JSE Market Communication Session

5 April 2016
Agenda

- JSE network upgrades
- Integrated Trading and Clearing (ITaC) update
  - Trading status update
    - Status update
    - Services documentation
    - Customer Test Service (CTS)
    - Trading bandwidth requirements
  - Clearing status update
    - Status update
    - Services documentation
    - Commissions
- T+3 update
  - Status and timeline
- Questions?
JSE Network upgrades

Dennis Mwanza
JSE Network upgrade
End of Life technology being decommissioned

- Existing E1 and X21 telecommunications technologies have been earmarked as ‘End of Life’ and will be decommissioned at both the JSE’s production and remote disaster recovery sites
- Clients making use of E1 or X21 technologies must migrate to a suitable alternative for their last mile connectivity into the JSE’s Customer Access Network (CAN)
- Clients must consider redundancy and their connectivity to the JSE’s remote disaster recovery site as well as bandwidth requirements when engaging with their Network Service Provider (NSP)
- These legacy connectivity options will be decommissioned and will no longer be supported by the JSE post September 2016
- The latest copy of the accredited JSE NSPs can be found at the link below: https://www.jse.co.za/services/technologies/nsp-accreditation-list
JSE Network upgrade
Customer Access Network (CAN) router replacement

• JSE is replacing its current Customer Access Network (CAN) infrastructure with a series of enterprise routers

• All clients and Network Service Provider (NSP) telecommunications links terminating with ‘fibre’ or ‘ethernet’ will be migrated to the new infrastructure

• To minimize impact to clients, all existing client and Network Service Provider (NSP) telecommunications link configurations will be migrated to the new infrastructure as is, no changes will be required to network configurations of clients or NSPs

• Migration of telecommunications links will take place on Thursday evenings during a Live Connectivity (LCON) test slot or during Participant Test Weekend (PTW) LCONs

• As mentioned previously, X21 and E1 links will not be migrated to the new routers as these legacy connectivity options will be decommissioned and will no longer be supported by the JSE post September 2016 – clients must ensure they migrate to a suitable alternative before then

• The latest copy of the accredited JSE NSPs can be found at the link below: https://www.jse.co.za/services/technologies/nsp-accreditation-list
JSE Network upgrade

Alternative last mile connectivity options

• Multi-Protocol Label Switching (MPLS) connectivity
  • Single or dual connectivity into a suitable MPLS, allowing for potential failover to the JSE’s remote disaster recovery site

• Direct point-to-point fibre
  • Single or dual connectivity via fibre into JSE’s production site, and potentially to the JSE’s remote disaster recovery site

• Metro-E connectivity
  • Single or dual connectivity via Metro-Ethernet into the JSE’s production site, and potentially to the JSE’s remote disaster recovery site

• For further details on connectivity options, clients can refer to the
  • JSE Client Connectivity and Requirements document
**JSE Sites**

Destination address details

**Production:**
One Exchange Square  
2 Gwen Lane  
Sandown  
2146

**JSE Remote Disaster Recovery (DR):**
Venus 2 Data Centre  
The Campus  
1st floor Imola Building  
57 Sloane Street  
Bryanston

**JSE London Point of Presence(PoP):**
2 Buckingham Avenue  
Slough Trading Estate  
Slough, Berkshire SL1 4NB  
United Kingdom
Integrated Trading and Clearing (ITaC) Update

Tshwantsho Matsena
Proposed ITaC phases

• The programme consists of 2 Projects
  • Project 1:
    • Phase 1a: Equity Market upgrade for trading only
    • Phase 1b: Equity Derivatives Market
    • Phase 1c: Currency Derivatives Market
  • Project 2:
    • Phase 2a: Commodities Market (TBC)
ITaC Trading Status Update

• Final trading specifications were issued 29 Feb 2016 – these include ITaC Project 1b & 1c functionality

• Formal notice provided to clients w.r.t. go live date of ITaC Project 1a – Equity Market upgrade
  • 26 September 2016 with contingency date of 10 October 2016

• JSE internal testing is progressing well

• Work in progress to update and issue the Trading Functional Overview document (Volume 00) as well as some updated guidance notes
ITaC Project 1a
Equity Market enhancements

- Introduction of Closing Price Cross (CPX) Session for trading segments ZA02, ZA03 and ZA06
- New Central Order Book Cross (XT)
- Introduction of pegged orders for trading segments ZA01, ZA02, ZA03 and ZA06
- EOD Volume Auction will introduce the non-visible uncrossing of large orders after the CPX Session
- Refer to 22 Feb 2016 Technical Working Group (TWG) presentation for details of the above
ITaC Project 1a
Customer Test Service (CTS)

- New ITaC 1a CTS environment launch to clients for connectivity testing 4 Apr 2016 and will be upgraded with new functionality during May
- MITCH market data gateways in the new ITaC 1a CTS environment will already cater for derivatives data
- A new message type on the MITCH market data gateway will now support Extended Statistics

**Equity Market Enhancements will only be made available to clients for testing in the new ITaC CTS environment from mid-May**

- At this stage the JSE will not support functional API queries specific to the new functionality until it is available in CTS
Trading CTS Enablement

• To minimise impact to clients, existing CTS client enablement's will be copied over from the current production parallel Equity CTS environment to the new ITaC Project 1a CTS environment
  • Connect to the current production parallel CTS environment and new ITaC Project 1a CTS environment with the same ComplIDs and Trader-IDs
  • However need to target the correct environment IP addresses
  • Production parallel CTS and new ITaC Project 1a CTS environments will have different target IP addresses

• As per the current client enablement process, to request a copy of the CTS IP contact JSE Client Services Centre (CSC) on +27 11 520 7777 or CustomerSupport@jse.co.za
  • Access to the new ITaC Project 1a CTS environment will be provided at no additional charge to current CTS fees until the end of October 2016
  • During this time the current production parallel CTS environment will still be available
  • Only once the existing production parallel CTS environment is decommissioned, will the new ITaC Project 1a CTS environment be billed for
### ITaC Project 1a – Equity Market Upgrade

**Key Dates**

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, 4 April 2016</td>
<td>Launch of upgraded Equity Market Customer Test Service (CTS)</td>
</tr>
<tr>
<td>May 2016*</td>
<td>CTS downtime</td>
</tr>
<tr>
<td>May 2016*</td>
<td>Implementation of new Equity Market functional enhancements in CTS</td>
</tr>
<tr>
<td>Wednesday, 1 June 2016</td>
<td>Start of conformance tests for clients</td>
</tr>
<tr>
<td>Saturday, 30 July 2016</td>
<td>Internal JSE prep dress rehearsal</td>
</tr>
<tr>
<td>Friday, 5 August 2016</td>
<td>Final Conformance cut-off date</td>
</tr>
<tr>
<td>Saturday, 13 August 2016</td>
<td>Equity Market <strong>Mandatory</strong> Dress Rehearsal (MMDR)</td>
</tr>
<tr>
<td>Saturday, 3 September 2016</td>
<td>Equity Market <strong>Mandatory</strong> Dress Rehearsal (MMDR)</td>
</tr>
<tr>
<td>Saturday, 24 September 2016</td>
<td>Equity Market <strong>Optional</strong> Dress Rehearsal (MODR) / Connectivity test and final cut-over activities for go live</td>
</tr>
<tr>
<td>Monday, 26 September 2016</td>
<td><strong>Go Live</strong> of ITaC Project 1a – Equity Market Upgrade</td>
</tr>
<tr>
<td>Saturday, 8 October 2016</td>
<td>Equity Market <strong>Optional</strong> Dress Rehearsal (MODR) / Connectivity test and final cut-over activities for go live <strong>contingency</strong></td>
</tr>
<tr>
<td>Monday, 10 October 2016</td>
<td>Go Live <strong>contingency</strong> of ITaC Project 1a – Equity Market Upgrade</td>
</tr>
</tbody>
</table>

*Exact dates to be confirmed in due course*
## Functional Overview

### Trading and Market Data

<table>
<thead>
<tr>
<th>Activity</th>
<th>Equity</th>
<th>Equity Deriv.</th>
<th>Currency Deriv.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trading Gateway (Native)</strong></td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Order Management of new and existing orders or order cancels with immediate confirmation of On Book (automated) trades and publishing of Execution Reports. Trade Cancellations and Market Operations announcements.</td>
</tr>
<tr>
<td><strong>Trading Gateway (FIX)</strong></td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Allow for the receipt of additional copies of the Execution Reports generated by the system, ‘Copy To’ functionality. This interface may also be used by clients to download the current status of all their active orders in the event of a failure.</td>
</tr>
<tr>
<td><strong>Drop Copy Gateway (FIX)</strong></td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Enables member firms to submit and manage Off Book trade reports and receive real-time information on On Book executed trades. This interface may also be used by clients to download all their confirmed trades in the event of a failure.</td>
</tr>
<tr>
<td><strong>Post Trade Gateway (FIX)</strong></td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Provides real-time market data of instruments traded on the JSE such as price, volume, closing prices auction information, instrument status etc. A Level 1 and Level 2 (full market depth) service will be available.</td>
</tr>
<tr>
<td><strong>Market Data Gateways (MITCH)</strong></td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Static trading reference data for the Trading System will be made available on a daily basis via the JSE IDP (FTP) service.</td>
</tr>
</tbody>
</table>
Interface Users
Login to Gateways – Native Gateway

CompID logs in accessing a particular market

EDMCompID
IRCompID
FXCompID
FICompID

Native Gateway 1
Native Gateway 2

EDM
IR
FX
FI

2 new Native Trading Gateways exist each with primary and secondary solution:
- Equity Derivatives
- Currency Derivatives & Interest rates and Fixed Income

Thus, there will be 3 separate Native Gateways including Equity Market

Max order rates per CompID are still under discussion, this may be similar to the current Equity model
Interface Users
Login to Gateways – Drop Copy Gateway

CompID logs in accessing a particular market

No new Gateways for ITaC existing Drop Copy and Post Trade Gateways will be used
Interface Users
Login to Gateways – Multicast Services Gateway

Client subscribes to a service per market

EDM Client

IR Client

FX Client

FI Client

MITCH Gateway 1

MITCH Gateway 2

EDM

IR

FX

FI

ITaC 1b & c

2 new MITCH Market Data Gateways will exist each with primary and secondary solution:

• Equity Derivatives
• Currency Derivatives & Interest rates and Fixed Income
Interface Users
Multicast Services Gateway – per Market example

EDM Client subscribing to EDM Market Data

MITCH Full Depth Throttled

MITCH Top of Book

MITCH Full depth Un-throttled

EDM
Bandwidth Requirements
Principles

• Data will be provided to clients over TCP for Private Data and via UDP/Multicast service for public Market Data

• Multicast data will be published to the market via an A and B feed of identical data and sources, but sent by different servers across different networks to the clients

• Clients will be required to connect to the JSE with sufficient line capacity to receive all data

• It is mandatory for clients to connect via two separate lines to receive the A Feed and B Feed over and arbitrate between sequence numbers before requesting any missed messages
# Bandwidth Requirements

## Equity Market - JSE

<table>
<thead>
<tr>
<th>Item</th>
<th>Current Bandwidth</th>
<th>ITaC 1a Bandwidth</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Bandwidth (100 orders/sec – Native Trading throttled)</td>
<td>0.750</td>
<td>0.750</td>
<td>Mbps</td>
<td>Native Trading throttled client bandwidth including order management + drop copy + post trade bandwidth without market data</td>
</tr>
<tr>
<td>Client Bandwidth (100 orders/sec – FIX Trading)</td>
<td>1.000</td>
<td>1.000</td>
<td>Mbps</td>
<td>FIX Trading bandwidth including order management + drop copy + post trade bandwidth without market data</td>
</tr>
<tr>
<td><strong>FAST bandwidth for a single Multicast feed (e.g. Feed A only)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1 (incremental for JSE)</td>
<td>1.410</td>
<td>1.410</td>
<td>Mbps</td>
<td>FAST multicast feed bandwidth for top of the book service</td>
</tr>
<tr>
<td>Indices (JSE)</td>
<td>0.512</td>
<td>0.512</td>
<td>Mbps</td>
<td>FAST multicast feed bandwidth for Index service</td>
</tr>
<tr>
<td>News (JSE)</td>
<td>0.512</td>
<td>0.512</td>
<td>Mbps</td>
<td>FAST multicast feed bandwidth for News service</td>
</tr>
</tbody>
</table>
## Bandwidth Requirements

Equity Market - JSE

<table>
<thead>
<tr>
<th>Item</th>
<th>Current Bandwidth</th>
<th>ITaC 1a Bandwidth</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MITCH bandwidth for a single Multicast feed (e.g. Feed A only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MITCH – Full Depth</td>
<td>1.200</td>
<td>1.370</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for full depth MITCH service</td>
</tr>
<tr>
<td>Un-throttled MITCH – Full Depth</td>
<td>3.300</td>
<td>3.4000</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for full depth Un-throttled MITCH service</td>
</tr>
</tbody>
</table>
# Bandwidth Requirements

Namibian Stock Exchange (NSX)

<table>
<thead>
<tr>
<th>Item</th>
<th>Current Bandwidth</th>
<th>ITaC 1a Bandwidth</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Bandwidth (5 orders/sec – Native Trading throttled)</td>
<td>0.035</td>
<td>0.035</td>
<td>Mbps</td>
<td>Native Trading throttled client bandwidth including order management + drop copy + post trade bandwidth without market data</td>
</tr>
<tr>
<td>Client Bandwidth (5 orders/sec – FIX Trading un-throttled)</td>
<td>0.052</td>
<td>0.052</td>
<td>Mbps</td>
<td>FIX Trading client bandwidth including order management + drop copy + post trade bandwidth without market data</td>
</tr>
<tr>
<td><strong>FAST bandwidth for a single Multicast feed (e.g. Feed A only)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1 (incremental for NSX)</td>
<td>0.024</td>
<td>0.024</td>
<td>Mbps</td>
<td>FAST multicast feed bandwidth for top of the book service</td>
</tr>
<tr>
<td>Indices (NSX)</td>
<td>0.067</td>
<td>0.067</td>
<td>Mbps</td>
<td>FAST multicast feed bandwidth for Index service</td>
</tr>
<tr>
<td>News (NSX)</td>
<td>0.067</td>
<td>0.067</td>
<td>Mbps</td>
<td>FAST multicast feed bandwidth for News service</td>
</tr>
<tr>
<td><strong>MITCH bandwidth for a single Multicast feed (e.g. Feed A only)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MITCH – Full Depth</td>
<td>0.045</td>
<td>0.047</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for full depth MITCH service</td>
</tr>
</tbody>
</table>
# Bandwidth Requirements

## Equity Derivatives Market

<table>
<thead>
<tr>
<th>Item</th>
<th>ITaC 1b Min Bandwidth</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Bandwidth (100 orders/sec – Native Trading throttled)</td>
<td>0.825</td>
<td>Mbps</td>
<td>Native Trading throttled client bandwidth including order management + drop copy + post trade bandwidth without market data</td>
</tr>
<tr>
<td><strong>MITCH bandwidth for a single Multicast feed (e.g. Feed A only)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MITCH – Full Depth</td>
<td>1.250</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for full depth MITCH service</td>
</tr>
<tr>
<td>Un-throttled MITCH – Full Depth <em>(testing to confirm bandwidth)</em></td>
<td>1.250</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for full depth Un-throttled MITCH service</td>
</tr>
<tr>
<td>MITCH – Top of Book (BBO)</td>
<td>0.950</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for BBO MITCH service</td>
</tr>
</tbody>
</table>
## Bandwidth Requirements

### Currency Derivatives Market

<table>
<thead>
<tr>
<th>Item</th>
<th>ITaC 1c Min Bandwidth</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Bandwidth (100 orders/sec – Native Trading throttled)</td>
<td>0.825</td>
<td>Mbps</td>
<td>Native Trading throttled client bandwidth including order management + drop copy + post trade bandwidth without market data</td>
</tr>
<tr>
<td>MITCH bandwidth for a single Multicast feed (e.g. Feed A only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MITCH – Full Depth</td>
<td>0.910</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for full depth MITCH service</td>
</tr>
<tr>
<td>Un-throttled MITCH – Full Depth (testing to confirm bandwidth)</td>
<td>0.910</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for full depth Un-throttled MITCH service</td>
</tr>
<tr>
<td>MITCH – Top of Book (BBO)</td>
<td>0.700</td>
<td>Mbps</td>
<td>MITCH multicast feed bandwidth for BBO MITCH service</td>
</tr>
</tbody>
</table>
Bandwidth Requirements
Example - Equity Derivatives Market ONLY

- Two lines into the JSE – splitting feeds
- Less than 100 orders per second
- Full Market Depth

**2.075 Mbps**

**Line 1:**
- **A feed** Full depth throttled data
- Primary Order entry

**Line 2:**
- **B feed** Full depth throttled data
- Secondary Order entry
Bandwidth Requirements
Example - Equity Derivatives Market ONLY

- Two lines into the JSE – splitting feeds
- Less than 100 orders per second
- Top of Book service

**Line 1:**
- **A feed** Top of Book data
- Primary Order entry

**Line 2:**
- **B feed** Top of Book data
- Secondary Order entry

1.775 Mbps

Client A

JSE Trading Systems

1.775 Mbps
Bandwidth Requirements
Example - Equity Derivatives Market ONLY

- Two lines into the JSE – Both feeds across each lines
- Less than 100 orders per second
- Full Market Depth

Client A

3.325 Mbps

JSE Trading Systems

Line 1:
- A feed + B Feed Full Market Depth
- Primary Order entry

Line 2:
- A feed + B Feed Full Market Depth
- Secondary Order entry

3.325 Mbps
Bandwidth Requirements
Example - Equity Derivatives Market ONLY

- Two lines into the JSE – splitting feeds
- 300 orders per second
- Full Market Depth

3.725 Mbps

Line 1:
- **A feed** Full depth throttled data
- Primary Order entry

Line 2:
- **B feed** Full depth throttled data
- Secondary Order entry

3.725 Mbps
Bandwidth Requirements
Example - Equity Derivatives Market ONLY

- Two lines into the JSE – Both feeds across each lines
- 300 orders per second
- Full Market Depth

**4.975 Mbps**

**Client A**

**Line 1:**
- A feed + B Feed Full depth throttled data
- Primary Order entry

**Line 2:**
- A feed + B Feed Full depth throttled data
- Secondary Order entry

**JSE Trading Systems**

**4.975 Mbps**
Bandwidth Requirements
Examples

• Examples of bandwidth above are **only** for the ITaC Project 1b **Equity Derivatives Market data**

• Clients must ensure that existing bandwidth requirements for current production services are still met including:
  
  • Subscription to current Derivatives Systems as not all markets are migrated at the same time. An example will be trading Equity Derivatives on the new Trading System and Currency Derivatives on the existing system

  • Subscription to BDA

  • Subscription to the Equity Market Trading and Information System

  • Any other subscriptions a client may make use of to interact with the JSE
ITaC Clearing Status Update

• Development of the RTC system is near complete and JSE system testing is progressing well
• Performance testing is currently being conducted
• Preparation underway for JSE system integration testing phase
• Work is in progress to issue the first draft of the Clearing & Deal Management API specification documents – aim is to publish to clients in May 2016
• A functional overview of the Clearing services documentation and structure will be presented at the 21 April Technical Working Group (TWG)
• Work is in progress to update the new ITaC Customer Test Service (CTS) environment to include the clearing and deal management interfaces – scheduled for Q3/4 2016
• JSE commissions offering was presented on 31 March to the trading advisory committees sub-working group and other key stakeholders and will also be covered in the 21 April Technical Working Group (TWG).
Change Mgmt - User Readiness and Engagement

• Work in progress to finalise the proposed software provider showcase event at the JSE – targeting June 2016
• Monthly Technical Working Group (TWG) sessions commenced in Feb 2016, next TWG session will be held 21 Apr 2016
• Focused session was held with the Clearing participants on the ITaC commissions solution that will be offered and will be covered in the next TWG
• JSE Client connectivity standards and requirements document is being updated to include ITaC bandwidth requirements for Project 1a, b & c as well as the JSE NW upgrade requirements
• Work is in progress to produce a bandwidth calculator to assist clients in determining required bandwidth based on services they subscribe to
• Technical Working Group (TWG) topic list is ongoing, please submit discussion topics you wish to have covered to ITAC@jse.co.za

• **Clients to ensure they are adequately represented at the TWGs**
• All presentations are available on the JSE website at the following link: https://www.jse.co.za/services/itac
### 2016 Technical Working Group (TWG) Schedule

- **Proposed 2016 Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon, 22 February 2016</td>
<td>14h00 – 15h30 SAST</td>
<td>Cmpl</td>
</tr>
<tr>
<td>Thurs, 10 March 2016 (CT)</td>
<td>11h00 – 13h00 SAST</td>
<td>Equity Market upgrades presentation in Cape Town Cmpl</td>
</tr>
<tr>
<td>Thurs, 21 April 2016</td>
<td>11h00 – 13h00 SAST</td>
<td>On track</td>
</tr>
<tr>
<td>Wed, 25 May 2016</td>
<td>11h00 – 13h00 SAST</td>
<td></td>
</tr>
<tr>
<td>Thurs, 9 June 2016 (CT)</td>
<td>11h00 – 13h00 SAST</td>
<td>TBC</td>
</tr>
<tr>
<td>Thurs, 23 June 2016</td>
<td>11h00 – 13h00 SAST</td>
<td></td>
</tr>
<tr>
<td>Thurs, 21 July 2016</td>
<td>11h00 – 13h00 SAST</td>
<td></td>
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<tr>
<td>Thurs, 25 August 2016</td>
<td>11h00 – 13h00 SAST</td>
<td></td>
</tr>
<tr>
<td>Wed, 7 September 2016 (CT)</td>
<td>11h00 – 13h00 SAST</td>
<td>TBC</td>
</tr>
<tr>
<td>Thurs, 29 September 2016</td>
<td>11h00 – 13h00 SAST</td>
<td></td>
</tr>
<tr>
<td>Wed, 26 October 2016</td>
<td>11h00 – 13h00 SAST</td>
<td></td>
</tr>
<tr>
<td>Wed, 23 November 2016</td>
<td>11h00 – 13h00 SAST</td>
<td></td>
</tr>
</tbody>
</table>
T+3 Update

Leila Fourie / Tyrone Arendse
T+3 Go-live date confirmation

The contingency weekend will be the 18 July, 2016
T+3 High-level status

**Phase 1:** Regulatory and Automation

**Status:** Implemented successfully - 22 July 2013

**Phase 2:** ECS go-live on T+5 Settlement Cycle

**Status:** Implemented successfully – 20 and 27 October 2014

**Phase 3:** Market on T3 settlement cycle

**Status:**
- Go-live scheduled for 11 July 2016
- Currently focused on the move to User Acceptance testing and market readiness activities
## T+3 Testing: market performance

<table>
<thead>
<tr>
<th>Participant</th>
<th>Cycle 3 - 5</th>
<th>Cycle 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T+5 to T+3 Migration</td>
<td>Failed Trade Management</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
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<tr>
<td>B</td>
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<td>C</td>
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<tr>
<td>D</td>
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</tr>
<tr>
<td>JSE</td>
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</tr>
</tbody>
</table>

**Legend:**
- Green: Feature fully functional
- Orange: Feature available but problematic
- Red: Feature not available

**Note:**
BTB/DPL: Medium Defects have been raised by some CSDPs which will be fixed and tested in UAT.
T+3 Testing: market performance (cont.)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Cycle 3</th>
<th>Cycle 4</th>
<th>Cycle 5</th>
<th>* Cycle 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>1</td>
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<td>E</td>
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</tr>
<tr>
<td>I</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>JSE</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* - Note the marked performance improvement as we progressed through the cycles

**Key**

<table>
<thead>
<tr>
<th>1</th>
<th>excellent participation, effective communication, transparency, on-time progress reports and early detection of defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>minor; participation, communication, transparency and delayed progress, defect report</td>
</tr>
<tr>
<td>3</td>
<td>poor; participation, communication, transparency and lack of progress and defect report</td>
</tr>
</tbody>
</table>
T+3 Testing: next steps

- UAT testing starts on 11 April 2016 with reference data alignment
- The first trade pack will be loaded on 13 April 2016
- Broker participation is mandatory
- Test packs have been circulated – please raise any comments/queries with the testing team prior to the start of UAT
Commits in a T+3 Environment

- While margin calculations will not be changing, the move to T+3 means that the **timing of margin calls** will change.

![Diagram showing the timing of allocations and commits in T+3 environment]
In an effort to raise awareness regarding the impact of commits timing, and to drive the required changes in behaviour, the JSE embarked on the following in 2015:

| Meetings with buy-side Cape Town | • Workshop in Cape Town 29 October 2015  
|                                  | • One-on-one meetings in Cape Town 30 October 2015 |
| Meetings with buy-side Johannesburg | • Workshop in Johannesburg November 2015  
|                                    | • One-on-one meetings in Johannesburg |
| Meetings with London based clients | • Workshop in London 23 November 2015  
|                                    | • One-on-one meetings with London-based clients 24 to 27 November 2015 (with the CSDPs) |
| Work with brokers and CSDPs to motivate clients based in other countries | • Videoconferences  
|                                                                        | • Teleconferences  
|                                                                        | • Visits to clients (where biggest impact) |
Changing commits behaviour (cont.)

- The JSE has also undertaken to have the following workshops and client meetings in 2016:

  | Meeting with buy-side Cape Town | Workshop in Cape Town 17 March 2016 |
  | Meeting with buy-side Johannesburg | Workshop in Johannesburg 15 April 2016 |
  | Meeting with London-based clients | Workshop in London in week starting 16 May 2016 |
  | | One-on-one meetings with London-based clients in week of 16 May |

- The JSE has set the following goals for the market to achieve:

  - **FEB ‘16**: 85% commit by end T+1
  - **MAR ‘16**: 90% commit by end T+1
  - **APR ‘16**: 95% commit by end T+1
## CSDP commits stats – as at 28 March 2016

<table>
<thead>
<tr>
<th></th>
<th>T+1</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28-Mar-16</td>
<td>21-Mar-16</td>
<td>Last 20 days</td>
<td></td>
</tr>
<tr>
<td><strong>Large CSDPs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>84%</td>
<td>88%</td>
<td>87%</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>96%</td>
<td>90%</td>
<td>95%</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>91%</td>
<td>92%</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>79%</td>
<td>81%</td>
<td>83%</td>
<td></td>
</tr>
<tr>
<td><strong>Smaller CSDPs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>89%</td>
<td>85%</td>
<td>86%</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>26%</td>
<td>19%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>99%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>Overall average of larger CSDPs</strong></td>
<td>87%</td>
<td>88%</td>
<td>89%</td>
<td></td>
</tr>
<tr>
<td><strong>Overall average of smaller CSDPs</strong></td>
<td>54%</td>
<td>51%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td><strong>Overall average of CSDP commits</strong></td>
<td>71%</td>
<td>70%</td>
<td>70%</td>
<td></td>
</tr>
</tbody>
</table>
Member commits stats – as at 28 March 2016

For the purpose of analysis, member firms have been categorised by size: large vs. medium vs. small broker firms

<table>
<thead>
<tr>
<th></th>
<th>T+1</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28-Mar-16</td>
<td>21-Mar-16</td>
<td>Last 20 days</td>
</tr>
<tr>
<td>Average for larger Brokers</td>
<td>74%</td>
<td>84%</td>
<td>78%</td>
</tr>
<tr>
<td>Average for medium-sized Brokers</td>
<td>89%</td>
<td>89%</td>
<td>89%</td>
</tr>
<tr>
<td>Average for smaller Brokers</td>
<td>85%</td>
<td>86%</td>
<td>81%</td>
</tr>
<tr>
<td>Overall Broker averages</td>
<td>83%</td>
<td>86%</td>
<td>83%</td>
</tr>
</tbody>
</table>
Changing of commits behaviour: next steps

- On-going monitoring of commits performance
- Distribution of weekly reports to CSDPs showing commits stats
- One-on-one meetings with each CSDP
- JHB Buy-side workshop on 15 April 2016
- Meetings with London-based clients in the month of May
User Readiness: Business and technical readiness

- **Market Readiness Tracking – counting down to go-live:**
  - A market readiness strategy has been defined and has been rolled-out with the market participants
  - Key activities, affecting both CSDPs and members, have been identified. These activities cover both technical and business readiness
  - Based on these activities, a reporting framework will be initiated to properly gauge readiness in the lead-up to go-live
  - Monthly meetings are being held with the CSDPs and Brokers to check the readiness of the market as a whole
# Market Readiness: Technical considerations

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Activity Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>Testing BCP &amp; DR</td>
<td>Updated BCP plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Updated DR plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DR testing</td>
</tr>
<tr>
<td>Technical</td>
<td>Testing with Clients</td>
<td>Testing with clients</td>
</tr>
<tr>
<td>Technical</td>
<td>Performance Testing</td>
<td>Confirmation of ability to handle the expected volumes in the migration week (systems and support staff)</td>
</tr>
<tr>
<td>Technical</td>
<td>Vendor SLAs</td>
<td>Have the appropriate updates been made to the SLAs with vendors/3rd party service providers?</td>
</tr>
<tr>
<td>Technical</td>
<td>Client Interface Specifications</td>
<td>Publication of specs for functionality impacting their clients (where applicable)</td>
</tr>
<tr>
<td>Technical</td>
<td>Internal Systems Development</td>
<td>Completion of in-house system development to align with T3 functional changes (SLB messages and uploads - development of software)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Updated vendor SLAs where required</td>
</tr>
<tr>
<td>Technical</td>
<td>Deployment Plan</td>
<td>Defined Crisis management process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Points of escalation defined</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Key contacts provided to JSE</td>
</tr>
<tr>
<td>Technical</td>
<td>Regression testing of the CSDPs' custody Systems</td>
<td>Cash Equities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cash Bonds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Money Market</td>
</tr>
</tbody>
</table>
## Market Readiness: Business considerations

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Activity Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business</strong></td>
<td>Process Re-engineering for T+3 (Process definition and process roll out)</td>
<td>Prop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non controlled</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>Process Re-engineering for Corporate Actions for T+3 (Process definition and process roll out)</td>
<td>Elective Events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mandatory Events</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>Process Re-engineering for Fails Management (Defaulting Vs. Non Defaulting Broker) (Process definition and process roll out)</td>
<td>Rolling of Settlement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Re-transaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compensation</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>Operating Hours Amendments</td>
<td>Updating of staff contracts (where applicable)</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>Go Live Issue List</td>
<td>Includes internal migration assumptions</td>
</tr>
</tbody>
</table>
## Market Readiness: Business considerations (cont.)

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Activity Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>Training - Broker Nominated Trainee</td>
<td>Nomination of appropriate settlement-related staff to attend the JSE provided training sessions</td>
</tr>
<tr>
<td>Business</td>
<td>Training Attendance (Phase 1)</td>
<td>Module 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Module 2</td>
</tr>
<tr>
<td>Business</td>
<td>Client Education &amp; Awareness</td>
<td>Non controlled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlled</td>
</tr>
<tr>
<td>Business</td>
<td>Get clients to send commit instructions before EOD T+1 leading up to a T+3 settlement cycle</td>
<td>Non controlled</td>
</tr>
<tr>
<td>Business</td>
<td>Client Mandate Amendments</td>
<td>Non controlled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlled</td>
</tr>
</tbody>
</table>
User Readiness: Market engagement

• A UK roadshow in week starting 16 May 2016 is being planned. An invite is being prepared and will be circulated in due course. CSDPs and members are welcomed to join the JSE
• Broker forums are being held bi-weekly, covering various T+3 topics with the JSE members and CSDPs (where applicable)
• A Retail Broker Forum (specifically focusing on T+3) has been established to ensure that retail clients are appropriately educated about T+3
• Training workshops are ongoing across the market
User Readiness: Market education

The JSE is currently involved in the creation of the following new batch of educational documents:

• A South African Corporate Actions overview focused towards retail clients
• The Removal Process – the movement of dual listed shares between share registers
• SLB impacts on Corporate Actions
• SLB and the associated tax implications
• Settlement Obligations
• Updates to the JSE & Strate Rules and Directives
Contacts

Should you have any queries, please do not hesitate to contact us on the following mail address:

T+3 @jse.co.za
Questions?

This presentation will be available post this session at the following link:
https://www.jse.co.za/services/technologies/market-communication-presentations

Customer Support
CustomerSupport@jse.co.za

+27 11 520 7777
Trading, Clearing and Information Systems
All Markets – High-level

ORDER & TRADE MANAGEMENT GATEWAYS
ALL MARKETS
- Trading (Native)
- Post Trade (FIX)
- Drop Copy (FIX)

EQUITY
- Trading (FIX)

DEAL MANAGEMENT & CLEARING
ALL MARKETS
- Deal Mgmt (EMAPI)
- Post Trade Risk Monitoring
- Collateral Mgmt
- Margin Methodologies
- Clearing and Settlement

REFERENCE, EOD & OTHER DATA
ALL MARKETS
- Information Delivery Portal (IDP) (FTP)
- Reference Data, Statistics & other

MARKET DATA GATEWAYS
ALL MARKETS
- Full Depth (MITCH) Throttled & Un-throttled

DERIVATIVES
- Bonds & Interest Rate
- Lvl1 (FIX)
- Indices (FIX)
- News (FIX)

EQUITY
- Lvl1 (MITCH)
Interfaces for Post Trade Functions
High Level Proposed Solution

Deal Management, Clearing & Back Office
Front Ends/API Solutions

- Monitoring of trading activity
  - Trades (COB & Reported)
  - Orders (COB)
  - Open Interest (periodic)
  - Live Prices
  - Other Market Data

- Open Interest
- Deal Management
- New contracts intraday
- Client Maintenance
- Intraday Risk Monitoring
- Collateral Mgmt
- EOD Balancing
- MTMs, Rates
- Vol surfaces
- Fees Invoice
- Fee Structures
- Daily A/c Summary
- Opening Positions

TRADING SYSTEM
- Post Trade G/W
- Drop Copy G/W

Market Data G/W

CLEARING SYSTEM
- Deal Management & Clearing G/W (EMAPI)
- Trading G/W
- Trade and Position updates
- New contracts intraday

INFORMATION DELIVERY PORTAL (IDP) (FTP)
- Clearing Ref Data