



ETF Analysis: Technology

Technology sector ETFs have something for just about every kind of investor.

Top Considerations

Vanguard Information Technology ETF (VGT)

Fidelity MSCI Information Technology Index ETF (FETC)

High-Yield Idea

Vanguard Telecommunication Services ETF (VOX)

VALUENTUM SECURITIES

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Technology ETF Industry Listings (sorted by AUM)

Name	Symbol	Launch	Gross Ex. Ratio	Net Ex. Ratio	AUM (\$ - mil)
Technology Select Sector SPDR Fund	XLK	12/16/1998	0.13	0.13	21,744.00
Vanguard Information Technology ETF	VGT	1/26/2004	0.10	0.10	21,700.00
First Trust Dow Jones Internet Index Fund	FDN	6/19/2006	0.53	0.53	9,020.96
iShares U.S. Technology ETF	IYW	5/15/2000	0.44	0.43	4,155.79
First Trust NASDAQ-100-Technology Sector Index Fund	QTEC	4/19/2006	0.58	0.58	2,579.16
Fidelity MSCI Information Technology Index ETF	FTEC	10/21/2013	0.08	0.08	2,100.00
First Trust Technology AlphaDEX Fund	FXL	5/8/2007	0.63	0.63	1,984.51
iShares North American Tech-Software ETF	IGV	7/10/2001	0.48	0.46	1,890.12
Invesco S&P 500 Equal Weight Technology ETF	RYT	11/1/2006	0.40	0.40	1,734.10
First Trust ISE Cloud Computing Index Fund	SKYY	7/5/2011	0.60	0.60	1,680.81
iShares PHLX SOX Semiconductor Sector Index Fund	SOXX	7/10/2001	0.48	0.46	1,609.30
iShares North American Tech ETF	IGM	3/13/2001	0.48	0.46	1,464.31
Market Vectors Semiconductors ETF	SMH	12/20/2011	0.38	0.35	1,300.00
Vanguard Telecommunication Services ETF	VOX	9/23/2004	0.10	0.10	961.80
Direxion Daily Semiconductor Bull 3X Shares	SOXL	3/11/2010	1.00	1.02	719.87
PowerShares Nasdaq Internet Portfolio	PNQI	6/12/2008	0.60	0.60	690.30
Direxion Daily Technology Bull 3X Shares	TECL	12/17/2008	1.09	1.09	655.07
iShares U.S. Telecommunications ETF	IYZ	5/22/2000	0.44	0.43	504.76
PowerShares S&P SmallCap Information Technology Portfolio	PSCT	4/7/2010	0.29	0.29	449.00
PowerShares DWA SmallCap Momentum Portfolio	DWAS	7/19/2012	0.60	0.60	338.90
PowerShares Dynamic Semiconductor Portfolio	PSI	6/23/2005	0.63	0.63	327.30
SPDR S&P Semiconductor ETF	XSD	1/31/2006	0.35	0.35	322.66
ProShares Ultra Technology	ROM	1/30/2007	1.05	0.95	288.56
PowerShares Dynamic Software Portfolio	PSJ	6/23/2005	0.64	0.63	225.50
SPDR S&P Telecom ETF	XTL	1/26/2011	0.35	0.35	165.89
PowerShares DWA Technology Momentum Portfolio	PTF	10/12/2006	0.72	0.60	141.00
Fidelity MSCI Telecommunication Services Index ETF	FCOM	10/23/2013	0.08	0.08	118.00

SPDR S&P Software & Services ETF	XSW	9/28/2011	0.35	0.35	91.31
ProShares Ultra Semiconductors	USD	1/30/2007	1.33	0.95	80.70
Direxion Daily Semiconductor Bear 3x Shares	SOXS	3/10/2010	1.18	1.11	65.91
PowerShares Dynamic Networking Portfolio	PXQ	6/23/2005	0.89	0.63	64.30
iShares North American Tech-Multimedia Networking ETF	IGN	7/10/2001	0.48	0.46	53.01
Direxion Daily Technology Bear 3X Shares	TECS	12/17/2008	1.29	1.10	30.10
ProShares UltraShort Technology	REW	1/30/2007	1.83	0.95	3.75
ProShares Ultra Telecommunications ETF	LTL	3/25/2008	2.85	0.95	2.72
ProShares UltraShort Semiconductors	SSG	1/30/2007	2.60	0.95	2.58

Source: Relevant ETF reports and State Street

Breaking Apart the Technology Sector

Technology sector ETFs come in many different forms and sizes, and the group seems to have something for almost every kind of investor. We have broken the broader technology sector into six different sub-sectors in order to facilitate more informative ETF analysis: 1) traditional style broad-based technology ETFs featuring sector leaders as top holdings, 2) broad-based technology ETFs that have a distinct strategy or follow a unique index, 3) telecommunications and networking technology ETFs, 4) semiconductor technology ETFs, 5) software technology ETFs, and 6) Internet technology ETFs. The basis for these groupings is derived from our examination of the unique sector exposure of each ETF, as well as the underlying indices and investment strategies. Most of these groups have a range of products, offering exposure to sub-sector leading firms as well as unique investment strategies.

The traditional broad-based sub-sector (the first one outlined above, 1) has a similar feel to other sector-leading ETF groupings. These ETFs track underlying indices that simply seek the highest-quality exposure to the technology sector; they do not aim to capture technical trends or equal weightings like some of the other more specialized products. The five ETF products we have categorized into this sub-sector all contain heavy doses of industry leaders in their top holdings. This group is home to three of the four largest funds in the entire technology sector in terms of assets under management. Four of the five list a sizeable position in Apple (AAPL) as their top holding. Other tech giants such as Microsoft (MSFT), Facebook (FB), Alphabet (GOOG, GOOGL), Intel (INTC), and Cisco (CSCO) are found throughout top holdings in this sub-sector.

The second broad-based sub-sector (2) is the largest sub-sector in terms of number of ETFs we have assigned to it. This group has products that have similar holdings to the traditional broad-based sub-sector, but in lower weightings due to the

different investment strategies employed by fund managers throughout the segment. There is a lot to take in in this group in terms of the range of differentiated products. Varying strategies from equal weighting to momentum and small cap style investing to the tracking of unique underlying indices set these products apart from their “big brothers.”

The telecommunications and networking technology sub-sector (3) could be split in half again, similar to the broad-based sub-sectors, but since there are not as many offerings available, we will keep the group together. The three customary style ETFs in this sub-sector have exposure to telecommunication industry leaders such as Verizon (VZ) and AT&T (T). These telecom giants help drive the rather meaningful dividend yields of the ETFs within this sub-sector, which features the highest yields in the entire technology sector. Income minded investors may find this sub-sector more appealing as there are low-cost options with higher dividend yields than the broad-based groups. The three remaining products in the group have either a blend of networking and telecommunications, or a unique strategy, such as equal weighting.

We have grouped four ETFs into the semiconductor sub-sector (4). Of the four, two have unique strategies while the other two offer higher exposure to sub-sector leaders such as Intel (INTC) and Texas Instruments (TXN), among others. The smaller, distinct strategy offerings still maintain exposure to many of the same companies, but in lower weightings, as is to be expected. The final two sub-sector groupings (5, 6) are the software technology and Internet technology sub-sectors. The software sub-sector is made up of three products, one of which uses the more traditional style of ETF management while the other two employ Intellidex or equal weighting strategies. The Internet sub-sector consists of two offerings, both of which have unique internet specific underlying indices though they feature many similar top holdings.

(1) Traditional Style Broad-based Technology ETFs

Fund Top Holdings					
Technology Select Sector SPDR Fund (XLK)		Vanguard Information Technology (VGT)		iShares U.S. Technology ETF (IYW)	
Name	Weight	Name	Weight	Name	Weight
Apple Inc.	14.06%	Apple Inc.	14.50%	Apple Inc.	16.52%
Microsoft Corp.	11.83%	Microsoft Corp.	11.10%	Microsoft Corp.	13.91%
Facebook Inc. Class A	7.19%	Alphabet Inc.	6.80%	Facebook Inc. Class A	8.45%
Alphabet Inc. Class C	5.21%	Facebook Inc.	4.70%	Alphabet Inc. Class C	6.12%
Alphabet Inc. Class A	5.18%	Intel Corp.	4.00%	Alphabet Inc. Class A	6.09%
AT&T Inc.	3.69%	Visa Inc.	3.60%	Intel Corp.	4.21%
Visa Inc. Class A	3.65%	Cisco Systems Inc.	3.20%	Cisco Systems Inc.	3.67%
Intel Corp.	3.58%	Mastercard Inc.	2.70%	Nvidia Corp.	2.63%
Verizon Communications	3.26%	Nvidia Corp.	2.20%	Oracle Corp.	2.44%
Cisco Systems Inc.	3.12%	Oracle Corp.	2.20%	Adobe System Inc.	2.18%

The largest offering in the traditional broad-based sub-sector technology ETFs (1), as well as the entire sector, is the Technology Select Sector SPDR Fund (XLK), the

first mover of our set into technology ETFs, with more than \$21.7 billion in assets under management. The Vanguard Information Technology ETF (VGT) is nipping at the heels of the XLK, with roughly \$21.7 billion in assets under management. The VGT also has a very competitive expense ratio of 0.10%, rivaled in its sub-sector only by the Fidelity MSCI Information Technology Index ETF (FTEC), which has an expense ratio of 0.084%. The FTEC checks in with a respectable \$2.1 billion in assets, good for fourth largest in its sub-sector.

The XLK has a 0.13% expense ratio keeping it competitive with the low cost leaders. Aside from ~7% exposure to the Diversified Telecommunication Services space, the XLK does little to differentiate from lower-cost competition, and it has only 75 holdings compared to 340+ for the VGT and FTEC.

The final two offerings in this sub-sector are both from iShares. The larger of the two in terms of assets under management is the iShares U.S. Technology ETF (IYW), coming in at ~\$4.1 billion. The iShares North American Tech ETF (IGM) has a much less significant amount, with ~\$1.4 billion in assets under management. The IYW also bests the IGM in a comparison of expense ratios, 0.43% to 0.46%, respectively. Apart from the IYW holding Apple as its highest weighting and the IGM holding Amazon (AMZN) as its highest weighting, these two products have similar top ten holdings, but their differences become clear when the exposure of their entire portfolios is examined. The IGM has a much more diverse portfolio in terms of exposure to industries within the technology sector. It fits the bill of a broad-based technology ETF better, whereas the IYM has higher exposure to software & services and technology hardware & equipment.

As it relates to the top holding of many of these sub-sector ETFs, it is probably not a surprise that Apple is held quite prominently. After all, it seems like everyone and their brother knows and uses Apple products these days from the iPhone to the Apple Watch and beyond (Apple is also a holding in both the Best Ideas Newsletter portfolio and Dividend Growth Newsletter portfolio). From our perspective, rivals will have a difficult time coming close to besting Apple's product suite, consumer mindshare, and brand power (its ecosystem may be its greatest advantage). Alphabet and Samsung (SSNLF) are nipping at its heels, but the former may be too late to the market with its new hardware. Due to our confidence in Apple's long-term investment prospects buttressed by its fortress balance sheet, we see no reason to steer away from any of the technology ETFs that have a high weighting in the company, as most of the broad-based technology ETFs have.

Even if Apple may never create another blockbuster product with the same success as that of the iPhone, mobile payment initiatives, Apple TV, and innovations in the wearables market could provide ancillary benefits to earnings in the near future and potentially more meaningful contributions over the long run. Apple's cash balance is higher than the market capitalizations of many of the largest companies in the S&P

500, giving the firm incredible flexibility, and we expect continued dividend growth in the future. The company may turn into one of the best dividend growth stories of the present century as a result of such financial flexibility. If an investor is attempting to avoid exposure to Apple for any reason, however, this sub-sector (traditional style broad-based technology ETFs) may be off limits.

Another holding in the Dividend Growth Newsletter portfolio is technology giant and common sub-sector top ten holding Microsoft. Despite its rich history and contrary to popular opinion, Microsoft is not a tech dinosaur, and we believe the company continues to reinvent itself. Case in point, Microsoft continues to grow rapidly in both enterprise and consumer-based areas of the cloud. Its Azure and Office 365 platforms have been exhibiting impressive overall growth in recent quarters. Few companies, if any, have as good of a financial profile as Microsoft; the firm floats debt with the highest credit rating available. Despite management's decision to purchase LinkedIn for \$26+ billion (absorbing a portion of its cash cushion), we feel Microsoft provides investors with a terrific dividend growth opportunity, a bonus when part of a larger ETF portfolio.

Other common top holdings in this sub-sector include Facebook, Alphabet, Intel, and Cisco. Generally speaking, we feel that "old" tech companies such as Apple, Microsoft and Cisco provide stronger investment opportunities on the basis of valuations than the younger--e.g. Fitbit (FIT), Snapchat (SNAP) and GoPro (GPRO)--with the exception of Facebook, whose impressive financial position and tremendous free cash flow generating capacity coupled with its ongoing user growth have cemented the viability of the young company as an Internet-based tech giant for years (if not decades) to come.

In any case, the strength of established tech companies' balance sheets (plus Facebook) gives us a lot more confidence in them rather than the younger generation of tech companies that are still largely speculative given the sensitivity of their valuations to long-term projections and the massive investments still ahead of them to retain relevancy. Because of this, we tend to like ETFs in the traditional style broad-based technology sub-sector (1) that have high exposure to the "older" tech companies given their extremely strong balance sheets and financial flexibility. In particular, Vanguard's VGT and Fidelity's FTEC are two of our top considerations, not only because of their low expense ratios and dividend yields near 1%, but because the top holdings of both encompass many of the best ideas that are included in our newsletter portfolios.

(2) Broad-Based Distinct Strategy Sub-Sector

Many of the ETFs within this sub-sector (broad-based technology ETFs that have a distinct strategy or unique index followed, 2) have similar industry exposure to the previous sub-sector just covered. What sets these ETFs apart from the previous

sub-sector, however, is their unique investment strategies, of which there is a wide range within the group. The largest ETF in this sub-sector in terms of assets under management, the First Trust NASDAQ-100-Technology Sector Index Fund (QTEC), does not come close in comparison to the sector leaders such as State Street's XLK (covered previously), which command \$21+ billion in assets, for example.

The First Trust NASDAQ-100-Technology Sector Index Fund, by comparison, has ~\$2.6 billion in assets under management. The QTEC is an equal weight product and has an expense ratio of 0.58%. The fund has relatively high weightings of industry leaders for an equal weight strategy, partially due to the fact that it does not contain as many holdings in its equal weightings, but we do not feel this is worth the extra cost. Another equal weight product within the group is the Invesco S&P 500 Equal Weight Technology ETF (RYT). In addition to its equal weighting of firms, the RYT has diverse exposure to various industries within the technology sector to go along with an expense ratio of 0.40%. Considering the cost discrepancy, the QTEC may not be as valuable an option as Invesco's product for investors looking for a broad-based equal weight ETF.

The First Trust Technology AlphaDEX Fund (FXL) employs First Trust's Alphadex stock selection strategy and therefore finds itself in the unique strategy sub-sector. First Trust's methodology rates stocks from the Russell 1000 index on growth and value factors, then takes the top 75% of the stocks according to their growth and value ratings. From there, the stocks are divided into quintiles based on their ratings, and each quintile receives a different weighting, with the top-ranked quintiles receiving a higher weighting. The independent stocks are then equally-weighted within each respective quintile. After considering the unique equal weight approach, which includes industry leaders we like *but* in much lower weightings, and its lofty expense ratio of 0.63%, First Trust's FXL doesn't make the cut.

Another unique ETF that we placed in this sub-sector is the First Trust ISE Cloud Computing Index Fund (SKYY). This ETF only has holdings that are engaged in business activity supporting or utilizing cloud computing. Stocks in First Trust's SKYY are classified into three categories: pure play cloud computing companies (or those that are direct service providers for "the cloud", non-pure play cloud computing companies (or companies that operate outside the cloud computing space but provide goods and services that support the cloud), and technology conglomerate companies. Ten percent of the underlying index is dedicated to tech conglomerates, the weighting of non-pure play cloud computing companies varies with the market cap of the companies in the category, and what is typically the highest weighting (the remainder of the index) is given to pure play cloud computing companies. Within each of the three categories, the stocks are equally weighted.

Fund Top Holdings					
Invesco S&P Equal Weight Technology (RYT)		First Trust Technology AlphaDex (FXL)		First Trust Cloud Computing Index Fund (SKYY)	
Name	Weight	Name	Weight	Name	Weight
Twitter Inc.	1.58%	Dell Technologies Inc. Class V	2.13%	VMware Inc.	4.94%
Alliance Data Systems Corp.	1.54%	Advanced Micro Devices Inc.	1.99%	NetApp Inc.	4.89%
Take-Two Interactive Software Inc.	1.53%	Zendesk Inc.	1.99%	Netflix Inc.	4.87%
Facebook Inc.	1.51%	Fortinet Inc.	1.98%	Equinix Inc.	4.76%
Seagate Technology	1.51%	GoDaddy Inc. Class A	1.98%	salesforce.com Inc.	4.64%
salesforce.com	1.51%	EchoStar Corp. Class A	1.97%	Amazon.com Inc.	4.48%
Motorola Solutions Inc.	1.51%	Okta Inc.	1.97%	Juniper Networks Inc.	4.48%
NetApp Inc.	1.51%	salesforce.com Inc.	1.97%	Alphabet Inc. Class A	4.45%
Electronic Arts Inc.	1.50%	RingCentral Inc. Class A	1.96%	Teradata Corp.	4.45%
Cognizant Technology Solutions Corp.	1.49%	Twilio Inc. Class A	1.96%	Facebook Inc. Class A	4.44%

On a high level, we like the idea of considering an investment in the fundamental shift towards cloud computing that is changing the way businesses connect with customers, employees, partners, and products. But the SKYY has an expense ratio of 0.60%, which we feel is too high despite the unique approach, and a growing number of tech giants, including Microsoft, Amazon, Cisco, and Oracle, now have adequate exposure to the cloud to satisfy investors' thirst for exposure to the changing landscape, whether through considering such ideas directly or in more concentrated technology ETFs. This, along with our wariness of more speculative holdings (the fund only has 30 holdings) and consumer-focused entities such as Netflix (NFLX) pulls our attention away from First Trust's SKYY.

The final two offerings within this sub-sector are both unique strategies from PowerShares; one is momentum-focused and the other small-cap. As with most of the other products within this group, neither has been able to accumulate a significant amount of assets under management. The PowerShares S&P SmallCap Information Technology Portfolio (PSCT) is the small-cap product and is the cheapest offering in the sub-sector with an expense ratio of 0.29%. Because of its small-cap minded investing style, there is greater potential for capital appreciation. However, the risk associated with small tech companies is enormous, in our opinion, and generally loses its luster in the context of the technology sector specifically. For one, the growth potential of larger, innovative tech companies is still very reasonable, offering much more amenable risk-adjusted considerations than riskier smaller entities that may not make it through the next downturn.

The PowerShares DWA Technology Momentum Portfolio (PTF) tracks an index that is designed to recognize relative strength. Though it shows potential in some areas, such as a nice position in Apple as its top holding, the PTF has a relatively high net expense ratio of 0.60%. We feel the momentum strategy has its pros, but since it leaves out a great deal of valuation analysis, it does not do a good enough job encapsulating the whole picture of a firm's future fair value path. A blend of value and momentum is core to our investment beliefs at Valuentum; thus we're not fans of the PTF.

We see some validity in the equal weight strategy in the technology sector, particularly when it comes to the younger generation of tech companies. However, as is evident by the holdings in the newsletter portfolios, we generally prefer “older” tech giants such as Apple and Microsoft that are attractively-priced, have strong dividend growth prospects, and have fantastic balance sheets. It should be no surprise then that we don’t see a great deal of value in paying higher expense ratios for reduced exposure to our favorite tried-and-true companies. Nevertheless, Invesco’s product is worthy of consideration for investors looking for an equal weight strategy, but the more risky small cap strategy of the PSCT is not worth the lower expense ratio, in our opinion.

(3) Telecommunications and Networking Sub-Sector

The telecommunications and networking sub-sector (3) shows somewhat of a blend of the investment strategies of the broad-based groups. At the top of the group in terms of assets under management and/or expense ratio there are a few products with industry leaders as top holdings; then moving down the list there are products with unique strategies. Outside of the top two offerings, none of these ETFs have been able to collect a significant amount of assets under management.

Fund Top Holdings					
Vanguard Telecommunication Services (VOX)		iShares US Telecommunications ETF (IYZ)		Fidelity MSCI Telecommunication Services (FCOM)	
Name	Weight	Name	Weight	Name	Weight
Verizon Communications Inc.	19.80%	AT&T Inc.	16.60%	AT&T Inc.	24.65%
AT&T Inc.	15.70%	Verizon Communications Inc.	14.79%	Verizon Communications Inc.	21.65%
Alphabet Inc.	7.70%	Cisco Systems Inc.	13.93%	CenturyLink Inc.	4.35%
Facebook Inc.	5.50%	CenturyLink Inc.	3.70%	T-Mobile US Inc.	4.33%
CenturyLink Inc.	3.70%	Palo Alto Networks Inc.	3.68%	Zayo Group Holdings Inc.	3.75%
T-Mobile US Inc.	3.50%	Motorola Solutions Inc.	3.61%	Vonage Holdings Corp.	3.62%
Iridium Communications Inc.	2.70%	T-Mobile US Inc.	3.48%	Iridium Communications Inc.	3.10%
Vonage Holdings Corp.	2.70%	Arista Networks Inc.	2.69%	Sprint Corp.	3.01%
Zayo Group Holdings Inc.	2.70%	F5 Networks Inc.	2.56%	Cincinnati Bell Inc.	2.96%
Cogent Communications Holdings Inc.	2.20%	Juniper Networks Inc.	2.41%	Cogent Communications Holdings Inc.	2.71%

The highest amount of assets under management is ~\$962 million from the Vanguard Telecommunication Services ETF (VOX). The VOX has a very competitive expense ratio of 0.1%, rivaled in the sub-sector only by the Fidelity MSCI Telecommunication Services Index ETF (FCOM) with an expense ratio of 0.084%. Interestingly, the VOX holds two high-profile tech companies that are outside the telecom space and do not pay a dividend in Facebook and Alphabet.

Vanguard’s VOX has over 8x the amount of assets under management of the FCOM and is over nine years older. Both sport a dividend yield above 3.4%, with Vanguard’s VOX having a solid advantage of roughly 60 basis points at the time of this writing. Verizon and AT&T--with dividend yields of ~4.6% and ~6.1%, respectively--are the top two holdings and make up over 35% and 45% of the VOX and FCOM, respectively, a key driver in the high yields being realized.

Another ETF with AT&T and Verizon listed as its top two holdings is the iShares US Telecommunications ETF (IYZ), though in a different order than the VOX and a

lower magnitude than the FCOM. Its expense ratio is also not on the same level as the previously mentioned telecom ETFs, coming in at 0.43%. The IYZ's dividend yield of ~3.5% is much higher than the rest of the sector outside of the telecom and networking sub-sector, but not quite on par with the larger and younger VOX's yield of ~4%. We're not sure the IYZ is doing enough to differentiate itself given its relatively high expense ratio.

Common top two holding Verizon is now the sole owner of Verizon Wireless, the crown jewel of the global wireless industry. However, this move caused Verizon to take on a massive debt load, something that could affect its future dividend growth and may cause management to keep a short leash on capital spending. The company's substantial free cash flow generating capacity eases concerns over the health of the payout, but debt service costs, capital spending, and dividend obligations should not be underestimated. The firm's focus on margin expansion and profitable growth is undeniable, but the key to remaining competitive in the coming years likely rests on the "race to 5G." Verizon and AT&T both expect to begin launching 5G networks in the US in 2018, but the competition may not be far behind.

The other common top two holding among the telecom ETF leaders, AT&T continues to execute across key growth areas including mobile internet, consumer IP and strategic business services. But after absorbing 30+ consecutive years of dividend increases, the firm has started to show signs of slowing its dividend growth. The company's debt load should not be ignored, no matter how strong of a free cash flow generator it may be, and cash dividend obligations and after-tax interest expenses are not immaterial by any stretch of the imagination. AT&T has felt considerable pressure from growing competition from smaller competitors such as T-Mobile (TMUS) and Sprint (S), and it is hardly the same company it was just a few years ago. We wouldn't be surprised to see its debt load balloon even more as it continues to search for growth and diversification as a next-generation media giant. Recent mega-deals--DirecTV and Time Warner--speak to this.

An equal weight offering within the telecommunications industry is provided in the SPDR S&P Telecom ETF (XTL). Investors will have to pay more for the equal weight investment style (the XTL has an expense ratio of 0.35%), and a good portion of its 46 holdings are similar to those of its peers, though in lower weights. Investors looking for less exposure to Verizon and AT&T may consider State Street's XTL, but income minded investors should be cognizant of its lower weightings of firms with high yields, resulting in a much lower yield of ~2.3% for this ETF.

The final two offerings in this sub-sector are network-related products. The networking industry is characterized by low barriers to entry, rapid technological change and significant pricing competition. Gross margins can be volatile and should be watched closely. We don't like the structure of the group and

consequently are not fond about the ETFs available within the group. The iShares North American Tech-Multimedia Networking ETF (IGN) has an expense ratio of 0.46% and an insignificant amount of assets under management. The PowerShares Dynamic Networking Portfolio (PXQ) employs the Intellidex strategy, which evaluates companies based on a wide range of criteria, including price momentum, earnings momentum, quality, management action, and value. This unique strategy comes along with an expense ratio of 0.63%, a value we feel is not worth further consideration, particularly within the networking industry.

(4) Semiconductor Sub-Sector

The two largest ETFs in the semiconductor sub-sector (4) do not employ unique strategies. The first is the iShares PHLX Semiconductor ETF (SOXX). This product has an expense ratio of 0.46% and features nearly equal, sizable weightings of Texas Instruments (TXN) and Qualcomm (QCOM) as its top holdings. Though it leads the sub-sector in assets under management, its ~\$1.6 billion pales in comparison to the overall sector leaders. The Market Vectors Semiconductor ETF (SMH) is the next largest semiconductor ETF and has an expense ratio of 0.35%. The SMH offers a decent concentration of its exposure to its top two holdings of Intel and Taiwan Semiconductor (TSM).

Fund Top Holdings					
iShares PHLX Semiconductor ETF (SOXX)		VanEck Vectors Semiconductor ETF (SMH)		SPDR S&P Semiconductor ETF (XSD)	
Name	Weight	Name	Weight	Name	Weight
Texas Instruments Inc.	8.23%	Intel Corp.	8.35%	SunPower Corp.	3.54%
Qualcomm Inc.	8.15%	Taiwan Semiconductor	6.74%	Cirrus Logic Inc.	3.43%
Broadcomm Inc.	8.04%	Micron Technology Inc.	5.49%	Synaptics Inc.	3.42%
Nvidia Corp.	7.95%	Nvidia Corp.	5.37%	Qorvo Inc.	3.28%
Intel Corp.	7.59%	Texas Instruments Inc.	5.30%	Advanced Micro Devices Inc.	3.26%
Analog Devices Inc.	4.10%	Broadcom Inc.	5.25%	Monolithic Power Systems Inc.	3.26%
Microchip Technology Inc.	3.91%	Asml Holding NV	4.91%	Cavium Inc.	3.25%
Taiwan Semiconductor	3.90%	Analog Devices Inc.	4.85%	First Solar Inc.	3.25%
Skyworks Solutions Inc.	3.85%	Qualcomm Inc.	4.79%	MACOM Technology Solutions	3.24%
Micron Technology Inc.	3.79%	Microchip Technology Inc.	4.72%	Skyworks Solutions Inc.	3.21%

Though many had feared Intel, a top holding in many of the ETFs of this style, would be left behind by the mobile revolution, we think those worries are overblown. The company has and will continue to spend billions in research and development, and we feel Intel will remain a viable competitor in the mobile space, offering a huge upside catalyst to shares. Its recent purchase of Mobileye all but guarantees it a strong opportunity in the growing auto sensor market, as well as opens up adjacent opportunities. Though we're not particularly fond of the moving parts in Nvidia's business, its exposure to the smartphone and auto systems markets bodes well for long-term demand, and its balance sheet and free cash flow generating capacity are positive attributes. Momentum across Nvidia's business platforms has been impressive of late, and its rapidly developing market provides interesting growth opportunities, though not without meaningful risk. Taiwan

Semiconductor, a major top holding in the SMH, receives an investment-grade credit rating on its debt from credit agencies.

All in, the semiconductor industry is notoriously cyclical and subject to significant economic upturns and downturns, as well as rapid technological changes. Firms must innovate to survive, and products stocked in inventory can sometimes become obsolete before they are even shipped. Severe pricing competition and lengthy manufacturing cycles only add uncertainty to the mix. We're not fans of the structure of the semiconductor space, though we point positively to Intel and licensing-giant Qualcomm as major players with plenty of fundamental momentum within the industry. Intel is a holding in both newsletter portfolios as of this writing, but investors should note the ongoing legal battles Qualcomm is facing over royalty disputes with Apple. The outcome of these legal fights could have meaningful implications on Qualcomm, which recently also had to fend off a takeover approach from Broadcom.

The PowerShares Dynamic Semiconductors Portfolio (PSI) brings the unique Intellidex strategy to the semiconductor sub-sector. The PSI has an expense ratio of 0.63%, and again, we do not feel this warrants further consideration at this point. The SPDR S&P Semiconductor ETF (XSD) offers an equal weight option in the semiconductor sub-sector. With an expense ratio of 0.35%, the XSD is one of the least expensive within the group. The broad line semiconductor industry is characterized by intense competition, rapid technological change, and frequent product introductions, and in this light, an equal weight approach may hold merit. Generally speaking, however, the semiconductor space is not the most attractive sub-sector in our coverage universe – not by a long shot.

(5) Software Sub-Sector

One of the largest ETFs in the entire sector can be found in the software sub-sector (5). iShares North American Tech-Software ETF (IGV) is the eighth-largest in the sector in terms of assets under management with ~\$1.9 billion and has an expense ratio of 0.46%.

Fund Top Holdings					
iShares North American Tech-Software ETF (IGV)		PowerShares Dynamic Software (PSJ)		SPDR S&P Software & Services ETF (XSW)	
Name	Weight	Name	Weight	Name	Weight
salesforce.com Inc.	8.95%	Liberty Broadband Corp.	5.28%	Acxiom Corp.	1.04%
Microsoft Corp.	8.42%	salesforce.com Inc.	5.27%	8x8 Inc.	0.92%
Adobe Systems Inc.	8.40%	Intuit Inc.	5.03%	ForeScout Technologies Inc.	0.91%
Oracle Corp.	8.11%	ServiceNow Inc.	4.96%	Glu Mobile Inc.	0.90%
Activision Blizzard Inc.	6.63%	Microsoft Corp.	4.93%	PROS Holdings Inc.	0.87%
Electronic Arts Inc.	4.71%	Adobe Systems Inc.	4.83%	PTC Inc.	0.87%
Intuit Inc.	4.55%	Citrix Systems Inc.	4.82%	First Data Corp. Class A	0.86%
ServiceNow Inc.	3.74%	Red Hat Inc.	3.99%	Qualys Inc.	0.86%
Autodesk Inc.	3.43%	Qualys Inc.	3.10%	Travelport Worldwide Ltd.	0.86%
Red Hat Inc.	2.84%	Apptio Inc.	3.02%	Convergys Corp.	0.85%

Another Intellidex strategy ETF from PowerShares is available in the software segment, the PowerShares Dynamic Software Portfolio (PSJ). At 0.63%, the PSJ

has the same expense ratio as the previously-mentioned Intellidex ETFs, and we come to the same conclusion concerning its high expense ratio. We can't justify the lofty expenses.

State Street has another equal weight offering, this time with a focus on the software industry. The SPDR S&P Software & Services ETF (XSW) has a sub-sector leading expense ratio of 0.35%, but it has been unable to gather a significant amount of assets under management since its inception in 2011. Though we like the idea of an equal-weighted portfolio to help reduce firm-specific risk, in software, however, we actually would prefer loftier weightings in established entities such as Microsoft, or even Adobe (ADBE) and Oracle, for example.

Nothing new to the reader, but companies that serve the mature software markets or those consisting of basic business applications have powerful distribution channels, large installed bases, and fortress-like balance sheets. Participants generally benefit from high-margin license revenue and generate significant returns on investment. There are a whole host of software companies that register 'Very Attractive' or 'Highest-Rated' marks on the Economic Castle scale. We not only like the software group by itself but also relative to other industries within technology, and we can't get enough of its top players, some of which can be found in the top holdings of software ETFs (particularly some of the higher weightings in the IGV).

Still, the lack of exposure to Apple in ETFs tied exclusively to software is one huge shortfall that's nearly impossible to overlook, in our opinion.

(6) Internet Technology Sub-Sector

We have classified the final two non-leveraged ETFs in the technology sector into the Internet technology sub-sector (6). These two ETFs follow unique, Internet specific indices. Though they track different indices, the top holdings of the two are very similar.

Fund Top Holdings			
First Trust Dow Jones Internet Index (FDN)		PowerShares NASDAQ Internet Portfolio (PNQI)	
<u>Name</u>	<u>Weight</u>	<u>Name</u>	<u>Weight</u>
Amazon.com Inc.	9.93%	Netflix Inc.	8.68%
Facebook Inc.	8.74%	Amazon.com Inc.	7.99%
Netflix Inc.	6.43%	Alphabet Inc.	7.93%
salesforce.com Inc.	5.00%	Facebook Inc.	7.92%
Alphabet Inc. Class A	4.93%	Booking Holdings Inc.	7.51%
Alphabet Inc. Class C	4.93%	Baidu Inc. ADR	3.85%
PayPal Holdings Inc.	4.80%	JD.com Inc. ADR	3.83%
Twitter Inc.	3.41%	Equinix Inc.	3.77%
eBay Inc.	3.24%	eBay Inc.	3.76%
Expedia Group Inc.	2.42%	Twitter Inc.	3.65%

The First Trust Dow Jones Internet Index Fund (FDN) is the third-largest ETF in the entire technology sector in terms of assets under management, with ~\$9 billion. The FDN has a high expense ratio of 0.53%, a hurdle that is hard to look past. While its top holdings are not as sound as the broad-based technology ETFs, we like its large positions in Facebook, Alphabet, and PayPal (PYPL), all of which are holdings in the Best Ideas Newsletter portfolio.

The PowerShares NASDAQ Internet Portfolio (PNQI) has considerably less assets under management and a slightly higher expense ratio of 0.60%. Its top holdings are generally more speculative than the older and larger FDN, which gives us little reason to consider it over the FDN. As it relates to holdings, we generally have no qualms with Booking Holdings (BKNG), Alphabet, and eBay (EBAY), the former two current holdings the Best Ideas Newsletter portfolio and the latter a former holding, but top sizeable positions in Chinese firms Baidu (BIDU) and JD.com (JD) could be unappealing for some risk-averse investors. Amazon is extremely sensitive to long-term operating margin assumptions (a one percentage point change in expectations of its normalized operating margin results in a ~\$185 per-share change in its fair value, for example), though we note its improving free cash flow generating capacity thanks to its leading position as a cloud services provider via Amazon Web Services.

As has been the general theme thus far, we generally prefer tried-and-true technology exposure rather than the up-and-coming firms that may not be consistently generating GAAP accounting profits, let alone pay out lofty and growing dividends. This, coupled with the high expense ratios of the two available Internet based ETFs, causes us to look away from this sub-sector for technology related investment ideas. Investors seeking significant price volatility may find either the FDN or the PNQI acceptable considerations.

Ultra-Leveraged Products

Investors must be aware of ETFs rooted with risk that promise returns of 2x and 3x that of the underlying index. In the technology sector, these include ProShares Ultra Technology (ROM), ProShares Ultra Semiconductors (USD), ProShares Ultra Telecommunications ETF (LTL), ProShares UltraShort Technology (REW), ProShares UltraShort Semiconductors (SSG), ProShares UltraShort Telecommunication ETF (TLL), Direxion Daily Technology Bull 3X Shares (TECL), Direxion Daily Semiconductor Bull 3X Shares (SOXL), Direxion Daily Semiconductor Bear 3x Shares (SOXS), and Direxion Daily Technology Bear 3X Shares (TECS).

These highly-leveraged products provide a return that is multiple times the return of the benchmark index for a single day; they should not be expected to provide the return of their benchmark's cumulative returns over an extended period of time. Because of this, these ETFs should be used as mere trading vehicles, which

could be hazardous to an individual investor unaware of erosion risk brought about by index volatility.

Valuentum Buying Index Ratings

We think the best ETFs are those that have low or reasonable expense ratios, have holdings that are collectively underpriced, and have technical and momentum indicators that are currently exhibiting bullish trends. Similar to how we arrive at the Valuentum Buying Index rating for stocks, we perform a process in arriving at a Valuentum Buying Index rating for each ETF.

The highest-rated ETFs will have best-in-class expense ratios, have undervalued constituents in aggregate, and possess strong technical and momentum indicators. The Valuentum Buying Index rating reflects our assessment of the relative attractiveness of each ETF on a scale from 1 through 10 (10 = best).

An ETF that registers a 5, for example, is relatively more attractive than an ETF that registers a 4 within its defined category based on the three defined parameters of “expense,” “valuation,” and “technical.” That same ETF can also be considered relatively more attractive to an ETF that registers a 4 in another defined category.

ETFs that register a 9 or 10 on the Valuentum Buying Index are not only best-in-class within their respective categories, but also may represent ideas for the opportunistic investor.

There is substantial risk involved with investing in any financial instrument.

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