



# RT Spread Scanner

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## Introduction

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:

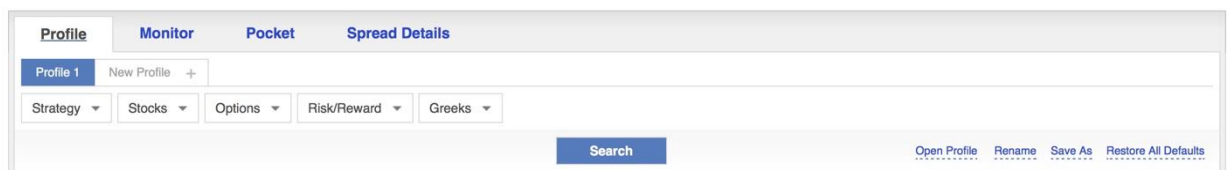
- Instruments coverage – all US publicly traded options (700,000+ listed contracts)
- Position risk scenario simulation
- Fine-tuning stock and option filters including stock sentiment (using IVolatility.com 'Stock Sentiment' service data), expiry, moneyness etc.
- Scanning by risk/reward, risk/capital required, maximum return and probability of loss

Software requirements:

- Check that you have flash player installed for your browser.

## Quick overview

When you open the service for the first time, you'll see 5 groups of filters



The screenshot shows the 'Profile' tab of the RT Spread Scanner interface. At the top, there are four tabs: 'Profile', 'Monitor', 'Pocket', and 'Spread Details'. Below the tabs, there is a section for 'Profile 1' with a 'New Profile +' button. Underneath, there are five dropdown menus: 'Strategy', 'Stocks', 'Options', 'Risk/Reward', and 'Greeks'. A 'Search' button is located to the right of these dropdowns. At the bottom right, there are four links: 'Open Profile', 'Rename', 'Save As', and 'Restore All Defaults'.

and some results for default search (straddle strategy).

All the filters are hidden by default - see the Strategy, Stocks, Options, Risk/Reward and Greeks groups below. You can expand any of these groups by pressing the arrow button to the right.

Let's see what comes up if you just press **Search** button after changing some filters' values:

Profile		Monitor	Pocket	Spread Details											
Profile 1		New Profile +													
Strategy ▾		Stocks ▾		Options ▾		Risk/Reward ▾		Greeks ▾							
Search												Open Profile	Rename	Save As	Restore All Defaults
Results		Copy to Pocket		Copy to Clipboard		Delete						Auto update			
<input type="checkbox"/>	Stock ?	Position legend ?		Stock price ?	Cap Req ?	Pos Cost ?	2 STD Profit ?	2 STD Risk ?	Risk / Reward	Risk / Cap Req	Max Return ?	Probability of Pr			
<input type="checkbox"/>	TASR	Buy 10 Mar. 17, 2017 21 C @ 3.50 Buy 10 Mar. 17, 2017 21 P @ 2.00		22.40	\$5,500.00	\$5,500.00	\$10,750.18	\$5,500.00	51.16%	100%	195.46%	33.85%			
<input type="checkbox"/>	MUR	Buy 10 Jan. 20, 2017 27.5 C @ 4.00 Buy 10 Jan. 20, 2017 27.5 P @ 2.40		29.29	\$6,400.00	\$6,400.00	\$12,478.78	\$6,400.00	51.29%	100%	194.98%	33.9%			
<input type="checkbox"/>	TPX	Buy 10 Jan. 20, 2017 50 C @ 5.80 Buy 10 Jan. 20, 2017 50 P @ 3.80		51.94	\$9,600.00	\$9,600.00	\$18,414.43	\$9,600.00	52.13%	100%	191.82%	34.27%			
<input type="checkbox"/>	TSN	Buy 10 Jan. 20, 2017 77.5 C @ 1.90 Buy 10 Jan. 20, 2017 77.5 P @ 8.10		71.38	\$10,000.00	\$10,000.00	\$19,140.81	\$10,000.00	52.24%	100%	191.41%	34.32%			
<input type="checkbox"/>	NG	Buy 10 Mar. 17, 2017 4 C @ 0.70 Buy 10 Mar. 17, 2017 4 P @ 0.55		4.05	\$1,250.00	\$1,250.00	\$2,375.73	\$1,250.00	52.62%	100%	190.06%	34.48%			
<input type="checkbox"/>	TPX	Buy 10 Jan. 20, 2017 55 C @ 3.40 Buy 10 Jan. 20, 2017 55 P @ 6.40		51.94	\$9,800.00	\$9,800.00	\$18,514.43	\$9,800.00	52.93%	100%	188.92%	34.61%			
<input type="checkbox"/>	TASR	Buy 10 Jan. 20, 2017 23 C @ 1.80 Buy 10 Jan. 20, 2017 23 P @ 2.35		22.40	\$4,150.00	\$4,150.00	\$7,784.19	\$4,150.00	53.31%	100%	187.57%	34.77%			
<input type="checkbox"/>	TASR	Buy 10 Mar. 17, 2017 24 C @ 1.95 Buy 10 Mar. 17, 2017 24 P @ 3.60		22.40	\$5,550.00	\$5,550.00	\$10,260.18	\$5,550.00	54.09%	100%	184.87%	35.1%			
<input type="checkbox"/>	TASR	Buy 10 Mar. 17, 2017 22 C @ 2.90 Buy 10 Mar. 17, 2017 22 P @ 2.50		22.40	\$5,400.00	\$5,400.00	\$9,850.18	\$5,400.00	54.82%	100%	182.41%	35.41%			
<input type="checkbox"/>	FANG	Buy 10 Mar. 17, 2017 115 C @ 5.60 Buy 10 Mar. 17, 2017 115 P @ 15.20		104.84	\$20,800.00	\$20,800.00	\$37,807.20	\$20,800.00	55.02%	100%	181.77%	35.49%			
<input type="checkbox"/>	TPX	Buy 10 Mar. 17, 2017 50 C @ 7.10 Buy 10 Mar. 17, 2017 50 P @ 5.10		51.94	\$12,200.00	\$12,200.00	\$22,147.83	\$12,200.00	55.08%	100%	181.54%	35.52%			
<input type="checkbox"/>	NG	Buy 10 Jan. 20, 2017 4 C @ 0.55 Buy 10 Jan. 20, 2017 4 P @ 0.50		4.05	\$1,050.00	\$1,050.00	\$1,905.59	\$1,050.00	55.1%	100%	181.48%	35.53%			

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. The screen shows position legend, along with most important risk and reward characteristics.

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 tab and "place" them into Pocket by pressing **Copy to Pocket** button.

Profile		Monitor	Pocket	Spread Details								
Copy to Clipboard		Delete		<div>Open PocketSave As<input type="checkbox"/> Auto update</div>								
<input type="checkbox"/>	Stock <span>?</span>	Position legend <span>?</span>		Stock price <span>?</span>	Cap Req <span>?</span>	Pos Cost <span>?</span>	2 STD Profit <span>?</span>	2 STD Risk <span>?</span>	Risk / Reward	Risk / Cap Req	Max Return <span>?</span>	Probability of Pr
<input type="checkbox"/>	TASR	Buy 10 Mar. 17, 2017 21 C @ 3.50 Buy 10 Mar. 17, 2017 21 P @ 2.00		22.40	\$5,500.00	\$5,500.00	\$10,750.18	\$5,500.00	51.16%	100%	195.46%	33.85%
<input type="checkbox"/>	TSN	Buy 10 Jan. 20, 2017 77.5 C @ 1.90 Buy 10 Jan. 20, 2017 77.5 P @ 8.10		71.38	\$10,000.00	\$10,000.00	\$19,140.81	\$10,000.00	52.24%	100%	191.41%	34.32%
<input type="checkbox"/>	TPX	Buy 10 Jan. 20, 2017 55 C @ 3.40 Buy 10 Jan. 20, 2017 55 P @ 6.40		51.94	\$9,800.00	\$9,800.00	\$18,514.43	\$9,800.00	52.93%	100%	188.92%	34.61%

Clicking on the position legend in the **Position Legend** column (**Profile** window or **Pocket** window) opens the **Spread Details** window:

Profile		Monitor	Pocket	Spread Details							
Position		Copy to Clipboard		Update							
Stock ?	Stock price ?	Cap Req ?	Position cost ?	2 STD Profit ?	2 STD Risk ?	Risk / Reward ?	Risk / Cap Req ?	Max return ?	Probability of profit		
CIR	49.29	\$9,700.00	\$9,700.00	\$20,627.95	\$9,700.00	47.02%	100.00%	212.66%	31.98%		
IV & Greeks		Copy to Clipboard									
IV Greeks Leg	leg IV	Leg delta	Leg vega	Leg gamma	Leg theta	Leg alpha	Leg Calc Date				
Buy 10 Feb 17 2017 5...	38.40%	524.80	116.30	35.75	-18.12	-1.97	11-Oct-2016 16:00:00				
Buy 10 Feb 17 2017 5...	38.39%	-476.75	116.32	35.84	-16.72	-2.14	11-Oct-2016 16:00:00				
Total		48.05	232.63	71.59	-34.83	-2.06					
Cost & Liquidity		Copy to Clipboard									
Cost liq leg	Leg bid	Leg ask	Leg bid size	Leg ask size	Leg IV bid	Leg IV ask	Leg volume	Leg Eod volume	Leg Eod OI		
Feb 17 2017 50 ...	\$3.80	\$4.60	30	25	\$34.96	\$41.84	0	0	0		
Feb 17 2017 50 ...	\$4.50	\$5.10	30	24	\$35.81	\$40.97	0	0	44		
Risk Scenario											
Horizontal axis		Time	Step	10	days	Vertical axis		Underlying	Step	10	%
Simulate											

This window gives a more detailed view on the position: volatility, 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.

Clicking on the stock symbol in the **Stock** column (**Profile** window or **Pocket** window) opens the tab in the **Monitor** window.

## 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 low probability of loss and low risk filter values at the same time - there's no free lunch
- You can save filters' configuration to a file (**Save As** button) and load it later (**Open Profile** button)
- You can restore all defaults of filters (**Restore All Defaults** button)
- Checking the box **Auto update** allows obtain the data automatically with 15-seconds delay
- You can delete "unnecessary" trades from results by pressing **Delete** button on the top of Result tab; 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 (**Copy to Pocket** button on the top of Result tab). Pocket window provides you the ability to save list of trades to a file (**Save As** button) and upload the trades from the file later (**Open Pocket** button). So **Save As** button (Pocket window) provides saving trades, but **Save As** button (Profile window) provides only saving settings of filters.
- Windows Profile, Pocket, Spread Details have **Copy to Clipboard** button. So can copy the data you need into, for example, Excel, Word, etc.
- Windows Profile and Pocket also have **Download** button. So can save the data you need into csv file.
- If you see the sign “?” in column / parameter name it means that the column / parameter has a prompt.
- The **Auto update** button enables regular updating of the table with an interval of 15 seconds.

## Monitor

The Monitor window shows the list of options for the selected stock that match your search criteria. Monitor window consists of a number of tabs with a different set of options shown simultaneously. You may add a new tab by clicking on the the **New Monitor** tab and editing the field **Stock Symbol**.

Profile

Monitor

Pocket

Spread Details

ibm

TASR

CIR

TASR

TSN

BKE

NG

TASR

MUR

TASR

MUR

TPX

New Monitor

Stock symbol

TPX

Call

Put

Expiry from

10/21/2016

to

03/17/2017

Strike from

30

to

120

Refresh

Restore

Open Monitor

Save As

Results

Copy to Clipboard

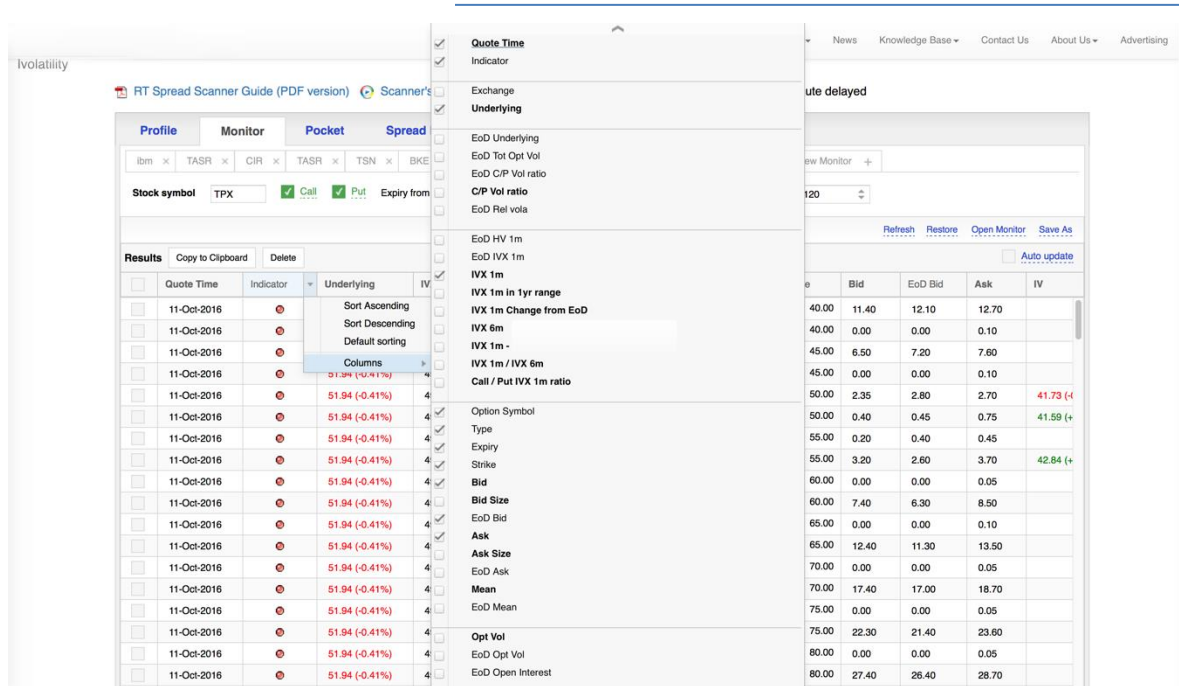
Delete

Auto update

	Quote Time	Indicator	Exchange	Underlying	IVX 1m	Option Symbol	Type	Expiry	Strike	Bid	EoD Bid	Ask
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00040000	Call	Oct 21, 2016	40.00	11.40	12.10	12.71
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00040000	Put	Oct 21, 2016	40.00	0.00	0.00	0.10
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00045000	Call	Oct 21, 2016	45.00	6.50	7.20	7.60
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00045000	Put	Oct 21, 2016	45.00	0.00	0.00	0.10
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00050000	Call	Oct 21, 2016	50.00	2.35	2.80	2.70
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00050000	Put	Oct 21, 2016	50.00	0.40	0.45	0.75
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00055000	Call	Oct 21, 2016	55.00	0.20	0.40	0.45
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00055000	Put	Oct 21, 2016	55.00	3.20	2.60	3.70
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00060000	Call	Oct 21, 2016	60.00	0.00	0.00	0.05
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00060000	Put	Oct 21, 2016	60.00	7.40	6.30	8.50
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00065000	Call	Oct 21, 2016	65.00	0.00	0.00	0.10
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00065000	Put	Oct 21, 2016	65.00	12.40	11.30	13.51
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00070000	Call	Oct 21, 2016	70.00	0.00	0.00	0.05
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00070000	Put	Oct 21, 2016	70.00	17.40	17.00	18.71
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00075000	Call	Oct 21, 2016	75.00	0.00	0.00	0.05
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00075000	Put	Oct 21, 2016	75.00	22.30	21.40	23.61
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021C00080000	Call	Oct 21, 2016	80.00	0.00	0.00	0.05
	11-Oct-2016		NYSE	51.94 (-0.41%)	49.37	TPX 161021P00080000	Put	Oct 21, 2016	80.00	27.40	26.40	28.71

You may filter the option's list by checking boxes **Call** and **Put** (Option type), defining an **Expiry from** (from/to) and a **Strike from** (from/to). Also, you can organize the option's list by clicking on a particular column name in the table header.

The fields in the table are removable and resizable. You can drag them with your mouse to a preferable position. Besides, you are able to add and remove fields in the table by checking/unchecking Columns-items. The items are **in bold** are updated intraday when market is open (with 20 minutes delay by default).

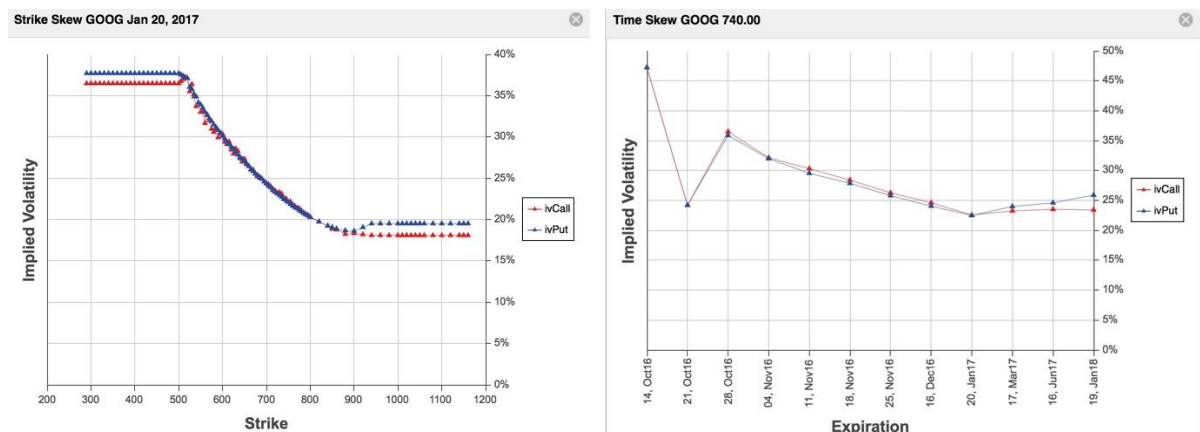


The **Indicator** (colors are in a range from green to red) illustrates relevancy of a particular option (novelty of the Option Contract Data). In particular, green color means the quote is less than 40 minutes old, yellow one is for quotes in 40 to 1h 20min range and the rest is marked as red ones.

You are able to copy options from the table into the Clipboard. For that purpose, you need to check options in the left column box and press the button **Copy to Clipboard**. Also, you may remove options from the table by checking options and pressing the button **Delete**. **Auto update** box has the same functionality as the Auto update box in the **Profile** window.

You may save the resulted table into a file on your computer (press **Save as** button). After that, wherever you need, you can open saved file (press **Open Monitor** button).

Clicking on the chart symbol in the **Expiry** column and **Strike** column opens the Graph windows with Strike or Time Skews. You are able to remove and add lines by clicking on the line's name in the Graph legend.



Most of the column names are pretty clear. Meanings of some column names are represented in the table below.



Column name	Units	Update intraday	Meaning
Quote time	-	✓	option quote time
Indicator	color	-	relevance of an option
Exchange	-	-	exchange
Underlying	absolute	✓	underlying price
	%		from yesterday
EoD Underlying	-	-	underlying last close price
EoD Tot Opt Vol	absolute	-	total close options volume
EoD C/P Vol ratio	absolute	✓	total close calls volume / total close puts volume
EoD Rel vola	absolute	-	EoD IVX 1m / EoD HV 1m
EoD HV 1m	%	-	EoD historical volatility for 20 trading days (1 month)
EoD IVX 1m	%	-	EoD intraday volatility index for 30 calendar days (1 month)
IVX 1m	%	✓	intraday volatility index for 30 calendar days (1 month) as an average of IVX calls and IVX puts
IVX 1m in 1yr range	%	✓	(IVX 1m – 1 year minimum IVX) / (1 year maximum IVX – 1 year minimum IVX)
IVX 1m Change from EoD	%	✓	IVX 1m / (EoD IVX 1m – 1)
IVX 6m	%	✓	intraday volatility index for 180 calendar days (1 month) as an average of IVX calls and IVX puts
IVX 1m – IVX 6m	%	✓	IVX 1m – IVX 6m
IVX 1m / IVX 6m	%	✓	IVX 1m / IVX 6m
Call / Put IVX 1m ratio	absolute	✓	IVX calls / IVX puts for 30 calendar days
Option symbol	-	-	21 characters identifier of an option
Type	-	-	type of an option (Call / Put)
Expiry	-	-	expiration date
Strike	absolute	-	strike price of an option
Bid	absolute	✓	current price offered by a market maker to buy a particular option
Bid size	absolute	✓	intraday bid size (liquidity indicator)
EoD Bid	absolute	-	close Bid
Ask	absolute	✓	current best price offered by a market maker to sell a particular option
Ask Size	absolute	✓	intraday ask size (liquidity indicator)
EoD Ask	absolute	-	close Ask
Mean	absolute	✓	mean of Ask price and Bid price
EoD Mean	absolute	-	close Mean
Opt Vol	absolute	✓	options volume
EoD Opt Vol	absolute	-	close Options Volume
EoD Open Interest	absolute	-	total number of contracts on the previous day that are allowed to expire (liquidity indicator)
IV	absolute	✓	option contract implied volatility by option's mean
	%		from yesterday
IV Bid	absolute	✓	bid price implied volatility



IV Ask	absolute	✓	ask price implied volatility
IV (int)	%	✓	interpolated IV (interpolation done if no IV was calculated)
EoD IV	absolute	-	close Implied volatility
Delta	absolute	✓	(Greek) rate of change in the price of an option relative to the underlying price
Gamma	absolute	✓	(Greek) rate at which the delta of an option changes in response to a change in the underlying price
Theta	absolute	✓	(Greek) ratio of the change in the price of an option to the decrease in the time to its expiration
Vega	absolute	✓	(Greek) rate of change of an option's price to the change in the underlying price
Alpha	absolute	✓	(Greek) Gamma / Theta

The **Auto update** button works the same as on the Profile tab.

## Strategy filters

Strategy filters allow selecting a strategy, sorting, number of contracts and how much results will be shown:

The screenshot shows a user interface for filtering trading strategies. At the top, there are five dropdown menus: 'Strategy' (highlighted in blue), 'Stocks', 'Options', 'Risk/Reward', and 'Greeks'. Below these is a larger, light-gray box containing several input fields: 'Strategy' set to 'Straddle', a direction dropdown set to 'Long', 'Quantity' set to '10', 'Sort by' set to 'Risk/Reward', and 'Show top' set to '20'.

You can read more about options strategies on the site of The Options Industry Council:  
[http://www.optionseducation.org/content/oic/en/strategies\\_advanced\\_concepts/strategies.html](http://www.optionseducation.org/content/oic/en/strategies_advanced_concepts/strategies.html)

By default the strategy is Long Straddle and number of contracts is 10 (meaning contract on 10 x 100 = 1000 underlying shares). Default sorting is by Risk/Reward, so you'll see less risky trades on top. (We calculate "2 STD Profit" and "2 STD Risk" at expiry and use these values as proxy to max loss/profit). So "less risky" here stands for "low max risk to max profit ratio" trades. Other possible sortings are:

- by **Capital Required** – by initial investment required to open the position (including margin requirement); the amount by which your "buying power" is decreased
- by **Risk/Cap Req** - by "2 STD Risk" to "Capital Required" ratio
- by **Max return** - by "2 STD Profit" to "Capital Required" ratio
- by **Probability of Loss** - by how probable is the "lose" scenario for the trade
- by **Stock Price**
- by **2 STD Profit** – by maximum profit received at expiry when the underlying price varies within two standard deviations from its current value
- by **2 STD Risk** – by maximum loss at expiry when the underlying price varies within two standard deviations from its current value
- by **Position Cost** – by position open value (positive for debit, negative for credit)

## Stock filters

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

Strategy ▾	<b>Stocks ▾</b>	Options ▾	Risk/Reward ▾	Greeks ▾
<a href="#">Hide inactive Filters</a> <a href="#">Edit Filters</a> <a href="#">Restore Defaults</a>				
<input checked="" type="radio"/> Stock Universe	All USA ▾	or	<input type="radio"/> Stocks	<input type="text"/>
Stock Sentiment	Neutral ▾		with Quiet behavior ▾	
IV Index	Dear ▾		% of HV ▾	

You can select already specified stock list for scan from drop down list or you can just enter stock symbols you need into the **Stocks** text box to the right (comma delimited string).

For example, in the stock filter below we set concrete companies: QUALCOMM (qcom) and Hershey (hsy).

Strategy ▾	<b>Stocks ▾</b>	Options ▾	Risk/Reward ▾	Greeks ▾
<a href="#">Hide inactive Filters</a> <a href="#">Edit Filters</a> <a href="#">Restore Defaults</a>				
<input type="radio"/> Stock Universe	Custom ▾	or	<input checked="" type="radio"/> Stocks	qcom,hsy
Stock Sentiment	Any ▾		with Volatile behavior ▾	
IV Index	Cheap ▾		% of HV ▾	

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

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:

Strategy ▾
Stocks ▾
Options ▾
Risk/Reward ▾
Greeks ▾

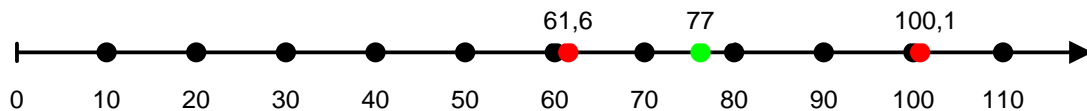
[Hide inactive filters](#)
[Edit Filters](#)
[Restore Defaults](#)

Expiry	Long term ▾	from: 07/18/2015	to:
Moneyness	ATM ▾	from: -10 %	to: 10 %
Expiry spread:	cal. month(s)	from: 3	to: 6
Strike offset:	strikes	from: 1	to: 1
IV difference:		>= 10	
IV ratio %:		>=	
Volume and size:	<input type="checkbox"/> <a href="#">Reject Low Volume</a> <input type="checkbox"/> <a href="#">Reject Low Quote Size</a>		

Here, you set Expiry and moneyness for "Leg 1" and difference (spread) in expiry, strike, and implied volatility for the "Leg 1" and "Leg 2" (Strike Spread and IV filters are in Advanced filters). 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"

We define moneyness as relative position of the boundaries, in which options' strikes should be, with respect to the current price of an underlying asset (current price is a starting point, i.e. 0 %)



For example, we have a set of options with strikes 10, 20, 30, ... etc. (black dots)

The stock price is 77 (green dot) and we set moneyness filter from -20% to 30%

$$\text{Left boundary} = 77 * \left(1 - \frac{20\%}{100\%}\right) = 61,6$$

$$\text{Right boundary} = 77 * \left(1 + \frac{30\%}{100\%}\right) = 100,1$$

So our engine will search among the options with strikes that greater than 61,6 (left red dot) and less than 100,1 (right red dot). According to picture we see that 4 strikes (70, 80, 90 and 100) satisfy this criteria.

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:

Advanced Stock Filters Selection		<a href="#">Close</a>
<input type="checkbox"/> <a href="#">Activate All Filters</a>	HV Short term, days: <input type="text" value="20"/>	
<input type="checkbox"/> <a href="#">Price, \$</a>	HV Long term, days: <input type="text" value="120"/>	
<input type="checkbox"/> <a href="#">Price % change from close</a>	IVX Short term, days: <input type="text" value="30"/>	
<input type="checkbox"/> <a href="#">Volume % chg from close</a>	IVX Long term, days: <input type="text" value="180"/>	
<input type="checkbox"/> <a href="#">Volume EoD % of 1m avg</a>	IVX to use: <input type="text" value="Mean"/>	
<input type="checkbox"/> <a href="#">Capitalization, \$bln</a>		
<input type="checkbox"/> <a href="#">HV_S - HV_L, %</a>		
<input type="checkbox"/> <a href="#">IVX_S - IVX_L, %</a>		
<input type="checkbox"/> <a href="#">IVX_S / HV_S, %</a>		
<input type="checkbox"/> <a href="#">IVX_L / HV_L, %</a>		
<input type="checkbox"/> <a href="#">Total options volume % of EoD OI</a>		
<input type="checkbox"/> <a href="#">Call/Put volume ratio, %</a>		
<input type="checkbox"/> <a href="#">IVX_S Call / IVX_S Put, %</a>		
<input type="checkbox"/> <a href="#">IVX_L Call / IVX_L Put, %</a>		
<input type="button" value="Apply"/>		

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 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:

Advanced Filters Selection		<a href="#">Close</a>
<input type="checkbox"/> <a href="#">Activate all leg 1 filters</a>	<input type="checkbox"/> <a href="#">Activate all leg 2 filters</a>	
<input type="checkbox"/> <a href="#">Bid 1</a>	<input type="checkbox"/> <a href="#">Bid 2</a>	
<input type="checkbox"/> <a href="#">Ask 1</a>	<input type="checkbox"/> <a href="#">Ask 2</a>	
<input type="checkbox"/> <a href="#">(Ask-Bid) % of stock 1</a>	<input type="checkbox"/> <a href="#">(Ask - Bid) % of stock 2</a>	
<input type="checkbox"/> <a href="#">Price % chg from yest 1</a>	<input type="checkbox"/> <a href="#">Price % chg from yest 2</a>	
<input type="checkbox"/> <a href="#">IV 1</a>	<input type="checkbox"/> <a href="#">IV 2</a>	
<input type="checkbox"/> <a href="#">IV % chg from yest 1</a>	<input type="checkbox"/> <a href="#">IV % chg from yest 2</a>	
<input type="checkbox"/> <a href="#">Volume % of OI 1</a>	<input type="checkbox"/> <a href="#">Volume % of OI 2</a>	
<input type="checkbox"/> <a href="#">Delta 1</a>	<input type="checkbox"/> <a href="#">Delta 2</a>	
<input type="checkbox"/> <a href="#">Gamma 1</a>	<input type="checkbox"/> <a href="#">Gamma 2</a>	
<input type="checkbox"/> <a href="#">Vega 1</a>	<input type="checkbox"/> <a href="#">Vega 2</a>	
<input type="checkbox"/> <a href="#">Theta 1</a>	<input type="checkbox"/> <a href="#">Theta 2</a>	
<input type="button" value="Apply"/>		

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.

### 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
Volume % chg from close	Stock volume change from previous trade day total stock volume
Volume EoD % of 1m avg	Previous trade day total stock volume to 1 month average ratio
Capitalization, \$bln	Stock capitalization
HV_S - HV_L, %	Difference between Short and Long term HV
IVX_S - IVX_L, %	Difference between Short and Long term IVX
IVX_S / HV_S, %	Ratio of Short term IVX to HV
IVX_L / HV_L, %	Ratio of Long term IVX to HV
Total options volume % of EoD OI	Total option volume to total end of day open interest ratio
Call/Put volume ratio, %	Total Call volume to total Put volume ratio
IVX_S Call/IVX_S Put, %	Call IV Index to Put IV Index ratio, Short term
IVX_L Call/IVX_L Put, %	Call IV Index to Put IV Index ratio, Long term

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	(Ask-Bid) spread to stock price ratio
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
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.

## Risk/Reward filters

Risk/Reward filters are always empty by default; you can use them for more sophisticated and fine-tuned scan.

Strategy ▼
Stocks ▼
Options ▼
Risk/Reward ▼
Greeks ▼

Capital Required, \$	≤	<input type="text"/>	Risk/Cap Req, %	≤	<input type="text"/>
Debit, \$	≤	<input type="text"/>	Max Return, %	≤	<input type="text"/>
Risk/Reward, %	≤	<input type="text"/>	Probability of Profit, %	≤	<input type="text"/>

**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. So your "buying power" is diminished in any case - if you enter debit or credit strategy, whatever.

**Debit (Credit)** – position open value (positive for Debit, negative for Credit)

- if you enter a debit strategy, the amount of money = debit is taken from your account;

- if you enter a credit strategy, the amount of money = credit is deposited to your account.

**Risk/Reward** ratio - is a ratio of "maximum" theoretical loss to "maximum" theoretical profit.

$$\text{Risk/Reward} = \frac{2 \text{ STD Risk}}{2 \text{ STD Profit}}$$

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.

$$\text{Risk/Capital Required} = \frac{2 \text{ STD Risk}}{\text{Capital Required}}$$

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

$$\text{Max Return} = \frac{2 \text{ STD Profit}}{\text{Capital Required}}$$

This is the return to expiry, not annualized figure.

**Probability of Loss** - an estimate of the probability that the trade will yield a loss. We use a simple model to calculate this value:

$$p = L_{\max} / (P_{\max} + L_{\max})$$

where **P<sub>max</sub>** is probability of maximum profit and **L<sub>max</sub>** is probability of maximum loss

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



## Greeks filters

Greeks filters are always empty by default too.

Strategy	Stocks	Options	Risk/Reward	Greeks
<a href="#">Restore Defaults</a>				
Delta, shares		from		to
Vega (1% move), \$		from		to
Gamma (1% move), \$		from		to
Theta (1 day), \$		from		to
Alpha (Gamma/Theta)		from		to

**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's 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 **Spread Details** page:

**Risk Scenario**

Horizontal axis: Time Step 10 days Vertical axis: Underlying Step 10 %

[Simulate](#)

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

## 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:

Risk Scenario				
Horizontal axis		Time	Step	10 days
Vertical axis		Underlying	Step	10 %
<a href="#">Recalculate P&amp;L</a> <a href="#">Reset All</a>				
Leg 1 volatility:		19.16%	Leg 2 volatility:	
		18.17%		
		Time Steps	10	20
Underlying	\$30.04		-5% (-1075\$)	-5% (-1075\$)
	\$33.79		-4% (-1008\$)	-4% (-1035\$)
	\$37.55		-2% (-557\$)	-2% (-607\$)
	\$41.30		0% (207\$)	1% (224\$)
	\$45.06		3% (712\$)	3% (801\$)

### Some hints on usage:

- Each cell in the matrix shows theoretical return (to date) and P&L
- All the axes' white background fields (time steps, underlying, leg 1(2) volatility) are editable (After editing the fields, please press **Recalculate P&L** button to see recalculated Risk Scenario)
- There are 2 ways to refresh the data:
  - manually, with adjustment of axes values according to market movement (by request): 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: 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.

## Appendix. Greeks representation

This section covers information on the Greeks representation in the Risk Management system.

### Definitions

- **S** - underlying spot price ("raw," not adjusted for dividends)
- **Vol** - implied volatility for an option contract, decimal
- **t** - time to expiry, days
- **r** - continuous interest rate for a given option expiry, decimal
- **C** - option price; C(.) is written below with different arguments.
- **Amt** - number of underlying shares

Greeks are always calculated by finite differences – the option price is calculated in neighbor point(s) and approximate Greeks by finite differences.

**Delta and Gamma** are calculated by their mathematical definitions:

- $\text{Delta} = (C(S+dS) - C(S)) / dS$ , where  $dS = S * ((r - \text{Vol}^2/2)/365 + 0.0523 * \text{Vol})$ <sup>1</sup>
- $\text{Gamma} = (C(S-dS) - 2 * C(S) + C(S+dS)) / dS / dS$

**Vega, Theta, Rho** are calculated as specific increments:

- **Vega** =  $C(\text{Vol} + 0.01) - C(\text{Vol})$  - change in price for a 1% (absolute) change in volatility
- **Theta** =  $C(t - 1) - C(t)$  - change in price from today (days to expiry = t) to tomorrow (days to expiry = t-1)
- **Rho** =  $C(r + 0.01) - C(r)$  - change in price for a 1% (absolute) change in the interest rate;

Some exotic Greeks such as DeltaVega, DeltaTheta, GammaVega, GammaTheta, Alpha (= Gamma / Theta) are calculated by a combination of the above formulas.

### For one contract

**Delta in shares** = Delta \* Amt -- this amount of underlying shares should be sold to establish delta-hedging of the contract

**Delta in \$** = Delta in shares \* S -- this is a cost of delta-hedging; this amount of money should be realized to hedge the contract. (The amount to spend would be (-Delta in \$) USD)

**Gma\$1** (Gamma in Shares for a\$1 spot move) = Gamma \* Amt

**Gam1%** (Gamma in shares for a 1% spot move) = Gma\$1 \* S/100 = Gamma \* Amt \* S / 100 -- this represents the number of underlying shares that should be sold to hedge the resulting delta from a 1% move in spot (if spot increases by 1%, the current delta should be kept for this contract). If it is needed to hedge PL, not Delta, from a 1% change in spot, a half of this quantity; then Gamma in shares / 2 should be sold.

**\$Gamma1%** (Gamma in \$) = Gam1% \* S = Gma\$1 \* S^2/100 - dollar equivalent. The cost of a gamma hedge for PL is Gamma in \$ / 2.

Values of Gamma in shares and Gamma in \$ are a common market practice.

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<sup>1</sup>0.0523 stands for 1 / sqrt(365). Testing shows that it is a rather reasonable choice for dS