Johannesburg Stock Exchange

Post-trade Services

JSE Specification Document

Volume PT00 – JSE Post-trade Services Overview

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Contents

1 DOCUMENT CONTROL

1.1 Document information

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1.2 Revision history

Date	Version	Description
31 January 2017	1.0	Initial published version
04 April 2017	1.01	Updates to following sections: • Section 6 – User enablement and connectivity: added reference to external document "ITaC Client-facing Functions Interfaces" • Section 10 – clarification of off-book trading vs deal management functionality Addition of new sections: • Section 11 – Trade give-ups – off book trade capture vs deal management • Appendix G – Commission functions: capture, cancel and reject
06 June 2017	1.02	Updates to the following sections: • Section 15.2.3 Intraday risk monitoring – Clarification of the sign of the Indicative Call value • Section 15.2.4 Thresholds – Updated the margin call formula as well as the Intraday Risk Monitoring example
07 June 2019	1.03	Updates to the following section: APPENDIX B- DEAL MANAGEMENT ALLOWED ACCOUNT TYPES
27 August 2019	1.04	Updates to the following sections:' • Section 13.6.1 position sub-account modification – User can specify price at which modification can be done. • APPENDIX B- DEAL MANAGEMENT ALLOWED ACCOUNT TYPES.
~~0~~24 August 2020~~5 May 2020~~	1.05	Updates to the following section: • Section 1~~1~~2 Broker commission – pending, accept ~~&~~and expire commissions

References

Note: The documents in the table below are published on the ITaC website: https://www.jse.co.za/services/itac

Name	Description
Trading Related	
Volume 00D - Trading and Information Overview for the Derivative Markets	Provides an overview of the JSE trading services and capabilities for the Derivatives Markets
Volume 00E - Trading and Information Overview for the Equity Market	Provides an overview of the JSE trading services and capabilities for the Equity Market
Post-trade Related	
Volume PT02 – Post-trade EMAPI Clearing	Describes the semantics and syntax of the clearing or application messages of the EMAPI protocol.
Volume PT03 - Post-trade Margining Methodology Specification (JSPAN)	Describes in detail the JSE margin methodology including all calculations used in deriving margins
Other	
ITaC Client-facing Functions and Interfaces	Provides details of the various trading and clearing functions that are available to trading members, clearing members and information subscribers

1.3 Contact details

JSE Limited One Exchange Square Gwen Lane, Sandown South Africa Tel: +27 11 520 7000 www.jse.co.za	**Client Services Centre** Email: CustomerSupport@jse.co.za Tel: +27 11 520 7777

1.5 Definitions, acronyms and abbreviations

Term/Abbreviation/Acronym	Description
ALSI	The FTSE/JSE Top40 Index
AnyDay	A derivatives instrument with a non-standard expiry date.
API	An Application Programmable Interface is a component that exposes application functionality to a user-base, using encapsulation, abstraction principles, a standardised security layer and tools for building software applications, and it specifies how software components should interact and are used, consistent with the operating environment.
ATM	At-the-Money – when the closing price of the option underlying is equal to the option strike price
Business Day	A measurement of time that typically refers to any day in which normal business is conducted. Within the securities industry, any day the financial markets are open for trading is considered to be a business day.
CA	Corporate Action – Any event that brings material change to a company and affects its stakeholders. Splits, dividends, mergers, acquisitions and spinoffs are all examples of corporate actions. Certain products are subject to corporate actions, for example, a split or a new issue. The effects that corporate actions have differ from product to product. The following objects may be required to be adjusted as a result of a corporate action: Positions; Contract Size; Strike Prices; Settlement Prices; Historical Market Data.
Cash Movements	Comprised of cash movements resulting from margins, interest on margins, journal transactions and physical deliveries (Commodity Derivatives). These movements do not generate revenue for the JSE and therefore does not attract VAT.
CCR	Counterparty Credit Risk.
CDM	Commodity Derivatives Market
CFD	Contract for Difference. An arrangement made in a futures contract whereby differences in settlement are made through cash payments, rather than the delivery of physical goods or securities.
CM	Clearing Member - means a sub-category of authorised users of the JSE, registered to perform clearing and who has entered into an agreement with JSE Clear.
COB	Central Order Book
CompID	In the trading system, this is a trading user that maintains a physical connection to the system
Contract	A tradable item on the market.
CRM	Client Relationship Management
CSMR	Class Spread Margin Requirements – used to determine the initial margin when trading calendar spreads
DAS	Daily Account Summary

EAD	Exposure at default – the total value that a client is exposed to at the time of default.
EDM	Equity Derivatives Market
EMAPI	"External Messaging API" refers to the application programming interface (API) used to integrate the JSE systems with the RTC system. Note: an EMAPI is agnostic of what it's used for and the JSE will have two of these, one that is part of the Cinnober RTC application and another which is built by the ICE team to integrate to RTC.
EMIR	European Market Infrastructure Regulation
EOD	"End of day" is the period after trading hours, for business days, after all batches have run just prior to shutting down JSE trading and clearing systems. Business days exclude Saturdays, Sundays and any public holiday as gazetted by the government of the Republic of South Africa from time to time. Non-trading hours refer to the time from 19h00 to 06h00
FE	System Front-End
FTP	File Transfer Protocol
FwdFwd	A derivative calendar spread instrument where at least one leg is an AnyDay Future.
GUI	Graphical User Interface
ID	Intra-Day
IDP	"Information Dissemination Portal" is an internet visible FTP site that hosts the information product files for access by information subscribers and members of the JSE.
IM	Initial margin – means the value determined by the JSE on the basis specified by the JSE and held in respect of the aggregate position of a trading member or a client.
IMR	Initial Margin Requirement
Information/Data Subscriber	Customer of the JSE who receives data and/or information in various forms from the JSE for a price specified by JSE.
Instrument	A financial vehicle belonging to a Market and Segment configuration.
Inter-day	This is the period between the End Day and Start Day events of the Trading System. This period will fall out of the normal trading period.
Intra-day	Within the day (between SOD and EOD).
Invoice	A commercial document that itemises a transaction between a buyer and a seller. An invoice includes the quantity of purchase, price of goods and/ or services, date, parties involved, unique invoice number, and tax information. Also known as a "bill", "statement" or "sales invoice".
IRC	Interest Rate and Currency Derivatives Market
ITaC	"Integrated trading and clearing" program refers to the

	enterprise wide project to provide integrated trading and clearing across all JSE markets on a single platform, not necessarily a single instance of the application.
JIBAR	Johannesburg Interbank Agreed Rate
JSE	Johannesburg Stock Exchange
JSE Clear	The licensed Clearing House for the JSE Derivatives and cash bond market, with Clearing Members as the members. Besides clearing all transactions, the JSE supplies compliance and surveillance and other exchange services to the JSE Derivatives market.
Legal Entity	An association, corporation, partnership, proprietorship, trust, or individual that has legal standing in the eyes of law. A legal entity has legal capacity to enter into agreements or contracts, assume obligations, incur and pay debts, sue and be sued in its own right, and to be held responsible for its actions.
Liquidity stress testing/needs	Risk to assess whether JSE Clear have sufficient liquid resources to meet intraday payment obligations under stressed conditions.
Margin back test	Valuation of margins at a member portfolio and contract level for the previous day using the current market data and calculates the change in value
Market Data	Market Data is comprised of: • Live Market Data – single messages broadcast via MIT Market Data Gateway (intraday, real-time) • Non-Live Market Data – files (usually) that are disseminated via FTP, Web, Email and SMS (intraday, EOD, not real-time)
Market data product(s)	A grouping of information, which is packaged and made available to subscribers of market data
Member	A party authorised in accordance with the JSE rules and directives to trade on the various JSE Markets. This includes traders, data vendors, information service providers, information subscribers, etc.
Member Account	An account opened for a member for trading purposes.
Member Branch	The concept of Member Branch is to create distinction between the various different trading desks of a Member.
Member Branch Account	A ring-fenced account belonging to the specific branch to separate an entity with different business purposes, e.g. Trading etc.
Member Branch Client Account	An account opened by a member branch on behalf of their client(s) for trading purposes.
Member Branch Client Sub Account	A sub account opened for trading purposes. This account is linked to the main Member Branch Client Account. These accounts are setup and managed by the trading member / branch.

Member Branch Sub-Account	A sub account opened for with different business purposes, e.g. Trading etc. This account is linked to the main Member Branch Account. These accounts are setup and managed by the trading member / branch.
Member Client Account	An account opened by a member on behalf of their client(s) for trading purposes. Note: Deals and positions are kept at this level for the client.
Member Client Sub-Account	A sub account opened for trading purposes. This account is linked to the main Member Client Account. These accounts are setup and managed by the trading member / branch.
Member Sub Account	A sub account opened for trading purposes. This account is linked to the main Member Account. These accounts are setup and managed by the trading member / branch.
MIT	"Millennium information technologies" refers to the vendor that supplies the JSE with the trading platform.
MIT Market Data Gateway	The gateway through which market data is disseminated from the Millennium Exchange platform
MtM	Marked-To-Market or Mark-To-Model - Operation performed EOD to realise the variation margin (profit or loss) for a position due to changing market prices.
Net Payment Amount	The net payment amount refers to the netted fees and cash movements amount per market that is utilised in the daily SWIFT payment instructions.
Nominal	Contract size of an instrument
Nostro Account	A bank account held in a foreign country by a domestic bank, denominated in the currency of that country. Nostro accounts are used to facilitate settlement of foreign exchange and trade transactions.
Participant	Refers to all client entities i.e. Clearing Member, Member, Client, Dealer and Information Subscriber.
Price	Unless specified otherwise, the term 'price' refers to what the instrument is quoted on. For an instrument traded on Rands, this refers to the Rands quoted, for an instrument traded on volatility, this refers to the volatility, for an instrument traded on yield/interest rate, this refers to the yield/interest rate.
Rebate	A rebate is an amount paid by way of reduction, return, or refund on what has already been paid or contributed.
RTC	In this context RTC refers to the JSE Real- time Clearing system that performs the necessary clearing and risk management capabilities at the exchange. Cinnober is the vendor supplying the RTC solution for the JSE.
SAVI	South African Volatility Index
SIP	Shared Infrastructure Provider

SLA	Service Level Agreement
SOD	"Start of day" refers to the non-trading hours on business days after the systems are started for the commencement of business. Business days exclude Saturdays, Sundays and any public holiday as gazetted by the government of the Republic of South Africa from time to time. Non-trading hours refer to the time from 19h00 to 06h00.
SSMR	Series Spread Margin Requirements – used to determine the initial margin when the underlying are placed in Series Spread Groups, offsets are then given when trading contracts in the same series spread group against one another.
Strategy	A strategy (also called a strategy order) is one which represents multiple trading actions on several instruments (e.g. a calendar spread strategy buy order represents a trader's interest to buy in a near-month futures instrument and sell in a far-month futures instrument). Strategies are represented as separate instruments in the Exchange.
Stressed loss	VM calculated in the stress test applied compared to IM held, i.e. the shortfall in margin.
SWIFT	Society for Worldwide Interbank Financial Telecommunication
SWIFT Alliance Access	Alliance Access is SWIFT's prime messaging interface and is designed to connect business applications to SWIFT messaging services.
TM	Trading Member - A member is authorised by the JSE to trade in a certain JSE market. A member who trades in more than one market (e.g. Equities and Equity Derivatives) currently has a membership for each.
Trader	Trading user that maintains a physical connection to the system (i.e. Comp ID)
VaR	Value at risk – Value at Risk (VAR) calculates the maximum loss expected (or worst case scenario), over a given time period and given a specified degree of confidence
VM	Variation margin – A net profit and loss payment that is made by clearing members to JSE Clear on behalf of their clients based on price movements in the market.
VSR	Volatility Scanning Range - The maximum anticipated up or down move in the ATM vol over the liquidation period.
VWAP	Volume Weighted Average Price
VWAV	Volume Weighted Average Volatility
ZAR	South African Rand

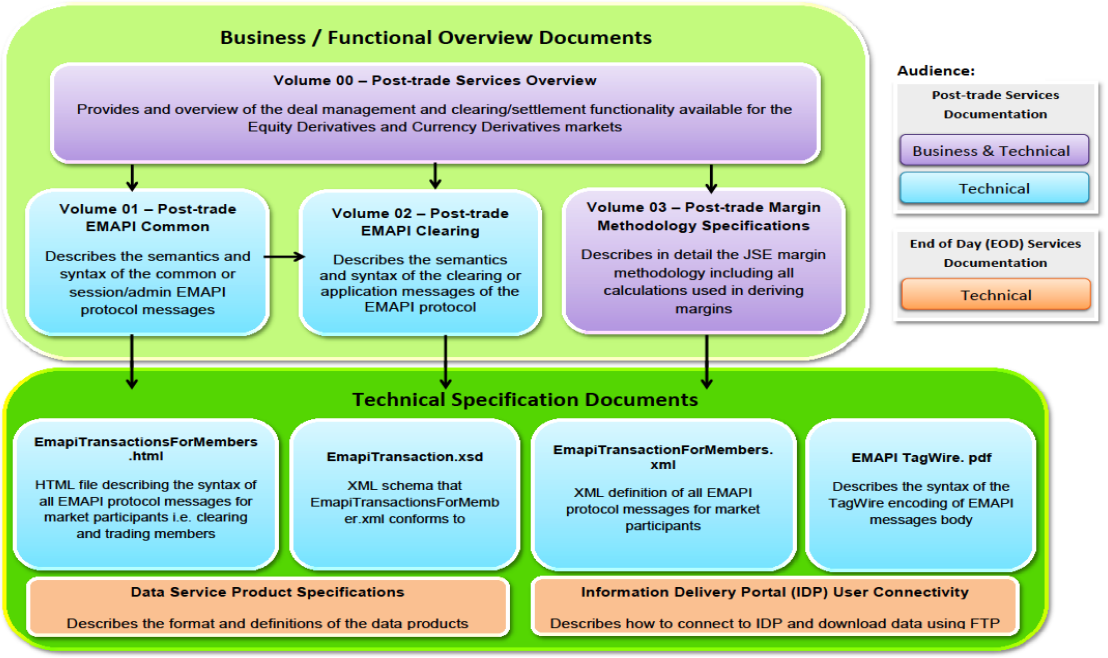
1.6 Document purpose

The purpose of this document is to provide an overview of the derivative post-trade services provided by JSE Clear, the central counterparty (CCP) in the South African market. It describes the services offered and how market participants will interact with and utilise the services. The services described in this document are based on the new, changed and enhanced functions being implemented as part of the JSE Integrated Trading and Clearing (ITaC) programme. This document will be a 'living' document and will be updated from time to time as new services are introduced, removed or modified.

This document is focused at the business process and functional level and not at the technical system level – for technical system information please refer to the additional post-trade documentation available on the JSE ITaC website:
https://www.jse.co.za/services/itac

1.7 Document context and related documents

The diagram below provides a high-level overview of the context of this document in relation to the various other documents published on the JSE website.



2 OVERVIEW

2.1 JSE integrated clearing objectives

The JSE currently provides trading, clearing and settlement services for the equity derivatives (EQD), foreign currency derivatives (FXD), Interest Rate derivatives (IRD) and commodity derivatives (CMD) markets.

Post the global financial crisis in 2008, international regulatory bodies acted swiftly to ensure a more stable global financial environment. Regulations introduced seek to increase transparency, tighten capital requirements and require more proactive and rigorous risk management. Many financial institutions have come under pressure due to the increased capital requirements.

In 2012, the JSE established the JSE Clear default fund for its derivative markets and enhanced its risk and compliance structures, practices and processes. JSE Clear achieved CPMI-IOSCO QCCP status in Dec 2012 and in Feb 2016 was granted equivalence by ESMA in line with EMIR regulations.

The JSE ITaC programme was kicked-off with the aim of replacing the existing derivative trading and clearing technology and further enhancing JSE Clear's capabilities in managing systemic risk, providing relief to clients facing increasing capital requirements and improving the robustness of its post-trade operations. The primary integrated clearing objectives can be categorised as follows:

A. Centralised, sophisticated and more real-time risk management
    - To allow market participants to monitor and manage their exposures and risk centrally across markets via a single integrated clearing platform
    - Providing the market with real-time intra-day risk monitoring services that allows monitoring of various exposure and risk metrics throughout the day as trading and deal management activities are performed
    - Develop more sophisticated and flexible risk management methods and practices i.e. margining, stress testing and back testing to better protect the market and remain compliant with international best practices and regulations such as IOSCO and EMIR
B. Efficient asset utilisation
    - Provide relief to clients in the face of rising capital requirements by allowing securities and foreign currencies to be pledged as collateral against margin requirements
    - Centralisation of margin and settlement calculations across all JSE markets with the aim of creating further opportunities for settlement netting and margin offset
C. Enhanced efficiency and robustness of processes through consolidation
    - Consolidation of clearing operations to maximise operational efficiencies as well as improve valuation processes to reduce risk of incorrect margin calls

The primary integrated trading and technology objectives of ITaC are as follows:

A. Increased trading volumes and liquidity through
   - stable platform with consistent and low latency – enabling low latency high volume strategies
   - access enabled for international clients
   - efficient access to real-time derivative market data

B. Enabling future product innovation
   - options on spot equities – currently the international norm
   - opportunities for cross-market trading strategies e.g. pairs trading (cash and derivatives combined)

C. Technology improvements
   - Standardised APIs resulting in lower connectivity/ access costs
   - Operational efficiencies as a result of managing interfaces with fewer JSE systems
   - Consolidation of platforms results in reduced system maintenance costs in the future (post project implementation)
   - Separation of trading and clearing systems providing reduced operational risk and system upgrade complexities
   - No vanilla trading and clearing front-ends provided by the JSE, resulting in a more open and competitive software provider landscape and more flexible/fit-for-purpose solution options available to clients
   - Publication of trade information aligned to international best practice

2.2 ITaC project timelines and key changes

Given the magnitude of the JSE ITaC programme, the delivery had been broken up into three project phases in order to minimise the implementation risk and impact on market participants. The diagram below provides a high-level view of the three project phases and indicative timelines. The current JSE derivative markets will continue to operate on the existing Nutron/Nuclears platform until migrated to the new ITaC platform. While many of the current functions and services will remain largely unchanged, there will be some functional changes and new services added to the new ITaC platform.

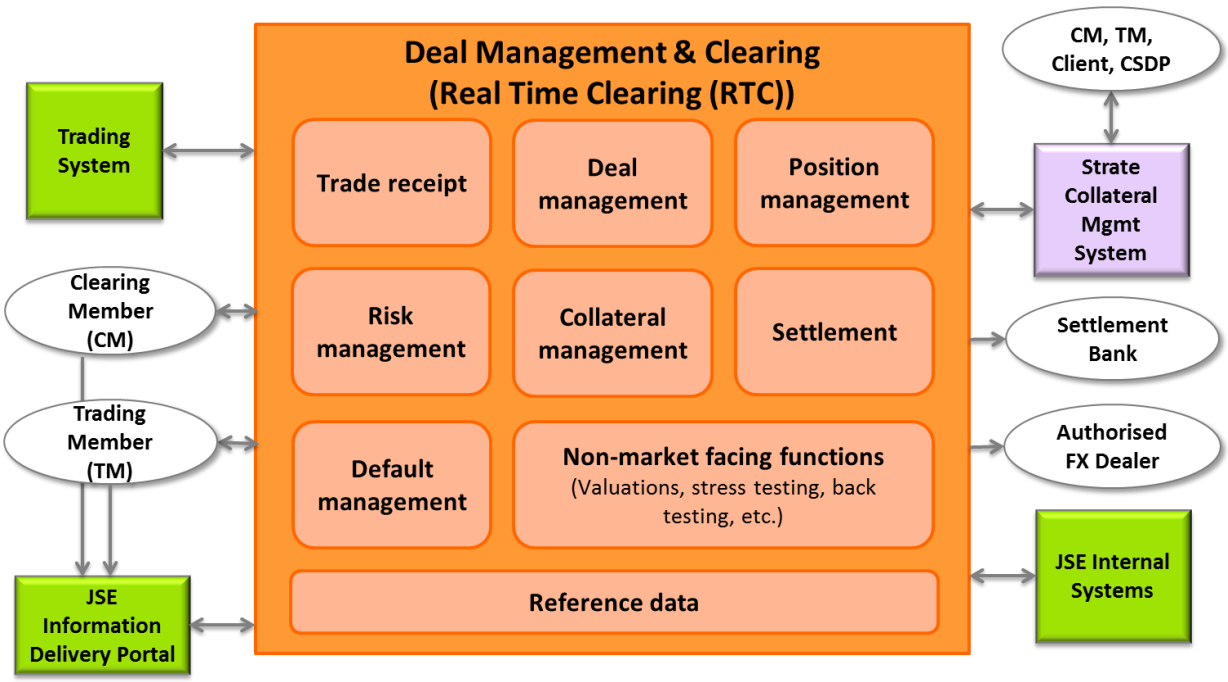
The table below provides a view of some of the key business and system changes that will be introduced as part of the JSE ITaC project.

New	Changed	Decommissioned

• Deal management & commissions functionality to replace "Take-a-Turn"
• Securities and FX collateral service that allows participants to pledge securities and foreign currency cash as collateral
• Intra-day risk monitoring service for intra-day monitoring of risk including exposure thresholds
• Connectivity and Bandwidth requirements.
• Data Agreements to access public market data
• JSE Services Agreement (JSA) for connectivity to JSE production and Customer Test Service (CTS) services.
	• JSE Rules and Directives relating to new, changed and removed services
	• Reference Data
	  ○ Trading Member codes are being consolidated
	  ○ Instruments codes
	  ○ Dividend neutral contract positions to be held directly in dividend neutral contract
	• Single end-of-day run across all markets with a 2-step clearing member balancing process
	• Collateral management part of the EOD process.
	• Inclusion of pledged securities collateral information in BDA
	• JSPAN Margining Methodology changes
	• Pre-trade risk controls with some controls shifting to trading front-ends and some new controls in the Trading system
	• Non-validation of accounts on trading system
	• Price bands changes
		• Global Market connectivity migrated from Equity Derivatives to Commodity Derivatives market
		• NUTRON front-end to be decommissioned by JSE – clients to find replacement front-ends by engaging directly with software providers

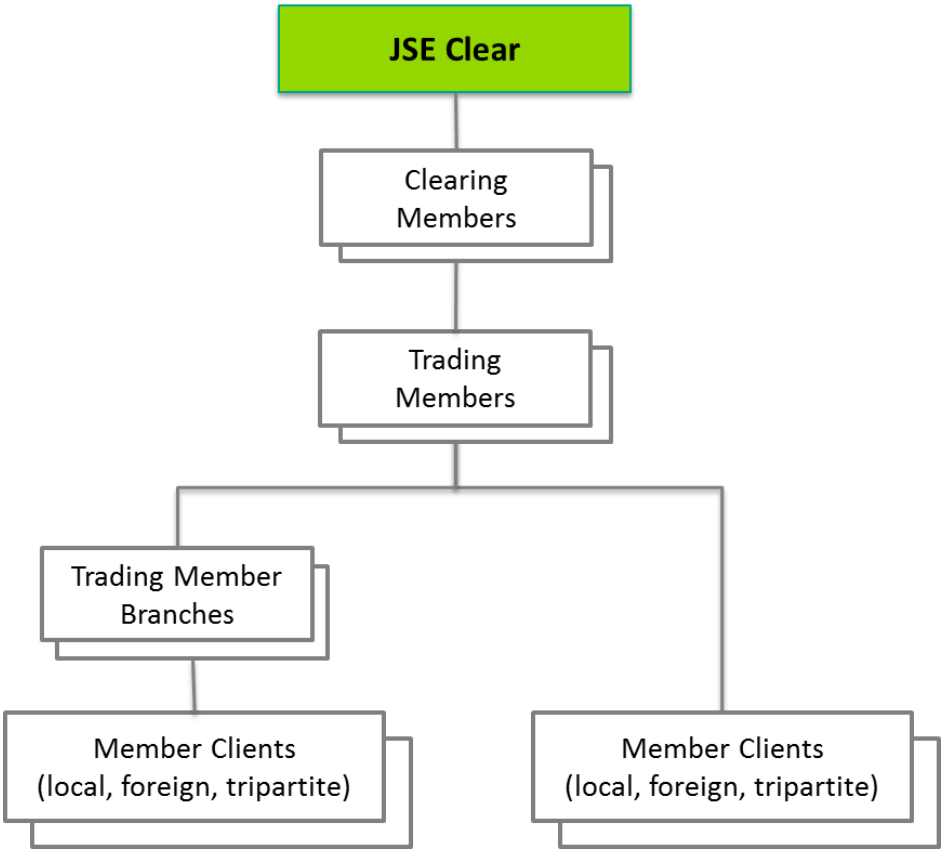
2.3 Derivative post-trade services landscape

The following diagram provides a bird's eye view of the JSE derivative post-trade services, systems and market participant landscape. The new Real-Time Clearing (RTC) system will facilitate deal management and clearing and settlement across all JSE derivative markets. The RTC system will integrate to the Strate collateral management system in order to facilitate the use of securities collateral against JSE Clear exposures for market participants.



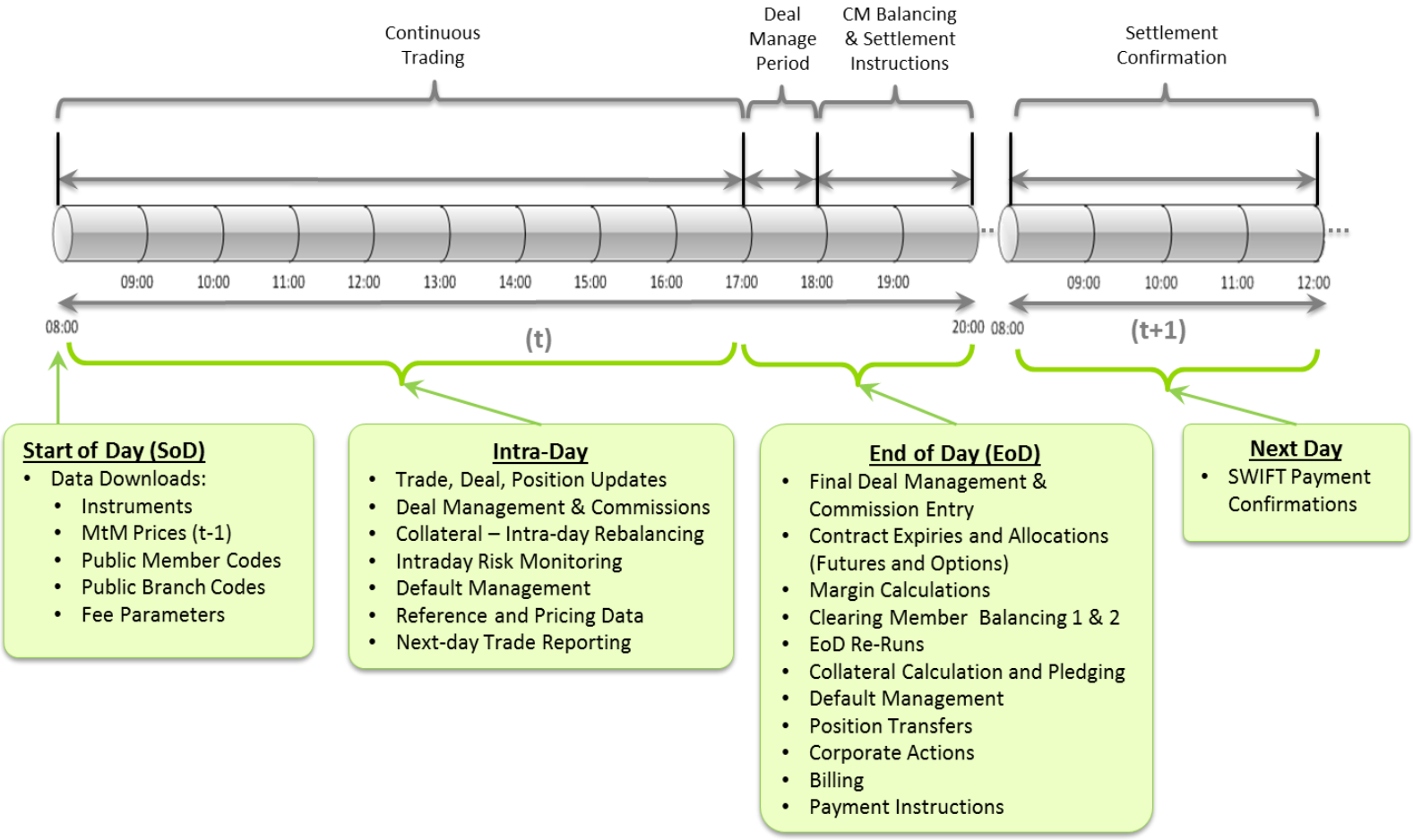
3 MARKET PARTICIPANT STRUCTURE

The diagram below reflects the high-level market participant structure for derivative trading and clearing at the JSE. Trading members may elect to clear all their derivative trades through a single clearing member or certain instrument classes through other clearing members. Trading members may have one or many branches, each having their own set of member clients.



4 DAILY POST-TRADE LIFECYCLE

The following diagram and notes provide a high level overview of the post-trade activities and processes in a typical business day. These activities and processes are further detailed in later sections of this document.



4.1 Daily post-trade activities

The table below represents the key post-trade activities that are performed during the course of the trading day:

<table>
<tr><th colspan="2">Intra-day</th></tr>
<tr><td><u>Throughout the day:</u>
○ Deal management
○ Position and open interest* updates
○ Client maintenance
○ New contracts
○ Securities collateral substitutions and top-ups
○ Post-trade risk monitoring</td><td><u>At certain times in the day:</u>
○ Collateral intraday batch process including securities and cash withdrawals
○ ZAR and/or FX margins and fees payments (by specified time)
○ Benchmark rates published
○ Early valuations prices published</td></tr>
<tr><th colspan="2">End of Day</th></tr>
<tr><td><u>Daily EOD margin and fees processes:</u>
○ Calculate & publish closing prices
○ Calculate margins, fees & commissions
○ Balance to Clearing Members
○ Pledging of securities collateral against initial margin
○ Calculate ZAR and FX cash payment amounts</td><td><u>Monthly:</u>
○ Interest on cash

<u>Ad hoc:</u>
○ Portfolio transfers
○ Corporate actions</td></tr>
<tr><th colspan="2">End of Day - Preparation for Next Day</th></tr>
<tr><td><u>Member Data:</u>
○ Member and client reference data
○ Final EOD positions
○ Deal updates generated to affect the position changes associated with portfolio transfers and/or corporate actions</td><td><u>Other Data:</u>
○ Member reference data (Counterparty codes)
○ Clearing reference data e.g. Initial Margin Requirements (IMRs)
○ Volatility surfaces</td></tr>
</table>

** Open interest will be published on the trading system market data gateway on a periodic snapshot basis*

4.2 Daily processing times

Time	Description	Functionality Available
05:00	System is started	
05:00	Reference data and transactional data available for download	Client loading
	Re-run of "end of day" from previous day	
07:00	Business date is set	Client loading
08:00	RTC starts receiving trades from the trading system	Trade management Commission management Client loading Indicative risk calculation Risk alerting Reporting Position updates
11:00	Publication of rates e.g. JIBAR, STEFFI, Overnight deposit	
11:00 (TBD)	Intraday collateral rebalancing process	Allows participants to change the mix of collateral posted against the previous day's margin call. For example substitute cash for securities or vice versa
12:00	Receive confirmation of payments from previous day's EOD run by 12pm	
15:00	Early valuations - publication of prices	
17:00	Central order book trading closes for currency derivative trading. Only deal management and booking of reported trades can be done	Trade management Receiving reported trades Client loading Indicative risk calculation Risk alerting
17:30	Central order book trading closes for equity derivative trading. Only deal management and booking of reported trades can be done	Trade management Receiving reported trades Client loading Indicative risk calculation Risk alerting
18:30	Trade management state ends. Remove pending give-up instructions	
18:30	"End of day" procedures begin, including: Option and future expiration Initial Margin, Variation Margin Fees Commissions Clearing Member balancing Collateral Settlement instructions etc.	Client loading
	"Post end of day" state begins	
	Transfers and corporate actions	

Note: All times subject to change. Times for new processes are TBD.

4.3 Overview of daily post-trade processes

4.3.1 Overview of intraday processes

a) **Reference data management**

- During the course of the trading day, the JSE and trading members are able to load and maintain client, instrument and member account information that is stored on the clearing system (note not all data is editable intraday)
- Upon successful capture or update of trading member, client and sub-account information in the clearing system, a confirmation message is sent to the relevant trading members and their clearing members
- Tripartite agreements between a client and two trading members are loaded by the JSE upon request from a trading member. This will enable tripartite trades and deal management activities to take place
- Reference data updates (instrument and member) relevant for deal management and clearing activities are published during the course of the day as they occur

b) **Receipt and publication of trades and position updates**

- The Clearing system receives matched trades from the trading system during the course of the trading day as orders are executed or trades are reported
- Trades are automatically entered into the associated position account as reflected on the matched trade
    - If the position account number on the trade is invalid, trades is placed in the trading member's house suspense account
- Once the position accounts are updated, the trades and account positions are published to members (trading and clearing) as they are processed by the clearing system

c) **Deal and position management and commissions**

- Members perform deal and position management activities on their trades throughout the day; these activities include:
    - Allocations
    - Assigns (also known as Give-Up/Take-Up)
    - Tripartite allocation
    - Deal sub-account modification
    - Allocation error correction
    - Principal correction
    - Position sub-account modification
- Position updates on accounts are published to members (trading and clearing) after each deal management function is performed
- Members will also capture and manage commissions on their trades

d) **Intraday Risk Monitoring**

- As trades are received and deal management is performed, the clearing system recalculates and publishes exposures in real-time throughout trading day
    - Initial Margin (IM) per account is recalculated and published with each position update
    - Variation Margin (VM) per account per position is calculated and published at regular intervals (as refreshed price snapshots are received)

- Exposure limits per market participant are set and monitored as required by their default underwriters i.e. Clearing house → Clearing member → trading member → client
- As exposures are recalculated they are compared to these pre-set thresholds
    - Alerts are published if exposures near or breach thresholds

e) **Intraday Collateral management process**

- During the course of the day various collateral management activities may be performed by trading members and clients:
    - Substitutions – substitute one security for another
    - Security withdrawals – release securities by posting cash
    - Cash withdrawals – release cash by pledging securities
    - Top-ups – pledge additional securities if value of securities already pledged falls below a specified threshold as market prices change

f) **Publication of rates and early valuations**

- In order to replicate daily margin calculations, benchmark rates are published via the clearing system daily at 11h00 e.g. JIBAR rates, interest on margin rates, rand overnight deposit rates
- Early valuation prices for the Equity Derivatives and Currency Derivatives markets are made available at 15h00 on a daily basis

4.3.2 Overview of end-of-day (EOD) processes

a) **Clearing Member Balancing 1**

- At the end of each trading day, once the markets are closed, the valuation process is triggered off in the clearing system to determine the final closing prices for all instruments
- Expiring option instruments are either exercised or abandoned and depending on the specific day of the month, expiring future contracts are also closed out and all position accounts updated accordingly
- Closing prices are then used in determining initial and variation margins to be settled by all trading members and clients depending on their open positions
- Dividend payments, CFD funding interest are calculated
- Clearing member balancing 1 – daily margins are rolled up and published to clearing members for confirmation. Dividends and funding interest is also reconciled as part of Clearing Member balancing 1

b) **Non-cash Collateral processes**

- Once margins are confirmed, the automated security pledging process is kicked off with the Strate collateral management system
- Following the securities pledge process, the initial margin that can be settled in cash (foreign currency and ZAR) is determined
- The foreign currency collateral process determines the amounts of collateral that non-resident clients will post in the form of foreign currency cash
- The system then determines the margin amount to be settled in ZAR cash

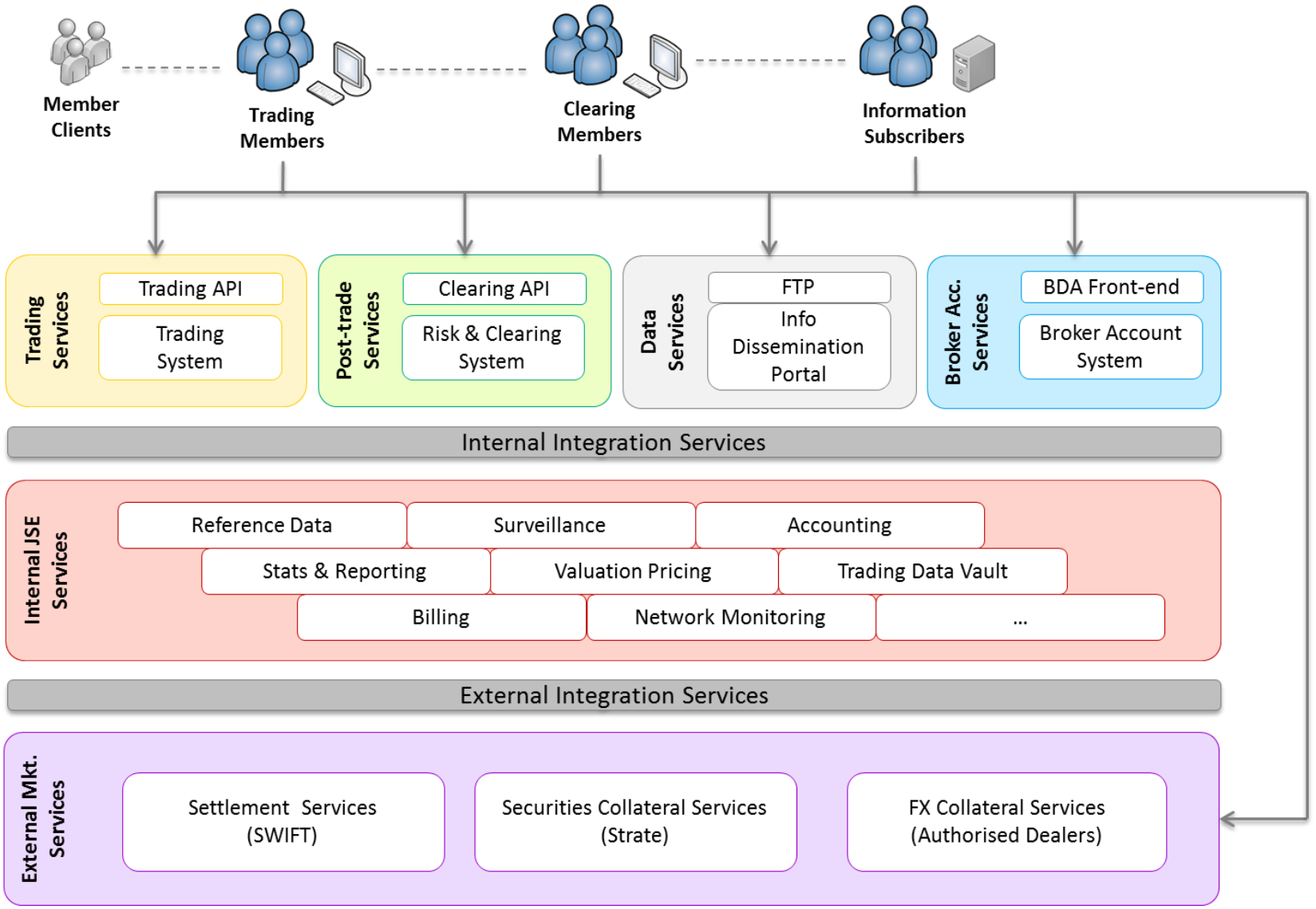
c) **Clearing Member Balancing 2**

- Once collateral balances are determined the clearing system determines all other cash amounts to be settled e.g. booking, risk and collateral fees and commissions
- These cash amounts are published to clearing members for confirmation of reconciliation
- Post balancing with all clearing members, the clearing system nets all cash amounts per Clearing Member for final settlement via SWIFT

d) **Corporate Actions and Transfers**

- Upon completion of the EOD balancing and collateral processes, any position adjustments due to corporate actions and position/portfolio transfers are processed
- Trade and position updates resulting from these actions are published during this period, as well as at the start of the following business day

5 HIGH-LEVEL SYSTEM ARCHITECTURE



6 USER ENABLEMENT AND CONNECTIVITY

In order to utilise the JSE post-trade services, market participants are required to integrate their front-end solutions to the JSE trading and clearing systems and the information dissemination portal (FTP site). The JSE provides three environments for clients to connect to:

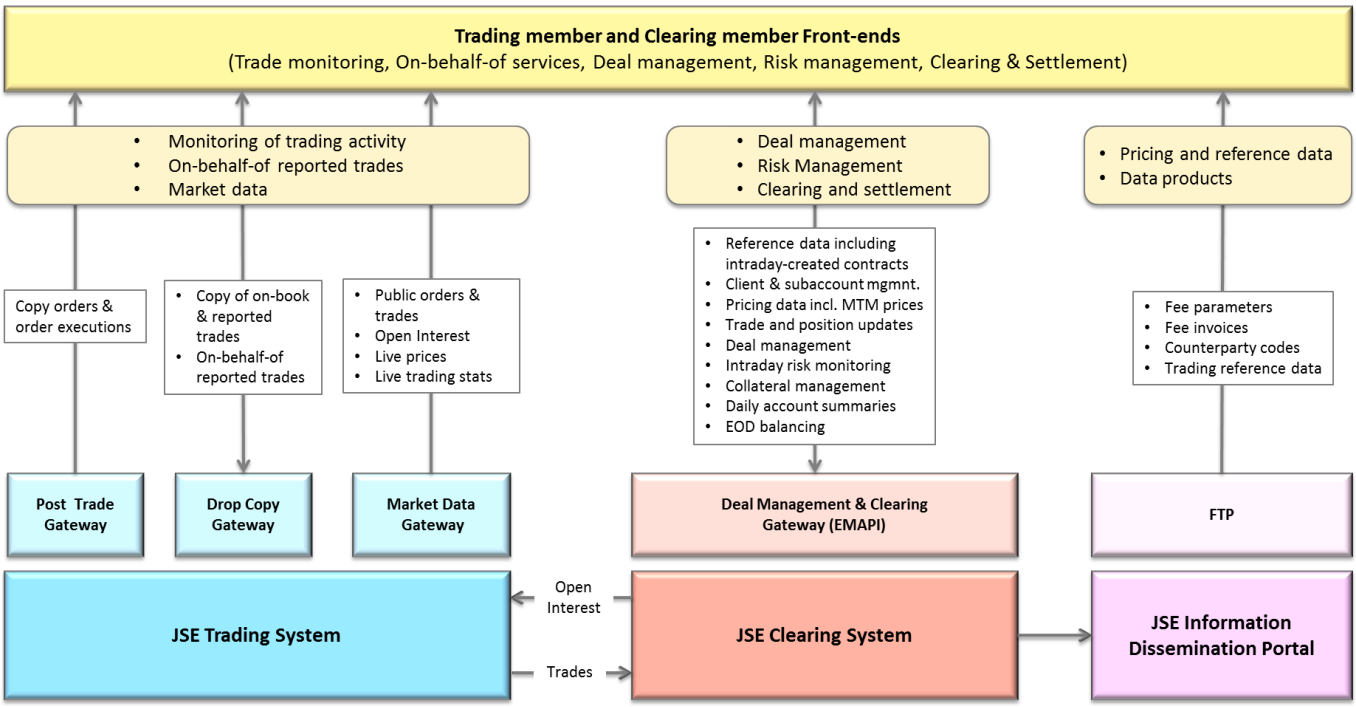
- Production – the main environment where daily trading and clearing occurs
- Customer Test Service (CTS) – an environment for clients to test their front-end solutions before connecting to the production environment
- Disaster Recovery – the backup production environment in the event of a disaster recovery situation at the main site

The diagram below provides an illustration of the various post-trade functions that are facilitated by the JSE systems. Depending on the required functionality, trading and clearing member front-end solutions should be customised and integrated accordingly.

Prior to connecting to the JSE production environment, all client front-end solutions must pass the JSE conformance test criteria. The conformance testing is done in the JSE CTS environment. Any future upgrades or enhancements to client front-end solutions must be re-conformed in the CTS environment.

In order to gain access to any of the JSE environments, market participants will need to liaise with the JSE Client Service Centre. Contact details for the JSE Client Service Centre are:

Tel: +27 11 520 7777
E-Mail: Customersupport@jse.co.za



Please refer to the "ITaC Client-facing Functions and Interfaces" document for detailed information on the various functions that are available to trading members, clearing members and information subscribers – web link: https://www.jse.co.za/services/itac

6.1 Steps to gain access to JSE CTS environment

The following basic steps are to be followed to gain access to the JSE CTS environments:

1. Complete the JSE Services Agreement (JSA)
    i. Request the JSA from CustomerSupport@jse.co.za
    ii. Return completed JSA for processing
2. Complete the enablement order form
    i. Request the enablement order form from CustomerSupport@jse.co.za
    ii. Complete relevant spreadsheet tab
    iii. Email your completed form to CustomerSupport@jse.co.za for processing
    iv. Enablement forms will be processed within a 7 business day Service Level Guideline (SLG) as per JSA Schedule 2G
3. You will receive connectivity details and login credentials within the same time period after which you can access the CTS environments

7 REFERENCE AND MARKET DATA IN SUPPORT OF CLEARING

Reference data and clearing related market data, is made available to trading and clearing members on a daily basis. The data may be retrieved and managed[1] via the JSE real-time clearing system interface. Reference and market data will also be available via the JSE information dissemination portal (IDP) for information subscribers, fund administrators and other stakeholders who choose not to interface to the Clearing API.

All reference data required to perform the necessary post-trade functions will be made available to all trading and clearing members. A full set of reference data will be provided daily before the start of trading. Publication of select reference and market data will also be provided intra-day as new data is captured or modified. Certain elements of the reference data set will be managed by trading and clearing members and the rest by the JSE.

All reference and market data published by the clearing system is done via a guaranteed dataflow i.e. TCP/IP, which ensures delivery to all participants. In order to receive the reference and market data from the JSE clearing system, market participants will setup subscriptions to the required data flows which can be done via snapshot (full set of reference data) as well as intraday updates. Replay of reference data is not supported as the snapshot subscription will provide all current reference data. Role-based permissioning and subscription groups allow for reference data to be filtered on the broadcasted message flows according to specific user needs and Chinese-wall restrictions.

Clearing reference and market data will also be available via the JSE Information Delivery Portal (IDP) for market participants who do not wish to subscribe to the JSE clearing system interface. This data includes elements such as MtM prices, risk parameters, volatility surfaces and JIBAR rates, trading reference data, etc. Please refer to the IDP specifications for more details on the available data elements.

7.1 Reference and market data elements

The post-trade reference and market data elements can be divided into the following key categories:

- **Market Participants** – information relating to clearing member, trading member and member clients
- **Markets and instruments** – reference information of the JSE derivative markets and instruments
- **Risk parameters** – margin grouping and risk parameters, as defined by the JSE, required for calculating initial margin
- **Pricing and reference instruments** – supporting market data required to perform the daily mark-to-model and margin calculations
- **General** – other general reference and market data required to perform certain JSE post-trade functions

[1] Trading and clearing members are required to manage a subset of reference data, e.g. member client info, cash accounts, etc. that is stored on JSE systems.

Reference data elements managed by the JSE, e.g. Instruments, trading member, clearing member, are normally updated/modified post the final end-of-day processes are completed. Clients may download the updated reference data set thereafter or before the start of the following business day.

Market Participants
Clearing Member
Trading Member
Member Branch
Member Client *
Cash Account *
Clearing Member Link
Tripartite
Risk Node
Access Group
Settlement Account
Collateral Account
Position Account
Subscription Group

Markets and instruments
Market
Market List
Segment
Instrument
Tradable Instrument

Pricing and reference instruments
Curve
Deposit
Interest Rate Swap
Forward Rate Agreement
Surface

Risk parameters
Series Spread Group
Class spread group

General
Corporate Action
Calendar
Calendar Date
Currency
Country
Eligible Currency
Eligible Security
Current System State

* Reference data managed directly by market participants

Please refer to technical specification "Volume PT01 – Post-trade EMAPI Common" for further information on the various reference and market data elements, including their dissemination methods, data structures and formats – web link:

https://www.jse.co.za/services/itac

7.2 Non-live market data products and reference data

The following non-live market data products will be available on the JSE IDP portal. Data is made available on a specific FTP location for download by registered clients. The data is provided in fixed width and/or Microsoft Excel formats. Depending on the nature of the products, the data is made available daily, monthly or quarterly at the end of the business day. The JSE applies standard data retention principles on all products after which data products are removed from the FTP location. Reference data provided on the JSE IDP portal is aimed at providing an alternative access point for clients that are not connected to the JSE clearing system.

Type	Product	Description
Market data	Equity Derivatives	All record types
Market data	Currency Derivatives	All record types
Reference pricing data	Risk Parameters Report	Contains all input parameters for J-Span
Reference pricing data	Dividends	Dividend information for a tradable instruments
Reference pricing data	Volatility Surfaces	Market data for a surface
Reference pricing data	South African Rates	Yield information
Reference pricing data	Rand Spot	Exchange rate

7.3 Reference data managed by market participants

The following reference data elements are to be managed directly by market participants via the JSE clearing system:

7.3.1 Member client

Member clients are maintained by trading members (including branches) or by clearing members on behalf of their trading members. The following functions are allowed in order to manage member client reference data:

- Adding of a new member client (NB. the JSE will have to verify the details of foreign clients before the client is enabled)
- Linking of a new member client to a clearing member
- Updating information of existing member clients
- Enabling or disabling of existing member clients

7.3.2 Cash accounts

Cash account details for foreign clients can be maintained by trading or clearing members. Only one cash account per currency per client is allowed. Cash accounts are maintained via the following functions:

- Adding of new cash account
- Updating of existing cash account

8 PARTICIPANT ACCOUNT TYPES AND STRUCTURES

This section provides an overview of the various positon and collateral accounts, as well risk nodes structures that are facilitated by the JSE clearing system. These accounts and risk nodes can be defined as follows:

- **Position accounts** – these are the accounts on which positions in derivative contracts are recorded. The various types of position accounts allow market participants to manage their trading business and segregate or group proprietary and client positons for accounting, regulation and user access purposes. The various account types are described below, with each having its own usage rules as defined by the JSE.
- **Risk nodes** – risk exposures for all trading members and clients are calculated and margined for each risk node defined in the clearing system. A risk node is the level at which portfolio margin is calculated and is defined by the owner of the risk and the risk hierarchy or path of risk underwriting in the entity and account structure.
- **Collateral accounts** – Collateral accounts are used to track the various collateral types, i.e. ZAR cash, foreign currency cash and securities that are paid/pledge to the JSE against member and client margin requirements. Similar to the risk nodes, these accounts are created and managed at the trading member and client levels.

8.1 Account types

8.1.1 House accounts

a) **Trading member main accounts**

All trading members will have a separate house main account that is created automatically when the trading member is linked to a clearing member. This account is mainly used as the default account for all proprietary trading by the trading member. The name of the account is the same as the trading member. This account is included in the trading member's risk node, i.e. for margining purposes, all positions in this account are rolled up to the trading member level. The trading member risk node is in turn rolled up to the clearing member level. Note: It is not possible to add additional house main accounts.

b) **Member branch main accounts**

All trading member branches have a separate house main account that is automatically created when the trading member branch is created. This account is mainly used as the default account for all proprietary trading by the trading member branch. The name of the account is the same as the trading member branch. The account is included in the trading member's risk node, i.e. for margining purposes, all positions in this account are rolled up to the trading member level and not separately at the branch level. Note: It is not possible to add additional house main accounts.

c) **Sub accounts**

A trading member and a member branch may add various house sub accounts. The house sub account can have any name up to a maximum of 9 characters. The house sub accounts are included in the same risk structure as the trading member main accounts. Members may create and manage these house sub accounts as desired.

d) **House suspense accounts**

Each trading member has a house suspense account that is created automatically when the trading member or branch is created. The ID of the automatically created suspense account is “40006”. The house suspense accounts are included in the same risk structure as the main accounts. The house suspense account is used as a default account when no account or an incorrect account number is specified when booking the trade in the trading system. Trades not moved out of this account by end of the deal management period will be subject to initial and variation margin calls.

e) **Client suspense accounts**

Each trading member and trading member branch has a clients’ suspense account that is created automatically when the trading member or branch is created. The ID of the automatically created clients’ suspense account is “99999” or “99B [Branch number]”. A trading member can add additional clients’ suspense accounts. The additional accounts can have any name. The client suspense accounts are included in the same risk structure as the main accounts. This account is used when trading in an agency capacity. All client trades must be traded through the client suspense accounts to ensure that trading members do not cherry pick bad trades, from other proprietary trades, to be allocated to clients.

8.1.2 Member client accounts

a) **Main accounts**

Each member client has a client main account that is automatically created when the client is created. The name of the account is the same as the client’s name. This is the account number that is required when submitting the order or trade to the trading system. The account is included in the client’s risk node and not in trading member’s risk node. This account is the main account for all client trades.

b) **Sub accounts**

A member or branch may add client sub accounts for the client. The client sub account is assigned an ID by the clearing system. The ID format is Client ID + a three-digit number. Client sub accounts are included in same risk structure as the main account. Members may create and modify these client sub accounts with prior approval from the JSE.

8.1.3 Collateral accounts

Collateral accounts are used to track the various collateral types, i.e. ZAR cash, foreign currencies and securities that are paid/pledge to the JSE against member and client margin requirements. Collateral accounts are created automatically by the system for trading members and member clients. A collateral account is connected to a risk node, and created at the same time as the risk node. Risk nodes for Trading Member Branches do not have collateral accounts; collateral for these risk nodes are located in the main member’s risk nodes. Member clients of trading members or branches have their collateral accounts included in the client’s risk node, which is included in the main member’s risk node.

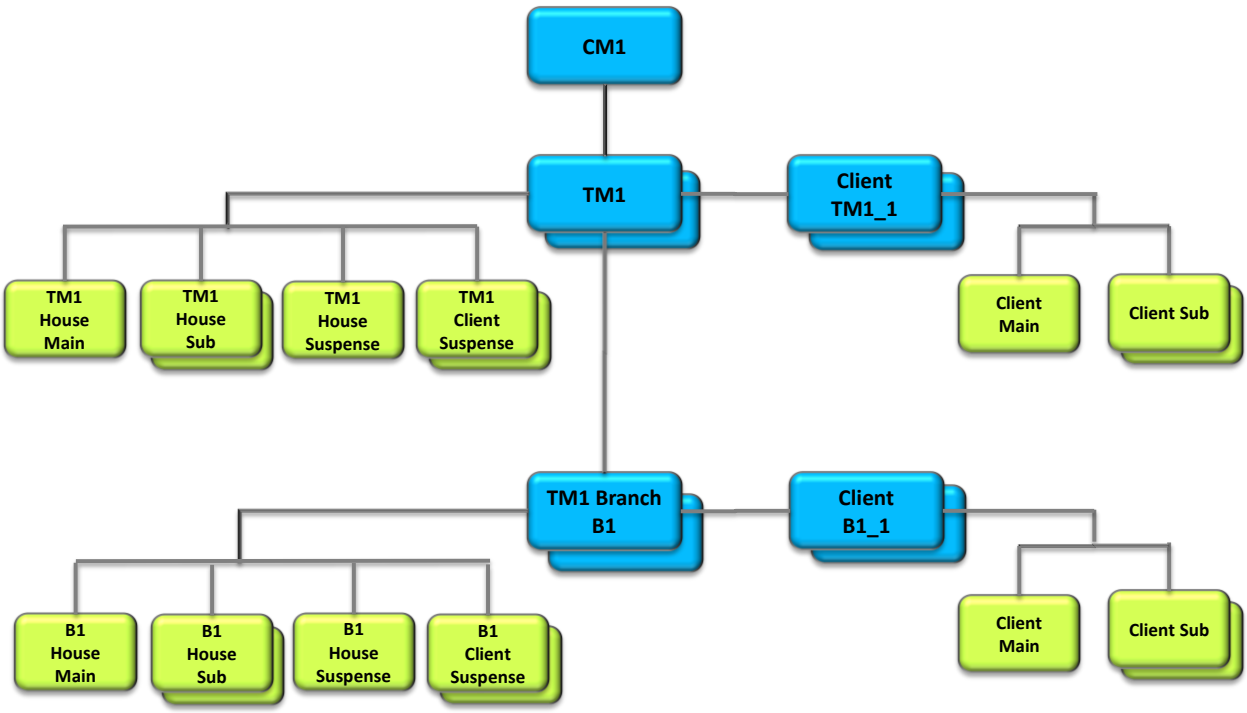
8.2 Account and risk structures

This section describes the participant firm and account structure applicable to the JSE clearing system. Two perspectives are relevant:

- Position account structure – how trading member and client position accounts are structured
- Risk node structure – how risk exposures and margins are evaluated and how collateral is pledged

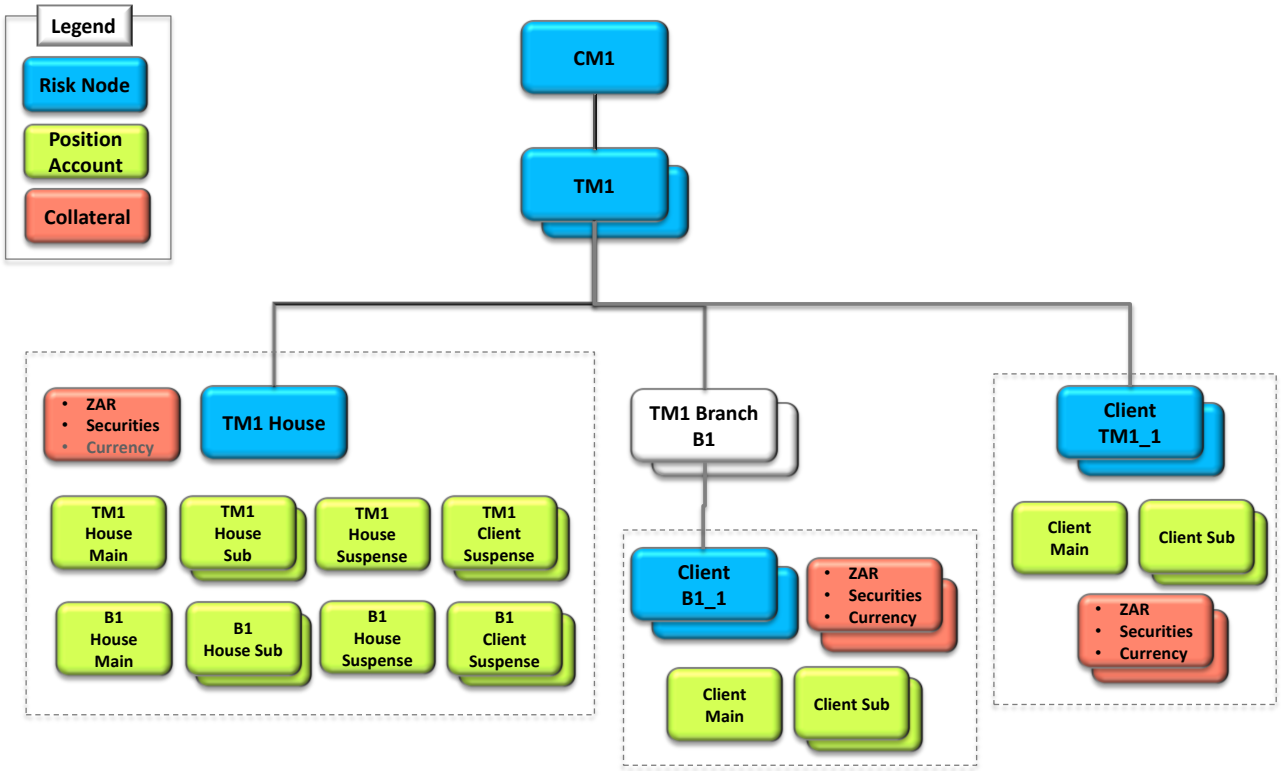
8.2.1 Position account structure

The diagram below represents the various levels at which positions are managed on the JSE clearing system. Various account types may be created under the trading member, trading member branch and client levels.

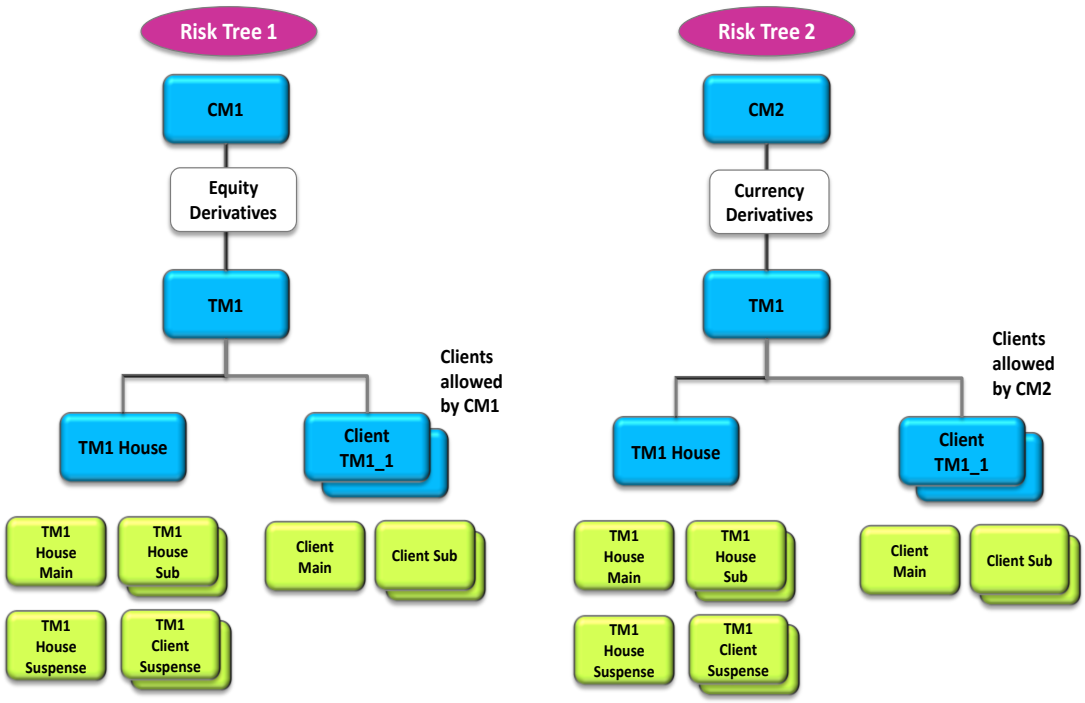


8.2.2 Risk node structure

The diagram below depicts the account structure from a risk management perspective illustrating the roll-up of risk to the various legal entity levels and the segregation of collateral of trading members and clients.

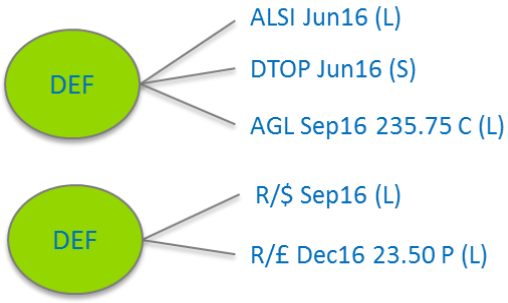


Clearing of different markets through different CMs is facilitated through separate risk structures with cloned accounts under each CM (risk tree) as illustrated below.

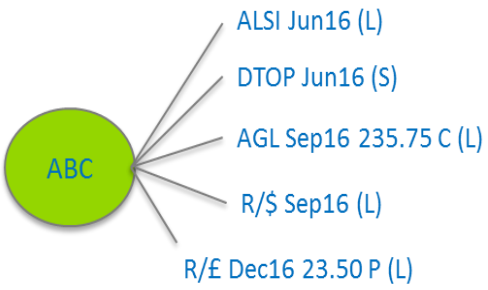


The diagrams above indicate the entity (i.e. clearing member, trading member, branch and client) and account structure as operated in the current JSE clearing will remain essentially unchanged in ITaC. There is however an important change stemming from the integration of markets that ITaC ultimately aims to achieve (i.e. once all markets have been migrated to the new clearing platform and member and client codes have been consolidated). A participant will have a single account containing the positions (exposures) across all markets. This is fundamental to enabling key integrated clearing objectives described above. The diagrams below illustrate this concept and the move from separation per market to integration:

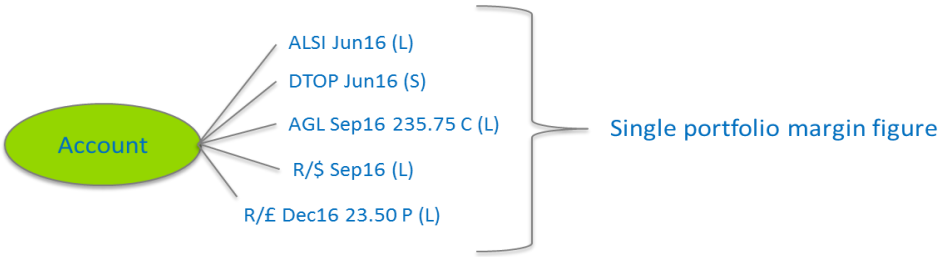
Currently markets are separated:



Post ITaC markets will be consolidated:



Taking this a step further a single margin figure will be calculated based on a participant's exposures across markets:



8.3 Account management

The following account management functions are provided to members to manage their subaccounts:

- Add position account – allows members to add new position sub or suspense accounts
- Enable/disable position account – allows members to enable or disable a position subaccount. No trade can be registered to the disabled position account

Below are the various account types that may be added and enabled or disabled:

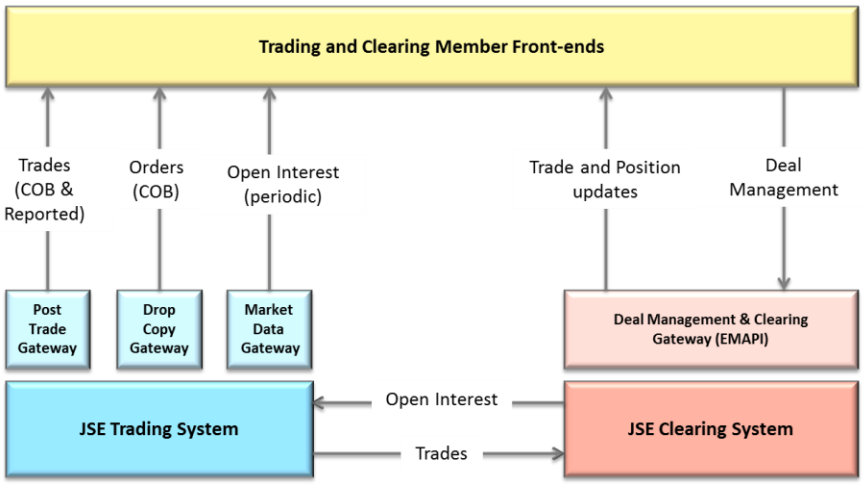
Type of account	Account Type	Account Sub type	Automatically created	Additional accounts can be added
House main account	HOUSE	MAIN	Yes	No
House sub account	HOUSE	SUB	No	Yes
House suspense account	HOUSE	SUSPENSE	Yes	No
Clients' suspense account	CLIENT	SUSPENSE	Yes	Yes
Client main account	CLIENT	MAIN	Yes	No
Client sub account	CLIENT	SUB	No	Yes

9 RECEIPT AND PUBLISHING OF TRADE INFORMATION

9.1 Publishing of trades and positions by the clearing system

9.1.1 New trades

As orders are matched on the JSE trading system, they are fed down into the JSE clearing system and in turn published as a matched trade to the respective market participants (a copy of the matched trade is also published via the JSE trading system). Trades published via the JSE clearing system will be sent to both the applicable trading members and their associated clearing members based on their subscription groups.



Trades published to market participants via the clearing system, will have all the necessary transactional information that is required to link back to the order and trade information that is published via the JSE trading system. Upon receipt of the matched trade, the JSE clearing system validates the position accounts stipulated by the trading members on their orders, and if successful, updates the accounts accordingly. If the account is not successfully validated, the trade is placed in the trading member's house suspense account. Trades that are placed on the suspense account (house or client) need to be moved by the trading member (or the clearing member that is acting on-behalf of the trading member) before the market is closed and end-of-day processes are kicked off. If not moved, the system will treat those trades as proprietary positions of that risk node.

Once the trade is successfully validated by the JSE clearing system and relevant position accounts updated, position and trade information is broadcasted to the associated market participants. Once this new position and trade information is received by market participants, they will be able to perform deal management functions as required. Open interest for all instruments is calculated by the Clearing system and published periodically to the market via the market data gateway of the JSE trading system.

9.1.2 Trade cancellations

Cancelling of a trade is initiated by trading or clearing members via the JSE trading system. Once the cancellation message is received and processed by the trading system (refer to 'Volume 00D – Derivatives Trading Overview' document), the cancelled trade is fed down to the JSE clearing system. Upon receipt of the message, the clearing system does the appropriate validation checks and similar to a new trade entry, updates the relevant position accounts and broadcasts the new positon and trade messages.

Once a cancellation is received in the clearing system, a trade message will be sent out for the original trade, indicating that no further deal management will be allowed on the trade. Members will be allowed to perform all deal management functions on the new cancelled trade – this is to allow for corrections where the original trade was deal managed before the cancellation was done. In the event where the original trade was part of an accumulation and resulted in an average price for the new accumulated trade, the cancelled trade should be booked at the average price and the original quantity. In all other deal management scenarios e.g. assign, allocate, etc. the cancelled trade should be booked at the original trade price and quantity.

New trades that are booked to facilitate price adjusts, and next day on-book and off-book cancellations, will be received and managed in the clearing system as normal reported trades with specific reported trade type indicators:

- Price adjust – PA,
- Next day on-book – PC
- Next day off-book cancellation – LC

9.2 Publishing of open interest

As new and cancelled trades are fed into the clearing system, as well as when certain deal and position management activities are performed (refer to sections below), open interest for the respective instruments are calculated and fed to the JSE trading system for publication to the market. Open interest is published to the market at the start of the trading day and in periodic intervals thereafter (every 30-60 minutes TBC). Open interest is calculated on a net position basis at client and trading member levels, i.e.

- at the client level i.e. client risk node, positions are netted across all main and sub accounts
- at the trading member level i.e. trading member risk node, positons are netted across house main, all sub and suspense accounts and all the trading member's branch house main, sub and suspense accounts

NB. Trading member and client positions below separate clearing members are not netted.

10 DEAL MANAGEMENT

Deal management is a collection of operations that may be performed on trades during the day of trade capture (T+0). A trade in this context is one side of a matched trade, and the subsequent versions of it resulting from trade management activities. Majority of deal management activities typically relate to transactions concluded by a trading member that is acting in an agency capacity, i.e. trading on behalf of their client. Only a few deal management functions are applicable in a principle capacity, i.e. propriety trading. The subsections below provide an overview of the various deal management functions that can be performed in the various trading capacities.

10.1 Principle and agent capacity

Principal and agency trading can be defined as follows:

- Principal trading refers to transactions concluded by a member for their own account
- Agency trading refers to transactions concluded by a member as an agent on behalf of their clients

The table below lists the deal management functions that are applicable in a principal and agency capacity:

Capacity	Deal location	Action allowed
Principal	N/A	• Accumulate • Deal sub account modification • Position sub account modification • Principal correction • Allocate **on exception basis only *** • Allocation error correction
Agency	Client suspense account	• Accumulate • Allocate • Assign • Tripartite • Deal sub account modification • Position sub account modification
	Client main or sub account	• Accumulate • Allocation correction • Principal correction

* When trading as principal with a client, allocations are to be performed on an exception basis only i.e. to rectify an incorrect client code. In the case of an invalid client code on the trade, the trade will be moved to the member's house account as it is processed into RTC. An allocation to the correct client account is then done in deal management.

10.2 Deal management functions

As mentioned above, with the exception of the ability to take a turn in deal management, existing deal management functions will be catered for. These are summarized in the table below.

Assign *(member acting on behalf of another member)*	• Trade matched on new trading system and the member assigns (gives-up) the trade to receiving member, at the same price. • Receiving member accepts/rejects the trade on RTC
Allocation *(member acting on behalf of own client)*	• Trade matched on the new trading system • Member allocates the trade to the client at the same price through deal management in RTC
Tripartite Allocation *(member acting on behalf of a tripartite client)*	• Trade matched on the new trading system • Member allocates the trade to the tripartite client at the same price through deal management on RTC • Tripartite agreement must already exist and receiving member accepts/rejects the trade
Accumulation	• Aggregation of several deals into a single deal with a volume weighted average price • The capacity (agency or principal) of the deals being accumulated must be the same
Deal sub-account modification	• Change a deal from member account to member sub-account or client suspense account and vice versa
Position sub-account modification	• Change a position from member account to member sub-account or client suspense account and vice versa
Allocation error correction	• Change the client code on a deal from one client to another client
Principal correction	• Change the client code on a deal from the incorrect client code to the member's house account

Refer to Appendix A for depictions of how the various deal management functions, applicable in principal and agency capacities, will be performed in the JSE clearing system.

Refer to Appendix B for the various position account rules that are applicable when performing the deal management functions listed above.

11 TRADE GIVE-UPS – OFF BOOK TRADE CAPTURE VS DEAL MANAGEMENT

The following rules are applicable when performing trade give-ups:

- When trading in a principle capacity
    - A give-up is affected by capturing an off book trade on the Trading System
- When acting in an agency capacity
    - A give-up is affected through deal management on the Post-trade System, using the assign or tripartite functions
    - Except on T+1 when an off book trade must be captured on the Trading System to affect the Give-Up (as it is not possible to deal manage the previous day's trades)

Refer to Section 14 for information on capturing off book trades by clearing members on-behalf of trading members.

12 BROKER COMMISSIONS

Existing deal management functions will be available in ITaC systems with one notable exception being the ability to take a turn (change the price) in deal management when performing assigns, allocations and tripartite allocations.

The JSE is obliged to ensure fair, efficient and transparent markets and promote price discovery and price transparency for proving best execution. In support of this and in line with international best practices regarding trade reporting, deal management and the treatment of agency and principal trades, the ability to take a turn in deal management will not be available in ITaC systems.

When trading in a principal capacity, a reported trade will be booked on the trading system at the price associated with the trade. The deal management functionality in RTC will not allow the price of a transaction to be changed when performing any deal management activities for principal transactions

RTC will provide existing functionality which allows members to assign and allocate trades (including tripartite allocations) at the same traded price. When acting in an agency capacity members must collect a commission (brokerage fee).

In order to assist the market in the processing of commissions the JSE will be providing a commissions solution. A summary of the JSE commissions offering follows:

- The primary role of the exchange will be to act as a payment clearing house for settling daily net commission amounts across Clearing Members on T+1
- The commissions solution will avoid trading members having to develop their own commission settlement solutions requiring invoicing of other members/tripartite clients to obtain commissions owed
- Daily commission amounts relating to give-up activity (i.e. between trading members and between trading members and tripartite clients) will be rolled up to the Clearing Member level and net amounts settled as part of the daily margin and fee settlement process on T+1
- Commission information will be provided to Trading and Clearing Members in order for them to do reporting, reconciliation, VAT invoicing as well as cash collections and payments at trading member and client levels
- Clearing Members, Trading Members and Independent Software Vendors (ISVs) will be required to develop the necessary front-end functionality to utilise the new JSE commission service
- Trading members will be required to actively monitor and manage their commission entries – JSE will not be liable for any mismanagement of commissions

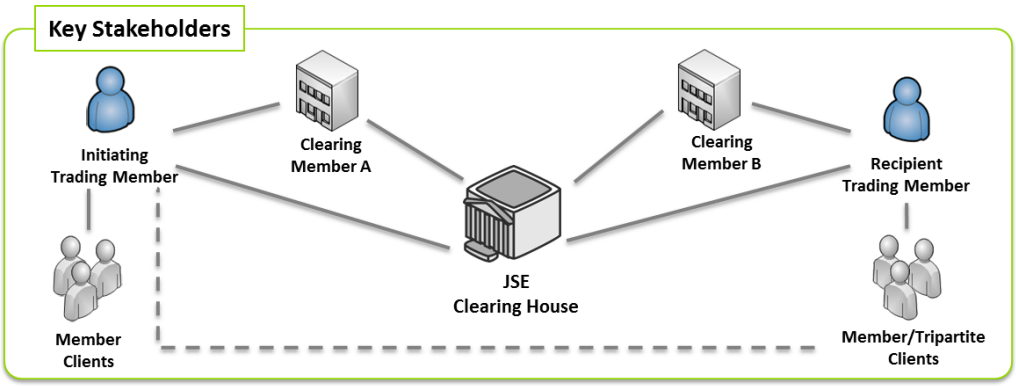
Key features of the JSE commissions offering:

- Provide the ability for trading members to capture their commissions against clients (direct and tripartite) and other trading members
- Provide trading members with the ability to cancel and reject incorrectly booked commissions
- Aggregate commission amounts to the CM level and settle net amounts across Clearing Members as part of the daily settlement process on T+1

- Provide clearing members and trading members with sufficient reporting information to facilitate their reconciliation, collections/payments and VAT invoicing processes

12.1 Commission booking process overview

Once trades are fed into the clearing system and necessary deal management activities are performed, trading members will be able to calculate the required commission amounts (using their font-end solutions) and submit them to the JSE clearing system for daily settlement. Commission entries can be captured at a deal level or aggregated up to the trading member or client levels and submitted to the JSE for settlement. The diagram below depicts the key stakeholders and their responsibilities during the commission booking process.



Key Responsibilities

- **Initiating Trading Member –** Calculating and capturing new commissions; Cancelling incorrect commissions;
  VAT invoicing of and cash collection from own Clients is typically done by the Clearing Member
- **Recipient Trading member –** Monitoring and rejecting incorrect commissions
- **Clearing Members –** Reconciling daily commissions; cash collection and payment between own Trading Members and Clients and associated VAT invoicing
- **JSE Clearing House –** Facilitate commission management between Initiating and Recipient Trading Members; Provide detailed commission information to Initiating and Recipient Trading Members and Clearing Members; Facilitate net settlement of commissions across Clearing Members on T+1

Once submitted to the JSE clearing system, the commission is set to pending and awaits confirmation/acceptance ~~deemed confirmed i.e. no confirmation is required~~ by the recipient trading member. In a case where the initiator and recipient of the commission are the same, the commission is deemed confirmed by default. Initiating trading members are allowed to cancel incorrect commission entries that were previously submitted. The cancellation must be done before the end of the deal management period at end-of-day otherwise the amount will be settled as part of the daily settlement process. Recipient trading members are allowed to reject incorrect commissions captured against them and accept pending commission before the end of the day. Commission not accepted by end of day will be expired by the system.

Commission notifications are sent to both the initiating and recipient trading members, as well as associated clearing members upon a pending, new, cancel, expire or reject commission event. Clearing members and trading members will be able to download all commission entries at end-of-day in order to facilitate their reconciliation, invoicing and

collection processes. Final commission amounts are aggregated to the clearing member level and net amounts are settled by the JSE as part of the daily settlement process.

12.2 Commissions booking scenarios

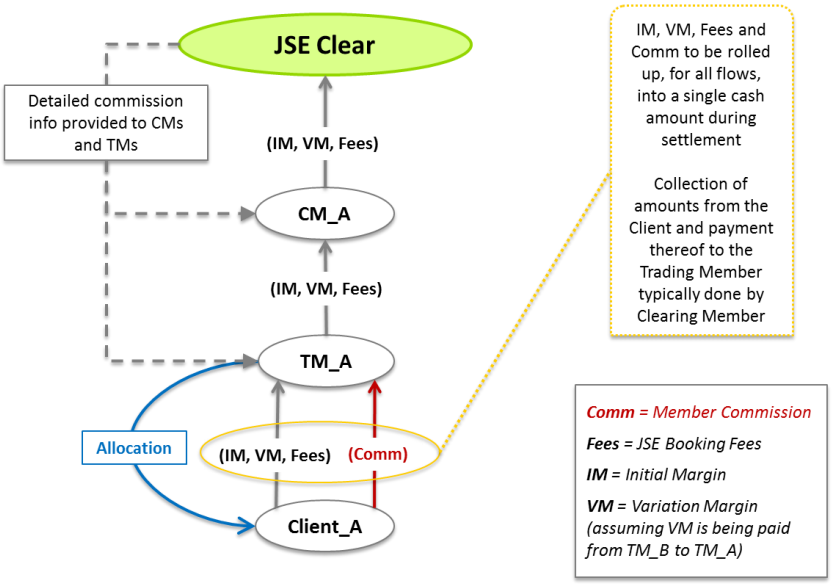
The scenarios below provide a view of the flow of commission amounts based on the various deal management activities that are performed by trading members when acting in an agency capacity. The scenarios include:

- Scenario A: Commission flows during Allocations
- Scenario B: Commission flows during Assigns
- Scenario C: Commission flows during Tripartite Allocations

Refer to Appendix H for an example of the commission booking and settlement flows.

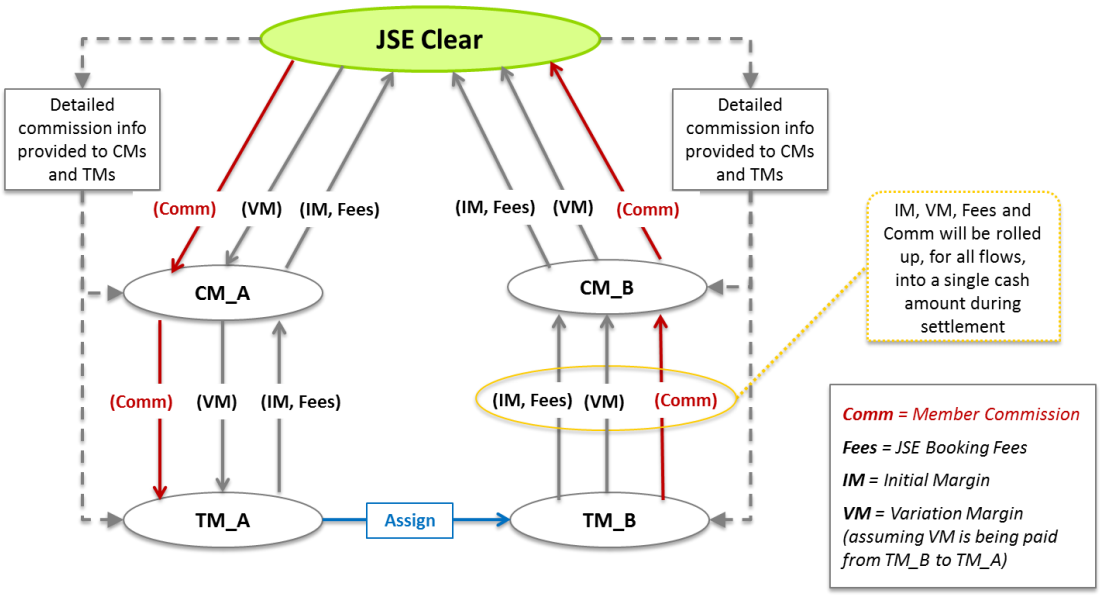
12.2.1 Scenario A: Commission flows during Allocations

Scenario: Member to Direct Client, under same Clearing Member



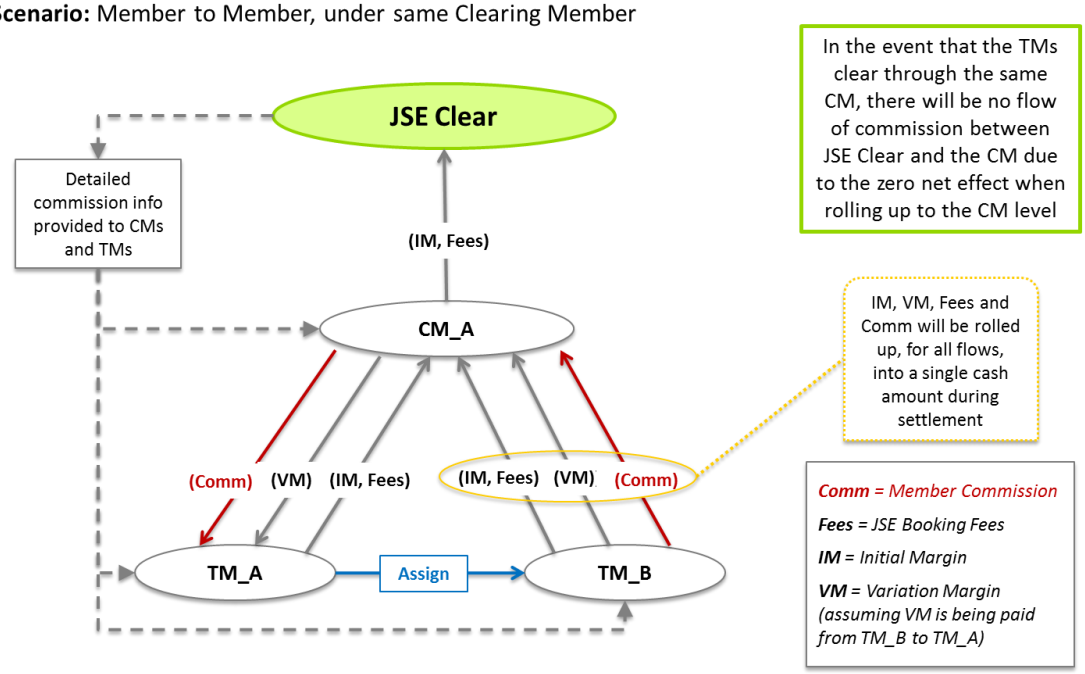
12.2.2 Scenario B1: Commission flows during Assigns

Scenario: Member to Member, under different Clearing Members



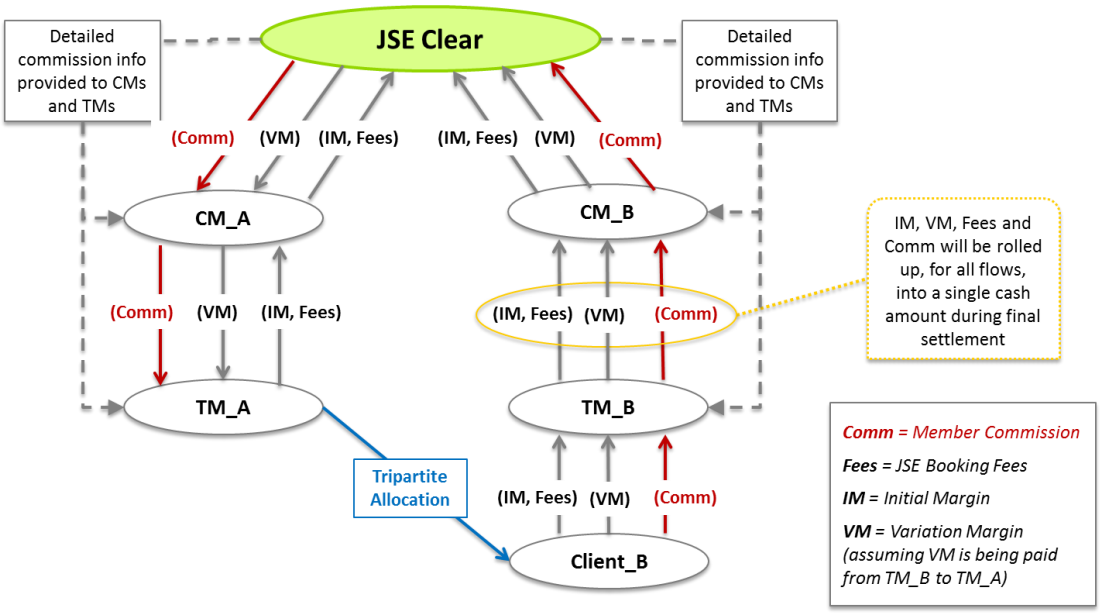
12.2.3 Scenario B2: Commission flows during Assigns

Scenario: Member to Member, under same Clearing Member



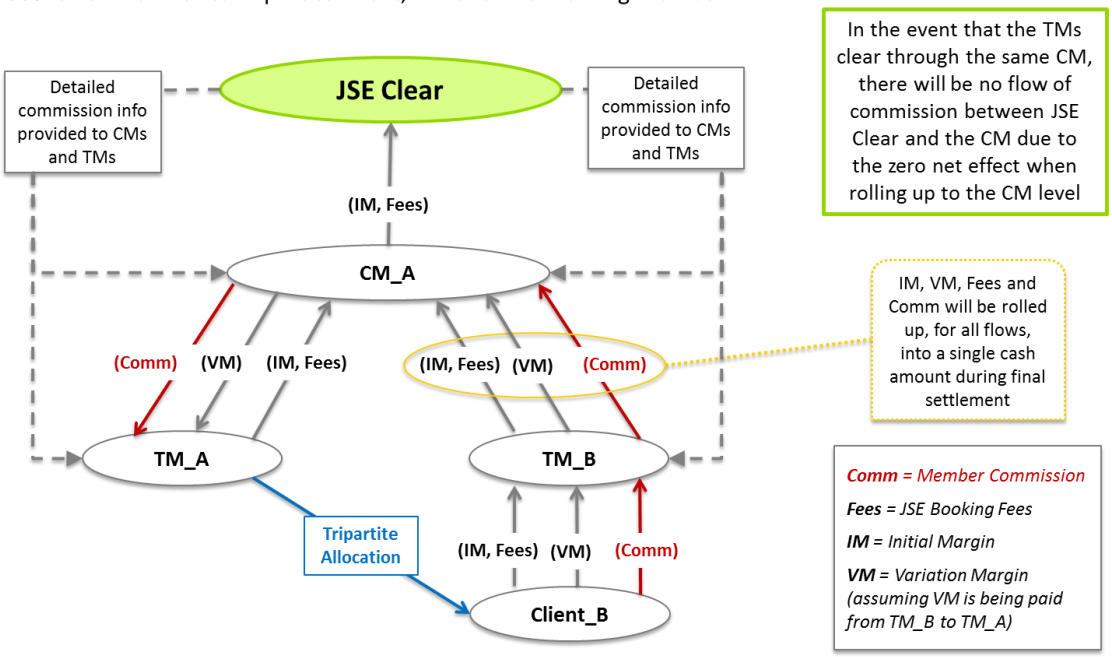
12.2.4 Scenario C1: Commission flows during Tripartite Allocations

Scenario: Member to Tripartite Client, under different Clearing Members



12.2.5 Scenario C2: Commission flows during Tripartite Allocations

Scenario: Member to Tripartite Client, under same Clearing Member



12.3 Commission management functions and processes

The subsections below detail the various functions and processes of the commission services offered by the JSE.

12.3.1 Commission management functions

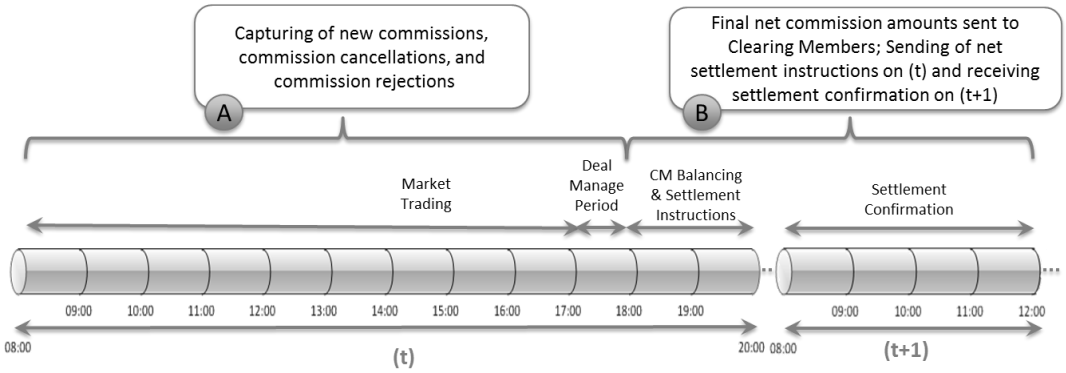
Trading members are provided with the following functionality that is required to capture and manage their daily commission entries:

- **Capture new commission** – this is performed by the initiating trading member. It provides the ability for trading members to capture new commission entries against recipient trading members or clients (direct or tripartite).
- **Cancel commission** – this is performed by the initiating trading member. It provides the ability for initiating trading members to cancel incorrectly captured commission entries
- **Reject commission** – this is performed by the recipient trading member. It provides the ability for recipient trading members to reject incorrect or unknown commission entries that have been captured against them
- **Accept Commission-** this is performed by the recipient trading member. It provides the ability for recipient trading members to accept pending commission captured against them
- **Expire commission – the system automatically expire pending commissions not accepted by end of day.**

Refer to Appendix G for the step by step process of performing the various commission functions

12.3.2 Commission processing times

The following daily window periods for managing and settling commission entries are applicable:



a) **Window Period A:**

- All commission entries captured within this period will be settled as part of the daily settlement cycle. Any commissions not captured within this period, will need to be captured the following trading day
- Incorrect commissions that are not cancelled or rejected, will be settled as part of the daily settlement cycle. Commissions that were not corrected, can be corrected by capturing a new commission for the delta amount the following trading day
- During the Deal Management Period, all members must finalise their new commission entries and cancel or reject any incorrect\unknown commissions – no new, cancellations or rejections of commissions will be allowed post the Deal Management period

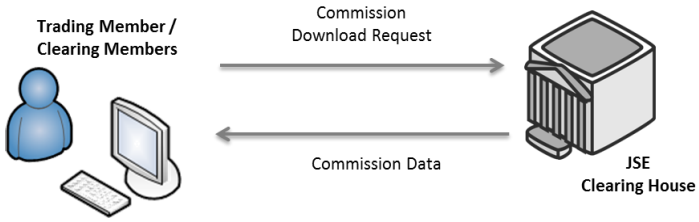
b) **Window Period B:**

- Clearing members to receive final net commission amounts as part of the daily balancing cycle. Net commission amounts across Clearing Members to be settled on (t+1)

12.3.3 Commission downloads

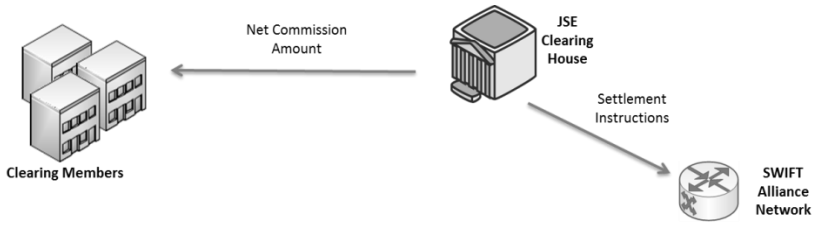
In addition to the real-time commission confirmation messages received upon new, cancelled and rejected commissions, recipient and initiating trading members, as well as associated clearing members, will be able to download all their commissions data during the course of the trading day and at end-of-day.

The commission entries will include all necessary information in order for trading members and clearing members to do reporting, reconciliations, VAT invoicing and cash collection down to client level. Commission downloads will also include cancelled and rejected commission entries. The download will only include commission entries for the day – entries to be refreshed at the start of each day.



12.3.4 End-of-day balancing and settlement

As part of the daily end of day process, the JSE clearing system will send the final net commission amounts to the clearing members. The net commission amounts will be sent as part of the second balancing step in the end-of-day process that includes the booking fees and interest on margin amounts - first balancing is for daily margin amounts. Once the second balancing process is complete, the settlement process is kicked off and all commission amounts are rolled-up with other cash amounts and settlement instructions are sent out.



12.3.5 Commission reporting and invoicing

Net commission amounts will be included in the Daily Account Summary reports that are available to each clearing member. Information in the Daily Account Summary report will be at the trading member level. Trading Members (or Clearing Members on their behalf) are responsible for generating and sending VAT invoices, for relevant fees and commissions, to their clients and associated trading members

12.4 Client front-end considerations

In order to fully utilise the JSE commission service, clearing members, trading members and supporting software vendors will be required to develop the necessary front-end capabilities to manage their commissions. Depending on the cash collection and invoicing arrangements between the clearing member and trading member, some of the key developments may include:

- **Clearing Member Front-Ends:**
    - Ability to receive and monitor real-time commission confirmation messages across trading members and clients
    - Ability to aggregate commission amounts for each trading member and determine their net commission amount to be settled
    - Ability to receive and reconcile net commission amounts (payable/receivable) from the JSE and perform necessary VAT invoicing and cash collection where applicable

- **Trading Member Front-Ends:**
    - Ability to automatically calculate and send new commission entries to the JSE, based on member defined commission structures (this can either be done in bulk at EOD or real-time as trades are booked and deal managed)
    - Ability to cancel and reject incorrect commission entries
    - Ability to actively monitor and alert (where and when applicable) the validity of all new commissions booked against the trading member or trading member's clients
    - Perform necessary detailed commissions reporting and reconciliations at end of day
    - Ability to generate and send necessary VAT invoices to trading members and clients

13 POSITION MANAGEMENT ACTIVITIES AND UPDATES

Positions are calculated and updated in real-time in the JSE clearing system. The following events trigger a position update:

- Trades are received or cancelled from the trading system (refer to section above)
- Deal management activities in the clearing system (refer to section above)
- Position management activities in the clearing system
    - Client and member transfers
    - Option exercise and abandon
    - Adjustments based upon corporate actions
    - Expiration of tradable instruments
    - Position corrections

Whenever a position is updated, the clearing system publishes an update to all market participants that have subscribed to that broadcast flow. Position updates are published down to the lowest account level, i.e. client level, and once received, market participants may choose to aggregate up to higher account levels in their front-end solutions, i.e. client → branch → trading member → clearing member. In addition, as positions are updated based on position management activities, open interest for the respective instruments are calculated in the clearing system and fed to the JSE trading system for publication to the markets (refer to section above). The subsections below provide details of the various position management functions that may be performed in the JSE clearing system.

13.1 Client and member transfers

The transfer of client or trading member positions may be performed in the clearing system, by the clearing house, in order to facilitate:

- Clients wishing to migrate to a new trading member
- Trading members wishing to clear though a new clearing member
- Defaulting of a client and migration of their positions to the nominated trading member
- Defaulting of a trading member and the migration of their clients to a new trading member
- Defaulting of a clearing member and the migration of their trading members and clients to a new clearing member

13.1.1 Transfer of client positions to a new trading member

The transfer of client positons to a new trading member is typically performed when:

- clients wish to migrate to a new trading member
- a trading member defaults and their clients need to be migrated to new trading members at an agreed price

Client transfers are performed by the clearing house post the completion of the daily end-of-day process run. Positions across all client main and sub accounts are transferred under a new trading member or trading member branch. In order to successfully perform the transfer, new client account reference data is created below the new destination trading member. Once the reference data is created, all client positions are transferred from the old trading member to the new trading member, taking into account the associated clearing member through which the trading member clears for the particular market. The positions are transferred at the end-of-day closing price or at a different agreed price.

All cash collateral that was held by the previous clearing member is transferred to the new collateral account of the client at the destination clearing member. In the event that the destination trading member clears through different clearing members per market, the cash collateral between the clearing members will be adjusted the following trading day during the intra-day or end-of-day margin call processes. Collateral positions in securities will remain under the original clearing member and is automatically adjusted the following trading day during the intra-day or end-of-day collateral processes. The original risk node and accounts will remain under the original trading member however will reflect a zero exposure. No future trades will end up on the original accounts post the migration.

13.1.2 Transfer of defaulting client positions to trading member

In the event where a client has defaulted, their positions are transferred to the trading member house account at an agreed price (refer to the 'collateral management' section for how securities collateral is managed in a default situation). The original risk node and accounts will remain under the original trading member however will reflect a zero exposure. No future trades will end up on the original accounts post the migration.

13.1.3 Transfer of trading member positions to a new clearing member

The transfer of trading member positions to a new clearing member is typically performed when:

- trading members wish to clear though a new clearing member
- a clearing member defaults and their trading members (including clients) are to be migrated to a new clearing member at an agreed price

Trading member transfers are performed by the clearing house post the completion of the daily end-of-day process run. Positions across all trading member house main, sub, suspense, branch and client accounts are transferred to the new clearing member. In order to successfully perform the transfer, new trading member reference data is created below the new destination clearing member(s). Once the new reference data is added and new risk structures created under the new clearing member, the positions are transferred from the old to the new clearing member. The positions are transferred at the end-of-day closing price or at a different agreed price.

All cash collateral that was held by the previous clearing member is transferred to the new collateral account of the trading member at the destination clearing member. In the event that the trading member clears through different clearing members per market, the cash collateral between the clearing members will be adjusted the following trading day during the intra-day or end-of-day margin call processes. Collateral positions in securities will remain under the original clearing member and is automatically adjusted the following trading day during the intra-day or end-of-day collateral processes. The risk structure of the trading member under the old clearing member will remain however will reflect a zero exposure. No future trades will end up on the original accounts post the migration.

13.2 Options exercise and abandon

The JSE facilitates the trading and clearing of both European and American style options. In the equity derivatives market, American options may be exercised or abandoned anytime up to twenty minutes after the publication of the official closing prices of the underlying (typically 12pm) on expiry day. European options may be exercised or abandoned at any time on expiry date (if price is available or not) until cut off time of the contract. Currently there are only American style options on the Equity derivatives market (EDM). The auction process for the EDM market is kicked-off at 12:00pm and closing prices published once complete. The publication time of closing prices may vary from time to time depending on how long the auction process takes. Trading members have a twenty minute period thereafter to exercise or abandon their options. On the Currency derivatives market, there are only European options at the moment. Exercise and abandon may be specified throughout the day. In-the-money option positions that are one cent in-the-money (Cents from ATM) are automatically exercised at end-of-day on expiry day.

The JSE clearing system provides clients with the following option exercise and abandon capabilities:

- request abandon for option positions
- request early exercise of American options
- automatic exercise at expiry day for in-the-money options

The table below provides a view of the various options exercise and abandon activities that may be performed in the JSE clearing system, and resulting outcomes:

Activity	Description	Outcomes
Manual option exercise or abandon	• A long option position holder of American options may request early exercise or abandon at any time during the contract life span, i.e. before "End of manual exercise" at expiry date. *NB. Definition of "End of manual exercise" is done per market.* • A long option position holder of European style options may request to exercise or abandon on expiry day before "End of manual exercise" i.e. until end-of-day.	• Exercise – option positions closed-off and new trades i.e. underlying future contracts are created and allocated according to the specific allocation method (refer to option allocation section below) • Abandon – option positions closed-off based on the specific allocation method (refer to option allocation section below) *NB. In both cases, trades and position updates are published to the market.*
Automatic exercise or abandon on expiry	• The clearing system automatically exercises in-the-money options and abandons out-the-money options on expiry date at end-of-day, if a client has not already manually selected. • The decision to exercise or abandon is based upon a configurable number of cents from the underlying futures price. This is currently configured at one cent, i.e. R0.01	

13.2.1 Option allocation process

The primary function of the option allocation process is to create positions in underlying futures instrument at exercise, and remove out-of-money options positions at abandon. The JSE facilitates two methods of allocation, random and pro-rata allocation. These allocation methods are set at a market level, i.e.

- Equity derivatives → Pro-rata allocation
- Currency derivatives → Random allocation

Regardless of allocation method, allocations are always done internally across all position accounts at the trading member and client levels. All remaining open positions are allocated externally across all other trading members and clients using either the random or pro-rata allocation methods. The following steps are performed during the allocation process:

- **Step 1: Decide the quantity to assign** – The system traverses all long positions in the option. For all accounts where a long position is found, the system checks the user-settable "exercise quantity" in the account. The smallest of the long position quantity and the exercise quantity is chosen as the quantity to exercise.
  NB. The exercise quantity can also be the total abandon quantity.

- **Step 2: Select participating short positions** – by summing the quantities from step 1, the total exercise quantity is determined. This quantity is now to be allocated among the short position holders. This is done using either the pro-rata or random allocation algorithms.

Pro-rata allocation

- **Step 3a: Pro-rata allocation step** – We assume that there are N short positions. Let TotalLongQty represent the total quantity to exercise and let ShortQty1, ShortQty2, ..., ShortQtyN be the quantities of the short positions. The sum of the short quantities is TotalShortQty. In the first step, every short position is awarded TotaLongQty * (ShortQty<xxx> / TotalShortQty) where the division means integer division and all quantities are expressed in nominal quantity.

- **Step 3b: Allocation of remainder** – Since integer division is used, the sum of the quantities awarded in the pro-rata step may not necessarily add up to TotalLongQty. The remaining long quantity is awarded randomly: a random subset of the short positions is selected, where the size of the subset is equal to the remainder. Every position in the subset is awarded one additional nominal unit.

Random allocation

- **Step 3: Random allocation step** – all long and short position accounts are sorted in tables in descending order from largest to smallest. Starting from the top, each long position account is then distributed over the short position accounts in the order that they were sorted. As short position accounts are filled, the system moves on to the next short position account until all long exercise/abandon position accounts have been filled.

Refer to Appendix C for the various processes when performing option exercise, abandon and futures closeout (FCO)

Refer to Appendix D and Appendix E for examples of the random and pro-rata allocation processes

13.3 Adjustments based upon corporate actions

Corporate actions (CA) are loaded into the JSE clearing system as part of the final steps of the daily end-of-day process. Depending on the type of corporate actions being applied, open derivative positions may increase or decrease, or new positions created in new instrument contracts. The updated positions are taken into effect the following trading day.

The amount of securities collateral pledged to the JSE may also be affected depending on the corporate action type. In the event that the corporate action results in a delisting of a security that has been pledged to the JSE, the Strate collateral management solution will automatically start the substitution process of that security three days prior to the effective date of the corporate action. The security may either be substituted for another eligible security if available, otherwise replaced with ZAR or foreign currency cash. Other corporate action types may result in either a top up or release of pledged securities.

The table below provides a view of the various corporate actions and the impact on pledged security collateral.

Corporate action type	Impact on pledged securities
• Merger • Tender Offer • Trading Status De-listed • Stock Split • Reverse Stock Split • Conversion • Name Change • Liquidation • Partial Redemption (partial decrease in value) • Scheme of Arrangements • Exchange Offer • Odd-Lot Offer • Expiry of Warrants • Repurchase Offer • Dutch Auction • Other events • Redemption (full decrease in value) • Worthless	Pledged securities become ineligible – to be substituted for other eligible securities or cash

• Bonus Issue • Spin-Off • Interest Payment • Cash Dividend • Dividend Option • Cash Distribution • Dividend Reinvestment • Rights Distribution • Rights Subscription • Capital Gain Distribution • Scrip Dividend • Stock Dividend • Share Premium Dividend • Priority Issue	Pledged securities remain eligible

13.4 Expiration of tradable instruments

Positions in expiring option and future contracts are either closeout or settled (physical delivery of underlying contracts) during the end-of-day process on expiration date/futures closeout (FCO). This process is performed automatically by the JSE clearing system by:

- creating equal and opposite trades, at the closeout price, for all positions to be closed out, i.e. creating a net zero position
- creating new underlying future contract positions for options
- creating delivery instructions of underlying cash/spot instruments for physically settled futures

The subsections below detail the automatic expiry processes that are performed by the JSE clearing system for option and future instruments.

13.4.1 Automatic exercise or abandon of options at expiry

On expiration date of option contracts, typically aligned with futures closeout (FCO) dates, the JSE clearing system automatically evaluates all open option positons and determines whether they are either In-the-Money (ITM), At-the-Money (ATM) or Out-the-Money (OTM) and as a result either exercise or abandon the positions. This determined by receiving the closing prices of the underlying instruments and performing the following calculations:

Action	Option Intrinsic Value (OIV)
Options to be exercised, i.e. options that are In-the-Money (ITM)	>= *min_exercise_value*
Options to be abandoned, i.e. options that are At-the-Money (ITM) or Out-the-Money (OTM)	< *min_exercise_value*

Where:

- *OSP: Option Strike Price*
- *UCP: Underlying Closing Price*
- *OIV: Option Intrinsic Value*
    - *for call options, OIV = UCP - OSP*
    - *for put options, OIV = OSP - UCP*
- *min_exercise_value: the minimum option intrinsic value at which it is exercised – currently set at R0.01 for all option instruments*

In the event where a client has manually selected to exercise or abandon their options positions, the JSE clearing system will honour that selection and not perform the automatic exercise or abandon evaluation. Once all option positions are evaluated, the automatic option allocation process is conducted where long and short positions are matched (refer to option allocation process above). Upon matching all long and short positions, the JSE clearing system closes out the positions by creating equal and opposite trades, i.e. sell trades for long option positions and buy trades for the short option positions, in the respective matched position accounts resulting in a net zero position. For all option positions that are to be exercised, the system in turn creates new positons in the underlying contracts by booking new trades. New futures trades are booked at the option strike price. All offsetting and new trades and positons are published to the market via the JSE clearing system.

13.4.2 Automatic closeout of futures at expiry

On closeout days, the JSE clearing system automatically closes out all open positions of expiring future contracts by generating equal and opposite trades (at the futures closeout price (FCO) for standard future contracts and end-of-day closing price for Anyday futures), i.e. sell trades for long positions and buy trades for the short positions. The clearing system runs a matching algorithm and creates these offsetting trades against the matched long and short position accounts. For future positions marked for physical settlement, the clearing system creates new settlement positons in the underlying instrument (spot) for the same side as the future, i.e. a long futures position will create a long settlement position. The system matches long position holders with short position holders, using the random allocation method (refer to 'Option allocation process' section above), to create delivery instruction pairs for the settlement positions. These underlying settlement positions are created in order to hold the required settlement margin from the long (purchaser) and short (seller) position holders until the settlement day ends, after which

the margins are released. All offsetting trades and settlement delivery instructions are published to the market via the JSE clearing system

13.4.3 Cash flow for expiring option and future positions

The example below provides a view of how cash is calculated and settled during the expiring of option and future positions.

Example of cash flow for expiring option and future positions

Day before exercise:

- Buy options: 100 call strike=100, trade price=8.

EOD *day before exercise*:

- MtM of future = 110
- MtM of option = 10 (roughly)
- VM (option) = 100 * (10-8) = 200

Day of exercise:

- Auction of future => MtM (expiration settlement tag) = 112. The option is definitely ITM!
- Options exercised, book closing trade at price 0 and receive futures at strike price:
- Sell options: 100 @0
- Buy futures: 100 @100

EOD day of exercise:

- MtM Option = 12
- Close out futures position by booking opposite trade at settlement price and buy stock at settlement price:
    - Sell futures: 100 @112
    - Buy equities: 100 @ 112 (handled outside RTC)
- Calculate VM:
    - Option: 100 * (12 - 10) - 100 * (12 - 0) = 200 -1200 = -1000
    - Future: 100 * (112 - 100) - 100 * (112 - 112) = 1200 - 0 = 1200
- Cash flow:
    - Gained from option: 200 - 1000 + 1200 = 400 = 100 * 4
    - Pays for stock: - 100 * 112
    - => get a rebate of 4 per stock

13.5 Physical deliveries

A delivery instruction is created when a physically-settled future expires. A physical delivery report is generated which facilitates the process of booking trades for the underlying equity in the cash equity market and delivery of the underlying by the short to the long position holder. As not all derivative members are members of the cash equity market, members can nominate a cash equity member to book the trade on their behalf. The clearing system allocates counterparties for the trades through a random allocation process. Deliveries are monitored and if a delivery obligation is not fulfilled the settlement margin is not released.

13.6 Position corrections

13.6.1 Position sub-account modification

Position sub-account modifications may be performed by trading members or clearing member (on-behalf-of) at any time during the trading day. This functionality is used to move positions between accounts within the trading member house main, sub and suspense accounts. Once triggered by the member, the clearing system transfers the positions between the accounts by creating an opposite trade at the end-of-day closing price or user specified price on same account and an equal trade on receiving account. Position account modifications may be performed from a disabled position account, but not to a disabled position account. Since positions are only allowed to be transferred within the same risk node, there is no new margin calculation triggered. New positions and trades are broadcasted to the market via the clearing system.

13.6.2 Single position transfers by the clearing house

Single position transfers are performed by the clearing house post end-of-day processing activities in the clearing system. This capability is used to facilitate the transfer of a single position to another account at the closing price for the day. These transfers are typically done by the clearing house in the event of position corrections that may be required. The destination account can be any account (except a suspense account) within the same trading member or within another trading member.

14 ORDER AND TRADE MONITORING, AND ON-BEHALF-OF ACTIVITIES

The diagram below illustrates how clearing members may perform real-time monitoring of order and trading activities of their trading members, as well as perform various on-behalf-of activities for their trading members if required.

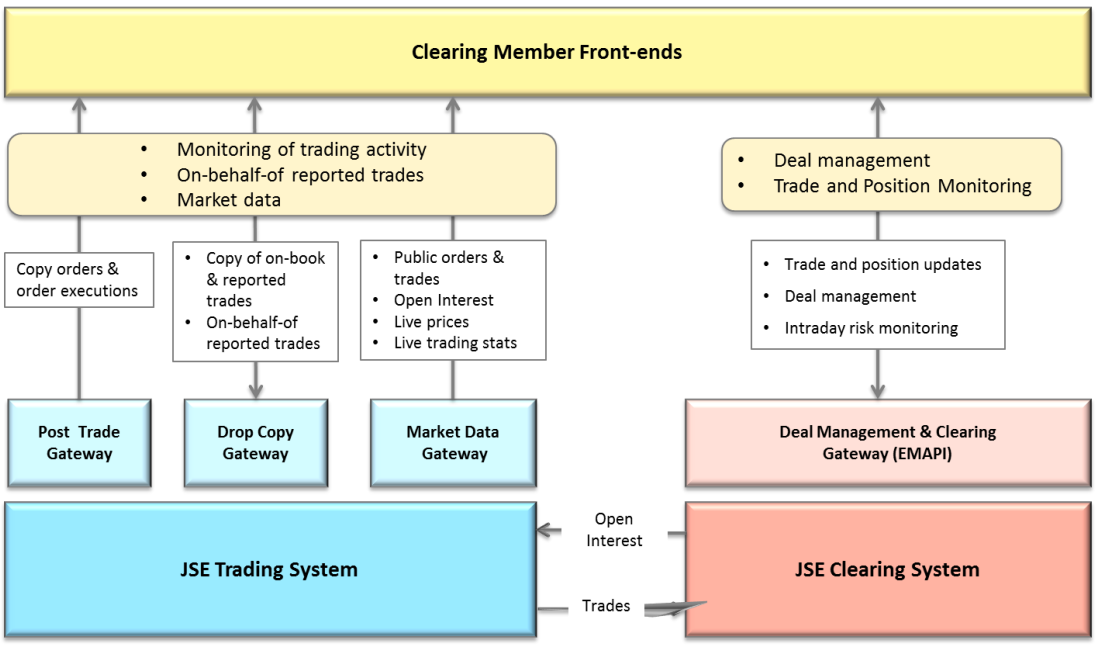
Clearing members are able to perform the following deal and position management actions, via the clearing system, on-behalf-of their trading members and direct clients:

- Allocation
- Assign
- Tripartite allocation
- Accumulation
- Allocation error correction
- Principal correction
- Deal sub-account modification
- Position sub-account modification

Clearing members are also able to perform the following reported trade functions on the trading system on-behalf-of their trading members and direct clients:

- Book reported trades
- Accept reported trades
- Cancel reported trades

Refer to Appendix F for further details on the required connectivity to the trading and clearing systems to perform order and trade monitoring and on-behalf of activities.



15 RISK MANAGEMENT

JSE Clear, the central counterparty (CCP) for the derivative markets operated by the JSE, has built a strong, internationally recognised risk management framework. The ITaC project will further enhance JSE Clear's risk management capabilities. The consolidation of all JSE derivative markets onto a single clearing platform will allow for more centralised management of risk across markets. The new Clearing platform will also facilitate more real-time and proactive monitoring and management of risk.

The following sections cover the risk management processes in support of the JSE's integrated clearing objectives. Both pre-trade risk management (facilitated by the Trading System) and post-trade risk management (facilitated by the Clearing System) are covered.

15.1 Pre-trade risk management

15.1.1 Introduction

The JSE Trading System to be implemented through ITaC for the derivative markets provides a range of pre-trade risk controls that allow the exchange to protect the market against systemic risk and ensure market integrity and quality. In designing the pre-trade risk management capabilities consideration has been given to the existing exchange-level pre-trade controls for the JSE derivative markets, industry best practices and recommendations from international regulatory bodies and the availability of additional pre-trade risk controls afforded by the MillenniumIT (MIT) trading system.

Pre-trade risk controls reside at 3 levels i.e. at the Trading Member, Clearing Member and Exchange levels. This next section describes the pre-trade risk controls at the exchange level i.e. controls that will be facilitated by the MIT trading system. A summary of pre-trade controls recommended at the Trading and Clearing Member levels can be found in the ITaC Technical Working Group presentation covering this topic:

Link to JSE ITaC Website (Related document: "20150921 ITaC Technical Working Group FINAL.pdf")

15.1.2 Market-wide limits

All orders entered by an Interface User ID (CompID) will be validated against the specified maximum order size and value applicable to the market in question. If the submitted volume or value is larger than the specified maximum parameter the order will be rejected.

Each side of a quote[2] , i.e. the bid and the offer, will be separately validated against the maximum order parameters, with the bid validated first.

[2] A quote is a single message used to generate a buy and sell order simultaneously

15.1.3 Permissions

CompIDs belonging to each Trading Member will be enabled and permissioned at a market level, with the following market gateways available:

- Equity Market
- Equity Derivatives, Currency Derivatives and Interest Rates Markets
- Commodities and Bond Markets

The CompIDs will be assigned, created and permissioned by the JSE on a market level during the enablement process and IP address validation will be performed by the system on connection and login. Only the specific link of a CompID login originating from the specified IP address will be granted access to the gateway. A CompID will be specifically assigned to trade on a Market.

15.1.4 Cancel on disconnect/logout

This functionality will provide users with the ability to cancel all open orders/quotes, with the option to exclude *Good Till Day* and *Good Till Time* orders. This will provide users with the confidence that they will not be adversely affected by positions still active in the market whilst having no connectivity.

Enabling this functionality will cancel all active orders in the event of disconnection and can be set up per order, where the field “Cancel On Disconnect” must be set to ‘YES’.

The option will exist to delay the cancelation which allows management of orders in case millisecond disconnects are experienced.

The table below represents the combinations available in the trading engine:

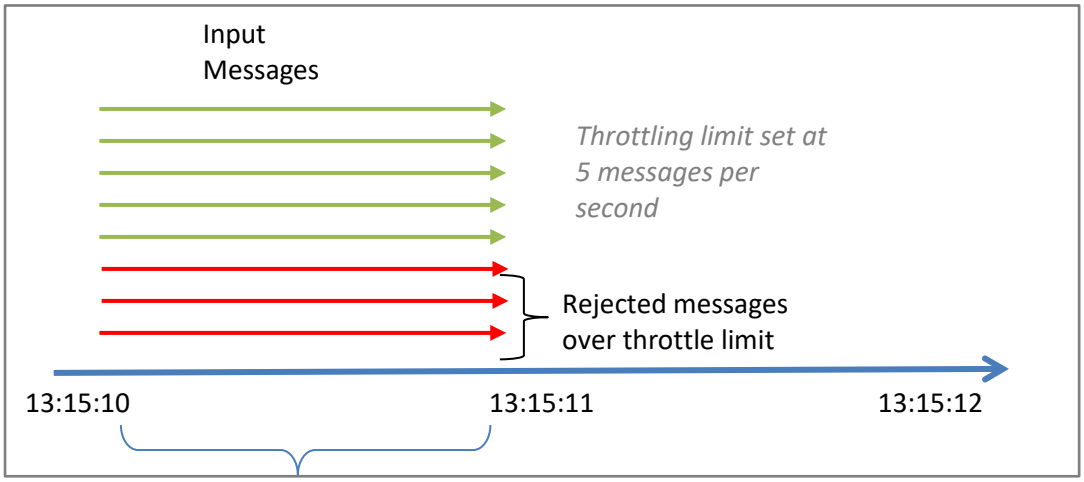
Enablement Setup: Mass Cancel on Disconnect/Logout	User Activity: User Specified Value in Order/Quote	Result: Order/Quote Cancelled (YES/NO)
Yes	No	No
No	No	No
No	Yes	No
Yes	Yes	Yes
Yes	Not set	No
No	Not set	No

15.1.5 Input message rate throttling

The Exchange will have the ability to manage and throttle message input rates on a CompID level which will limit the number of messages entered into the system within a second, in order to limit the level of order “noise” in the market. This “noise” has historically been attributed to the trading style of certain market participants and algorithms. The setup will form part of the enablement process when Interface User IDs (CompIDs) are created per firm.

Inbound messages are received by the gateway up to the limit set for the respective CompID e.g. 100 messages per second. Any orders that are received that breach this limit

within the same second will be rejected. The representation below illustrates message rate throttling and rejection:



The JSE will communicate the preferred throttle limits in due course and members are welcome to engage with the trading team should they believe these limits too stringent. Users are advised to design systems with limits in mind and set in-house message input rates to ensure no breaches of the CompID order rate. Should excessive breaching of the limits occur, the offending CompID could be potentially locked.

15.1.6 Disabling access to trade (kill switch concept)

Operations can immediately disable the access of a CompID/Firm/Trader Group on instruction by Market Surveillance or the Trading Member. JSE Market Operations can also, as it deems fit, suspend any user, trader, trader group or Trading Member firm.

15.1.7 Price bands on off-book trades

Off Order Book Trades will be subject to a pricing range away from the Central Order Book Price in order to ensure that the pricing of these transactions are within a fair range.

In the event that an Off Book Trade breaches a price band, an alert is sent on the trade capture report to the trading member and a notification of the breach is sent to the clearing member on the deal message published by the clearing system. JSE Market Operations and Surveillance are also notified of the breach via an alert and JSE Surveillance may request the transaction to be reversed or cancelled.

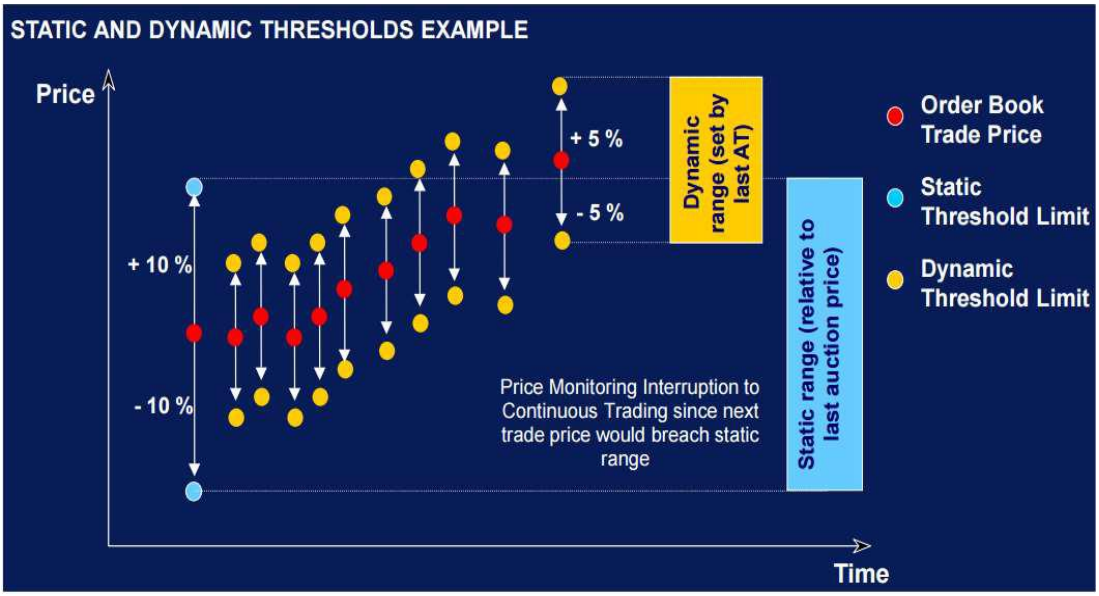
15.1.8 Circuit breakers

Circuit Breakers are necessary in order to protect market participants against sudden large changes in instrument prices as well as maintain market quality in the face of potential market manipulation.

Two types of circuit breakers will exist in the Trading System, the more restrictive of which, will always take precedence:

- Static Reference Price Circuit Breaker – which refers to either the previous day's closing price or the last auction price
- Dynamic Reference Price Circuit Breaker - refers to last traded price

The circuit breaker thresholds can be illustrated as follows:



These can be set to either percentage values or static values, and will be applicable to all orders aggressing the order book with matching potential on a pre-execution basis. JSE will be implementing percentage values for all markets except for the commodities market where price limits will apply.

When an order breaches the relevant limit, a volatility auction is triggered, which will allow users to manage orders where no executions will take place. These volatility auctions will be subject to price monitoring extensions or market order extensions, depending on market conditions.

15.2 Post-trade risk management

15.2.1 Introduction

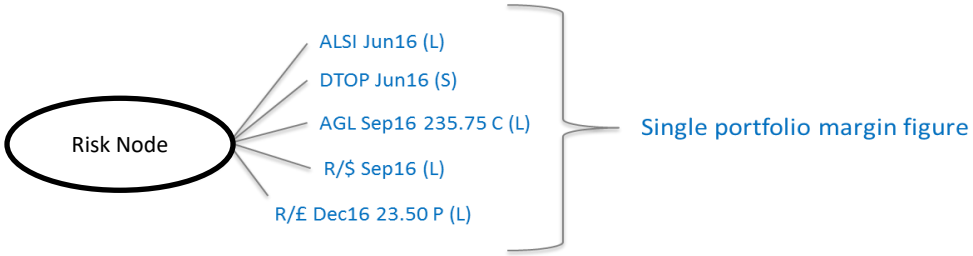
JSE Clear, a wholly owned subsidiary of the JSE, is the clearing house for all Exchange-Traded Derivatives in South Africa. In this capacity, JSE Clear novates all matched derivative trades transacted through the JSE. For a full description of JSE Clear's risk management framework and its policies, processes and procedures please refer to Derivative Market Risk Management on the JSE website. This covers the various lines of defence and risk mitigation measures employed by JSE Clear including membership requirements, margin, stress testing, default fund, default management and governance procedures.

The following section focuses on the key post-trade risk management enhancements and changes to be delivered through the ITaC project. This includes the concept of a 'risk node' and consolidated margin call across derivative markets, a new intraday risk monitoring service and some relatively minor changes to the JSPAN margin methodology.

15.2.2 Concept of a risk node and consolidation of derivative markets

Post-trade risk will be calculated and managed for each risk node. A risk node is the level at which portfolio margin is calculated and is defined by the owner of the risk and the risk hierarchy or path of risk underwriting in the entity and account structure. A client who clears all his positions i.e. all asset classes through a single Clearing Member will have a single risk node i.e. there is a one to one mapping between client account and risk node. A client who clears different asset classes through two different Clearing Members will have two risk nodes. Margin offset (where applicable) cannot be given between two different risk nodes. It is only provided across all position accounts under the same risk node structure. For a diagrammatic depiction of risk nodes refer to the section on Entity and Account Structures above.

ITaC will consolidate all derivative markets and introduce a single margin run. Ultimately (once all phases have been implemented) a client will have a single risk node against which all positions are held. A single margin amount will be calculated per risk node:

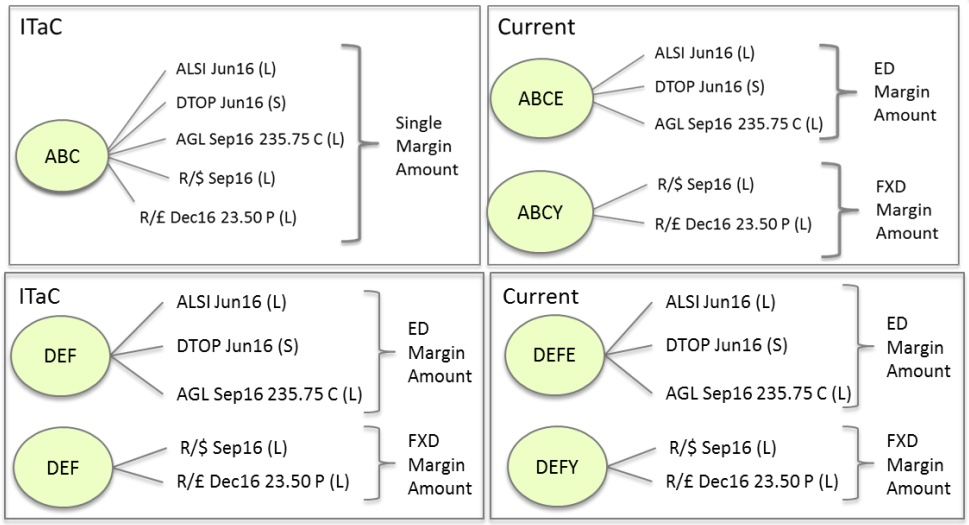


In ITaC Phase 1, which implements the equity derivative and currency derivative markets, Trading Member codes will be consolidated. In accordance with the risk node principal described above, a single margin amount will be calculated for a Trading Member who clears all markets through the same Clearing Member.

Firm	Market	CM	TM Code (ITaC)	Current TM code (Nutron/Nuclears)
ABC Securities	ED	CM1	**ABC**	ABCE
ABC Securities	FXD	CM1	**ABC**	ABCY
DEF Securities	ED	CM2	**DEF**	DEFE
DEF Securities	FXD	CM3	**DEF**	DEFY

TM 'ABC' clears through one CM

TM 'DEF' clears through two different CMs



Note: Client account codes will not be consolidated in Phase 1; this will be done at a later stage.

- End-state (at the end of the ITaC programme)
    - Single margin run across all derivatives markets
        - Allows the JSE to give margin off-set where appropriate
- Transition phase (during the ITaC programme delivery)
    - Markets will be migrated onto ITaC in phases
        - Equity Derivatives and Currency Derivatives (Project 1b & c)
        - Interest Rate Derivatives, Commodities Derivatives and Bonds (Project 2)
    - Margin calculated and shown separately for currency and interest rate derivatives
    - Single net payment per Clearing Member across all derivatives markets

15.2.3 Intraday risk monitoring

A new service that will be introduced through ITaC in support of the move to more real-time and proactive risk management is the intraday risk monitoring service. This will support the monitoring of risk throughout the trading day.

Updated exposures and other risk metrics will be calculated and published on the Clearing system interface (EMAPI) to Trading Members and Clearing Members throughout the day as positions are updated by trading and deal management activity and as new prices are made available to the Clearing system (on a periodic snapshot basis).

The exposure and risk information will be aggregated to Client, Trading Member and Clearing Member levels and includes:

- Initial Margin (IM), Additional Margin and Settlement Margin per account recalculated and published with each position update. The IM amount includes the J-SPAN figure and the Large Position and Liquidation Period Add-ons.
- Variation Margin per account per position recalculated and published at regular intervals
- Collateral revalued at regular intervals
- By consolidating these elements, an estimation of the margin call that the client will face at the end of the day is also published.[3]

15.2.4 Thresholds

A threshold can be set on the margin call of a client i.e. this value ((Initial Margin + Additional Margin - Variation Margin) – Collateral)[4] is compared to the threshold set. Notifications of margin calls that breach thresholds are published on the Clearing system external interface.

The JSE sets a global threshold, Clearing Members can set a more conservative threshold for their Trading Members and clients and Trading Members can set a more conservative threshold for their clients.

[3] The Indicative Call is positive when the client needs to pay
[4] Variation Margin is positive when VM is paid to the client

Example of a dashboard that can be created based on the risk information published on the Clearing system interface (EMAPI) is illustrated in the diagram below:

Client Level

Clearing Member	Trading Member	Client	J-SPAN	Liquidation Period Add-on	Large Position Add-on	Settlement Margin	IM	AM	VM	Collateral Value	Indicative Call
AAA CM	AAA TM	AAA TM House	82 780	0	0	0	82 780	0	-16 507 557	100 000	16 490 337
AAA CM	AAA TM	AAA TM BR1	439 700	25 000	0	35 000	499 700	0	558 317	499 700	-558 317
CCC CM	CCC TM	CCC TM House	8 520 000	350 000	2 500 000	15 000	11 385 000	1 707 750	-2 869 199	9 200 000	6 761 949
CCC CM	CCC TM	CCC TM BR1	12 727 800	15 000 000	20 000 000	0	47 727 800	7 159 170	26 985 363	60 000 000	-32 098 393
AAA CM	AAA2 TM	AAA2 TM House	59 200	0	15 000	0	74 200	0	37 338	100 000	-63 138
AAA CM	AAA TM	AAA BR1 CL1	134 800	0	0	5 000	139 800	0	58 317	400 000	-318 517
BBB CM	BBB TM	BBB CL2	0	0	0	0	0	0	89 950	1 000	-90 950
CCC CM	CCC TM	CCC TM CL1	46 620	0	0	0	46 620	6 993	26 985 363	50 000	-26 981 750
DDD CM	DDD TM	DDD TM CL1	5 000	0	0	0	5 000	0	-47 500	0	52 500

Trading Member Level

Clearing Member	Trading Member	J-SPAN	Liquidation Period Add-on	Large Position Add-on	Settlement Margin	IM	AM	VM	Collateral Value	Indicative Call
AAA CM	AAA TM	657 280	25 000	0	40 000	722 280	0	-15 890 922	999 700	15 613 502
CCC CM	CCC TM	21 294 420	15 350 000	22 500 000	15 000	59 159 420	8 873 913	51 101 526	69 250 000	-52 318 193
AAA CM	AAA2 TM	59 200	0	15 000	0	74 200	0	37 338	100 000	-63 138
BBB CM	BBB TM	0	0	0	0	0	0	89 950	1 000	-90 950
DDD CM	DDD TM	5 000	0	0	0	5 000	0	-47 500	0	52 500

Clearing Member Level

Clearing Member	J-SPAN	Liquidation Period Add-on	Large Position Add-on	Settlement Margin	IM	AM	VM	Collateral Value	Indicative Call
AAA CM	716 480	25 000	15 000	40 000	796 480	0	-15 853 584	1 099 700	15 550 364
CCC CM	21 294 420	15 350 000	22 500 000	15 000	59 159 420	8 873 913	51 101 526	69 250 000	-52 318 193
BBB CM	0	0	0	0	0	0	89 950	1 000	-90 950
DDD CM	5 000	0	0	0	5 000	0	-47 500	0	52 500

The full list of information published on the EMAPI whenever there is a change on the client's account (risk node) is:

- Risk Node ID (Client ID)
- Variation Margin
- JSPAN Value
- Liquidation Add-On
- Large Position Add-On
- Settlement Margin
- Risk (=Initial Margin)
- Additional Margin
- Additional Margin Percentage
- Notional Values
    - Total Notional Value
    - Notional Per Underlying
    - Equity Notional Value
    - FX Notional Value
- Collateral Values
    - Quantity & Value per collateral Item (for ZAR, FX, Securities)
- Risk Limit
- Indicative Call (= (IM + AM) - (VM + Collateral value))
- Alert (when Indicative Call > Risk Limit)

15.2.5 Margin methodology

Initial Margin on go-live of ITaC Phase 1 will be based, as currently, on J-SPAN together with the Liquidation Period Add-on and the Large Exposure Add-on. The Liquidation Period Add-on caters for positions that could take longer to liquidate than assumed under J-SPAN. The Large Exposure Add-on caters for losses that could exceed margin held for J-SPAN & Liquidation Period Add-on.

Additional Margin can be charged by the Clearing Member or Trading Member for all or selected entities (Trading Members and clients) if required. This is done by applying a percentage of the initial margin calculated by JSE Clear. Additional margin is added onto the initial margin required by JSE Clear before the margin call is made.

15.2.6 J-SPAN

As a result of the ITaC project, there will be some minor changes introduced to the current J-SPAN calculation method. Some of the key changes include:

- The inclusion of the Class Spread Group (CSG). Currently CSG is the same as the contract code.
- A new field, Contract Size Type, will also be introduced to facilitate Mini/Maxi contracts margin treatment

Pre-ITaC	Post-ITaC			
Contract Code	**Alpha Code Example**	**CSG**	**Contract Size**	**Contract Size Type**
MTNQ	MTN	MTNQ	100	Base
MTNS	MTN	MTNS	100	Base
ALSI	J200	ALSI	100	Base
ALMI	J200	ALSI	1	Mini
ZAUS	$/R	ZAUS	1,000	Base
ZAUM	$/R	ZAUS	100,000	Maxi

- Volatilities used in risk arrays of option instruments
    - Initially there will be no change to the risk arrays. It will contain 18 elements that are made of 9 price scenarios where the volatility goes down by the VSR and 9 price scenarios where the volatility goes up by the Volatility Scaling Ratio (VSR)
    - At a later stage the plan is to transition to a more granular risk array with 85 elements. This risk array will consist of the combination of 17 price scenarios and 5 volatility scenarios.
    - The volatility skew is determined by the moneyness of the option on the underlying future and added to ATM Volatility Scenario
- Rounding

- A limited number of measures are rounded in order to ease the replication of the JSPAN values.

For full details on the new JSPAN methodology refer to the latest JSE JSPAN Methodology document on the JSE website. Also refer to *ITaC TWG presentation 20150921* for a *step by step walkthrough of JSPAN*.

15.2.7 Liquidation period add-on

The Liquidation Period Add-On caters for the costs associated with liquidating a defaulting portfolio. It is based on the assumption that larger positions take longer to liquidate in the event of a default. The size of such positions could lead to the liquidation period assumption in the JSPAN calculation to be exceeded. During this time the price could move against the JSE and lead to losses in excess of the JSPAN margin.

Calculation steps

1. Determine client's position per instrument
2. Obtain delta adjusted notional per position
3. Aggregate the delta-adjusted notional values across the same underlying (per Alpha Code)
4. Compare the result against the ADVT to determine the time it would take to liquidate the portfolio in the underlying
5. Determine the total potential loss that could be suffered over this period given the 1-day VaR of the underlying
6. The Liquidation Period Add-On is the degree to which this loss exceeds the JSPAN margin

Refer to the JSE Clear Margin Methodology document for more details.

15.2.8 Large position add-on

Large Exposure Add-On captures a client's margin shortfall under stressed market conditions. All instrument prices are stressed based on several approved JSE stress scenarios which are designed to simulate extreme trading conditions. In the event of a default, losses suffered could exceed the margin already held.

Calculation steps

1. Determine client's position per instrument
2. Obtain stressed prices per scenario per instrument
3. Determine position P&L for each scenario
4. Aggregate position P&L per scenario
5. Determine scenario with the worst (negative) P&L
6. The Large Position Add-on is the degree to which this loss exceeds both the JSPAN and Liquidation Period Add-on values

Refer to the JSE Clear Margin Methodology document for more details.

15.2.9 Additional margin percentage

External participants can maintain additional margin percentages for their trading members and clients. Clearing members set global margin percentages for their trading members and trading members set global margin percentages for their clients. Clearing members may choose to set a specific stricter (higher) value on an individual trading member or client than the global value they set across their trading members. Trading members may set a stricter (higher) value on an individual client than the global value they set across their clients.

15.2.10 Data inputs for margin calculation replication

All data required to replicate margin - both the JSPAN and the add-on calculations - will be made available via the EMAPI and Information Delivery Portal (FTP site). These include:

- J-SPAN Margin parameters
    - IMR, CSMR, SSMR, VSMR, CSG, SSG
- Instrument Reference data
- Settlement Prices
- Rates
- Risk Arrays

15.2.11 Future change to a Value-at-Risk margin methodology

The JSE is looking to replace the J-SPAN margin methodology with a Value at Risk (VaR) based methodology at a later stage (not in ITaC Phase 1). The move to a VaR based methodology is envisioned to allow a greater degree of flexibility and more intuitive margin off-setting.

Any changes to the margin methodology will follow the current rigorous approval process, including market consultation and approval required at the relevant JSE Clear governance committees.

15.3 Margin call processes

Each day JSE Clear will run an End-of-Day (EOD) margin call. Margin calls are required to be settled on T+1. Additionally in extremely volatile markets JSE Clear may elect to run an ad-hoc intraday margin call. The intraday margin call takes place during the trading day and follows much the same process as the EOD margin call with variation and initial margin called from and paid to market participants as applicable. Details on the EOD run and margin call processes including those for non-ZAR collateral are included later in this document.

15.4 Margin calculator on the web

The JSE website provides a margin calculator. This allows market participants to capture a portfolio and see what the initial margin on that portfolio would be. Positions in the user portfolio may include positions on existing contracts (futures and options) as well as positions in a new option strike but exclude positions on the following instruments:

- Expired instruments
- Instruments loaded on the same day
- Anyday instruments

16 COLLATERAL MANAGEMENT

Currently JSE Clear, the Central Clearing Counterparty (CCP) for listed derivatives in the South African market, collects ZAR cash collateral against derivative exposures. Over recent years there has been a steady growth in demand from the market for the acceptance of securities and foreign currency collateral. Post the 2008 financial crisis and the tightening of risk and regulatory frameworks and policies such as Basel III, CPMI IOSCO and EMIR, the demand for efficient asset utilisation has increased. The ability to post securities and foreign currency collateral is expected to provide clients with some relief in the face of increasing capital requirements and free up ZAR cash.

JSE Clear calls for Initial Margin (IM), Variation Margin (VM) and Default Fund contributions from its clients as part of its risk management processes. These margins and contributions are currently payable in ZAR-cash only. The acceptance of alternate collateral forms will allow members to meet IM calls through a combination of ZAR-cash, selected securities and in the case of non-resident clients, selected foreign currency cash collateral. Support in principle for the acceptance of foreign currency cash collateral for non-resident clients has been obtained from the regulator however it is subject to formal approval from the South African Reserve Bank and National Treasury. VM will continue to be payable in ZAR cash. The option for Clearing Members to fulfil default fund contributions using alternative collateral has yet to be finalised and will be communicated in due course.

Two technology initiatives are underway to enable the acceptance of non-ZAR cash collateral. The first is an interim collateral solution planned to be delivered prior to ITaC Project 1 go-live that will facilitate the acceptance of securities collateral for the recently introduced large exposure margin add-on only. The second is the ITaC solution which will provide the systems and processing capability for the acceptance of securities and foreign currency collateral against the whole IM obligation i.e. not just the large exposure add-on portion of IM (note a minimum cash percentage will be applicable).

In addition to the technology and process capabilities that need to be enabled, the relevant policies, rules and legislation will need to support the acceptance of securities and FX collateral. The JSE in consultation with stakeholders is in the process of reviewing and addressing these aspects. A key focus of this and a requirement that needs to be satisfactorily addressed before JSE Clear can start accepting securities collateral is the ability to timeously liquidate assets in the event of a participant default and insolvency. Stakeholders will be kept informed as to the progress and expected timelines in this regard.

In order to adequately manage the risk of the CCP and safeguard the market, JSE Clear will set and manage various criteria relating to the acceptance of alternate collateral forms such as a minimum percentage of collateral that must be in the form of cash to meet liquidity needs in the event of a default, eligibility criteria determining the list of admissible securities and foreign currencies and valuation haircuts. The pledge is the proposed mechanism to be used for securities collateral.

In terms of systems and processes, the new JSE clearing system to be delivered in ITaC will integrate to the Strate collateral management system for the management of securities collateral. Processes will cater for the posting of securities collateral against initial margin calls at end of day. Non-resident clients will also be able to submit foreign currency cash, through their Trading and Clearing members, as collateral against end of day margin calls. The solution will also cater for flexibility required by market participants to manage the mix of the collateral posted against JSE Clear exposures during the course of the day, by for example substituting securities for cash, cash for securities or one security for another.

JSE Clear is the central counterparty (CCP) for JSE operated derivative markets. To mitigate the risk of Trading Members and Clearing Members defaulting, JSE Clear collects Initial Margin (IM) and Default Fund contributions from Clearing Members to cover any potential losses arising from a default.

To date, JSE Clear has only accepted ZAR cash for these obligations, while all major global CCPs accept IM and Default Fund contributions from their Clearing Members in the form of securities and foreign currency collateral. The need for JSE Clear to consider alternative collateral options to fund IM calls and Default Fund contributions has been raised in various forums across the JSE derivatives markets for a number of years. The call for the ability to post alternative collateral, in the form of securities or foreign currency collateral has intensified in the recent past.

The benefits of accepting alternative collateral include:

- Allowing effective utilisation of assets and for clients to have the benefit of freeing up their ZAR cash holdings for other capital requirements or investment needs
- Aligning South Africa with global markets where all major CCPs allow for the posting of securities and foreign currency collateral against IM and Default Fund contributions

As part of its Integrated Trading and Clearing (ITaC) initiative, the JSE is in the process of technologically enabling the acceptance of securities, held with the local CSD (Strate), and foreign currency as IM collateral. The JSE interim collateral solution, prior to the go-live ITaC, is aimed at facilitating the acceptance of securities collateral against the Large Exposure Add-on portion of IM.

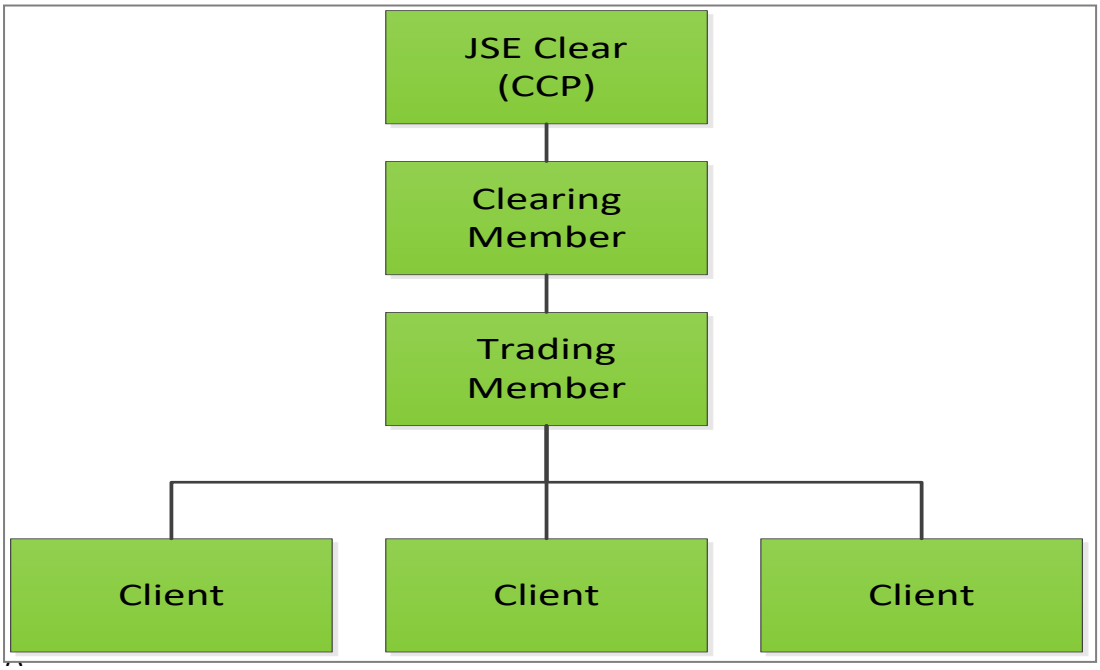
The JSE, in consultation with key stakeholders, is currently reviewing the policies, rules and legislation in support of accepting securities and FX collateral for both the interim and future ITaC collateral solutions.

This paper outlines the conceptual framework and process for the acceptance of non-ZAR cash collateral against exposures in the derivatives markets operated by the JSE and cleared by JSE Clear. It is intended to inform market participants of the JSE position in this regard, based on market engagement as the JSE moves toward an integrated clearing environment. Proposals relating specifically to the acceptance of foreign currency collateral will be subject to South African Reserve Bank and National Treasury approval.

The consideration of acceptance of alternative collateral for settlement margin in the cash equity market space is out of scope of this document and will be covered in due course.

16.1 Current listed derivative landscape

JSE Clear novates transactions, by becoming the counterparty to the seller and the counterparty to the buyer, and acts as the central counterparty (CCP) in the various listed derivative markets (Equity Derivatives, Currency Derivatives, Interest Rate Derivatives and Commodity Derivatives) operated by the JSE. JSE Clear interfaces with Clearing Members who clear transactions for themselves (Direct Clearing Member) or for other Trading Members and for the clients of Trading Members (General Clearing Members) i.e. the end investors. At a high level this structure can be illustrated as follows:



All transactions are recorded at account level, i.e. Trading Member level (where they have house positions) and client level where positions are held. All collateral is held at the Trading Member and client level as well and is held in the name of the Trading Member or client i.e. neither the Clearing Member nor JSE Clear owns the collateral and it can only be used in the case of default. At the end of the day JSE Clear sums up these transactions to determine closing positions, which are then used to calculate the applicable margins for each account. Margins calculated include:

1. **Initial Margin (IM)** - collected by the CCP to mitigate losses in the case of default. This margin is returned to the Trading member or client on closeout of their position. IM collected by the CCP includes Settlement Margin for contracts that are physically settled where the IM is held for 5 business days after Futures Close Out.
2. **Variation Margin (VM)** - refers to the cash movements relating to daily profits and losses on positions held. The positions are marked-to-market/marked-to-model each day to calculate the daily profit and loss, which must be settled by midday on the following day. Variation margin is (and will continue to be) payable in cash based on the trading currency and is not held by JSE Clear (due to the net zero sum game, JSE Clear effectively just facilitates payment between daily winners and losers).
3. **Additional Margin (AM)** – this margin requirement is requested or called by the Clearing Member or Trading Member who may request additional margin from clients should they see the need to do so and as with IM, this margin is returned once the positions which attracted the additional margin have been closed out. This margin may be held by the Clearing Member or Trading member or JSE Clear (where requested).
4. **Add-on Margin** – this margin forms part of IM and includes the liquidation period and the large exposure (or large position) add-on's.
5. **Default Fund** – this is a fund created to manage potential defaults the derivatives market.

JSE Clear calculates the above margins per account and per position on all accounts then aggregates all required margin to the Clearing Member level. A daily account summary report is sent to the Clearing Member and the IM, including Add-ons and Variation Margin is reconciled between JSE Clear and the Clearing Member. JSE Clear then calls the applicable amounts from the Clearing Member. The Clearing Member may then request collateral from its Trading Members, who in turn may call from their clients in order to fund the margin call from JSE Clear. This payment is currently accepted only in ZAR cash and payment must be settled by 12h00 on the next business day.[5]

16.1.1 Applicable markets

The use of alternative collateral is proposed for the derivative markets operated by the JSE and cleared through JSE Clear, namely:

- Equity Derivatives
- Commodity Derivatives
- Currency Derivatives
- Interest Rate Derivatives

The JSE is in the implementation phase of its Integrated Trading and Clearing project (ITaC) and has designed the ability to accept alternative collateral into the new Clearing system. The first phase of this project includes Equity Derivatives and Currency Derivatives, hence it is envisaged that these will be the first markets for which alternative collateral will be accepted using the new system.

16.1.2 Applicable margins

Securities collateral will be accepted for IM and AM for all local clients and securities and foreign currency collateral be accepted for foreign client's IM and AM obligations (where AM is held by JSE Clear). Payment of VM will remain as cash only, based on the trading currency. JSE Clear will set a maximum percentage of the IM/AM requirement which can be met with alternative collateral. The JSE is also considering the acceptance of alternative collateral for Default Fund contributions from Clearing Members.

16.1.3 Admissible alternative collateral and qualifying members

In the initial phase of accepting alternative collateral, it is envisioned that only highly liquid securities will be accepted as securities collateral. Other asset classes may be considered in due course subject to meeting the JSE's risk requirements. All derivative market members and clients will be authorised to use the securities collateral facility, providing that the member or clients holds acceptable securities at Strate.

Due to the regulatory impact of foreign currency movement, the JSE has engaged SARB and National Treasury to get their approval for the acceptance of foreign currency collateral and thus principles outlined in this regard will be subject to this regulatory approval.

[5] See Appendix 1 for a graphical illustration of the current process.

The JSE intends to accept USD, EUR and GBP as foreign currency collateral from only non-resident clients as a first phase, which may be expanded to other clients subject to the applicable approvals.

Any extensions regarding acceptable collateral or parties to whom this facility is available will be communicated in due course as the JSE will regularly review and publish collateral eligibility criteria.

16.1.4 Valuation of the collateral

The collateral held as IM and AM will only be accessed in the case of a default. To ensure that Clearing Members and JSE Clear are adequately covered, the valuation of non-ZAR collateral will take the following factors into consideration:

- **Impact Cost** – a measure of the degree to which the potential costs of liquidating the collateral may fluctuate
- **Liquidity Risk** – a measure of the degree to which the potential volume of trade in any security may fluctuate
- **Price Volatility** – a measure of the degree to which the price may fluctuate
- **Concentration Risk** – a measure of the risk of the bulk of posted collateral being only one share
- **Spread Risk** – a measure of the degree to which the difference between the bid and offer prices for an equity security may fluctuate

Quantification of the above considerations will result in a risk factor (haircut). The haircut states by how much the margin requirement must be increased to determine the value of the collateral to be pledged to fully cover the margin requirement. A maximum amount will also be set for non-ZAR collateral (securities and FX collateral) so that the collateral value after haircut does not exceed the maximum amount set for that collateral per risk node. For securities collateral, an excess and deficit tolerance can also be set as an absolute amount (ZAR) or as a percent of the securities allowed per Member or Client. The tolerances will prevent the system from updating the securities collateral pledged where there is a small difference in value between pledged securities and the newly calculated value that can be held in securities collateral.

Threshold Type	Percentage	Absolute Amount
Deficit Threshold	e.g. 10% Strate will not make additional pledges until the exposure amount that can be covered by securities exceeds the value of the pledges by more than 10% (i.e. until there is a deficit in the collateral amount of 10%)	e.g. R 1,000,000 Strate will not make additional pledges until the exposure amount that can be covered by securities exceeds the value of the pledges by more than R 1,000,000
Excess Threshold	e.g. 10% Strate will not release any pledges on securities until the value of the pledges exceed the exposure amount that can be covered by securities by more than 10%	e.g. R 1,000,000 Strate will not release any pledges on securities until the value of the pledges exceed the exposure amount that can be covered by securities by more than R 1,000,000

16.2 Processing times

To facilitate the posting and acceptance of securities and foreign currency collateral a number of additional processes are necessary. These processes and requirements will differ according to collateral type.

In order to utilise foreign currency collateral JSE Clear, Trading Members, Clearing Members and clients will be required to open Customer Foreign Currency (CFC) accounts with an Authorised Dealer. One CFC account per allowed currency will be necessary. Further, JSE Clear systems will be updated to enable the flagging of accounts who wish to utilise foreign currency collateral as well as the particular currencies they wish to use, as per the CFC accounts opened with the Authorised Dealer. The flows for currency collateral will be the same as the flows for the ZAR cash – from client to Trading Member, Trading Member to Clearing Member and Clearing Member to JSE Clear

For the utilisation of securities collateral, JSE Clear, Trading Members, Clearing Members and clients will be required to open Segregated Depository Accounts (SADs) with Strate as the JSE intends to utilise Strate's Clearstream Collateral Management System to manage securities collateral.

JSE Rules and clearing agreements between JSE Clear and the Clearing Members, as well as any agreements between the Clearing Members and their clients, including Trading Members, will also be updated to cater for both securities and foreign currency collateral.

As part of the end-of-day batch processing, JSE Clear will calculate IM, Additional Margin and Variation Margin on the individual accounts, aggregate to Clearing Member level and reconcile the balances with the relevant Clearing Member. Up to this point the current process applies. JSE Clear will then calculate what portion of the total IM balance can be met with alternative collateral and call for the eligible securities collateral, ensuring that securities are posted, if available.

After the posting of securities collateral, the outstanding IM and Additional Margin will be calculated. JSE Clear will then calculate the maximum amount that may be collateralised through foreign currency by considering the non-resident client's exposure (margin obligation). The Clearing Member will be advised of this amount and also of the updated currency valuations and valuation haircuts (risk factors described previously) applicable for the margin call. Clearing Members may then call the outstanding collateral from Trading Members who may in turn call from their clients.

The Clearing Member will advise JSE Clear of how much each of its clients intends to settle through foreign currencies, after which JSE Clear will determine the ZAR cash amounts outstanding for each account and aggregate the currency and ZAR cash amounts up to the Clearing Member level and generate payment instructions.

On T+1 (next day), payments for both foreign currency and ZAR cash collateral will be processed and must be paid by 12h00.

The JSE will not become the owner of either the securities or the foreign currency funds placed as collateral but will hold this collateral on behalf of Trading Members or clients (as is the case for ZAR cash collateral).

16.3 Daily collateral balancing, reporting and reconciliation

As part of the daily end-of-day process (refer to 'End-of-Day Processing' section below), JSE reconciles all securities pledged to ensure that:

a) The value assigned to the pledged ISIN is the same in JSE and Strate systems

b) The total value of the pledged securities does not exceed the Member or Client exposure by a certain threshold

If any of these are breached, an alert is raised and the process halted. Post investigations, a decision is made to allow the process to continue or re-run.

16.4 Rules, regulations and reporting

The JSE's Rules and Directives will be amended to cater for securities and foreign currency collateral and ensure protection in terms of the Insolvency Act.

In the event of a client or Trading Member default, any foreign currency collateral held will be converted to ZAR cash, at an exchange rate in line with market rates and released to the Clearing/Trading Member who will use the proceeds in meeting the defaulting party's obligations. Any securities held will be liquidated at the market price and a similar process to the above will be followed. As mentioned earlier in this document, the rules, policies and legislation in support of timeous liquidation of collateral assets is still in assessment and will need to be finalised with key stakeholders. Currently, the provision of the Insolvency Act states that the proceeds of any collateral (whether pledged or ceded in securitatem debiti) have to be paid to the trustee of the insolvent estate. Thus, as a result of needing to claim the assets from the trustee prior to being able to liquidate them, JSE Clear may face potential delays in resolving the defaulting event.

As is currently the case with ZAR cash collateral, JSE Clear will only have access to the securities or foreign currency collateral in the case where a Clearing Member defaults.

Further information regarding the JSE collateral service may be review in the following documents:

- *Volume PT02 - Post-Trade EMAPI Clearing (section 11, pages 47-53) – Detailed technical information of the various collateral management API (EMAPI) messages and process flows*
- *20160919 ITaC Clearing Member Working Group Focus Session 2 vFINAL (pages 18-31) – Summary of the key JSE collateral management principles and intra-day and end-of-day process flows*
- *20150821 ITaC Technical Working Group CT FINAL (pages 23-49) – Summary of the key JSE collateral management principles and intra-day and end-of-day process flows*

17 SETTLEMENT MANAGEMENT

Settlement management in the derivative markets comprise processes that occur both at EOD on trade date (T) as well as intraday on the following day (T+1). During the EOD run on trade date (T), margins, fees, interest and other cash amounts such as commissions, dividend payments and CFD funding amounts are calculated and reconciled between JSE Clear and the Clearing Members. Securities collateral is called and pledged. Settlement instructions for foreign currency cash collateral are generated. Net settlement instructions consolidating ZAR cash collateral, fees and other cash movements are generated – a single instruction is created per Clearing Member. The payment of these instructions – both foreign currency and ZAR by Clearing Members to JSE Clear occurs on the next day i.e. on T+1. Payment confirmations must be received by midday on T+1 to avoid default.

The clearing system manages settlement of the following:

- Initial margin (IM); this can be covered through a combination of:
    - Securities (can be used to cover IM only)
    - Foreign currency cash (can be used by non-resident clients to cover IM and AM)
    - ZAR cash
- Variation margin (only ZAR cash is accepted for VM obligations)
- Funding interest associated with eCFD positions
- Dividend payments associated with dividend neutral positions
- Fees – booking (trading) fees, risk management fees and collateral management fees
- Broker commissions
- Interest on cash collateral - applicable to both ZAR and foreign currency cash collateral. Interest is calculated daily and settled monthly.

Notes:

- *During the transition phase when certain derivative markets will be on the new ITaC platform and others on the existing platform, netted payments from the markets not yet migrated to the ITaC platform will be consolidated with those from the migrated markets to ensure a single payment instruction and single payment per Clearing Member across all markets*
- *ZAR payments are processed through the Settlement banks*
- *Foreign currency payments are processed through the Authorised dealers of the Clearing Members*
- *The status of settlement instructions is updated in CS when confirmations are received on T+1*

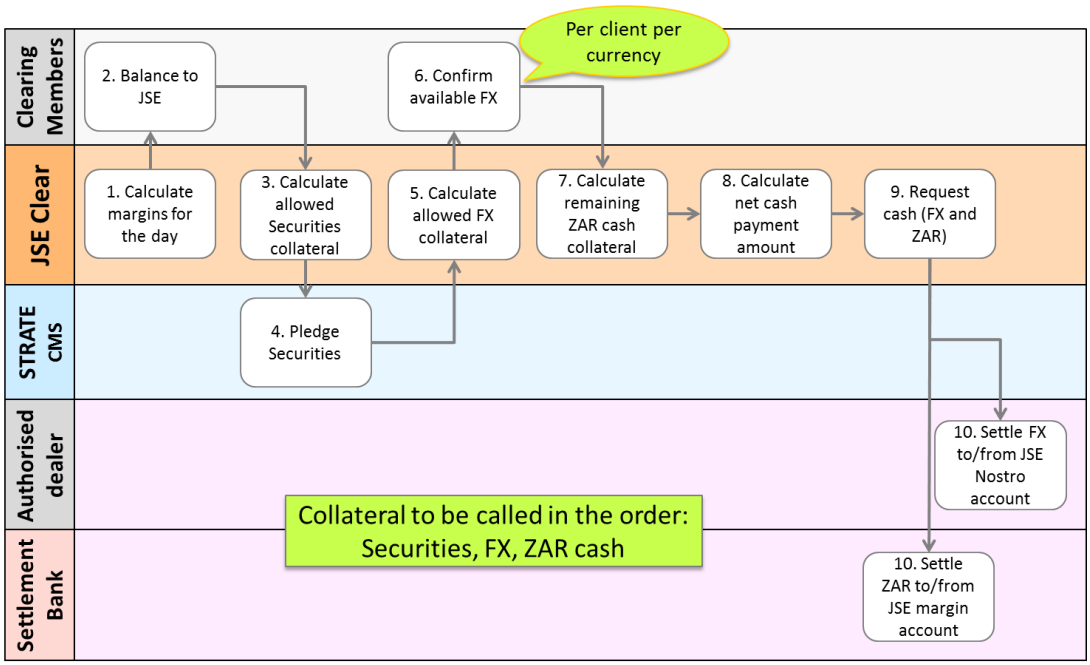
18 END-OF-DAY PROCESSING

Post ITaC go-live, in line with the JSE integrated clearing objectives, there will be a single EOD margin and fees run for all markets on the new clearing platform. A single margin amount will be calculated per participant based on exposures across all markets. Collateral will be called against this single margin amount.

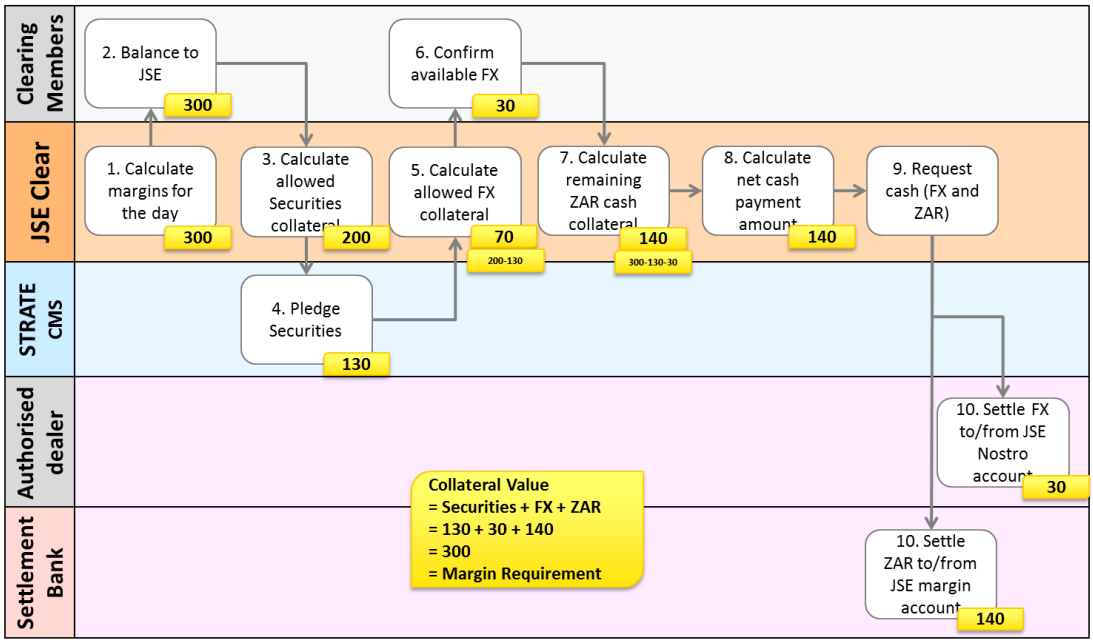
The EOD process will be a multi-step process. In the first step margins will be calculated and aggregated to Clearing Member level and Clearing Members will balance (reconcile) to the JSE. The process for confirmation of balancing will be automated via the RTC external interface, EMAPI. Balancing on margins will be followed by the collateral calling processes starting with the calling and pledging of securities collateral. Once securities collateral has been pledged, foreign currency cash (non-resident clients only) and ZAR cash will be determined and payment instructions for these amounts will be generated. The final step of the EOD process will be the calculation and balancing on fees and commissions.

18.1 End-of-Day process flows

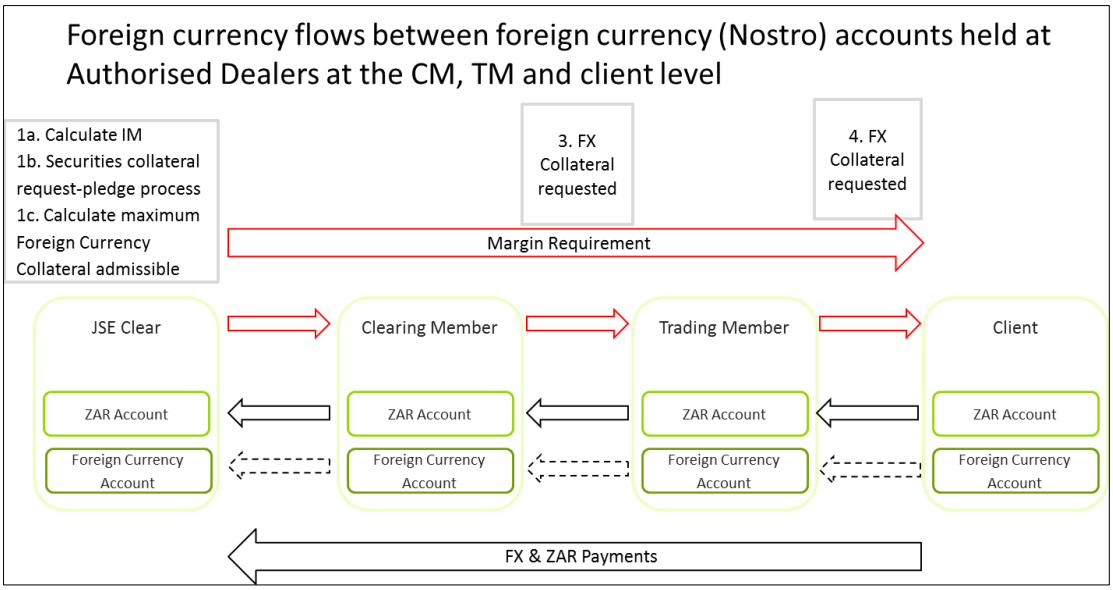
The diagram below depicts the steps of the EOD process encompassing Clearing Member Balancing 1 and the collateral processes.



Below is the same diagram with example amounts superimposed on each step illustrating the collateral process and the determination of the final ZAR cash amount to cover initial margin.



Foreign currency cash flows involving Nostro accounts are depicted below:



18.2 End-of-Day schedule

Step	Activity	Description
0	Start of EOD	JSE starts End Of Day. No further Trade Management and Commissions functions are allowed.
1	EOD Prices * Intraday Settlement Prices	Validate that all End-of-Day closing prices have been calculated and received in the clearing system
2	Option exercise (including options close out)	System generated option exercise
3	Future close out	System generated future close out
4	Calculate VM	Calculate Variation Margin profit or loss per instrument
5	Calculate risk arrays	Calculate JSPAN Risk Arrays
6	Calculate IM	Calculate End of Day IM for all risk nodes for all members (JSPAN and the margin add-on's)
7	Calculate funding interest	Calculate funding interest payment for CFD instruments.
8	Calculate Interest on cash collateral	Calculate Interest on cash collateral (as of previous days cash)
9	CM Balancing 1	Clearing members confirm their balance on IM, AM, VM, funding interest (CFDs) and dividend payments (for dividend neutrals and CFDs)
10	Request securities collateral	JSE requests and processes securities collateral
11	Request FX collateral	RTC calculates the margin amount that a member can cover with FX collateral and sends these amounts to the Clearing Members.
12	Clearing Members confirm foreign currency collateral	Clearing Members confirm the foreign currency collateral amounts to be posted per non-resident client
13	Calculate ZAR collateral	Calculation of ZAR amount to cover the balance of margin
14	Calculation of fees and aggregation of broker commissions	JSE calculates fees and commissions
15	CM Balancing 2	Clearing members confirm their balancing on fees and commissions
16	Determine net settlement amounts per CM	Netting of settlement amounts per clearing member
17	Consolidate net amounts from derivative markets on legacy system	Consolidation ensures a single payment instruction per Clearing Member for all markets
18	Generate and send payment instructions	JSE sends the SWIFT payment instructions. Payments to be made by 12 pm on the following day i.e. T+1
19	Position transfers	Transfer of portfolios and/or single positions
20	Corporate actions	Adjust derivative positions for any corporate actions on underlying equities
21	Calculate dividend payments for dividend neutrals and CFDs	Calculate payment to compensate for dividends in dividend neutral instruments and CFDs

18.3 End-of-Day reruns

Post reconciliation between JSE Clear and the clearing members, i.e. the CM Balancing 2 step in the EOD process, a rerun may be required as a result of an erroneous price or other incorrect inputs that were identified. Before the rerun decision is confirmed and executed, careful consideration is applied by the JSE in terms of the impact of the error. These considerations include:

- the magnitude of the margin differential
- the number of market participants impacted
- the time of the detection

If the error is not material it will be rectified the following day through appropriate manual adjustments. The aforementioned factors will be considered in context of JSE Clear guidelines and JSE Clear will in consultation with Clearing Members decide whether or not to proceed with the rerun. A rerun may be performed on the same trading day or before the start of the business day on T+1

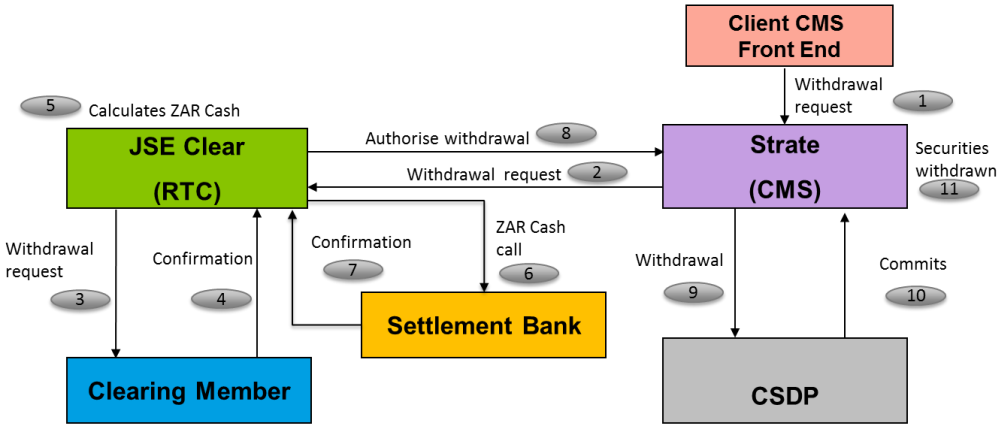
19 INTRADAY PROCESSING

This section provides further detail on key intraday processes.

19.1 Intraday collateral rebalancing process

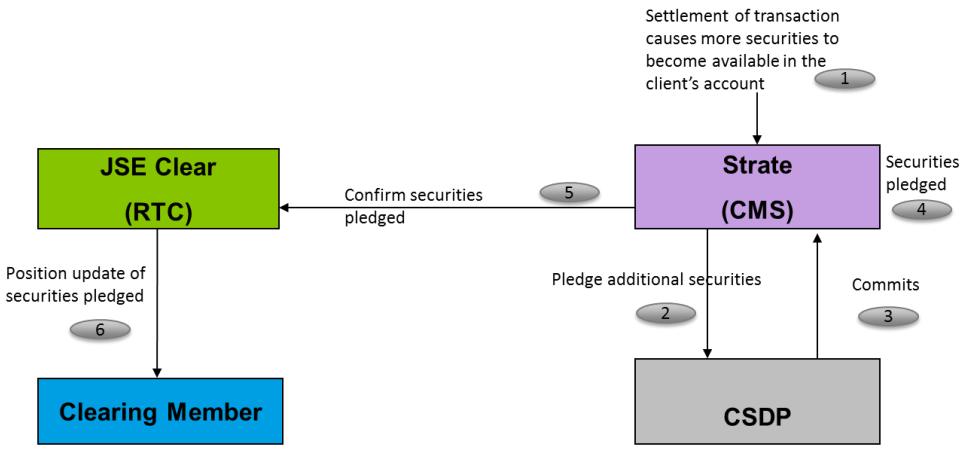
The intraday collateral batch process will provide market participants the opportunity to change the mix of collateral posted against the previous day's margin call. It will also allow the Clearing House to ensure securities collateral is topped up or additional cash is called in the event that the securities collateral pledged drops in value. The processes facilitated by the intraday collateral batch process are depicted in the diagrams that follow:

Withdrawals of securities collateral (securities replaced by cash):

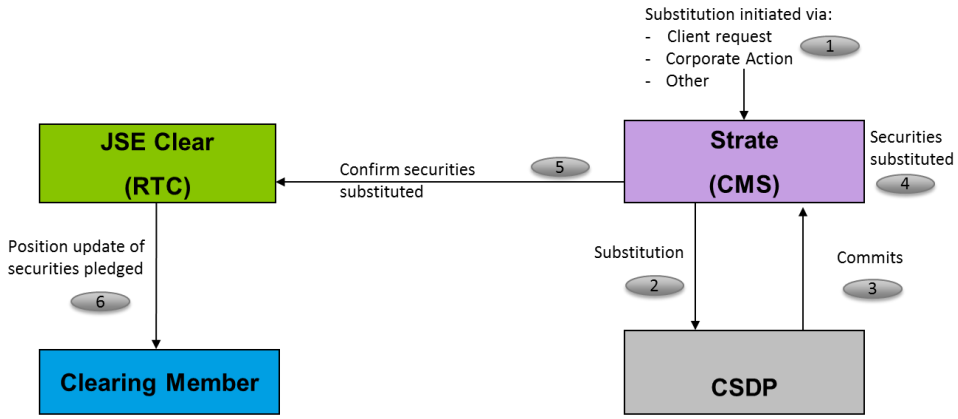


Note: Pledged securities are not released until cash is confirmed in JSE Clear's account

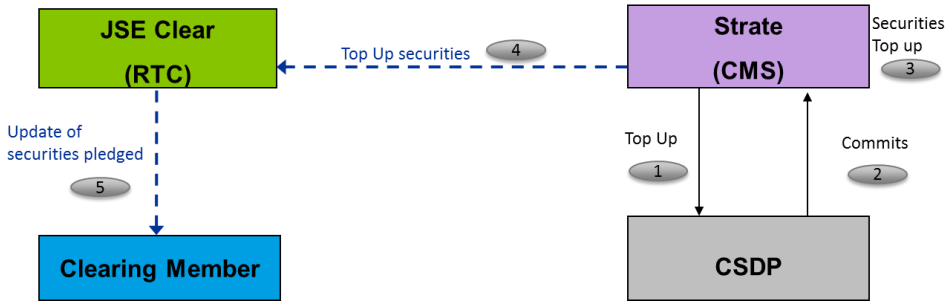
Posting of additional securities that become available to a market participant (substitute cash for securities):



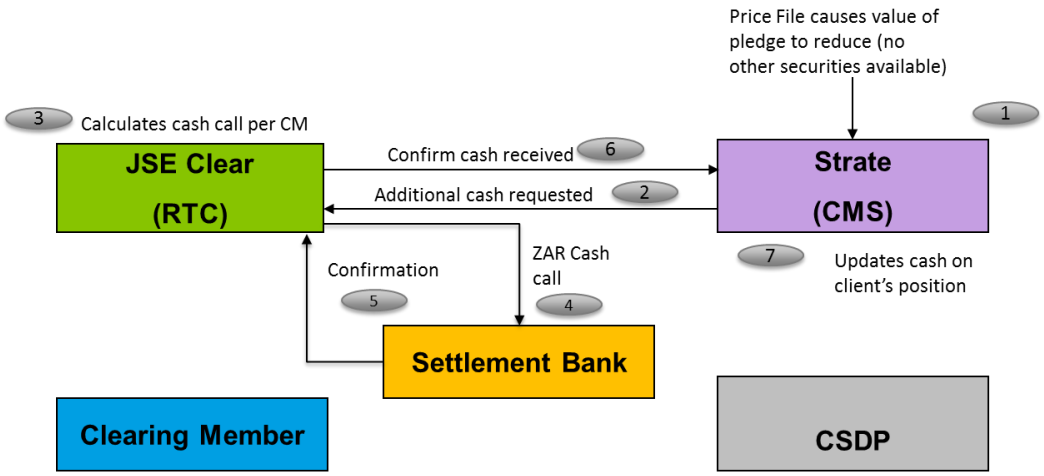
Substitution of securities (securities for securities):



Securities top-up (value of pledged securities dropped and client has additional securities available to be pledged)



Request for more cash (value of securities drops and no other securities available):



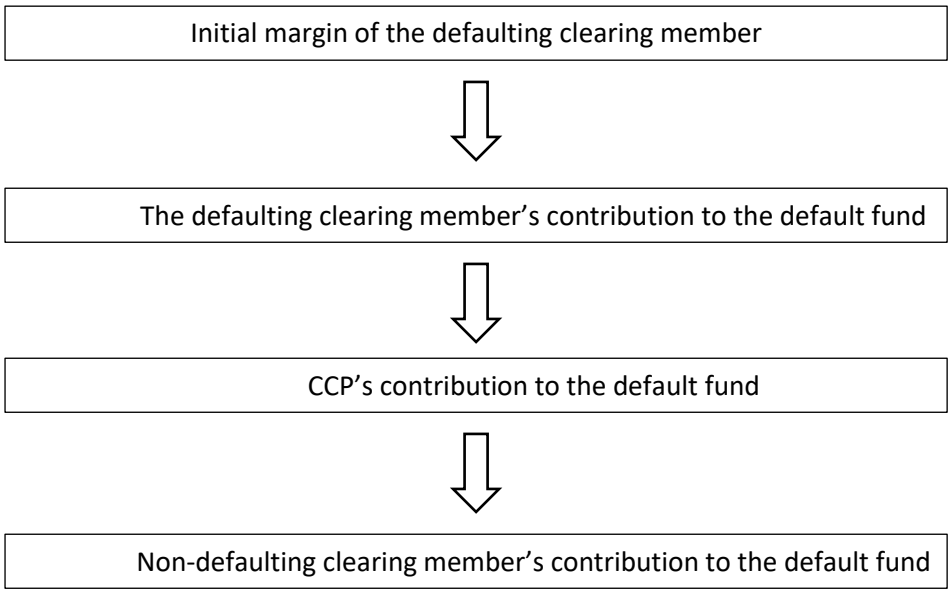
19.2 Ad-hoc Intraday margin call

In extremely volatile market conditions, in order to manage systemic risk a margin call may be run during the day. This is referred to as an ad-hoc intraday margin call. IM, AM and VM are calculated and margin is called from or paid to the CMs as applicable. The ad-hoc intraday margin call process includes the full securities and foreign currency collateral calling processes. The margin call is based on a snapshot of positions taken at a specific time. Trading and deal management activities continue while the intraday margin call progresses allowing participants to trade and manage their risk during the period of volatility. Fee calculations are excluded from an intraday margin call (these are calculated and processed in the EOD run).

20 DEFAULT MANAGEMENT

To ensure its readiness in the case of a default, JSE Clear has documented its default management processes and procedures and tested these during simulation exercises. JSE Clear also has a clearly defined and transparent full risk waterfall that defines how risk mitigants will be used for default purposes. In the case of a clearing member default, positions will be closed out by the clearing house and any losses incurred will be apportioned in terms of the risk waterfall.

JSE Clear risk waterfall:



The introduction of non-ZAR collateral introduces additional processes in a default situation. These relate to the transferring of the collateral of the non-defaulting party and the liquidation and use of the proceeds from the collateral of the defaulting party to settle losses incurred in the default. Non-defaulting clients (Trading Members) are transferred to a new Trading Member (Clearing Member). As part of this process both portfolio positions and collateral positions of the non-defaulting party are transferred. The collateral of the defaulting party needs to be held and then liquidated in the event of a default. The following sections depict the handling of the non-ZAR collateral of the defaulting party in the event of a client and Trading Member default.

Additional information regarding the JSE Clear default fund policy may be reviewed here.

For details of the scenarios that result in a default and the consequences thereof for a Client, Trading Member and Clearing Member default refer to the Derivatives Rules on the Market Regulation page of the JSE web site.

21 PORTFOLIO WEB CALCULATOR

The portfolio web calculator allows users to determine the margin on a hypothetical portfolio. The user enters the portfolio positions via a web client that is integrated to the clearing system to perform a full margin calculation of the portfolio. To perform the calculation, the following input fields are to be captured for each position:

1. **Asset Class:** The user must specify from which asset class he wants to add a position. This can be either an Equity or Currency Derivative.
2. **Description:** The user must select which instrument description best describes the required position. The information in this field depends on the asset class selected in the previous step.
    a. **Equity Derivatives:** The Underlying, Instrument Type, Contract Size Type, Contract Size are displayed.
    b. **Currency Derivatives:** The Underlying is displayed.
3. **Expiry Date:** A list of the available standard expiry dates can be chosen from given the *Asset Class* and *Description* already selected.
4. **Contract Code:** The instrument code of the relevant future must be chosen given the *Asset Class, Description* and *Expiry Date* already selected. Even if the user wants to know the margin requirement on an option, he first has to specify the future in this field.
5. **Call/Put/Future:** This field will default to *Future*. The user needs to select either *Put* or *Call* if an option on the future in *Contract Code* is required.
6. **Strike Price:** If the user selected either *Put* or *Call* at the previous step, a strike price for the option must be provided.
7. **Buy/Sell:** The user indicates whether he wants to load a long (*Buy*) or short (*Sell*) position in the instrument.
8. **Number of Contracts:** Indicates the number of instruments to include in the positon for which the user wants to determine the margin requirement.
9. **Contract Multiplier:** The contract size of the selected future (*Contract Code*) is displayed.

Once the user has successfully captured the portfolio for which they want to determine the margin requirement, the system goes through the following steps:

1. Calculates theoretical option prices when applicable. The most recent prices and input parameters are used.
2. Calculates risk arrays for new option strikes.
3. Calculates the margin components:
    a. Calculates J-SPAN IM. If the primary risk method is HistVaR (default channel), HistVaR is used instead of J-SPAN.
    b. Calculates Liquidation period add-on.
    c. Calculates Large position add-on.

    NB. AM and SM are not included in the calculation.
4. Aggregates the numbers from the margin components as the Initial Margin and displays all four values.

The following limitations\exclusions apply to the margin calculator:

- The portfolio is limited to 100 positions.
- Instruments created on the same day are excluded and thus cannot be included in the portfolio.
- Only tradable instruments can be selected. This means cash equities or FX spot cannot be included.
- Only active futures and CFDs instruments can be selected in the *Contract Code*-field. Expired instruments will be filtered out by the application.
- Strikes for non-existing options can be selected as long as the underling future instrument exists.
- Options can only be selected on futures if at least one other option on the same future exists.

NB. Margin values determined by the Web Calculator during the day and that called from clients at the end of that day on a similar portfolio will differ. This is because the risk arrays for futures (input into the JSPAN margin requirement) are only calculated at end-of-day. The margin calculator will reuse the future risk arrays from the previous night throughout the day. The risk array can change at the following end-of-day when the actual margin call is determined.

22 REPORTING

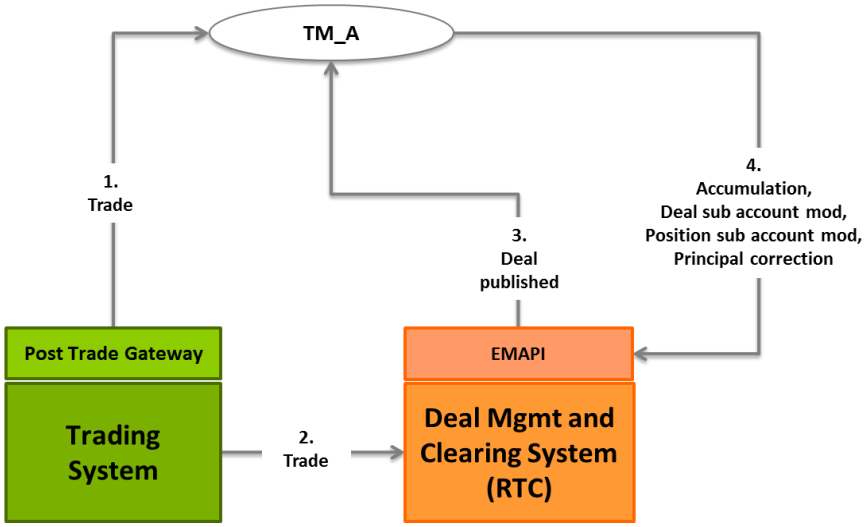
In addition to the reference and transactional data provided via the JSE clearing system interface (refer to the 'Volume PT02 – Post-trade EMAPI Clearing' document), additional reporting information is made available to clearing members in support of their daily reconciliation with the JSE. In the event that clearing members are not able to reconcile based on the reporting provided, further detailed breakdown reports may be requested from the JSE clearing operational support team. Below are some of the key post-trade related reports that available:

No.	Report Name	Description	Frequency
	Margin reports		
1	J-SPAN - Risk parameters for all tradeable instruments	This report contains the risk input parameters for all tradeable instruments to the J-SPAN calculations. It is only created once for each traceable calculation, and not per risk node.	Available at end-of-day and at an intraday margin calls
2	Large position add-on - Scenarios for all tradeable instruments	This report contains the calculation inputs and applicable scenario values for the large position add-on for each contract. Values are only stored for scenarios that are defined as eligible for large position add-on.	Available at end-of-day and at an intraday margin calls
3	Summary per risk node	This report contains the results of the margin and add-on calculations for a particular risk node.	Available at end-of-day and at intraday margin calls
	Settlement reports		
4	Interest statement	A monthly report that is published to clearing members indicating the interest earned on cash collateral per currency per day for the previous month.	Monthly at end-of-day
5	Physical deliveries	A report provided on the day of futures closeout to each trading member, indicating the underlying securities required to be delivered.	On future closeout at end-of-day
6	Summary of daily margin and collateral movements	A daily report provided to clearing members indicating the movement of margin and collateral (securities and cash) for each of their trading members.	Daily at intra-day and end-of-day
7	Summary of daily margin and collateral balances	A daily report provided to clearing members indicating the balance of margin and collateral (securities and cash) for each of their trading members.	Daily at intra-day and end-of-day

Various additional data products will be available via the JSE Information Delivery Portal (IDP). This includes information such as MtM prices, risk parameters, volatility surfaces, JIBAR and other benchmark rates, dividend data, trading reference data, as well as trading and deal management statistics. Please refer to the JSE IDP specifications for more details on the available data products.

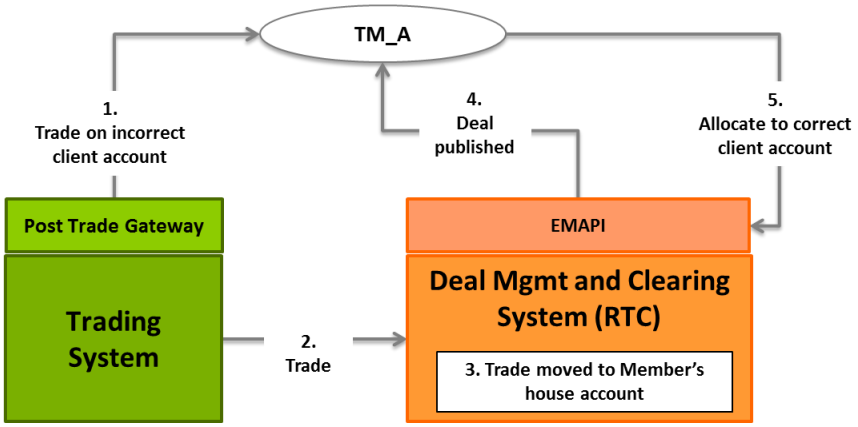
APPENDIX A – TRADE REPORTING AND DEAL MANAGEMENT PROCESSES

Accumulation, Deal and Position Sub Account Mod's, Principal Corrections

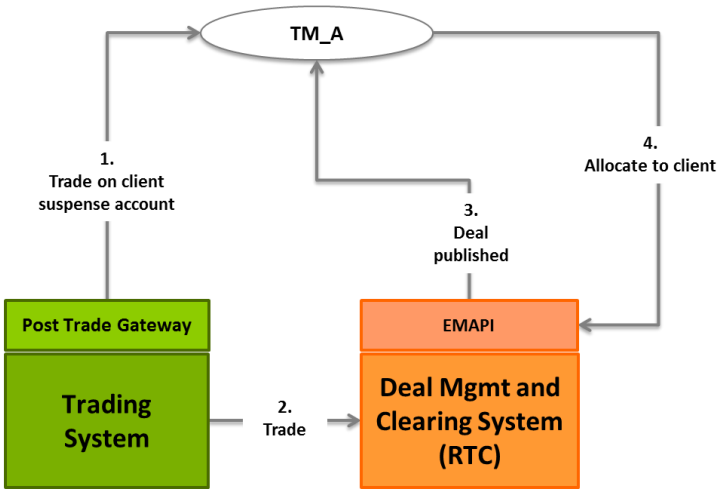


Allocation of a principal transaction - exception basis only

- When trading as principal with a client, allocations are to be performed on an exception basis only i.e. to rectify an incorrect client code
- In the case of an invalid client code on the trade, the trade will be moved to the member's house account as it is processed into RTC. An allocation to the correct client account is then done in deal management.

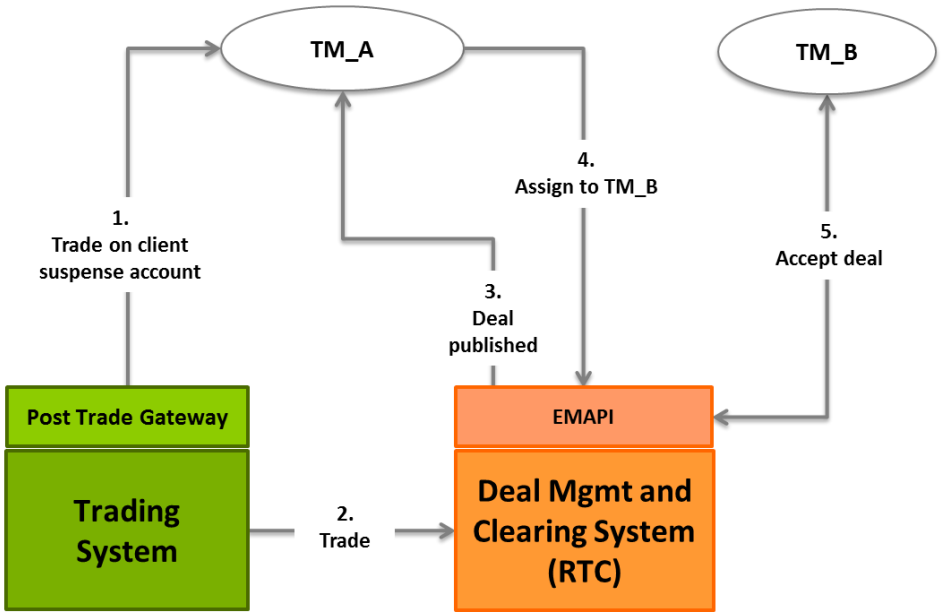


Allocation (Member to Client)

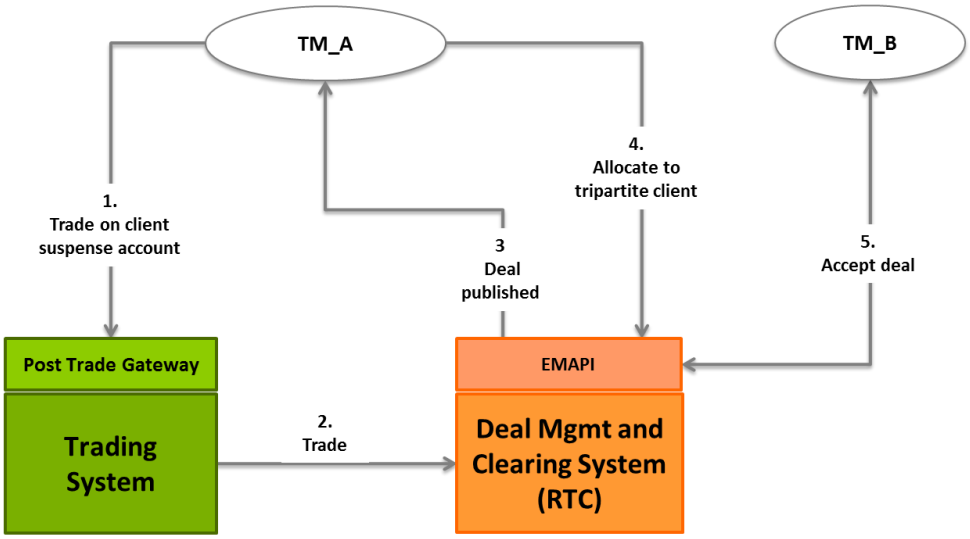


In the event that the agency trade is done directly on the tripartite client's account, no allocation would be required.

Assign (Member to Member)



Tripartite Allocation (Member to Tripartite Client)



In the event that the agency trade is done directly on the tripartite client's account, no allocation would be required.

Accumulations, deal and position sub account mod's, allocation error corrections

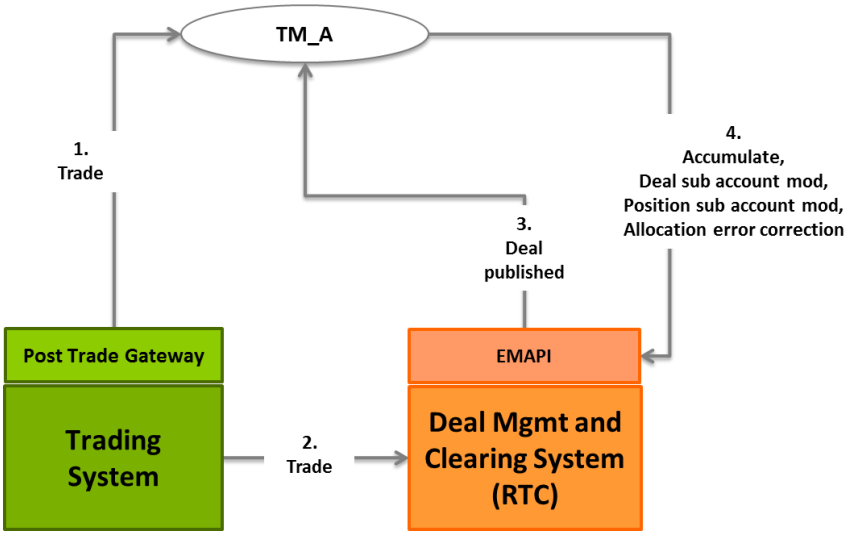
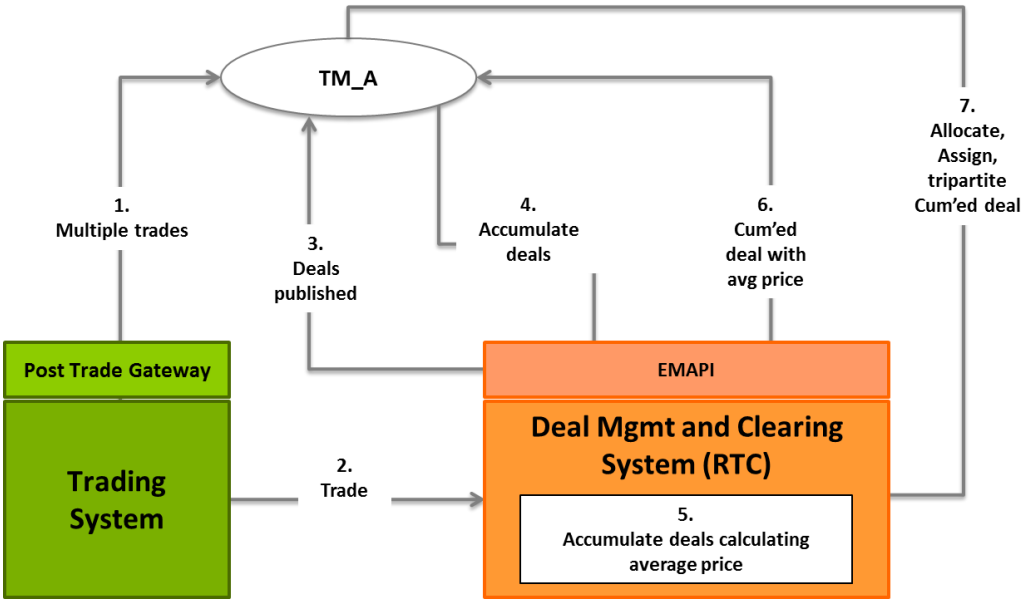


Illustration - Accumulation followed by allocation, assign, tripartite



APPENDIX B – DEAL MANAGEMENT ALLOWED ACCOUNT TYPES

Allocate trade

To: / From:	House main	House sub	House Suspense	Clients Suspense	Branch main	Branch sub	Branch Clients suspense	Client main	Client sub	Branch Client main	Branch Client sub
House main								x	x		
House sub								x	x		
House Suspense								x	x		
Clients Suspense								x	x		
Branch main										x	X
Branch sub										x	X
Branch Clients suspense										x	X
Client main											
Client sub											
Branch Client main											
Branch Client sub											

After: Only Correct allocation error, Correct principal and Accumulation of trades are allowed.

Correct allocation error

To: / From:	House main	House sub	House Suspense	Clients Suspense	Branch main	Branch sub	Branch Clients suspense	Client main	Client sub	Branch Client main	Branch Client sub
House main											
House sub											
House Suspense											
Clients Suspense											
Branch main											
Branch sub											
Branch Clients suspense											
Client main								x	x		
Client sub								x	x		
Branch Client main										x	x
Branch Client sub										x	x

After: Only allowed to perform Accumulation of trades

Tripartite allocation

To: / From:	House main	House sub	House Suspense	Clients Suspense	Branch main	Branch sub	Branch Clients suspense	Client main	Client sub	Branch Client main	Branch Client sub
House main								x	x	x	x
House sub								x	x	x	x
House Suspense								x	x	x	x
Clients Suspense								x	x	x	x
Branch main								x	x	x	x
Branch sub								x	x	x	x
Branch Clients suspense								x	x	x	x
Client main											
Client sub											
Branch Client main											
Branch Client sub											

Rules: Validate that agreement exists

Tripartite request is for the trading member or TM branch

After: Only allowed to perform Accumulation of trades

Main and/or sub accounts are specified by the destination TM or Branch upon acceptance of the tripartite.

Accumulate trade

To: / From:	House main	House sub	House Suspense	Clients Suspense	Branch main	Branch sub	Branch Clients suspense	Client main	Client sub	Branch Client main	Branch Client sub
House main	x										
House sub		x									
House Suspense			No!								
Clients Suspense				x							
Branch main					x						
Branch sub						x					
Branch Clients suspense							X				
Client main								x			
Client sub									x		
Branch Client main										x	
Branch Client sub											x

After: Trade management is allowed

Correct principal

To: / From:	House main	House sub	House Suspense	Clients Suspense	Branch main	Branch sub	Branch Clients suspense	Client main	Client sub	Branch Client main	Branch Client sub
House main											
House sub											
House Suspense											
Clients Suspense											
Branch main											
Branch sub											
Branch Clients suspense											
Client main	x	x									
Client sub	x	x									
Branch Client main					x	x					
Branch Client sub					x	x					

After: No further trade management

Assign

To: / From:	House main*	House Sub	House Suspense	Clients Suspense	Branch main*	Branch Sub	Branch Clients Suspense	Client main	Client Sub	Branch Client main	Branch Client Sub
House main	x	x		x	x	x	x				
House sub	x	x		x	x	x	x				
House Suspense**	no	no	no	no	no	no	no	no	no	no	no
Clients Suspense	x	x		x	x	x	x				
Branch main	x	x		x	x	x	x				
Branch sub	x	x		x	x	x	x				
Branch Clients Suspense	x	x		x	x	x	x				
Client main											
Client sub											
Branch Client main											
Branch Client sub											

After: Further trade management is allowed. When the trade reaches the new member, it is considered as a fresh start.
*Main account(s) are specified by the destination TM or Branch upon acceptance of the assign.
**Not allowed to assign from House suspense account

Modify position sub account

To: / From:	House main	House sub	House Suspense	Clients Suspense	Branch main	Branch sub	Branch Clients suspense	Client main	Client sub	Branch Client main	Branch Client sub
House main		x									
House sub	x	x									
House Suspense	x	x									
Clients Suspense	x	x									
Branch main						x					
Branch sub					x	x					
Branch Clients suspense					x	x					
Client main											
Client sub											
Branch Client main											
Branch Client sub											

After: No further trade management

Modify trade sub account

To: From:	House main	House sub	House Suspense	Clients Suspense	Branch main	Branch sub	Branch Clients suspense	Client main	Client sub	Branch Client main	Branch Client sub
House main		x		x							
House sub	x	x		x							
House Suspense	x	x		x	x	x	x				
Clients Suspense	x	x		x							
Branch main						x	x				
Branch sub					x	x	x				
Branch Clients suspense					x	x	x				
Client main											
Client sub											
Branch Client main											
Branch Client sub											

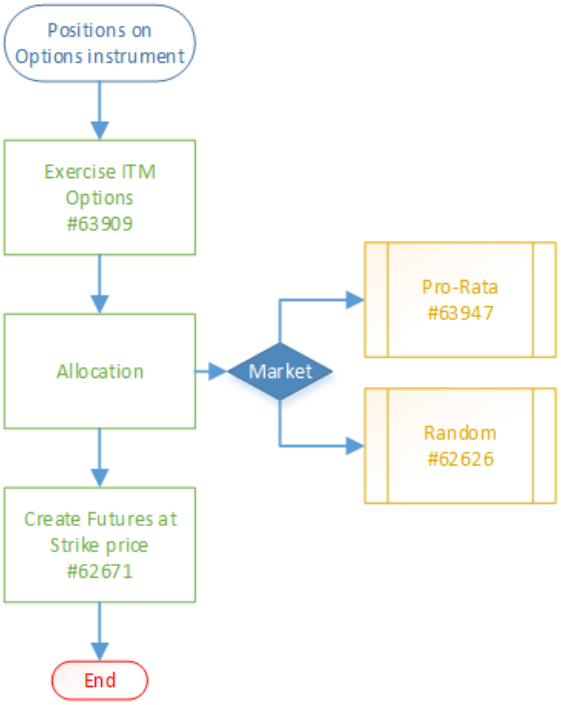
After: All trade management activities must be allowed after a trade sub account modification was performed on a trade ~~except another trade sub account modification~~.

APPENDIX C – OPTION EXERCISE, ABANDON AND FUTURES CLOSEOUT (FCO) PROCESSES

Manual Exercise

ITM: In-the-money

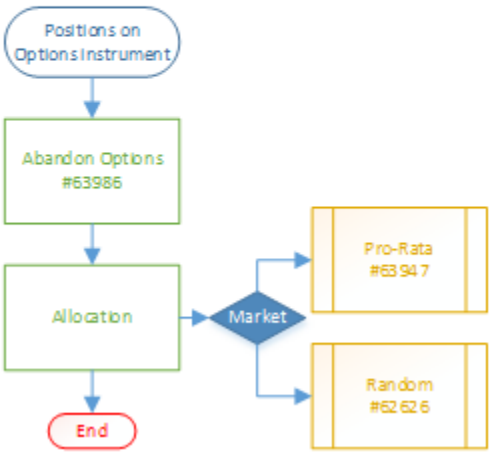
1. American: any time up to the end of the 20 min on FCO
2. European: only allowed on FCO



Manual abandon

FCO: Futures close-out

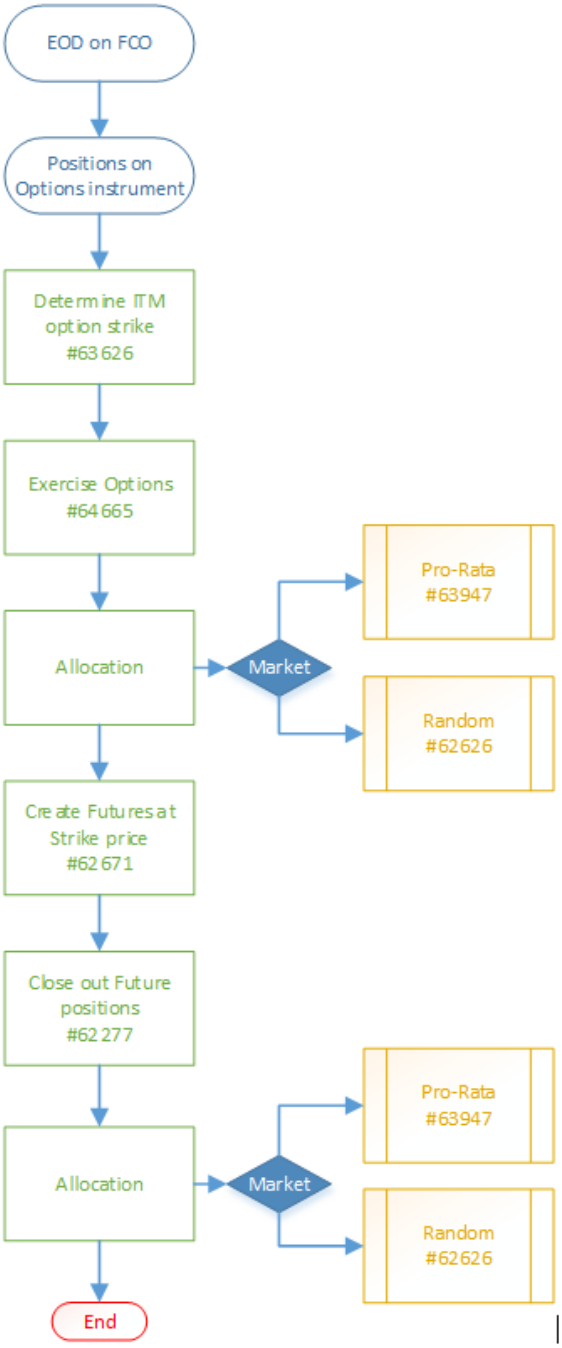
1. American: any time up to the end of the 20 min on FCO
2. European: only allowed on FCO



Automatic exercise of ITM options on FCO at EOD

ITM: In-the-Money

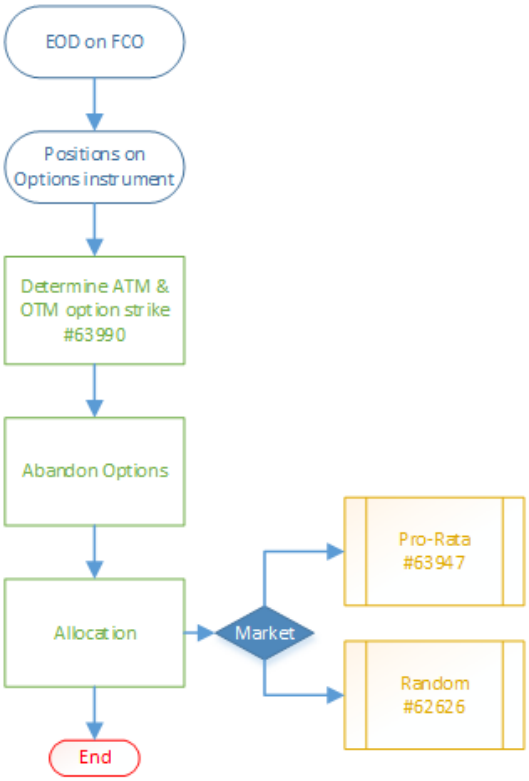
FCO: Futures close-out



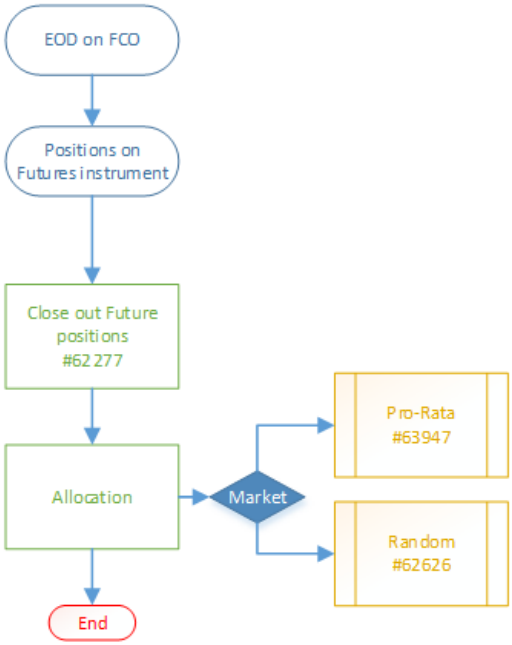
Automatic abandon of ATM and OTM options at EOD on FCO

ATM: At-the-money

OTM: Out-the-money



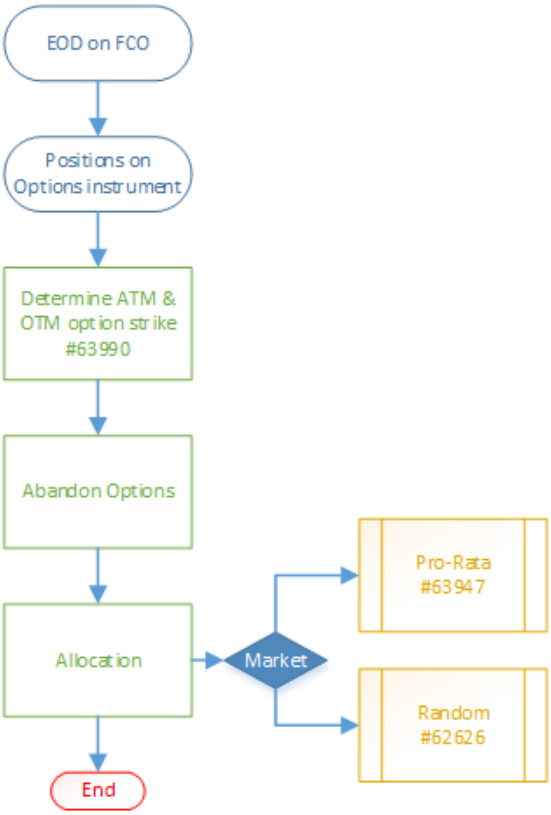
Futures close-out at EOD



Automatic abandon of ATM and OTM options at EOD on FCO

ATM: At-the-money

OTM: Out-the-money



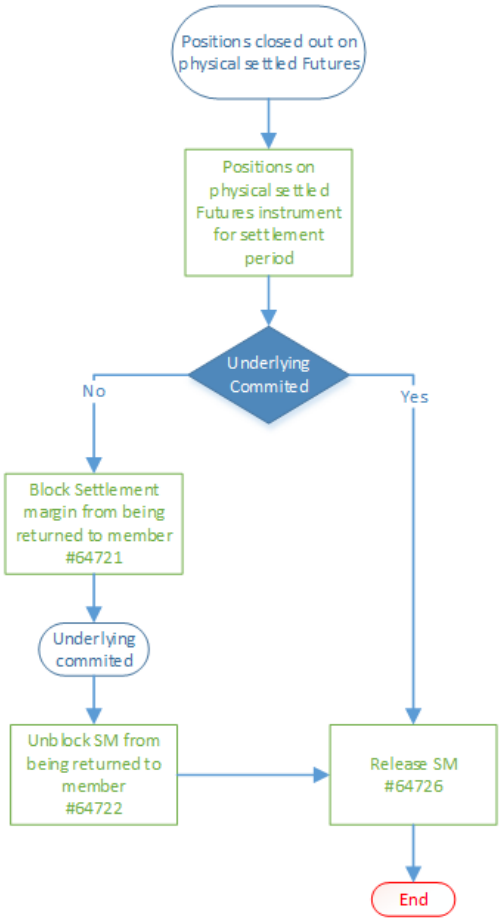
Physical settlement

SM: Settlement Margin

CH: Clearing house

A physical settlement report is generated after EOD on FCO which is sent to each member responsible for booking the deals on the equity market.

If a member has not committed to the underlying equity, the CH will manually block the settlement margin f that member from being returned.



APPENDIX D – OPTION ALLOCATION EXAMPLES

Pro-rata Allocation:

		Open Interest before Exercise						Exercise round #1 within OING of exerciser					Exercise round 2 among all OINGs					Exercise round 3 within each OING			Open interest after exercise		
OI netting group (OING)	Account	Long	Short	Net per account	Net per OING	Long side OI	Exercise request	Exercise Qty within own OING	Short Net Qty	Total short Qty per OING	Random within own OING	Trades	New Net per Account	Remaining to exercise among all OINGs	New Short Net Qty	New Total short Qty per OING	Random to each OING	Exercise Qty	Random within each OING	Trades	New Net per account	New Net per OING	New long OI
TM1	Main	100	20	80	-4	0			0	170			80		0	170		0	0	0	80	-4	0
	Sub1	60	14	46					0				46		0				0	0	46		
	Sub2	30	200	-170					170				-170		170				0	0	-170		
	Sub3	50	10	40					0				40		0				0	0	40		
CL1	Main	80	85	-5	173	173		0	5	25	5	5	0	125	0	0		0	0	0	0	48	48
	Sub1	200	5	195			150	25	0			-25	170		0				0	-125	45		
	Sub2	3	0	3				0	0			0	3		0				0	0	3		
	Sub3	0	20	-20				0	20		20	20	0		0				0	0	0		
CL2	Main	78	94	-16	394	394			16	27			-16		16	27		0	0	0	-16	394	394
	Sub1	55	66	-11					11				-11		11				0	0	-11		
	Sub2	45	34	11					0				11		0				0	0	11		
	Sub3	866	456	410					0				410		0				0	0	410		
TM2	Main	0	1000	-1000	-563	0			1000	7106			-1000		1000	7106	125	125		0	-1000	-438	0
	Sub1	5555	1	5554					0				5554		0				0	0	5554		
	Sub2	999	10	989					0				989		0				0	0	989		
	Sub3	0	6106	-6106					6106				-6106		6106				125	125	-5981		
SUM		8121	8121	0	0				7328	7328	25	0	0			7303				0		0	
Total Open Interest						567																	442
																						Delta:	125

Random Allocation:

		Open Interest before Exercise						Exercise round #1 within OING of exerciser					Exercise round 2 among all OINGs					Exercise round 3 within each OING			Open interest after exercise		
OI netting group (OING)	Account	Long	Short	Net per account	Net per OING	Long side OI	Exercise request	Exercise Qty within own OING	Short Net Qty	Total short Qty per OING	Random within own OING	Trades	New Net per Account	Remaining to exercise among all OINGs	New Short Net Qty	New Total short Qty per OING	Random to each OING	Exercise Qty	Random within each OING	Trades	New Net per account	New Net per OING	New long OI
TM1	Main	100	20	80	-4	0			0	170			80		0	170		0	0	0	80	-4	0
	Sub1	60	14	46					0				46		0				0	0	46		
	Sub2	30	200	-170					170				-170		170				0	0	-170		
	Sub3	50	10	40					0				40		0				0	0	40		
CL1	Main	80	85	-5	173	173		0	5	25	5	5	0	125	0	0		0	0	0	0	48	48
	Sub1	200	5	195			150	25	0			-25	170		0				0	-125	45		
	Sub2	3	0	3				0	0			0	3		0				0	0	3		
	Sub3	0	20	-20				0	20		20	20	0		0				0	0	0		
CL2	Main	78	94	-16	394	394			16	27			-16		16	27		0	0	0	-16	394	394
	Sub1	55	66	-11					11				-11		11				0	0	-11		
	Sub2	45	34	11					0				11		0				0	0	11		
	Sub3	866	456	410					0				410		0				0	0	410		
TM2	Main	0	1000	-1000	-563	0			1000	7106			-1000		1000	7106	125	125		0	-1000	-438	0
	Sub1	5555	1	5554					0				5554		0				0	0	5554		
	Sub2	999	10	989					0				989		0				0	0	989		
	Sub3	0	6106	-6106					6106				-6106		6106				125	125	-5981		
SUM		8121	8121	0	0				7328	7328	25	0	0			7303				0		0	
Total Open Interest						567																	442
																						Delta:	125

APPENDIX E – RANDOM AND PRO-RATA ALLOCATION EXAMPLES

Example 1a - Exercising of American options using the pro-rata allocation method

Pre-allocation	Post-allocation
TM1 (House): Initial Net Options Positions: +25 MTN Options (Put) (Strike: R120.00) Initial Net Futures Positions: -2 MTN Futures **TM2 (Sub Account1):** Initial Net Options Positions: -15 MTN Options (Put) (Strike: R120.00) Initial Net Futures Positions: +14 MTN Futures **TM3_Client1 (Main):** Initial Net Options Positions: -10 MTN Options (Put) (Strike: R120.00) Initial Net Futures Positions: -12 MTN Futures **Initial Open Interest (MTN Options (Put) (Strike: R120.00))**: 25 **Initial Open Interest (MTN Futures):** 14 **Exercise Input Message:** Tradable Instrument: MTN Options (Put) (Strike: R120.00) Quantity: +20 Account/Sub Account: TM1 (House)	**TM1 (House):** Updated Net Options Positions: +5 MTN Options (Put) (Strike: R120.00) Updated Net Futures Positions: -22 MTN Futures (Price R120) **TM2 (Sub Account1):** Updated Net Options Positions: -3 MTN Options (Put) (Strike: R120.00) Updated Net Futures Positions: +26 MTN Futures **TM3_Client1 (Main):** Updated Net Options Positions: -2 MTN Options (Put) (Strike: R120.00) Updated Net Futures Positions: -4 MTN Futures **Updated Open Interest (MTN Options (Put) (Strike: R120.00))**: 5 **Updated Open Interest (MTN Futures):** 26 NB. All newly created futures must have a price of R120

Example 1b - Abandoning of American options using the pro-rata allocation method

Pre-Conditions	Post-Conditions
TM1 (House): Initial Net Options Positions: +20 MTN Options (Call) (Strike: R120.00) Initial Net Futures Positions: 0 MTN Futures **TM2 (Sub Account1):** Initial Net Options Positions: -15 MTN Options (Call) (Strike: R120.00) Initial Net Futures Positions: +10 MTN Futures **TM3_Client1 (Main):** Initial Net Options Positions: -5 MTN Options (Call) (Strike: R120.00) Initial Net Futures Positions: -10 MTN Futures **Initial Open Interest (MTN Options (Call) (Strike: R120.00))**: 20 **Initial Open Interest (MTN Futures):** 10 **Abandon Input Message:** Tradable Instrument: MTN Options (Call) (Strike: R120.00) Quantity: +16 Account/Sub Account: TM1 (House)	**TM1 (House):** Initial Net Options Positions: +4 MTN Options (Call) (Strike: R120.00) Initial Net Futures Positions: 0 MTN Futures **TM2 (Sub Account1):** Initial Net Options Positions: -3 MTN Options (Call) (Strike: R120.00) Initial Net Futures Positions: +10 MTN Futures **TM3_Client1 (Main):** Initial Net Options Positions: -1 MTN Options (Call) (Strike: R120.00) Initial Net Futures Positions: -10 MTN Futures **Initial Open Interest (MTN Options (Call) (Strike: R120.00)):** 4 **Initial Open Interest (MTN Futures):** 10 NB. All newly created futures must have a price of R120

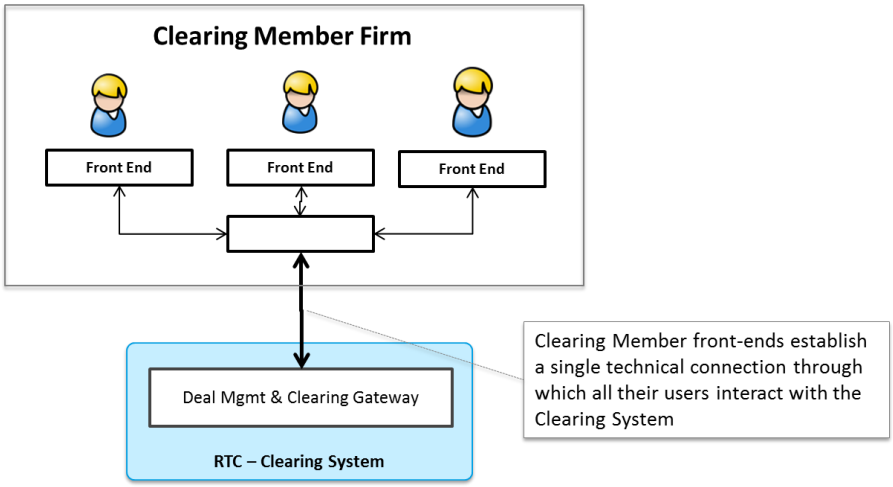
Example 2a - Exercising of European options using the random allocation method, on the expiry date

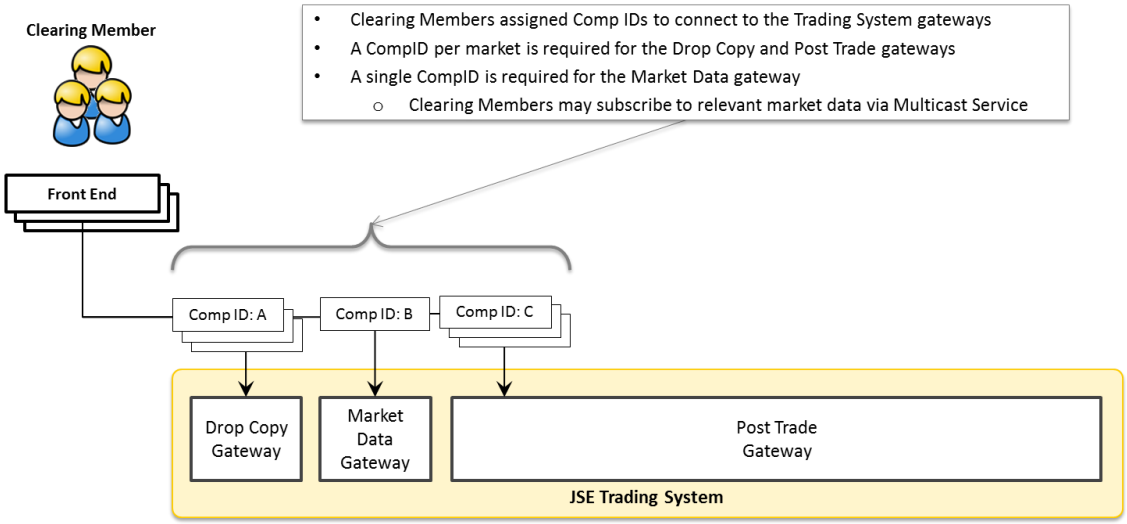
Pre-Conditions	Post-Conditions
TM1 (House): Initial Net Options Positions: +20 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: 0 USD/ZAR Futures **TM2 (Sub Account1):** Initial Net Options Positions: -15 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: +10 USD/ZAR Futures **TM3_Client1 (Main):** Initial Net Options Positions: -5 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: -10 USD/ZAR Futures **Initial Open Interest (USD/ZAR Options (Call) (Strike: R16.50))**: 20 **Initial Open Interest (USD/ZAR Futures):** 10 **Exercise Input Message:** Tradable Instrument: USD/ZAR Options (Call) (Strike: R16.50) Quantity: +20 Account/Sub Account: TM1 (House)	**TM1 (House):** Updated Net Options Positions: 0 USD/ZAR Options (Call) (Strike: R16.50) Updated Net Futures Positions: 20 USD/ZAR Futures **TM2 (Sub Account1):** Updated Net Options Positions: 0 USD/ZAR Options (Call) (Strike: R16.50) Updated Net Futures Positions: -5 USD/ZAR Futures **TM3_Client1 (Main):** Updated Net Options Positions: 0 USD/ZAR Options (Call) (Strike: R16.50) Updated Net Futures Positions: -15 USD/ZAR Futures **Updated Open Interest (USD/ZAR Options (Call) (Strike: R120.00))**: 0 **Updated Open Interest (USD/ZAR Futures):** 20 NB. All newly created futures must have a price of R16.50

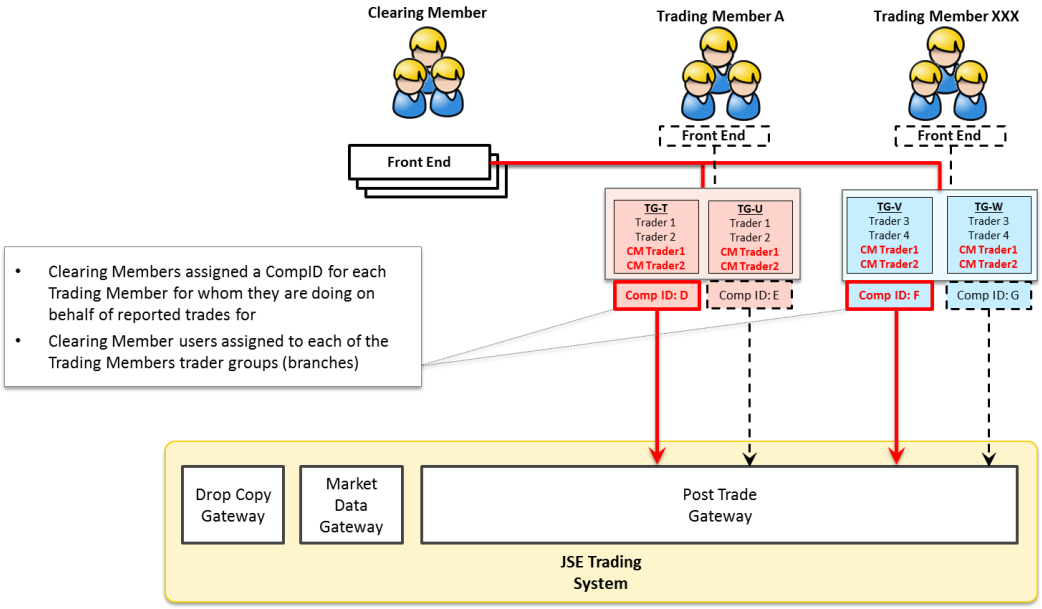
Example 2b - Abandoning of European options using the random allocation method, on the expiry date

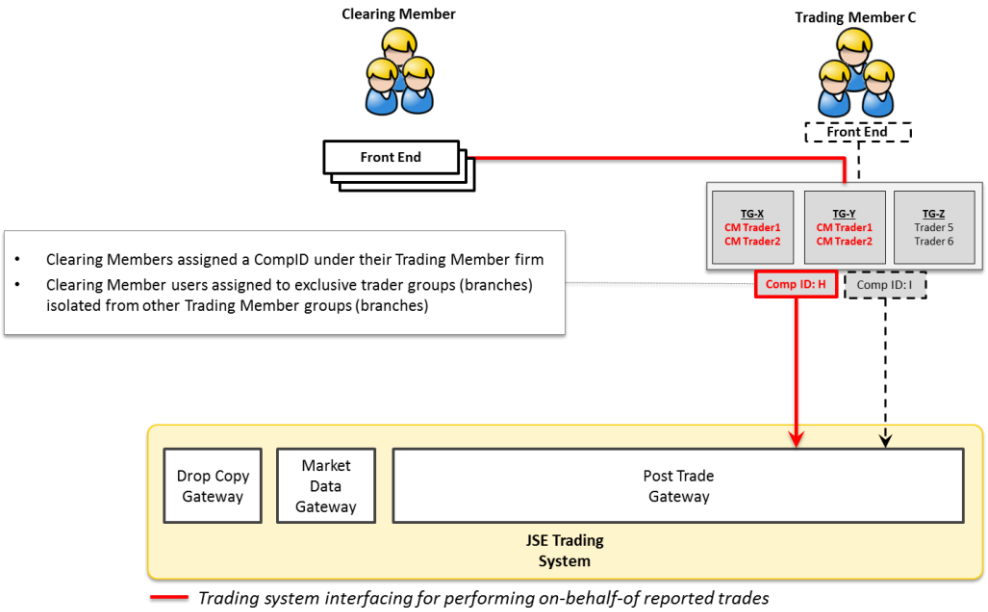
Pre-Conditions	Post-Conditions
TM1 (House): Initial Net Options Positions: +30 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: -5 USD/ZAR Futures **TM2 (Sub Account1):** Initial Net Options Positions: -25 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: +15 USD/ZAR Futures **TM3_Client1 (Main):** Initial Net Options Positions: -5 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: -10 USD/ZAR Futures **Initial Open Interest (USD/ZAR Options (Call) (Strike: R120.00))**: 30 **Initial Open Interest (USD/ZAR Futures):** 15 **Abandon Input Message:** Tradable Instrument: USD/ZAR Options (Call) (Strike: R16.50) Quantity: +23 Account/Sub Account: TM1 (House)	**TM1 (House):** Initial Net Options Positions: +7 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: -5 USD/ZAR Futures **TM2 (Sub Account1):** Initial Net Options Positions: -2 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: +15 USD/ZAR Futures **TM3_Client1 (Main):** Initial Net Options Positions: -5 USD/ZAR Options (Call) (Strike: R16.50) Initial Net Futures Positions: -10 USD/ZAR Futures **Initial Open Interest (USD/ZAR Options (Call) (Strike: R16.50)):** 7 **Initial Open Interest (USD/ZAR Futures):** 15 NB. All newly created futures must have a price of R16.50

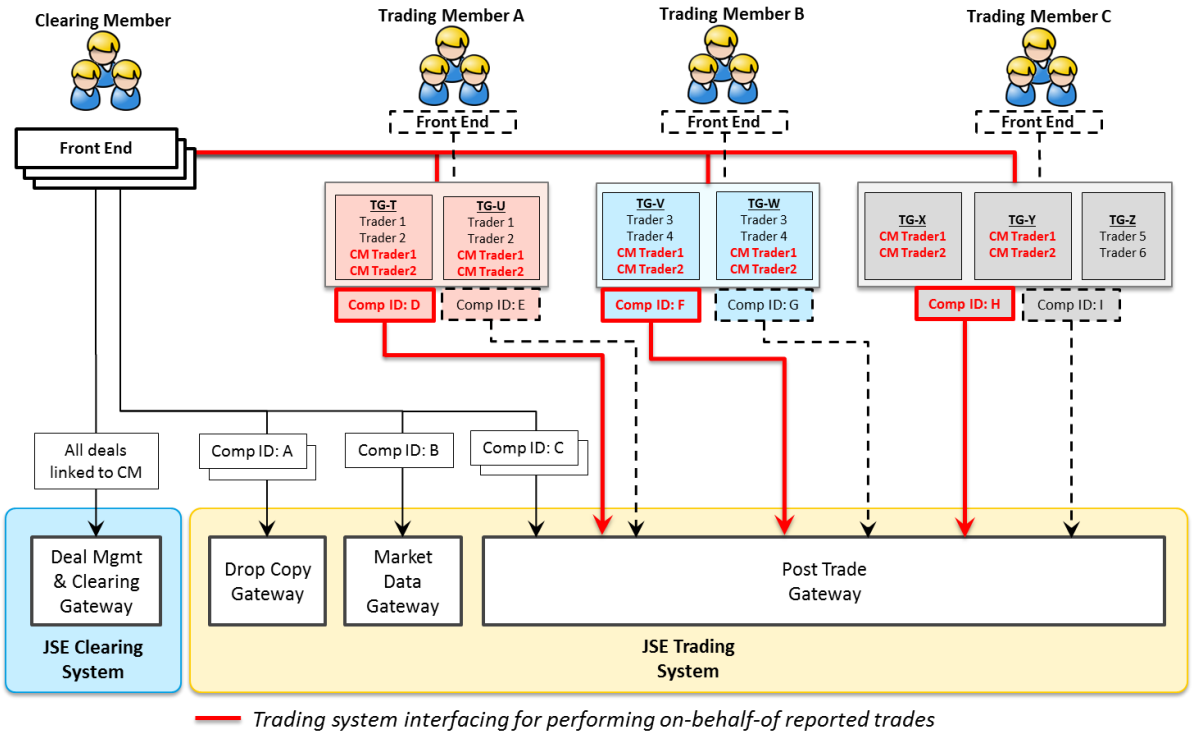
APPENDIX F – SYSTEM INTERFACING FOR TRADE MONITORING AND ON-BEHALF-OF ACTIVITIES






Clearing Member
Trading Member A
Trading Member XXX
Front End
Front End
Front End
TG-T
Trader 1
Trader 2
CM Trader1
CM Trader2
TG-U
Trader 1
Trader 2
CM Trader1
CM Trader2
TG-V
Trader 3
Trader 4
CM Trader1
CM Trader2
TG-W
Trader 3
Trader 4
CM Trader1
CM Trader2
Comp ID: D
Comp ID: E
Comp ID: F
Comp ID: G
Clearing Members assigned a CompID for each Trading Member for whom they are doing on behalf of reported trades for
Clearing Member users assigned to each of the Trading Members trader groups (branches)
Drop Copy Gateway
Market Data Gateway
Post Trade Gateway
JSE Trading System
Trading system interfacing for performing on-behalf-of reported trades

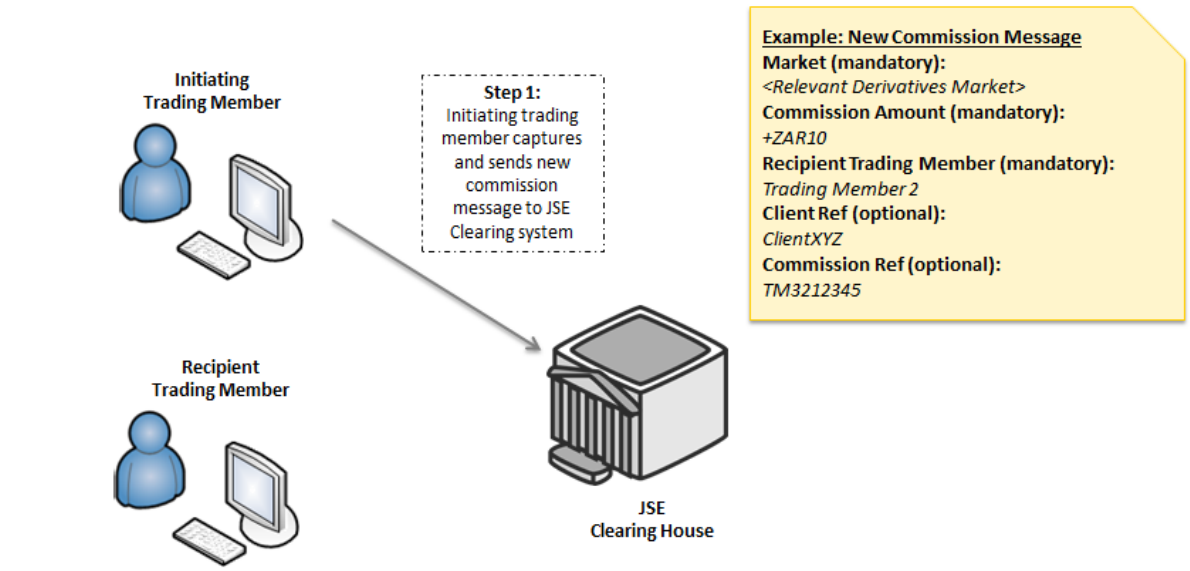

Clearing Member
Trading Member C
Front End
Front End
TG-X
CM Trader1
CM Trader2
TG-Y
CM Trader1
CM Trader2
TG-Z
Trader 5
Trader 6
Comp ID: H
Comp ID: I
Clearing Members assigned a CompID under their Trading Member firm
Clearing Member users assigned to exclusive trader groups (branches) isolated from other Trading Member groups (branches)
Drop Copy Gateway
Market Data Gateway
Post Trade Gateway
JSE Trading System
Trading system interfacing for performing on-behalf-of reported trades



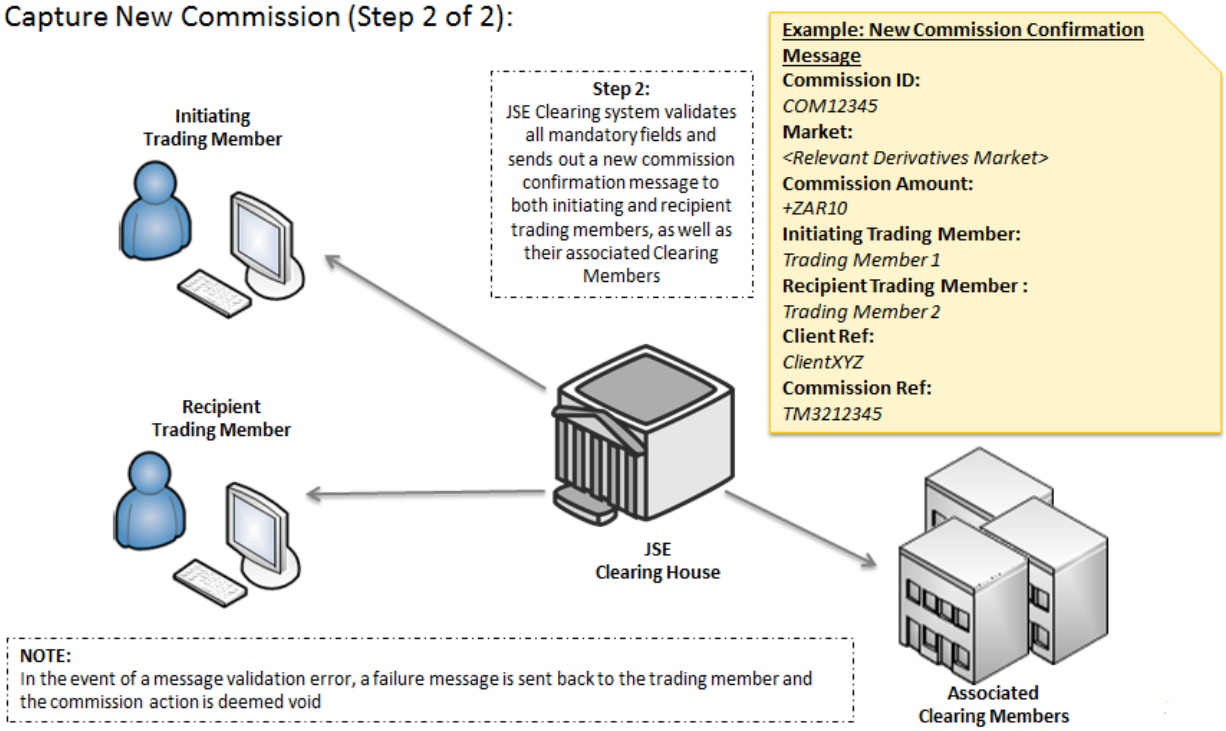
- TMs will request from the JSE, a CompID for their CM as part of the normal enablement process OR allow the CM to request for a CompID via email and copying the compliance officer or head of trading from the TM firm.
- The CompID only links to the post trade gateway and thus the CM can only perform off-book trade activities and cannot place any on-book orders.
- Using the CompID, the CM establishes a single daily connection to the JSE Post Trade gateway – one CompID connection per TM
- All flows i.e. off-book message requests and acknowledgements will go through this connection.
- The trading system identifies who captured the off-book trade message based on the CompID.
- Off-book messages submitted through the CompID include fields:
    - TraderID – identifies the particular trader/dealer initiating the message
    - TraderGroup – identifies the trader group (i.e. branch) to which the trader/dealer belongs
    - Account – the branch or client account (as per RTC) to which the position is to be allocated
- CMs will require separate Comp IDs for Drop Copy, Market Data and Post Trade gateways.
- TMs will have their own CompIDs for Post Trade and Native gateway (On and Off-book trade activity).

APPENDIX G – COMMISSION FUNCTIONS: CAPTURE, CANCEL AND REJECT

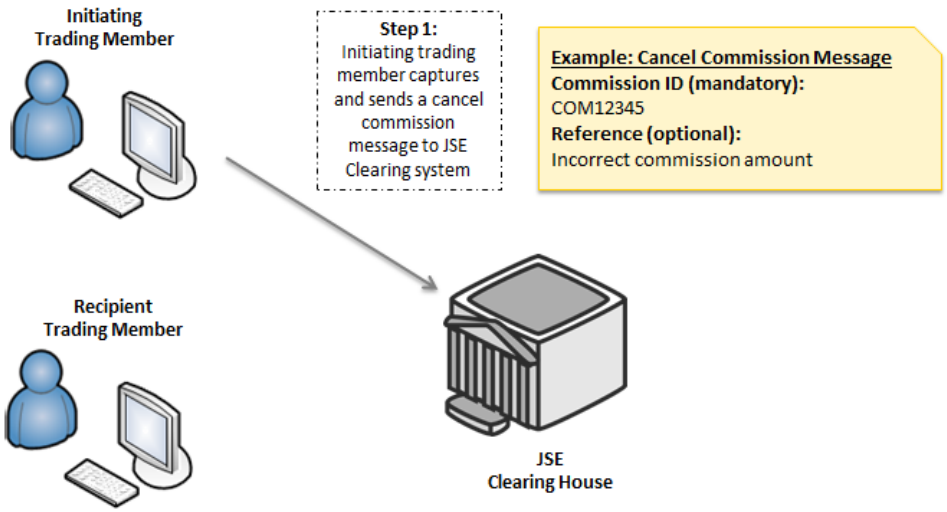
Capture New Commission (Step 1 of 2):



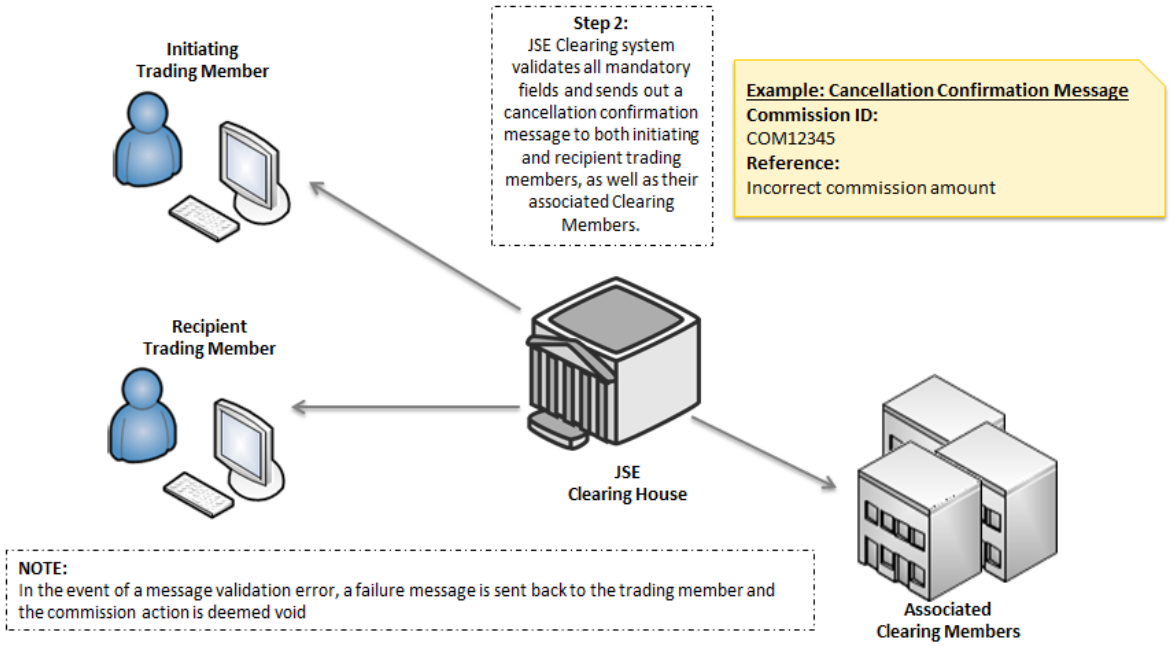
Capture New Commission (Step 2 of 2):



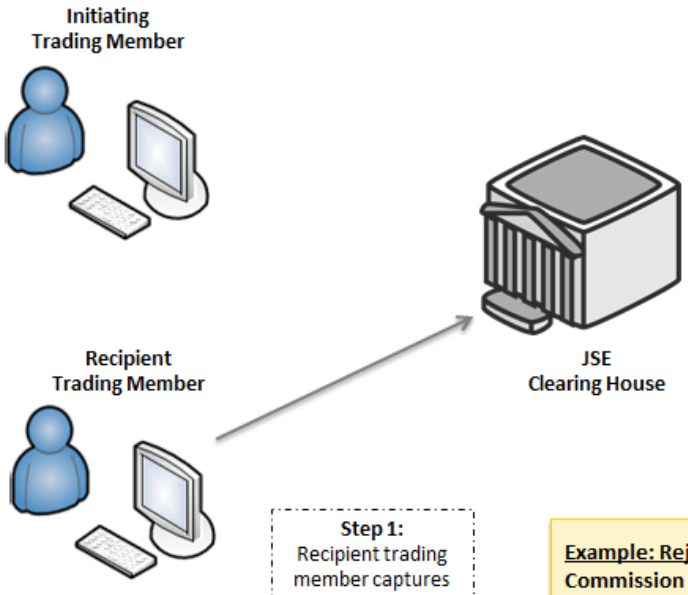
Cancel Commission (Step 1 of 2):



Cancel Commission (Step 2 of 2):



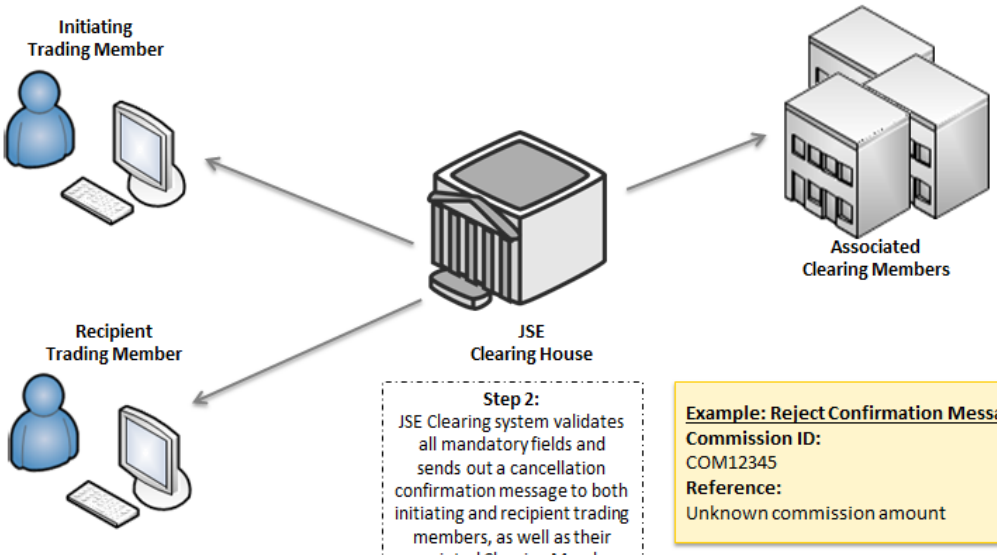
Reject Commission (Step 1 of 2):



Step 1:
Recipient trading member captures and sends a reject commission message to JSE Clearing system

Example: Reject Commission Message
Commission ID (mandatory):
COM12345
Reference (optional):
Unknown commission amount

Reject Commission (Step 2 of 2):



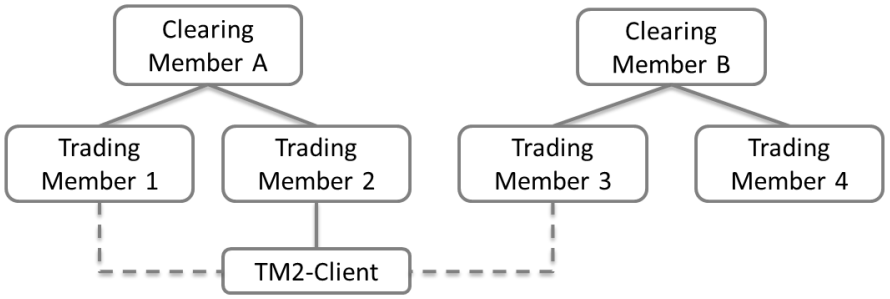
Step 2:
JSE Clearing system validates all mandatory fields and sends out a cancellation confirmation message to both initiating and recipient trading members, as well as their associated Clearing Members

Example: Reject Confirmation Message
Commission ID:
COM12345
Reference:
Unknown commission amount

NOTE:
In the event of a message validation error, a failure message is sent back to the trading member and the commission action is deemed void

APPENDIX H – COMMISSION BOOKING AND SETTLEMENT EXAMPLE

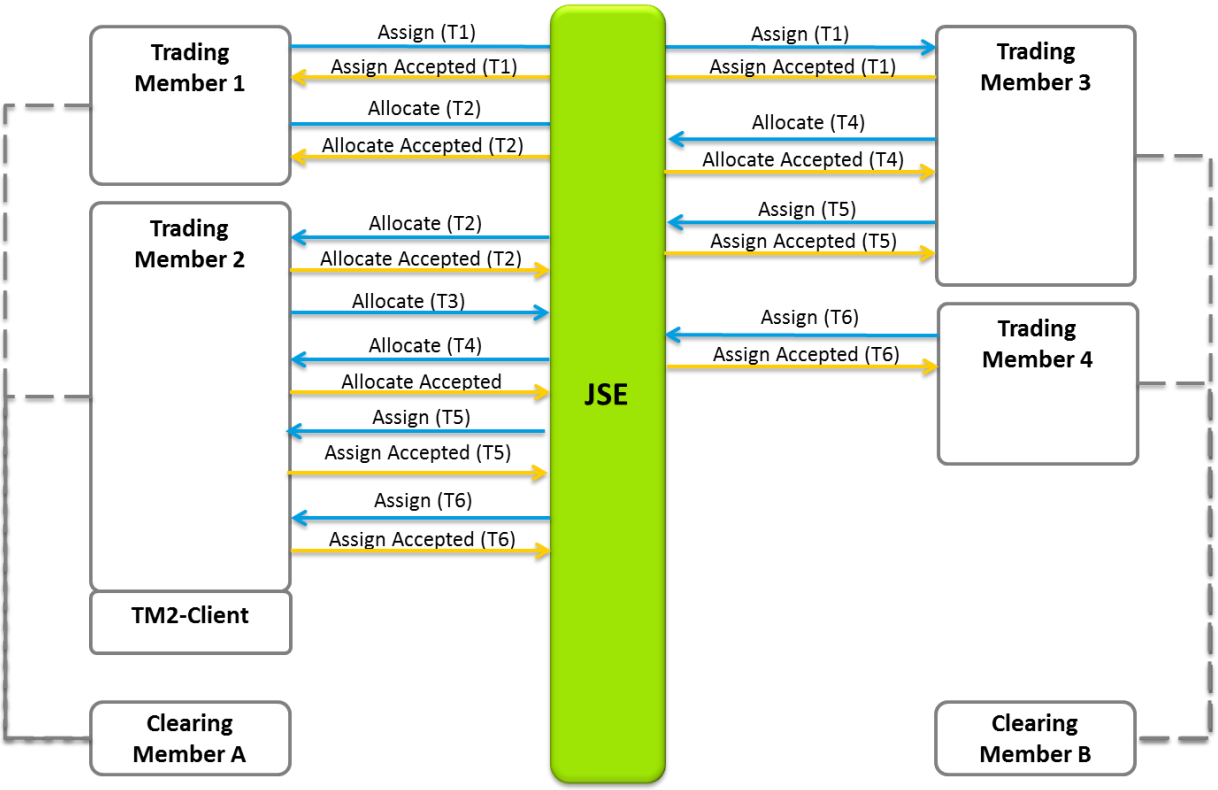
Market Structure:



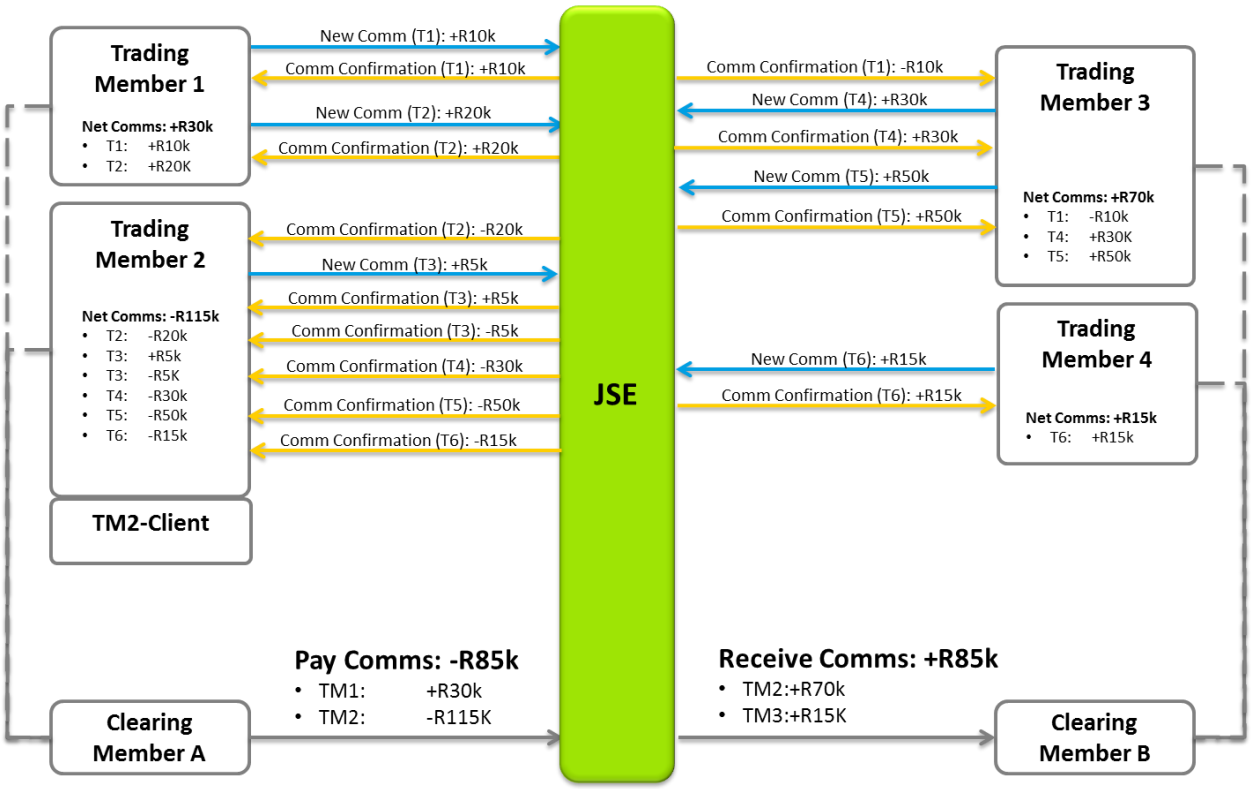
Scenarios:

a. TM1 assigns trade (T1) to TM3 and charges a R10k commission.
b. TM1 tripartite allocates trade (T2) to TM2-Client and charges a R20K commission
c. TM2 allocates trade (T3) to TM2-Client and charges a R5k commission
d. TM3 tripartite allocates trade (T4) to TM2-Client and charges a R30K commission
e. TM3 assigns trade (T5) to TM2 and charges a R50k commission
f. TM4 assigns trade (T6) to TM2 and charges a R15k commission

Trading Flows:



Commission flows captured at trade level:



Commission flows captured at trading member level: