

Project: Disaster Recovery Test

Guidelines for participants

Objective of the test

The objective of this test is to ensure that the NYSE Euronext Disaster Recovery Plan (for Euronext Cash Markets and SmartPool) remains fully operational following recent enhancements to Euronext's Cash Market trading architecture. This will be done by simulating a failover with customers in a real-life situation.

Scope of the test

Included in the test:

- Both NYSE Euronext Cash Markets Data Centres: DC1 and DC2
- Trading engines: the Equities Regulated Market (Universal Trading Platform), NSC-VW, TCS, Smartpool and the Index platform.

Not part of the test:

- Euronext derivatives systems
- Post-trade systems trades will not be integrated in the Clearing 21 system and no members will be involved in the test.

Main principles of the test

NYSE Euronext will simulate a failover of DC1 during a continuous trading session and implement the appropriate decision-making process, as defined in its Business Continuity Plan for disaster-event situations.

NYSE Euronext will then initiate a recovery on DC2 and assess the data centre's readiness before authorising customers to reconnect.

NYSE Euronext will trigger the "Retransmission of the Order Book" for both the Equities Regulated Market (Universal Trading Platform) and NSC-VW, as they will act as the market reference. Orders will be cancelled on TCS and SmartPool.

Customers will be able to test DC2 during a standard pre-opening and continuous session.

Customers are responsible for checking their own connections and any internal system re-synchronisations with NSC.

Communication

NYSE Euronext will keep customers informed throughout the simulation via regular info-flashes, emails and market data information messages.

Contacts

For technical issues please contact **Customer Technical Support (CTS)**:

Tel: +33 1 49 27 5050

Email: cts@nyx.com

For market and operational issues please contact **Cash Market Operations**:

Tel: +33 1 49 27 5010 or + 33 1 49 27 5030.

Email: equities@euronext.com or structured.products@euronext.com

Schedule

In order to allow NYSE Euronext to implement the necessary adjustments, customers must submit their participation form to Euronext before close of business on Wednesday, 24 June 2009.

Details of the events will be as follows for Saturday, 27 June 2009

- Approximately 09:30 CET: Beginning of the test. Customers start their systems and connect their applications to Euronext DC1 central systems.
✉ Flash-information: Access to the market available and trading timetable.
- Pre-opening period on DC1: Customers can connect and send orders to the Universal Trading platform and NSC.
- Opening and Continuous Trading Session. Customers can trade on all trading engines (TCS included).
- Around 11:00 CET: approximate time of the disaster event and beginning of the failover from DC1 to DC2. SLEs will be disconnected from their access means.
✉ Flash-information: Disaster event on Euronext Cash Markets and Smartpool.
- NYSE Euronext will complete the failover procedure from DC1 to DC2 and carry out all necessary assessments to check the readiness of DC2 before giving customers the go-ahead to reconnect. *Action expected from customers:* Shift their network connection to DC2 as explained in the “Details for SLE connections” paragraph of this document
✉ Flash-information: Go- ahead to reconnect.
- Around 14:00 CET: NYSE Euronext will advise clients that DC2 is ready, authorising SLE connections. Euronext will then activate the retransmission of the order book for all members (Universal Trading Platform and NSC-VW).
✉ Flash-information: Trading to resume on DC2
- Pre-opening period on DC2: Customers may send orders to the Universal Trading Platform, NSC, TCS and SmartPool DC2 trading engines.
- Opening and Continuous Trading Session on DC2. Customers can trade on the Universal Trading Platform, NSC, TCS and SmartPool.
- Around 15:00 CET: End of the test. Customers can disconnect from Euronext central systems.
✉ Flash-information: End of the Disaster Recovery tests
- After the test, customers will have to roll back their internal systems to the situation of the evening of Friday, 26 June 2009 (after corporate events and order cancellations).

- Euronext will provide participating customers with feedback on the results of this test.

Details for SLE connections

Once DC1 has failed, the maximum estimated length of recovery on DC2 is under 3 hours.

How to reconnect to DC2 after the failover?

If you are using a CCG access mean over SFTI, you should use the IP address targeting DC2 which was provided during the roll-out process. If you don't have one, please contact Euronext Customer Technical Support for the correct details.

If you are using an OPS, you should use the IP address targeting DC2 which was provided during the roll-out process and also the network equipment connected to DC2.

If you are connecting via UTP-Direct Protocol (CCG Binary):

Prior to connecting to DC2, the customer application must be restarted as though it were the beginning of a new trading day. Accordingly, the last sequence number must be reset to zero. Please refer to UTP-DIRECT v1.10 documentation available at <http://www.euronext.com/fic/000/048/265/482659.pdf>

If you are connecting via FIX 4.2 Protocol (CCG Classic):

Prior to connecting to DC2, the customer application must be restarted as though it were the beginning of a new trading day. Please refer to 1.2.2 First Logon of the day of UTP-FIX4.2 documentation v2.3 available at <http://www.euronext.com/fic/000/048/266/482660.pdf>

If you are connecting via Euronext FIX Protocol (CCG Classic):

Prior to connecting to DC2, the customer application must be restarted as though it were the beginning of a new trading day. Please refer to section 8.1 Logon in the Euronext Fix documentation available at <http://www.euronext.com/fic/000/031/165/311655.pdf>

If you are connecting via Euronext FIX Protocol through OPS:

Messages sent to the SLE from DC2 will have a specific session ID: (i.e., 200906908B0000123456).

Prior to connecting to DC2, the customer application must be restarted as though it were the beginning of a new trading day. Please refer to section 8.1 Logon in the Euronext Fix documentation available at <http://www.euronext.com/fic/000/031/165/311655.pdf>

If you are connecting via MMTP through OPS:

Prior to connecting to DC2, the customer application must be restarted as though it were the beginning of a new trading day. Reconnection with blank message ID.

NYSE Euronext will restart NSC on DC2 with a full order book, i.e. as it was at the time of the disaster event on DC1.

The NSC-VW and UTP Equity order book on DC2 will therefore be the Market of Reference. Customers will manage the synchronization of the local data with the ones sent by NSC-VW and UTP Equity from DC2.

NYSE Euronext will send the central order book situation on DC2 to all the customers.

Retransmitted order messages coming from UTP:

- MMTP: SLE message = 0146
- FIX Euronext and FIX 4.2: MsgType = 8
- UTP-Direct: MsgType = X

Retransmitted order messages coming from NSC-VW:

- Beginning / End of retransmission message (MMTP: SLE 0145 - FIX: MsgType = U0145)
- Retransmitted order message (MMTP: SLE 0146 - / FIX: MsgType = 8)

Details for Market data connection

TOPCAC/FIM feed (MMTP and FIX)

Once DC1 has failed, SLC will be disconnected.
Customer must reconnect with a last message ID set to blank.

EMF feed

Once DC1 has failed

Real-time feed

- No data at all will be available in the feed (even heartbeat messages) until the complete start up of DC2
- Customers should remain connected to the same IP address used for the multicast groups before the crash but source addresses to be used from DC2 will be:
 - Primary feed: 156.48.125.0/29
 - Secondary feed: 156.48.125.8/29

Retransmission server

The IP addresses of the retransmission servers on the DC2 will be:

- Primary for Equities: 156.48.125.18
- Secondary for Equities: 156.48.125.26
- Primary for Structured products: 156.48.125.19
- Primary for Structured products: 156.48.125.27

Note: Once DC1 has failed, messages broadcast from DC1 will be no longer available for retransmission.

XDP feed:

Once DC1 has failed

Real-time feed:

- No data at all will be available in the feed (even heartbeat messages) until the complete start up of DC2

- Customers will continue to receive data at the IP addresses used for the multicast groups but source addresses from DC2 will be:
 - Line A: 156.48.125.40/29
 - Line B: 156.48.125.32/29

Note: On MMBA lines, only line A will be available while on SFTI lines line A and B will be available. In case of failover, all the packet sequence numbers are reset to 1 (MMBA and SFTI).

Retransmission server

The IP addresses of the retransmission servers on the DR site are:

- Primary server: 156.48.125.20 Port 21150
- Secondary server: 156.48.125.29 Port 21150

Note: Once DC1 has failed, all the packets broadcast from DC1 will be no longer available for retransmission.

Trading date details

The trading date of the test will be Saturday, 27 June 2009.

The Universal Trading Platform and NSC order book situations will be those of Monday, 29 June 2009 before the start of the pre-opening session meaning after the corporate events of the evening of Friday, 26 June 2009.

→ Euronext recommends that members enter orders as they do in the live environment.

Roll-back for the customers' internal systems

It is very important that members do NOT synchronize their order book with data from Saturday, 27 June 2009.

At the end of the test, NYSE Euronext strongly advises members to roll back their internal systems to the situation as it was on the evening of Friday, 26 June 2009 (after corporate events).

The Saturday, 27 June 2009 test session will not be taken into account in the Live/Production environment which will start on Monday, 29 June 2009 as usual.

Conclusion

NYSE Euronext would like to make this test as realistic as possible in order to draw the most relevant and useful conclusions, and therefore encourages customers to participate actively.

NYSE Euronext will communicate the test results and conclusions at the beginning of the following week.

Should you require any further information, please contact our Disaster Recovery (DR) support group at:

Customer Technical Support (CTS)
Tel: +33 (0)1 4927 5050
Email: cts@nyx.com