

STANDARDS FOR SELF REPORTING DEVIATIONS OF CLOCK SYNCHRONIZATION STANDARDS TO FINRA CAT

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1. SUMMARY

On January 28, 2020, the CAT NMS Plan Operating Committee approved parameters for when a CAT Reporter is required to self-report to the CAT Plan Processor, FINRA CAT, deviations of clock synchronizations standards required under SRO Rules and the CAT NMS Plan. FINRA CAT will use this information to evaluate the impact of the reported incident(s) on the quality of the CAT Data and to provide notice to the Regulatory Users of reported incident(s) that may impact their analysis of CAT Data.¹ This alert provides information regarding the current clock synchronization standards, the

¹ Information received through this process will be provided by FINRA CAT to the applicable regulators (e.g. SEC or SROs) on a periodic basis or as requested.

thresholds requiring self-reporting of deviations of those standards and the reporting requirements.²

FINRA CAT will update this alert to provide information regarding the self-reporting form, the method for submission of the form, and the effective date when these details are finalized.

2. Clock Synchronization Standards: The clock synchronization standards for CAT Reportable Events are found in Section 6.8 of the CAT NMS Plan and in SROs rules.³

2.1 Participant Standard: Section 6.8(a)(i) and (iii) of the CAT NMS Plan indicates that each Participant shall synchronize its Business Clocks, other than such Business Clocks used solely for Manual Order Events, at a minimum to within 100 microseconds of the time maintained by the atomic clock of the National Institute of Standards and Technology (“NIST”), consistent with industry standards; and

For Manual Order Events, synchronize its Business Clocks at a minimum to within one second of the time maintained by the NIST atomic clock, consistent with industry standards, and maintain such synchronization.

2.2 Industry Member Standard: Each Industry Member shall synchronize its Business Clocks, other than such Business Clocks used solely for Manual Order Events or Allocation Reports, at a minimum to within a fifty (50) millisecond tolerance of the time maintained by the atomic clock of the NIST, and maintain such synchronization; and

² Under the CAT NMS Plan, clock synchronization standards must be reviewed annually and it is anticipated that the standards will evolve as technology and industry practices change.

³ See BOX Exchange LLC Rule 16010 (Consolidated Audit Trail – Clock Synchronization); Cboe BZX Exchange, Inc. Rule 4.6 (Consolidated Audit Trail – Clock Synchronization); Cboe BYX Exchange, Inc. Rule 4.6 (Consolidated Audit Trail – Clock Synchronization); Cboe EDGX Exchange, Inc. Rule 4.6 (Consolidated Audit Trail – Clock Synchronization); Cboe EDGA Exchange, Inc. Rule 4.6 (Consolidated Audit Trail – Clock Synchronization); Cboe C2 Exchange, Inc. Rulebook Chapter 7, Section B (Consolidated Audit Trail); Cboe Exchange, Inc. Rule 7.21 (Consolidated Audit Trail – Clock Synchronization); FINRA Rule 6820 (Clock Synchronization); Investors’ Exchange, LLC Rule 11.620 (Consolidated Audit Trail – Clock Synchronization); Long-Term Stock Exchange, Inc. Rule 11.620 (Consolidated Audit Trail – Clock Synchronization); Miami International Securities Exchange LLC Rule 1702 (Consolidated Audit Trail – Clock Synchronization); MIAX PEARL, LLC Rulebook Chapter XVII (Consolidated Audit Trail Compliance Rule); MIAX Emerald, LLC Rulebook Chapter XVII (Consolidated Audit Trail Compliance Rule); NASDAQ BX, Inc. General 7 Rule (Consolidated Audit Trail Compliance); Nasdaq GEMX, LLC General 7 Rule (Consolidated Audit Trail Compliance); Nasdaq ISE, LLC General 7 Rule (Consolidated Audit Trail Compliance); Nasdaq MRX, LLC General 7 Rule (Consolidated Audit Trail Compliance); NASDAQ PHLX LLC General 7 Rule (Consolidated Audit Trail Compliance); The NASDAQ Stock Market LLC General 7 Rule Section 2 (Consolidated Audit Trail – Clock Synchronization); (New York Stock Exchange LLC Rule 6820 (Consolidated Audit Trail – Clock Synchronization); NYSE American LLC Rule 6820 (Consolidated Audit Trail – Clock Synchronization); NYSE Arca, Inc. Rule 11.6820 (Consolidated Audit Trail – Clock Synchronization); NYSE Chicago, Inc. Rule 6.6820 (Consolidated Audit Trail – Clock Synchronization); and NYSE National, Inc. Rule 6.6820 (Consolidated Audit Trail – Clock Synchronization).

For Manual Order Events or Allocation Reports, synchronize its Business Clocks at a minimum to within one second of the time maintained by the NIST atomic clock and maintain such synchronization.

3. Self-Reporting Thresholds

3.1 Assumptions for Reporting

- **Systems Used to Create and Record CAT Reportable Events:** The self-reporting obligation only applies to systems that are used to create and record CAT Reportable Events.
- **Impact to CAT Reportable Events:** The self-reporting obligation only applies when a system is creating and recording CAT Reportable Events. For example, if a system drifts out of compliance with the standard at a time when the system is not creating and recording CAT Reportable Events, this would not need to be reported to the Plan Processor.
- **Excessive Clock Drift:** The self-reporting obligation is based on each individual occurrence of excessive clock drift on a given device or server while creating and recording CAT reportable events.

3.2 Participant Self-Reporting Threshold

- **Standard:** The Participant self-reporting requirement only applies to systems where a business clock drifts outside of the CAT NMS Plan's required time frame **(100 microseconds) for at least one second.**

3.3 Bifurcated Industry Self-Reporting Threshold: A bi-furcated approach was adopted to take into account different industry practices while still providing FINRA CAT and the CAT Regulatory Users information to assess the impact of any clock-sync drift incidents on the quality of CAT Data.

3.3.1 Large Drift from Clock Synchronization Standards: *This standard is intended to capture a drift that would be so large that even one incident of such drift would negatively impact the quality of CAT Data.*

- **Standard:** The Industry Member would need to self-report a deviation if a system creating and recording CAT Reportable Events drifts out of compliance with the established standards by **twice the standard or 100 milliseconds** for all systems other than those used for Manual Order Events and **twice the standard or 2 seconds** for systems that record Manual Order Events.

3.3.2 Persistent Drift from Clock Synchronization Standards: *This standard is intended to capture a consistent or persistent drift that would negatively impact the quality of CAT Data.*

- **Standard:** The Industry Member would need to self-report a deviation if a system creating and recording CAT Reportable Events drifts out of compliance with the established standards **10 times in one rolling 24-hour period** at any time when the system is recording a timestamp on data that is reportable to the CAT on a given device or server. (The 10 times standard also applies to systems that process Manual Order events.)

4. Reporting

4.1 Timing of Reporting: Deviations must be reported by T+3 at 8 a.m., which is consistent with the error correction timeframe.

4.2 Trade Day Reporting: If a system has multiple incidents of drift that trigger the self-reporting obligation, it is anticipated that the incidents can be captured on a single report for each trading day.

4.3 Self-Reporting Form: The self-reporting form is still under development, but it is anticipated the form will require at least the following information:

- Designate which self-reporting threshold has been breached.
- Indicate how frequently the system's business clocks are synchronized and monitored in order to provide insight into how long the business clock may have been in deviation of the standard.
- Specify each recorded time that the business clock drift exceeded the self-reporting threshold. Only one report will be required for each trading day.
- If multiple reportable incidents occur due to a single systems event, CAT Reporters will be able to report the incidents aggregated in a manner that ties them to the single event.
- If the reportable incident persists over more than one trading day the report should refer back to the original report for that incident.

4.4 Method of Reporting: The location of the form and the method for submission are being determined. This alert will be updated when this information is available.