



Securities Industry Automation Corporation
11 Wall Street, New York, NY 10005

May 1, 2023

To: OPRA Multicast Subscribers

Subject: Expansion of OPRA Data Dissemination from a 48-Line to a 96-Line Multicast Network:
Effective July 31, 2023 -- Final Symbol Distribution

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:

As part of expanding data dissemination from a 48-line to a 96-line multicast data distribution network, and to help facilitate capacity upgrades to the ICE Global Network (IGN), new subnets, rendezvous points, source addresses, and multicast addresses are being introduced (including Global Trading Hours (GTH)). Note that these changes apply to customer connections via both IGN and the NMS Network in Mahwah.

The changes are being made in two phases:

- **Phase 1:** migration of the current 48-line symbol distribution schema to new network subnets, rendezvous points, source addresses, and multicast addresses
- **Phase 2:** migration of the new symbol distribution schema over 96 lines

When it is Changing:

Activation of the new network subnets, rendezvous points, source addresses, and multicast addresses will take place at start of day on **Monday, July 10, 2023**.

Activation of data dissemination on the 96-line multicast data distribution network will take place at start of day, **Monday, July 31, 2023**.

For detailed schedule information including industry tests, please consult the OPRA 96-Line Migration FAQ's [here](#).

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
- **The final symbol routing distribution for the July 31, 2023, activation date is in the Appendix of this notice, and available as CSV and Excel files [here](#).**
- 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:**

48-Line Actual Peaks			
	Million Msg / Sec	Million Pkt / Sec	Gbit/sec
1-ms	81.3	7.2	20.8
10-ms	70.1	6.7	18.3
100-ms	62.1	6.4	15.9

96-Line Projected Peaks Upon Activation			
	Million Msg / Sec	Million Pkt / Sec	Gbit/sec
1-ms	116.3	16.9	37.3
10-ms	100.2	14.8	32.3
100-ms	88.2	14.5	28.4

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

General Testing Information:

- Several industry tests and Confidence Tests will take place on designated Saturdays.
- Capacity testing will be available after the June 10th and July 15th industry tests (see FAQs).
- Test replay dissemination with the new 96-line distribution has been available every weeknight over Playback Test IP's (not Production IP's) utilizing new network addresses, between 8:00pm and 9:00pm ET (15-minute period; variable time dependent on completion of afterhours), since April 3, 2023.
- Testing in the Certification (Cert) environment utilizing new symbol routing schema and test symbol distribution has been available since April 3, 2023.
- **New OPRA subnets, rendezvous points, source addresses, and multicast addresses can be found in the appendices of the Common IP Multicast Distribution specification [here](#).**
- **For detailed schedule information please consult the OPRA 96-Line Migration FAQ's [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
- NMS Product Management Support Line: 212-656-8177, Option 2 (Monday through Friday, 9:00 AM-5:00 PM ET)

Appendix: Final OPRA 96-Line Distribution (Effective July 31, 2023)

	Beginning	Expiration Months				Expiration Days					Ending Ra	Expiration Months					Expiration Days			
		Odd Calls (Jan-Mar- May-Jul- Sep-Nov)	Even Calls (Feb-Apr- Jun-Aug- Oct-Dec)	Odd Puts (Jan-Mar- May-Jul- Sep-Nov)	Even Puts (Feb-Apr- Jun-Aug- Oct-Dec)	Odd Day (01 03 05 07 09 11 13 15 17 19 21 23 25 27 29 31)	Even Day (02 04 06 08 10 12 14 16 18 20 22 24 26 28 30)	Odd Calls (Jan-Mar- May-Jul- Sep-Nov)	Even Calls (Feb-Apr- Jun-Aug- Oct-Dec)			Odd Puts (Jan-Mar- May-Jul- Sep-Nov)	Even Puts (Feb-Apr- Jun-Aug- Oct-Dec)	Odd Day (01 03 05 07 09 11 13 15 17 19 21 23 25 27 29 31)	Even Day (02 04 06 08 10 12 14 16 18 20 22 24 26 28 30)					
1	A	X	X	X	X	X			ADBE	X	X					X				
2	A	X	X	X	X		X		ADBE	X	X						X			
3	ADBE			X	X	X			AMZMZ	X	X	X	X		X					
4	ADBE			X	X		X		AMZMZ	X	X	X	X				X			
5	AMZN	X	X			X			AMZN	X	X				X					
6	AMZN	X	X				X	X	AMZN	X	X					X		X		
7	AMZN			X	X	X			AMZN			X	X		X					
8	AMZN			X	X		X	X	AMZN			X	X			X		X		
9	AMZNA	X	X	X	X	X			BABZZ	X	X	X	X		X					
10	AMZNA	X	X	X	X		X	X	BABZZ	X	X	X	X			X		X		
11	BAC	X	X	X	X	X			BXBZZ	X	X	X	X		X					
12	BAC	X	X	X	X		X	X	BXBZZ	X	X	X	X			X		X		
13	BXC	X	X	X	X	X		X	COF	X	X				X					
14	BXC	X	X	X	X		X	X	COF	X	X					X		X		
15	COF			X	X	X			CRWCZ	X	X	X	X		X					
16	COF			X	X		X	X	CRWCZ	X	X	X	X				X			
17	CRWD	X	X	X	X	X			DIA	X	X				X					
18	CRWD	X	X	X	X		X	X	DIA	X	X					X		X		
19	DIA			X	X	X			ENPH	X	X					X				
20	DIA			X	X		X	X	ENPH	X	X						X			
21	ENPH			X	X	X			EXPDZ	X	X	X	X		X					
22	ENPH			X	X		X	X	EXPDZ	X	X	X	X			X		X		
23	EXPE	X	X	X	X	X			GILD	X	X				X					
24	EXPE	X	X	X	X		X	X	GILD	X	X					X		X		
25	GILD			X	X	X			GLD	X	X					X				
26	GILD			X	X		X	X	GLD	X	X						X			
27	GLD			X	X	X			GOOFZ	X	X	X	X		X			X		
28	GLD			X	X		X	X	GOOFZ	X	X	X	X			X		X		
29	GOOG	X	X	X	X	X		X	GOOG	X	X	X	X		X					
30	GOOG	X	X	X	X		X	X	GOOG	X	X	X	X			X		X		
31	GOOGA	X	X	X	X	X		X	GOOGL	X	X	X	X		X					
32	GOOGA	X	X	X	X		X	X	GOOGL	X	X	X	X			X		X		
33	GOOGM	X	X	X	X	X		X	IWLZZ	X	X	X	X		X					
34	GOOGM	X	X	X	X		X	X	IWLZZ	X	X	X	X			X		X		
35	IWM	X	X			X			IWM	X	X				X					
36	IWM	X	X				X	X	IWM	X	X					X		X		
37	IWM			X	X	X			IWM			X	X		X					
38	IWM			X	X		X	X	IWM			X	X			X		X		
39	IWMA	X	X	X	X	X			LRCWZ	X	X	X	X		X					
40	IWMA	X	X	X	X		X	X	LRCWZ	X	X	X	X			X		X		
41	LRCX	X	X	X	X	X		X	MET	X	X	X	X		X					
42	LRCX	X	X	X	X		X	X	MET	X	X	X	X			X		X		
43	META	X	X			X			META	X	X				X					
44	META	X	X				X	X	META	X	X						X			
45	META			X	X	X		X	MRZZZ	X	X	X	X		X					
46	META			X	X		X	X	MRZZZ	X	X	X	X			X		X		
47	MS	X	X	X	X	X		X	MU	X	X				X					
48	MS	X	X	X	X		X	X	MU	X	X					X		X		
49	MU			X	X	X			NFLX	X	X				X					
50	MU			X	X		X	X	NFLX	X	X					X		X		
51	NFLX			X	X	X			NVD	X	X	X	X		X					
52	NFLX			X	X		X	X	NVD	X	X	X	X			X		X		
53	NVDA	X	X			X			NVDA	X	X				X					
54	NVDA	X	X				X	X	NVDA	X	X					X		X		
55	NVDA			X	X	X			NVDA			X	X		X					
56	NVDA			X	X		X	X	NVDA			X	X				X			
57	NVDAA	X	X	X	X	X			QQPZZ	X	X	X	X		X					
58	NVDAA	X	X	X	X		X	X	QQPZZ	X	X	X	X			X		X		
59	QQQ	X				X			QQQ	X					X					
60	QQQ	X					X	X	QQQ	X						X		X		
61	QQQ		X			X			QQQ		X				X					
62	QQQ		X				X	X	QQQ		X					X		X		
63	QQQ			X		X			QQQ			X			X					
64	QQQ			X			X	X	QQQ			X				X		X		
65	QQQ				X	X			QQQ				X		X					
66	QQQ				X		X	X	QQQ				X			X		X		
67	QQQA	X	X	X	X	X			SBUX	X	X				X					
68	QQQA	X	X	X	X		X	X	SBUX	X	X					X		X		
69	SBUX			X	X	X			SNOVZ	X	X	X	X		X					
70	SBUX			X	X		X	X	SNOVZ	X	X	X	X			X		X		
71	SNOW	X	X	X	X	X			SPXZZ	X	X	X	X		X					
72	SNOW	X	X	X	X		X	X	SPXZZ	X	X	X	X			X		X		
73	SPY	X				X			SPY	X					X					
74	SPY	X					X	X	SPY	X						X		X		
75	SPY		X			X			SPY		X				X					
76	SPY		X				X	X	SPY		X					X		X		
77	SPY			X		X			SPY			X			X					
78	SPY			X			X	X	SPY			X				X		X		
79	SPY				X	X			SPY				X		X					
80	SPY				X		X	X	SPY				X			X		X		
81	SPYA	X	X	X	X	X		X	TSL	X	X	X	X		X					
82	SPYA	X	X	X	X		X	X	TSL	X	X	X	X		X					
83	TSLA	X				X			TSLA	X		X			X					
84	TSLA	X					X	X	TSLA						X			X		
85	TSLA		X			X			TSLA		X				X					
86	TSLA		X				X	X	TSLA		X					X		X		
87	TSLA			X		X			TSLA			X			X					
88	TSLA			X			X	X	TSLA							X		X		
89	TSLA				X	X			TSLA				X		X					
90	TSLA				X		X	X	TSLA					X		X		X		
91	TSLAA	X	X	X	X	X			VLO	X	X				X					
92	TSLAA	X	X	X	X		X	X	VLO	X	X					X		X		
93	VLO			X	X	X			XLEZZ	X	X	X	X		X					
94	VLO			X	X		X	X	XLEZZ	X	X	X	X			X		X		
95	XLF	X	X	X	X	X			ZZZZZ	X	X	X	X		X					
96	XLF	X	X	X	X		X	X	ZZZZZ	X	X	X	X			X		X		