Frequently Asked Questions

PHLX Depth of Market

NASDAQ OMX PHLX^{SM} (PHLX^{SM}) offers a full depth of market data feed called PHLX Depth of Market (PHLX Depth).

This document attempts to answer questions that are important to subscribers of the PHLX Depth feed. Additional information will be published as it becomes available.

I. Overview

1. **Q: What is PHLX Depth of Market?**

    A: PHLX Depth of Market is a direct, low-latency market data feed that is designed to provide full depth of quotes, depth of simple orders, net order imbalance information for the opening cross and last sale information directly to subscribers.

2. **Q: Why would a firm subscribe to PHLX Depth?**

    A: PHLX Depth is a direct data feed offering full depth of quotes and simple orders with minimal latencies to subscribers who are concerned about maintaining a leading edge in a competitive market environment. As speed becomes an increasingly-important issue to conducting a successful trading operation, PHLX expects direct data feeds to become a critical component for options trading.

    Furthermore, PHLX Depth data is completely proprietary and is not available from any other source.

3. **Q: From where will the PHLX Depth feed be disseminated?**

    A: The PHLX Depth feed is available from NASDAQ OMX's New York Area data center.

II. Technical

4. **Q: Where can I locate the PHLX Depth interface specification?**

    A: The spec for PHLX Depth is available on the NASDAQ OMX Trader® website. As updates and enhancements are made, new versions will be published.

5. **Q: What is the recommended bandwidth to support the PHLX Depth feed?**

A: The recommended bandwidth for the feed is 250 Megabits per multicast group. PHLX Depth will be offered in uncompressed binary format only.

6. **Q: Is complex order information available on the PHLX Depth feed?**

A: No. The only complex information on PHLX Depth is a Trade Indicator message that an options trade resulted from a complex cross.

Full complex order data is available on the PHLX Orders data feed or as part of the TOPO Plus Orders data feed entitlement, which includes both the TOPO and PHLX Orders data feeds.

7. **Q: If I am using both the PHLX Depth feed and the PHLX Orders feed, is there a way I can track the simple orders on one feed with the same simple orders on the other feed?**

Yes. PHLX Depth contains an additional "Order ID" field in the order message, which is a PHLX assigned order ID. This allows subscribers to map the Order ID on the PHLX Depth feed to the equivalent Order ID on the PHLX Orders feed.

8. **Q: How closely aligned are the PHLX Depth, NOM ITTO and BX Options Depth of Market protocols?**

A: The specifications are almost identical. All three protocols offer the same message set and the fields and offsets within the messages are exactly the same. Every effort will be made to keep the message set, fields and offsets the same. Field values may differ slightly.

9. **Q: Are Option ID's the same across all PHLX data feeds?**

A: Yes, Option ID information is the same across the TOPO, PHLX Orders and PHLX Depth data feeds.

10. **Q: Is a PHLX Glimpse feed offered with the PHLX Depth feed?**

A: Yes, PHLX offers a companion Glimpse feed for PHLX Depth. PHLX Glimpse acts as a current state of the book retransmission facility. PHLX Glimpse is offered in SoupBinTCP protocol and uses the same data formats as the PHLX Depth data feed.

11. **Q: Is there quote mitigation on PHLX Depth?**

A: No. PHLX Depth offers the full depth of quotes and orders.

(TOPO v3 has 10% mitigation on the sizes. This means TOPO will not send out a quote if the price does not change and the new size increases by less than 10%. All decreases are reported and all price changes are always disseminated.)

12. **Q: How many multicast groups will be offered?**

A: NASDAQ OMX will support three multicast groups, also called the 'A feed",

"B feed" and "C feed". NASDAQ OMX will provide local redundancy in the New York Metro Area data center ("A feed" and "B feed") while using the Mid-Atlantic Region data center ("C feed") for disaster recovery in the event that order entry is switched from the New York Metro Area.

13. **Q: Why are both the "A feed" and "B feed" being introduced from the New York Metro Area data center?**

A: In order to maximize the low-latency advantages of the PHLX Depth data feed, NASDAQ OMX determined to offer local redundancy for the "A" and "B" feeds. The intent is to offer a high availability, low latency alternative in the event of a single failure. The "C" feed from the Mid-Atlantic Region is meant as a disaster recovery feed in the event of total New York Metro Area failure, and has a higher latency than the "A" and "B" feeds.

14. **Q: Is the PHLX Depth data exactly the same from the "A feed" and "B feed"?**

A: The "A" and "B" feeds are independent, logically identical feeds that contain the same content. However, the bundling of the data will be different. In other words, the sequence of the PHLX Depth messages will be exactly the same between the two feeds, but the packaging of PHLX Depth messages in a Mold packet is not guaranteed to be identical.

Firms should synchronize by Mold sequence number between feeds. If a sequence number gap is detected in one of the feeds, the gap can be filled with the missing sequence numbers from the other feed, or by requesting the missing sequence numbers in the Mold re-request channel.

Soup TCP connections are also available as a means of filling large amounts of missing data.

15. **Q: Are sample data files available that can be used for test purposes?**

A: Not at this time. Sample data file for PHLX Depth may be available in the future. Please contact clientsuccess@nasdaq.com for more information.

16. **Q: What do I need to do if I miss a quote/order?**

Missing data in the multicast feed implies that quotes/orders have most likely been lost. The missing data can be filled by requesting the missing data with the multicast rerequest channel, or by listening to both feeds in parallel (missing data in one feed can be filled by the received data in the other feed), or by connecting to the SoupTCP connection and logging in with the first sequence number that is missing.

17. **Q: How can I best utilize the Mold and Soup re-request channels?**

A: Recovering data from PHLX Depth can be done in different ways. The best way depends on how much information you are missing and your own particular implementation. The different ways of recovering data are outlined below:

1. Gap in the feed: If the issue of recovery is that there was a gap in the Mold MultiCast stream, then use the Mold rerequestor to fill the gap. For example one Multicast datagram containing PHLX Depth sequence x to y is missing, you can ask Mold reqrequestor to send messages x to y. If this will fit in one datagram, your gap is filled. If your request does not fit in one datagram, you can ask again for the remaining missing messages. This is the best and quickest way to fill small gaps.

2. Recovering from GLIMPSE: If you missed data for an extended period of time or if you want to start consuming data in the middle of the day, then using GLIMPSE is the best option. You connect to GLIPMSE using the Soup login and get the current book state. Use the PHLX Depth feed sequence number returned by GLIMPSE to join the live multicast stream.

3. Data missed for a period of time**:** If your system went down and missed data for a period of time (seconds to minutes), then you can connect to the Soup rerequestor and login with the last sequence number your system received and processed (see second note below). You will get all messages that you missed in sequence. You can remain connected to Soup for the rest of the day if you like (there is no latency difference in Mold or Soup at the application level, Mold is Multicast, Soup is TCP however, there may be (small) latency due to the different (TCP, MultiCast) transport methods).

4. Catastrophic failure with need to fill in a significant portion of a day of data: Different ways to deal with this, the method you choose is implementation-specific
   - You can use method (2) above, it may take time to process
   - You can Connect to Multicast to get live data (recording sequence number of the data) while connecting to Soup to get historical data. Record sequence number of each side of quote in the Multicast stream. During the Soup rewind, discard quotes with lower sequence number (older) than multicast, otherwise process the data and store the sequence number. In this way you will get the live quote data for the active options, and fill in the quiet, no so active quotes with Soup rewind

III. Connectivity

18. **Q: What are the available connectivity options?**

   A: Firms will be able to co-locate in the New York Metro Area data center, access the feed through a direct connection or utilize an extranet provider.

19. **Q: Is there a list of NASDAQ OMX connectivity providers?**

   A: Review the list of Extranets and Direct Connect Providers on the NASDAQ OMX Trader website.

IV. Contact Information

20. **Q: If I have questions, whom should I contact?**

A: Contact the NASDAQ OMX Global Data Product Sales team at +1 301 978 5307, Option #2 or DataSales@nasdaqomx.com for additional information.