

2016 SECURITIES INDUSTRY BUSINESS CONTINUITY TEST

Saturday, October 15, 2016

SUMMARY OF RESULTS

Test Led By

Securities Industry and Financial Markets Association



2016 SECURITIES INDUSTRY BCP TEST

October 15, 2016

Summary of Results

Executive Summary

The 2016 test is part of an ongoing industry-driven backup site testing initiative that began in 2003 and is led by Securities Industry and Financial Markets Association (SIFMA)¹.

The 2016 test followed the format of prior industry-wide tests where firms test connectivity and/or submit test orders and transactions from their backup sites to the markets and industry utilities. The test involved components for Equities, Options, Fixed Income, Market Data, Treasury Auctions, Payment Systems, Service Bureaus and FX. The exercise was supported by all major exchanges, markets and industry utilities. Participation in the test was voluntary and results for specific firms, exchanges, markets and utilities are retained in strict confidence by SIFMA.

Participants in the SIFMA test included **110 securities firms** and **63 market organizations**. During the test approximately **1,100 communications connections** were established between securities firms and banks and the exchanges, markets and utilities. **Test transactions on these connections were successful 98% of the time**. These results were generally comparable to prior tests and underscore the ability of the securities industry to operate through adverse conditions. Industry testing to meet the requirements of Regulation Systems Compliance and Integrity (Reg SCI) also took place for the first time on October 15, in parallel with the SIFMA industry test.

In parallel with the SIFMA test on October 15, the Futures Industry Association led a backup site test of the futures exchanges and clients. The futures test results can be found at the link below:

<https://bcp.fia.org/events/2016-fia-disaster-recovery-test>

¹ The Securities Industry and Financial Markets Association (“SIFMA”) brings together the shared interests of hundreds of securities firms, banks and asset managers. SIFMA’s mission is to support a strong financial industry, investor opportunity, capital formation, job creation and economic growth, while building trust and confidence in the financial markets. SIFMA, with offices in New York and Washington, D.C., is the U.S. regional member of the Global Financial Markets Association (“GFMA”). For more information, visit www.sifma.org.

Test Objectives

1. To assess the ability of securities market participants to operate through a significant emergency from their primary or backup data centers and work area recovery sites and to examine the level of resiliency of the markets and the industry overall.
2. To provide firms and exchanges with an opportunity to test and evaluate their backup sites and backup communications with the markets on a single day.

Markets and Utilities Tested

The 2016 test included components for Equities, Options, Fixed Income, Market Data, Payment Systems, Treasury Auctions, Commercial Paper and FX.

Market participants included all major exchanges, markets and industry utilities plus major service bureaus and market data vendors. See **Appendix A** for list of participating market entities.

The Financial Information Forum assisted in coordinating with the services bureaus and market data vendors during the test.

Test Format

Participating firms, exchanges, industry utilities, service bureaus and payment banks, operating from either their primary or backup sites (data center and work area recovery), simultaneously connected and/or submitted scripted test transactions to markets and settlement entities and received simulated confirmations. The test was not intended to be a simulation of any specific real event.

Firms and markets were requested to test from backup locations but, in some instances, this was not technically feasible. For a connection between a firm and a market to be considered a valid test interaction, at least one of the entities had to test from a backup site. A number of exchanges and markets and some firms run multiple “hot” sites as a normal data center configuration. In a multiple hot site configuration, order traffic is routed automatically to one or more of the sites and if a site fails, traffic is automatically shifted to the operational sites. This test did not require shutdown of one of the hot sites. However, firms that do run this type of configuration were encouraged to test from their DR site as opposed to remaining in their Primary configuration.

Reg SCI

In parallel with the SIFMA industry testing on October 15, the industry carried out the first test program as mandated by Regulation Systems Compliance and Integrity (Reg SCI). Nearly all Reg SCI entities took part in both testing programs, offering connectivity testing to interested firms as well more involved testing

requirements for those firms designated as mandated testers under the rule. In addition, many firms who took part mandated Reg SCI testing also took part in the SIFMA industry test to test their connectivity with other exchanges, as well as for market segments not involved in Reg SCI, such as fixed income, service bureaus, and payments. Due to system constraints around Reg SCI, equity clearance and settlement entities took part in Reg SCI testing but not the SIFMA industry test in 2016.

Test Participants Summary

Exchanges, Markets and Industry Utilities (Equities, Options, FI, Clearing, FX)	39
Securities Firms (Including those testing directly with markets and through service bureaus)	110
Service Bureaus	13
Market Data Vendors	8
Payment Organizations	3

See Appendix A for a complete list of market entities participating. The names of the participating firms will not be released.

Overall Test Results

There were approximately 1,100 test interactions in the SIFMA test components of which 98% were successful.

The success rate for 2016 is in line with results for the past few years.

Notes: A test interaction is a successful connection between a firm and an exchange, market, service bureau or utility during the test window. Interactions that experienced issues that were corrected during the test window were counted as successful tests.

Successful Test Interactions by Market

<i>Test Segment</i>	<i>Success Rate</i>
Equities	100%
Options	94%
Fixed Income	99%
Treasury Auctions	86%
Payments	100%
Market Data	100%
Service Bureaus	100%
FX	94%
Average	98%

Types of Issues Resulting in Unsuccessful Test Transactions

The type of issues noted during this year's test were consistent with issues encountered in prior tests; however the organizations experiencing problems to vary from year to year. Types of problems include:

- ✓ General connectivity issues at firms
- ✓ System specific configuration issues at firms

Observations and Conclusions

- This test and prior annual industry tests have consistently achieved extremely positive results that underscore the ability of the industry as a whole to operate through adverse conditions.
- One of the primary values of the annual test is the opportunity it provides for firms and markets to test their backup strategies collectively as an industry.
- The types of problems that caused a small number of failures during this test were not so significant that, during a real event, they could not be addressed fairly quickly with full resources.
- The need for firms to regularly and frequently test their backup connections to market entities is critical and in the few cases where there were issues the test provides a valuable opportunity to uncover them.
- Firms should ensure that appropriate controls are in place to manage changes to applications and hardware that may impact backup site connectivity to markets.
- There was significant value in having providers in DR vs. relying on connections to their Primary systems that are configured as Hot-Hot. We will continue this trend in 2016, while allowing firms the flexibility to test from Primary or DR depending on what is most valuable to them.
- Organizing the industry test in parallel with Reg SCI testing was valuable for test participants, and will be continued in 2017.

Inquires About the SIFMA Test

Inquires about the test may be directed to:

Charles De Simone
Vice President
SIFMA
120 Broadway, 35th floor, New York, NY 10271
212-313-1262
cdesimone@sifma.org

Futures Industry Test

For information about the Futures test led by Futures Industry Association, see <https://bcp.fia.org>

Appendix A

PARTICIPATING MARKET ORGANIZATIONS

Equities

NYSE ARCA
NYSE MKT (AMEX)
NYSE (CLASSIC)
NASDAQ
CHX
BATS BZX
BATS BYX
BATS EDGA
BATS EDGX
OTC Link ATS
UBS ATS
NSX
BIDS Trading

Options

OCC
CBOE
ISE
NYSE ARCA Options
NYSE AMEX Options
NASDAQ OMX PHLX
BOX
BATS BZX Options
CDCC
MIAX
Montreal Exchange
C2

Fixed Income

Bloomberg TOMS
BondDesk
MarketAxess
TMC Bonds
TradeWeb Markets

ICAP
Dealerweb
NASDAQ eSpeed
Tullet Prebon
Bank of New York
JP Morgan Chase
Canadian Derivatives Clearing
Corp (CDCC)

Payments

Fedwire
CHIPS
SWIFT

Treasury Auctions

US Department of the
Treasury

Market Data

Bloomberg
eSignal
Factset
Fidessa
Interactive Data
OTC Markets Group
SIX Financial
Thompson Reuters

Service Bureaus

Broadridge BPS
Broadridge ICI
Broadridge BPO (Formerly
Ridge)
Thomson Reuters BETA
Systems
FIS Phase 3
FIS Valdi

LavaFlow ECN
Fidessa
ReadQ
FlexTrade Systems
OTC Markets - See OTC Link
under Equities tab
Shadow Financial
SS&C Technologies
(Lightning)
Talisys

FX

Bloomberg FXGO
FXAll
Traiana