RT Spread Scanner

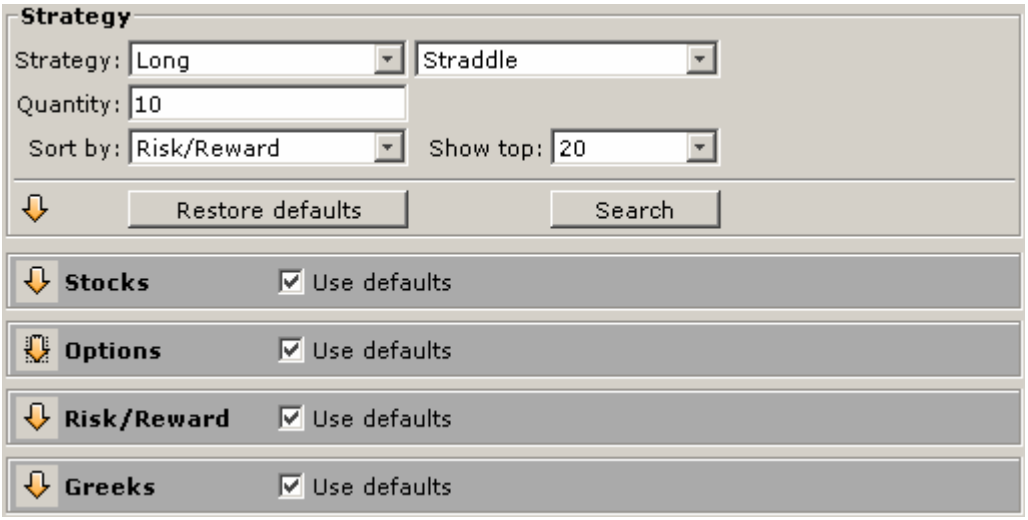
RT Spread Scanner service is a professional tool for scanning equity option universe for profit opportunities. It covers the most popular strategies, from plain naked or covered strategies and conversions to more sophisticated spreads, straddles and strangles. Intuitive, but flexible interface makes the service suitable for both novice and advanced users.

The scanner features:

- Instruments coverage – all US publicly traded options (170,000+ listed contracts)
- Real-time or 20-minute delayed data subscription modes
- Scanning by risk/reward, risk/capital required, maximum return and probability of profit
- Real-time position risk scenario simulation; includes short leg assignment risk simulation
- Filtering by stock sentiment (using IVolatility.com ‘Stock Sentiment’ service data)
- Ability to use custom stock lists (using IVolatility.com ‘Favorite’ groups)
- Fine-tuning stock and option filters

Quick overview

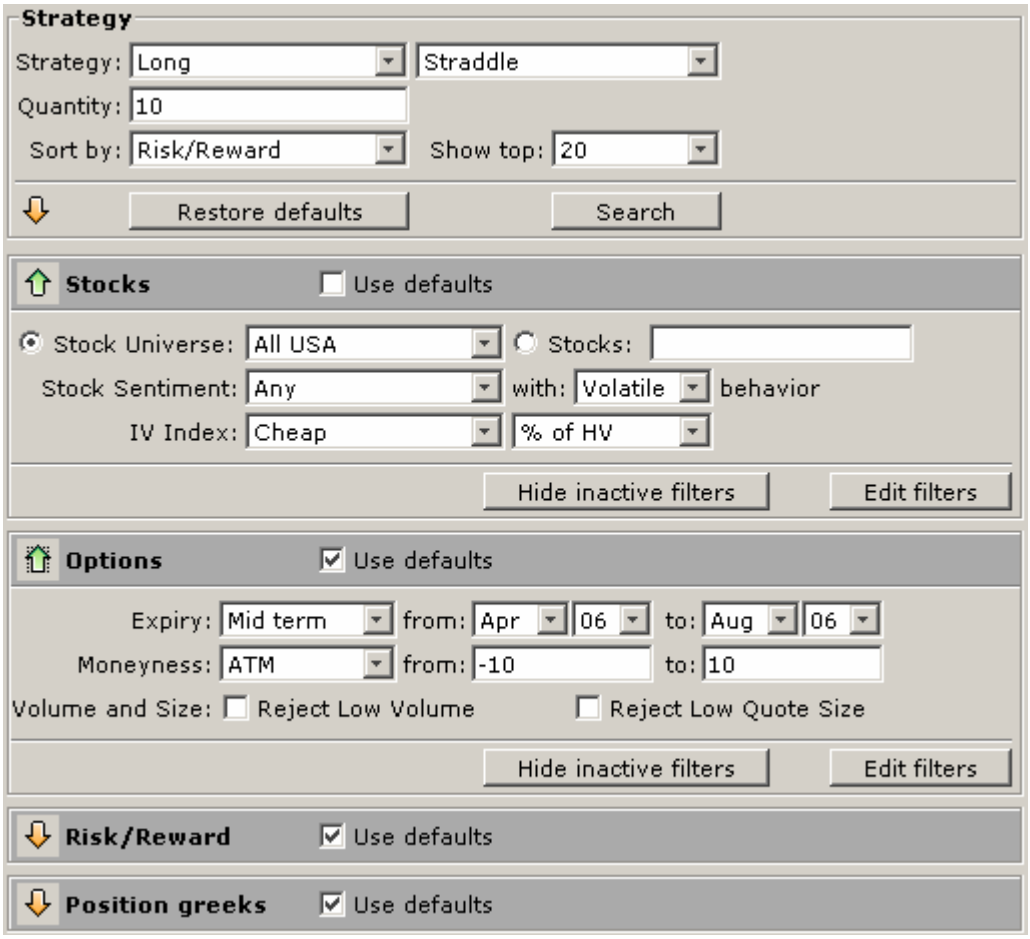
When you open the service for the first time, you'll see the following Search screen:



You can change the strategy here (Long Straddle by default) and number of contracts (10 by default, meaning contract on 10 x 100 = 1000 underlying shares). Default sorting is by Risk to Reward ratio (Risk / Reward), so you'll see less risky trades on top. "Less risky" here stands for "low max risk to max profit ratio" trades. Other possible sortings are:

- by **Capital Required** - that is, by initial investment in $
- by **Risk/Cap Req** - by Risk to Capital Required ratio
- by **Max return** - by maximum return of the trade
- by **Probability of Profit** - by how probable is the "win" scenario for the trade

All the other filters are hidden by default - see the Stocks, Options, Risk/Reward and Greeks groups below. You can expand any and all of these groups by pressing the orange arrow button to the left. For example, let's see how Stocks and Options filters are set for Long Straddle strategy by default:

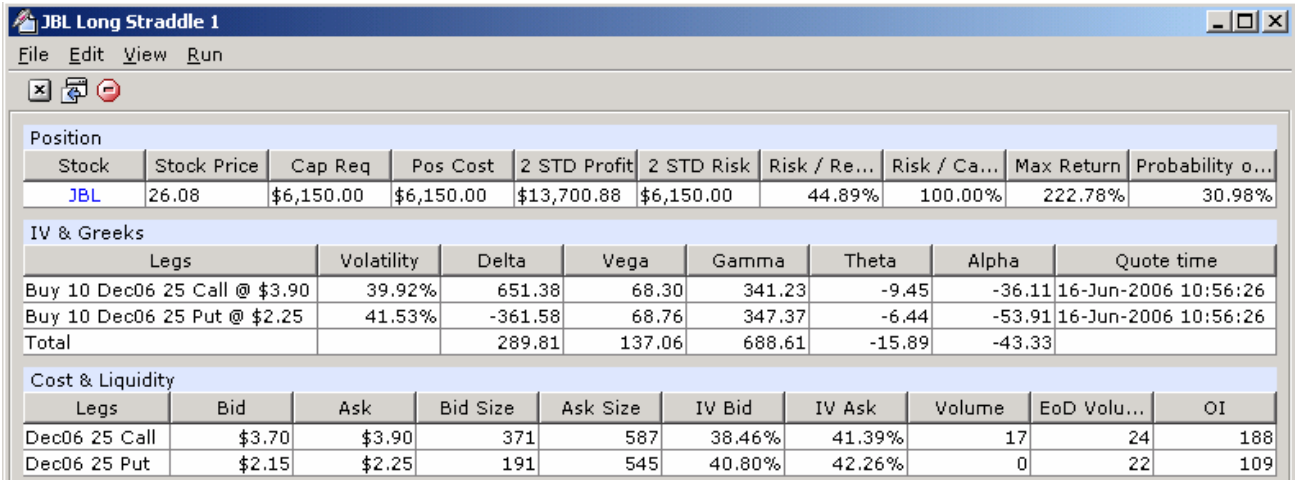


As you see, by default we are going to scan all US publicly traded equity with expected volatile behavior, but having cheap options (cheap IV Index). Options to be selected have mid-term expiry (3 to 6 months) and moneyness from10% OTM to 10% ITM.
As for the Risk/Reward and Greeks groups of filters - they are always not set by default; you can use them for more sophisticated and fine-tuned scan.

Let's see what comes up if you just press **Search** button, without changing any filters' values :

Stock	Position Legend	...	Stock...	Cap Req	Pos Cost	2 STD Profit	2 STD Risk	Risk / Reward	Risk / Cap Req	Max Return	Probability of Profit
JBL	Buy 10 Dec06 25 C @ 3.90 Buy 10 Dec06 25 P @ 2.25		26.05	$6,150.00	$6,150.00	$13,700.88	$6,150.00	44.89%	100.00%	222.78%	30.98%
JBL	Buy 10 Sep06 25 C @ 2.95 Buy 10 Sep06 25 P @ 1.60		26.05	$4,550.00	$4,550.00	$10,083.08	$4,550.00	45.13%	100.00%	221.61%	31.09%
ESV	Buy 10 Dec06 40 C @ 7.30 Buy 10 Dec06 40 P @ 3.50		42.77	$10,800.00	$10,800.00	$23,518.09	$10,800.00	45.92%	100.00%	217.76%	31.47%
NRG	Buy 10 Sep06 50 C @ 2.00 Buy 10 Sep06 50 P @ 3.50		47.91	$5,500.00	$5,500.00	$11,794.74	$5,500.00	46.63%	100.00%	214.45%	31.80%
LSCP	Buy 10 Dec06 30 C @ 1.15 Buy 10 Dec06 30 P @ 0.35		30.70	$1,500.00	$1,500.00	$3,215.18	$1,500.00	46.65%	100.00%	214.35%	31.81%
BGC	Buy 10 Nov06 25 C @ 5.70 Buy 10 Nov06 25 P @ 2.75		27.40	$8,450.00	$8,450.00	$18,066.15	$8,450.00	46.77%	100.00%	213.80%	31.87%

After a short time (from just a couple of seconds to about two minutes, depending on the filters set) you'll see **Results** tab with the trades satisfying your criteria (top 5 trades with lowest Risk / Reward ratio are shown). The screen shows position legend, along with most important risk and reward characteristics.
Clicking on the icon in the **Details** column (or, double-clicking in any place) opens the **Details** window:



JBL Long Straddle 1

File Edit View Run

Position

Stock	Stock Price	Cap Req	Pos Cost	2 STD Profit	2 STD Risk	Risk / Re...	Risk / Ca...	Max Return	Probability o...
JBL	26.08	$6,150.00	$6,150.00	$13,700.88	$6,150.00	44.89%	100.00%	222.78%	30.98%

IV & Greeks

Legs	Volatility	Delta	Vega	Gamma	Theta	Alpha	Quote time
Buy 10 Dec06 25 Call @ $3.90	39.92%	651.38	68.30	341.23	-9.45	-36.11	16-Jun-2006 10:56:26
Buy 10 Dec06 25 Put @ $2.25	41.53%	-361.58	68.76	347.37	-6.44	-53.91	16-Jun-2006 10:56:26
Total		289.81	137.06	688.61	-15.89	-43.33	

Cost & Liquidity

Legs	Bid	Ask	Bid Size	Ask Size	IV Bid	IV Ask	Volume	EoD Volu...	OI
Dec06 25 Call	$3.70	$3.90	371	587	38.46%	41.39%	17	24	188
Dec06 25 Put	$2.15	$2.25	191	545	40.80%	42.26%	0	22	109

This window gives a more detailed view on the position: volatility (including IV bid / IV ask !), greeks, quote sizes, volumes etc.
Here you can run a Risk Scenario and see how a position P&L will change under different levels of underlying price, implied volatility through time. This advanced functionality is described in a separate “Risk Scenario” section below.

You'll find the following feature very useful if you are considering different option strategies and wish to compare them - a **Pocket** window. You can select the trades seeming attractive in Results window and "place" them into **Pocket** (**Tools -> Copy to Pocket** menu item or **Ctrl+C** hot key or this button ). The example below shows different types of "bearish" strategies (Bearish Vertical Spread, Naked Put, Short Naked Call etc.) in one **Pocket** window:

Stock	Position Legend	Details	Strategy	Stock Price	Cap Req	Pos Cost	2 STD Profit	2 STD Risk	Risk...	Risk / ...	Max ...	Proba...
UVN	Buy 10 Sep06 32.5 P @ 0.75		Long Naked Put	35.61	$750.00	$750.00	$6,703.49	$750.00	11.19%	100.00%	893.80%	10.06%
ETN	Buy 10 Oct06 65 P @ 1.45		Long Naked Put	71.99	$1,450.00	$1,450.00	$12,592.38	$1,450.00	11.51%	100.00%	868.44%	10.33%
CECO	Buy 10 Jul06 30 P @ 1.20 Sell 10 Jul06 25 P @ 0.15		Long Bear Vertical Spread	30.47	$1,050.00	$1,050.00	$3,950.00	$1,050.00	26.58%	100.00%	376.19%	21.00%
HOM	Buy 10 Jul06 7.5 P @ 0.95 Sell 10 Jul06 5 P @ 0.10		Long Bear Vertical Spread	7.84	$850.00	$850.00	$1,650.00	$850.00	51.52%	100.00%	194.12%	34.00%
MGPI	Sell 10 Jun06 20 C @ 1.65		Short Naked Call	21.83	$4,366.00	-$1,650.00	$1,650.00	$2,415.11	146.37%	55.32%	37.79%	59.41%
CVTX	Sell 10 Jun06 12.5 C @ 0.85		Short Naked Call	13.43	$2,686.00	-$850.00	$850.00	$2,094.03	246.36%	77.96%	31.65%	71.13%

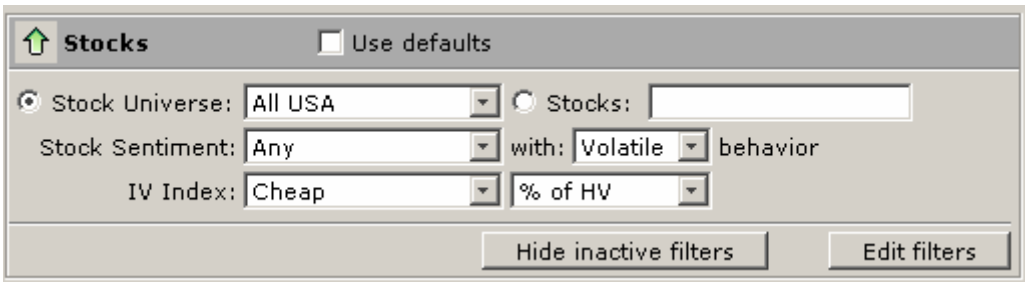
Some hints on usage

- If you are novice in option trading, you can use the very basic interface, without setting all the filters; we've tried to set reasonable default values for all the parameters
- Do not try setting high probability of profit and low risk filter values at the same time - there's no free lunch
- You can save filters' configuration to a file (**File -> Save As** or **Ctrl+S**) and load it later (**File -> Open** or **Ctrl+L**)
- You can save options list returned by Scanner to a file (**File -> Save As** or **Ctrl+S**) and load this list later (**File -> Open** or **Ctrl+L**)
- You can stop quotes updates and resume them through **Run** menu
- You can delete "unnecessary" trades from results by **Edit->Delete selection** or **Ctrl+D**; you'll need to select the trades first, by checking the box(es) in the first column.

- You can select the trades seeming attractive in Results window and "place" them into **Pocket** (**Tools -> Copy to Pocket** menu item or **Ctrl+C**

Stock filters

Stock filters allow selecting a stock universe, stock sentiment and options' cost level (IV Index):



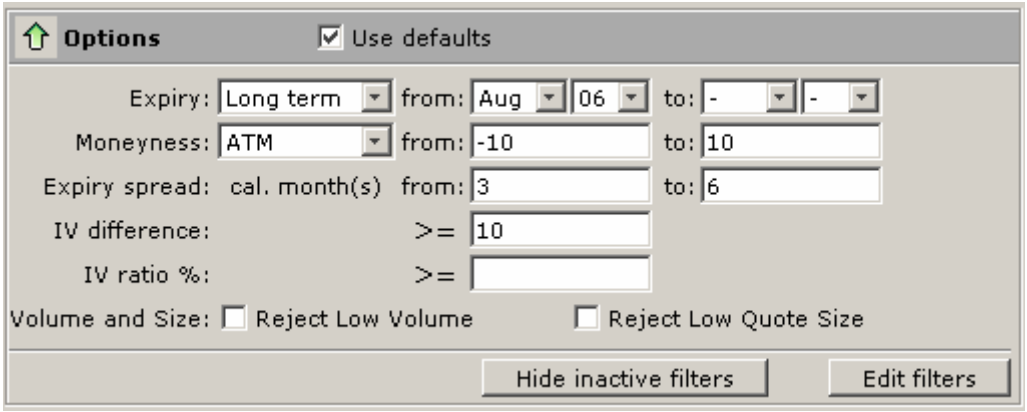
You can read more on how we calculate stock sentiment here:
http://www.ivolatility.com/doc/StockSentimentRanker.pdf

You can select a custom stock list as a universe for scan. For small lists, you can just enter them into the **Stocks** text box to the right (comma delimited string). For the large ones, you need to create such a stock list (or lists) in our free My Favorites service http://www.ivolatility.com/manage_favourites.j This list will become available in the **Stock Universe** combobox then.

If you press the **Edit Filters** button, the other (advanced) stock filters will become available. We'll describe all them in a separate section below.

Option filters

This section allows setting filters on options; it looks most sophisticated for Diagonal spreads:



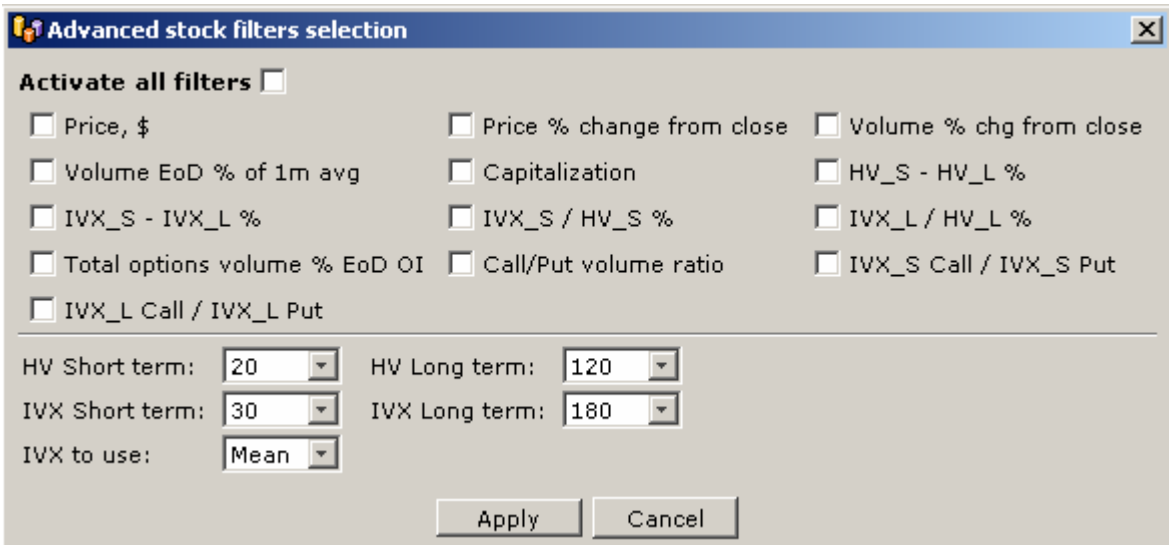
Here, you set Expiry and moneyness for "Leg 1" and difference (offset) in expiry, strike, and implied volatility for the "Leg 2". Here are the rules to determine "Leg 1" for a strategy:

- if one option is bought, and other is sold - the bought option is "Leg 1"
- if both options are bought or sold, the Call option is "Leg 1"

Again, if you press the **Edit Filters** button, the other (advanced) option filters will become available. Stock and option advanced filters are described in a separate section below.

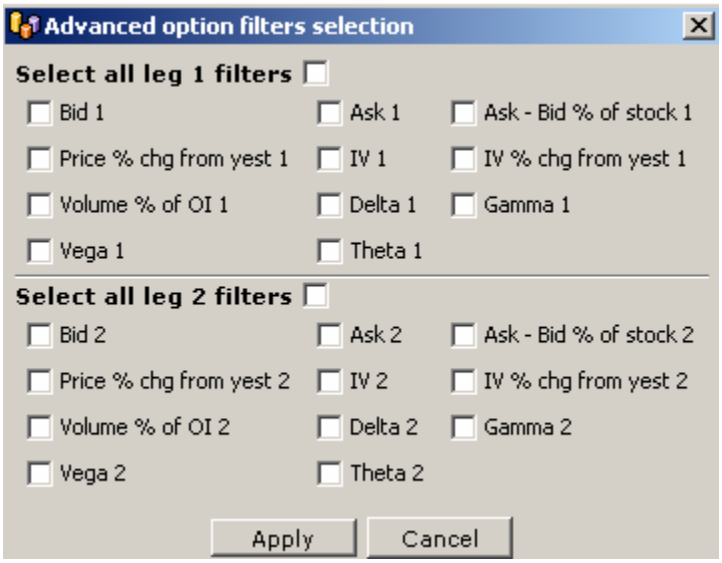
Stock and option advanced filters

If you press the '**Edit Filters'** button in the **Stocks** section, you'll see the following window:



You can select any (or all) of these filters and press **Apply** button. If you do so, these filters will be added to the **Stocks** section of the Search window and you will be able to specify desired range for selected filters.
Finally the 'Long' and 'Short' terms at the bottom can be used for advanced traders who would like to use such criteria as differences in long term IV index and short term IV index – suffix _S stands for short term, _l for long terms. So when you specify IVX Short term as 30 and IVX long term as 180 you can apply a filter that will have a ratio of IVX 30d to IVX 180d in desired range (specified in the main Search window).

Options section also has similar filtering window, the only difference is that there are 2 sets of filters for each leg:



Below we describe what each of these filters means in detail. Note that if you wish to cancel some advanced filter, you need to erase the criteria. Just hiding the filter from the **Stocks** or **Options** section (using checkboxes in the **Edit Filters** window) is not sufficient!

Stock advanced filters

Here is the entire list of the advanced stock filters available:

Filter name	**Meaning**
Price	current stock price
Price % chg from close	stock price change from close (in %)
Volume % chg from close	stock volume change from close (in %)
Volume EoD % of 1m avg	stock close volume to 1 month average ratio (in %)
Capitalization	stock capitalization, in $bln (in $1,000,000,000)
HV_S - HV_L %	difference between Short and Long term HV (in%)
IVX_S- IVX_L %	difference between Short and Long term IVX (in%)
IVX_S / HV_S %	ratio of Short term IVX to HV (in%)
IVX_L / HV_L %	ratio of Long term IVX to HV (in%)
Total options volume % of EoD OI	total option volume to total end of day open interest ratio (in%)
Call/Put volume ratio	total Call volume to total Put volume ratio (in %)
IVX_S Call/IVX_S Put	Call IV Index to Put IV Index ratio, Short term (in %)
IVX_L Call/IVX_L Put	Call IV Index to Put IV Index ratio, Long term (in %)

Using these filters, you can select stocks with given change in stock price, volume, volatility etc. Also, you can monitor unusual option trading activity using **Total options volume % of EoD OI** filter. Finally, **Call/Put ratio** filters allow making an additional check for the stock sentiment (reading above 1 considered to be Bullish; however, too high reading may mean Overbought sentiment).

Short and Long term in the above are set in the same **Edit Filters** window - you can select them close to options' expiries or using other considerations. By default, they are set to 30 and 180 calendar days for IV Index (IVX) and to 20 and 120 trading days for HV (the closest to 30 and 180 calendar days' values).

Option advanced filters

Advanced option filters are available for each leg of the strategy and listed below:

Filter name	**Meaning**
Bid	option bid quote
Ask	option ask quote
Ask-Bid % of stock	bid/ask spread to stock price ratio (in %)
Price % chg from yest	option mid-price change from close
IV	option implied volatility
IV % chg from yest	option implied volatility change from close
Volume % of OI	option volume to end of day option open interest ratio (in%)
Delta	Delta greek
Gamma	Gamma greek
Vega	Vega greek
Theta	Theta greek

Mind, that all these filters are per individual contract and independent of the quantity of contracts you are going to buy or sell. You can monitor change in option price and IV, assess option liquidity (**Ask-Bid % of stock** filter) and unusual option trading activity (**Volume % of OI** filter). Finally, for really fine-tuned scan you can set filters on each individual greek for the option contract.

Calculation of risk / reward characteristics

You can scan options' universe by the following important position characteristics in the service:

- Capital Required
- Risk/Reward
- Risk/Cap Req
- Max Return
- Probability of Profit

Here are their definitions and calculation methods:

Capital Required - this is the initial investment required to open the position. Note, that this value is always positive - even if you are entering the credit trade. The amount of money blocked into your account (except credit, if any) is the Capital Required. We use this document from CBOE (R) site as a guideline for calculation of the Capital Required:
http://www.cboe.com/tradtool/marginmanual2000.pdf

Risk/Reward ratio - is a ratio of "maximum" theoretical loss to "maximum" theoretical profit. We do not use absolute maximum loss and profit, since they are infinite for certain strategies and cannot

be used in calculations and scanning. We use a reasonable assumption that underlying price can vary within two standard deviations from its current value. We calculate "2 STD Profit" and "2 STD Risk" at expiry and use these values as proxy to max loss / profit. Same assumption is used for implied volatility. For Calendar and Diagonal spreads, we calculate risk at the short expiry, additionally assuming that option contract implied volatility can vary within two standard deviations too.
These estimates give a feeling of how risky and profitable the trade is; if you need the exact estimates - you can always use the Risk Scenario functionality of our service.

Risk/Capital Required ratio - is a ratio of 2 STD loss to Capital Required. This is an alternative way to estimate risk, comparing it with the initial investment, instead of maximum theoretical profit.

Max Return ratio - is a ratio of 2 STD profit to Capital Required. This is the return to expiry, not annualized figure.

Probability of Profit - an estimate of the probability that the trade will yield a profit. We use a simple model to calculate this value, **p**. Consider a case, when there are only two possible outcomes: you get maximum profit **Pmax** with probability **p** or maximum loss **-Lmax** with probability **(1-p)** ("maximum" here stands for "2 STD" too). Assuming that position is fairly priced, your expected outcome should be zero, so

Expected outcome = 0 = p*Pmax - (1-p)*Lmax

From this we derive the probability of profit as

p = Lmax / (Pmax + Lmax)

This formula is just another illustration to the "no free lunch" concept: high probability of profit means either high risk (**Lmax**) or low maximum profit (**Pmax**) - or both.

So, a general guideline to using these filters is as follows: do not try setting very high probability of profit and low risk to reward ratio at the same time; most probably, such a search will return nothing.

Greeks

You can filter the trades by their greeks; here are some hints of how are they calculated:

Delta is shown in shares; in other words, it is a position value change in case when underlying price advances by $1.

Vega is a position value change in case when option contract implied volatility increases by 1% (absolute, say, from 20% to 21%). We just sum vegas for two options without any adjustments for simplicity (the same is true for other greeks).

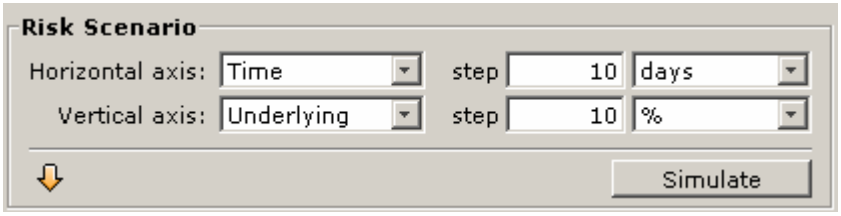
Gamma is a change in Delta in case when underlying price advances by 1%. Large negative Gamma shows that a position will loose much under large change in underlying price and hence very risky.

Theta is a position value change from today to tomorrow; it is negative for long option positions. Large negative Theta means that the position will loose in value ("waste") through time, all other factors being unchanged.

Alpha is a ratio of Gamma to Theta. It compares profits (losses) due to underlying price move with losses (profits) due to option extrinsic value decay. Generally, you want large Alpha if your Gamma is positive and small Alpha if Gamma is negative.

Risk Scenario

You'll see this feature at the bottom of the **Details** page:

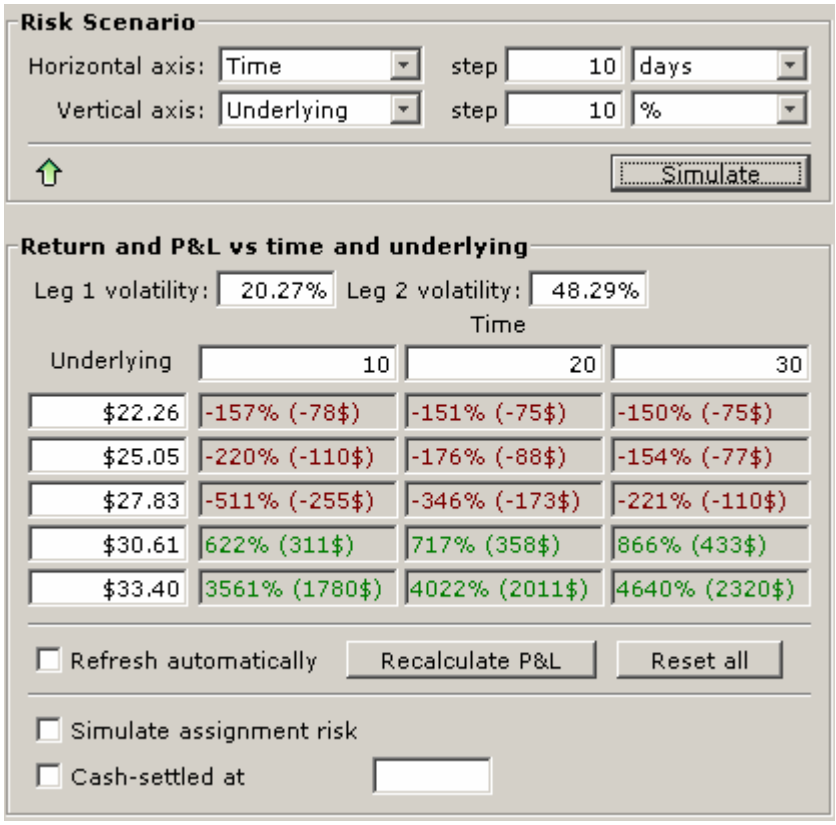


It is a flexible tool for simulation of the position P&L and return under different levels of **options' volatility** and **forward underlying price** for fixed **time horizons** in the future. It is an invaluable tool allowing to check "what happens if" with your position under different market conditions. The following risk factors are taken into account:

- Sensitivity of position value to underlying price and option volatility
- Additional loss due to bid/ask spread
- Short leg assignment risk

How to use

You can simulate P&L as a function of underlying price, time and volatility - just choose two of these as X and Y axes and simulate P&L and return as a function of these two (the third variable will be fixed). You can also customize your axes step (as absolute value of percentage). You will see the matrix of P&Ls and returns like the one below:



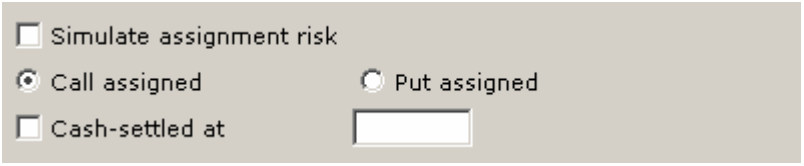
Some hints on usage:

- Each cell in the matrix shows theoretical return (to date) and P&L
- All the white background fields are editable
- There are 3 ways to refresh the data:

  - automatically: check **Refresh automatically** box at the lower left corner; quotes and volatilities will be refreshed from market feed then - so you'll see how your position risk is changing in real-time.
  - manually, with adjustment of axes values according to market movement (by request): the **Refresh automatically** box should be cleared, press **Reset all** button when you need to refresh the axes and P&L values. This mode suits for analysis of risks, having default values for underlying price and volatility.
  - manually, fixed axes: the **Refresh automatically** box should be cleared, press **Recalculate P&L** button when you need to refresh the data. This mode suits for analysis of risks using custom (edited by user) values for underlying price and volatility.

Simulate assignment risk

As you know a short leg can be assigned against you. We provide a convenient tool to simulate the short leg assignment risk (for a Short Straddle strategy for example):



Some hints on usage:

- Check the **Simulate assignment risk** box if you wish to deal with this risk at all
- Choose what leg is assigned (if more than one legs are short)
- For cash-settled (index) options check "**Cash-settled at"** box and enter expected forward underlying price
- You may wish to emulate the cash settlement for stock options too (scenario when you are going to close resulting stock position resulting from the assignment).