

DATE 04-30-2018



Technical Notice 18-005

Incident Report April 27, 2018

Incident Date:

April 27, 2018

Incident Summary:

At 1:37 p.m. an internal alert was generated indicating access to some trading components had become offline.

At 1:40 p.m. we received several calls from external participants indicating they were not receiving any order acknowledgements.

At 1:41 p.m. we received several calls from access vendors indicating they had lost connectivity to order entry.

Internal Incident Management was initiated and External communication was sent.

Throughout this time period, external participants had no access to order entry for all MX Derivative products. As well, no market data was being disseminated.

After a thorough investigation, the root cause was identified. The process to recover and recycle would have taken past the regular market closing time. At 2:50 p.m. a decision was made to not bring up the systems and leave all trading down for the remainder of the day. This was communicated to our Market participants.

At 4:55 p.m. we published a notice outlining our criteria for establishing settlement prices.

All open orders (with the exception of Day or GTD which would have expired) will remain in the continuous limit order book.

Services Impacted:

FIX and SAIL Order Entry for all Derivative Products

HSVF and OBF

LOPR

TMS

Clearing API

Problem Analysis:

A central storage appliance encountered a hardware failure in one of its communication management components. The appliance has redundancy built in however when hardware failure occurred the redundant communication management module was unable to take over the role of primary thus failover did not succeed. This subsequently resulted in the entire storage array being offline for the trading applications that rely on centralized storage.

This incident is confirmed not to be a cyber security attack or other technology change related incident.

Resolution:

1. The failed communication management storage module was replaced and centralized storage array health was verified as normal
2. All applications that relied on the centralized storage were brought back online
3. Data integrity checks were completed
4. A start-up validation of the entire trading enterprise was completed on Saturday, April 28 with no issues to report
5. System ready for start of business on Monday, April 30. All derivative instruments will be available for trading at their respective opening times.
- 6. With respect to the permanent fix of the failover logic, our storage manufacturer has identified the root cause and they are working on giving us a patch update over the next few days.**
- 7. In the meantime we have taken necessary measures to ensure we have the ability to run our markets**

Market Operations staff will be onsite at 5:30 a.m. on Monday, April 30, 2018 to assist Approved Participants (AP) with order management and trade execution. If you need assistance with with the aforementioned, please contact the Market Operations Department at 514-871-7871.

Staff from the Technical Help Desk (THD) will also be on site at 5:30 am on Monday April 30, 2018. APs requiring assistance with technical issues can contact THD at 514-871-7872.

Gateways:

Gateway Schedules for Monday, April 30 will be as follows:

Order Entry Gateway (SAIL & FIX): 4:30 am

TMS & TMS Historical : 2:00 am

Clearing API : 2:05 am

LOPR: 1:00 am

SAIL Drop Copy: 4:30 am

HSVF and OBF: 1:10 am

ATR: 2:00 am

Open Orders:

All Good-til-Cancel (GTC) and valid Good-til-Date (GTD) orders that were booked in the order book on Friday April 27, 2018 will be available on Monday April 30, 2018.

LOPR

All Approved Participants can submit their positions on Monday April 30, 2018 until 9:00 am.

CDCC

CDCC clearing services were unaffected by the incident. End of day clearing processes and expiry Friday were completed. Prices for settlement were determined as described below.

Futures:

The Montreal Exchange (MX) established settlement prices for all futures contracts using a reference time of 1:30 pm.

In the case of the BAX futures contract the automated settlement algorithm used a reference time of 1:30 and therefore used all available trade and order data 3 minutes prior to 1:30 pm to establish the settlement price for each of the BAX expiries.

For all other futures contracts a weighted average price was calculated using all trade data 1 minute prior to the 1:30 pm reference time.

For all option futures the settlement prices of the BAX futures contracts were used to calculate a theoretical value using an options pricing model.

Options:

The Montreal Exchange (MX) established end of day reference prices for all Equity, ETF, and Index options contracts using previous day's (April 26, 2018) end of day reference prices.

Underlying prices for expiring options contracts were established using TSX closing prices.

Should you have any questions related to this announcement, we invite you to contact the MX Technical Help Desk at the coordinates below.

Regards,

Technical Help Desk

Toll free: 1-877-588-8489

Telephone: 514-871-7872

Email: samsupport@tmx.com