

TFX Electronic Market Overview

Interest Rate Futures Trading System



TFX

2012/1/30

Ver.1.1

TOKYO FINANCIAL EXCHANGE INC.

Document History

Version	Date	Change Description
Ver.1.0	2010/05/19	• New Document
Ver.1.1	2012/1/30	• Changes associated with listing Six-month Euroyen LIBOR Futures

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1. Document Content and Audience

This document is intended as a general guide explaining overview of TFX Electronic Market for interest rate futures trading with including main features and functionality of TFX trading system (LIFFE CONNECT® Version 9.3) and is aimed at the following audiences:

- TFX member firms and affiliates (i.e. commercial and management contracts, back and middle office management)
- Derivatives trades (i.e. Banks, Institutional Investors, Proprietary Traders, Market Makers)
- Financial markets software developers (i.e. Independent Software Vendors: ISV)

Note: This document is based on current data as of 30th of January 2012. For further understanding of the TFX market please check other documents such as TFX rules.

(TFX members are notified of TFX rule changes as appropriate.)

For further information about TFX market and for latest information, please refer to <http://www.tfx.co.jp/en>.

2. TFX Products and the Trading Hours

Outline of the futures and options that can be traded on TFX market and system operating hours are as follows:

2.1. The Trading Day

2.1.1. TFX Products and Trading Hours

The following contracts are available:

Three-month Euroyen Futures, Six-month Euroyen LIBOR Futures, Over-Night Call Rate Futures, Spot-Next Repo Rate Futures and Options on Three-month Euroyen Futures.

The trading hours of these contracts are as follows subject to change by a notice to TFX members:

	DAY START	PRE- OPEN	OPEN	RESTRICTED OPEN	EVE NING	PRE- CLOSE	CLOSE	DAY END
Tokyo	7:30	8:30	8:45	11:30 - 12:30	15:30	19:58	20:00	22:00
Singapore	6:30	7:30	7:45	10:30 - 11:30	14:30	18:58	19:00	21:00
New York	17:30 (18:30)	18:30 (19:30)	18:45 (19:45)	21:30 - 22:30 (22:30-23:30)	1:30 (2:30)	5:58 (6:58)	6:00 (7:00)	8:00 (9:00)
Chicago	16:30 (17:30)	17:30 (18:30)	17:45 (18:45)	20:30 - 21:30 (21:30- 22:30)	0:30 (1:30)	4:58 (5:58)	5:00 (6:00)	7:00 (8:00)
London	22:30 (23:30)	23:30 (0:30)	23:45 (0:45)	2:30 - 3:30 (3:30 - 4:30)	6:30 (7:30)	10:58 (11:58)	11:00 (12:00)	13:00 (14:00)

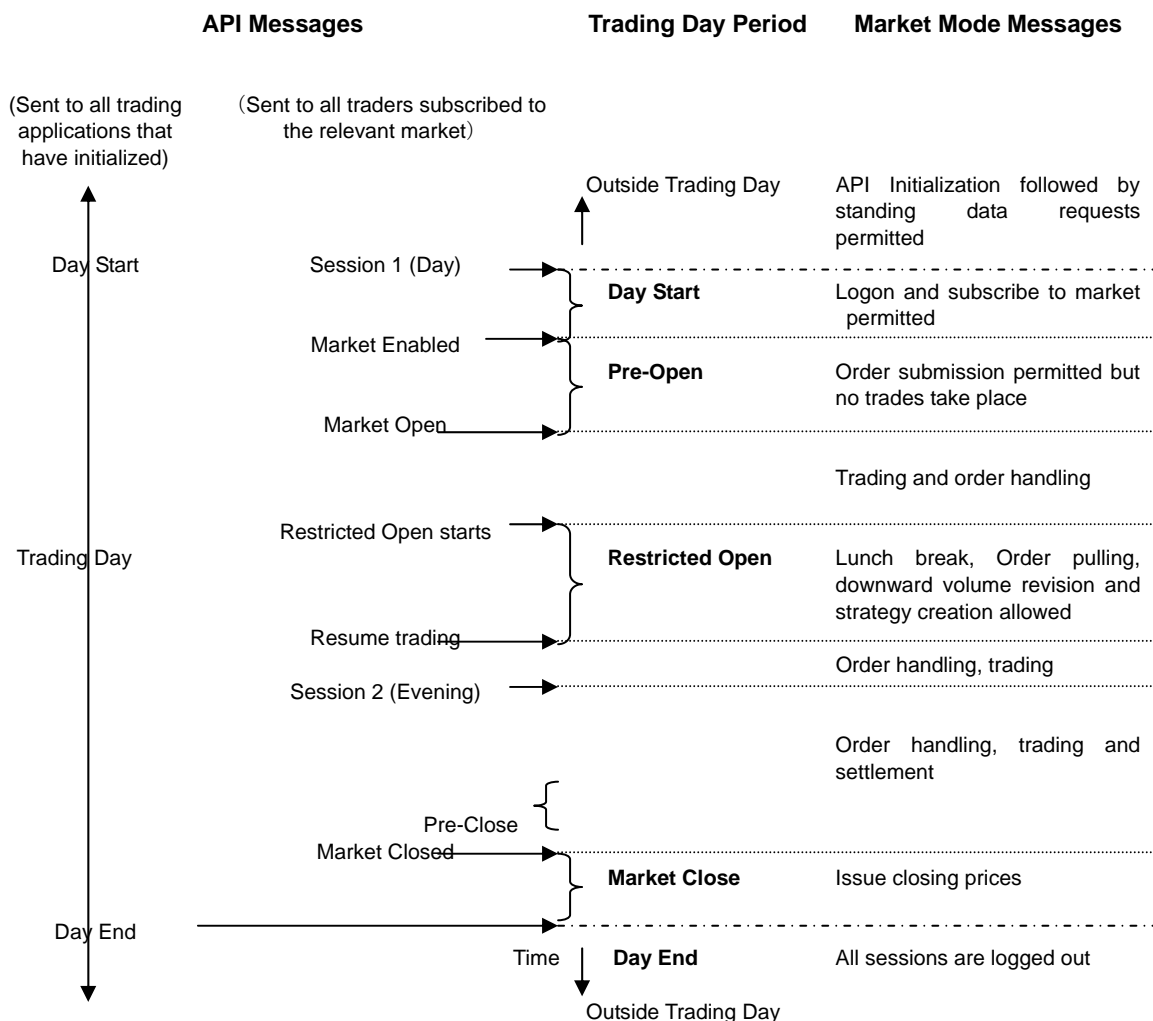
Note: 1) Time in parenthesis is “daylight saving time”.

2) “Evening” refers to evening session start time which is synchronized with daily settlement time.

2.1.2. System Operating Hours

The TFX Trading System (LIFFE CONNECT®) and associated Clearing system are designed to support system operating hours between 7:30 to 22:00. They are separated into a number of distinct periods, as in the following diagram:

From API (Application Program Interface: Software that allows a front end trading application to communicate with the TFX Trading Host) to each front end, messages are sent to notify start and end of each distinct period.



2.1.3. Day Start Period

Day Start is a period from 7:30 to Market Open. From the period, trader logon is enabled. Messages notifying the start and end of the period, etc are sent to the application of such traders. Once logged on, traders can access master data including tradable contract, contract month, and strike prices. After logging on, traders can subscribe to any contracts for which they have the appropriate trading rights.

2.1.4. Pre-Open Period

At the start of the Pre-Open period (15 minutes prior to Market Open), the TFX system sends a message to all the traders who have subscribed to a market indicating that Pre-Open has started.

During the Pre-Open period, the Trading Application can use any of the functions provided by the API, including those used to submit, revise and pull orders.

Traders may only enter the following order types into the market for both outrights and strategies:

- Market On Open
- Limit Orders (including Good Till Cancelled and Good in Session orders)

Other order types, such as CMOs, may only be submitted once the Market Trading Period commences, see "5.4.2 Order Types" for more details. Order matching will not take place during the Pre-Open period. This only occurs during the Market Trading period.

2.1.5. Market Trading Period

Just prior to start of the Market Trading period, there may be choice markets or backwardation in some prices, in other words bids equal to or higher than offers. When this occurs, LIFFE CONNECT[®] will run an Uncrossing Algorithm to calculate the price at which the maximum volume will be traded and automatically execute those trades. These will be opening prices. See "5.10.1. Matching Algorithm during Market Trading period" for more details. Any orders that are executed by using this approach will be traded at a price equal to or better than that at which they were entered.

During the Market Trading Period, the Trading Application may use any of the API functions. The Period is divided into two sessions of Day Session (which consists of Morning Session and Afternoon Session) and Evening Session.

The Morning Session commences following Pre-Open and ends at 11:30 when the Restricted Open begins. Following that, the duration of the Afternoon Session is from 12:30 to 15:30. The Evening Session follows directly on from the afternoon session and finishes at market close.

At the start of the Evening Session, all Good in Session (GIS1) orders submitted with a 15:30 expiry time will be automatically pulled by the Trading Host. The TFX Trading System will send a message to advise members of the change in session.

The settlement prices of futures and options are notified during Market Trading Period. See

“5.15. Procedures for Establishment of Settlement Prices” for more details.

2.1.6. Restricted Open States

The Restricted Open State operates between 11:30 and 12:30. During this time, trading all contracts at TFX are stopped. Orders entered before the Restricted Open State are held in the central order book and The Trading Host will not accept the submission of new orders during this time. Existing orders in the central order book can be pulled or have their volume revised downwards. No revision of prices is allowed.

At the end of the Restricted Open State, there will be an immediate return to full functionality and all contracts will be configured to “Open” at the same time.

2.1.7. Pre-Close Period

At the Start of the Pre-close period, the system sends a message to all members who have subscribed to a market indicating that Pre-Close has started. This message is issued 2 minutes prior to the end of the trading session for each contract. The alert will take the form of a market mode message warning that the market is about to close.

2.1.8. Market Close

Once Market Close has commenced, all trading ceases and no further orders are accepted until the next Pre-Open period.

2.1.9. Day End Period

Day End period lasts for 2 hours following Market Close.

At the beginning of the Day End period, all orders except for GTC (Good Till Cancelled) orders are automatically deleted.

During the period, Trading Host will distribute closing prices for futures to which the trader has subscribed.

At the end of the Day End period, the Trading Host will issue a “Day End” message.

3. LIFFE CONNECT[®] Functionality for the TFX Market

3.1. Overview

TFX Trading system (LIFFE CONNECT[®]) is based on an open system architecture using an API which allows users to build Trading Applications to suit their specific business needs. This offers the potentiality to integrate front/back office trading, settlement, risk management and order routing systems as well as allowing members to trade derivatives and other cash markets on the same screen. The open system approach also allows members and others to access the market in a variety of different ways, utilizing both direct and indirect network solutions.

The main features of LIFFE CONNECT[®] are trading functionality which is core functionality supported by the Trading Host and the front-end functionality which is typically provided by ISVs as part of their front-end trading applications.

3.2. TFX Market Core Functionality

Trade Functionality	Three-month Euroyen Futures (EY)	Six-month Euroyen LIBOR Futures (EL)	Over-Night Call Rate Futures (ON)	Spot-Next Repo Rate Futures (SN)	Options on Three-month Euroyen Futures (EYO)
Trade Matching/Trade Priority					
Price/Time Priority algorithm	✓	✓	✓	✓	✓
Strategies					
2 x 1 Ratio Spread					✓
Butterfly	✓	✓	✓	✓	✓
Call / Put Spread					✓
Condor	✓	✓	✓	✓	✓
Diagonal Calendar Spread					✓
Guts					✓
Ladder					✓
Straddle Calendar Spread					✓
Box					✓
Calendar Spread	✓	✓	✓	✓	✓
Combo					✓

Trading Functionality	Three-month Euroyen futures EY	Six-month Euroyen LIBOR Futures EL	Over-Night Call Rate Futures ON	Spot-Next Repo Rate Futures SN	Options on Three-month Euroyen futures EYO
Straddle					✓
Strip	✓				✓
Pack	✓				
Bundle	✓				
Strangle					✓
Iron Butterfly					✓
Diagonal Straddle Calendar Spread					✓
3 x 3 ways					✓
Conversion/Reversal (Synthetic)					✓
Jelly Rolls					✓
Iron Condor					✓
Order Types					
Limit orders	✓	✓	✓	✓	✓
Market orders	✓	✓	✓	✓	✓
Market On Open orders	✓	✓	✓	✓	✓
Contingent Multiple orders	✓	✓	✓	✓	✓
Ex-pit orders	✓	✓	✓	✓	✓
Request for Quote(RFQ)	✓	✓	✓	✓	✓
Order designation/parameters					
Good in Session with session identifier (GIS)	✓	✓	✓	✓	✓
Good Till Cancelled with date (GTC)	✓	✓	✓	✓	✓
Complete Volume (CV)	✓	✓	✓	✓	✓
Minimum Volume (MV)	✓	✓	✓	✓	✓
Immediate & Cancel (IC)	✓	✓	✓	✓	✓
Order mechanisms					
Batch order submission/revision/pulling	✓	✓	✓	✓	✓
Order revisions					
Volume	✓	✓	✓	✓	✓
Price	✓	✓	✓	✓	✓
GTC Date	✓	✓	✓	✓	✓
Trading and Settlement values					
Trading	5/1000	25/10000	5/1000	5/1000	5/1000
EDSP	1/1000	1/10000	1/1000	1/1000	—
Intra-Day Settlement	5/1000*	25/10000*	5/1000*	5/1000*	5/1000*
Settlement	5/1000*	25/10000*	5/1000*	5/1000*	5/1000*
Closing	5/1000*	25/10000*	5/1000*	5/1000*	—

* On the last trading day, EDSP, Settlement prices may be published at 1/1000 or 1/10000.

Please note that certain functionality will not be available during the Restricted Open State (Refer to 2.1.6 Restricted Open for details).

4. Market Access

4.1. Overview

Access to TFX market may be direct or indirect (i.e. through an intermediary). Only members holding the relevant trading subscriptions will be able to access the market directly through their trading applications. Non-members will only be able to conduct business at TFX by placing their orders through an intermediary who does hold the appropriate access rights. A TFX member firm may provide this indirect access by utilizing an electronic order routing facility.

4.2. Trading Rights

In order to gain direct access to TFX, a member must

- Obtain membership of the TFX,
- Have permission from TFX to use the System,
- Register Trading Officer for trading by the member,
- Have a clearing agreement with a clearing member if they are not a clearing member themselves,
- Have successfully completed a Market Entry Test (MET)

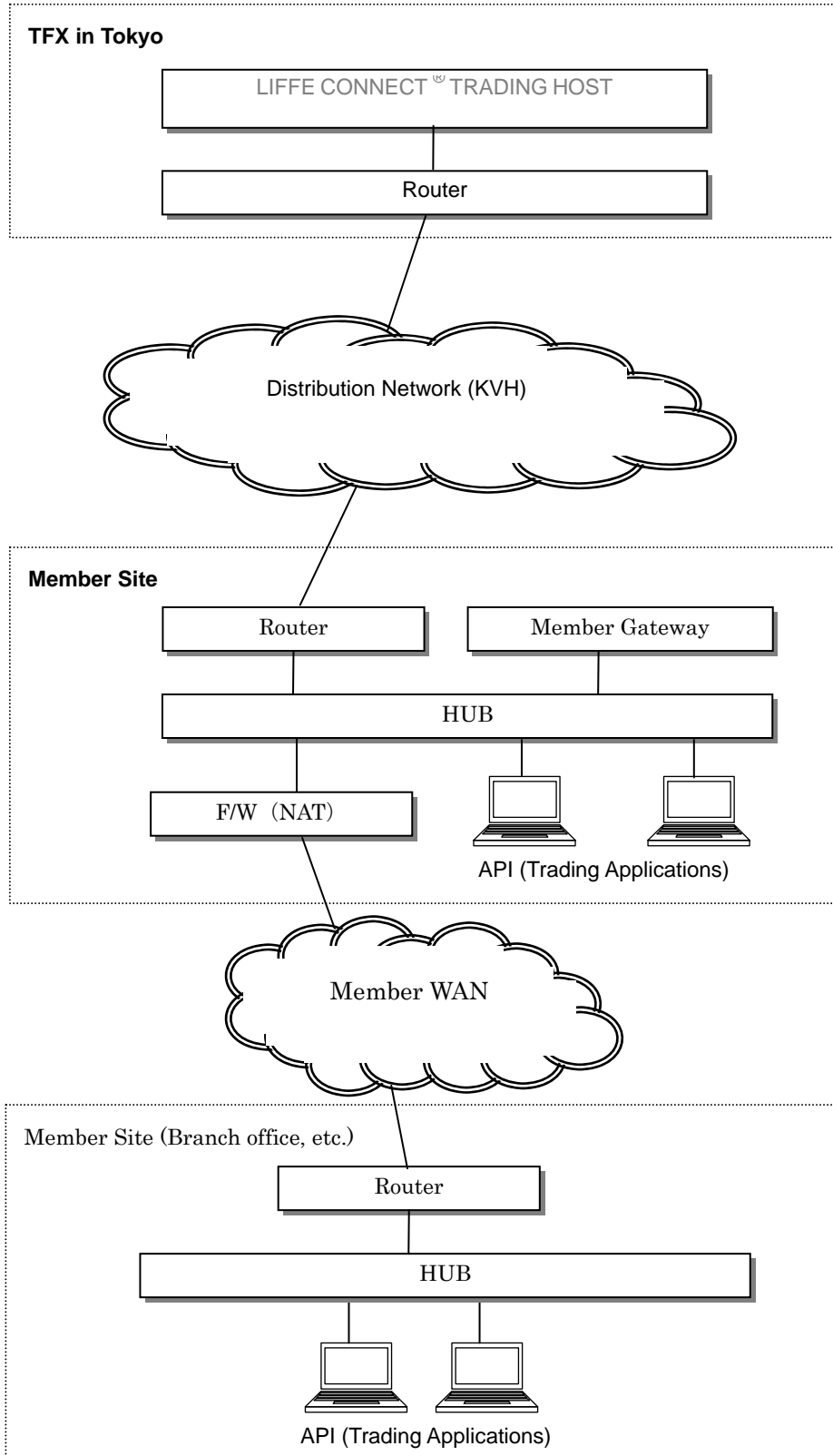
4.3. System Configuration

The Trading Application must communicate with the TFX market through the LIFFE CONNECT[®] API software.

The API can reside on the Trading Application workstation or a server based application and communicates with the Trading Host via the TFX network as detailed in the following sections.

4.4. Direct Access from Japan to TFX Market (1)

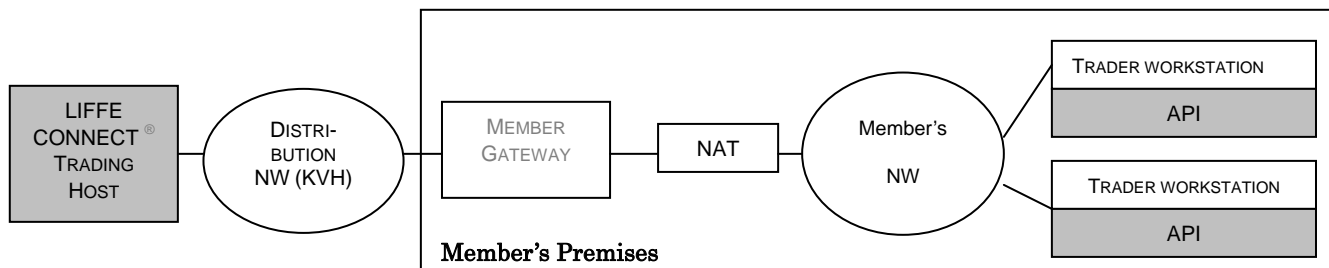
Typical system configuration for Japan based access to the TFX market.



4.5. Direct Access from Japan to TFX Market (2)

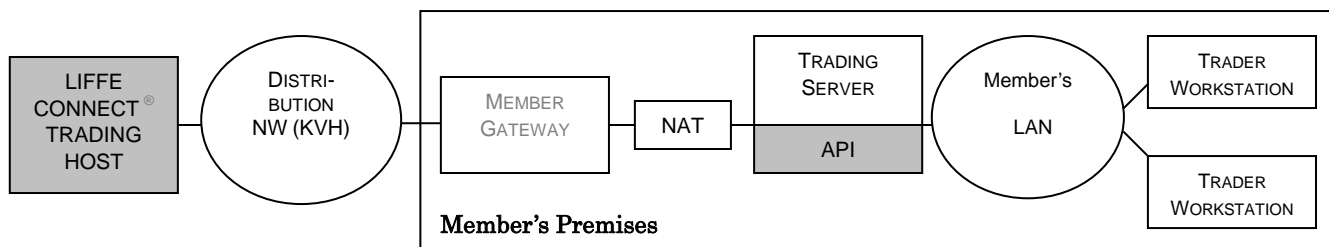
The following diagrams represent typical system configuration for access to TFX CONNECT® via ISV solutions using either single or multiple API implementation.

Figure 1: Multiple API Implementation



- The Network Address Translator (NAT) represents the demarcation point between TFX and the member.
- Each trader workstation accesses the TFX Market via an independent LIFFE CONNECT® API.

Figure 2: Single API Implementation

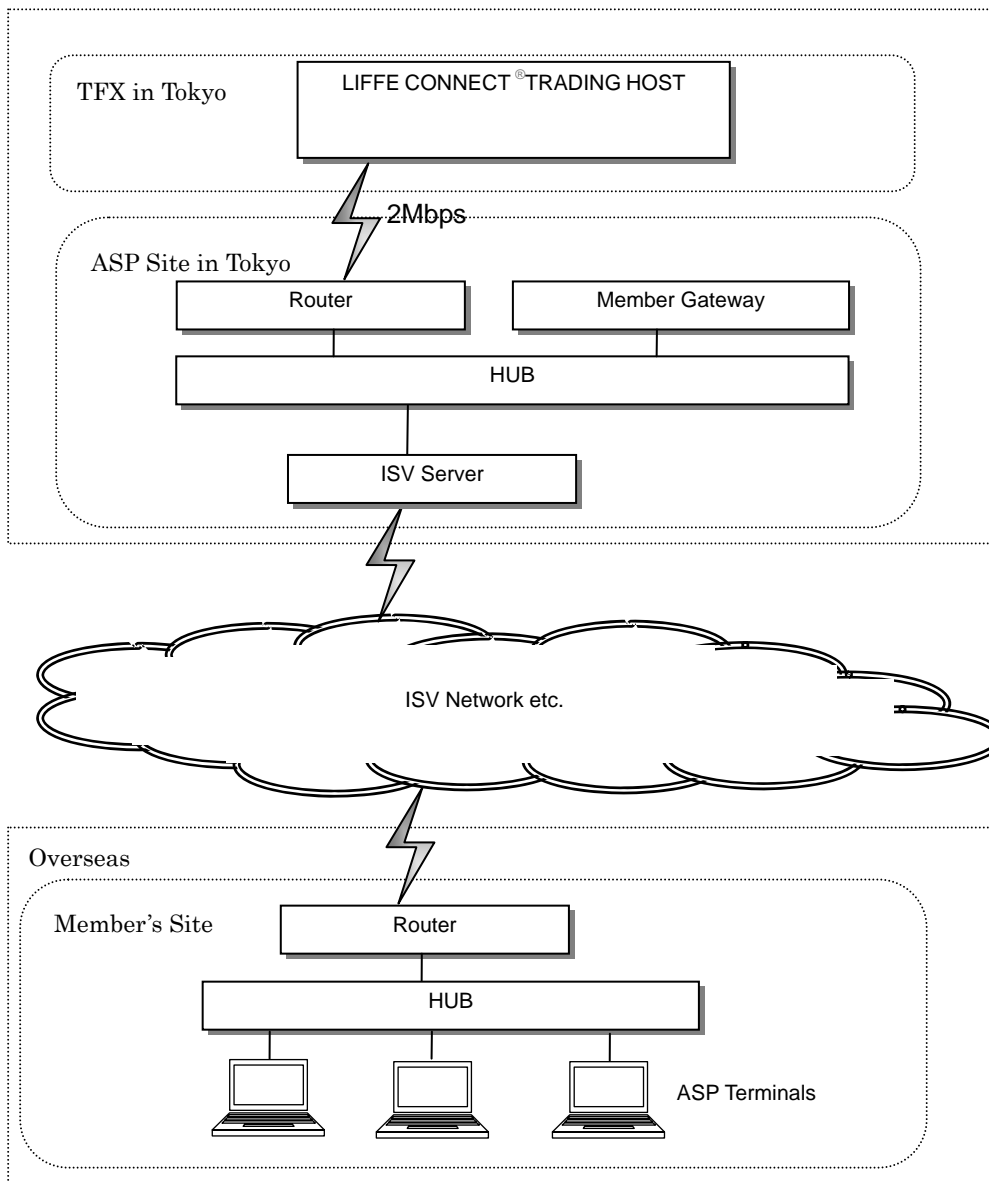


- The Network Address Translator (NAT) represents the demarcation point between TFX and the member.
- Each trader workstation accesses the TFX Market via a single API running on the Trading Server.

Note: The above diagrams represented are typical network configurations to which some variations may apply. Members need to inform TFX prior to deciding on the configuration.

4.6. Direct Access from overseas to TFX Market

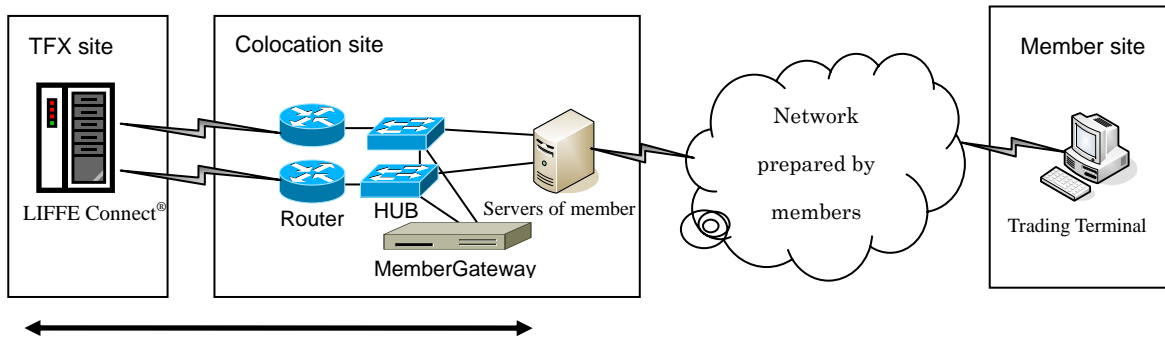
The following diagrams represent an example of system configuration for access from overseas member site to TFX CONNECT[®] via ASP solutions. An ISV will provide members ASP Terminals and network which will allow members to directly access the TFX market from overseas. The number of vendors providing such services may increase in the future.



In addition, the following solution (colocation service) is being planned.

Colocation Service (← → provided by TFX)

Members will prepare their own servers and network in to the Colocation site near the TFX site for trading.



For the colocation site specified network and servers will be provided by TFX. (Redundant configuration is possible)

4.7. Trading Officer

Members are required to submit orders via Trading ID or ITM (Individual Trading Mnemonic) provided by TFX.

To start trading at TFX Market, members are required to register a Trading Officer who controls members business via Trading ID (Trading Officer).

Members may also grant trading access to their clients via order routing systems. Where such access is enabled, the members should ensure that client orders are appropriately vetted before they are submitted to TFX.

All orders (house or client account) must be submitted via an ITM and under the appropriate supervision of the Trading Officer who is required to identify the immediate source of all orders and report to TFX and must implement suitable security measures for passwords and security keys such that only authorized individuals may gain trading access.

4.8. Replacement Trader ITMs

Individual traders may nominate, using their Trading Application, a replacement ITM to handover all non-GTC orders. Such Replacement ITM must be within the same member firm as the nominating trader.

Using their Trading Application, a trader may choose to handover all its non-GTC orders to its latest nominated replacement. On logging off, orders of the nominating trader will be transferred. (GTC orders will still remain in their system against the nominating trader's ITM). Any orders transferred in this manner will retain their original time-stamp; however, the system will not retain a record of the original trader who submitted the order.

In the event of a failure of the Trading Application or of the network link from the Application to the Trading Host, the Host will automatically transfer any existing non-GTC orders to the nominated replacement ITM, if one exists and is logged on.

5. Trading

5.1. Anonymity

Trading Anonymity is a key aspect of trading on the TFX market. Traders in the market will not be aware of whose orders they are viewing or trading against, either before or after a trade.

5.2. Overview of the Trading Process

Trading will take place through the submission of orders, using the member's Trading Application into the TFX central order book. Orders may be for individual contract months, individual option series or for strategies.

An order will be considered firm only upon receipt by the Trading Host and may be traded at anytime subsequently. Traders have the ability to revise their orders (changing price, volume or a GTC expiry date), and orders may subsequently be withdrawn at any time, either individually or as a batch.

The system distributes any changes to the order book, whether they are new orders, order revisions or trades, to any trader who has subscribed to the relevant market. In addition traders will be able both to view and trade in depth for individual contract month, series and strategy orders. These features enable the trader, using their Trading Application, to continuously track full market movement.

Traders may also access from their Trading Terminals all prices available (including those outside the best bid and offer) plus aggregate volume in a given contract month/series/strategy).

Traders, using their Trading Application, may also maintain their own local order book.

5.3. Market Information

5.3.1. Viewing Market Information

Traders must subscribe to a market before any information is forwarded to them by LIFFE CONNECT®.

Note: A trader can still submit orders or RFQs to any market and receive trade confirmations on orders without subscribing to any market and receive trade confirmations on orders without subscribing to the market in question.

The Trading Application can subscribe to a market at one of three levels:

- I. Contract level
- II. Contract month level
- III. Market level

The Trading Application may also make the choice, when subscribing, of whether or not to receive RFQ notices for the market.

Subscribing to a market may be done at any time during the Trading Day.

On receiving a request to subscribe to a market, the Trading Host will send an acknowledgement to the Trading Application and will provide some immediate information.

- A market mode status, which reports whether the market is open for trading or not.
- A market depth update, which provides the prices and respective aggregate volumes in that market at the time of subscription. This update will not be sent if the market is closed or empty.

Subsequently, a stream of market information will be provided, starting when the market enters Pre-Open and ending when the market closes. The stream of information consists of:

- Warnings of market mode changes, for example, opening and closing the market, or suspending and activating price limits.
- Market information, which provides updates of the best buy and sell prices and the aggregate volumes available at those prices, as well as traded price and volume information
- Order book and market updates, which provide updates whenever there is a change in the central order book affecting prices or aggregate volumes.

At appropriate times, TFX will publish the EDSP, intra-day, settlement and closing price information. This will also be sent to all those members who has subscribed to the particular market.

The market update information can be stopped at any time by exiting from the market. The Trading Application can exit market at the same levels as it can subscribe.

5.4. Entering and Managing Orders

5.4.1. Submitting Orders

Using their Trading Application traders may submit orders to the system at any time from the start of the Pre-Open period until the market closes. The trader need not subscribe to a market to submit an order.

Orders can be submitted either individually or in batches. When an order is submitted to the Trading Host, it is considered firm once the Host has confirmed it as valid. At that point, it is time stamped. Orders must specify the price in ticks, of the contract month, series or strategy and the volume, in lots, to be bought or sold at that price. Orders that do not trade to completion and are not of a type that require immediate completion are stored in the central order book.

Members may either execute business for house or client account. The LIFFE CONNECT® system provides a facility to allow members executing business on behalf of another member to allocate the business done directly to the originating members using an account allocation field on their Trading Application.

TFX is allowed to limit the maximum lot of an order (including strategies) that can be submitted in a single submission via a trader's ITM. If exceeded, the order will be rejected.

5.4.2. Order Types

Orders can be of the following types:

- Limit orders: These are executed at the price stated or better. Unless otherwise specified, any residual volume from an incomplete limit order is retained in the central order book until pulled or traded (or cancelled automatically at the end of the day.)
- Market orders: These are executed at the best price available in the market when submitted until all available volume at that price has been traded. The order then executes at the next best price and so on until all the order volume has been filled. Any residual volume from an incomplete market order is immediately cancelled. If the market is not open, market orders are rejected.
- MOO (Market on Open) orders: These may be submitted to the Trading Host during the Pre-Open period. MOO Orders will be executed at the calculated opening price at Market Open. Where a MOO order traded in part at Market Open, the residual volume will be converted to a limit order at the calculated opening price of that order. If no trade happens at Market Open, the MOO order will trade with any matching MOO order at the mid-price of the opening bid and offer. Any residual MOO orders volume will then convert to a Limit order at this mid-price. Where no bid or offer exists at Market Open, the MOO order will be cancelled by the Trading Host.

In addition, modifiers can be attached to the above order types as follows:

- CMO (Contingent Multiple Order): These orders contain two or more component orders. Trading of any component is contingent on being able to fully trade all components within the contingent order. Contingent orders allow the trading of contract strategies across two separate contracts, therefore allowing traders to submit inter-contract spreads to LIFFE CONNECT[®]. They cannot be submitted during the Pre-Open, as all order components must exist in open markets.
- GIS (Good in Session): These orders will only be able to trade during the session in which it is submitted. All orders of this type entered during the Day session will be automatically pulled by the Trading Host at the start of Evening session.
- GTC (Good Till Cancelled): These remain in the central order book until either they trade, or are pulled by the submitting trader, or the contract expires. GTC orders may be entered with or without a designated cancellation date. If they have the designated date, they will automatically be pulled at the end of trading on that date. Combination of GTC and MOO is enabled. If so designated, unmatched MOO orders will convert to a Limit GTC order at the price calculated at Market Open or mid-price of the opening bid and offer.

In the event that a GTC order trades when the trader associated with that order is not logged onto the system, the system will update the order volume but the trader will not receive a trade notification message. Upon logon to the system, the trader will receive the updated order information from the Host and will need to check his order book to confirm the order status.

GTC orders cannot be transferred to another trader. In the event of a failure, a trader may withdraw GTC orders by calling TFX and instructing TFX Officials accordingly.

- IC (Immediate and Cancel): These are executed against any existing orders at the stated price or better, up to the volume of the IC order. Any residual volume from the IC order is then immediately cancelled. IC modifier can be added to limit orders and will be added to Market orders automatically if no other designation is made.
- CV (Complete Volume): These orders are only executed if there is sufficient volume available at the stated price or better, for them to execute fully. Otherwise the entire order is cancelled.
- MV (Minimum Volume): Traders may state a MV for an order. If the MV cannot be executed

immediately, the whole order is cancelled. Any residual volume from an incomplete MV order is retained in the central order book and will trade as normal. (I.e. with no further MV constraints.)

- Strategy orders: These are combinations of individual contracts that are dealt with as a single order.

The following table details the permitted modifiers that can be specified with price and volume for limit and market orders:

Order Type		Price	Volume	MV	CV	IC
Limit	Normal	✓	✓	✓	✓	✓
	GTC	✓	✓			
	GIS	✓	✓			
Market	Normal		✓	✓	✓	
	CMO*	✓	✓			

*Price and volume or just the price can be submitted.

5.4.3. Batch Orders

- Submit up to 16 outright Limit orders in the same contract in a single transaction
- Revise up to 64 outright Limit orders in the same contract in a single transaction
- Pull up to 64 outright or strategy Limit orders in the same contract in a single transaction.

It is important to bear the following in mind:

- The matching of bids and offers is not permitted between orders within a single submission or revision transaction.
- On updating a bid and ask, the worsening prices will be revised first in order to avoid the inadvertent matching of orders.

5.4.4. MM Orders

- Market Making Orders (MM Orders) can be used only via TFX- recognized Market Makers. Via designated trading ID, MM Orders can be submitted both bids and offers against a contract simultaneously.
- For a contract, maximum 65 of orders (A MM Order consists of a bid and an offer.)

5.5. Block Trades

5.5.1. Block Trades (Outright)

The Block Trade Facility permits a member transaction of significant size on the Exchange without the price/execution uncertainties that may occur in the execution of large volume orders.

Order size must satisfy the minimum volume threshold for the contract which may be changed by the Exchange as necessary.

5.5.2. Block Trades (Strategy)

In addition to outright, members are allowed to enter strategy block trades as follows:

Each leg volume should meet minimum volume threshold as specified by the Exchange. This may be amended by the Exchange as necessary.

Futures	Strategy Types	Three-month Euroyen Futures (EY)	Six-month Euroyen LIBOR Futures (EL)	Over-Night Call Rate Futures (ON)	Spot-Next Repo Rate Futures (SN)
	Calendar Spread	○	○	○	○
	Butterfly	○	○	○	○
	Condor	○	○	○	○
	Strip	○	/	/	/
	Pack	○	/	/	/
	Bundle	○	/	/	/

	Strategy Types	Options on Three-month Euroyen futures (EYO)
Options	Call Butterfly	○
	Put Butterfly	
	Call Spread	
	Put Spread	
	Call Calendar Spread	
	Put Calendar Spread	
	2×1 Ratio Call Spread	
	2×1 Ratio Put Spread	
	Iron Butterfly	
	Combo	
	Strangle	
	Call Ladder	
	Put Ladder	
	Straddle	
	Condor (Put)	
	Condor (Call)	
	3-Way : Call Spread versus Put	
3-Way : Put Spread versus Call		

5.6. Strategy Trading

Traders may enter orders and/or RFQs for the recognized strategies for futures and options as listed in Appendix A. (For details, please refer to 5.11. Request for Quotes (RFQ))

5.7. Implied Strategies

LIFFE CONNECT[®] offers an implied strategy trading facility for selected strategies as listed below. There are two different ways of processing implied:

- Implying In orders which build contingent strategy orders from existing outright orders;
- Implying out orders which build contingent outright orders from existing strategy orders.

Futures — The Trading Host will calculate (not publish) implied in prices for Calendar Spread, Butterfly, Condor, Strip, Pack, and Bundles.

It will also calculate and publish implied out prices for Calendar Spread.

Options — The Trading Host will calculate both implied in and out prices and publish only implied out prices for

Call/Put Spread, Call/Put Calendar Spread, Call/Put Diagonal Calendar Spread, Strangle, Straddle.

5.7.1. Implied in Order Process for Options

Implied in prices are derived from explicit prices in the outright legs.

Example

TRADER	STRIKE	BID	ASK/OFFER
Trader 1	Dec 99250 P		10 Ask 150 lots
Trader 2	Dec 99500 P	25 Bid 100 lots	
Trader 3	D (P) Dec 99500/99250	15 Bid 100 lots	

Explanation: in the above example, Trader 1 enters 150 lots at 10 offers in the Dec 99250P; Trader 2 enters a 25 bid for 100 lots in the Dec9950P; Trader 3 has a client who is interested in trading the Dec Put spread and therefore creates this strategy market. Upon successful creation of this strategy, the Trading Host will hold a hidden implied in price of 15 Bid for 100 lots.

5.7.2. Implied Out Order Process for Options

Implied out prices are derived from strategy prices and explicit leg prices to produce an implied price in the respective outright leg.

Example

TRADER	STRIKE	BID	ASK/OFFER
Trader 1	D (C) Dec 99250 / 99500	60 Bid 100 lots	
Trader 2	Dec 99250 C		95 Ask 100 lots
Implied price from Trader 1	Dec 99500 C		35 Ask 100 lots

Explanation : In the above example, Trader 1 enters an order in the Dec Call Spread to buy @ 60 for 100 lots; Trader 2 enters an order in the 99250 Calls to sell 100 lots @95. The Trading Host will then generate an implied out price of 100 lots @ 35 Offer in the Dec 99500 Calls.

5.7.3. Implied In Order Process for Futures

Implied In prices are derived from explicit prices in the outright legs.

Example

TRADER	CONTRACT MONTH	CONTRACT MONTH	CONTRACT MONTH
	DEC	MAR	JUNE
Trader 1	99.000 Bid 100 lots		
Trader 2		99.100 Offer 100 lots	
Strategy	-0.100 Bid 100 lots Implied		

Explanation: in the above example, two explicit quotes in separate months generate an Implied in strategy quote. Trader 1 enters a bid of 99.000 for 100 lots in Dec. Trader 2 enter an offer of 100 lots @99.100 in Mar. This implies a -0.100 bid for 100 lots in the Dec/Mar spread. Only outright explicit prices are used in this calculation.

This price is calculated and held in the Host. An incoming strategy entered that matched this price would automatically trade the explicit outright orders which created the implied strategy.

5.7.4. Implied Out Order Process for Futures

Implied out prices are derived from strategy prices and explicit outright prices to produce an implied out price in the respective outright leg.

Example

BUY/SELL	CONTRACT MONTH	CONTRACT MONTH	CONTRACT MONTH
	DEC	MAR	JUNE
Bid	99.480 Implied 100 lots	99.580 explicit 100 lots	
Offer	99.500 explicit 100 lots	99.600 Implied 100 lots	
Explicit price for Dec/Mar spread	-0.100 Bid 100 lots		

Explanation : in the above example, two explicit outrights have been entered as well as an explicit strategy- the resulting implied quotes are shown in bold. From the bid in strategy and the explicit offer of 100 lots at 99.500 in Dec, an Implied out offer price of 100 lots at 99.600 has been generated in March. And the strategy price and the bid of 99.580 for 100 lots in Mar will imply out a bid of 99.480 for 100 lots in Dec. Any trade with the implied quote will automatically facilitate the Strategy trade with the explicit outright.

Implied out functionality is available across all contract delivery months and will be generated both forwards and backwards. An implied price needs to have an explicit as its parent for it to be generated.

5.8. General Rules; Strategy Trading

LIFFE CONNECT[®] Trading Host enforces different rules whenever any strategy is created:

- Only strategies defined as LIFFE CONNECT[®] recognized will be allowed to be entered into the system;
- The strategies are always defined from the buy side (i.e. Futures Calendar Spread would be defined as buying the near month and selling the far month).
- Near month always has to be defined before far month (i.e. with a Futures Calendar Spread, buying the far month and selling the near month would be rejected).
- Once created, strategy markets are unique and are identified by a LIFFE CONNECT[®] AMR(Automated Market Reference). AMRs are used to uniquely identify each possible outright and strategy market. Each AMR is a 15-byte array.
- At the end of trading day, the strategy is hidden by the host so the AMR given on creation remains with the strategy until its expiration.
- An implied price will not be awarded trade priority even if it improves the best price in the market.

A strategy market, which is created during a trading session, will be returned to the market in the following business day if it contains GTC orders. In all other cases, the strategy markets will be deleted overnight.

A major advantage of strategy implementation in the LIFFE CONNECT[®] Trading Host is that it totally remove legging risk (i.e. by avoiding the possibility of price slippage).

When any one expiry month for a given strategy expires, the GTC orders and strategy market

will be deleted from the Trading Host.

When two strategy orders trade. The traded price of each leg will be calculated by maintained algorithm.

5.9. Managing Orders

5.9.1. Withdrawing Orders

An order can be withdrawn (pulled) once it is stored in the central order book. Using the Trading Application, the trader may withdraw orders either individually or as a batch. Batches may consist of:

- all orders in a given contract
- all orders in a given contract month
- all orders in a given series
- all orders in one class (i.e. all puts or all calls) for a given contract
- all orders in a specified list (batch)

The originating trader can pull orders even when not subscribed to the individual contract month, series or strategy in question.

The system will send an acknowledgement of a successful pull operation to the Trading Application. At the same time it will also trigger "order book update" messages to all traders who are subscribed to that contract, to update them with any price and volume change.

When an existing order in the market is to be amended using a Trading Application, the "revise order" function should be used. The Trading Application should not pull the original order and then re-submit a new one as the time priority of the original order will be lost.

In addition, TFX may cancel an order upon request of members (trading officer).

5.9.2. Revising Orders

An order can be updated once it is stored in the central order book. The Trading Host allows volume, price and GTC expiry dates to be changed. If the volume of an order is increased or its price is changed, then the order loses its original time-stamp and is re-stamped with the current time. A reduction of volume or a change in the cancellation date has no effect on the time-stamp.

The originating trader can revise orders even if not subscribed to the contract in question.

The system will send the Trading Application an acknowledgement of the successful completion of the change in the central order book. It will also trigger order book updates and market information messages to all traders subscribed to that market, to update them with any price and volume changes.

5.9.3. Transferring Orders

Individual traders may nominate a replacement ITM, using their Trading Application. A trader may then choose to perform a 'handover'. This means that they transfer all their non-GTC orders to their nominated replacement and are logged off. Orders transferred in this manner will retain their original time-stamp.

If the Trading Application has not nominated a replacement when a handover is attempted, or if the nominated ITM is not logged on, then the Trading Host will log the trader off and pull all his non-GTC orders. On successful transfer of orders from one ITM to another, the system will notify the replacement ITM's Trading Application and provide a list of the transferred orders. There is no facility that permits the transfer of selected orders only.

5.9.4. Viewing Submitted Orders

A trader's Trading Application will maintain a complete list of the trader's orders in the market and provide facilities for the trader to view these orders at any time. The system will send a message to the Trading Application whenever there is any trade from one of the trader's orders. This notice identifies the specific order affected (by order identifier) and carries the traded price and the volume at that price and the residual volume, if any. This will enable the Trading Application to keep track of the status of all a trader's orders.

In addition, the Trading Application may make a specific 'retrieve order' request on the system.

This is used following a Trading Application failure where the trader is reconnecting during the same trading day. This requests a list of all the trader's non-GTC orders that were pulled at the point of failure (They will be pulled automatically by the Host if no transfer to a nominated replacement was possible when the failure occurred).

5.9.5. MTM— Master Trader Mnemonic

Orders and trades by an ITM of a member can be monitored by the MTM of the member and can be pulled by the MTM.

5.10. Trade Matching and Reporting

5.10.1. Market Opening Price—Uncrossing Algorithm

Just prior to start of the Market Trading period, opening prices will be calculated based on the Uncrossing Algorithm (c.f. 2.1.5. Market Trading Period). In each pass of the Uncrossing Algorithm, the system is matching the best bid and the best offer in time order. After matching is complete for a pass there may be residual volume in one half of the market. This will form the best bid or offer in the next pass or will be the best shown in the market if uncrossing completes in that pass.

5.10.2. Matching Algorithm during Market Trading Period

At present, Price/Time Priority algorithm is adopted for all the contracts traded on LIFFE

CONNECT®.

In the Price/Time Priority Algorithm under the new system, if there are multiple orders with identical price, any such orders derived from implied function (including strategy orders) will be subordinated to the other orders.

5.10.3. Trade Reporting

When a trade occurs within the central order book, the owners of the orders that have traded will be sent with a notification. Any other Trading Applications that are subscribed to the relevant market will be sent an 'order book and market update' message. This will inform them of the price and volume changes resulting from the trade.

When an order causes more than one trade, the following occurs:

- an order trade notice message is sent to the owner of the new order instigating the trades
- traders owning the rest of the orders are sent a respective order trade notice message
- an order book and market update message is sent to all the members informing them of the price and volume changes resulting from all the trades
- In case of strategy trades, outright market is updated to all members informing them of the effective traded leg volumes of the consequent outright markets.

5.11 Request for Quotes (RFQ)

The trader, using his Trading Application, may submit a Request for Quote (RFQ) for any futures/options contract month, series or strategy, without having to subscribe to the market. RFQs are a request for price, for an optionally specified volume (which may be of any size), in a specific contract month, series or strategy. If the volume is not specified, the RFQ is regarded as being for minimum of lots as TFX defines.

An RFQ is only permitted where there has not been an RFQ for an equivalent or greater size in the contract month or strategy concerned within the last several seconds as TFX defines.

When an RFQ is submitted, the Trading Host will notify any Trading Application that has subscribed to the relevant market and has chosen to receive RFQs accordingly.

Traders will be able to enter orders and/or RFQs for LIFFE CONNECT® recognized strategies

5.12 Price Limit

All incoming orders are subject to price limits¹. These are in place to prevent the execution of orders with manifest pricing errors. Futures and options contracts are treated differently.

¹ With the exception of ex-pit trades

5.12.1. Futures Price Limit

For an individual futures contract, the price limits are calculated based on prices prevailing in the market.

5.12.2. Options Price Limit

For an individual options contract, the price limits are calculated using the options pricing model based on the 'fair value' price calculated.

5.12.3. Monitoring

The price limits are monitored throughout the trading day and may be adjusted by TFX officials depending on the market conditions. Orders submitted that fall outside price limits will be rejected by the Trading Host and the originating trader will be notified via their trading application. Price limits apply during the market trading period and the Pre-Open period.

5.13. Termination of a Trading Session and Subsequent Re-start

Trading on LIFFE CONNECT[®] may be suspended if circumstances are preventing the orderly conduct of business. TFX will send out a message to all market users informing them of such a suspension. In the event that trading on LIFFE CONNECT[®] in one or more contracts is restricted, suspended or halted, the Market Trading period will follow the Pre-Open period as in the regular operational sequence.

5.14. Market Monitoring

To keep integrity of the market, TFX Officials are monitoring trading to identify any potential breaches of obligations or rules.

All events (e.g. orders submitted, revised, withdrawn, traded, traders logging on/off, etc.) will be logged by LIFFE CONNECT[®] for audit (and possible investigation) purposes.

5.15. Procedures to Calculate Daily Settlement Prices (DSP), etc.

For futures, DSP, contingent intra-day DSP and Official Closing prices for each contract are determined by TFX.

For options, the Daily Settlement, contingent intra-day DSP for each contracts are determined by TFX.

For both futures and options, the DSP calculation procedure is run by TFX Officials in the trading session and the prices are published via the LIFFE CONNECT[®] API to subscribed members during the trading day. The Official Closing prices for futures are determined and published after the Market Close.

5.15.1. DSP for Futures Contracts

The procedure for settling each futures contract is as follows:

At the settlement time, LIFFE CONNECT[®] takes a feed of reported prices in some period before the time for the settlement of the contract. This period is known as the 'Settlement Range'. The settlement price is calculated after taking account of:

- The trade weighted average of the prices traded during the Settlement Range;
or
- Where there is no trade weighted average, the spread relationship with other contract months of the same contract, etc.

5.15.2. DSP for Options Contracts

The procedure for settling each option contract is as follows:

- For each series, implied volatilities of the trading day are calculated by the options pricing model.
- Having established the settlement volatilities, settlement prices are calculated for every series in each such contract. These are communicated, via the Trading Host and the API, to the Trading Applications of relevant members (i.e. those subscribing to the markets);

6. Publication of Market Information

Quote Vendors (QVs), Independent Software Vendors (ISVs) and Members require access to LIFFE CONNECT[®] API, purely to monitor prices in the order book ("market depth").

The ITA Wave continues to disseminate best bid and offer prices, including implied prices, and traded prices, with associated volumes.

Quote Vendors providing TFX's market information are listed in the address below.

<http://www.tfx.co.jp/en/trading/mktvdr.shtml>

Attachment A: LIFFE CONNECT[®] Recognised Strategies

A.1 <Strategy Codes for Options Strategies>

The table below lists the LIFFE CONNECT[®] recognized options strategies that may be traded on LIFFE CONNECT[®]. The components of an option strategy (whether a buy or sell order) must always be created from the BUY perspective, as defined below.

LIFFE CONNECT [®] STRATEGY CODE	STRATEGY	STRATEGY DEFINITION/STRUCTURE (Sequence in which the strategy order must always be entered, irrespective of whether it is a buy or a sell order)
A	Jelly Roll	Buy a reversal in one serial month and sell the reversal in another serial month to produce a synthetic spread between both months. Sell call, buy put at same strike in near month, buy call, sell put at same strike in far month (strike price in far month need not equal strike price in near month).
B	Call Butterfly	Buy call, sell two calls at higher strikes, buy call at a higher strike (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
	Put Butterfly	Buy put, sell two puts at higher strikes, buy put at a higher strike (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
D	Call Spread*	Buy call, sell call (same month) at higher strike
	Put Spread*	<ul style="list-style-type: none"> ● Buy put, sell put (same month) at lower strike
E	Call Calendar Spread	Sell near month call, buy far month call (Same strikes across the two months)
	Put Calendar Spread	Sell near month put, buy far month put <ul style="list-style-type: none"> ● (Same strikes across the two months)
F	Call Diagonal Calendar Spread	Sell near month call, buy far month call at a different strike
	Put Diagonal Calendar Spread	<ul style="list-style-type: none"> ● Sell near month put, buy far month put at a different strike
G	Guts	Buy call, buy put at higher strike

LIFFE CONNECT® STRATEGY CODE	STRATEGY	STRATEGY DEFINITION/STRUCTURE (Sequence in which the strategy order must always be entered, irrespective of whether it is a buy or a sell order)
H	2x1 Ratio Call Spread	Sell call, buy two calls at higher strike
	2x1 Ratio Put Spread	<ul style="list-style-type: none"> ● Sell put, buy two puts at lower strike
I	Iron Butterfly	Buy the straddle, selling Strangle. This must be entered in the following sequence, which equates to the same: Sell put, buy put and call at higher strike. Sell call at even higher strike. (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
J	Combo	Sell call, buy put at lower strike
K	Strangle	<ul style="list-style-type: none"> ● Buy put, buy call at higher strike
L	Call Ladder	Buy call, sell call at higher strike, sell call at even higher strike (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
	Put Ladder	Sell put, sell put at higher strike, buy put at even higher strike <ul style="list-style-type: none"> ● (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
M	Option Strips	Comprised of a minimum of 3 and a maximum of 8 outright strikes being either all call or all puts, but not a mixture of calls and puts; or Comprised of a minimum of 2 and a maximum of 4 matching calls and puts of the same strike price (i.e. straddles) to form a straddle strip
N	Straddle Calendar Spread	Sell Straddle in near month, buy Straddle in far month at same strike <ul style="list-style-type: none"> ● (Sell near month put, sell near month call, buy far put, buy far call)

LIFFE CONNECT® STRATEGY CODE	STRATEGY	STRATEGY DEFINITION/STRUCTURE (Sequence in which the strategy order must always be entered, irrespective of whether it is a buy or a sell order)
P	Diagonal Spread Straddle Calendar	Sell Straddle in near month, buy Straddle in far month at different strike: (Calendar Spread Sell near month put, sell near month call, buy far month put, buy far month call)
S	Straddle*	Buy put, buy call at same strike
W	Condor	Buy put (call), sell put (call) at two higher strikes, buy put (call) at even higher strike. (The strikes do not have to be consecutive and the gaps between them do not have to be equal)
X	Box	<ul style="list-style-type: none"> ● Buy call and sell put, buy put and sell call at higher strike
r	Synthetic conversion/reversal	This is a standard conversion/reversal strategy but without the Underlying leg. Reversal: Buy a call, sell a put at the same strike To trade a Conversion the order must be entered in the same sequence as above, but submitted to the market as a sell/offer order
w	Iron Condor	Buy the call spread and also buying the put spread with lower strikes. Sell put, buy put at higher strike, buy call at even higher strike, sell call at even higher strike (all series for the same expiry month).
x	3 – Way: Buy a Call spread versus a Put	Buy a Call spread versus selling a put: Buy a call, sell a call at a higher strike, sell a put at any strike
y	3 – Way: Buy a Put spread versus a Call	Buy a Put spread versus selling a call: <ul style="list-style-type: none"> ● Buy a put, sell a put at a lower strike, sell a call at any strike.
z	3 – Way: Straddle versus a Call	Buy a Straddle versus selling a call: Buy a put and call at the same strike, as well as selling a call at any strike.

LIFFE CONNECT® STRATEGY CODE	STRATEGY	STRATEGY DEFINITION/STRUCTURE (Sequence in which the strategy order must always be entered, irrespective of whether it is a buy or a sell order)
z	3 – Way: Straddle versus a Put	Buy a Straddle versus selling a put: <ul style="list-style-type: none"> ● Buy the straddle (i.e. Buy a put and call at the same strike), as well as selling a put at any strike.

LIFFE CONNECT® will facilitate the Implied trading of both “out” from strategies into outright and “in” from outright into strategies. However, only implied “out” prices and volumes will be reported across the API to connected front ends, with the front ends being relied upon to generate implied “in” prices locally. Implied trading functionality has been implemented for Call/Put Spreads, Call/Put Calendar Spread, Call/Put Diagonal Calendar Spread, Strangle, and Straddles.

A.2 <Strategy Codes for Futures>

STRATEGY	CODE	STRATEGY DEFINITION/STRUCTURE	PRICING
Calendar	E	Buy (Sell) one contract in the near month, Sell (Buy) one contract in the far month	Subtract the price of the back month from that of the front month
Butterfly	B	Buy (Sell) one contract in near Calendar month Sell (Buy) two contracts far month, Buy (Sell) one contract in a further dated contract month. The gap between the months does not have to be equal/consecutive	The combined price of the two contracts being sold is subtracted from the combined price of the two contracts being bought
Condor	W	Buy (Sell) one contract month in the first month of the strategy, Sell (Buy) one contract in each of the next two delivery months and Buy (Sell) one contract in the fourth month, The gap between the months does not have to be equal/consecutive	$(\text{Month1} - \text{Month 2}) - (\text{Month3} - \text{Month4})$

STRATEGY	CODE	STRATEGY DEFINITION/STRUCTURE	PRICING
Strip	M	<p>The simultaneous purchase (sale) of one or more contracts in four or more quarterly delivery months within a single contract. Any quarterly delivery month can act as the first month of the Strip, as long as there are at least three following months available. Serial months in a contract are ignored and cannot form part of a Strip Strategy. The number of lots in each leg can vary. Selling the Strip involves selling all months in the Strip, vice versa for buying</p>	<p>Combined value for four or more quarterly delivery months of (market price of a contract month – YDSP* of the contract month)</p> <p>*Not official closing price of Yesterday)</p>
Pack	O	<ul style="list-style-type: none"> ● Packs consist of four consecutive quarterly months. The first month of the “White” Pack is always the first quarterly month. The number of lots in each leg must be the same. TFX currently recognizes five Packs: ● White Pack /Red Pack /Green Pack /Blue Pack/Gold Pack 	<p>Priced same as Strips above</p>
Bundle	Y	<p>Bundles are standardised Strips. The first month of a Bundle is always the front Quarterly month. The number of lots in each leg must be the same. LIFFE CONNECT[®] currently recognises four Bundles:</p> <p>2 – Year bundle/3 – Year Bundle/4 – Year Bundle/5 – Year Bundle</p>	<p>Priced same as Strips above</p>

LIFFE CONNECT[®] will facilitate the implied trading of both “out” from strategies into outright and in from outright into strategies. However, only implied “out” prices and volumes will be reported across the API to connected front ends, with the front ends being relied upon to generate implied “in” prices locally (Butterfly and Calendar). Implied out trading

functionality has been implemented for Calendar.

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