EURONEXT

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EURONEXT CASH & DERIVATIVES DISASTER RECOVERY TEST: GUIDELINES FOR PARTICIPANTS

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INTRODUCTION

PURPOSE

The purpose of this document is to inform Euronext clients about the agenda and activities related to the Euronext 2022 Disaster Recovery Tests.

TARGET AUDIENCE

This document should be read by Euronext clients participating in the 2022 Disaster Recovery Tests.

WHAT'S NEW?

The following lists only the most recent modification made to this revision/version. For the Document History table, see the Appendix.

REVISION NO./ VERSION NO.	DATE	AUTHOR	CHANGE DESCRIPTION
1.0	07 October 2022	Euronext	First version

ASSOCIATED DOCUMENTS

The following documents should be read in conjunction with this document:

■ Euronext Markets - OPTIQ OEG Connectivity Specifications - Aruba Data Centre
■ Euronext Optiq Market Data Gateway - Production Environment - Aruba Data Centre
■ Euronext Markets - OEG Connectivity Telnet Tests - Aruba Data Centre

DEFINITIONS

■ **Production (Primary Datacentre - DC1)** – Euronext Markets on Optiq and surrounding systems hosted in the Data Centre in Bergamo, Italy.
■ **Disaster Recovery (Secondary Datacentre - DC2)** – A Euronext Disaster Recovery event occurs when Euronext switches the Optiq markets from the Euronext production environment to the Euronext DR environment. The DR environment is hosted in the Data Centre in Saint-Denis, France and provides redundant standby systems to be used upon a failure of the Euronext Production environment.

CONTENTS

1. DISASTER RECOVERY TEST

The objective is to simulate a real life scenario that the Disaster Recovery trading architecture and Disaster Recovery Plan are fully operational within the targeted time frame.

The Euronext Disaster Recovery test will take place on Saturday 15 October 2022.

Euronext recommends that all clients take advantage of this service, however the test is not mandatory.

- Disaster Recovery takes place on a Saturday with the support of the FIA organization. It supports technical and functional testing on the Production and Disaster Recovery environments.
- All clients will be authorised to take part in the Disaster Recovery test weekend. However please do validate your technical connectivity prior to the Saturday test.
- Clients are invited to participate actively in the Saturday test by sending orders / quotes to enrich the orderbooks.
- At the end of the Disaster Recovery test, Clients have to roll back all data and applications to the situation as it was on the previous Friday evening (at the end of the Trading session).

1.1 PLANNING

DATE	EVENT	DESCRIPTION
15 October 2022	Production Disaster Recovery	**Disaster Recovery test**

Webform to register for the **Disaster Recovery test**.

1.2 COMMUNICATION DURING DISASTER RECOVERY TEST

During the Disaster Recovery test, Euronext will keep clients informed on all activities through the Market Status Webpage: https://live.euronext.com/market-status. All clients are advised to subscribe to the Market Status alerts, which can be done through My Subscriptions menu on the Euronext customer connect web portal.

Compared to a real event of Disaster Recovery, email will not be published during the test, only web and RSS feed will be published.

1.3   SCOPE OF THE TEST

The following is included in the test:

- Both production trading systems of Euronext's Data Centres: DC1, located in Aruba (Bergamo – IT) and DC2 (DR Data Centre), located in the Paris region.
- Trading engines:
  - Optiq Cash Markets: Equities, Funds, Warrants & Certificates, Fixed Income, Trade Confirmation System (TCS), Transaction Reporting and Publication System (Saturn) and Index platform.
  - Optiq Derivatives Markets: Equity Derivatives, Index Derivatives, Commodity Derivatives.

  Related access means: Optiq Cash & Derivatives Order Entry available via OEG
  Market Data: All MDG market data services

The following systems/ services are not part of the test:

- Co-location access means
- Post-trade systems: trades will not be integrated in the clearing system and no clearing members will be involved in this test.

1.3.1 Markets

The scope of the Disaster Recovery test day is to perform administrative and functional testing for all Markets operated by Euronext.

Markets in scope are:

- Euronext Markets - All Euronext Cash & Derivatives Markets

1.3.2 Environments

The following environments are in scope for the Disaster Recovery test.

NEW TARGET ENVIRONMENT	NEW LOCATION
Production	Aruba – Bergamo – IT
Disaster Recovery	St Denis – FR

1.3.3 Applications and services

Please see below the applications and services that are in scope for the Disaster Recovery test.

EURONEXT APPLICATION	SERVICES	PRODUCTION	DISASTER RECOVERY
Optiq CASH & DERIVATIVES	Order Entry Gateways (OEG) Market Data Gateway (MDG) Drop Copy	Available	Available
Index	Indices Market data dissemination	Not available	Available
Saturn Web	Approved Publication Arrangement (APA) Approved Reporting Mechanism (ARM) Short Code Long Code Management (SLC) Off Book On Exchange Trade Reporting (OBOE) OTC Cleared functionalities Commodity Positions Reporting	Not available	Available
Trade Confirmation System (TCS) Web	Web for Off-Market and Dutch Funds services	Not available	Available
Euronext File Server (EFS)	Standing Data SBE templates Tick Sizes	Available	Available
End Of Day File (EOD)	No files will be delivered	Available	Available

1.3.4 Not in scope for the Disaster Recovery test

■ Co-location access means
■ Post-trade systems: trades will not be integrated in the clearing system and no clearing members will be involved in this test.

1.4 TEST SCRIPT FOR DISASTER RECOVERY TEST

Proposal client test script:

■ Log-on for OEG. All Trading members are advised to perform a successful log-on with at least 1 logical access per segment they are active on and this should be replicated for each Member Code / Firm ID owned by the Trading Member. In addition, a test can be performed from all the forecasted network sources (except from Colocation) that may be used in case of Disaster Recovery event.

Note: The **Optiq OEG IP-Filtering** security in place on Disaster Recovery is synchronized with the Production configuration meaning that only source IPs already registered on Production for dedicated Firm IDs (Logical Access) are allowed to get Log-on acknowledgement on the Disaster recovery site.

In addition, Euronext can provide a list of registered source IPs to clients. Requests can be send to cas@euronext.com (the request has to include the Firm ID).

- OEG require dedicated configuration for Disaster Recovery connectivity. Trading Members are advised to send orders.
- MDG Channels are published over the same channels as used for Production.

Note: Clients without trading access can only validate Market Data reception.

- Web Applications**.** Trading members are advised to validate the access to the applicable web applications (EFS, Saturn, Trade Confirmation System, EOD).

2.   SCHEDULE

Please see below the detailed schedule of Disaster Recovery test (15 October 2022). Note that in case of any changes of scheduled activities on Disaster Recovery day, Euronext will keep clients informed through the Market Status Webpage: https://live.euronext.com/market-status.

Schedule

DATE	DESCRIPTION
10:30 CEST	**Start of Disaster Recovery test Day:** participants are invited to check the status and last updated on the Market Status web page.
10:45 CEST	**Client connection to Euronext DC1 central systems:** Clients can start their systems and connect their applications to the **Production** environment hosted in the Aruba Data Centre in Bergamo, Italy.
11:00 CEST	**Referential Data:** Market data referential messages published over the Euronext Market Data Gateway.
11:30 CEST	**Call Phase (Pre-Opening):** Clients can connect and send orders to the trading platform.
11:45 CEST	**Continuous trading:** clients can trade on all Euronext Markets. Euronext will communicate in due course on the availability of TCS & Saturn for the Disaster Recovery test day.
12:30 CEST	**Approximate time of the disaster event:** Beginning of the failover from DC1 to DC2 Euronext will proceed with the failover procedure from DC1 to DC2 and carry out all necessary assessments to check the platform readiness of DC2. Clients will then be given the readiness status to reconnect and must shift their network connection to DC2 as explained in the 'Details for Order Entry Connections' section of this document.
15:00 CEST	**Disaster recovery:** Euronext will start the **Disaster Recovery** site hosted in Saint-Denis, France. **Note:** Disaster recovery can only be tested by clients that have an independent Disaster Recovery connection in place or connections in one of the Euronext London Points of Presence. Colocated clients in the Aruba Data Centre are not automatically routed by Euronext to the Disaster Recovery site.
15:15 CEST	**Client connection (telnet) to Saint-Denis:** Clients start their systems and connect to the **Disaster Recovery** environment hosted in Saint-Denis, France.

15:30 CEST	**Call Phase (Pre-Opening):** Clients can connect and send orders to the Disaster Recovery trading platform.
15:45 CEST	**Continuous trading:** clients can trade on all Euronext Markets to the Disaster Recovery trading platform.
16:30 CEST	**End of the test and Roll-Back to Aruba Data Centre:**
17:00 CEST	**End of Disaster Recovery test:** Clients can disconnect from all Euronext applications and it is mandatory that clients roll back all data and applications to the situation as it was on the previous Friday evening (at the end of the Trading session).
Client Feedback	**Disaster Recovery test client feedback:** Clients are requested to confirm the Disaster Recovery Test results by sending an email to clientsupport@euronext.com

3. IMPORTANT REMINDERS

Client are advised to keep the below in mind during and after the Disaster recovery test.

3.1 TRADING DATE & REFERENTIAL FILES DATE

The Trading session (OEG/MDG): Saturday's date:15 October 2022

The standing data files and any EFS files: Following Monday's date (17 October 2022)

Instruments and orderbook will reflect the situation of the following Monday, therefore all corporate events that took place the day before (on Friday evening) have been processed.

3.2 FAILOVER TO THE DISASTER RECOVERY SITE

The Disaster Recovery event consists of a failover from the Production environment in Aruba, Bergamo to the Disaster Recovery site in Saint-Denis.

3.3 ROLL-BACK OF CLIENT APPLICATIONS

After the Disaster Recovery test, clients must restore/rollback their internal Production systems to reflect the conditions of Friday evening (day before the Disaster Recovery test), including all corporate events. It is important that clients do not synchronize their order book with data from Disaster Recovery test day.

Clients are responsible for purging all market data and order entry data sent and received during Saturday's Disaster Recovery test.

4. CONTACTS

Find below the contact details of Euronext's teams:

TEAM	CONTACT DETAILS
Operational Client Services Desk	■ **Tel:** ■ Belgium +32 2 620 0585 ■ France +33 1 8514 8585 ■ Ireland +353 1 617 4289 ■ Netherlands +31 20 721 9585 ■ Norway +31 20 721 9585 ■ Portugal +351 2 1060 8585 ■ UK +44 20 7660 8585 ■ **Email:** ■ clientsupport@euronext.com

5.   APPENDIX

5.1   ORDER ENTRY ON SEGMENT & PARTITION AND DROP COPY IPS INFORMATION

Production Environment

OPTIQ SEGMENT NAME	PARTITION ID	BERGAMO PROD IP
Equities	10	212.107.95.2
	11	212.107.95.5
	12	212.107.95.8
	13	212.107.95.11
Funds (ETFs)	20	212.107.95.14
Fixed Income (Bonds)	30	212.107.95.20
Warrants and Certificates	40	212.107.95.23
	41	212.107.95.47
Bourse De Luxembourg	50	212.107.95.17
Block	140	212.107.95.60
Commodities	80	212.107.95.29
Equity Derivatives	120	212.107.95.38
	121	212.107.95.41
	122	212.107.95.35
Index Derivatives	110	212.107.95.32
Drop Copy Cash	990	212.107.95.66
	991	212.107.95.67
	992	212.107.95.68
	993	212.107.95.69
Drop Copy Derivatives	980	212.107.95.72
	981	212.107.95.73
	982	212.107.95.74
	983	212.107.95.75

Disaster Recovery environment

OPTIQ SEGMENT NAME	PARTITION ID	"NEW" DISASTER RECOVERY (ST DENIS)
Equities	10	212.197.254.1
	11	212.197.254.3
	12	212.197.254.4
	13	212.197.254.5
Funds (ETFs)	20	212.197.254.7
Fixed Income (Bonds)	30	212.197.254.6
Warrants and Certificates	40	212.197.254.9
	41	212.197.254.10
Bourse De Luxembourg	50	212.197.254.13
Block	140	212.197.254.16
Commodities	80	212.197.254.25
Equity Derivatives	120	212.197.254.20
	121	212.197.254.21
	122	212.197.254.22
Index Derivatives	110	212.197.254.24
Drop Copy Cash	990	212.197.254.12
	991	212.197.254.26
	992	212.197.254.27
	993	212.197.254.28
Drop Copy Derivatives	980	212.197.254.31
	981	212.197.254.32
	982	212.197.254.33
	983	212.197.254.34

5.2   MARKET DATA CONFIGURATION INFORAMTION

Production & Disaster Recovery environments

	"NEW" PRODUCTION (BERGAMO)	
	FEED A	FEED B
Rendez-vous Point (RP) for Colocation	212.107.67.240	212.107.67.241
Rendez-vous Point (RP) for CMC	212.107.67.248	212.107.67.249
Primary IP Address	212.107.93.0/24	212.107.94.0/24
Secondary IP Address	212.107.93.0/24	212.107.94.0/24
Disaster Recovery IP Address	212.107.240.0/24	212.107.241.0/24
Channel ID 1(n)xxx Real-Time	224.0.208.0/24	224.0.209.0/24
Channel ID 2(n)xxx Snapshot	224.0.210.0/24	224.0.211.0/24

5.3   WEBHOSTING CONFIGURATION INFORMATION

Production environment

	"New" Production (Bergamo)	
	IP address	DNS
EFS Internet Access	212.107.68.129	https://efsweb-prod.euronext.com
EFS on Euronext network	212.107.67.1	https://efsoptiq-prod.euronext.com
EOD Web	212.107.68.130	https://eod-prod.euronext.com
Plug-Web	212.107.68.131	https://plug-prod.euronext.com
Saturn API	212.107.68.132	https://saturnapi-prod.euronext.com
Saturn Web using RSA/TOTP	212.107.68.133	https://saturn-prod.euronext.com

TCS Web	212.107.68.134	https://tcs-prod.euronext.com

Disaster Recovery environment

	"New" Disaster Recovery (ST Denis)	
	IP address	**DNS**
EFS Internet Access	212.197.239.104	https://efsweb-dr.euronext.com
EFS on Euronext network	212.107.67.97	https://efsoptiq-dr.euronext.com
EOD Web	212.197.239.69	https://eod-dr.euronext.com
Plug-Web	212.197.239.70	https://plug-dr.euronext.com
Saturn API	212.197.239.67	https://saturnapi-dr.euronext.com
Saturn Web using RSA/TOTP	212.197.239.103	https://saturn-dr.euronext.com
TCS Web	212.197.239.68	https://tcs-dr.euronext.com