

IIROC NOTICE

Rules Notice Request for Comments

UMIR

Please distribute internally to:
Legal and Compliance
Trading

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16-0023
February 4, 2016

Summary of Comments Received on Proposed Guidance on Time Synchronization

On October 19, 2015, IIROC issued a notice requesting comments on proposed guidance on Time Synchronization (“Proposed Guidance”)¹. IIROC received comments on the Proposed Guidance from:

National Research Council Canada (“NRC”)
Investment Industry Association of Canada (“IIAC”)
Perimeter Markets Inc. (“PMI”)

A copy of the comment letters received in response to the Proposed Guidance is publicly available on the IIROC website at [UMIR Request for Comments](#).

¹ [IIROC Notice 15-0234](#) – Rules Notice – Request for Comments – UMIR – Proposed Guidance on Time Synchronization



Appendix A presents a summary of the comments received together with IIROC’s responses to those comments and revisions made to the Proposed Guidance.

On February 4, 2016, IIROC issued final guidance on Time Synchronization (“Guidance”). The Guidance varies from the Proposed Guidance in that:

- Coordinated Universal Time (“UTC”), as administered and offered by any recognized contributor to UTC may be used;
- the provision that systems clocks must be continually traceable to UTC has been added;
- the provision that manual clocks should not drift more than 1 second from UTC has been added;
- the reference to “GPS” in section 2.4 of the Proposed Guidance has been replaced with Global Navigation Satellite System (“GNSS”); and
- the notification requirement in section 2.5 of the Proposed Guidance has been amended to clarify the notification requirement by specifying the form of communication and by changing the time duration expectation from “reasonable time from detecting such occurrence” to “immediate”. The application of the notification requirement has been limited to marketplaces.

Comment Summary

Comments Received in Response to Rules Notice 15-0234 – Rules Notice – Request for Comments – *UMIR– Proposed Guidance on Time Synchronization (October 19, 2015)*

On October 19, 2015, IIROC issued Notice 15-0234 requesting comments on the Proposed Guidance on Time Synchronization (“Proposed Guidance”). IIROC received comments in response to the Proposed Guidance from:

National Research Council Canada (“NRC”)
 Investment Industry Association of Canada (“IIAC”)
 Perimeter Markets Inc. (“PMI”)

A copy of the comment letters received in response to the Proposed Guidance is publicly available on the website of IIROC at www.iiroc.ca. The following table presents a summary of the comments received on the Proposed Guidance together with the responses of IIROC to those comments. Column 1 of the table highlights the revisions to the Proposed Guidance made in response to the comments received and thought necessary by IIROC.

Text of Guidance (Revisions to Proposed Guidance highlighted)	Commentator and Summary of Comment	IIROC Response to Commentator and Additional IIROC Commentary
<p><u>Executive Summary</u></p> <p>This Guidance, effective on August 3, 2016, clarifies IIROC’s expectations regarding compliance with the time synchronization requirements under the Universal Market Integrity Rules (“UMIR”)¹.</p> <p><i>This guidance notice repeals and replaces Market Integrity Notice 2008-007 - Time Synchronization (April 11, 2008).</i></p> <p>This Guidance :</p> <ul style="list-style-type: none"> • identifies Coordinated Universal Time (“UTC”) as the accepted reference time source; 	<p>IIAC - Time stamps are stored using regional time. IIAC expects that this would remain unchanged,</p>	<p>IIROC confirms that the storage of time stamps using regional time would remain unchanged. The</p>

¹ UMIR 10.14 (Synchronization of Clocks) requires each marketplace and each Participant to synchronize the clocks used for recording the time and date of any event that must be recorded pursuant to UMIR to the clock used by the Market Regulator for this purpose.



Text of Guidance (Revisions to Proposed Guidance highlighted)	Commentator and Summary of Comment	IIROC Response to Commentator and Additional IIROC Commentary
<ul style="list-style-type: none"> • applies time synchronization expectations to both systems (computer) clocks and manual clocks; • provides flexibility in selecting the time protocol or synchronization method; • sets out the accepted clock drift levels for each type of clock and the method of calculation; and • includes a requirement for marketplaces and Participants to <u>immediately</u> notify IIROC when there are timeclock drifts beyond the allowable timedrift level, within a reasonable time from detecting such occurrence<u>and follow up with a full incident report.</u> 	<p>but wishes to confirm that a move to Coordinated Universal Time (“UTC”) as the reference time source for clock synchronization purposes will not impact the use of regional time for time stamp storage.</p>	<p>results of IIROC’s review of its process for time stamp storage using regional time indicated that there is no impact of using UTC as the accepted common reference time on the time stamp storage process.</p>
<p>1. Provisions Respecting Time Synchronization</p> <p>UMIR 10.14 (synchronization<u>Synchronization</u> of clocks;<u>Clocks</u>) requires that each marketplace and Participant synchronize the clocks used for recording the time and date of any event that must be recorded pursuant to UMIR to the clock used by the Market Regulator.</p> <p>1.1 Compliance with UMIR order handling requirements</p> <p>UMIR imposes a number of order handling requirements on a Participant including:</p> <ul style="list-style-type: none"> • Rule 5.3 which requires a Participant in certain circumstances to provide priority to client orders over principal orders or non-client orders at the same or better prices than the client orders; and • Rule 8.1 which requires a Participant, when executing a principal order or non-client order with certain client orders, to do so at a “better price”. <p>Pursuant to UMIR 7.1, each Participant has supervision and compliance obligations, including the monitoring of its compliance to<u>of</u> the order handling rules, referred to above. In order to ensure that information which is available to a Participant to undertake its compliance reviews is accurate, it is important to ensure that discrepancies in the recording of time; for the entry and execution of orders is<u>are</u> minimal.</p> <p>1.2 Audit trail requirements</p> <p>Various regulatory requirements mandate the recording of time by Participants and marketplaces.</p> <p>Part 11 of National Instrument 23-101 (“Trading Rules”) imposes various audit trail requirements on dealers with respect to their handling of orders. In particular, a dealer must record the time that:</p>		



Text of Guidance (Revisions to Proposed Guidance highlighted)	Commentator and Summary of Comment	IROC Response to Commentator and Additional IROC Commentary
<ul style="list-style-type: none"> • each order is originated or received; • each order is transmitted to a marketplace or another dealer; • each variation, correction or cancellation of an order is originated or received; • each variation, correction or cancellation of an order is transmitted to a marketplace or another dealer; and • an order is executed. <p>Rule <u>UMIR</u> 10.11 of UMIR adopts the requirements set out in the Trading Rules with respect to the recording of time.</p> <p>Similarly, Part 11 of National Instrument 21-101 (“Marketplace Operation Instrument”) imposes various audit trail requirements on marketplaces including requirements that each marketplace record the time that:</p> <ul style="list-style-type: none"> • each order is originated or received by the marketplace; • each message respecting each order was sent to or received from an information vendor or marketplace; and • an order is executed. <p>Under the Marketplace Operation Instrument, each marketplace is required to provide this information to a securities regulatory authority or a regulation services provider such as IROC.</p> <p>Part 6 of National Instrument 23-101, <u>the Trading Rules</u>, the “Order Protection Rule” (“OPR”), was introduced in 2011. Participants and marketplaces are frequently requested to provide time stamped order logs and a consolidated order book display (as visible to them or their “smart order router” (“SOR”) as part of the OPR alert investigation process by IROC Surveillance.</p> <p>In order for the information under the audit trail requirements of Participants and marketplaces to be comparable and manageable, marketplaces and Participants are under an obligation <u>obligated</u> under UMIR 10.14 to synchronize the clocks used for recording time and date to the clock used by IROC.</p>		



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<p>2. Elements of Time Synchronization</p> <p>2.1 Accepted common reference time</p> <p>Participants and marketplaces shall use Coordinated Universal Time (“UTC”)UTC administered and offered by the National Research Council (“NRC”) <u>or UTC as administered and offered by any other recognized contributor to UTC</u>, as the common reference time for synchronization purposes.</p>	<p>NRC - UTC is not the official time scale of Canada and is not available in real-time. Proposes a modification to Part 2.1 requiring Participants and marketplaces to use a reference time that is traceable to Canada’s official timescale, UTC(NRC).</p>	<p>IIROC acknowledges the comments, however we believe that changing the acceptable common reference time to UTC (NRC) may be too limiting. We have added to the Guidance that marketplaces and Participants may use UTC administered and offered by any recognized contributor to UTC (NRC is one such contributor) which we believe will maintain the integrity of the reference time used as well as provide flexibility to our members.</p>
<p>2.2 Different clock types</p> <p><i>2.2.1 Systems clocks (computer clocks)</i></p> <p>Systems clocks are any computer based clock with an automated access to a source of official time (<u>i.e.</u> UTC), including clocks within:</p> <ul style="list-style-type: none"> • the matching engine of a marketplace; and • trading, order entry and compliance systems of participantsParticipants. <p><i>2.2.2. Manual clocks (mechanical clocks)</i></p> <p>Manual clocks are non-computer based clocks that are used for general time keeping purposes such as time stamping of trade tickets.</p>		



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<p>2.3 Clock drift (time drift) Clock times may differ from the common reference time. These drifts, in part, are due to system delays during load handling, general network delays and network delays specific to time synchronization processes.</p> <p><i>2.3.1 Allowable clock drift for different clock types</i> Marketplace ParticipantParticipants and marketplaces must ensure that systemsystems clocks do not drift more than +/- 50 milliseconds from UTC. To help minimize theclock drift, Marketplace ParticipantParticipants and marketplaces must ensure that systemsystems clocks are continually synchronized <u>and traceable to UTC</u> during trading hours. Manual clocks <u>should not drift more than 1 second from UTC and</u> must be synchronized at least once daily, preferably prior to the opening of trading.</p> <p><i>2.3.2 Method of clock drift calculation</i> Clock drift is measured as the time difference between UTC (described in section 2.1 above) and the clock used by a marketplace or a Participant for the purposes of UMIR 10.14.</p>	<p>NRC - Use of the term “clock drift” or “time drift” in the scientific community generally describes the process of increasing clock time deviation rather than clock accuracy. Recommends that IIROC consider using language to describe clock accuracy as “divergence” from UTC(NRC).</p>	<p>IIROC acknowledges the comment. The term “clock drift” for the purposes of this Guidance refers to the occurrence when a Participant’s or marketplace’s time may differ from the common reference time, and is specifically described in the Guidance to clarify our expectation.</p>
	<p>IIAC - Requests confirmation that 100% compliance is not expected with respect to allowable clock drift as this is not possible to achieve. IIAC believes that a reasonable percentage of trading hours (e.g. 99.9%) should be the norm within which the system clock would be +/- 50 milliseconds (“ms”) from UTC</p>	<p>The clock drift levels were chosen to provide a reasonable limit that could be met at all times during trading hours. Therefore 100% compliance will be expected.</p>
	<p>NRC - The Proposed Guidance uses the term “synchronization” when describing regulatory compliance for clock accuracy, instead of using the word “traceability”. Traceability, as defined by the International Vocabulary of Metrology, is a property of the measurement result (clock accuracy) that allows it to be related to a reference (UTC(NRC)). NRC does not propose specific wording but feels there is a need for a broader technical discussion regarding measurement reliability, system validation and the scientific notion of traceability.</p>	<p>IIROC acknowledges the comments. Wording in section 2.3.1 has been amended by adding that systems clocks must be traceable to UTC.</p>



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<p>2.4 Time protocols/Synchronization method</p> <p>There are multiple time protocols and time synchronization methods available including:</p> <ul style="list-style-type: none"> • Network time protocol (“NTP”); • Precision time protocol (“PTP”); • GPS <u>Global Navigation Satellite System (“GNSS”)</u> based time synchronization methods; and • Hybrid methods that use 2 or more of the above <p>2.4.1 <i>Time protocol used by IIROC</i></p> <p>IIROC undertakes a continual synchronization utilizing NTP offered through the National Research Council (“NRC”) <u>NRC</u>.</p> <p>2.4.2 <i>Flexibility to choose a time protocol</i></p> <p>A marketplace or a Participant may use its existing time synchronization protocol/method, NTP or any other method commonly used for time synchronization purposes to achieve the allowable clock drifts described in section 2.3.1 above.</p> <p>IIROC recognizes that many Participants and marketplaces rely to some extent on systems offered by third-party providers. Participant <u>Participants</u> and marketplaces must ensure that such systems comply with allowable clock drift requirements prescribed in section 2.3.1 above.</p>	<p>NRC - Time synchronization methods utilizing satellites could use several different Global Navigation Satellite Systems (“GNSS”) including GPS, therefore suggests the term “GNSS” be used instead of “GPS”.</p>	<p>We agree with the comment and have amended section 2.4 accordingly.</p>
<p>2.5 Notify IIROC of time drifts beyond allowable level</p> <p>We expect that a marketplace or Participant will notify IIROC surveillance when there are <u>provide immediate written notice to IIROC Surveillance (surveillance@iroc.ca) upon detecting that its</u> time drifts are <u>are</u> beyond the allowable time drift level, within a reasonable time from detecting such occurrence, followed <u>drift levels, and follow</u> up with a full incident report.</p>	<p>IIAC - Requests clarification of the process for notification to IIROC in the event of clock drift beyond the set threshold including form of communication to Surveillance and time duration expectations described by “reasonable time from detection”.</p>	<p>IIROC acknowledges the comment. Section 2.5 of the Guidance has been amended to clarify the notification requirement by including form of communication and changing the time duration expectation from “reasonable time from detecting such occurrence” to “immediate”. The current responsibility to submit trading data to IIROC (including time stamps) rests with marketplaces and consequently the Guidance has been amended to limit the application of the notification requirement to marketplaces only. IIROC expects that marketplaces would have an existing process to communicate technical difficulties to IIROC as required under section 6.3 of the</p>



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		Trading Rules and and this same process should be used when notifying IIROC Surveillance of clock drift issues under the Guidance.



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	<p>IIAC - Believes that certain events causing clock drift beyond 50 ms do not warrant notification to IIROC and request confirmation that the rebooting of a server that causes drift to exceed 50 ms would not be an incident requiring notification to IIROC.</p>	<p>Notification of clock drift beyond 50 ms allows IIROC surveillance to better understand the trading that it surveils and therefore we would expect that all clock drifts beyond 50 ms would be reported as set out in the Guidance .</p>
	<p>PMI - As a general principle, submits that non- equity marketplaces need to be specifically contemplated and addressed in the establishment of any new marketplace rules.</p> <p>PMI submits that Parts 2.3.1 and 2.5 in the Guidance, in their current form, are an unnecessary level of rigor for those Participants and marketplaces operating in the existing Canadian fixed income environment. PMI requests that the above-mentioned aspects of the Guidance only apply to those Participants and marketplaces which are interconnected and/or require live regulatory surveillance, such as those involved in the trading of equity securities.</p>	<p>IIROC acknowledges the comments. However, we do not consider that the new allowable clock drift provisions in section 2.3.1 and notification provisions in section 2.5 are overly burdensome in terms of cost or time needed for implementation. This Guidance builds on existing Guidance Notice 2008-007 and it is expected that marketplaces already have processes in place to comply with time synchronization requirements. We also note that fixed income trade reporting requirements are changing with the introduction of IIROC’s fixed income trade reporting regime that was introduced in November 2015 and we do not believe that specifically relieving fixed income marketplaces from these clock synchronization provisions would be justified under this changing regulatory framework or existing regulatory framework as set out in NI 21-101 and NI 23-101.</p>