nth Moment

VolLevels Algo

For Vela's Metro trading platform
Version 1.33 (06-29-2021)

Testimonials

"During an active trading session, it is easy to lose track of critical IV and tick levels, IV term structure, and individual skews and curvature, while trying to monitor and trade simultaneously. Especially when volatility and skew are whipping around, it can become a guessing game, leaving me vulnerable to poorly timed or ill-advised trades.

The VolLevels algo neatly organizes the chaos, condensing the most important information in a way that allows me to easily spot and identify potential relative value trading opportunities in each vol curve as well as the overall IV term structure. The VolLevels algo enables me to capitalize on overbought and/or oversold conditions in both intraday/short-term markets, as well as relative value opportunities in 'big picture' scenarios. The algo helps prevent me from getting picked off by 'smart paper' on seemingly good trades everyone is doing that end up being losers. It's akin to a live 'cheat sheet' that enables me to quickly spot opportunity while simultaneously avoiding bad trades due to poor pricing by the marketplace."
-Beta tester & collaborator

IV Levels Tracking

When running, the algo monitors the published vol curves of all assigned options expirations. When a change in the published vol curve is detected (a new curve is published), the algo will update all monitored metrics for that expiration accordingly. For maximum utility, it is recommended that the VolLevels algo is run in conjunction with a realtime volatility curve fitter (such as our complimentary Dynamic Skew algo), however this is not a requirement. The algo can also monitor manual curve updates, and of any volatility curve type. The primary disadvantage of manual curve publications is the corresponding reduction in temporal resolution. For example, with relatively infrequent manual curve updates, the tracked intraday highs and lows of various vol-related metrics will be less accurate than the true extrema determined with frequent vol curve publications (the Dynamic Skew algo can publish new vol curves as often as once per second).

The algo allows net changes in IVs to be displayed with respect to two possible reference curves: EOD and Baseline. The user can toggle between these with a button click and can also arbitrarily assign (overwrite) either of these reference curves with another button click.
- **EOD** (End-Of-Day): Defaults to the last curve published prior to the server reboot. The vol curve stored at this slot can also be re-assigned at any time with a button click.
- **Baseline**: The vol curve stored at this slot is user-defined and can be re-assigned at any time with a button click.

The "From" and "From Vol" columns display the date/time of the reference curve currently being used to calculate net changes, and the prior vol from that reference curve, respectively. When a new reference curve is established, the "Net Change" and "Net Change Range" columns will update accordingly. The "Net Change Range" columns are reset at the start of each new trading day; that is, the highs and lows displayed are the intraday highs and lows.

The user can choose to view the "Net Change" and "Net Change Range" columns in two different modes:
- **IV Units**: This option displays the raw difference in IVs: ($IV_{current} - IV_{reference}$)
- **Tick Units**: This option displays the raw difference in IVs transformed into approximate ATM tick units: $f(IV_{current} - IV_{reference})$. The function $f(x)$ is a robust and uniquely derived normalizing function that works accurately in all products and time-to-expiration horizons. It does _not_ suffer from any of the deficiencies that can occur when using simple vega ratios.

Users can toggle between the two display options with the click of a button and the relevant columns will update on the fly.

"Changes By Delta" Grid

The "Changes By Delta" grid allows the user to view IVs, net changes, and net change ranges (from either reference curve) on a delta axis (i.e., perspective). The 9 delta points used are symmetric and user-defined via the *"delta_points"* Configure screen setting. For example, if this setting is "35,25,15,5", then the 9 (out of the money) delta points displayed by the algo will be: { -5Δ, -15Δ, -25Δ, -35Δ, 50Δ, 35Δ, 25Δ, 15Δ, 5Δ }. The "Nearest Strike" column will also display the closest strike to each delta point.

Vol Levels Dashboard

Changes By Delta

#	Key ▲	Expiry	Delta	Nearest Strike	Current Vol	Current Vol Range	Net Change	Net Change Range	From Vol	From
1	001. LO 2019-07-17	Aug19	-5	48.5	50.37	50.37 / 50.37	5.18	-1.19 / 7.34	45.18	baseline (06/27 05:18 PM)
2	002. LO 2019-07-17	Aug19	-15	53.0	43.58	43.58 / 43.58	3.79	-1.00 / 5.32	39.79	baseline (06/27 05:18 PM)
3	003. LO 2019-07-17	Aug19	-25	55.0	41.33	41.33 / 41.33	3.61	-0.86 / 4.72	37.72	baseline (06/27 05:18 PM)
4	004. LO 2019-07-17	Aug19	-35	56.5	39.69	39.69 / 39.69	3.29	-0.71 / 4.37	36.40	baseline (06/27 05:18 PM)
5	005. LO 2019-07-17	Aug19	50	58.5	38.08	38.08 / 38.08	2.79	-0.66 / 3.79	35.29	baseline (06/27 05:18 PM)
6	006. LO 2019-07-17	Aug19	35	60.5	36.95	36.95 / 36.95	2.48	-0.55 / 3.48	34.47	baseline (06/27 05:18 PM)
7	007. LO 2019-07-17	Aug19	25	62.0	36.31	36.31 / 36.31	2.12	-0.47 / 3.18	34.19	baseline (06/27 05:18 PM)
8	008. LO 2019 07 17	Aug19	15	63.5	36.09	36.09 / 36.09	1.45	0.67 / 2.38	34.64	baseline (06/27 05:18 PM)
9	009. LO 2019-07-17	Aug19	5	67.5	37.71	37.71 / 37.71	0.57	-1.61 / 1.83	37.14	baseline (06/27 05:18 PM)
10	010.									
11	011. LO 2019-08-15	Sep19	-5	44.5	45.50	45.50 / 45.50	2.71	-0.63 / 4.16	42.79	baseline (06/27 05:18 PM)
12	012. LO 2019 08 15	Sep19	15	50.0	40.36	40.36 / 40.36	2.24	0.75 / 3.29	38.12	baseline (06/27 05:18 PM)
13	013. LO 2019-08-15	Sep19	-25	53.5	37.94	37.94 / 37.94	2.08	-0.53 / 2.97	35.85	baseline (06/27 05:18 PM)
14	014. LO 2019-08-15	Sep19	-35	55.5	36.20	36.20 / 36.20	1.90	-0.47 / 2.74	34.30	baseline (06/27 05:18 PM)
15	015. LO 2019-08-15	Sep19	50	58.5	34.32	34.32 / 34.32	1.59	-0.31 / 2.35	32.73	baseline (06/27 05:18 PM)
16	016. LO 2019 08 15	Sep19	35	61.0	33.00	33.00 / 33.00	1.38	0.23 / 2.11	31.62	baseline (06/27 05:18 PM)
17	017. LO 2019-08-15	Sep19	25	63.0	32.21	32.21 / 32.21	1.10	-0.25 / 1.87	31.11	baseline (06/27 05:18 PM)
18	018. LO 2019-08-15	Sep19	15	66.0	31.58	31.58 / 31.58	0.74	-0.43 / 1.57	30.84	baseline (06/27 05:18 PM)
19	019. LO 2019-08-15	Sep19	5	71.0	32.04	32.04 / 32.04	-0.13	-0.85 / 1.03	32.18	baseline (06/27 05:18 PM)
20	020.									
21	021. LO 2019-09-17	Oct19	-5	42.0	43.96	43.96 / 43.96	2.36	-0.67 / 2.08	41.60	baseline (06/27 05:18 PM)
22	022. LO 2019-09-17	Oct19	-15	48.5	38.95	38.95 / 38.95	1.96	-0.63 / 2.29	37.00	baseline (06/27 05:18 PM)
23	023. LO 2019-09-17	Oct19	-25	52.5	36.47	36.47 / 36.47	1.88	-0.58 / 2.14	34.59	baseline (06/27 05:18 PM)
24	024. LO 2019-09-17	Oct19	-35	55.0	34.64	34.64 / 34.64	1.71	-0.53 / 1.93	32.93	baseline (06/27 05:18 PM)
25	025. LO 2019-09-17	Oct19	50	50.5	32.60	32.60 / 32.60	1.39	-0.49 / 1.65	31.22	baseline (06/27 05:18 PM)
26	026. LO 2019-09-17	Oct19	35	62.0	31.06	31.06 / 31.06	1.17	-0.49 / 1.43	29.90	baseline (06/27 05:18 PM)
27	027. LO 2019-09-17	Oct19	25	64.5	30.19	30.19 / 30.19	0.93	-0.48 / 1.23	29.25	baseline (06/27 05:18 PM)
28	028. LO 2019-09-17	Oct19	15	67.5	29.52	29.52 / 29.52	0.64	-0.54 / 0.97	28.88	baseline (06/27 05:18 PM)
29	029. LO 2019-09-17	Oct19	5	74.0	29.92	29.92 / 29.92	0.14	-0.73 / 0.64	29.78	baseline (06/27 05:18 PM)
30	030.									
31	031. LO 2019-10-17	Nov19	-5	40.5	42.62	42.62 / 42.62	1.44	-0.57 / 2.15	41.18	baseline (06/27 05:18 PM)
32	032. LO 2019-10-17	Nov19	-15	48.0	37.69	37.69 / 37.69	1.36	-0.58 / 1.93	36.33	baseline (06/27 05:18 PM)
33	033. LO 2019-10-17	Nov19	-25	52.0	35.27	35.27 / 35.27	1.34	-0.55 / 1.82	33.93	baseline (06/27 05:18 PM)
34	034. LO 2019-10-17	Nov19	-35	55.0	33.42	33.42 / 33.42	1.25	-0.51 / 1.70	32.17	baseline (06/27 05:18 PM)
35	035. LO 2019-10-17	Nov19	50	59.0	31.33	31.33 / 31.33	1.07	-0.46 / 1.44	30.27	baseline (06/27 05:18 PM)
36	036. LO 2019-10-17	Nov19	35	63.0	29.65	29.65 / 29.65	0.86	-0.49 / 1.24	28.79	baseline (06/27 05:18 PM)
37	037. LO 2019-10-17	Nov19	25	66.0	28.72	28.72 / 28.72	0.66	-0.50 / 1.07	28.06	baseline (06/27 05:18 PM)
38	038. LO 2019-10-17	Nov19	15	69.5	28.07	28.07 / 28.07	0.46	-0.53 / 0.82	27.61	baseline (06/27 05:18 PM)
39	039. LO 2019-10-17	Nov19	5	77.5	28.99	28.99 / 28.99	0.07	-0.97 / 0.28	28.92	baseline (06/27 05:18 PM)
40	040.									
41	041. LO 2019-11-15	Dec19	-5	39.5	41.13	41.13 / 41.13	1.20	-0.39 / 1.95	39.93	baseline (06/27 05:18 PM)
42	042. LO 2019-11-15	Dec19	-15	47.0	36.57	36.57 / 36.57	1.13	-0.47 / 1.70	35.44	baseline (06/27 05:18 PM)
43	043. LO 2019-11-15	Dec19	-25	51.5	34.39	34.39 / 34.39	1.17	-0.47 / 1.67	33.22	baseline (06/27 05:18 PM)
44	044. LO 2019-11-15	Dec19	-35	55.0	32.65	32.65 / 32.65	1.10	-0.44 / 1.54	31.55	baseline (06/27 05:18 PM)
45	045. LO 2019-11-15	Dec19	50	59.0	30.61	30.61 / 30.61	1.01	-0.42 / 1.33	29.60	baseline (06/27 05:18 PM)
46	046. LO 2019-11-15	Dec19	35	63.5	28.81	28.81 / 28.81	0.84	-0.47 / 1.14	27.97	baseline (06/27 05:18 PM)
47	047. LO 2019-11-15	Dec19	25	66.5	27.80	27.80 / 27.80	0.68	-0.48 / 0.98	27.12	baseline (06/27 05:18 PM)
48	048. LO 2019-11-15	Dec19	15	70.5	27.08	27.08 / 27.08	0.54	-0.50 / 0.82	26.54	baseline (06/27 05:18 PM)
49	049. LO 2019-11-15	Dec19	5	79.0	28.14	28.14 / 28.14	0.39	-0.79 / 0.41	27.76	baseline (06/27 05:18 PM)
50	050.									

Set

Set New Baseline

Set New EOD

Discard Changes   Apply Changes

Changes By Delta | Changes By Strike | Changes By Sigma | Current Vols | Relative Value By Delta | Relative Value By Sigma

Display   Set

"Changes By Strike" Grid

The "Changes By Strike" grid allows the user to view IVs, net changes, and net change ranges (from either reference curve) on a strike axis (i.e., perspective). The 9 strikes used are those corresponding to the *current* nearest strikes of the user-defined delta points from the *"delta_points"* Configure screen setting. For example, for the center delta (50Δ) point, let's imagine strike 1330.0 is currently the nearest strike to 50Δ. Then the net change at this strike will be calculated as: $(IV@1330_{current} - IV@1330_{reference})$, regardless of whether the historical delta at $1330_{reference}$ was 50 or not. In this sense, the "Changes By Delta" grid and the "Changes By Strike" grid offer complimentary "floating" and "sticky" perspectives into IV, respectively.

Vol Levels Dashboard

Changes By Strike

	Key ▲	Expiry	Strike	Current Vol	Current Vol Range	Net Chan...	Net Change Range	From Vol	From
1	001. LO 2019-07-17	Aug19	48.5	50.51	50.51 / 50.51	2.71	-0.96 / 3.59	47.80	baseline (06/27 05:18 PM)
2	002. LO 2019-07-17	Aug19	53.0	43.37	43.37 / 43.37	2.44	-0.89 / 3.17	40.93	baseline (06/27 05:18 PM)
3	003. LO 2019-07-17	Aug19	55.0	41.24	41.24 / 41.24	2.50	-0.83 / 3.13	38.74	baseline (06/27 05:18 PM)
4	004. LO 2019-07-17	Aug19	56.5	39.68	39.68 / 39.68	2.44	-0.72 / 3.08	37.24	baseline (06/27 05:18 PM)
5	005. LO 2019-07-17	Aug19	58.5	38.05	38.05 / 38.05	2.28	-0.67 / 3.07	35.77	baseline (06/27 05:18 PM)
6	006. LO 2019-07-17	Aug19	60.5	36.87	36.87 / 36.87	2.07	-0.54 / 2.95	34.80	baseline (06/27 05:18 PM)
7	007. LO 2019 07 17	Aug19	62.0	36.24	36.24 / 36.24	1.95	0.46 / 2.92	34.29	baseline (06/27 05:18 PM)
8	008. LO 2019-07-17	Aug19	63.5	36.08	36.08 / 36.08	1.82	-0.74 / 2.76	34.26	baseline (06/27 05:18 PM)
9	009. LO 2019-07-17	Aug19	67.5	37.84	37.84 / 37.84	1.66	-1.13 / 2.97	36.18	baseline (06/27 05:18 PM)
10	010.								
11	011. LO 2019-08-15	Sep19	44.5	45.62	45.62 / 45.62	1.18	-0.44 / 2.23	44.45	baseline (06/27 05:18 PM)
12	012. LO 2019-08-15	Sep19	50.0	40.55	40.55 / 40.55	1.04	-0.45 / 1.92	39.51	baseline (06/27 05:18 PM)
13	013. LO 2019-08-15	Sep19	53.5	37.76	37.76 / 37.76	1.00	-0.43 / 1.83	36.76	baseline (06/27 05:18 PM)
14	014. LO 2019 08 15	Sep19	55.5	36.24	36.24 / 36.24	0.97	0.40 / 1.74	35.27	baseline (06/27 05:18 PM)
15	015. LO 2019-08-15	Sep19	58.5	34.25	34.25 / 34.25	0.88	-0.25 / 1.62	33.36	baseline (06/27 05:18 PM)
16	016. LO 2019-08-15	Sep19	61.0	33.06	33.06 / 33.06	0.88	-0.23 / 1.60	32.18	baseline (06/27 05:18 PM)
17	017. LO 2019-08-15	Sep19	63.0	32.26	32.26 / 32.26	0.83	-0.25 / 1.61	31.44	baseline (06/27 05:18 PM)
18	018. LO 2019-08-15	Sep19	66.0	31.55	31.55 / 31.55	0.65	-0.41 / 1.49	30.91	baseline (06/27 05:18 PM)
19	019. LO 2019-08-15	Sep19	71.0	32.09	32.09 / 32.09	0.54	-0.65 / 1.54	31.55	baseline (06/27 05:18 PM)
20	020.								
21	021. LO 2019 09 17	Oct19	42.0	43.89	43.89 / 43.89	1.14	0.43 / 1.55	42.74	baseline (06/27 05:18 PM)
22	022. LO 2019-09-17	Oct19	48.5	39.00	39.00 / 39.00	0.92	-0.45 / 1.21	38.08	baseline (06/27 05:18 PM)
23	023. LO 2019-09-17	Oct19	52.5	36.30	36.30 / 36.30	0.97	-0.40 / 1.20	35.33	baseline (06/27 05:18 PM)
24	024. LO 2019-09-17	Oct19	55.0	34.67	34.67 / 34.67	0.92	-0.38 / 1.13	33.76	baseline (06/27 05:18 PM)
25	025. LO 2019-09-17	Oct19	58.5	32.59	32.59 / 32.59	0.77	-0.34 / 1.02	31.81	baseline (06/27 05:18 PM)
26	026. LO 2019-09-17	Oct19	62.0	31.00	31.00 / 31.00	0.72	-0.40 / 0.99	30.28	baseline (06/27 05:18 PM)
27	027. LO 2019-09-17	Oct19	64.5	30.14	30.14 / 30.14	0.62	-0.45 / 0.92	29.51	baseline (06/27 05:18 PM)
28	028. LO 2019 09 17	Oct19	67.5	29.52	29.52 / 29.52	0.55	0.54 / 0.88	28.97	baseline (06/27 05:18 PM)
29	029. LO 2019-09-17	Oct19	74.0	29.97	29.97 / 29.97	0.54	-0.51 / 0.97	29.43	baseline (06/27 05:18 PM)
30	030.								
31	031. LO 2019-10-17	Nov19	40.5	42.54	42.54 / 42.54	0.79	-0.41 / 1.19	41.75	baseline (06/27 05:18 PM)
32	032. LO 2019-10-17	Nov19	48.0	37.57	37.57 / 37.57	0.76	-0.33 / 1.02	36.81	baseline (06/27 05:18 PM)
33	033. LO 2019-10-17	Nov19	52.0	35.25	35.25 / 35.25	0.85	-0.35 / 1.04	34.40	baseline (06/27 05:18 PM)
34	034. LO 2019-10-17	Nov19	55.0	33.52	33.52 / 33.52	0.77	-0.31 / 0.92	32.75	baseline (06/27 05:18 PM)
35	035. LO 2019 10 17	Nov19	59.0	31.36	31.36 / 31.36	0.72	0.28 / 0.79	30.64	baseline (06/27 05:18 PM)
36	036. LO 2019-10-17	Nov19	63.0	29.63	29.63 / 29.63	0.66	-0.40 / 0.80	28.97	baseline (06/27 05:18 PM)
37	037. LO 2019-10-17	Nov19	66.0	28.67	28.67 / 28.67	0.53	-0.45 / 0.77	28.14	baseline (06/27 05:18 PM)
38	038. LO 2019-10-17	Nov19	69.5	28.07	28.07 / 28.07	0.43	-0.53 / 0.72	27.64	baseline (06/27 05:18 PM)
39	039. LO 2019-10-17	Nov19	77.5	29.03	29.03 / 29.03	0.31	-0.68 / 0.81	28.72	baseline (06/27 05:18 PM)
40	040.								
41	041. LO 2019-11-15	Dec19	39.5	40.97	40.97 / 40.97	0.71	-0.28 / 1.04	40.26	baseline (06/27 05:18 PM)
42	042. LO 2019 11 15	Dec19	47.0	36.59	36.59 / 36.59	0.72	0.27 / 0.89	35.87	baseline (06/27 05:18 PM)
43	043. LO 2019-11-15	Dec19	51.5	34.36	34.36 / 34.36	0.81	-0.25 / 0.93	33.56	baseline (06/27 05:18 PM)
44	044. LO 2019-11-15	Dec19	55.0	32.60	32.60 / 32.60	0.76	-0.22 / 0.83	31.85	baseline (06/27 05:18 PM)
45	045. LO 2019-11-15	Dec19	59.0	30.65	30.65 / 30.65	0.75	-0.21 / 0.75	29.91	baseline (06/27 05:18 PM)
46	046. LO 2019-11-15	Dec19	63.5	28.73	28.73 / 28.73	0.65	-0.35 / 0.70	28.07	baseline (06/27 05:18 PM)
47	047. LO 2019-11-15	Dec19	66.5	27.76	27.76 / 27.76	0.56	-0.40 / 0.67	27.20	baseline (06/27 05:18 PM)
48	048. LO 2019-11-15	Dec19	70.5	27.06	27.06 / 27.06	0.50	-0.49 / 0.71	26.55	baseline (06/27 05:18 PM)
49	049. LO 2019 11 15	Dec19	79.0	28.14	28.14 / 28.14	0.57	0.64 / 0.86	27.57	baseline (06/27 05:18 PM)
50	050.								

Display

IV Units
Tick Units
From EOD
From Baseline

Discard Changes | Apply Changes

Changes By Delta | Changes By Strike | Changes By Sigma | Current Vols | Relative Value By Delta | Relative Value By Sigma | Display | Set

"Changes By Sigma" Grid

The "Changes By Sigma" grid allows the user to view IVs, net changes, and net change ranges (from either reference curve) on a sigma axis (i.e., perspective). The term "sigma" here is synonymous with "standard deviation." The Configure screen setting *"sigma_points_calc"* specifies whether a normal or lognormal calculation is used. The normal distribution is more applicable to Treasuries, rates, and currency products, whereas the lognormal distribution is more applicable to most other commodities that have an intrinsic physical value. The lognormal distribution creates a slight asymmetry where extreme downward moves are somewhat less likely than extreme upward moves; this can be understood as physical commodities having a non-zero intrinsic value which prevents prices from ever reaching values close to zero (but prices may be theoretically unbounded on the upside). The allowed values for the *"sigma_points_calc"* setting are:

- 0 = **Normal (standardized simple moneyness)**. The calculation of the sigma points uses the following formula: $((K/S) - 1) / (\sigma\sqrt{T})$
- 1 = **Lognormal (standardized log moneyness)**. The calculation of the sigma points uses the following formula: $\ln(K/S) / (\sigma\sqrt{T})$

The 9 sigma points used are symmetric and user-defined via the *"sigma_points"* Configure screen setting. For example, if this setting is "1.0,2.0,2.5,3.0", then the 9 sigma (or standard deviation) points displayed by the algo will be: { -3.0σ, -2.5σ, -2.0σ, -1.0σ, 0.0σ, 1.0σ, 2.0σ, 2.5σ, 3.0σ }. The "Nearest Strike" column will also display the closest strike to each sigma point.

Vol Levels Dashboard

Changes By Sigma

#	Key ▲	Expiry	Sigma	Nearest Strike	Current ...	Current Vol Range	Net Cha...	Net Change Range	From Vol	From
1	001. LO 2019-07-17	Aug19	2.00	49.5	48.46	48.46 / 48.46	3.94	0.95 / 6.98	44.52	baseline (06/27 05:18 PM)
2	002. LO 2019-07-17	Aug19	-1.50	51.5	45.17	45.17 / 45.17	3.61	-0.93 / 6.11	41.56	baseline (06/27 05:18 PM)
3	003. LO 2019-07-17	Aug19	-1.00	54.0	42.57	42.57 / 42.57	3.51	-0.93 / 5.21	39.06	baseline (06/27 05:18 PM)
4	004. LO 2019-07-17	Aug19	0.50	56.0	40.19	40.19 / 40.19	3.31	0.72 / 4.63	36.88	baseline (06/27 05:18 PM)
5	005. LO 2019-07-17	Aug19	0.00	58.5	38.22	38.22 / 38.22	2.83	-0.66 / 3.85	35.38	baseline (06/27 05:18 PM)
6	006. LO 2019-07-17	Aug19	0.50	60.5	36.81	36.81 / 36.81	2.44	-0.51 / 3.34	34.37	baseline (06/27 05:18 PM)
7	007. LO 2019-07-17	Aug19	1.00	63.0	36.09	36.09 / 36.09	1.61	-0.60 / 2.54	34.40	baseline (06/27 05:18 PM)
8	008. LO 2019-07-17	Aug19	1.50	65.5	36.75	36.75 / 36.75	0.97	-0.87 / 2.49	35.78	baseline (06/27 05:18 PM)
9	009. LO 2019-07-17	Aug19	2.00	68.5	38.52	38.52 / 38.52	0.62	-1.13 / 2.49	37.91	baseline (06/27 05:18 PM)
10	010.									
11	011. LO 2019-08-15	Sep19	-2.00	45.5	44.68	44.68 / 44.68	2.36	-0.58 / 4.00	42.32	baseline (06/27 05:18 PM)
12	012. LO 2019-08-15	Sep19	-1.50	48.5	42.00	42.00 / 42.00	2.14	-0.60 / 3.59	39.86	baseline (06/27 05:18 PM)
13	013. LO 2019-08-15	Sep19	-1.00	51.5	39.49	39.49 / 39.49	2.08	-0.65 / 3.22	37.41	baseline (06/27 05:18 PM)
14	014. LO 2019-08-15	Sep19	-0.50	54.5	36.98	36.98 / 36.98	1.98	-0.46 / 2.89	35.00	baseline (06/27 05:18 PM)
15	015. LO 2019-08-15	Sep19	0.00	58.0	34.55	34.55 / 34.55	1.62	-0.30 / 2.42	32.93	baseline (06/27 05:18 PM)
16	016. LO 2019-08-15	Sep19	0.50	61.5	32.82	32.82 / 32.82	1.37	-0.21 / 2.05	31.45	baseline (06/27 05:18 PM)
17	017. LO 2019-08-15	Sep19	1.00	65.5	31.65	31.65 / 31.65	0.80	-0.42 / 1.60	30.85	baseline (06/27 05:18 PM)
18	018. LO 2019-08-15	Sep19	1.50	69.5	31.73	31.73 / 31.73	0.20	-0.58 / 1.30	31.53	baseline (06/27 05:18 PM)
19	019. LO 2019-08-15	Sep19	2.00	74.0	33.29	33.29 / 33.29	-0.08	-0.42 / 1.54	33.38	baseline (06/27 05:18 PM)
20	020.									
21	021. LO 2019-09-17	Oct19	-2.00	42.5	43.33	43.33 / 43.33	2.09	-0.59 / 2.82	41.24	baseline (06/27 05:18 PM)
22	022. LO 2019-09-17	Oct19	-1.50	46.0	40.78	40.78 / 40.78	1.91	-0.66 / 2.44	38.87	baseline (06/27 05:18 PM)
23	023. LO 2019-09-17	Oct19	-1.00	49.5	38.19	38.19 / 38.19	1.87	-0.60 / 2.30	36.32	baseline (06/27 05:18 PM)
24	024. LO 2019-09-17	Oct19	-0.50	53.5	35.59	35.59 / 35.59	1.79	-0.54 / 2.09	33.79	baseline (06/27 05:18 PM)
25	025. LO 2019-09-17	Oct19	0.00	58.0	32.95	32.95 / 32.95	1.46	-0.49 / 1.70	31.50	baseline (06/27 05:18 PM)
26	026. LO 2019-09-17	Oct19	0.50	62.5	30.84	30.84 / 30.84	1.12	-0.49 / 1.37	29.72	baseline (06/27 05:18 PM)
27	027. LO 2019-09-17	Oct19	1.00	67.5	29.55	29.55 / 29.55	0.66	-0.54 / 0.96	28.89	baseline (06/27 05:18 PM)
28	028. LO 2019-09-17	Oct19	1.50	72.5	29.63	29.63 / 29.63	0.22	-0.67 / 0.76	29.41	baseline (06/27 05:18 PM)
29	029. LO 2019-09-17	Oct19	2.00	78.5	31.70	31.70 / 31.70	0.18	-0.53 / 0.92	31.52	baseline (06/27 05:18 PM)
30	030.									
31	031. LO 2019-10-17	Nov19	-2.00	41.5	42.00	42.00 / 42.00	1.26	-0.58 / 2.17	40.74	baseline (06/27 05:18 PM)
32	032. LO 2019-10-17	Nov19	-1.50	45.0	39.49	39.49 / 39.49	1.22	-0.56 / 2.02	38.26	baseline (06/27 05:18 PM)
33	033. LO 2019-10-17	Nov19	-1.00	49.0	36.90	36.90 / 36.90	1.23	-0.55 / 1.95	35.68	baseline (06/27 05:18 PM)
34	034. LO 2019-10-17	Nov19	-0.50	53.5	34.41	34.41 / 34.41	1.22	-0.57 / 1.77	33.19	baseline (06/27 05:18 PM)
35	035. LO 2019-10-17	Nov19	0.00	58.5	31.73	31.73 / 31.73	1.08	-0.47 / 1.50	30.65	baseline (06/27 05:18 PM)
36	036. LO 2019-10-17	Nov19	0.50	63.5	29.44	29.44 / 29.44	0.04	-0.50 / 1.19	29.59	baseline (06/27 05:18 PM)
37	037. LO 2019-10-17	Nov19	1.00	69.0	28.10	28.10 / 28.10	0.48	-0.54 / 0.80	27.62	baseline (06/27 05:18 PM)
38	038. LO 2019-10-17	Nov19	1.50	75.5	28.49	28.49 / 28.49	0.17	0.60 / 0.49	28.31	baseline (06/27 05:18 PM)
39	039. LO 2019-10-17	Nov19	2.00	82.5	31.10	31.10 / 31.10	0.36	-0.55 / 0.88	30.74	baseline (06/27 05:18 PM)
40	040.									
41	041. LO 2019-11-15	Dec19	-2.00	39.5	40.83	40.83 / 40.83	1.17	-0.48 / 1.96	39.66	baseline (06/27 05:18 PM)
42	042. LO 2019-11-15	Dec19	-1.50	43.5	38.37	38.37 / 38.37	1.07	-0.49 / 1.81	37.30	baseline (06/27 05:18 PM)
43	043. LO 2019-11-15	Dec19	-1.00	48.0	36.05	36.05 / 36.05	1.09	-0.48 / 1.71	34.95	baseline (06/27 05:18 PM)
44	044. LO 2019-11-15	Dec19	-0.50	53.0	33.70	33.70 / 33.70	1.11	-0.48 / 1.62	32.58	baseline (06/27 05:18 PM)
45	045. LO 2019-11-15	Dec19	0.00	58.0	31.05	31.05 / 31.05	1.02	-0.45 / 1.42	30.03	baseline (06/27 05:18 PM)
46	046. LO 2019-11-15	Dec19	0.50	64.0	28.58	28.58 / 28.58	0.82	-0.49 / 1.09	27.76	baseline (06/27 05:18 PM)
47	047. LO 2019-11-15	Dec19	1.00	70.5	27.08	27.08 / 27.08	0.54	-0.51 / 0.80	26.54	baseline (06/27 05:18 PM)
48	048. LO 2019-11-15	Dec19	1.50	77.5	27.63	27.63 / 27.63	0.42	-0.56 / 0.63	27.20	baseline (06/27 05:18 PM)
49	049. LO 2019-11-15	Dec19	2.00	85.0	30.43	30.43 / 30.43	0.50	-0.58 / 0.74	29.93	baseline (06/27 05:18 PM)
50	050.									

Display: IV Units | Tick Units | From EOD | From Baseline

Discard Changes | Apply Changes

Changes By Delta | Changes By Strike | Changes By Sigma | Current Vols | Relative Value By Delta | Relative Value By Sigma | Display | Set

"Current Vols" Grid

The "Current Vols" grid displays the current vols on a delta basis, and some related metrics, for each monitored expiration. This grid does not display net changes and thus does not react to the assigned reference curve. Most of the columns are self-explanatory; more details are provided on some of the columns below:

- The "Cheapest Strike" column displays the strike with the lowest IV on the vol curve, followed by its current IV and delta.
- The "Normalized Skew" column displays a widely used calculation for a vol curve's skew: (25Δ Call IV – 25Δ Put IV) / 50Δ IV. Note that dividing by the 50Δ IV allows the user to measure all skews in the term structure on a standardized basis, independent of the level of volatility in any single expiration.

This grid is very similar to the dashboard found in the Dynamic Skew algo. One difference is that the IV differentials of the 25Δ and 5Δ points in this grid can also be displayed in ATM "Tick Units", which shows the current premium or discount in ATM equivalent ticks at the respective delta points.

Relative Value Grids

The two relative value grids ("Relative Value By Delta" and "Relative Value By Sigma") display scaled IVs (IV ratios) across the term structure in standardized terms. Scaled IVs adjust for the often significant differences in the ATM IVs of each expiration and are expressed as a percentage (%) premium or discount to the 50Δ ("By Delta") or ATM ("By Sigma") point. This methodology is also effective when comparing skews between multiple, similar exchange-traded products. For example, at the time of writing, the ATM IV of the October 2019 expiration in WTI crude oil is 36.32%, whereas Brent crude oil at the same expiration has an ATM IV of 34.67%.

The expirations are listed in chronological order within these two grids. A maximum of 7 expirations will be displayed; these will be the nearest expirations in time. Note that monthly and weekly expirations will be grouped separately; this scheme prevents any monitored weekly options from taking too many expiration slots away from the monthly options. The same delta points and sigma points are used as in the "Changes By Delta" and "Changes By Sigma" grids.

"Skew & Kurtosis" Grid

This grid displays other sophisticated, but widely used, metrics that quantify IV skew and kurtosis. These metrics help capture the dynamics and nuances of the IV surface.

- **SK10 Skew**: [(100% ATM Strike IV) - (90% Strike IV)] * √T
  - The square root of time factor normalizes same strike skews across a term structure.
  - Very applicable to equity option IV curves given their similar steep downside slopes.
- **Moneyness Skew**: (110% Strike IV) - (90% Strike IV)
  - Popular for fixed strike skews exhibited by stock and equity index IV curves.
  - Sensitive to IV at lower levels of IV, showing strong correlation to levels of volatility.
- **OTM Kurtosis**: (90% IV + 110% IV) / (2 * 100% ATM Strike IV)
  - This ratio compares strikes 10% OTM with the ATM strike.
- **25d Butterfly**: (25Δ Call IV + 25Δ Put IV) / (2 * 50Δ IV)
  - The inner curve butterfly ratio.
- **1 Sigma Butterfly**: (1.0σ Call IV + 1.0σ Put IV) / (2 * 0.0σ ATM Strike IV)
  - Butterfly ratio at the 1σ (i.e., 1 standard deviation) point away from ATM.
  - 1.0σ may approximate the area on the curve near ≈16Δ.
- **5d Wing Kurtosis**: (5Δ Call IV + 5Δ Put IV) / (2 * 50Δ IV)
  - Widely used data points to measure kurtosis of a vol curve.
  - Often close proximity to the ≈|2σ| points.

Vol Levels Dashboard

Skew & Kurtosis

Key ▲	Expiry	SK10 Ske...	SK10 Skew Range	Moneyne...	Moneyness Skew Range	OTM Kurt...	OTM Kurtosis Range	25d Butt...	25d Butterfly Range	1 Sigma B...	1 Sigma Butterfly Range	5d Wing...	5d Wing Kurtosis...	From
1 001. "LO"	Sep19	-1.47	-1.51 / -1.38	-10.61	-11.24 / -9.79	1.150	1.133 / 1.155	1.025	1.019 / 1.028	1.033	1.025 / 1.035	1.164	1.148 / 1.172	baseline (08/07 08:17 PM)
2 002. "LO"	Oct19	1.36	1.40 / 1.33	6.60	6.75 / 6.41	1.024	1.022 / 1.027	1.018	1.015 / 1.021	1.026	1.024 / 1.029	1.122	1.121 / 1.128	baseline (08/07 08:17 PM)
3 003. "LO"	Nov19	-1.27	-1.28 / -1.19	-5.08	-5.13 / -4.87	1.011	1.009 / 1.012	1.013	1.012 / 1.015	1.023	1.019 / 1.023	1.103	1.100 / 1.104	baseline (08/07 08:17 PM)
4 004. "LO"	Dec19	-1.23	-1.26 / -1.17	-4.43	-4.52 / -4.24	1.005	1.003 / 1.007	1.011	1.009 / 1.012	1.017	1.015 / 1.018	1.096	1.091 / 1.096	baseline (08/07 08:17 PM)
5 005. "LO"	Jan20	-1.27	-1.30 / -1.21	-4.32	-4.33 / -4.13	0.999	0.998 / 1.001	1.008	1.004 / 1.009	1.008	1.004 / 1.009	1.079	1.072 / 1.080	baseline (08/07 08:17 PM)
6 006. "LO"	Feb20	1.27	1.31 / 1.23	4.02	4.13 / 3.96	0.997	0.995 / 0.997	0.999	0.998 / 1.002	0.993	0.992 / 0.995	1.054	1.051 / 1.057	baseline (08/07 08:17 PM)
7 007. "LO"	Mar20	-1.34	-1.41 / -1.25	-3.91	-4.14 / -3.76	0.997	0.995 / 0.997	0.998	0.995 / 1.003	0.990	0.987 / 0.991	1.046	1.041 / 1.052	baseline (08/07 08:17 PM)
8 008. "LO"	Jun20	-1.23	-1.28 / -1.21	-3.26	-3.32 / -3.22	0.992	0.992 / 0.994	0.987	0.987 / 0.989	0.972	0.972 / 0.974	1.031	1.031 / 1.035	baseline (08/07 08:17 PM)

Display: IV Units, Tick Units, From EOD, From Baseline

Tabs: Changes By Delta | Changes By Strike | Changes By Sigma | Current Vols | Relative Value By Delta | Relative Value By Sigma | Skew & Kurtosis

"Butterflies" Grid

This grid displays detailed information on ten butterflies (5 put side, 5 call side) across the term structure. For convenience, the nearest strikes to each butterfly leg are also displayed. The butterfly vols are displayed in ratio format; e.g. the 10/20/30 Put butterfly vol is calculated as: (10Δ Put IV + 30Δ Put IV) / (2 * 20Δ Put IV). The vols are displayed in the cells with the following format: "current IV (low IV / high IV)", where the low and high IVs are tracked intraday.

Butterflies

	Expiry 1	Expiry 2	Expiry 3	Expiry 4	Expiry 5	Expiry 6	Expiry 7
001. "LO"	LO Jul21	LO Aug21	LO Sep21	LO Oct21	LO Nov21	LO Dec21	LO Jan22
002. "LO"	2021-06-17	2021-07-15	2021-08-17	2021-09-16	2021-10-15	2021-11-16	2021-12-15
003. "LO" 10/20/30 Put	1.020 (1.010 / 1.055)	1.024 (1.019 / 1.029)	1.024 (1.018 / 1.025)	1.022 (1.017 / 1.025)	1.018 (1.013 / 1.020)	1.014 (1.009 / 1.016)	1.009 (1.006 / 1.015)
004. "LO" 10/25/40 Put	1.036 (1.020 / 1.082)	1.041 (1.031 / 1.043)	1.037 (1.028 / 1.037)	1.035 (1.028 / 1.038)	1.030 (1.023 / 1.032)	1.025 (1.018 / 1.026)	1.016 (1.012 / 1.022)
005. "LO" 10/30/50 Put	1.058 (1.034 / 1.103)	1.059 (1.042 / 1.059)	1.049 (1.036 / 1.049)	1.048 (1.037 / 1.049)	1.043 (1.033 / 1.044)	1.037 (1.027 / 1.039)	1.026 (1.019 / 1.030)
006. "LO" 20/35/50 Put	1.032 (1.014 / 1.049)	1.023 (1.013 / 1.025)	1.016 (1.010 / 1.018)	1.017 (1.011 / 1.018)	1.017 (1.011 / 1.018)	1.016 (1.011 / 1.018)	1.013 (1.008 / 1.014)
007. "LO" 30/40/50 Put	1.015 (1.003 / 1.023)	1.008 (1.005 / 1.008)	1.006 (1.004 / 1.006)	1.006 (1.004 / 1.006)	1.006 (1.004 / 1.006)	1.006 (1.004 / 1.006)	1.005 (1.004 / 1.006)
008. "LO" 50/40/30 Call	1.012 (1.002 / 1.027)	1.006 (1.005 / 1.008)	1.006 (1.005 / 1.007)	1.006 (1.005 / 1.007)	1.006 (1.005 / 1.007)	1.007 (1.005 / 1.007)	1.007 (1.006 / 1.007)
009. "LO" 50/35/20 Call	1.030 (1.009 / 1.052)	1.020 (1.016 / 1.024)	1.019 (1.016 / 1.021)	1.019 (1.016 / 1.021)	1.020 (1.016 / 1.021)	1.020 (1.017 / 1.022)	1.022 (1.018 / 1.024)
010. "LO" 50/30/10 Call	1.084 (1.062 / 1.167)	1.072 (1.065 / 1.081)	1.059 (1.054 / 1.065)	1.059 (1.054 / 1.065)	1.060 (1.054 / 1.063)	1.064 (1.057 / 1.066)	1.067 (1.054 / 1.070)
011. "LO" 40/25/10 Call	1.062 (1.048 / 1.131)	1.058 (1.052 / 1.065)	1.045 (1.041 / 1.052)	1.045 (1.041 / 1.051)	1.046 (1.042 / 1.050)	1.049 (1.044 / 1.051)	1.051 (1.039 / 1.057)
012. "LO" 30/20/10 Call	1.034 (1.025 / 1.091)	1.043 (1.036 / 1.048)	1.030 (1.027 / 1.037)	1.030 (1.025 / 1.035)	1.030 (1.027 / 1.034)	1.032 (1.029 / 1.035)	1.034 (1.023 / 1.042)
013. "LO" 10/20/30 Put Strikes	70 / 71 / 71	62 / 66 / 68	57 / 62.5 / 66	54 / 60.5 / 64.5	51 / 58.5 / 63	48.5 / 56.5 / 61.5	46.5 / 54.5 / 60
014. "LO" 10/25/40 Put Strikes	70 / 71 / 71.5	62 / 67 / 70	57 / 64.5 / 68.5	54 / 62.5 / 67.5	51 / 60.5 / 66.5	48.5 / 59 / 65.5	46.5 / 57.5 / 64.5
015. "LO" 10/30/50 Put Strikes	70 / 71 / 72	62 / 68 / 71.5	57 / 66 / 71	54 / 64.5 / 70	51 / 63 / 69.5	48.5 / 61.5 / 68.5	46.5 / 60 / 68
016. "LO" 20/35/50 Put Strikes	71 / 71.5 / 72	66 / 69 / 71.5	62.5 / 67.5 / 71	60.5 / 66 / 70	58.5 / 64.5 / 69.5	56.5 / 63.5 / 68.5	54.5 / 62.5 / 68
017. "LO" 30/40/50 Put Strikes	71 / 71.5 / 72	68 / 70 / 71.5	66 / 68.5 / 71	64.5 / 67.5 / 70	63 / 66.5 / 69.5	61.5 / 65.5 / 68.5	60 / 64.5 / 68
018. "LO" 50/40/30 Call Strikes	72 / 72 / 72.5	71.5 / 73 / 75	71 / 73 / 75.5	70 / 72.5 / 75.5	69.5 / 72.5 / 75.5	60.5 / 72 / 75.5	60 / 71.5 / 75.5
019. "LO" 50/35/20 Call Strikes	72 / 72.5 / 73	71.5 / 74 / 77	71 / 74.5 / 78.5	70 / 74 / 79	69.5 / 74 / 79.5	68.5 / 74 / 80	68 / 73.5 / 80.5
020. "LO" 50/30/10 Call Strikes	72 / 72.5 / 73.5	71.5 / 75 / 80.5	71 / 75.5 / 83	70 / 75.5 / 84.5	69.5 / 75.5 / 86	68.5 / 75.5 / 87.5	68 / 75.5 / 88.5
021. "LO" 40/25/10 Call Strikes	72 / 72.5 / 73.5	73 / 76 / 80.5	73 / 77 / 83	72.5 / 77 / 84.5	72.5 / 77.5 / 86	72 / 77.5 / 87.5	71.5 / 78 / 88.5
022. "LO" 30/20/10 Call Strikes	72.5 / 73 / 73.5	75 / 77 / 80.5	75.5 / 78.5 / 83	75.5 / 79 / 84.5	75.5 / 79.5 / 86	75.5 / 80 / 87.5	75.5 / 80.5 / 88.5
023.							

Tabs: Changes By Delta | Changes By Strike | Changes By Sigma | Relative Value By Delta | Relative Value By Sigma | Butterflies

"Trade Performance" Grid

This grid allows the trader to track the intraday performance of individual trades for options or options strategies. Some of the information is redundant with that displayed in Metro's "Fills" window, however, other information is novel and also the "Trade

Performance" grid displays information on a trade basis (a trade may aggregate multiple fills). The "Init IV" and "Init Edge" columns show the initial IV and initial edge locked in at the time of the trade. The Live columns update periodically, however, displaying current values for each trade:

- "Live Price": the current price of the traded instrument
- "Live IV": the current IV of the traded instrument (and the change from "Init IV" is displayed after in parentheses)
- "Live C PL": the current per-contract (single contract) P/L dollar value. A delta-neutral hedge against the underlying at the time of the opening trade is assumed.
- "Live T PL": the current trade's P/L dollar value ("Live C PL" x traded qty)
- "Closing Edge": the current closing edge for the traded instrument

All columns are sortable, allowing different perspectives into the displayed data. Note that, for strategies, an alternative IV metric is displayed in the IV columns; this metric approximates the difference in the long legs' average IV and the short legs' average IV. Also note that information displayed in this grid is affected by the following nine Configure screen settings (see below for details):

- *"tp_update_freq"*
- *"tp_last_n_trades"*
- *"tp_min_trade_qty"*
- *"tp_live_PL_calc"*
- *"tp_min_hedging_res"*
- *"tp_filter_trader"*
- *"tp_filter_account"*
- *"tp_underlying_tick_$_vals"*
- *"tp_options_tick_$_vals"*

Trade Performance

|	Time	Instrument	Qty	Init Price	Init IV	Init Edge	Live Price	Live IV	Live C PL	Live T PL	Closing Edge	UPrice	Trader
001	02:40:29 PM	LO-Sep21 77C	2	1.46	28.44	0.499	1.46	28.40 (-0.04)	($-5)	($-9)	-1.678	72.625	RCD
002	02:40:29 PM	LO-Sep21 77C	4	1.46	28.44	0.499	1.46	28.40 (-0.04)	($-5)	($-19)	-1.678	72.625	RCD
003	02:40:29 PM	LO-Sep21 77C	4	1.46	28.44	0.499	1.46	28.40 (-0.04)	($-5)	($-19)	-1.678	72.625	RCD
004	02:40:18 PM	LO-Sep21 77C	4	1.46	28.46	0.857	1.46	28.40 (-0.06)	($-6)	($-25)	-1.678	72.62	RCD
005	02:02:41 PM	LO-Sep21 80C	11	0.81	29.29	0.819	0.78	28.62 (-0.67)	($-49)	($-537)	-1.672	72.545	RCD
006	01:33:57 PM	LO-Sep21 68P	-1	1.71	31.85	0.433	1.67	31.42 (-0.43)	$47	$47	-1.760	72.66	RCD
007	01:27:08 PM	LO-STRG Oct21 69 P :1	74.5 C :1	1	5.98		1.027	5.82		($-163)	($-163)	-2.689	71.75	RCD
008	01:27:07 PM	LO-STRG Oct21 69 P :1	74.5 C :1	1	5.98		1.027	5.82		($-163)	($-163)	-2.689	71.75	RCD
009	01:26:55 PM	LO-Aug21 67.5P	-12	0.56	34.08	0.249	0.53	33.62 (-0.46)	$25	$296	-1.152	73.255	RCD
010	01:08:26 PM	LO-Sep21 77.5C	-11	1.4	29.77	0.425	1.31	28.37 (-1.40)	$129	$1420	-1.668	72.475	RCD
011	12:46:43 PM	LO-Aug21 76.5C	-1	0.78	28.44	0.205	0.7	26.58 (-1.86)	$111	$111	-0.776	73.165	RCD
012	12:46:42 PM	LO-Aug21 76.5C	-1	0.78	28.44	0.205	0.7	26.58 (-1.86)	$111	$111	-0.776	73.165	RCD
013	12:46:42 PM	LO-Aug21 76.5C	-1	0.78	28.44	0.205	0.7	26.58 (-1.86)	$111	$111	-0.776	73.165	RCD
014	12:36:49 PM	LO-Aug21 80C	-2	0.27	30.58	0.204	0.22	28.45 (-2.13)	$70	$139	-1.201	73.125	RCD
015	12:01:08 PM	LO-Aug21 86C	-1	0.09	39.55	0.066	0.08	38.15 (-1.40)	$20	$20	-1.057	73.015	RCD
016	11:55:33 AM	LO-Aug21 64P	-1	0.28	37.91	0.164	0.24	37.34 (-0.56)	$21	$21	-0.700	73.115	RCD
017	11:21:52 AM	LO-Aug21 82C	-1	0.17	33.40	0.033	0.14	31.42 (-1.98)	$48	$48	-0.740	72.975	RCD
018	11:00:11 AM	LO-Aug21 62P	-1	0.18	39.87	0.182	0.16	39.66 (-0.21)	$12	$12	-0.767	73.195	RCD
019	10:50:15 AM	LO-Aug21 69P	5	0.88	33.08	0.233	0.75	32.14 (-0.94)	($-63)	($-317)	-0.924	73.025	RCD
020	10:28:34 AM	LO-Sep21 65P	-1	1.14	33.50	0.371	1.04	32.71 (-0.79)	$72	$72	-2.072	72.495	RCD

Discard Changes   Apply Changes

Trade Performance

Configuration Options

The example screenshot below shows the Configuration screen for a typical job instance. Note that only one VolLevels algo instance (a.k.a "job") is required to monitor any number of products and their expirations.
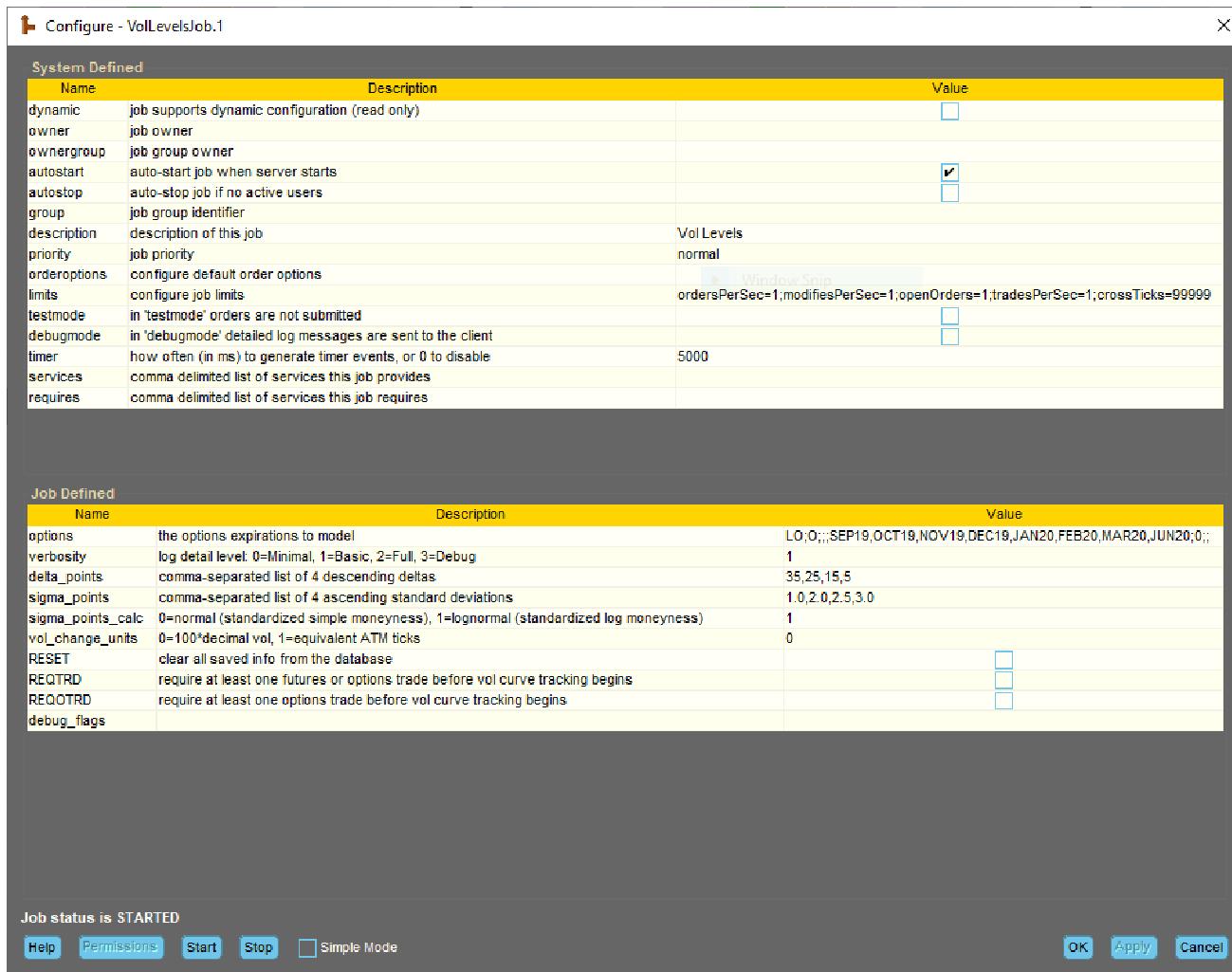
"options"

Double-click the value cell to pop open the Matcher Editor dialog. Click the "New" button to unlock the filter fields. Select the radio button for the options symbol, set "Type" to "Option", and then type in the comma-separated expirations codes for each expiration to monitor for that options symbol in the "Expires" fields. For example, the Expires field of "SEP19,DEC19,MAR20" would include the September 2019, December 2019, and March 2020 options expirations for the selected options symbol. Success can be confirmed by viewing a positive number of matches (number of matching outright contracts) at the bottom field (see image below). All other fields can be left blank or at

the default values. To include multiple options symbols for monitoring (for multiple products), just click the "New" button again and start adding the fields for the next options symbol.
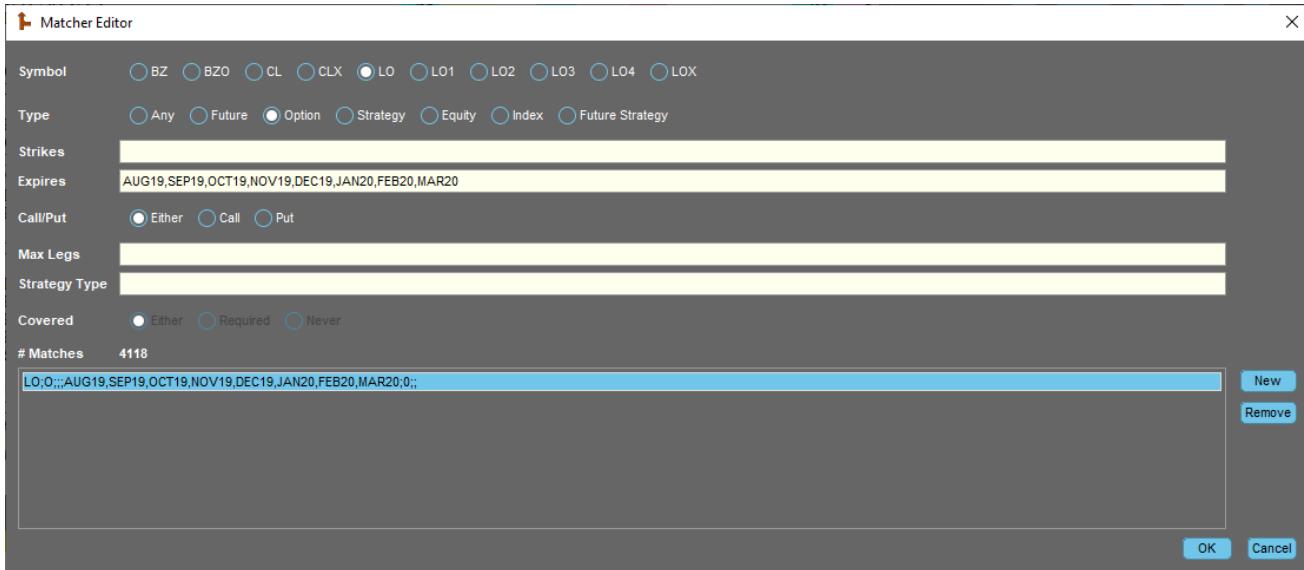
"verbosity"
An integer value that controls the level of detail reported in the log.

- 0: Minimal
- 1: Basic
- 2: Full
- 3: Debug (only useful for debugging)

Recommended initial value is 1 (Basic).

"delta_points"
A list of 4 descending OTM deltas in the range of 1-49. The default setting is "35,25,15,5". These points specify the positive (call side) half of the symmetric array of OTM delta points, where the 50 delta point is the implicit center point and the negative copies of these points compose the negative (put side) half. These delta points control the relevant columns and rows in various grids that show "by delta" perspectives, as well as the "Changes By Strike" grid that is also based on the nearest strikes to these delta points.

"sigma_points"
A list of 4 ascending standard deviations that are greater than 0.00. The default setting is "1.0,2.0,2.5,3.0". These points specify the positive (call side) half of the symmetric array of sigma points, where the 0.00 sigma point (ATM price) is the implicit center point and the negative copies of these points compose the negative (put side) half.

These delta points control the relevant columns and rows in various grids that show "by sigma" perspectives.

"sigma_points_calc"

This integer setting controls whether the sigma points are calculated via normal standardized moneyness (setting of 0) or lognormal standardized moneyness (setting of 1). The normal calculation may be more applicable to Treasuries, rates, and currency products; the lognormal calculation may be more appropriate for many other commodities representing a physical resource with some inherent value. See the "`Changes By Sigma' Grid" section for more detail.

"vol_change_units"

This integer value controls the initial units used by the algo to display net changes and net change ranges. The user can always toggle to different display units on-the-fly by clicking either the "IV Units" or "Tick Units" buttons, while the algo is running.
- 0 = **IV Units**: This option displays the raw difference in IVs: ($IV_{current}$ – $IV_{reference}$). The displayed values are formatted as 100.0 times the IV difference.
- 1= **Tick Units**: This option displays the raw difference in IVs transformed into approximate ATM tick units: $f(IV_{current} – IV_{reference})$. The function *f(x)* is a robust and uniquely derived normalizing function that works accurately in all products and time-to-expiration horizons. It does <u>not</u> suffer from any of the deficiencies that can occur when using simple vega ratios.

"tp_update_freq"

This 5+ integer value controls the number of seconds between periodic updates of the Live columns in the "Trade Performance" grid.

"tp_last_n_trades"

This integer value controls the number of most recent intraday trades to track in the "Trade Performance" grid. The allowed range is 1-999. The oldest displayed trade will roll off to make room for a new incoming trade.

"tp_min_trade_qty"

This 1+ integer values controls the minimum number of contracts required for a trade to be displayed in the "Trade Performance" grid. Any trades with a quantity less than this value will not be displayed.

"tp_live_PL_calc"

This dropdown choice setting allows the user to specify the preferred calculation method for certain Live columns (including P/L values) in the "Trade Performance" grid.
- **Mark to model**: Live values for tracked trades will be calculated using the current theoretical prices for the instrument. This is equivalent to the Metro tradesheets calculations and is the recommended setting.

- **Mark to market**: Live values for tracked trades will be calculated using the current market prices for the instrument. If a bid or ask price is missing on the required closing side, no value will be displayed.

"tp_min_hedging_res"

This decimal setting accepts a value between 0.0 and 1.0 and represents the rounding resolution to use on the assumed delta-neutralizing hedge against the underlying at the time of the initial trade. For example, a setting of 0.5 would round to the nearest half futures lot (e.g. 1.34 options delta would assume a 1.5 futures lots hedge). Or for example, a setting of 0.1 would round to the nearest tenth of a futures lot (e.g. 1.34 options delta would assume a 1.30 futures lots hedge). The default setting of 0.0 assumes a perfect resolution hedge (e.g. 1.34 options delta would assume a 1.34 futures lots hedge). Although fractional futures lots are not usually possible to trade on the exchange, at the portfolio level, the overall hedging of positions may approach a fine resolution from the perspective of any single trade. A setting greater than 0.0 does introduce some "noise" into the P/L dollar values; thus a setting of 0.0 is usually recommended for most traders.

"tp_filter_trader"

This optional text setting accepts a comma-separated list of traders for whom to display intraday trades in the "Trade Performance" grid. If this setting is blank, trades for all traders will be displayed. If one or more traders are specified here, only trades for those traders are eligible for display in the grid.

"tp_filter_account"

This optional text setting accepts a comma-separated list of trade accounts for which to display intraday trades in the "Trade Performance" grid. If this setting is blank, trades for all trade accounts will be displayed. If one or more accounts are specified here, only trades for those accounts are eligible for display in the grid.

"tp_underlying_tick_$_vals"

This optional text setting accepts a comma-separated list of key-value pairs, where the key is the underlying symbol and the value is the dollar value change for one lot changing by one minimum price increment. This information is used to calculate the Live P/L values in the "Trade Performance" grid. Many common underlying symbols and their corresponding tick $ values have already been hard-coded into the algo. However, the user can optionally add new values here (to add any missing symbols), or overwrite existing values (to correct any possible mistakes), using this field. For example, the setting of "CL=10.00,ZC=12.50" would assign the crude oil future a $10.00/tick value and the corn future a $12.50/tick value (both of these futures symbols are already hard-coded into the algo, so this hypothetical setting would actually be unnecessary). This setting will only be required if the user is trading unusual or niche underlying products that have not been previously hard-coded into the algo.

"tp_options_tick_$_vals"

This optional text setting accepts a comma-separated list of key-value pairs, where the key is the <u>options</u> symbol and the value is the dollar value change for one contract changing by one minimum price increment. This information is used to calculate the Live P/L values in the "Trade Performance" grid. For example, the setting of "LO=10.00,OZC=6.25" would assign the crude oil options a $10.00/tick value and the corn options a $6.25/tick value (both of these options symbols are already hard-coded into the algo, so this hypothetical setting would actually be unnecessary). This setting will only be required if the user is trading unusual or niche options products that have not been previously hard-coded into the algo.

"RESET"

This special flag tells the algo to reset any persisted information upon the next algo restart. While the range (high/low) information is automatically reset at the start of each new trading day, all tracked metrics, their ranges, and both reference curves are always stored in the database. This allows the algo to be restarted intraday with no loss of data. However, in certain rare cases, the user may wish to clear all saved data from the database and restart completely from scratch. One such case might be after an algo version update that is not backwards compatible.

"REQTRD"

This special flag requires the algo to observe at least one market trade in the options (or linked underlying future) before it begins tracking vol curves (i.e., looking for new vol curve publications). This flag could be useful if the user wishes to edit or alter published vol curves from the Model Settings page prior to market open but, however, would prefer these custom fits not to be seen or tracked by the VolLevels algo.

"REQOTRD"

This special flag is nearly identical to the *"REQTRD"* flag. The only difference is that this flag explicitly requires an options trade to be observed before it publishes the very first vol curve (observed underlying trades do not count). This flag could be useful if the underlying market is open when the options market is still closed and the user wishes to ignore any potential curve publications prior to the options market opening.

"debug_flags"

This text field allows the user to assign various optional rare flags controlling algo behavior. These flags are intended for development and troubleshooting purposes only.