *defaultCISManagementFeeType* domain. Define the fee definitions from Calypso Navigator by choosing **Configuration > Fees, Haircuts & Margin Calls > Fee Definition**. For example, the PREMIUM can be defined using the Commodity default calculator. The MANAGEMENT_FEE can be defined using the AnnualPercentage default calculator; add the AnnualPercentage calculator to the feeCalculator domain. The AnnualPercentage fee amount is nominal * (fee percentage * daycount/365), where the daycount is the Fee Start Date – Fee End Date. The fee percentage is entered in the trade in the Fees panel

Entering Trade Details

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly.

Note that the Trade Date is entered in the Details panel.

» Proceed to the other panels as applicable.

Saving a Trade

» Hit F5 to save the trade, or choose **Trade > Save**.

You can also hit F3 to save the current trade as a new trade, or choose **Trade > Save As New**.

A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

» For pricing Total Return Swap on Market Index we use the accrual method. In this method we calculate:

- The funding leg NPV as the accrual of interest from last payment date to today.

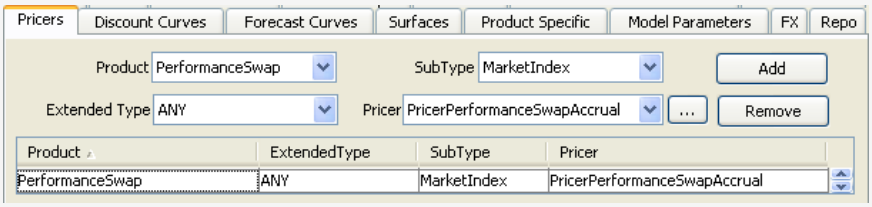
- The performance leg:

On Index level: (Valuation dates index level/period start index level -1)*notional

On Index spread: (Valuation dates index spread/period start index spread -

1)*period start modified duration*notional

» The PricerPerformanceSwapAccrual is used for accrual pricing. Register the pricer for the PerformanceSwap product and MarketIndex subtype:



» You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.

» Click **Price** to price the trade.

Trade Lifecycle

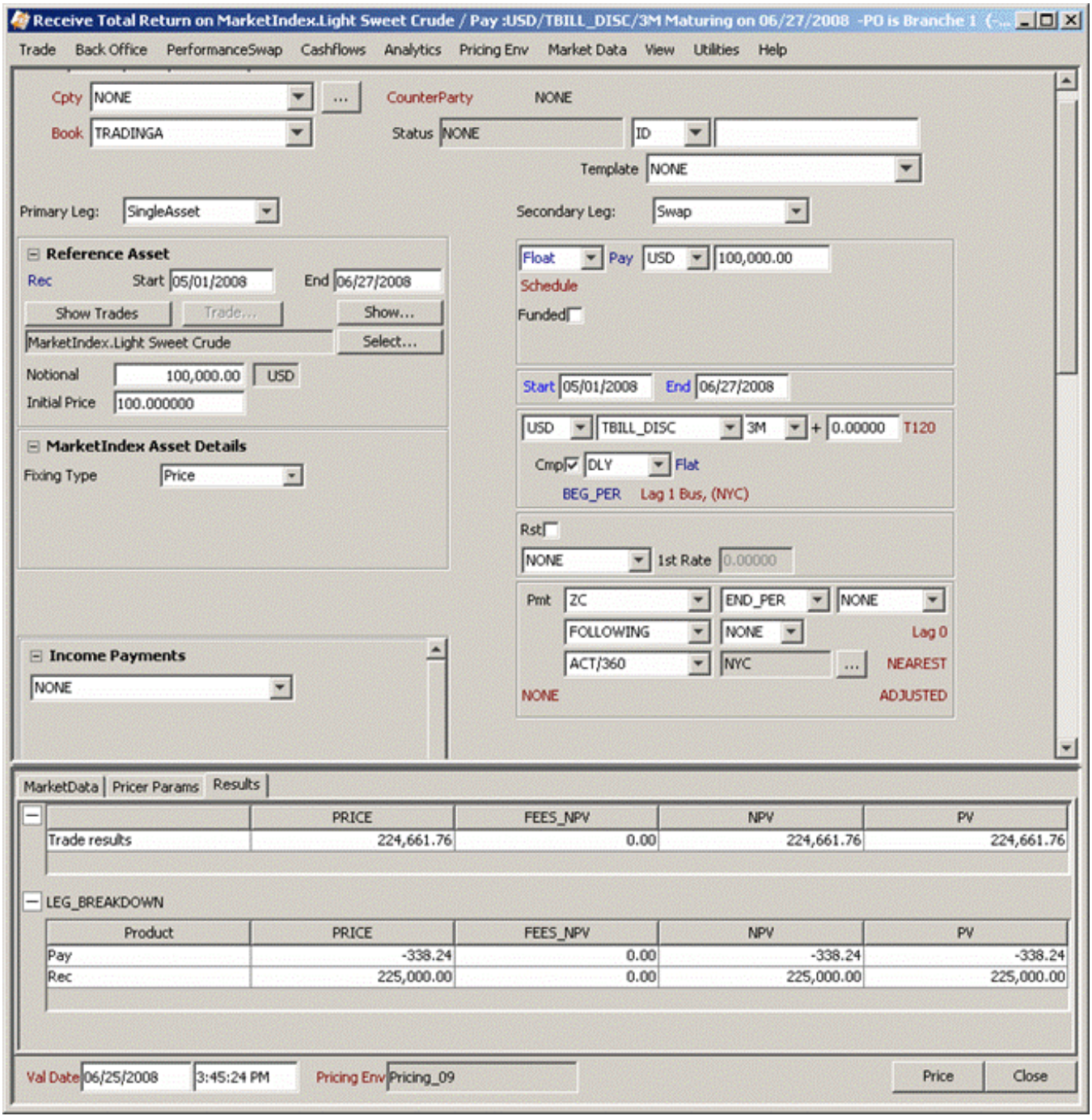
» You can allocate the trade using **Back Office > Allocate**

» You can terminate the trade using **Back Office > Terminate**

» You can reset the floating interest rates by choosing **Trade Lifecycle > Reset > Rate Reset** from Calypso Navigator, or using the RATE_RESET scheduled task

» You can fix prices by choosing **Trade Lifecycle > Reset > Price Fixing**, or using the PRICE_FIXING scheduled task

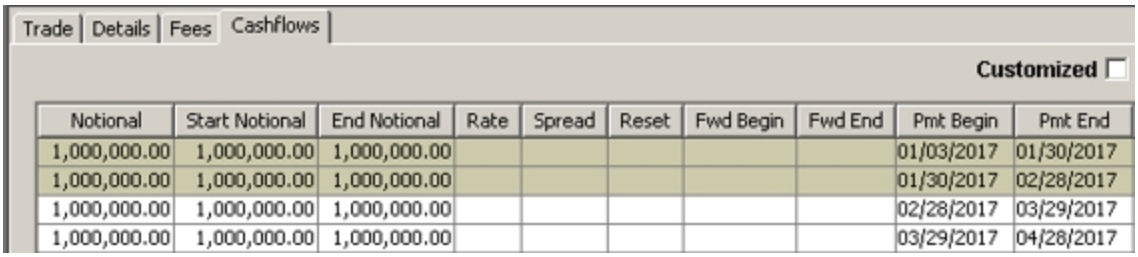
22.1 Sample Commodity Index Swap Trade



It is to be noted that, the check to ensure weights of all constituents amounts to 100%, is accurate upto 10 decimal places for weight type as 'Percentage'.

Important Note

The notional is fixed at trade inception and does not change when the index is reset.

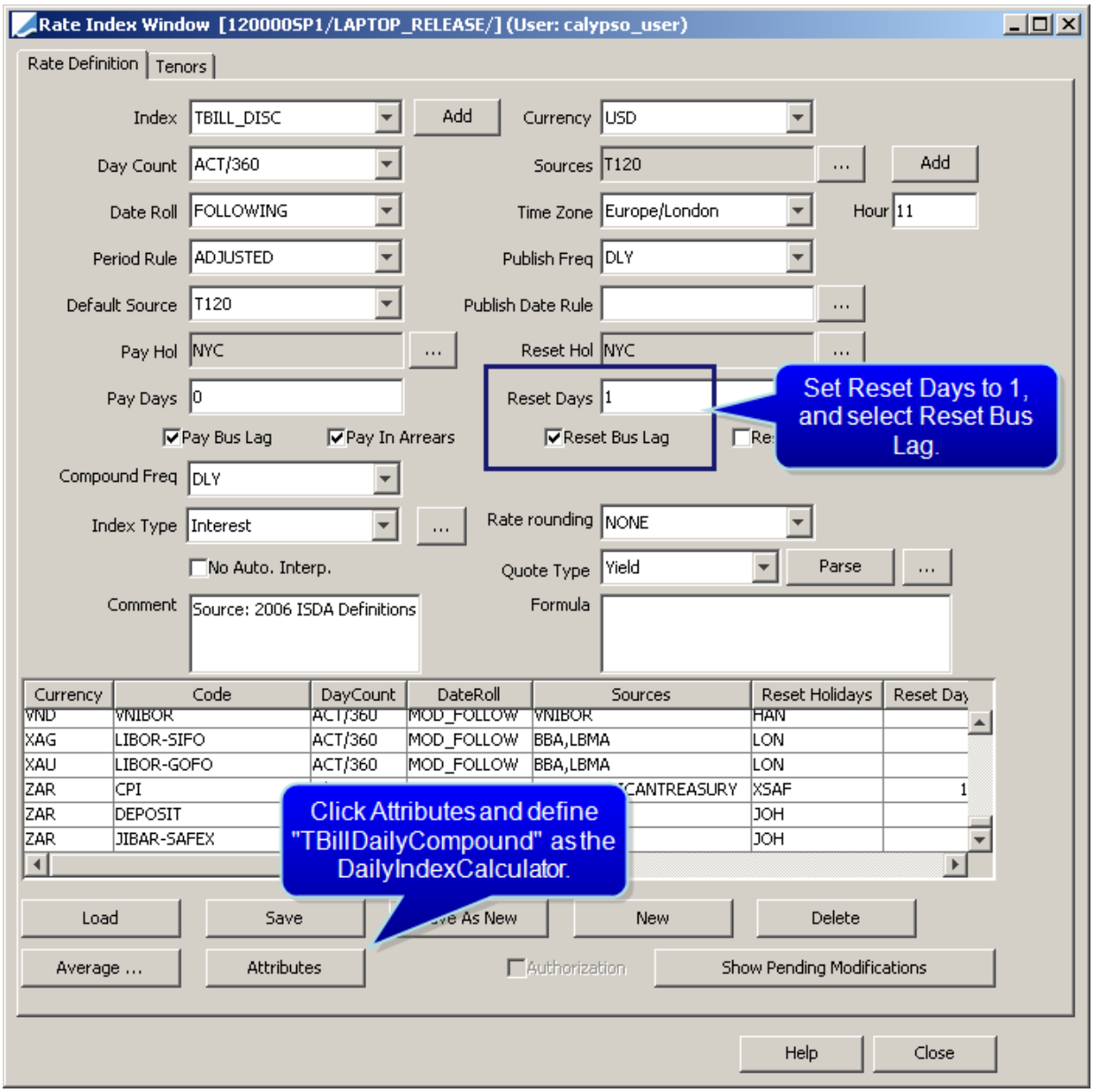


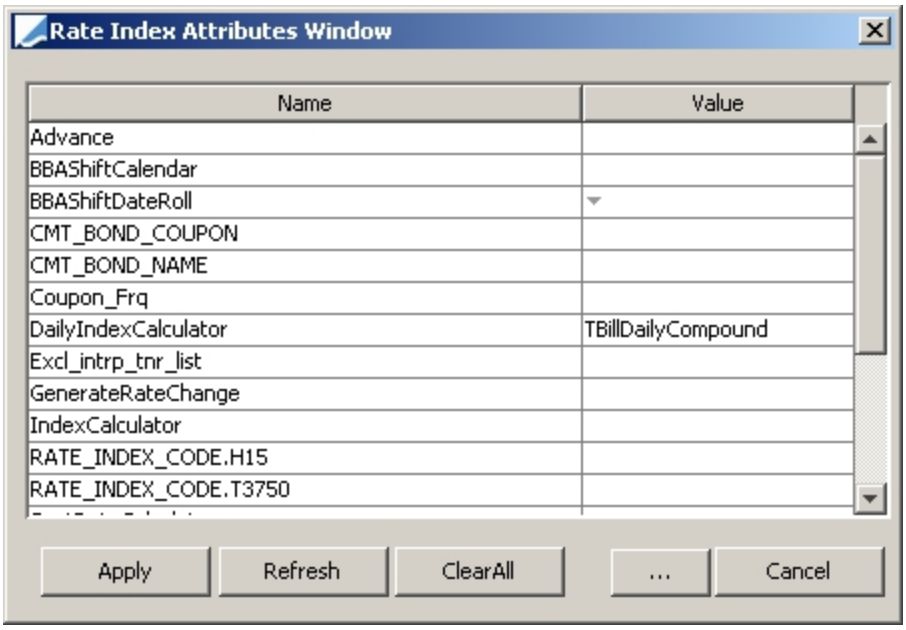
Notional	Start Notional	End Notional	Rate	Spread	Reset	Fwd Begin	Fwd End	Pmt Begin	Pmt End
1,000,000.00	1,000,000.00	1,000,000.00						01/03/2017	01/30/2017
1,000,000.00	1,000,000.00	1,000,000.00						01/30/2017	02/28/2017
1,000,000.00	1,000,000.00	1,000,000.00						02/28/2017	03/29/2017
1,000,000.00	1,000,000.00	1,000,000.00						03/29/2017	04/28/2017

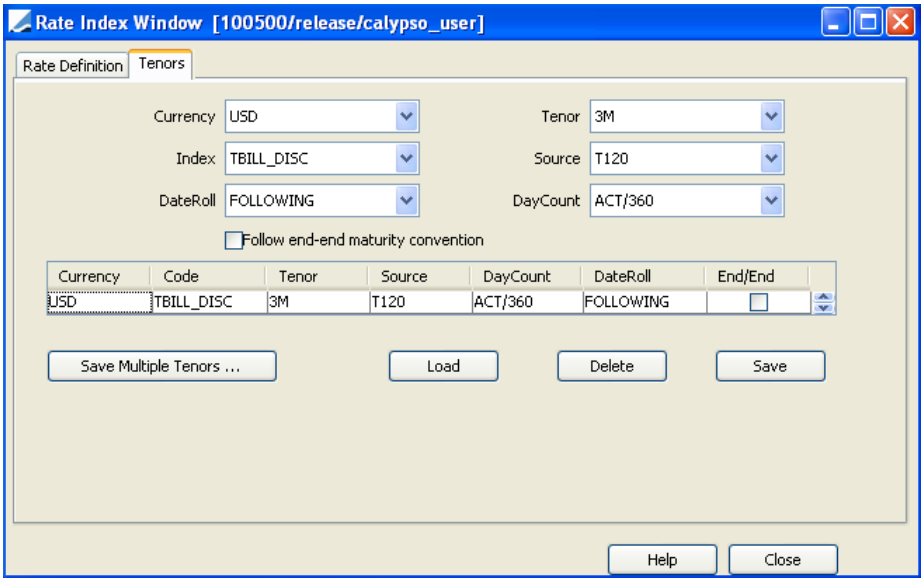
If you want the notional to change based on the index reset, you may want to consider Equity Swaps instead (and define an Equity Index rather than a Market Index).

22.2 Sample TBILL Index - TBillDailyCompound Calculator

From Calypso Navigator, choose **Configuration > Interest Rates > Rate Index Definitions**.


Rate Index Window [120000SP1/LAPTOP_RELEASE/] (User: calypso_user)
Rate Definition
Tenors
Index
TBILL_DISC
Add
Currency
USD
Day Count
ACT/360
Sources
T120
Add
Date Roll
FOLLOWING
Time Zone
Europe/London
Hour
11
Period Rule
ADJUSTED
Publish Freq
DLY
Default Source
T120
Publish Date Rule
Pay Hol
NYC
Reset Hol
NYC
Pay Days
0
Reset Days
1
Pay Bus Lag
Pay In Arrears
Reset Bus Lag
Set Reset Days to 1, and select Reset Bus Lag.
Compound Freq
DLY
Index Type
Interest
Rate rounding
NONE
No Auto. Interp.
Quote Type
Yield
Parse
Comment
Source: 2006 ISDA Definitions
Formula
Currency
Code
DayCount
DateRoll
Sources
Reset Holidays
Reset Day
VND
VNIBOR
ACT/360
MOD_FOLLOW
VNIBOR
HAN
XAG
LIBOR-SIFO
ACT/360
MOD_FOLLOW
BBA,LBMA
LON
XAU
LIBOR-GOFO
ACT/360
MOD_FOLLOW
BBA,LBMA
LON
ZAR
CPI
CANTREASURY
XSAF
ZAR
DEPOSIT
JOH
ZAR
JIBAR-SAFEX
JOH
Click Attributes and define "TBillDailyCompound" as the DailyIndexCalculator.
Load
Save
New
Delete
Average ...
Attributes
Authorization
Show Pending Modifications
Help
Close


Rate Index Attributes Window
Name
Value
Advance
BBAShiftCalendar
BBAShiftDateRoll
CMT_BOND_COUPON
CMT_BOND_NAME
Coupon_Frq
DailyIndexCalculator
TBillDailyCompound
Excl_intrp_tnr_list
GenerateRateChange
IndexCalculator
RATE_INDEX_CODE.H15
RATE_INDEX_CODE.T3750
Apply
Refresh
ClearAll
...
Cancel


Rate Index Window [100500/release/calypso_user]
Rate Definition
Tenors
Currency
USD
Tenor
3M
Index
TBILL_DISC
Source
T120
DateRoll
FOLLOWING
DayCount
ACT/360
Follow end-end maturity convention
Currency
Code
Tenor
Source
DayCount
DateRoll
End/End
USD
TBILL_DISC
3M
T120
ACT/360
FOLLOWING
Save Multiple Tenors ...
Load
Delete
Save
Help
Close

22.3 Sample TBILL Index - LiborDailyDecompound Calculator

$$Floating\ Amount = Ntl[\prod_{i=1}^{N}\left(1+(R_i+S)\frac{d}{365}\right)^{\frac{1}{d}}-1]$$

Ntl – *leg notional for a period*

N – *number of resets in accrual period*

R_i – *reference index, e.g. 3M LIBOR*

S – *spread*

d – *number of days in a fixing period*

Days in fixing period	90
Ntl	$ 1,000,000.00
Basis	365

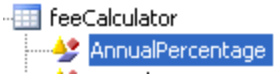
Date	LIBOR 3M	Spread	Effective rate	Daily Accrual Factor	Comp	Interest
3/1/2008	5.70%	0.25%	5.95%	1.000161843	1.000161843	$ 161.84
3/2/2008	5.71%	0.25%	5.96%	1.000162113	1.000323981	$ 323.98
3/3/2008	5.72%	0.25%	5.97%	1.000162383	1.000486417	$ 486.42
3/4/2008	5.73%	0.25%	5.98%	1.000162653	1.000649148	$ 649.15
3/5/2008	5.74%	0.25%	5.99%	1.000162923	1.000812177	$ 812.18
3/6/2008	5.75%	0.25%	6.00%	1.000163193	1.000975502	$ 975.50
3/7/2008	5.76%	0.25%	6.01%	1.000163463	1.001139124	$1,139.12
3/8/2008	5.77%	0.25%	6.02%	1.000163733	1.001303044	$1,303.04
3/9/2008	5.78%	0.25%	6.03%	1.000164003	1.00146726	$1,467.26
3/10/2008	5.79%	0.25%	6.04%	1.000164273	1.001631774	$1,631.77

From Calypso Navigator, choose **Configuration > Interest Rates > Rate Index Definitions**.

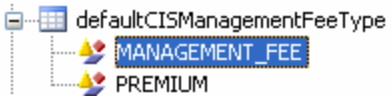
22.4 Sample Management Fee

The fee calculator AnnualPercentage can be used with the management fee accrual in Performance Swap pricing. The fee amount is nominal * (fee percentage * daycount/365). The fee percentage is entered in the trade.

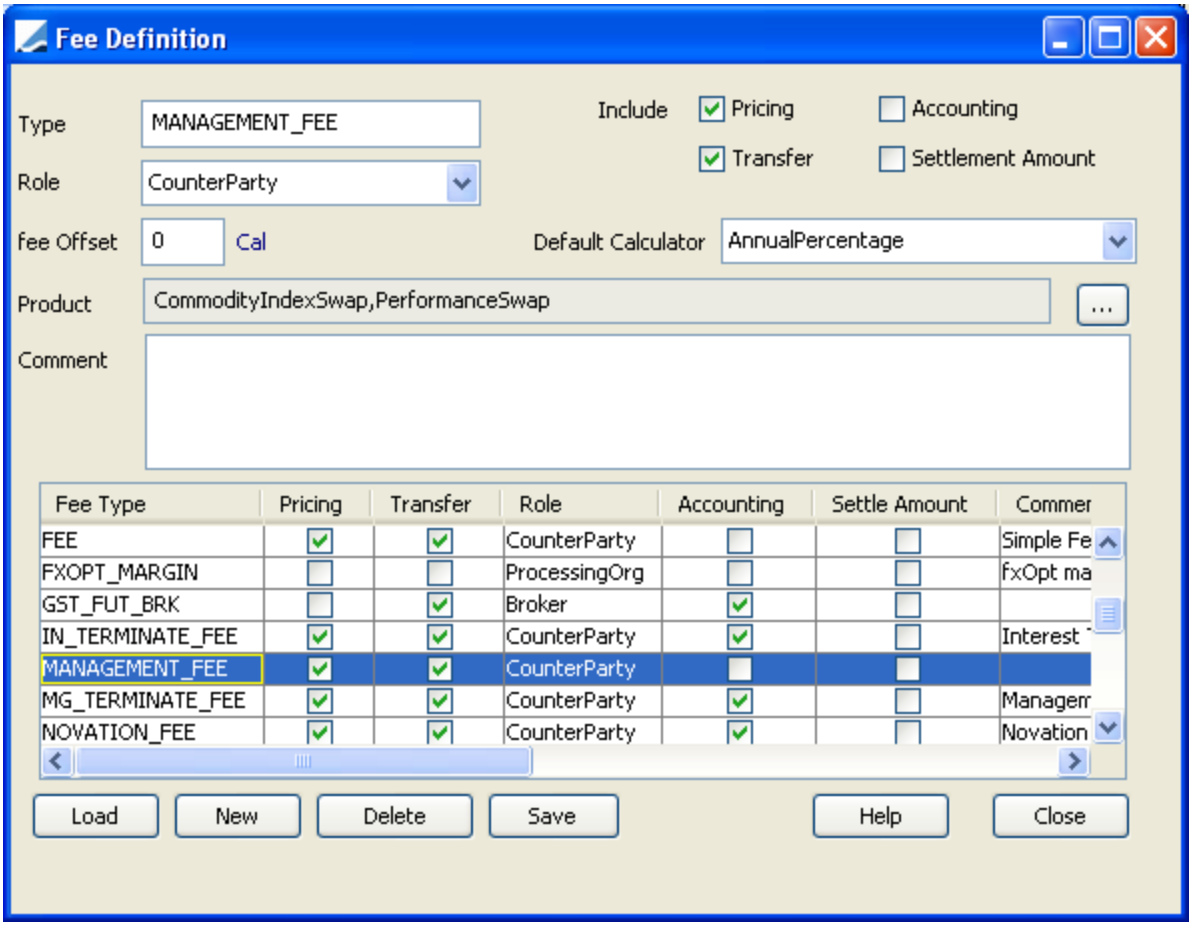
Add the calculator to the *feeCalculator* domain in Domain Values.



Add the MANAGEMENT_FEE to the *defaultCISManagementFeeType* domain in Domain Values.



To set up the fee definition, choose **Configuration > Fees, Haircuts & Margin Calls > Fee Definition** from Calypso Navigator.

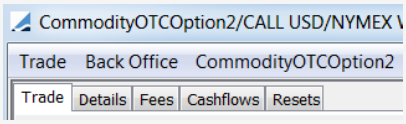


23. Capturing Commodity OTC Option Trades

To capture Commodity OTC Option Trades, please use the Pricing Sheet - Commodity Vanilla.

Choose **Trade > Commodities > OTC Options** to open the Commodity OTC Option worksheet, from Calypso Navigator or from the Calypso Workstation.

Commodity OTC Option Quick Reference



When you open a Commodity OTC Option worksheet, the Trade panel is selected by default.

Configuration

- Define the commodity product by choosing **Configuration > Commodities > Commodities** from Calypso Navigator
- Define the commodity reset definition by choosing **Configuration > Commodities > Commodity Reset** from Calypso Navigator

Entering Trade Details

- You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

  Or you can enter the trade fields directly. They are described below, see Field Description.

  Note that the Trade Date is entered in the Details panel.
- Proceed to the other panels as applicable.

Saving a Trade

- Hit F5 to save the trade, or choose **Trade > Save**.

  You can also hit F3 to save the current trade as a new trade, or choose **Trade > Save As New**.

  A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

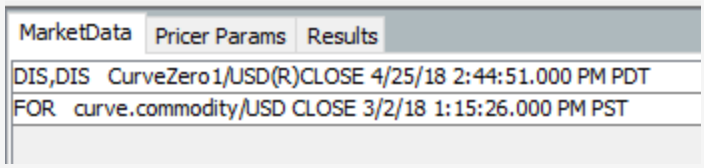
  The description is in the form of *ProductType/OptionTypeOptionStyle/UnderlyingCommodityMaturityDate Strike*

Pricing a Trade

- The following pricers are available for Commodity OTC Options out-of-the-box: *PricerCommodityOTCOption2LTBlack*, *PricerCommodityOTCOptionAnalytic* and *PricerCommodityOTCOption2Clewlow*.

- You can add the following pricer measures for the option strategies if they do not appear in the system by default: LOWER_PAR_STRIKE and UPPER_PAR_STRIKE. To do this, from Calypso Navigator, **Configuration > System > Add Pricer Measure**.
- A commodity otc option trade requires the following market data: a discount curve, a commodity forward curve for forecasting the prices, a commodity volatility surface, and commodity reset quotes.

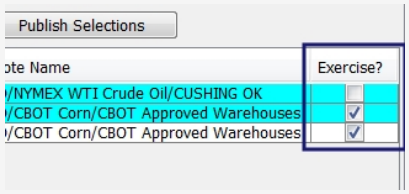
  Note that a cross-currency commodity otc option also requires an FX curve, an FX rate, and an FX reset.
- You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.



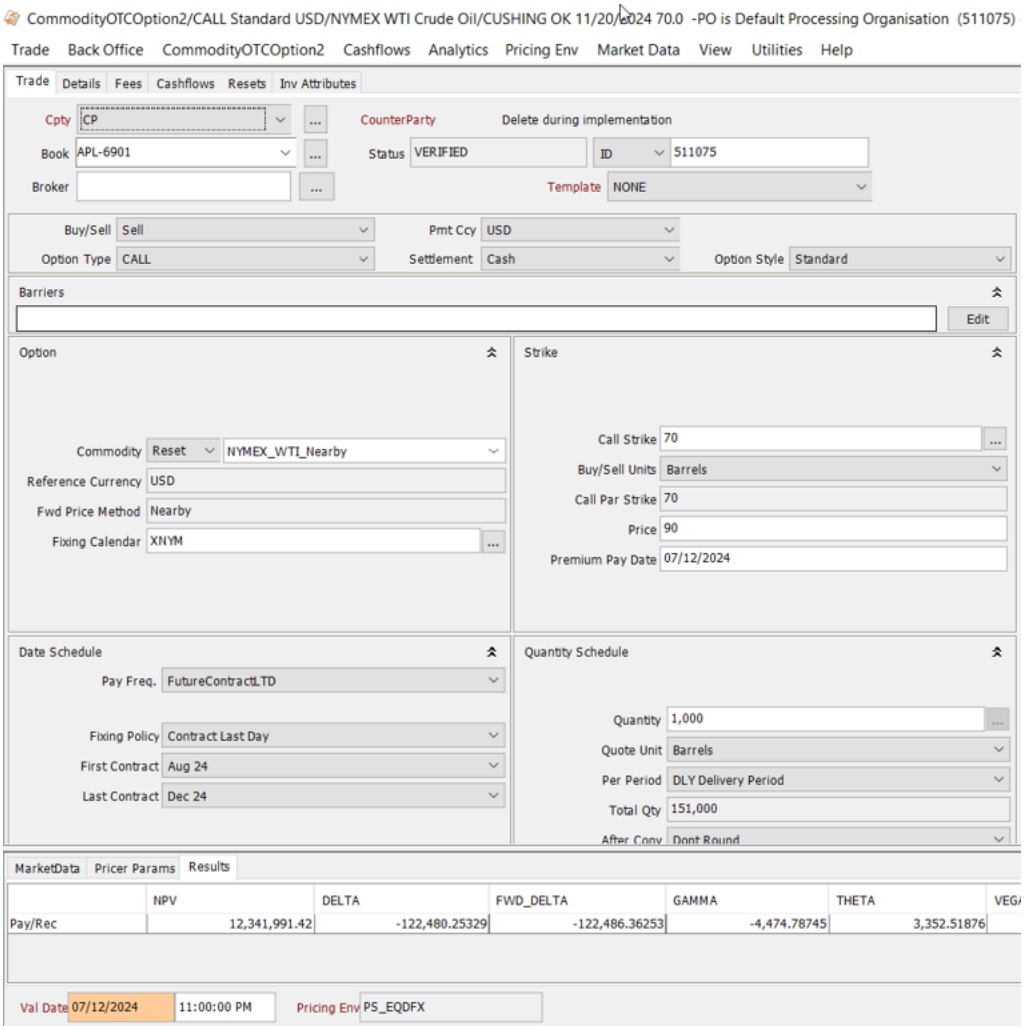
- Click **Price** to price the trade.

Trade Lifecycle

- You can allocate the trade to multiple books using **Back Office > Allocate**
- You can terminate and partially terminate the trade using **Back Office > Terminate**
- Prices can be fixed from Calypso Navigator by choosing **Trade Lifecycle > Reset > Price Fixing**
- For physically settled options, you can exercise the option from the trade worksheet using **Back Office > Exercise**
- For cash settled options, the option can be exercised using the Price Fixing function, either through the Price Fixing window **Trade Lifecycle > Reset > Price Fixing**, or the PRICE_FIXING scheduled task.
- For cash settled options, it is possible to choose not to exercise in-the-money options by manually de-selecting the *Exercise?* checkbox for the option in the Price Fixing window.



23.1 Sample Commodity OTC Option Trade



» Choose**Help > Trade Help** for complete details and more sample trades

23.2 Commodity Option Types Table

Option Type	Number of Strikes	Strike	Components of Option Structure	
			Buy	Sell
Put	1	x	Buy Put Option with Strike x	Sell Put Option with Strike x
Call	1	x	Buy Call Option with Strike x	Sell Call Option with Strike x
Put Spread	2	x,y, where x>y	Buy Put Option with Strike x and	Sell Put Option with Strike x and

Option Type	Number of Strikes	Strike	Components of Option Structure	
			Buy	Sell
			Sell Put Option with Strike y	Buy Put Option with Strike y
Call Spread	2	x,y, where x<y	Buy Call Option with Strike x and Sell Call Option with Strike y	Sell Call Option with Strike x and Buy Call Option with Strike y
Straddle	1	x	Buy Call Option with Strike x and Buy Put Option with Strike x	Sell Call Option with Strike x and Sell Put Option with Strike x
Strangle	2	x,y, where x>y	Buy Call Option with Strike x and Buy Put Option with Strike y	Sell Call Option with Strike x and Sell Put Option with Strike y
Risk Reversal	2	x,y, where x>y	Buy Call Option with Strike x and Sell Put Option with Strike y	Sell Call Option with Strike x and Buy Put Option with Strike y
Synthetic Forward	1	x	Buy Call Option with Strike x and Sell Put Option with Strike x	Sell Call Option with Strike x and Buy Put Option with Strike x

23.3 Barriers

You are able to add a barrier (knock-in or knock-out) to a cash settled OTC Commodity Option. The barrier is active for the entire life of the option, or until triggered. To set the Barrier details, click the **Edit** button next to the Barrier field.

The Barriers Details window is then displayed.

The Barrier is considered when calculating cashflows.

- Type UP & IN, cashflows will be paid/received only if the barrier is hit
- Type UP & OUT, cashflows will be paid/received until the barrier is hit
- Type DOWN & IN, cashflows will be paid/received only if the barrier is hit
- Type DOWN & OUT, cashflows will be paid until the barrier is hit

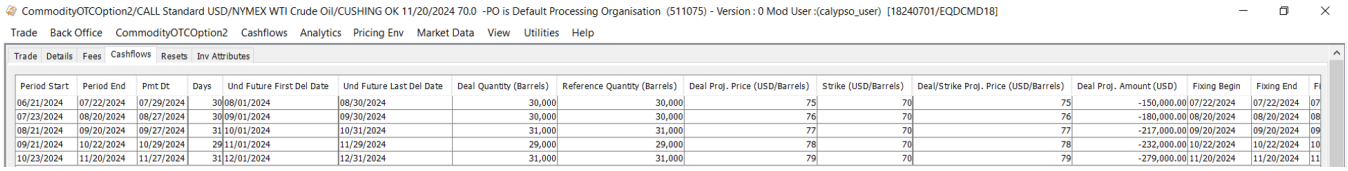
Field	Description
Barrier Count	The default setting is 'No Barrier'. Click in this field and select 'Single' to add a barrier to the option.
Type	Select the type of barrier: 'UP & IN', 'UP & OUT', 'DOWN & IN', 'DOWN & OUT'
Level	This is the absolute price level of the barrier. This price is understood to be quoted in the option strike units per option settlement currency.
Level %	This field is not yet implemented.
Rebate	A rebate can be paid if an option is knocked out. To include a rebate, set this field to 'Yes'.
Amount	The amount of the rebate per commodity unity. The rebate is entered in amount per strike unit. For example, a rebate may be entered as "0.35 per barrel" by entering 0.35 in this field.
Currency	The currency of the rebate. This should always be equal to the settlement currency of the option.

Field	Description
Payment Timing	The payment schedule of the rebate. This can be paid at the original option maturity (At Maturity) or on a date relative to the knock out event (At Instant).

Note: The commodity barrier option is compatible with the Option Lifecycle Analysis, where you can monitor the barriers, flag for trigger or exercise as well as other useful features. You must also be sure to configure the appropriate workflow to allow commodity options to be triggered and exercised.

Field	Description

The cashflow column ‘Days’ is modified to store number of days in Delivery Period i.e. days in between cashflow column 'Und Future First Del date' and 'Und Future Last Del date' including first and last date in the period when Date Schedule Pay Frequency is FutureContractLTD or FutureContractFND and Per Period - 'DLY - Future Contract Delivery Period' is selected.



Period Start	Period End	Pmt Dt	Days	Und Future First Del Date	Und Future Last Del Date	Deal Quantity (Barrels)	Reference Quantity (Barrels)	Deal Proj. Price (USD/Barrels)	Strike (USD/Barrels)	Deal/Strike Proj. Price (USD/Barrels)	Deal Proj. Amount (USD)	Fixing Begin	Fixing End	F
06/21/2024	07/22/2024	07/29/2024	30	08/01/2024	08/30/2024	30,000	30,000	75	70	75	-150,000.00	07/22/2024	07/22/2024	07
07/23/2024	08/20/2024	08/27/2024	30	09/01/2024	09/30/2024	30,000	30,000	76	70	76	-180,000.00	08/20/2024	08/20/2024	08
08/21/2024	09/20/2024	09/27/2024	31	10/01/2024	10/31/2024	31,000	31,000	77	70	77	-217,000.00	09/20/2024	09/20/2024	09
09/21/2024	10/22/2024	10/29/2024	29	11/01/2024	11/29/2024	29,000	29,000	78	70	78	-232,000.00	10/22/2024	10/22/2024	10
10/23/2024	11/20/2024	11/27/2024	31	12/01/2024	12/31/2024	31,000	31,000	79	70	79	-279,000.00	11/20/2024	11/20/2024	11

24. Capturing Commodity Swaption Trades

To capture Commodity Swaption Trades, please use the Pricing Sheet - Commodity Swaption.

To capture commodity swaption trades in the Pricing Sheet, select the Commodity Swaption strategy and set the properties as needed. You can also select a strategy template to populate default values.

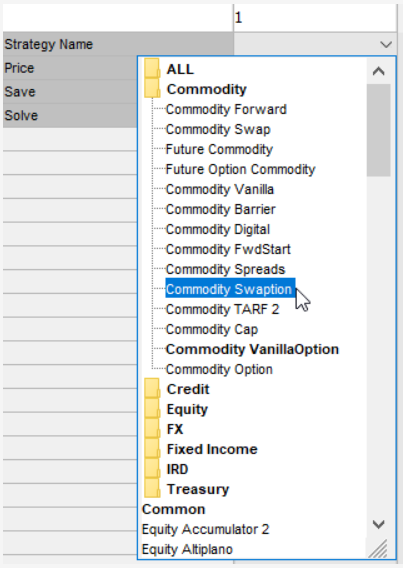
The following categories of properties are common to all types of strategies:

- Trade properties
- Product Amount properties
- Market Data properties
- Solver properties
- Dealt Data properties
- Keyword properties
- Pricer properties

▶ Please refer to Calypso Strategy Properties documentation for details.

Commodity Swaption Quick Reference

Pricing Sheet Strategy drop-down menu for selection.



Entering Trade Details

» You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

Or you can enter the trade fields directly.

Note that the Trade Date is entered in the Details panel.

» Proceed to the other panels as applicable.

Saving a Trade

» Hit F5 to save the trade, or choose **Trade > Save**.

You can also hit F3 to save the current trade as a new trade, or choose **Trade > Save As New**.

A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

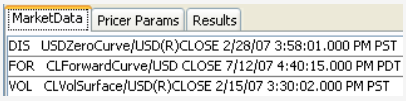
Pricing a Trade

» Please use PricerCommoditySwaption2.

» A commodity swaption trade requires the following market data: a discount curve, a forecast curve, a commodity volatility surface, reset rates.

Note that a cross-currency commodity swaption also requires an FX curve, an FX rate, and an FX reset.

» You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.



» Click **Price** to price the trade.

Trade Lifecycle

» You can allocate the trade to multiple books using **Back Office > Allocate**

» You can terminate and partially terminate the trade using **Back Office > Terminate**

» You prices by choosing **Trade Lifecycle > Reset > Price Fixing**

» You can exercise the option using **Back Office > Exercise** or from Calypso Navigator by choosing **Trade Lifecycle > Expiration & Exercise > Options Exercise**

25. Capturing Commodity Listed Future Trades

Choose **Trade > Commodities > Listed Future** to open the Future worksheet, from Calypso Navigator or from the Calypso Workstation.

Future Commodity Quick Reference

When you open a Future worksheet, the Trade panel is selected by default.

[NOTE: The trade counterparty must be a clearer, so you must have defined a legal entity of role Clearer]

Configuration

- Define the exchange where the commodity trades by choosing **Configuration > Legal Data > Entities** from Calypso Navigator
- Define the holiday calendar by choosing **Configuration > Definitions > Calendar Definitions** from Calypso Navigator
- Define date rules by choosing **Configuration > Definitions > Date Rule Definitions** from Calypso Navigator
- Define the commodity product by choosing **Configuration > Commodities > Commodities** from Calypso Navigator
- Define the future contracts by choosing **Configuration > Listed Derivatives > Future Contracts** from Calypso Navigator

▶ See Commodity Futures Setup for details.

Entering Trade Details

- You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

  Or you can enter the trade fields directly. They are described below, see Field Description.

  Note that the Trade Date is entered in the Details panel.
- Proceed to the other panels as applicable.

Saving a Trade

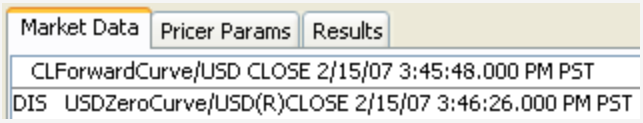
- Hit F5 to save the trade, or choose **Trade > Save**.

  You can also hit F3 to save the current trade as a new trade, or choose **Trade > Save As New**.

  A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

- A future commodity trade requires the following market data: a zero curve for discounting the cash flows, a commodity forward curve for forecasting the price. The future price quote is not used in pricing when the FUTURE_FROM_QUOTE pricing parameter is set to false.
- You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.

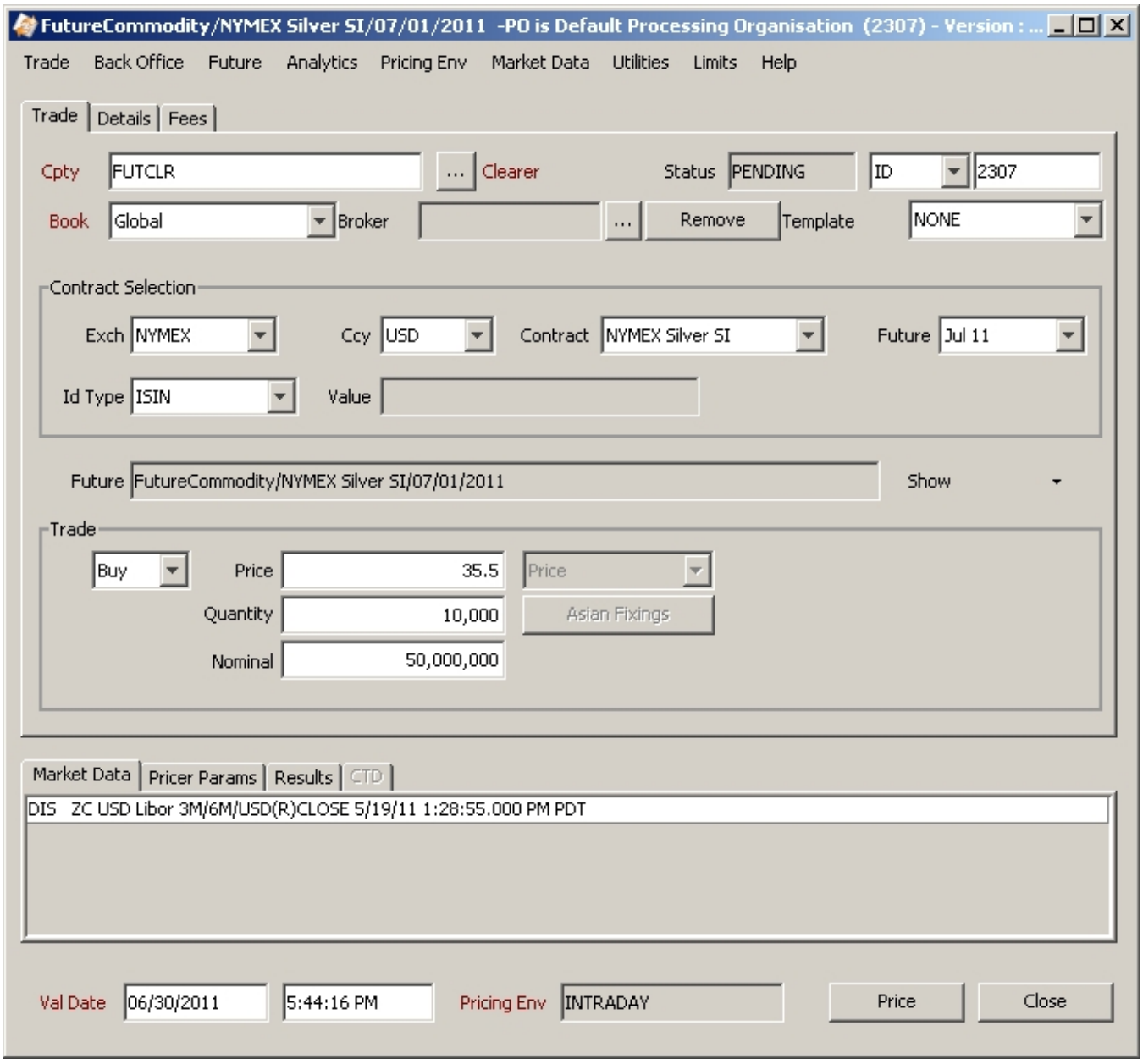


- Click **Price** to price the trade.

Trade Lifecycle

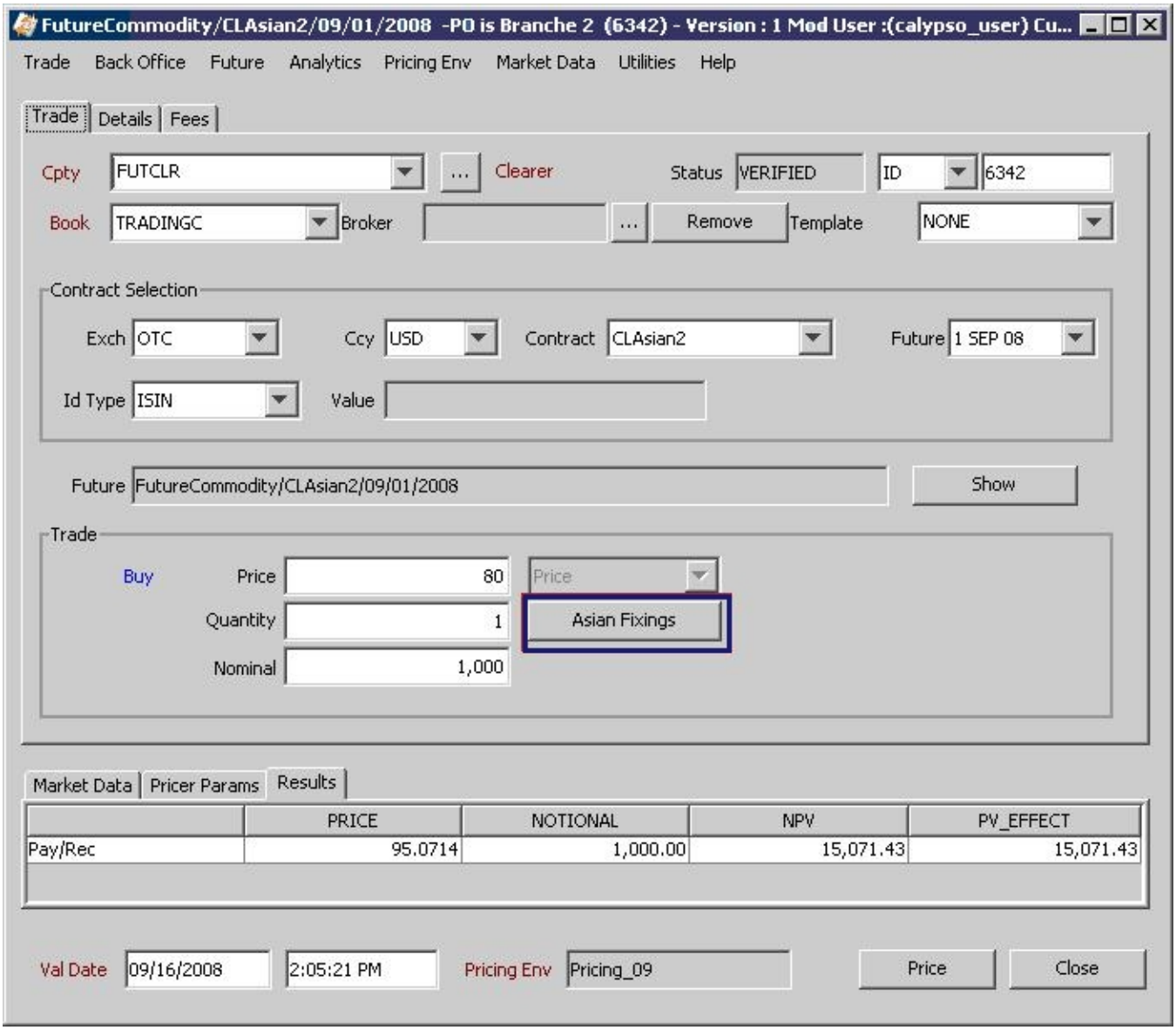
- You can allocate the trade to multiple books using **Back Office > Allocate**
- You can terminate the trade using **Back Office > Terminate**
- You can liquidate the trade manually using **Back Office > Manual Liquidation**
- You can expire futures by choosing **Trade Lifecycle > Expiration & Exercise > Future Expiry** from Calypso Navigator, or the FUTURE_POSITION_EXPIRY scheduled task
- You can compute margin calls on the clearing accounts in real-time or in batch mode – Refer to *Calypso Futures Documentation* for details

25.1 Sample Future Commodity Trade



» Choose **Help > Trade Help** for complete details.

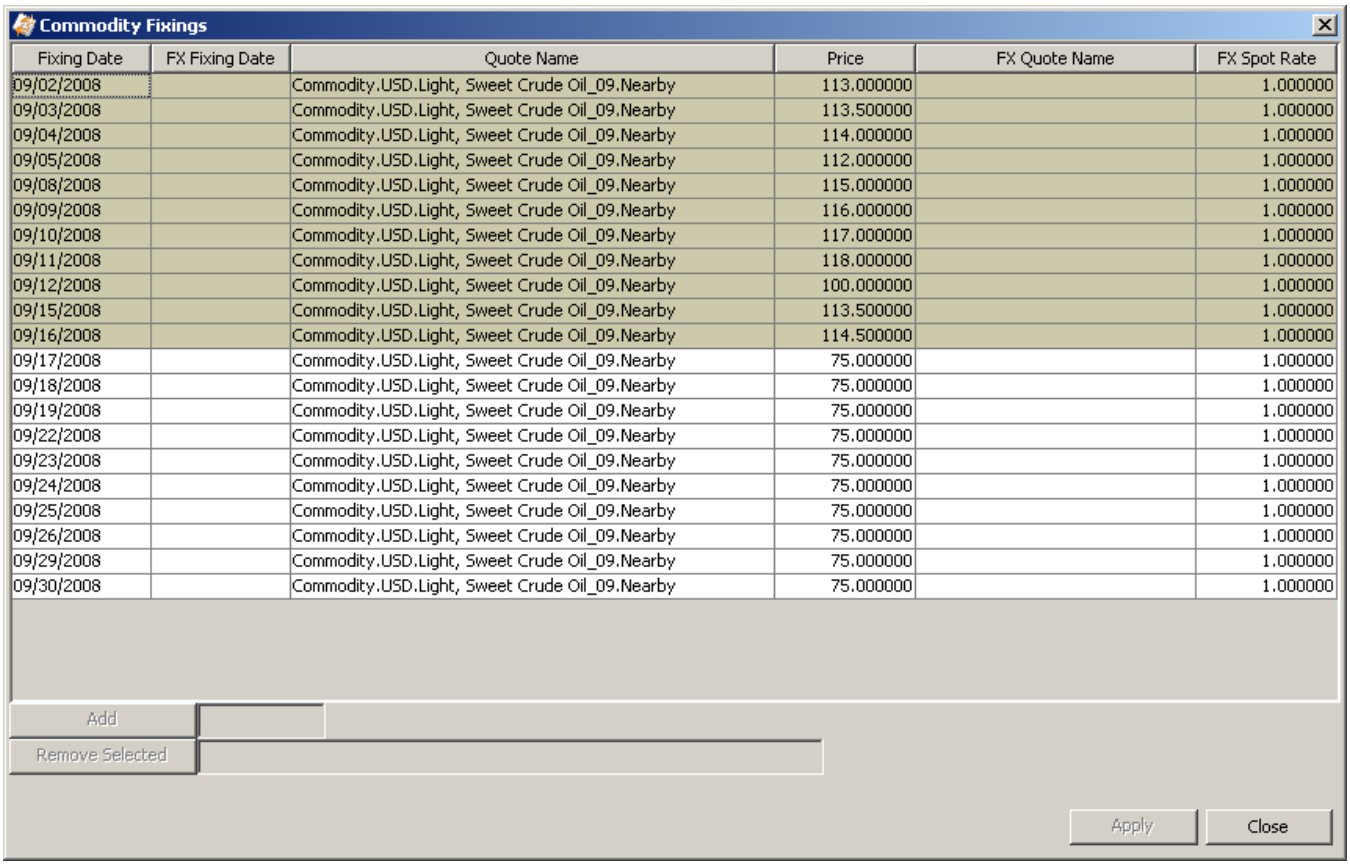
25.2 Sample Asian Future Commodity Trade



The current value (PRICE) of the future is the average of both the known and unknown fixings.

The NPV of the trade is: NPV = (Current Value – Unit Price) * Notional.

Click **Asian Fixings** to view the fixing details.

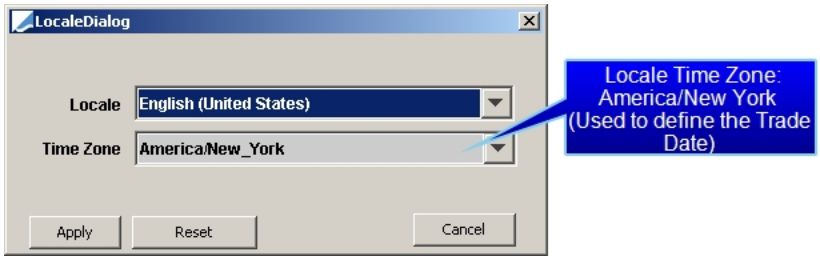


25.3 Future Contract Display - Time Zone

This section describes how the future contract is displayed in the trade window according to the time zone selected.

The Future trade window displays the first available contract based on the trade date defined in the Future trade window, and the Last Trading Date defined in the future contract. The contract display uses the following logic:

» The TradeDate of the Future trade is based on the TimeZone defined in the Locale window. From Calypso Navigator, choose **Configuration > Definitions > Locale Configuration**.



» It converts the TradeDate to the TimeZone defined in FutureContract window, and then compares it to the LastTradingDate of the Future.

» Choose **Help > Trade Help** for complete details

26. Capturing Electricity Future Trades

Electricity Future Quick Reference

When you open a Future worksheet, the Trade panel is selected by default.

Configuration

- Define the exchange for the commodity trades by choosing **Configuration > Legal Data >Entities** from Calypso Navigator
- Define the holiday by choosing **Configuration > Definitions > Date Rule Definitions** from Calypso Navigator
- Define date rules by choosing **Configuration > Definitions > Date Rule Definitions** from Calypso Navigator
- Define the commodity product by choosing **Configurations > Commodities > Commodities** from Calypso Navigator
- Define the future contracts by choosing **Configuration > Listed Derivatives > Future Contracts** from Calypso Navigator

  ▶ See Defining Future Contracts for details.
- Define the commodity reset definition by choosing **Configuration > Commodities> Commodity Reset** from Calypso Navigator
- Define the FX rate definition as needed by choosing **Configuration > Foreign Exchange FX Rate Definitions** from Calypso Navigator
- Define the period distributions using by choosing **Configuration > Commodities > Period Distribution** from Calypso Navigator
- Define the intraday policy by choosing **Configuration > Commodities > Intraday Configuration** from Calypso Navigator

Entering Trade Details

- You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable. Or, you can enter the trade fields directly.

  Note that the Trade Date is entered in the Details panel.
- Proceed to the other panels as applicable.

Saving a Trade

» Hit F5 to save the trade, or choose Trade > Save.

You can also hit F3 to save the current trade as a new trade, or choose Trade > Save As New.

A description appears in the title bar of the trade worksheet and a trade id will be assigned to the trade. The trade status will be modified according to the workflow configuration.

Pricing A Trade

» An electricity derivative trade requires the following market data: a zero curve for discounting the cash flows, a commodity electricity hypersurface and electricity quotes.

Note that a cross-currency trade also requires an FX curve, an FX rate and an FX reset.

For Natural Gas futures, you need a forward curve generated using the CommodityNG algorythm.

» You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.

» Click **Price** to price the trade.

Trade Lifecycle

» Allocate the trade to multiple books using **Back Office > Allocate**.

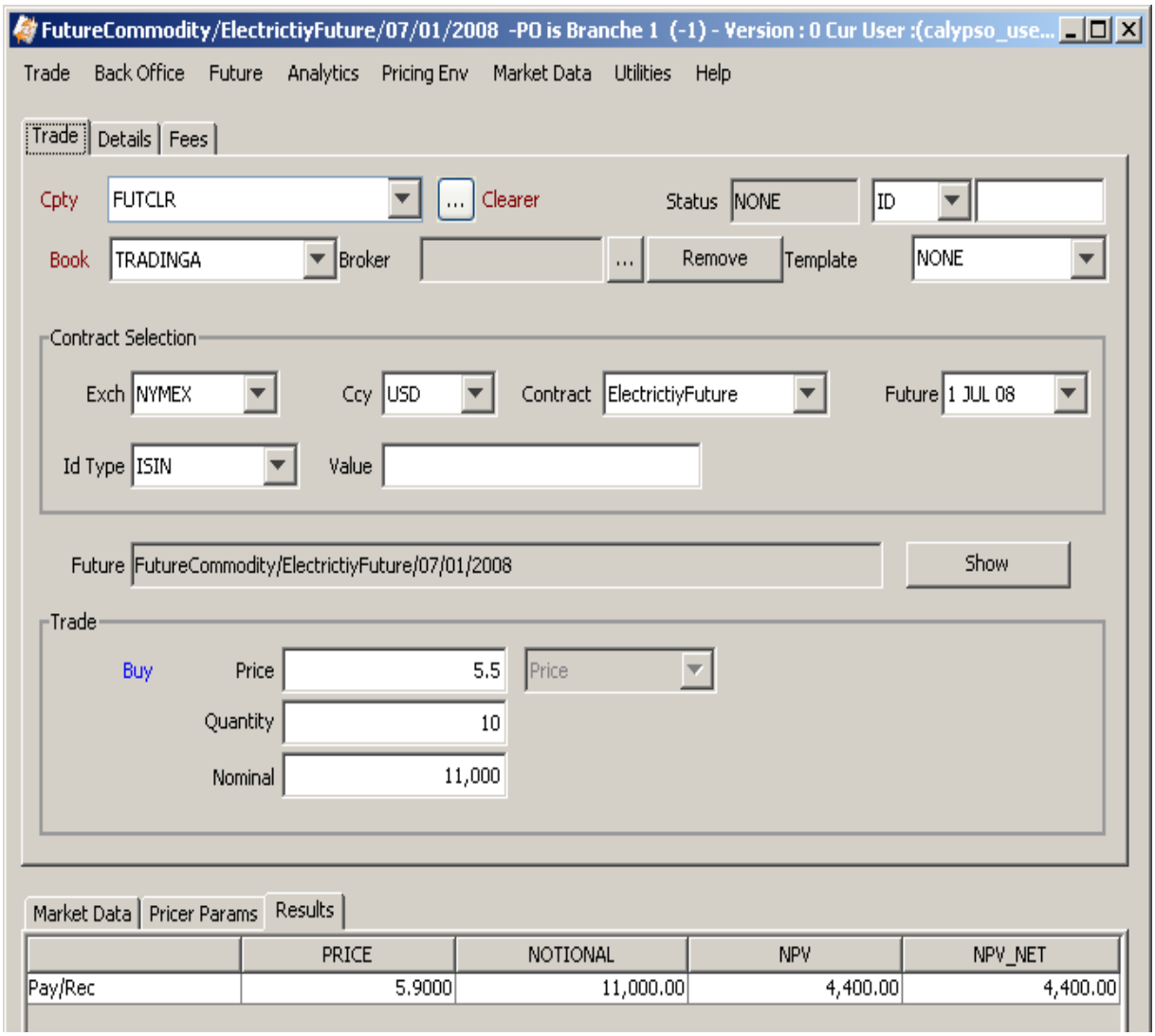
» Terminate the trade using **Back Office > Terminate**

» Liquidate the trade manually using **Back Office > Manual Liquidation**

» You can expire futures by choosing **Trade Lifecycle > Expiration & Exercise > Future Expiry** from Calypso Navigator. Or you may use the FUTURE_EXPIRY scheduled task.

» You can compute margin calls on the clearing accounts in real-time or in batch mode. Refer to the *Calypso Futures User Guide* for details.

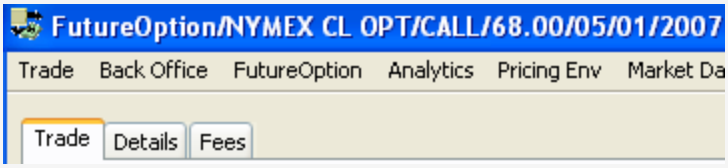
Sample Electricity Future Trade


FutureCommodity/ElectrictiyFuture/07/01/2008 -PO is Branche 1 (-1) - Version : 0 Cur User :(calypso_use...
Trade
Back Office
Future
Analytics
Pricing Env
Market Data
Utilities
Help
Trade
Details
Fees
Cpty
FUTCLR
Clearer
Status
NONE
ID
Book
TRADINGA
Broker
Remove
Template
NONE
Contract Selection
Exch
NYMEX
Ccy
USD
Contract
ElectrictiyFuture
Future
1 JUL 08
Id Type
ISIN
Value
Future
FutureCommodity/ElectrictiyFuture/07/01/2008
Show
Trade
Buy
Price
5.5
Price
Quantity
10
Nominal
11,000
Market Data
Pricer Params
Results
PRICE
NOTIONAL
NPV
NPV_NET
Pay/Rec
5.9000
11,000.00
4,400.00
4,400.00

27. Capturing Commodity Listed Future Option Trades

Choose **Trade > Commodities > Listed Future Options** to open the Future Option worksheet, from Calypso Navigator or from the Calypso Workstation.

Future Option Commodity Quick Reference



When you open a Future Option worksheet, the Trade panel is selected by default.

[NOTE: The trade counterparty must be a clearer, so you must have defined a legal entity of role Clearer]

Configuration

- Define the exchange where the commodity trades by choosing **Configuration > Legal Data > Entities** from Calypso Navigator
- Define the holiday calendar by choosing **Configuration > Definitions > Calendar Definitions** from Calypso Navigator
- Define date rules by choosing **Configuration > Definitions > Date Rule Definitions** from Calypso Navigator
- Define the commodity product by choosing **Configuration > Commodities > Commodities** from Calypso Navigator
- Define the future option contracts by choosing **Configuration > Listed Derivatives > Future Contracts Options** from Calypso Navigator

▶ See Commodity Future Options Setup for details.

Entering Trade Details

- You can select a template from the Template field to populate the worksheet with default values. Then modify the fields as applicable.

  Or you can enter the trade fields directly. They are described below, see Field Description.

  Note that the Trade Date is entered in the Details panel.
- Proceed to the other panels as applicable.

Saving a Trade

- Hit F5 to save the trade, or choose **Trade > Save**.

  You can also hit F3 to save the current trade as a new trade, or choose **Trade > Save As New**.

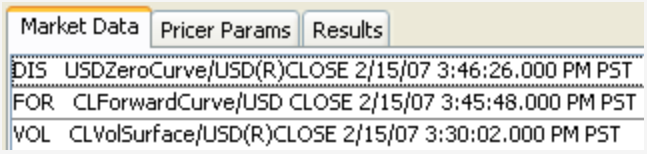
  A description will appear in the title bar of the trade worksheet, a trade id will be assigned to the trade, and the status of the trade will be modified according to the workflow configuration.

Pricing a Trade

- A future option commodity trade requires the following market data: a zero curve for discounting the cash flows, a commodity forward curve for forecasting the price, a COMMODITY volatility surface.

  The future price quote is not used in pricing when the FUTURE_FROM_QUOTE pricing parameter is set to false.

- You can choose **Pricing Env > Check** to check if all required pricing data are available in the Pricing Environment.

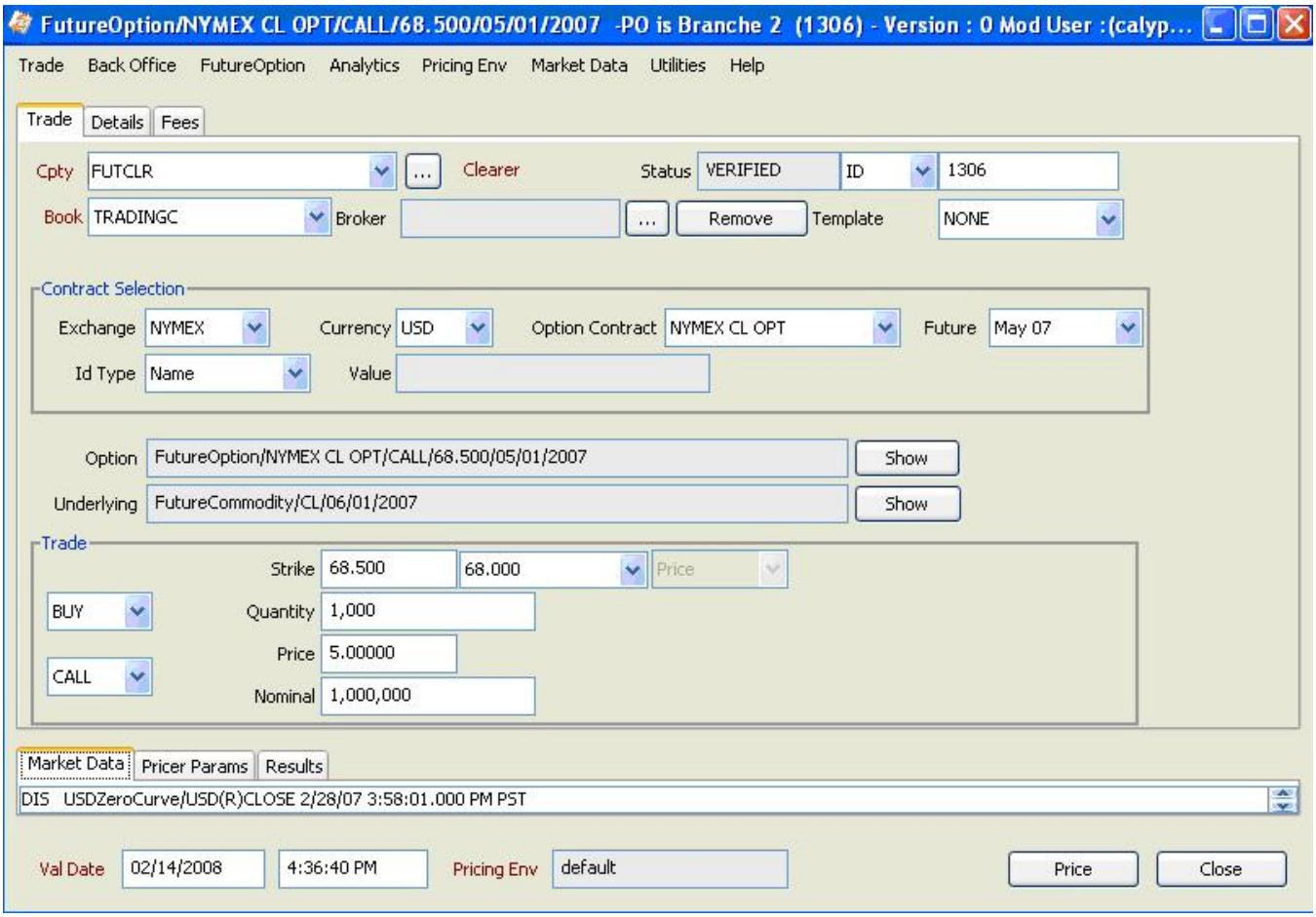


- Click **Price** to price the trade.

Trade Lifecycle

- You can allocate the trade by choosing **Back Office > Allocate**
- You can terminate the trade using **Back Office > Terminate**
- You can liquidate the trade manually using **Back Office > Manual Liquidation**
- You can exercise future options by choosing **Trade Lifecycle > Expiration & Exercise > Future Option/ETO Exercise**
- You can compute margin calls on the clearing accounts in real-time or in batch mode – Refer to *Calypso Futures Documentation* for details

Sample Future Option Commodity Trade

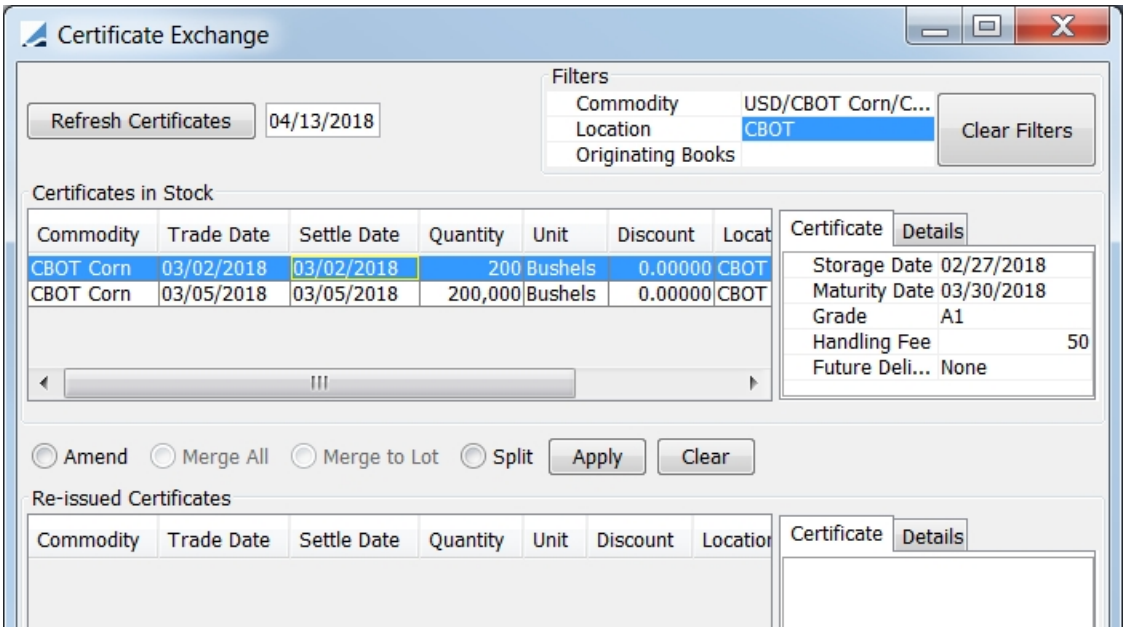


» Choose **Help > Trade Help** for complete details.

28. Commodity Certificate Management

A Commodity Certificate is a document issued by a storage owner to identify the owner of a commodity in their storage facility. It also contains information about the commodity such as the type of commodity, the quality and the location and storage costs. These certificates can be bought and sold on the open market thereby transferring ownership of the physical commodity by the transfer of the certificate.

The Certificate Management window is used to split, merge and amend certificates. To display this window, from Calypso Navigator, select **Configuration > Commodities > Commodity Certificate Management**.

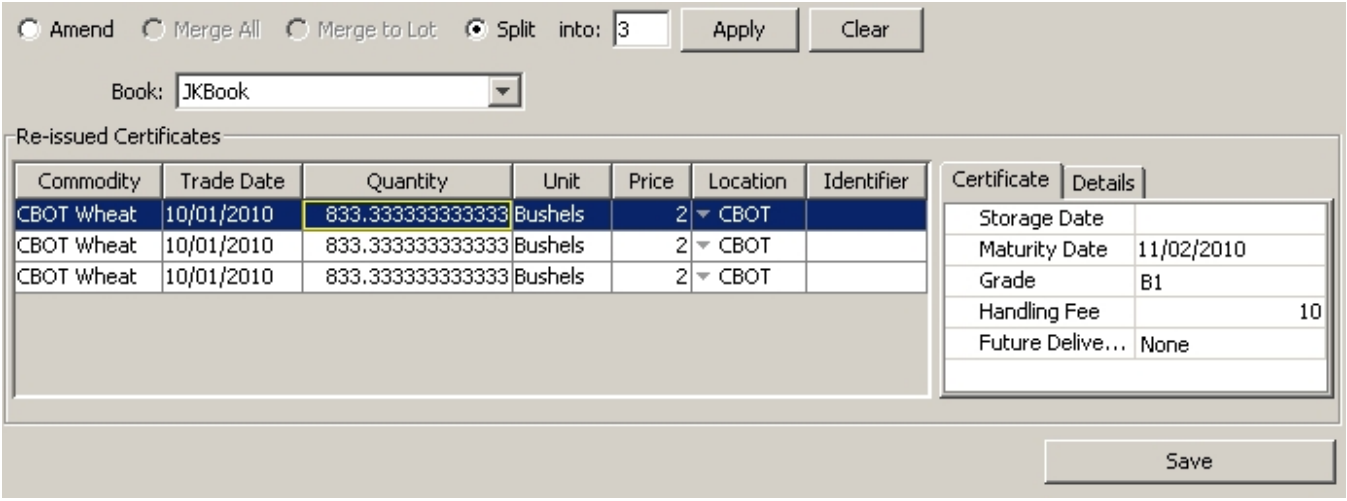


- Click the **Refresh Certificates** button to display certificates in your inventory as of the date displayed. Certificates entered after this date will not appear. You may click in this field and enter whatever date you desire.
- You are able to filter your display further with the Filters area by selecting a Commodity, Location or Originating Book for the certificates that you would like to display. Entering filter information is not required in order to display certificates in this window.
- You may Amend, Merge and Split any of the certificates in the top portion of the window.

Note: For certificates to populate in this window, Back Office Transfer status for certificates must be SETTLED and the following engines need to be running: Transfer, Inventory and Liquidation.

28.1 Splitting Certificates

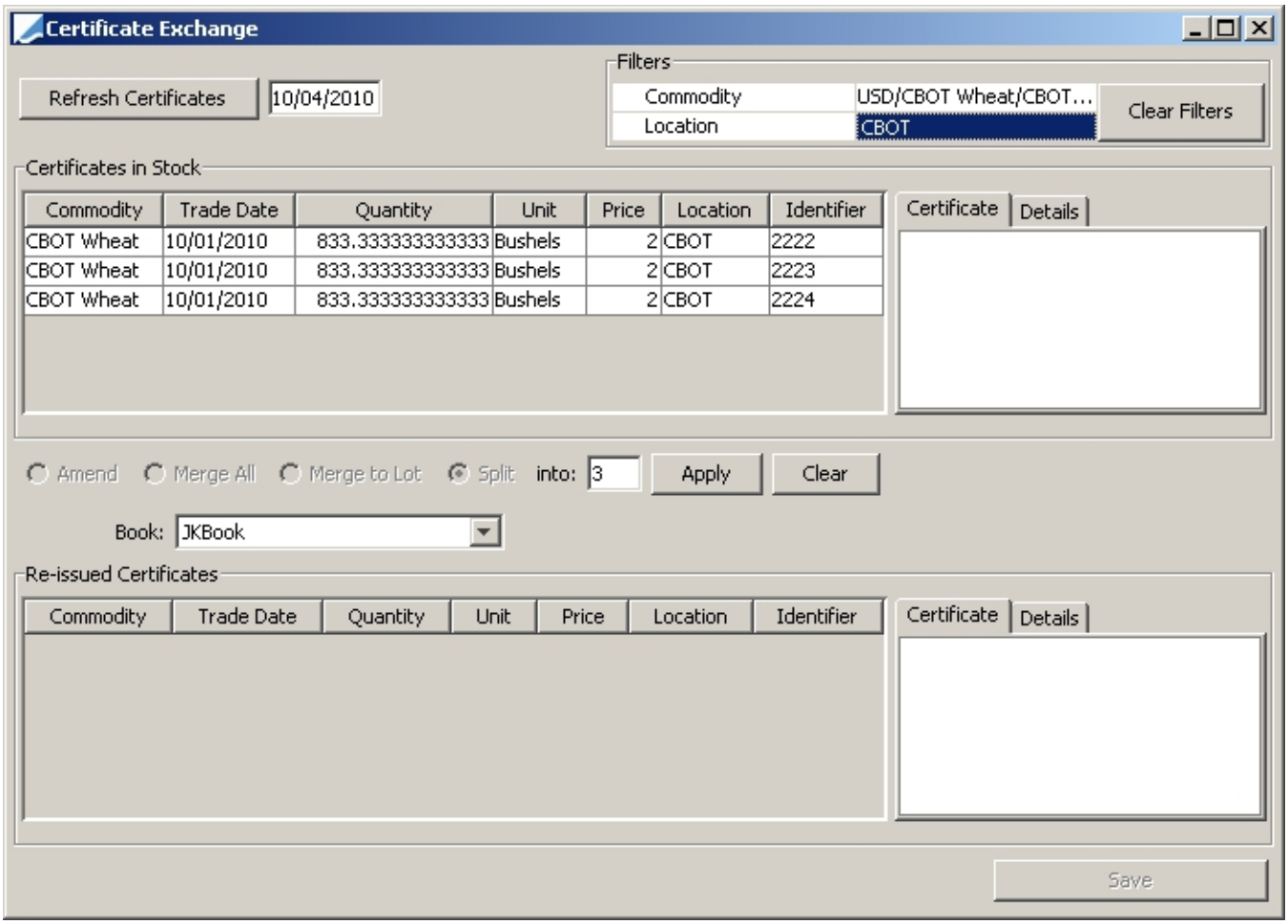
To split a certificate, select the certificate in the top portion of the window and click the **Split** radio button.



Enter the number of certificates into which you would like to split the selected certificate and the Book in which you would like the new certificates

placed. Click **Apply**.

The new certificates appear below and you can then enter the appropriate information and details and click **Save**. After you click **Save**, the new certificates move to the top of the screen.



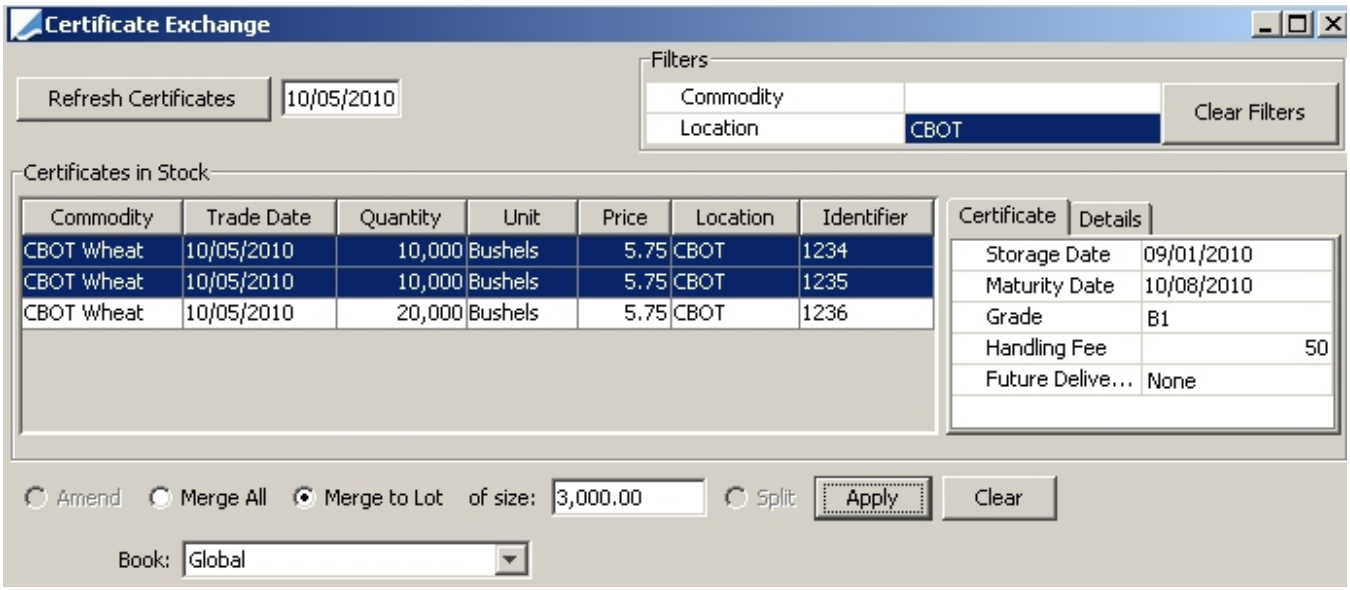
Newly created certificates are automatically settled.

28.2 Merging Certificates

To merge certificates, select the certificates you would like to merge in the top portion of the window by holding down the Ctrl button on your keyboard and select either the **Merge All** or **Merge to Lot** radio button.

Merge to Lot allows you to merge multiple certificates into a specific lot size. When you select this option, select the option the window displays a field where you can enter the lot size. Quantity above the lot size appears in a separate certificate in the table below.

Enter the details to merge the certificates, and click **Apply**. The newly created certificates appear below. Edit the certificate details as needed and click **Save**. They will then move to the top portion of the window.

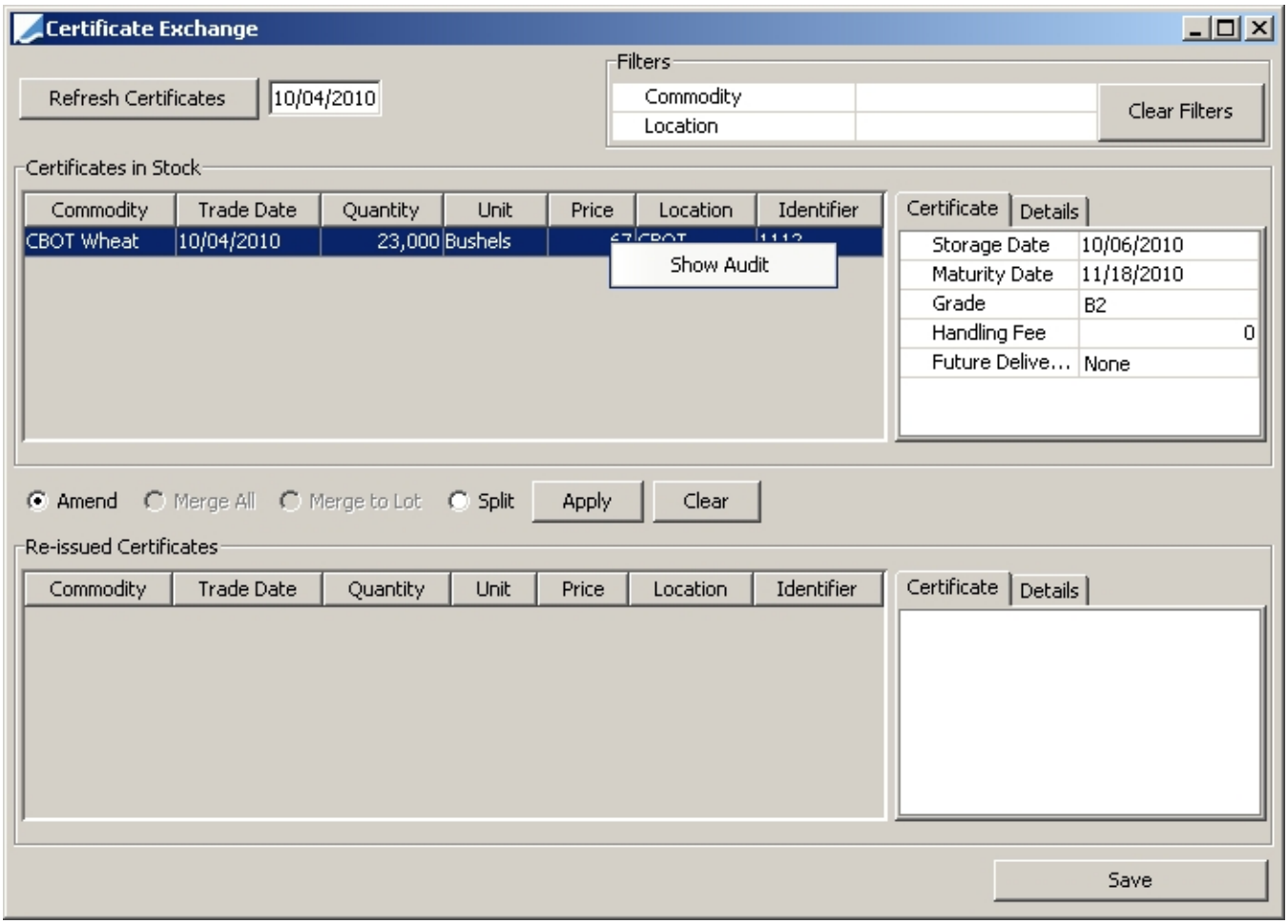


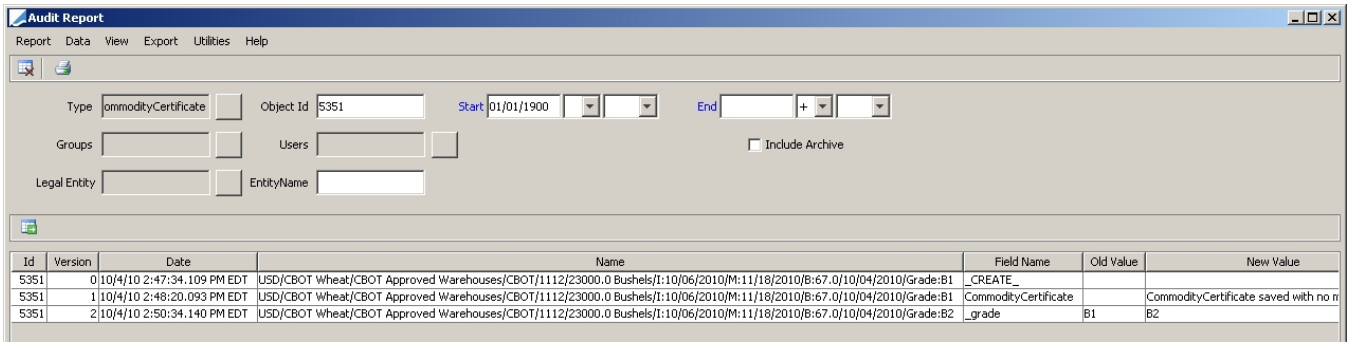
Merge All merges the selected certificates into one new one.

Note: You must click Save at the bottom of the window after performing any changes or the amendments or newly created certificates will not be saved.

28.3 Certificate Audit

You are able to right-click on any certificate in the Certificate Management window and display audit information for that certificate.


Certificate Exchange
Refresh Certificates
10/04/2010
Filters
Commodity
Location
Clear Filters
Certificates in Stock
Commodity
Trade Date
Quantity
Unit
Price
Location
Identifier
CBOT Wheat
10/04/2010
23,000
Bushels
Show Audit
Certificate
Details
Storage Date
10/06/2010
Maturity Date
11/18/2010
Grade
B2
Handling Fee
0
Future Delive...
None
Amend
Merge All
Merge to Lot
Split
Apply
Clear
Re-issued Certificates
Commodity
Trade Date
Quantity
Unit
Price
Location
Identifier
Certificate
Details
Save


Audit Report
Report
Data
View
Export
Utilities
Help
Type
ommodityCertificate
Object Id
5351
Start
01/01/1900
End
Groups
Users
Include Archive
Legal Entity
EntityName
Id
Version
Date
Name
Field Name
Old Value
New Value
5351
0
10/4/10 2:47:34.109 PM EDT
USD/CBOT Wheat/CBOT Approved Warehouses/CBOT/1112/23000.0 Bushels/I:10/06/2010/M:11/18/2010/B:67.0/10/04/2010/Grade:B1
CREATE
5351
1
10/4/10 2:48:20.093 PM EDT
USD/CBOT Wheat/CBOT Approved Warehouses/CBOT/1112/23000.0 Bushels/I:10/06/2010/M:11/18/2010/B:67.0/10/04/2010/Grade:B1
CommodityCertificate
CommodityCertificate saved with no n
5351
2
10/4/10 2:50:34.140 PM EDT
USD/CBOT Wheat/CBOT Approved Warehouses/CBOT/1112/23000.0 Bushels/I:10/06/2010/M:11/18/2010/B:67.0/10/04/2010/Grade:B2
_grade
B1
B2