

IIROC NOTICE

Rules Notice
Guidance Note
UMIR

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Guidance on Time Synchronization

Executive Summary

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.

This guidance notice repeals and replaces Market Integrity Notice 2008-007 - Time Synchronization (April 11, 2008).

This Guidance :

- identifies Coordinated Universal Time ("UTC") as the accepted reference time source;
- applies time synchronization expectations to both systems (computer) clocks and manual clocks;
- provides flexibility in selecting the time protocol or synchronization method;

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.



- sets out the accepted clock drift levels for each type of clock and the method of calculation; and
- includes a requirement for marketplaces to immediately notify IIROC when there are clock drifts beyond the allowable drift level, and follow up with a full incident report.

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1. Provisions Respecting Time Synchronization

UMIR 10.14 (Synchronization of Clocks) 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.

1.1 Compliance with UMIR order handling requirements

UMIR imposes a number of order handling requirements on a Participant including:

- 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”.

Pursuant to UMIR 7.1, each Participant has supervision and compliance obligations, including the monitoring of its compliance of the order handling rules, referred to above. In order to ensure that information 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 are minimal.

1.2 Audit trail requirements

Various regulatory requirements mandate the recording of time by Participants and marketplaces.

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:

- 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.

UMIR 10.11 adopts the requirements set out in the Trading Rules with respect to the recording of time.



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:

- 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.

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 IIROC.

Part 6 of the Trading Rules, 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”) as part of the OPR alert investigation process by IIROC Surveillance.

In order for the information under the audit trail requirements of Participants and marketplaces to be comparable and manageable, marketplaces and Participants are obligated under UMIR 10.14 to synchronize the clocks used for recording time and date to the clock used by IIROC.

2. Elements of Time Synchronization

2.1 Accepted common reference time

Participants and marketplaces shall use UTC administered and offered by the National Research Council (“NRC”) or UTC as administered and offered by any other recognized contributor to UTC, as the common reference time for synchronization purposes.

2.2 Different clock types

2.2.1 Systems clocks (computer clocks)

Systems clocks are any computer based clock with an automated access to a source of official time (i.e. UTC), including clocks within:

- the matching engine of a marketplace; and
- trading, order entry and compliance systems of Participants.

2.2.2 Manual clocks (mechanical clocks)

Manual clocks are non-computer based clocks that are used for general time keeping purposes such as time stamping of trade tickets.



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.

2.3.1 Allowable clock drift for different clock types

Participants and marketplaces must ensure that systems clocks do not drift more than +/- 50 milliseconds from UTC. To help minimize clock drift, Participants and marketplaces must ensure that systems clocks are continually synchronized and traceable to UTC during trading hours. Manual clocks should not drift more than 1 second from UTC and must be synchronized at least once daily, preferably prior to the opening of trading.

2.3.2 Method of clock drift calculation

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.

2.4 Time protocols/Synchronization method

There are multiple time protocols and time synchronization methods available including:

- Network time protocol (“NTP”);
- Precision time protocol (“PTP”);
- Global Navigation Satellite System (“GNSS”) based time synchronization methods; and
- Hybrid methods that use 2 or more of the above

2.4.1 Time protocol used by IIROC

IIROC undertakes a continual synchronization utilizing NTP offered through NRC.

2.4.2 Flexibility to choose a time protocol

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.

IIROC recognizes that many Participants and marketplaces rely to some extent on systems offered by third-party providers. Participants and marketplaces must ensure that such systems comply with allowable clock drift requirements prescribed in section 2.3.1 above.

2.5 Notify IIROC of time drifts beyond allowable level

We expect that a marketplace will provide immediate written notice to IIROC Surveillance (surveillance@iirc.ca) upon detecting that its time drifts are beyond the allowable drift levels, and follow up with a full incident report.