FINRA CAT™

2021 Business Clock Synchronization Survey
by FINRA CAT

Purpose of Survey:

The CAT NMS Plan requires the CAT Chief Compliance Officer to annually develop and conduct an assessment of Business Clock synchronization, as to whether industry standards have evolved such that: (i) the synchronization standard in Section 6.8(a) should be shortened; or (ii) the required time stamp in Section 6.8(b) should be in finer increments.

Industry Members and CAT Reporters are encouraged to complete this survey. Your input will help shape recommendations for potential changes to the Business Clock requirements.

Survey Participants who submit a completed survey and provide a business email will receive a copy of aggregated and anonymized summary results.

Current Business Clock Synchronization Requirements:

Pursuant to Section 6.8(a) of the CAT NMS Plan

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. 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.

Pursuant to Section 6.8(b) of the CAT NMS Plan

Each Participant shall, and through its Compliance Rule shall require its Industry Members to, report information required by SEC Rule 613 to the Central Repository in milliseconds. To the extent that each Participant and its Industry Members order handling or execution systems utilize timestamps in increments finer than the minimum required, such finer increments shall be reported to the Central Repository.

Current Self-Reporting Standards:

A CAT Reporter is required to self-report to FINRA CAT, deviations of clock synchronization standards required under SRO Rules and the CAT NMS Plan. CAT Reporters would need to self-report a deviation if a system creating and recording CAT Reportable Events drifts outside of the CAT NMS Plan's required timeframe based on thresholds outlined in CAT Alert 2020-02 (10/19/2020).

1. Please enter the following optional information:

    Name: Click or tap here to enter text.
    Company: Click or tap here to enter text.
    Business Email (required for survey results):Click or tap here to enter text.

2. Please send me aggregated and anonymized summary results of this survey to my business email.

    Yes ☐   No   ☐

Demographics

3. Identify your business profile below. Check all that apply:

    Clearing Broker-Dealer Only   ☐   ATS   ☐
    Introducing Broker-Dealer Only   ☐   Service Vendor   ☐
    Clearing & Introducing Broker-Dealer   ☐   Other (please specify):   ☐
                                                          Click or tap here to enter text.

4. Specify the type of Business. Check all that apply:

    Retail Only   ☐   Market Maker   ☐
    Institutional Only   ☐   Proprietary Trading   ☐
    Retail and Institutional   ☐   Execution Venue   ☐
    Routing Venue   ☐   Other (please specify):   ☐
    ATS Operator   ☐   Click or tap here to enter text.
    Service Vendor   ☐

5. What is the size of your Broker-Dealer?

    Total Capital less than $500,000   ☐   Not Applicable (e.g. Vendor)   ☐
    Total Capital greater than $500,000   ☐

6. Identify the types of instruments traded. Check all that apply.

    Reg NMS Securities   ☐   Options   ☐
    OTC Securities   ☐

Current Business Clock Standards

7. My firm relies _____ system(s) for clock synchronization.

    ☐exclusively on a service provider's
    ☐ on a combination of service provider's and in-house
    ☐ exclusively on in-house

8. Provide the total count of systems, not servers, which you operate for which Business Clocks are maintained.

1 system	☐	More than 10 systems	☐
2 to 5 systems	☐	Not known	☐
6 to 10 systems	☐		

9. How many of these systems capture timestamps in finer increments than milliseconds?

None	☐	More than 10 systems	☐
Less than 5 systems	☐	Not known	☐
5 to 10 systems	☐		

10. Identify the types of systems you operate in which Business Clocks are maintained. Check all that apply.

Order Origination System	☐	Internalization Systems	☐
Order Routing System	☐	Back office Systems	☐
Order Execution or Matching System	☐	Third Party Systems (clearing, vendor systems)	☐
		Not applicable. (Clocks maintained by third party)	☐
		Other (please specify):Click or tap here to enter text.	☐

11. Does the firm maintain different synchronization tolerances for Business Clocks used for different systems?

Yes ☐   No☐(skip question #12)   Not known☐

12. Do tolerances vary based on: ☐ Business Need ☐Location of Business Clock (e.g., internal data center)
    Other☐(please specify)   Click or tap here to enter text.

13. Does your firm have tighter Business Clock drift tolerances than what is required by the CAT NMS Plan?
    Yes ☐   No ☐ （skip question #14）   Not known☐

14. If yes, provide the current Business Clock drift tolerances tighter than the current standard requirement for each
    system. For multiple systems, check all that apply.

Drift Tolerance tighter than standard	Order Origination System	Order Routing System	Order Execution or Matching System	Order Allocation	Other Click or tap here to enter text.
Under 1 millisecond	☐	☐	☐	☐	☐
1 millisecond	☐	☐	☐	☐	☐
2 milliseconds to 5 milliseconds	☐	☐	☐	☐	☐
6 milliseconds to 10 milliseconds	☐	☐	☐	☐	☐
Not known	☐	☐	☐	☐	☐

15. How often does the firm synchronize its Business Clocks? For multiple systems, check all that apply.

Once a day ☐
More than once a day, but less than once an hour ☐
Once an hour or more but less than once a minute ☐
Once a minute or more but less than once a second ☐
Once a second or more, but less than once a hundredth of a second ☐
More than once a hundredth of a second ☐
Not known ☐

16. How often does the firm check the accuracy of its Business Clock synchronization?

Once a day ☐
More than once a day, but less than once an hour ☐
Once an hour or more but less than once a minute ☐
Once a minute or more but less than once a second ☐
Once a second or more, but less than once a hundredth of a second ☐
More than once a hundredth of a second ☐
Not known ☐

17. Is the frequency of Business Clock synchronization checks by the firm the same for all systems?

Yes ☐   No ☐   Not known ☐

Escalation

18. If your clocks drift outside of your clock synchronization tolerance, what amount of drift outside the tolerance would cause you concern?

Less than 1 millisecond	☐	6 milliseconds to 10 milliseconds	☐
1 millisecond to 2 milliseconds	☐	11 milliseconds to 49 milliseconds	☐
3 milliseconds to 5 milliseconds	☐	More than 50 milliseconds	☐

19. If your system fails to re-synchronize, over what period of time do you consider that a concern?

Multiple times per second	☐	Multiple times per day	☐
Multiple times per minute	☐	Daily	☐
Multiple times per hour	☐	Weekly	☐

Cost

20. Provide the firm's current Business Clock synchronization maintenance and compliance costs per year.

Less than $25,000	☐	$50,000 to $100,000	☐
$25,000 to $50,000	☐	$100,000 to $500,000	☐

$500,000 to $1,000,000 ☐   Not known   ☐
More than $1,000,000 ☐

21. Provide an estimated initial cost the firm expects to incur if the Business Clock synchronization tolerance is reduced to the following:

Tolerance reduced to	Less than $25,000	$25,000 to $50,000	$50,000 to $100,000	$100,000 to $500,000	$500,000 to $1,000,000	More than $1,000,000
25 millisecond standard	☐	☐	☐	☐	☐	☐
5 millisecond	☐	☐	☐	☐	☐	☐
1 millisecond standard	☐	☐	☐	☐	☐	☐

22. Provide an estimated maintenance cost the firm expects to incur if the Business Clock synchronization tolerance is reduced to the following:

Tolerance reduced to	Less than $25,000	$25,000 to $50,000	$50,000 to $100,000	$100,000 to $500,000	$500,000 to $1,000,000	More than $1,000,000
25 millisecond standard	☐	☐	☐	☐	☐	☐
5 millisecond	☐	☐	☐	☐	☐	☐
1 millisecond standard	☐	☐	☐	☐	☐	☐

23. How long would the firm anticipate it would take to comply with any changes if the Business Clock synchronization tolerance is reduced to the following?

Tolerance reduced to	Less than 1 month	1 month to 2 months	3 months to 6 months	More than 6 months
25 millisecond standard	☐	☐	☐	☐
5 millisecond	☐	☐	☐	☐
1 millisecond standard	☐	☐	☐	☐

24. Describe the costs the firm expects to incur if the timestamp increment requirements are made finer than milliseconds.
Click or tap here to enter text.

25. Provide an estimate of initial and ongoing expenses the firm would incur if the timestamp increment requirements are made finer by:

Increment finer than	Less than $25,000	$25,000 to $50,000	$50,000 to $100,000	$100,000 to $500,000	$500,000 to $1,000,000	More than $1,000,000
100s of microseconds	☐	☐	☐	☐	☐	☐
10s of microseconds	☐	☐	☐	☐	☐	☐
Microseconds	☐	☐	☐	☐	☐	☐

26. Would these costs vary by type of Business Clock or system? Yes ☐ No ☐

27. How long would the firm anticipate it would take to comply with any changes if the timestamp increment requirements are made finer than milliseconds?

Less than 1 month ☐ 3 months to 6 months ☐
1 month to 2 months ☐ More than 6 months ☐

General

28. What do you believe are the advantages of reducing the current Business Clock synchronization standard? (e.g., reduce latency, improve competitive advantage)

29. What do you believe are the advantages of requiring finer time increments for CAT reporting? (e.g., Improve accuracy of sequencing order events - finer timestamps would validate the uniqueness of the Routed Order Id)

30. Should the Business Clock synchronization requirements set forth in the Plan, vary depending on the type of CAT Reporter, IM and/or the type of system? Yes ☐ No ☐

If yes, explain how and why.

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31. Does your firm have any suggestions how the standards for self-reporting business clock deviations, as set forth in CAT Alert 2020-02, can be improved or optimized? Yes ☐   No ☐

If yes, explain how:

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32. Do you have any other Comments:

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