

**BEST ONLINE BROKERS** 

# **Barron's 2017 Best Online Broker Ranking**

Fidelity takes the top spot, with Interactive Brokers and TD Ameritrade right on its heels



William Waitzman for Barron's

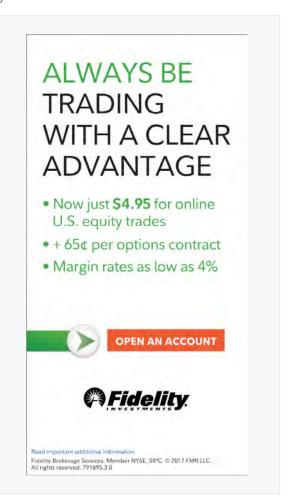
The bull market is on sale for online brokerage customers.

In the run-up to our 22nd annual ranking of *Barron's* Best Online Brokers, two developments topped all others: The three major indexes—the Dow Jones Industrial Average, the Standard & Poor's 500, and the <u>Nasdaq</u> Composite—all set record highs, and six brokers slashed commissions and other fees. At the 16 brokers we reviewed this year, the average monthly cost of trading for an occasional investor had fallen 25% since early 2016, to \$47.51 from \$63.45. That means more of the market's gains are ending up in the pockets of self-directed online traders.

#### Table: How Online Brokers Stack Up

#### **How We Ranked the Brokers**

Charles Schwab kicked off the price wars by cutting its base commission from \$8.95 to \$6.95, and after a flurry of activity, six brokers settled into reduced-fee structures. Following a second cut, Schwab now charges \$4.95 per equity trade, as does Firstrade. TD Ameritrade and E\*Trade dropped to \$6.95 from \$9.99. E\*Trade charges active traders—those who trade more than 30 times per quarter—\$4.95 per transaction. TradeStation announced that it is waiving its \$99 monthly platform fee for its



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sophisticated analysis and trading engine, and also added a flat \$5-per-trade charge to its elaborate fee schedule. And our 2017 winner of Best Online Brokers, Fidelity Investments, also joined in: The firm dropped its commission rate in two steps to \$4.95 from \$7.95.

## Amid a Price War, Interactive Brokers, Tradier the Cheapest

By our calculations, Interactive Brokers ranks as the least-expensive broker for occasional traders, while newcomer Tradier excels for price-conscious frequent traders.

OCCASIONAL TRADER'S* MONTH	ILY COSTS	FREQUENT TRADER'S** M  LOWEST	TATELLY NO.			
Interactive Brokers	\$20.00	Tradier****	\$213.00			
eOption	27.00	Interactive Brokers	854.00			
Merrill Edge***	28,90	eOption	888.00			
Lightspeed Trading	29.94	Lightspeed Trading	1,200.00			
Just2Trade	30.00	SogoTrade	1,506.00			
HIGHEST		HIGHEST	1			
TradingBlock	\$75.00	TD Ameritrade	52,259.00			
Planner Securities	73,70	Planner Securities	2,076.00			
TD Ameritrade	68,60	E*Trade	1,859.00			
E*Trade	68.60	Charles Schwab	1,840.00			
Schwab, Fidelity, Firstrade (tied)	52.60	Fidelity	1,836.00			
AVERAGE (16 brokers)	\$47.51	AVERAGE (16 brokers) 1,5				

All costs assume customer has a minimum of \$100,000 in assets with broker "Occasional Trader" serstock and two options trades per rocalli"Inequent Trader: 100 stock and 100 options trades plus \$30,000 in margin debt, ""Assumes customer qualifies for 100 free stock trades per
month. It not, occasional fee is \$70.60 per month and frequent fee is \$2.226/month. """ Assumes customer oots in to the all-you-can-trade plant
for stocks and options.

"We know that costs matter to investors," says Barry Metzger, a senior vice president in Schwab's Trading Services unit. When Schwab surveyed its clients recently, more than 70% said that cost is a critical component in investing and financial-advice decisions. *Barron's* own reader survey shows that the majority of respondents want to keep their costs at a bare minimum.

"But cost is just one piece of the puzzle," as Metzger says. *Barron's* encourages investors to look at the entire set of services a broker provides, including research and education offerings, and then decide whether the commissions assessed provide adequate value.

Cost is an element in our rankings, and the six brokers who changed their pricing all earned more points in that category this year. The points awarded there are based on the range from cheapest to most expensive, with the least-expensive brokers earning more points.

### Barron's 2017 Best Online Brokers Ranking

No. 1 Fidelity scored highly in virtually all areas—even ruising last year's low ranking for trading costs a bit interactive Brokers did well across the board, though its customer service was on the low side. Like Fidelity, TD Amerirade generally did well, with the sole exception of trading costs.

Broker	Trading Experience & Sechnology	Usability	Mobile	Range of Offerings	Research Amenities	Portfolio Analysis & Reports	Service, Education, Security	Costs	Total	Stars
Fidelity	4.7	4.6	4.9	4.3	4.9	4.9	4.8	2.5	35.6	*****
Interactive Brokers	4.7	4.4	4.3	4.7	4.4	4.9	3,9	4.2	35.5	*****
TD Ameritrade	4.7	4.7	4,9	4.2	4.8	4.9	4.8	1.1	34.1	****
OptionsHouse	45	4.6	4.8	3.9	4.3	4.7	4.3	2.6	33.7	****
Charles Schwab	4.2	4.4	4.5	4.1	4.8	4.4	4.9	2.2	33,5	****
Merrill Edge	3.7	4.2	4.8	3.0	4.8	4.7	4.6	2.4	32.2	****
TradeStation	4.4	4.7	4.2	3.1	4.5	4.3	4.6	2.4	31.8	****
E*Trade	4.2	4.5	4.7	3.3	4.7	4.0	4.6	1.1	31.1	****
Tradier	2.8	4.4	3.7	3.1	3.6	3.4	2.9	4.0	27.9	****
Lightspeed Trading	4.1	3.9	3.7	7.4	3.0	2.5	3.7	3.5	26.8	****
SogoTrade	2.9	2.8	2.6	3.0	3.0	2.2	3.5	2.3	22.3	***
eOption	2.8	2.8	3.7	1.9	2.2	2.1	2.3	4.0	21.8	***
Firstrade	2.0	2.9	3.5	1.9	2.8	2.9	3.4	2.2	21.6	***
Just2Trade	1.5	2.4	3.3	1.1	0.8	1.4	2.6	3.6	16.7	**
Trading Block	2.4	2.7	0.0	3.4	2.7	1.7	2.7	0.7	16,3	**
Planner Securities	1.4	2.8	3.6	1.8	0.7	1.5	2.3	1.5	15.5	**

#### Click table to view larger version

We also take margin rates and other charges into account, and they can affect a broker's score. Schwab achieved the biggest bump in its Cost rating from 2016 to 2017, going to 2.2 points from 0.9 points. Fidelity and TD Ameritrade both edged up a fraction. Margin rates rose this year for almost every broker.

The rise in interest rates—demonstrated by the Federal Reserve once more last week—can help bolster the bottom lines of the brokers that have cut their commissions. The

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increase leads to higher margin-interest rates and higher rates of return on cash held in customer accounts.

As we've written about price-cutting, we've received emails from fans of tastyworks, a new online brokerage launched in January by the founder of thinkorswim, Tom Sosnoff. His acolytes believe that the launch of tastyworks, with its innovative fee structure, was the first salvo in the price war. Tastyworks charges a commission only for opening a position—\$5 for equities and \$1 per contract for options. Closing a position is free.

As much as we admire tastyworks, it seems unlikely that a small newcomer could cause such an upheaval. Schwab, one of the largest online brokers, both by assets under management and by number of clients, isn't a nimble little sailboat that reacts to every passing breeze. It is, rather, a large ship—and it can take time to change headings. The firm appears to have started the process of lowering its fees months before the launch of tastyworks.

Not everyone was eager to join in. TD Ameritrade said as recently as mid-February that it had no plans to cut fees. But when its biggest competitors slashed fees to \$4.95, TD had to respond. "While we have made a point not to get involved in past price wars, in this case, the time was right," says Steven Quirk, the firm's executive vice president of trading. "We had the benefits of a rising-rate environment, the competitive environment, and our integration planning for Scottrade to consider." Scottrade, which TD recently purchased, charges \$7 for a stock trade, so TD's new pricing is in line with that of its acquisition.

Quirk says the brokerage business will continue to be dynamic, but warns against a price war that takes all participants to the bottom. "Firms that try to compete across multiple dimensions, such as price, product, and experience, will inevitably fail to be the best at any of them," he says, adding that nobody wins in a price war when firms cut back on platform innovation, client service, and investor education.

**A WAVE OF CONSOLIDATION** continues to break over the industry, with the venerable Scottrade having been acquired by TD Ameritrade, and OptionsHouse purchased by E\*Trade. At some point this year, Schwab plans to complete its integration of optionsXpress, but E\*Trade is moving at a faster pace, expecting its new unit to be assimilated this year.

The number of online brokers has steadily declined over the past decade, and fees are generally lower but much less variable. In 2007, we reviewed 26 firms and 29 total platforms. Commissions for a stock order that year averaged \$6.35, with a range going from free (at a couple of long-gone sites) to \$14.95 (at Muriel Siebert). Placing an order for 10 options contracts resulted in much more variation, from a low of \$7.50 (at Interactive Brokers) to a high of nearly \$40 (at <a href="Bank of America">Bank of America</a> Investment Services). And not every broker had enabled options trading at that time.

## Playing to Their Strengths

We again deemed TD Ameritrade best for long-term and novice investors. Interactive Brokers was tops for frequent traders and options players. Schwab scored on education and Merrill Edge, for personal service.

BEST FOR LONG-TERM INVESTING	STARS	BEST FOR NOVICES	STARS
TD Ameritrade	****	TD Ameritrade (Website)	****
Fidelity	****1/2	Fidelity	****
Charles Schwab	****/2	Merrill Edge	****
Merrill Edge	****	Charles Schwab	****
E*Trade	****	E*Trade	****
BEST FOR FREQUENT TRADERS	STARS	BEST FOR INVESTOR EDUCATION	STARS
Interactive Brokers	****	Charles Schwab	****
TradeStation	****	Fidelity	****
Lightspeed Trading	****	TD Ameritrade	****
Tradier	****	Merrill Edge	****
TD Ameritrade (thinkorswim)	***	TradeStation	****
BEST FOR OPTIONS TRADERS	STARS	BEST FOR IN-PERSON SERVICE	STARS
Interactive Brokers	****//	Merrill Edge	****
TD Ameritrade (thinkorswim)	****1/2	Charles Schwab	****
OptionsHouse	****1/2	Fidelity	****
TradeStation	****	TD Ameritrade	****
eOption	****	E*Trade	****

The 16 firms reviewed here all allow options transactions. Stock trading ranges from free (at Merrill Edge, which gives customers 100 no-fee equity trades per month, as long as they hold the requisite assets) to \$7.50 (at TradingBlock). Ten options contracts incur commissions ranging from \$4.50 (eOption) to \$15 (TradingBlock).

Another big trend this year is the proliferation of robo-advisors. Ten of the 16 firms in our survey report offering an automated portfolio-builder and rebalancing feature to clients. Though frequent traders are most coveted by online brokers, growing assets under management is also a key driver of success. Robo-advisors are nudging reluctant investors, particularly millennials, into the markets.

Ram Subramaniam, head of brokerage and investment solutions at Fidelity, says the firm "believes the easy access and lower fees for professionally managed money has encouraged younger investors to move from savers to investors, which can help them meet their longer-term financial goals." We did not explicitly review robo-advisory services for this feature, though having one helped a broker's Range of Offerings score.

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Our informal survey of *Barron's* readers and other interested online traders turned up fewer security worries than in the past two years. Though the Identity Theft Resource Center (idtheftcenter.org) reports an increase of 40% in overall data breaches in 2016, uncovering a total of

1,093, only 52 (4.8%) of those occurred at banks or other financial institutions.

A data breach occurs when an individual's name, along with his or her Social Security and driver's license numbers, and medical or financial records, have been exposed electronically or on paper. The only brokerage that appears on the list of those reporting a breach is Schwab, which told customers about "unusual login activity" in May 2016. "We believe someone may have obtained your username and password from a non-Schwab account or Website that you use and tried them successfully on Schwab.com," the firm told clients.

THIS SORT OF SECURITY BREACH falls roughly into the user-error bucket, though. If you use the same user name and password for multiple sites, scammers might be able to access your account. Fortunately, most of the brokers detect when you are using a new device or browser and require additional steps before you can log in. Schwab's Metzger says, "Our sites use multilayered protections beyond login name and password before granting access to an account. In the event unauthorized account activity is

suspected, the user is prompted to answer additional security questions, and failed login attempts are limited."

Mobile platforms continue to drive development at most brokers. Every brokerage in our survey with a mobile app—15 of the 16—reported growth ranging from 15% to 30% in trades placed on phones and tablets. To make the experience seamless across platforms, brokers have, for the most part, made it possible to synchronize watchlists and trading defaults across platforms.

That means that when you set a trading default on, say, the Web browser of your broker's services so that your standard order type is a limit order, that setting also appears on your mobile app the next time you log in, and vice versa. This is most helpful when your watchlists synchronize between your desktop or laptop and your mobile device. Until this year, most brokers required you to set up watchlists separately on each platform, a tedious task that, mercifully, appears to have gone extinct.

Smartwatch apps, which primarily display alerts such as trade executions, are offered by 11 of our 16 brokers. The Apple Watch is supported by 10 of our brokers; one (Just2Trade) supports only Android-based watches. Two brokers, Tradier Brokerage and TD Ameritrade, support both Apple and Android watches.

**BUT LET'S GET TO** the real excitement of our rankings. For 2017, *Barron's* reviewed 16 firms, each of which supplied us with a large amount of data and hands-on trading accounts. As has become customary, Vanguard once again rejected our overtures. We considered resorting to other means because so many readers are interested in seeing how Vanguard would stack up. But since much of the data we request is difficult to find without a firm's help, we decided to move on.

Two brokers we've examined for many years, Scottrade and TradeKing, stepped away this year due to acquisitions. (In TradeKing's case, the buyer was Ally Bank.) But we have two newcomers: Planner Securities and Tradier, each of which has an interesting story to tell.

To analyze 2017's top brokers, we took a hard look at the value they offer to clients, analyzing security, mobility, and social-media features as well as the depth of their investment tools and their trading capabilities. Our primary consideration in judging these 16 firms is how they work for our readers, who are high-net-worth active investors. Price-improvement statistics are built into our Trading Experience and Technology category.

The ability to set up a personalized experience, both on a computer and with a mobile device, is a key area of focus. We want to see how smoothly the system moves from idea generation to trade ticket, and then on to reporting the results of one's hard work. Customizable reporting is a concern. We think it's important for investors and traders to understand which of their strategies work—and which need a little more work.

Three firms earned  $4\frac{1}{2}$  stars, and our winner, Fidelity, was a repeat from 2016. Its margin was a bare 1/10th of a point over longtime favorite Interactive Brokers. TD Ameritrade moved up one spot to No. 3. Five brokers, each with unique strengths, earned four stars: OptionsHouse, Charles Schwab, Merrill Edge, TradeStation, and E\*Trade.

Because there are so many different trading styles, *Barron's* also pinpoints top online brokers in six categories—frequent trading, in-person service, investor education, long-term investing, services for novices, and options trading—to help you decide where you might want to open an account or transfer an existing one (see table). We also show the brokers that were at the extremes when we calculated the monthly cost of trading for infrequent traders, as well as for those who trade multiple times per day.

You can read about our methodology at Barrons.com in <u>"How We Ranked Our Online Brokers."</u> and review the categories that informed our analysis in the tables <u>"Barron's Online Broker Survey: How the Brokers Stack Up."</u> the most comprehensive comparison we're aware of listing the tools and services each firm provides. This year, we expanded the tables displaying research and news based on reader requests. Those requests are extremely helpful in our research, so please keep them coming.

**Fidelity Investments** (4½ stars) wins because of its excellent mobile tools and assistance available whenever you want it. The firm is one of the rare brokerages that maintained access to international markets when others walked away. Now that the company has lowered its base commission to \$4.95 and its per contract options fee to 65 cents, Fidelity's full suite of tools and services is also a terrific value.

Fidelity is leading the way in making the quality of its trade executions more transparent. We're fans of the Fidelity report that displays after every execution showing how much price improvement its trading engine generated.

As one of the three brokers that participate in the Financial Information Forum's voluntary extended reporting program, which is working to standardize execution quality reports (the others are Schwab and Scottrade), the firm also puts out quarterly reports that show the percentage of orders that were price-improved, and the average savings per order. In the fourth quarter of 2016, a 500-to-1,000 share order of a stock listed on the S&P 500 attained an average savings of \$10.25 per order at Fidelity. That gives you more back in price improvement than you pay in commissions.

On its Website and in mobile apps, Fidelity's design mandate is to create a unified customer experience, so that you don't feel like you're in a different universe on your tablet compared with your desktop.

Its exchange-traded-fund screener now includes technical pattern recognition powered by Recognia, which lets you look for particular price events, such as a moving average crossover or, perhaps, a bullish engulfing line for candlestick enthusiasts. The screener will display all of the technical events you've chosen, then narrow down the choices further by fundamental items, such as market capitalization, or pricing characteristics such as volatility. Fidelity also has an ETF Compare tool, which shows you similar funds and lets you compare them side by side. ETFs that trade commission-free—91 in all at Fidelity—are indicated with an icon.

Fidelity has made a concerted effort to go after the millennial market, including repackaging educational content onto its mobile site. There are 12 programs available now, with more being added monthly. The Planning and Guidance center is designed to allow customers to focus on the future, planning for any kind of goal from college tuition to retirement to taking a long vacation. Fidelity Go, the firm's robo-advisory service, is clearly aimed at the younger set.

Fidelity has also added a site that allows guest access for 30 days and includes its premium research. When the 30 days are up, you can decide whether to open an account.

Interactive Brokers (4½ stars) maintains its position near the top of the charts. IB is aiming at more than just the hyperactive trader these days. In order to ease a new customer onto its flagship trading platform, the downloadable Trader Workstation, or TWS, IB has launched a layout library that includes 20 predefined setups for different styles of trading. There are templates for options traders, fundamental research, and traders who focus on the news. You can set up as many layouts as you'd like and switch among them using the tabs at the bottom of the screen.

To keep from getting lost in the complexity of the Trader Workstation, IB introduced an artificial-intelligence-enabled assistant named IBot, which responds to plain English questions. IBot can answer queries about price quotes, option chains, order placement, upcoming corporate events, and market activity, among other things.

The trader's journal has been enhanced significantly, allowing you to organize your notes by underlying symbol so you can see all of your notes in one streaming view. These notes are stored on IB's server, so you can access them whether you're using the desktop, Web, or mobile version of the platform.

IB also offers 10 low-fee robo-advisory portfolios from its Covestor Smart Beta Portfolios unit. The portfolios combine automated investing with human oversight, and their risk-return profiles are potentially more profitable than passive index trackers. Rather than being invested in ETFs, the portfolios, which are rebalanced quarterly, include a wide range of individual stocks. The minimum investment is \$5,000, and the portfolios may include fractional shares of some of the stocks. Fees top out at 0.08%.

**TD Ameritrade** (4½ stars) moved up into the top three this year by enhancing each of its platforms. On the Web, the experience of analyzing stocks has become more personalized in the My Stocks Overview section of its research section. The firm's thinkorswim platform added global indexes to the charting package, as well as Federal Reserve data. Technical traders can use an enhanced scanner, which looks for classic and candlestick patterns. You can even set up a scan graphically, by dragging and dropping components into the tool.

One of the creature comforts we appreciate is the way TD watchlists can be generated quickly from the output of a screener and then made available to all platforms—including mobile. You can have a multiscreen setup that includes your mobile devices, and all of your data and watchlists are instantly synchronized.

The designer crew at TD has made thoughtful changes to the mobile experience, including the way long watchlists are sorted on smaller devices. Some other brokers don't allow you to access real-time streaming data on multiple devices simultaneously, mainly because of the cost of supplying the data. "We're good at negotiating with data providers," notes a technical manager at the firm. With 20% of trades occurring on mobile devices, the focus on mobile is appropriate.

Over the past year, TD launched its own robo-advisory service, Essential Portfolios, via its advisory affiliate, TD Ameritrade Investment Management. Goal-setting is a key piece of this service, with five diversified model portfolios recommended by Morningstar. Slider bars allow the client to make adjustments at any point in the investing cycle, and display the updated results. For clients who are not projected to hit their targets, up to three tips are presented to help them get back on track.

**OptionsHouse** (4 stars), which was acquired last year by E\*Trade, continues to operate as a separate entity but will be integrated into a single platform this year. The combined firms are targeting the summer for the completion of the process, which will offer the OptionsHouse platform to E\*Trade customers, and vice versa. OptionsHouse's Steve Claussen assures us that the platform will not be going away, and will be developing additional tools for analyzing and trading futures. When the merger is complete, OptionsHouse customers will be able to utilize E\*Trade's extensive education offerings as well as its recently-launched robo-advisory.

On the mobile front, OptionsHouse launched two new native mobile apps in 2016, and is currently rolling out a new HTML5 application that can run on any device, from desktop to smartphone. The new layout is extremely flexible, and the design team worked to reduce the number of clicks and taps that it takes to get around, and to provide more functionality for active traders. Options chains displays snap onto the screen. When placing an options order, data for the underlying stock continue to stream, keeping the trader up to date during the process of crafting a spread.

The platform has switched from a proprietary charting package to one powered by third party Chart IQ, which has given OptionsHouse additional technical studies as well as fundamental data (dividends, earnings, splits) that display on a chart.

On mobile, the platform has been redesigned so that it can be operated with one hand, either right or left, for quick access to quotes and trading. The mobile options chain uses a tumbler for choosing strikes and dates rather than long drop-down menus. There are multiple trade analysis tools on both mobile and the HTML5 platform to make sure you know the probability of success.

**Charles Schwab** (4 stars) continues to pull tools from optionsXpress into its flagship Web platform, and in the last year has invested into its trading infrastructure to support those tools. Once the integration is complete, Schwab will offer portfolio margining, which will be a benefit to active traders who use options to mitigate risk. Idea generation functions, including Trade Source, a gain/loss analyzer, have also been added to the Website.

The site has also been enhanced with additional personalization, such as a customizable opening view with widgets that can be dropped into the display. Once you've updated this view on the Web, it follows you to your mobile app. For active traders, StreetSmart Edge added quite a few options tools, including a nicely laid-out trading workflow. A probability calculator is built into the trade ticket. When viewing

account positions, you can resubmit, close, or roll out a position into a future strike with minimal effort.

One area where Schwab has made a big push is transparency around order execution and quality. The firm has introduced a new order routing system that allows it to make direct comparisons of quality across execution venues. During the fourth quarter of 2016, this new system ensured that 98.4% of shares traded in the 500-1,999 share bucket were executed at the current market quote or better, and the average savings per order was \$11.29. This focus on execution quality is most welcome.

Schwab's robo-advisory service, Schwab Intelligent Portfolios, managed to amass \$12.3 billion in assets by the end of 2016, which is an incredible figure for a service that launched in 2015. The firm has added another level of financial planning, Schwab Intelligent Advisory, which combines professional advisors with automated portfolios. Performance details are displayed upon logging in to the Website or the mobile apps.

**Merrill Edge** (4 stars) found that about 50% of its customers who are using its mobile apps are mobile only, so it pushed to enrich the experience on smartphones and tablets. The apps now include a Dashboard feature that displays your portfolio, and quite a bit of information related to your holdings such as corporate events, ratings changes, and news. The events are presented based on how recently they occurred, and how impactful they are to your portfolio.

When placing a trade on a mobile app, the entire process can be done on a single page rather than swiping back and forth. There is also quite a bit of customizable research and education content that can be viewed on mobile. The charting function is slick — when you switch to landscape mode on your device, the charts are fully interactive, which includes indicators, event markers, and comparisons to peers, indexes, or sectors. Store the template and use it again for a different symbol. There was also an emphasis on long-term investing on mobile, integrating goal planning content with self-service functions. In April, there will be a suite of mobile education modules through a partnership with Morningstar.

Back on the Website, an options strategy builder has been launched, which helps a customer filter strategies by market outlook and volatility expectations. The options order entry screen was updated as well. The MarketPro platform includes the OptionsPlay toolkit as well as Recognia's pattern recognition.

Life events drive the planning and goal-setting capabilities of the platform. More than 20 life events, such as getting married, sending a child to college, buying a house, or retiring are included. Merrill has been baking in an enterprise-wide approach to helping clients meet their goals with varying levels of assistance from completely self-directed to advisor managed. Merrill Edge Guided Investing is the firm's robo-advisory, which makes it possible to restrict the ETFs that will be included in the account. Customers with a Bank of America relationship, whether checking, savings, mortgage, or credit card, can see a unified view of all accounts from Merrill Edge. You'll find financial advisors in almost every Bank of America branch.

**TradeStation** (4 stars) dropped its \$99 monthly platform fee, and added a \$5 flat rate commission, which could be more appealing to less active traders. All customers will be able to access the firm's RadarScreen tool for no extra charge as well. GainsKeeper, a tax management system, has been integrated to make April a less cruel month. Other enhancements include an Intraday Short Locate app to allow short sellers to find shares to borrow. When viewing quote detail on a particular stock, you'll be able to see an "easy to borrow" or "hard to borrow" indicator. Several algorithms for managing large block trades have also been published.

OptionsStation Pro is also available to all customers for no additional fee, and it has been simplified considerably in the last year. At the bottom of the options chain screen are four tabs rather than the previous 12, with access to trading, analysis, position management, and search. When viewing an options chain, as you click on a bid or ask, a spread gets built. The platform recognizes the spread you are building, or you can click on a drop-down menu to start with a particular strategy. The Analyze tab displays a profit/loss graph, while the manage tab lets you quickly roll a strategy out, or add legs.

On mobile devices, options chain displays were expanded, including Greeks calculations. Conditional order types were enabled on mobile, as well as the ability to close all positions with a click.

The firm added a huge amount of content to its educational offerings, with resources that address all asset classes and skill levels. There are live Webinars every day the market is open, including those on strategy trading, daily market intelligence, and "I Want To Be A Trader" sessions for novices. The platform is ideal for technical analysis junkies, and for those who want to build their own trading system.

**E\*Trade** (4 stars) rolled out its new Portfolio display last fall, which offers a much cleaner layout with easier access to additional functionality. The aim was to allow customers to get more tasks done without having to leave the page, which was a most welcome update. The entire navigation experience was overhauled and simplified; as a result, the Website feels much cleaner and up-to-date. The Estimated Income tool was overhauled, giving customers a clearer picture of how their portfolios are generating income with a customizable time frame and the ability to seek out additional income.

E\*Trade Pro's charting package was significantly enhanced as well, including 110 technical and fundamental studies and comparison tools. The charts created in E\*Trade Pro can also be loaded in the mobile apps, which is a welcome cross-platform integration.

With the acquisition of OptionsHouse, E\*Trade will be able to offer additional options analytics and trading functionality later this year. E\*Trade launched its own roboadvisor, Adaptive Portfolio, in mid-year, which allows combinations of actively and passively managed ETFs and mutual funds. Portfolio analysis functions look similar when viewing a robo-generated portfolio or your regular portfolio in terms of asset allocation. The firm offers three other managed solutions with higher initial minimums.

**Tradier** (3½ stars) is an interesting animal. This is its first year in our survey since its founding in 2012, and what it provide is essentially a trading engine and a back office management system to which third- party developers can attach a front end. So it's hard to review when compared to the others in the story since there are so many possibilities inherent in this model. There are currently about 100 developers who partner with Tradier, including eSignal, Quantcha, Mobile Interactive and MissingStep. CEO Stephen Ehrlich, an industry veteran, joined the firm in May and says it plans to add another 100 providers and build its own front end this year. Ehrlich also said that it is about to announce an acquisition but was not ready to reveal the target when we went to press.

Customers can use any front end they'd like, and subscribe to multiple partners. Since all account settings and data are stored in the cloud, you could use Livevol Core for your options trading and analysis, and then switch over to Technician for chart-based analysis and trading. Mobile apps are dependent on the partner. Most of the partners charge a subscription fee that is often waived based on trading activity.

The platform earns 3½ stars based on its flexibility and pricing. In April, Tradier will offer its customers monthly flat fee possibilities for unlimited trading: \$19.95 for equities, and \$99 for options. Currently the flat fee is available through a handful of partners including EF Hutton (the direct investment platform that owns the storied name), Chart IQ, Equities.com, and Key2Options. Very frequent traders could save a lot of money using these flat fees.

**Lightspeed Trading** (3½ stars) spent the first half of 2016 focusing on its small institutional clients, but turned back to the retail and active trader space in the second half of the year. One of its goals was to provide more content to clients, which resulted in a partnership with TipRanks, which lets you evaluate analyst and blogger recommendations, and includes a real-time feed of analyst updates. There were also some cosmetic enhancements to the order entry process, making it simpler.

For options traders, Lightspeed customers can access the Livevol options scanner for free, which can otherwise cost you \$100 per month. A smart order router for complex options trades was also implemented this year. The platform performed very reliably during the whirlwind trading episodes experienced over the last year. It's worth a look for the very active trader or hedge fund.

SogoTrade (3 stars) redesigned their Website in the last year, making navigation much simpler. They also put the entire account application process online, which saves international applicants a lot of time since they no longer need to print out, sign, and mail the new account forms. There were also enhancements made to the API, allowing developers and institutional customers to connect their own front end to the SogoTrade engine. OptionsPlay has been fully integrated; clicking on Trade once a spread has been chosen by the investor populates a trade ticket. "About 75% of our customers trade options," reports Senior Vice President Kris Wallace.

The firm is making a conscious effort to attract cost-conscious customers who don't want to be swallowed up by one of the larger firms. So they are offering 100 free trades for new clients for the first 30 days after an account is opened. They also offer their lowest pricing tier, \$3 per equity trade, to customers who transfer \$10,000 or more into a new account. With offices in Taiwan, the firm caters to Chinese-speaking traders.

SogoTrade's parent company acquired MarketRiders this month, one of the early entrants in the robo-advisory space. Wallace says, "The days of 1% and greater advisory fees are coming to a close. A large and growing percentage of the under-40 age demographic demands mobile access to advanced portfolio asset allocation models at competitive pricing."

**eOption** (3 stars) completed the launch of its new desktop and mobile trading platforms in 2016, which includes enhanced research and improved charting technology and increased security. The mobile platform is moving closer to the desktop in terms of functionality, but remains a different experience for now. The firm's guiding light with new development is now "mobile first," and they are making sure that all new features will be delivered to iOS and Android platforms simultaneously with the desktop. Watch lists and other features sync across platforms.

Social media sharing has been enabled in the platform, allowing customers to share articles to a variety of venues. The charting platform has been enhanced, and displays entry and exit points for your trades. When placing a trade, all commissions and fees are explicitly spelled out, including regulatory fees, so there are no surprises.

The big advantage to eOption is the ability to trade enormous spreads at low cost. This firm is by far the least expensive choice for heavy options traders, and the enhancements to the platform make it easy to build spreads quickly.

**Firstrade** (3 stars) focused on enhancing its options platform over the last year, adding support for 3- and 4-legged strategies. The ability to roll a strategy forward was added as part of this upgrade, as was a rewrite of the buying power and risk engine to provide additional funds for purchase of securities for those using margin.

The firm was one of the six cutting its commissions this winter, and is now even with Schwab and Fidelity at \$4.95 for equities. Firstrade remains committed to providing real-time streaming data, high quality market information, and research. It also has multilingual customer service representatives available to provide live help. CEO John Liu says, "We believe it is vital that customers are able to reach out to a real person when they have questions about their money."

Firstrade is seeing trades on its mobile platform grow to 25% of all transactions placed, and expects to see 30% by the end of the year. They are launching a new mobile app later this year, and expect the number of mobile users to increase significantly across the industry.

Just2Trade (2 stars) streamlined its Website and enhanced their mobile apps over the last year. Just2Trade's fees are very low, at \$2.50 per stock trade, but the firm does not offer access to mutual funds or bonds. The Web-based trading application has streaming data with stock and options trading functionality that is relatively basic compared to others in the survey. Tabs offering access to charts and trading ideas open new windows that access third-party Websites, including advanced charting under the TradeX banner and trading ideas on BestTrades.

For more advanced trading and analytical capabilities, you can access your Just2Trade account through several third-party applications, though you'll pay additional fees.

These include the recently-added MetaTrade, Sterling Trader Pro, OEC Trader and CQG Trader. The mobile futures trading platform, iBroker, is also available.

**Trading Block** (2 stars) had a fairly quiet year in 2016 as most of the firm's focus was on rebuilding its middleware to better serve its network of registered independent advisors and brokers. The long-scheduled revamp of the client-facing front end will take place this year. Trading Block's score suffers because they do not offer a mobile trading platform yet, and fees are on the high side after all the other price cuts.

TradingBlock's suite of proprietary scanners, which include TradeBuilder and Portfolio Hedger for free, allow you to look for options strategies and collar strategies to protect existing stock or ETF positions. You can add EdgeFinder for \$199/month, which is a real-time customizable scanner that analyzes over 30 different variables to locate potential trades. It also has a method for finding mispriced contracts, which can result in more profitable trades.

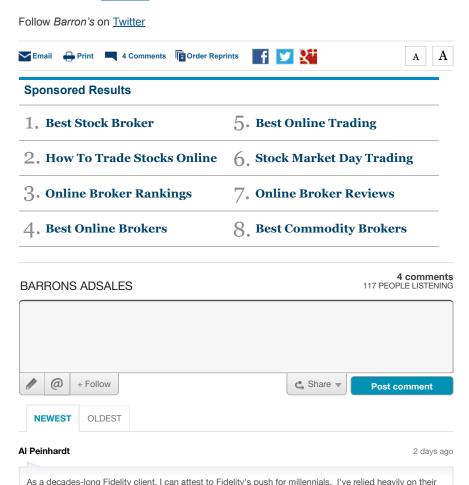
**Planner Securities** (2 stars) focuses on bringing foreign accounts to the U.S. markets. Its current big push is into Brazil, but the firm is also present in Russia, Ireland, and Bulgaria. The platform offers research on Brazilian ADRs, and also automatically opens an iBillionaire robo-advisory account for every new customer. "If you trade, allocate 10% of the commissions generated and put them into the robo," says Humberto Santos, Planner Securities' managing director.

The trading platform is AlphaPlan, which is a flexible Web-based application. The firm's investment banking side also provides private equity, and offers management and financial advisory services to professional soccer players from Brazil and elsewhere.

Email: editors@barrons.com

Email: theresa@twcarev.com

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screener. However, just this week they dumped their old classic screener and substituted a really dumbed

down version that's reduced its functionality. I'm trying out a screener that I have to pay for, but I'd be interested in whether another broker has a good screener. Like Reply Flag Share

**Paul Foote** 2 days ago

While I have a Fidelity account for its research resources, I seldom use the account. Fidelity provides a desktop platform only for its most active taders. Anyone can have the best desktop platform from thinkorswim. Nio one matches thinkorswim's On Demand for backtesting. With thinkorswim, I do not pay ticket charges for options-only trades. I can enter multiple-leg transactions in a single ticket. In my Fidelity account, I cannot even enter a married put transaction as a single transaction. I need to pay Fidelity two ticket charges. In my optionsXpress account, I can enter multiple-leg transactions. In my Schwab accounts, I cannot place all of the same transactions in a single ticket. Schwab has been claiming for a long time that it will integrate optionsXpress. Schwab has failed to do so. Like Fidelity, Schwab charges me a ticket charge for an options-only trade. Considering costs only, there are some brokers offering lower costs for options traders. However, thinkorswim offers prompt trade support, swim lessons, chats with other traders, and a huge number of technical studies from which to select.

Flag Share 2 Like Reply

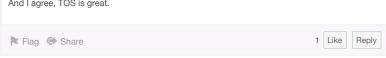
## MICHAEL SANDRIK 2 days ago @Paul Foote Agreed, TOS is great.

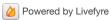
Like Flag Share Reply Theresa Carey BARRON'S

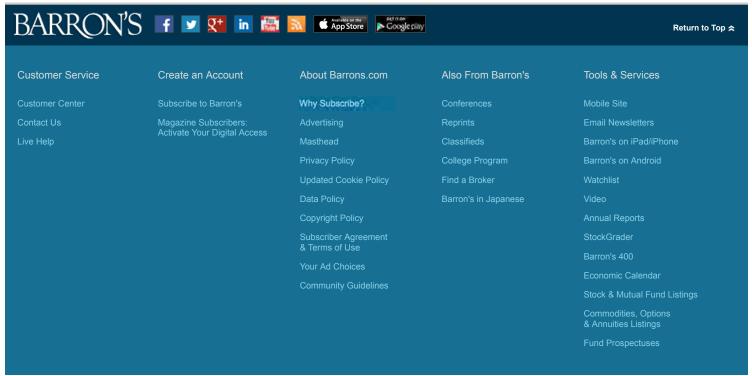
Schwab says the integration will be completed this year. They had a ton of back-end work to do on both sides. WHen the integration is completed, portfolio margining will be available, which requires an entire revamp of their risk management system.

Fidelity will let anyone have the platform who asks, really, especially if you have lot of assets in your account(s). There are extra costs to Fidelity to provide all the streaming data, so they don't just give it away.

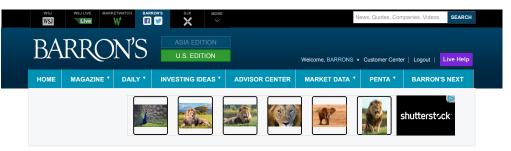
And I agree, TOS is great.







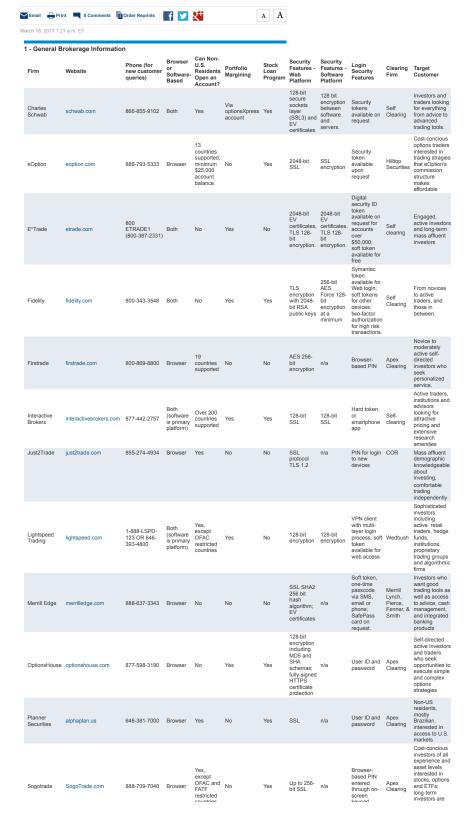
1 day ago



#### BARRON'S TABLE WIDE

#### Barron's Online Broker Survey 2017: How They Stack Up

Here are the 7 categories of service we examined to rate brokers for online stock and options trading.



Countries	reypau	target of its new
		MarketRiders acquisition

											acquisition
TD Ameritrade	tdameritrade.com	800-454-9272	Both	Yes	Yes	No	AES SSL	AES-256	Device recognition; unfamiliar device triggers challenge questions	Self clearing; Forex clearing by Wedbush	The entire spectrum of the investing and trading community; tools, services, and education tailored to each level
TradeStation	TradeStation.com	800-808-9336	Both (software is primary platform)	Yes	No	Yes	128-bit SSL	Proprietary security features	Two-step verification through Symantec VIP	Self- clearing	Highly active, sophisticated retail traders, and less active traders who aspire to more, seeking advanced analysis and execution capabilities
Tradier	tradier.com	980-272-3880	Both	Yes	No	No	n/a	n/a	User ID and password.	Apex Clearing	The engaged retail investor
TradingBlock	tradingblock.com	800-494-0451	Both	Yes, 4 countries supported	Yes	No	Up to 256- bit SSL; Sterling platform maintained by provider	256-bit SSL	No	Apex Clearing	Engaged stock investors, options investors, independent investment advisors and registered representatives on Web platform; active traders on software platform

2 - TRADE	EXPE	RIEN	ICE
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	Customizable Trading Defaults	Tax Lot Selection When Placing Order	Multiple Order Entry	Orders be staged for later entry	Place orders in multiple accounts simultaneously	Trades placed in dollar amounts (ex: \$10,000 of MSFT)	Basket trading	Customer designation of order routing	Customer routing orders to IEX	Automated trading strategy	Trading journal	Fractional shares of stock	Automatic dividend reinvestment
Charles Schwab	In StreetSmart Edge	Yes	Yes	Yes	No	Yes	Yes	Active traders enabled for direct access	No	No	In StreetSmart Edge	Yes	Yes
eOption	Yes	No	Yes	No	No	No	No	No	No	Autotrade newsletters supported	No	Yes	Yes (account- wide setting)
E*Trade	E*Trade Pro and mobile apps	Yes	Yes	E*Trade Pro: Yes	No	E*Trade Pro: Yes	No	E*Trade Pro: Yes	E*Trade Pro: Yes	E*Trade Pro: Yes, via API	E*Trade Pro: Yes	Yes	Yes (broker- assisted)
Fidelity	Yes.	Yes	Yes	Yes	Yes (Active Trader Pro only)	Yes (Web only)	Yes (Web only)	Web: Options only. Active Trader Pro: Yes	No	In WealthLab Pro	Yes	No	Yes (account- wide setting)
Firstrade	No	Adjusted after trade via live broker.	No	No	No	No	No	No	No	No	No	Yes	Yes (post- trade)
Interactive Brokers	Yes (extensive)	Yes	Yes	Yes	Yes	Yes	Yes (multiple methods)	Yes	Yes	Yes, via API	Yes	Yes (Covestor Smart Beta)	Yes (account- wide setting)
Just2Trade	Yes	No	Yes	No	No	No	Yes	No	No	No	No	No	No
Lightspeed Trading	Yes (extensive)	No	Yes	Yes	RealTick or Sterling: Yes	No	Yes	Yes	Yes	Yes, via API	No	Yes	No
Merrill Edge	Yes	Yes	Yes	Yes	No	Yes	No	Via live broker	Yes, via live broker	No	Yes	Yes	Yes
OptionsHouse	Yes	Yes	Yes	Yes	Yes	Yes	No	Via live broker	No	Yes	Yes, an excellent implementation	Yes	Yes, via live broker
Planner Securities	Yes	No	No	No	No	No	No	No	No	No	No	Yes	Yes
Sogotrade	Yes	No	No	No	No	Yes	No	No	No	No	SogoOptions: Yes	Yes	Yes
TD Ameritrade	Yes (extensive via thinkorswim platform)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TradeStation	Yes (extensive)	No (FIFO only)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	A strength of this platform	Yes	No	No
Tradier	No	Yes	Yes	Yes	No	In development	Yes	No	No	Yes	Yes	No	No
TradingBlock	Software only	No	Via software	Yes (software)	No	No	Software: Yes. Web: Advisors only	Yes (software)	Yes (software)	Software platform via API	No	No	By request to trade desk

3 - Range of Offerings
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Charles over Schwab 10,0 stoc avai	0,000 ocks railable short	226	16,807	13,026										
, ,	200				7,046	4	C, T, M, CD, I	Via oX account	Via oX account	Via oX account	Yes	8 currencies available for equity trading	Schwab Intelligent Portfolios	Global investing services (via broker) in 30 countries
E*Trade 6,00		0	8,876	1,289	451	4	C, T, M, CD	No	No	No	Yes	No	No	None
	000	133	9,103	5,877	4,474	4 online, up to 8 via live broker	C, T, M, CD, I	No	Yes	Yes	Yes	No	Adaptive Portfolio	None
Fidelity 3,00	000	91	11,681	3,816	3,671	4	C, T, M, CD. I via broker.	No	No	No	Yes	16 currencies online, 4 more via broker	Fidelity Go	Canada, Mexico, So. America (3), Europe (24), Asia (12), Pacific Islands (3), So. Africa.
Firstrade 4,20	200	12	12,954	5,241	473	2 online, up to 5 via broker	C, T, M, CD	No	No	No	Yes	No	No	None
Interactive Brokers 7,40	400	41	8,327	5,567	2,911	8	C, T, M, CD, I	Yes	Yes	Yes	Yes	22 currencies, 91 pairs	Covestor Smart Beta, Portfolio Builder, various 3rd party options	Canada (7), Mexico (2), Europe (46), Asia (12), Pacific Islands (4). CFDs on multiple exchanges.

Just2Trade	3,800	0	0	0	0	2	n/a	No	Yes	Yes	Yes	No	Via Meta Trader 5 Market Place	None
Lightspeed Trading	5,600	0	0	0	0	4+	C, T	No	Yes	Yes	Yes	38 pairs	No	None
Merrill Edge	3,800	0	13,270	6,541	6,153	2	C, T, M, CD. I via broker.	No	No	No	Yes	No	Merrill Edge Guided Investing	Via live broker
OptionsHouse	4,000	5	12,472	4,946	0	4	C, T, M, CD, I	Yes	Yes	Yes	Yes	No	No	Futures on dollar denominated products
Planner Securities	No answer	0	Via Live Broker	0	0	4	C, T, I	No	No	No	Yes	No	Yes	Via live broker
SogoTrade	3,925	0	12,474	4,800	340	4	C, T, M, CD and I via broker.	No	No	No	Yes	No	MarketRiders	None
TD Ameritrade	3,000	101	13,071	7,891	4,019	8	C, T, M, CD; I via broker.	Via broker	Yes	Yes	Yes	77 Pairs	Essential Portfolios	Via live broker
TradeStation	3,000	0	4,854	988	0	4+	Via broker	No	Yes	Yes	Yes	No	No	Europe (7)
Tradier	4,000	0	12,000	4,900	400	4	C, T, M, CD	No	No	No	No	No	Openinvest	None
TradingBlock	4,000	0	12,406	1,233	0	4	C, T, M, CD, I	Yes (software platform)	Yes (software platform)	Yes	Yes	Via software platform	For reps and advisors only	None

<sup>(1)</sup> Number of stocks on the broker's "Easy to Borrow" list as of 2/1/2017
(2) Bonds: C=Corporate, T= US Treasuries, M=Municipal, CD=Certificates of Deposit, I=International

4 - Research	Amenities: Sc	reeners, Data	, Charting														
	Stock/ETF screener	Options Strategy Scanner	Mutual Fund Screener	Bond Screener	Can screener results be exported?	Streaming Stock	Real Time Streaming Options Quotes	Limits to Real-Time Quotes for Non- Professional Traders	Volatility Data	Historical Volatility Data (1)	Stock History for Charting	Stock Charting Supplier	Daily Market Reports	Analyst Reports	Real Time Streaming News Feeds	High Balance/Frequent Trader Research Bonuses	Additional Research
Charles Schwab	Fundamental and technical screens on Website and StreetSmart Edge, Recognia and Screener Plus in StreetSmart Edge, prefered stock screener, customizable	on customer's forecasts; Option Builder helps find,	available	Can search for corporate, munis, agencies, Treasuries and CDs; corporate allows search by underlying stock symbol; full length credit reports for munis and corporates	from screener results	Yes	Yes	None	Charting study in Street/Smart platforms, calculated option both both Street/Smart Edge and on Web	IV 6 years; AV 19 years	15 years (active trader platforms)	Markit on Demand, Recognia, Edge Charting is proprietary	Credit Suisse First Edition, Last Edition, Tedders Form, Tedders Form, Tedders Form, Tedders Form, Tedders Form, Tedders Form, Morningstar Market Edge Daily Commentary Argue Starket Logdate Judate Logdate Judate Logdate Judate J	Schwab ratings and research, Argus, Briefing.com, Credit Suisse, Economist Intelligence Unit, Marketledge, Mecogna Chart Patterns, Reuters, S&P, Trader Market (Randy Frederick's weekly blog), and Vickers Insider	AP Online, Business Wire, Canada NewsWire, Canada NewsWire, CCNMatthews CNBC, CompanynewsGroup, Daily Options News, Dow Jones, GlobeNewswire, Hugin, Investrend, Jagnotes, JCN Corporate News, Knight Rüdder/Tribune, Market/Watch (US and Canada), Mergent (Asia/Pacific), PR Newswire, PrimeNewswire, Reuters, Street Insider, Reuters, Street Insider, Trade Ideas, U.S. Newswire, United Press International, Securities and Exchange Commission – Edgar Filings	Nothing additional.	BondSource New Service New Ser
eOption	No built-in screeners	Basic screener plus OptionsPlay	None	None	No	Yes	Yes	None	Yes	Historical IV not available; AV provided by Quote Media.	10+ years	QuoteMedia	Daily Market Report from Recognia; Morning Market Insight posted 90 minutes after open	Summary of analyst ratings (Buy, Sell, Hold) from QuoteMedia	MarketQ streaming (may incur fee); Business Wire, PR Newswire, and RTT News	Nothing additional.	Comtex News, OneOption, Recognia, and OptionsPlay
E*Trade	On Web, fundamental and technical screens with predefined strategies; customizable. E-Trade Pro has Strategy Scanner with predefined screens	Screener, strategy optimizer, options analyzer, and probability calculator	Markit on Demand screener available outside login; 61 criteria, 22 preset scans, customizable; can compare up to 5 funds/ETFs; mutual fund "All Star List;" can compare up to 5 ETFs and mutual funds on single page	stock symbol to find bonds issued by	No	Yes	Yes	None	Streaming IV and Greeks in Pro	IV and AV since 2011.	34+ years	Markit on Demand on etrade.com; proprietary charting on E*Trade Pro.	Morningstar Intra Day news articles, research reports, market commentary, articles and videos; Daily Market Commentary provided by Briefing.com and S&P Capital IQ.	S&P Capital IO. Moody's, Thomson Reuters, Morningstar, Markelf.Ggb, Trefts, Research Team (Smart Consensus); TipRanks offers aggregated opinions from over 4,000 analystis and 4,500 bloggers.	E-Trade Pro: CNBC streaming, Dow Jones, Market/Vatch, PR Newswire, BusinessWire, Market/Wire, GlobenNewswire, Briefing.com; CNBC Streaming also available on Web	Credit Suisse reports for clients with \$100,000 in assets.	E-Trade com: TipRanks, Dow Jones, Jones, MarketlWatch, PR Newswire. Business Wire, MarketlWire, and GlobeNewswire: Commentary from E-TRADE Capital Management, Morningstar, S&P Capital IQ, Briefing.com, Seeking Alpha, Trefis, Minyanville, Dreyfus, BondDesk, CME Group, and Daily FX
Fidelity	Fundamental and technical screens with customizable weighting of criteria; can screen on chart patterns; 56 built-in stock built-in stock at ETF screens; customizable; ETF screener in mobile apps as well	screener with	3 scanners on Website including a Compare Funds tool. Evaluator includes interactive sliders, customized oulumns, and sorting; Fund Picks list updated quarterly	Extensive ability to search live search live bowentory; access to move search consistency access and CDs; fixed-income page also features an interest Rate Sensitivity Analysis	Yes (to Excel)	and on	Yes in Active Trader Pro and on iPad app	None	30, 60, and 90-day IV in Active Trader Pro	180 days in Active	45 years	Customizable charting is proprietary, Recognia supplies technical patterns and events	Multiple reports available from S&P, Hightower Report, Ned Davis Research, and Zaoks	Analyst recommendations and upgrades/downgrades from over 125 firms, access to research recommendations of the second second recommendation of the second second recommendation of the second recommendation of the second recommendation with their respective historical accuracy.	Active TraderPro and ATP.com display streaming news, as	Active traders receive additional technical analysis tools from Recognia	Briefing.com. Business Wire, Canada Newswire, Canada Newswire, Canada Newswire, Company News Group. Dow Jones Realtime News, Hugin, Investired, J.Coh. News, Hugin, Investired, J.Coh. Network, MarketWatch, Micand, Market News, UPI Business News, UPI Business Health News, UPI Hi-Tech News, UPI Business Health News, UPI Hi-Tech News, Market OnDemand, Market News Interval Income Bullets, Bond Market News Interval Income Bullets, Bond Market News Interval Income Bullets, Bond Reports, Hightower, Zacks, Hightower, Zacks, And Recognia
Eiretrada	Screener with 7 preset	OptionsPlay	31 criteria for	Knight Rendesint	No	Vac	Vac	None	Implied	No	EE veare	Morningetar	Unenscified	Morningstar reports multiple times daily; Weekly Economic Insights, Market Outlook, Research	Zacks, Briefing.com, Benzinga (Premium),	Weekly Morningstar	Morningstar ETF

Filotidue	strategies; customizable	nitegrated into platform	screening	screener	IVO	165	IES	NOTE	volatility	IVO	oo years	woningstar	Onspecialed	Upgrades and Downgrades from Briefing.com; Morningstar commentary videos	PR Newswire, and BusinessWire	newsletter	research reports
Interactive Brokers	Fundamental, technical, media sentiment sentiment sentiment services and beautiful services and beautiful services servi	Proprietary scanners include Protability Lab, Options Strategy Lab and Option Strategy Activity Scanner	Mutual Fund Replicator scans for ETFs that replicate performance of a selected fund at lower cost to investors	Proprietary screener with 29 criteria: Muni Bond Scanner allows clients to scan over 1,000,000 muni bonds on 28 criteria	Yes (to	All quotes are streaming	are	100 simultaneous real-time quotes at Baseline; active traders receive more simultaneous quotes, less active traders more than 100 simultaneous quotes can purchase subscriptions	includes 3 skew tools, 3 plotting	IV and AV 6 years	30 years	Proprietary charing built in to platform; can connect a wide range of third-party applications via API	Briefing Stock Market Update, and (d) major index levels and charts; subscribers to Discount Research Bundle also get an economic event calendar	Analyst ratings history, a 2-year graph of mean ratings with a log of or upgradeldowngrade activity, Zarks, activity, Zarks, self, and Briefing Fed Brief, AltaVista, Seeking Alpha Earnings Call Transcripts, and Market Realist; Premium reports available including Volunti Ratings, Argus and Rareview Macro	24/7 Wall Street, StreetInsider.com, Seeking Alpha, Morningstar, Fox Business, and IB Trader's Insight, premium newswires available for additional fee: Dow Jones, Briefing.com, FlyOnTneWall, Benzinga Pro, and MT LiveBriefs.	Nothing additional	IB Daily Lineup, MarketPlace@iB, worldwide data, and Morningstar equity analyst reports: Subscriptions available for available for market, old for a surface and for a surface
Just2Trade Lightspeed Trading	None Fundamental, technical,	Very basic Scanners on Web and in	None None	None None	n/a Yes	Yes All quotes are	Yes All quotes are	None Based on client's data	Implied volatility Yes	No IV and AV 2 years (3rd		Proprietary Proprietary	None Yes (content unspecified)	None TipRanks	Forbes, other free sources. Professional news feed (\$10/month)	Nothing additional Exclusive research offered to select	
ITAUING	Tradeldeas (Technical); no preset screens; customizable	software					streaming	subscription		party software)			unspecified)		reed (\$10/ii/oililii)	clients; Lightspeed prefers to keep the	strategic
Memili Edge	defined	Proprietary scanner that starts with customer's outlook on equity price and volatility; up to 4-legged strategies can be selected	Select Funds and Select ETFs screeners; Morningstar and Lipper ratings plus many other criteria	Proprietary screener	Yes	Yes	Yes	None	Yes	IV and AV	30+ years	Markit On Demand	Bank of America Merrill Lynch Morning Call; Morningstar and S&P Intraday Research Notes and Analyst Reports; Briefing.com Market Updates and Commentary	Morningetar and	Thomson Reuters, Dow Jones, Business Wire, and PR NewsWire	Nothing additional	PR NewsWire, Business Wire, Business Wire, BAML Morning Call, Morningstar, S&P Intraday Research Notes, Merill Edge ETF Select List
OptionsHouse	Proprietary LiveAction scans in real fundamental and technical data with over 100 pre-defined screens for stocks and ETFs; customizable; 140 fields to cutomizable; volatility, volume and order flow statistics	Four strategy scanners: StrategySeek, AdjustTrade (to roll existing strategies). SpreadMaker and Strategy and Strategy and Strategy extensive and deep options scanning tools	No screening tools currently available while new platform is built	None	Yes, as a watchiel, or to Excel, or to .PDF	Yes	Yes	Only for very low balance accounts or inactive accounts (no trades in past 3 months)		IV 8 years, AV 20 years.	20+ years	Proprietary	None	10-15 proprietary daily reports: live daily Webcast with guest analysts: Resurers reports: ResearchLAB team produces analyst reports on hundreds of symbols and symbol groups throughout the day; premium research available at additional fee.	Indie Research Investopedia com Investor's Business Dally, Kiplinger com Law.com, MarketWatch, Minyanville, Money, Morningstac.com, Motley Fool, NyTimes.com, paidContent.org, Portfolio.com, Reuters, Seeking Alpha, Silicon Alley Insider, Seeking Alpha, Silicon Alley Insider, Seeking Alpha, Silicon TheStreet com, TradingMarkets.com, TradingMarket	Nothing additional	Briefings pre- market and throughout the day- bullt-in Twitter feed for positions and watch late. Research late. Research systems of the day- various premium 37 d party research reports for additional fee
Planner Securities	None	None	None	None	n/a	Yes	Yes		Implied volatility	None	3 years	Quote Media	The SogoTrade	None	holdings None	None	None
SogoTrade	Fundamental and technical; 30 preset screens; customizable; Sogo-Forecaster suite offers advanced stock screeners	Strategies section on the SogoOptions Platform; SogoPlay application displays risk and reward, and probability of profit	None	None	Yes	Yes	Yes	None	Yes	No	20 years	Proprietary in SogoElite.	Morning Call Newsletter provides commentary and recaps on	ValuEngine Research Reports and Newsletter	Comtex, Chinese WorldNet		Barchart Market Data Solutions; full Chinese Website available

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D meritrade	technical, analyst ratings; 84 predefined on Web; Via thinkorswim	Options Screener; in thinkorswim: SpreadHacker and OptionsHacker (real-time scanner) with many volatility	data include 35 criteria with 30 predefined screens; customizable and exportable; can compare	Bond Wizard features both a screener as sc	Yes	Yes	Yes	None	Real-time streaming implied im	On thinkorswim: My 12 years, complete history	From inception of security or 20 of security or 20, whichever is shorter		Over 45 daily market, portion of the control of the	S&P Capital IQ. TheStreet, Credit Suisse. Suisse. Raywalis, Market Edge, Vickers insider Trade, Morningstar; fixed income reports: Moody's and S&P Capital IQ. Uninkorswim's company profile tool includes Trefis	Dow Jones Real-Time, Benzzinga, Midnight Trader, MarkerWatch, Trader, MarkerWatch, Trader, MarkerWatch, Senzinga Audio Senzinga Senzinga Audio Senzinga Senzing		tastytrade, Thomson Reuters video, Bernzinga video, Video, Video, Video video, Video, Video, Video, Video, Video video, Vi	
radeStation	Technical and fundamental scans with 69 preset scans; extensively customizable	extremely	Proprietary screener that scans the entire fund universe	Proprietary free bond scanner	Yes	Yes	Yes	2,000 maximum real-time symbols	Yes	IV starting in 2007, AV complete history	49 years daily, 26 years intraday, 6 months of tick data	Proprietary; additional charting packages available from App Store by subscription	Morning Market Briefing is a special pre- market online briefing presented each weekday morning from 9:00 a.m. to 9:30 a.m. ET; weekly stocks/ETFs report, weekly Futures Market Outlook	None	Benzinga and Comtex News (free); Dow Jones (\$95/month)		Market briefings, stock and ETF updates; Forex in Focus	
radier	Most of the front-end platforms that use the Tradier back end include screening tools	deared as the	Screening tools depend on front end chosen	Screening tools depend on front end chosen	Depends on the front-end platform chosen	Yes	Yes	None	Depends on platform chosen	Depends on platform chosen	5 years	Through partners including Chart IQ	Through partners	None				
iradingBlock	Fundamental scanner on Website with 16 preset screens; customizable.	Web: TradeBuilder and Portfolio Hedger built in; Software (additional fee): EdgeFinder, a real-time scanner	None	None	In software application, yes; on Web, no	Yes	Yes	OTC Market quotes default to delayed; can request real- time for \$5/month.	Yes	Web only: IV 1 year, AV 1 year	Web: 5; software: 10+ years	ChartIQ on Web, Sterling Trader Pro in software	None	None	Web: none; Software: CCS Business Wire (\$30/month)	Nothing additional	Links to external sites	

(1) IV = Implied Volatility, AV = Actual Volatility

## 5 - Research Amenities: Analyst reports and News

	Daily Market Reports?	Analyst Reports	Real Time Streaming News Feeds?	International Research and Data	High Balance/Frequent Trader Research Bonuses	Additional Services and Resources (Fee- Based)
Charles Schwab	Credit Suisse First Edition, Last Edition, Last Edition, Traders Forum, Equity High Noon and more; Morningstar Morningstar Morningstar Morningstar Morningstar Economic Commentary; Argus Market Update and Market Edge Daily Lommentary; Argus Market Update and Market Walch; Update and Market Walch; Edge Daily Suisse Andre Walch; Edge Daily Formentary; Argus Market Update Update and Market Update Update Update Suisse Suiss	Schwab ratings and research, Argus, Briefing.com, Credit Suisse, Economist Intelligence Unit, MarketEdge, Morningstar, Recognia Chart, Recognia Chart, Redidaritet, Randy Frederick's weekly blog), Vickers Insider	AP Online, Business Wire, Canada NewsWire, Canada NewsWire, CCMMatthews CNBC, CompanynewsGroup, Daily Options News, Dow Jones, GlobeNewswire, Hugin, Investrend, Jagnotes, JCN Corporate News, Knight Ridder/Tribune, Mc, MarketWatch (Us and Canada), Mergent (AsudPacific), PR PrimeNewswire, Reuters, Street Insider, Trade Ideas, S. Newswire, United Press International, Securities and Exchange Commission – Edgar Filings	Schwab Schwab Schwab Equity Ratings Equity Ratings and international and international stock ranking methodology covering approximately 4,000 large and small cap stocks are 2	Nothing additional	Third party offers at discounted cost include size of the priority of the prio

		PR Newswire, Canada Newswire, Business Wire, Marketwired, GlobeNewswire, UPI, Market News	recognition.		
Daily Market Report from Recognia; Morning Market Insight posted 90 minutes after open	Summary of analyst ratings (Buy, Sell, Hold) from QuoteMedia	neutlishing, FlyontheWall, McClatchy-Tribune, Fling Services Canada, M2 Presswire, StockWatch News, Eworldwire, Thomson Reuters ONE, Sinocast, Cancesswire, Equities.com, Investors Guru, Stock Howskirs Guru, Stock Mewswire, AcN Newswire, AcN Newswire, Newsfile Corp, ABN Newswire, Seeking Alpha, Stockhouse News	None	Nothing additional	None
Morningstar Intra Day news articles, research reports, market commentary, articles and videos; Daily Market Commentary provided by Briefing.com and S&P Capital IQ	S&P Capital IQ, Moody's, Thomson Reuters, Morningstar, MarketEdge, Trefis, Research Team (Smart Consensus); TipPanks offers aggregated opinions from over 4,000 analysts and 4,500 bloggers	E*Trade Pro: CNBC streaming, Dow Jones, MarketWatch, PR Newswire, BusinessWire, MarketWire, GlobeNewswire, Briefing.com; CNBC Streaming also available on Web	None	Credit Suisse reports for clients with \$100,000 in assets	Automated trading platforms that connect through API: AbleTrend, Cooltrade, ionDesk; TrendLens; also MarketEdge.com, Briefing Trader, and SmartStops.net
Multiple reports available from S&P, Hightower Report, Ned Davis Research and Zacks	upgrades/downgrades/downgrades/ from over 125 firms; access to research reports on more than 6,000 stocks from more than 12 independent of party independent of party Sommany Scores from StarMine and Investars; Fidelity couples current analyst recommendations with their respective historical accuracy	Active TraderPro and ATP-om display streaming news, as do mobile app	Real-lime quote data are available for securities traded in Australia, Austria, Belgium, Canada, Austria, Belgium, Canada, Germany, Greece, Mong, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, New Zealand, Norway, Spain, Sweden, Syalin, Sweden, Switzeriand and the Switzeriand and the Austria Canada and Switzeriand and the securities traded in these markets with traded in these markets with the securities traded in these	Active tradesr receive additional technical analysis tools from Recognia	None
Unspecified	Morningstar reports multiple times daily; Weekly Economic Insights, Market Outlook, Research Highlights, and Upgrades and Downgrades from Briefing.com; Morningstar commentary videos	Zacks, Briefing.com, Benzinga (Premium), PR Newswire, BusinessWire	None	Weekly Morningstar newsletter	None
IB Daily Lineup (free) includes (a) top 10 news stricles, (b) analyst upgrades and downgrades, (c) Briefing Stock Market Update, and (d) major index levels and conomic event calendar and a corporate earnings the calendar in the popular of the popular levels and a corporate earnings the popular levels and a corporate earnings and a	Analyst ratings history, a 2-year graph of mean ratings with a log of upgrade/downgrade activity; Zacks,	24/7 Wall Street, StreetInsider.com, Seeking AJpha, MarketIVatch, Morningstar, Fox Business, IB Trader's Insight, IB Marsider, Signals, StreetInsider, Signals, StreetInsider, Signals, StreetInsider, Signals, StreetInsider, Signals, StreetInsider, Reuters Newswire; Premium newswires available for additional fee: Dow Jones, Briefing.com, FlyOn TheWall, Benzinga Pro, MT Benzinga Pro, MT Global, StreetInsider Premium, and several others	International data available for more than 100 markets; some require subscriptions	Nothing additional	Investors' Marketplace displays offerings categorized into displays offerings categorized into five groups: investing applications, research, adventure of the control of t
None	None	Morningstar	None	Nothing additional Exclusive research	None
Yes	TipRanks	Professional news feed (\$10/month)	None	offered to select clients; Lightspeed prefers to keep the research providers	Discounts to preferred partner trader training and analytics software
Bank of America Merrill Lynch Morning Call; Morningstar and S&P Intraday Research Notes and Analyst Reports; ongoing Briefing.com Market Updates and Commentary	Morningstar and Merrill Lynch research.	Thomson Reuters, Dow Jones, Business Wire, and PR NewsWire	AFP World News, as Associated Press, Boston Globe, BBC Newsfile, Briefing, com, Business Wire, Canada Newswire, Canadian Press DataFile, Chicago Tribune, Dow Jones, DPA, All Equity News, The Economist, Globe Newswire, Information	Nothing additional; clients can access one-on-one	None
	Report from Recognia: Morning Market Insight posted 90 minutes after open more street of the posted street open more street op more s	Morningstar Intra Day news creatings (Reys, Sell, Hold) from Journal of Journ	Summary of analyst ratings (Buy, Selt, Hold) from Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes and Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes after open Grand Canada, MZ Presearch Flags (Buy, Selt, Hold) from Cheeked 90 minutes and C	Report in control of the control of	Report for Recognity (Morning bater of Lodd) from the same of the Commendation with reports and commendations with recommendations with

				Observer, Marketwire.		
				Marketwire, Marketwire, Mondaq Business Briefing, Need to Know News, New York Times Dealbook, PR Newswire, The Canadian Press, The New York Times, Reuters, The Wall Street Journal, United Press International, UPI, USA Today, and Xinhua News Agency		
OptionsHouse	None	10-15 proprietary daily reports: Live daily webcast with guest analysts: ResearchLAB team produces analyst reports on hundreds of symbols and symbol groups dark incognout the archive grout the archive groups and the archive groups and groups are ground the archive groups are ground to the groups are ground the archive groups are ground to the groups are ground to the groups are groups and groups are groups and groups are ground to the groups are groups are groups are groups are groups are groups and groups are groups are groups are groups are groups and groups are groups are groups are groups are groups are groups and groups are groups	optionMONSTER. Zacks, Benzinga, headlines and symbol psecific news from AP, AllBusiness, AllThingsD, Bankrate.com, Barrons.com, Disjournals.com, Consumer Reports, Daily FX, Entrepreneur.com, ETFZione.com, Fast Company, Forbes, Fox Business, Fortune, Fortune Small, Froune, Fricon, Index.Iniverse.com, Index.Iniverse.com, Index.Iniverse.com, Index.Iniverse.com, Index.Iniverse.com, Index.Iniverse.com, Disjournals.com, Minyarville, Money, Minyarville, Minyarvi	Futures quetes on dollar denominated products international exchanges	Nothing additional	None
Planner Securities	None	None	QuoteMedia, some fees may apply	None	Third party research upon request	None
SogoTrade	The SogoTrade Morning Call Newsletter provides commentary and recaps on the previous day's market activity; Daily Sector performance analysis vs. the S& P 500 provided by the newsletter	ValuEngine Research Reports and Newsletter	Barchart Market Data Solutions market news; Comtex, Chinese WorldNet	Entire Website can be translated to Chinese, and includes Chinese language news feeds	Nothing additional	None
TD Ameritrade	Over 45 daily market, portfolio and security reports which can be viewed on the Website, mobile, or via email. Featured daily market reports: Argus's Morning	Trade, Morningstar, Morningstar, Capital (Capital IQ., Capital IQ., thinkorswim's Company Profile tool includes Trefis	Dow Jones Real-Time, Benzinga, Midnight Menzinga, Midnight Tenderch, Tenderch, Tenderch, Tenderch, Midnight Menzinga, Midnight	2.400 international available; TD Global available; TD Global available; TD Global international news from real-time feeds in previous box; stock screener	Nothing additional	TradeWise, an affiliated advisory and filiated advisory contion trade strategy and trade strategy are commendations premium MarketEdge reports available

	Technical Market Insight reports and built into thinkorswim, the RED OptionSM daily market summary and blog					
TradeStation	Morning Market Briefing is a special pre- market online briefing presented each weekday morning from 9:00 a.m. ET; weekly stocks/ETFs report, weekly Futures Market Outlook	None	Benzinga (free); other news sources available for a fee from the TradingApp store	International data available for several European exchanges at a fee	Nothing additional	Optional real-time streaming market data
Tradier	Through partners	None	Benzinga	None	Nothing additional	Over 100 providers use Tradier's trading engine and back end processing, most for additional fees
TradingBlock	None	None	Web: SeekingAlpha; Software: CCS Business Wire (\$30/month)	None	Nothing additional	TradeSpoon, RB Technologies (options scanning), Quantly, Quovo

(1) IV = Implied Volatility, AV = Actual Volatility

## 6 - Costs for Account with \$100,000 or more in assets

6 - Costs for	Account with	1 \$100,000 01	more in ass	eis											s					
	\$ Commission: Stock Order (1)	\$ Commission: Options Order Base / Per Contract	\$ Commission on 10 options contracts	\$ Commission for Covered Call (2)	Fee to Close Low-Priced Options Contracts	\$ Mutual Fund Commission (outside NTF list)	\$ Bond Transaction Fee (5)	\$ Futures Commission per Contract (6)	\$ Broker- Assisted Trades	\$ Platform or Maintenance Fee	\$ Account Transfer Fee (outgoing)	Fee (for	\$ Fee for Wires Out	\$ Monthly Trading Costs (6 stock trades, 2 options)	Costs (200 trades plus	Margin Rate, \$10000	Rate, \$25000	% Margin Rate, \$50000 balance	% Margin Rate, \$100,000 balance	s
Charles Schwab	\$4.95	\$4.95 / \$0.65	\$11.45	\$8.20	Standard commissions	\$76 (purchase only)	\$1/bond, \$10 minimum	n/a (optionsXpress customers \$3.95)	Add 25.00	TotalView/Level II data \$10/month for infrequent traders	Full \$50; partial \$25	\$39 (waived for large accounts / frequent traders)	25.00	52.60	1,840.00	8.50%	8.00%	7.00%	6.875%	Not published, but pricing can be
eOption	3.00	3 / 0.15	4.50	6.75	No fee for buy-to-close low value options; otherwise standard commissions.	14.95	5.00/bond; minimum 39.00	n/a	Add 6.00	50.00 for inactive accounts; Sterling Trader Pro cost is 230.00/month plus data.	Full 60.00; partial \$50 partial	50.00	30.00	27.00	887.50	5.50%	5.50%	4.75%	4.25%	negotiated Discounted margin rates for larger debit balances
E*Trade	6.95, 4.95 for more than 30 trades/quarter	4.95-6.95 / 0.65	11.45-13.45	13.05-17.05	Standard commissions	19.99	1.00/bond	2.99	Add 25.00	Non-qualified accounts can subscribe to E*Trade Pro for 99.95/month	Full 60.00; partial 25.00	38.00	25.00	68.60	1,858.75	9.00%	8.75%	8.25%	7.75%	More than 30 trades per quarter, or accounts larger than 250,000 qualify for free access to E*Trade Pro
Fidelity	4.95	4.95 / 0.65	11.45	8.20	Free for contracts 0.10 or less	49.95 (purchase only)	1.00/bond	n/a	32.95	None	50.00 retirement account close-out.	38.00 (waived for large accounts / frequent traders)	15.00 (waived for large accounts / frequent traders)	52.60	1,835.63	8.325%	7.825%	6.875%	6.575%	Rates negotiated on a case- by-case basis
Firstrade	4.95	4.95 / 0.65	11.45	13.15	Standard commissions	9.95	Net yield basis	n/a	19.95 (plus 0.65/contract for options)	None	Full 75.00; partial 25.00	25.00	30.00 domestic; 50.00 international	52.60	1,827.50	7.75%	7.50%	7.00%	6.50%	None listed
Interactive Brokers	.005/share, minimum 1	0.15- 0.70/contract, minimum 1	7.00	6.00	Premium less than 0.05: 0.25/contract; premium 0.05-0.10: 0.50/contract	14.95	10 bps for first 10,000, remainder 2.5bps.	0.85 plus exchange and regulatory fees	30 (closing orders only) IB Block Desk 0.01/share (min 10,000) and 0.95/contract (min 100 contracts)	None for accounts over 100,000; 10.00/month minumum monthly commission if under 100,000	No fee	No fee	1 wire free per month; 10.00 for subsequent	20.00	854.00	2.16%	2.16%	2.16%	2.16%	Aggressive commission discounts for frequent U.S. equity and options traders
Just2Trade	\$2.50	2.50 / 0.50	7.50	7.50	Standard commissions	n/a	n/a	2.50	20 plus 0.50 per contract	15.00/quarter, waived for accounts over 10,000 or for more than 5 trades per quarter	75.00	25.00	Domestic 30.00; international 60.00 (increase from 2016)	30.00	1,162.50	7.00%	6.50%	6.25%	5.50%	Very active traders may qualify for a \$0.50/trade discount
Lightspeed Trading	Maximum 4.50	0.60 per contract.	6.00	5.25	Standard commissions	n/a	n/a	0.60	20.00	None; accounts under 15,000 must generate 25.00/month in commissions	No fee	20.00	None	29.94	1,200.00	6.00%	6.00%	6.00%	5.00%	Very active traders can negotiate discounted pricing for equities, options and futures
Merrill Edge	6.95 (4)	6.95 / 0.75	14.45	17.65	Lesser of standard commissions or 75% of principal	19.95	Net yield basis	n/a	29.95	None	49.95	30.00	24.95	28.90	1,645.00	9.13%	8.00%	8.00%	%6.63	Discounts negotiated on a case by case basis on margin rates, equity and options commissions
OptionsHouse	4.95	4.95 / 0.50	9.95	12.40	Free for contracts 0.10 or less; otherwise 0.50/contract.	20.00	25.00 per trade	2.00	25.00	None	75.00	50.00	25.00	49.60	1,646.25	6.75%	6.25%	5.50%	5.00%	Rates negotiated on a case- by-case basis
Planner Securities	8.95	1/contract, minimum 10	10.00	18.95	Standard commissions	25.00	Negotiated	n/a	15/transaction, negotiable	8.95/month; waived if more than 20.00 commissions generated	100.00	No fee	Domestic 30.00; international 50.00	73.70	2,076.25	7.25%	7.25%	7.00%	6.50%	None listed
SogoTrade	3.00-5.00	5.00 / 0.50	10.00	10.50-12.50	Standard commissions	15.00	25.00	n/a	25.00	50.00 Low Equity fee for accounts with under 100.00 that have no trades in the last year.	75.00	50.00	Domestic 25.00; international 50.00	50.00	1,506.25	8.25%	8.25%	7.25%	6.00%	Discounted rates on options and equities for traders averaging 50+ trades per month
TD Ameritrade	6.95	6.95 / 0.65	13.45	17.05	Free for contracts 0.05 or less	49.99	Net yield basis.	2.25	44.99, free for Apex	None	75.00	38.00 (free for Apex)	25.00 (free for Apex)	68.60	2,258.75	9.00%	8.75%	7.75%	7.50%	Customers who qualify for Apex receive a variety of fee waivers
TradeStation	5.00	5.00 / 0.50 or 1/contract	10.00	7.50	Standard commissions	14.95	14.95 plus 5.00/bond	0.25-1.20	50.00 per transaction	35.00/year for IRAs; platform fee is 50.00/year for low activity and balances under 2,000.00	125.00	20.00	25.00 (decrease from 2016)	145.00	1,706.25	8.50%	8.25%	7.75%	7.75%	None listed
Tradier (7)	3 49	0.35/contract, min 5 for	5.00	8 49	Standard	5.00	50.00	n/a	Add 10.00 per	Depends on front-end	75 00	50 00	30 00	30.94	942 75	3 75%	3 75%	3 75%	3 75%	None listed

	0.10	single leg, 7 for multi leg.	0.00	0.10	commissions	0.00	55.55		order	subscription	. 0.00	55.55	00.00	00.01	U-12.7 U	0.1070	0.1070	0070	0070	110110 110100
TradingBlock	\$7.50	7.50 / 0.75	15.00	11.25	Standard commissions	30.00	1.00/bond, 50.00 minimum	1.99 per side	No additional fee	Sterling Trader Pro 230.00/month plus data	75.00	Domestic 50.00, international 100.00	Domestic 25.00, international 50.00	75.00	1,686.25	7.45%	7.45%	7.45%	7.45%	Minimums and ticket charges waived for very active traders

<sup>(1)</sup> Stock order of 500 shares

7 - Mobile										
	Mobile Operating Systems Supported	Tablet- specific app	Mobile watch	Website	Streaming Data	Multi- Leg Options	Mutual Fund Trading	International Trading	Account Application	Amazo Echo app
Charles Schwab	iOS, Android, Windows	Yes	Apple watch	Yes	iOS, Android	Yes	Yes	ADRS and Toronto	Via Mobile Browser	No
eOption	iOS, Android	Yes	Apple watch	No	Yes	Yes	No	ADRs	No	In progres
E*Trade	iOS, Android, Windows	Yes	Apple watch	Yes	Yes	Yes (iPhone, Android)	Yes (iPhone, Android)	ADRs, Foreign Ordinaries	Via Mobile Browser	No
Fidelity	iOS, Android, Windows	Yes	Apple watch	Yes	Yes	Yes	Yes	Mobile browser app	Yes	Yes
Firstrade	iOS, Android, WIndows	Yes	No	Yes	Yes	No	No	n/a	Yes	No
Interactive Brokers	iOS, Android, Windows	Yes	Apple watch	Yes	Yes	Yes	Yes (in mobile browser)	Yes	Via Mobile Browser	No
Just2Trade	iOS, Android	Yes	Android watch	No	Yes	No	No	No	No	No
Lightspeed Trading	iOS, Android, Windows	Yes	No	HTML5	Yes	Yes	n/a	n/a	Via Mobile Browser	No
Merrill Edge	iOS, Android, Windows	Yes	Apple watch	Yes	Yes	Yes	Yes	ADRs	Via Mobile Browser	No
OptionsHouse	iOS, Android, Windows	Yes	No	Yes	Yes	Yes	Yes	n/a	Yes	No
Planner Securities	iOS, Android, Windows	Yes	No	Yes	Yes	Yes	No	No	In progress	No
SogoTrade	iOS, Android, Windows	Yes	Apple watch	Yes	Yes	No	No	No	Via Mobile Browser	No
TD Ameritrade	iOS, Android, Windows	Yes	Apple and Android watches	Yes	In apps	Yes	Yes	ADRs	Yes	Yes
TradeStation	iOS, Android	Yes	Alerts only	Yes	Yes	Yes	No	ADRs	No	No
Tradier (1)	iOS, Android, Windows	Yes	Apple and Android watches	Yes	Yes	Yes	No	No	Yes	In progres
TradingBlock	None	No	n/a	No	n/a	n/a	n/a	n/a	n/a	n/a

<sup>(1)</sup> Tradier's mobile functionality depends on the partner supplying the front end chosen by the customer.

3	-	Repor	ts an	d Ser	vice

	Customizable Portfolio Performance Reports	Internal Rate of Return Calculated	Consolidate holdings from other institutions for reporting	100% Capacity (all clients can be logged on simultaneously)	\$ Minimum to Open Cash Account (1)		# Live Events in 2016	# Webinars Held in 2016	Checking account			Online Transfer To/From External Accounts	Average wait time on hold for customer service	Other services
Charles Schwab	Yes, including benchmark comparisons	Yes, also Time Weighted Return	Yes	No	None if linked to Schwab One Checking. \$100 otherwise.	Yes	6,845 (includes in- branch seminars). Schwab Live: Conversations broadcast online.	512	Yes	Yes	American Express	Yes	50 seconds	Variable annuity, banking and lending services
eOption	Yes	Yes	No	Yes	500	Yes	0	0	Yes	No	Yes	Yes	26 seconds	None
E*Trade	Yes	No	No	No	500	Yes	71	118	Yes	Yes	No	Yes	63 seconds	Banking, retirement planning
Fidelity	Yes, including benchmark comparisons	Yes	Yes	No	2,500	Yes	2 Traders' Summits, 4 Workshops, 2200 branch seminars	90+	Yes	Yes	Visa	Yes	73 seconds, 29 seconds for Active Trader Services	Cash management, external account aggregation
Firstrade	Yes	Yes	No	No	None	Yes	9	0	Yes	No	No	Yes	8 seconds	None
Interactive Brokers	Yes, very flexible and customizable	Yes	Yes	Yes	10,000 (5,000 for IRA, 3,000 if under age 26.)	Yes	1	439	No	No	No	Yes	Less than one minute	Investors Marketplace including advisors and non- brokerage services; access to hedge funds; Greenwich Compliance helps advisors meet their registration and conditioned
Just2Trade	Yes, basic level	No	No	Yes	2,500	Yes	0	20	Yes, for accounts over \$25,000	No	No	Yes	1 minute	None
Lightspeed Trading	Yes	No	No	Yes	10,000 for Web Trader, 25,000 for Lightspeed Trader.	No	0	17	No	No	No	Yes	Less than 5 seconds	None
Merrill Edge	Yes	Yes	Yes	No	None	Yes	1,691	60	Yes	Yes	Yes	Yes	Less than 30 seconds	Banking services through Bank of America
OptionsHouse	Yes, including benchmark comparisons and flexible	Yes	No	Yes	None	Yes	26	250	Yes	No	Debit Card	Yes	Top tier under 30 seconds, second tier under 45 seconds, third tier	

<sup>(1)</sup> Stock order of 500 shares
(2) 500 shares of stock plus 5 contracts.
(3) There are no fees for mandatory reorganizations.
(4) For accounts with over \$100,000 at Merrill Edge, there are 100 commission-free stock transactions monthly.
(5) Brokers who charge on net yield basis do not charge an explicit commission, but they mark up the price of the bond, thus reducing your yield.
(6) Trading costs include exchange fees and regulatory fees, which depend on the instrument being traded.
(7) Rates shown are the base Tradier fees. The partner chosen to supply the front-end may apply additional fees.

