November 17, 2022

To:          OPRA Multicast Subscribers

Subject:    Expansion of OPRA Data Dissemination from a 48-Line to a 96-Line Multicast Network – Postponement to Q3, 2023

What’s New:
As previously announced, for optimal symbol balancing and line capacity utilization, OPRA will be expanding data dissemination from a 48-line to a 96-line multicast data distribution network. Bandwidth requirements are provided below.

Changes Being Made:
In addition to expanding data dissemination from a 48-line to a 96-line multicast data distribution network, the OPRA symbol routing schema is changing.

When it is Changing:
Activation of data dissemination on the 96-line multicast data distribution network is postponed until Q3, 2023. Further detailed information (e.g., new activation date; revised specifications; specific industry test and test playback dissemination dates; FAQ’s; final routing distribution) will be provided at a later date.

Current 48-Line Network:
• OPRA output traffic is distributed over 48 output lines
• Each line has data for Options series within an alpha range for the underlying symbol, Odd or Even Expiration Month, and Puts or Calls
• As the volume of data and burstiness varies often, it is challenging to evenly distribute the load across all lines
• Periodically, alpha ranges for the lines are changed to better distribute the traffic

New 96-Line Network (New Symbol Routing Schema):
• OPRA output traffic will be distributed over 96 output lines
• The alpha range and Odd or Even Expiration Month restriction will remain, but Odd or Even Expiration Day will be added to the distribution
• Data for the combination of 'Underlying Symbol + Odd or Even Expiration Month + Odd or Even Expiration Day + Puts or Calls', within the allowed alpha range, will be published on a particular line
• A new distribution example for testing is in the Appendix of this notice, and available as an Excel file on the OPRA web site under “Specifications”.
• Load balancing will be more frequent and coordinated with Data Subscribers.
Bandwidth Requirements:
The bandwidth requirements for the OPRA 96-line multicast data distribution network are as follows:

- **48-Line Actual Peaks and 96-Line Projected Peaks upon Activation:**

<table>
<thead>
<tr>
<th>48-Line Actual Peaks</th>
<th>96-Line Projected Peaks Upon Activation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millon Msg / Sec</td>
<td>Million Pkt / Sec</td>
</tr>
<tr>
<td>1-ms</td>
<td>81.3</td>
</tr>
<tr>
<td>10-ms</td>
<td>70.1</td>
</tr>
<tr>
<td>100-ms</td>
<td>62.1</td>
</tr>
</tbody>
</table>

- Data Subscribers who receive OPRA should contact their connectivity service providers for bandwidth considerations.

General Testing Information:
- Four industry tests and the final Confidence Test will take place on designated Saturdays.
- Capacity testing will be available after select industry tests (dates to be determined).
- Test replay dissemination with the new 96-line distribution will be available every weeknight over Playback Test IP’s.
- Testing in the Certification (Cert) environment utilizing new symbol routing schema and test symbol distribution will be available.
- Multicast Lines 49-96 have been publishing Line Integrity messages since July 26, 2021, in preparation for the expansion of data dissemination to 96 lines. OPRA multicast addressing can be found in Appendix D [here](#).

Data Subscribers who receive OPRA from connectivity service providers other than ICE Global Network (IGN) or the NMS Network must contact their connectivity service providers to coordinate testing.

Technical Inquiries
- NMS Product Management Support Email: [CTA-OPRA-Support@siac.com](mailto:CTA-OPRA-Support@siac.com)
- NMS Product Management Support Line: 212-656-8177, Option 2 (Monday through Friday, 9:00 AM-5:00 PM ET)