
Connolly Network Insight

January/February 2017 Update

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The Big Four - 4Q16 Update

The Big Four continued their success this quarter collectively generating revenues of \$157 billion and net income of over \$27 billion. Apple returned to small positive growth while the other three had double-digit revenue growth with triple-digit net income growth for Facebook. Apple, once again, dominated profitability generating significantly more net income than the other three combined.

Collectively, they spent \$42.5 billion in R&D in 2016 fueling both their continued core business dominance and aggressive expansion into new business spaces.

Company	4Q16 Revenue	Growth Rate (YOY)	4Q16 Net Income	Growth Rate (YOY)	Market Cap
Apple*	\$78.4B	3.2%	\$17.9B	<2.7>	\$609B
Amazon	\$43.7B	22%	\$0.75B	55%	\$356B
Google	\$26.1B	22%	\$5.3B	8%	\$532B
Facebook	\$8.8B	51%	3.6B	128%	\$330B

\$157B **\$27.55B** **\$1.83 Trillion**

Following are highlights from their earnings calls with emphasis on their plans to enter the Pay-TV space.

Apple:

Apple returned to positive growth in the quarter generating all-time record revenues and earnings per-share. Over \$27 billion in operating cash flow was generated. Apple shipped a record 78.3 million smartphones in the quarter, moving ahead of Samsung, who faced a severe battery problem. Services revenue was again highlighted as growing faster than the overall company growth rate. International sales were 64% of the quarterly revenue. Apple choose not to enter the V-MPVD market but chose rather to launch a systems integration type of app (“Pay-TV”) which allows users of iOS devices to consolidate all of their video offerings into one integrated system while generating a cut of the revenue for Apple.

Amazon:

Once again the focus was on Amazon Prime with highlights that the number of items available for purchase by Prime customers had risen by 73%, to over 50 million items, and that “tens of millions” of new Prime users had joined.

Amazon Prime Video was introduced to customers in more than 200 countries around the globe. Original content was a major focus for the company with seven Academy Award nominations and 11 Golden Globe nominations. Their digital butler, Alexa, had a major ramp up in the quarter. Tens of thousands of developers have released more than 4000 new Alexa skills and the Alexa voice service is enabling integration of Alexa into DVRs, appliances, and vehicles from companies such as Ford and Volkswagen. This will continue to extend the reach and value of Amazon’s digital butler capability. Amazon continues to lead in the cloud space with their AWS offering, accelerating their infrastructure expansion with 42 Availability Zones across 16 infrastructure regions globally, and more growth planned.

Amazon publicly highlights their commitment to four principles: customer obsession rather than competitor focus, passion for invention, commitment to operational excellence, and long-term thinking.

Facebook:

Facebook had an outstanding quarter with revenue increasing 51%, and 81% of that revenue coming from mobile ads. Mark Zuckerberg again emphasized the importance of “video first” across all of their platforms. The company is managing four major platforms: Facebook, Messenger, Instagram, and WhatsApp, which have all scaled to enormous volume but are in different stages of monetization. Shorter-term plans call for optimizing the business performance of each platform. Longer term, bringing more users onto the internet, and capitalizing on AI and AR/VR bets are paramount. Most analysts’ questions revolved around ad metrics and monetization of video on each platform.

Alphabet:

Alphabet had a very strong quarter with 22% revenue growth and 24% operating income growth. Highlights were stated as advertising revenue growth, driven by mobile search, YouTube, and programmatic ads. Substantial growth was also highlighted in Hardware, Play, and Cloud as the company broadens its focus. The CEO, Sundar Pichai, highlighted the shift in market emphasis from mobile first to AI first, with Google Assistant leading the way. Three hundred and fifty launches, powered by machine learning, took place in Search, Maps, Messaging and Google Play. The use of neural networks for enabled more improvement for language translation in a single leap than the prior 10 years combined. Speaking of YouTube, Mr. Pichai emphasized their goal of “creating the best video experience that’s fast, personalized, searchable and that just works.”

The majority of questions coming from the analysts on the call focused on YouTube, with an emphasis on: the shift to a subscription basis, the embrace of professional content, and the monetization model.

Social Media - A New Assault on Pay-TV Ads

The recent IPO of Snap, the parent company of the Snapchat messaging app, has received an enormous amount of attention in the business and industry press. What is of most interest to my research is the ability of Snap, and more importantly of the Facebook-family copycat services, to more effectively target the Pay-TV ad budget.

To put this in context, the digital ad market has been growing faster than the Pay-TV ad market in the US, and, in fact, is expected to exceed the Pay-TV ad market this year. By 2021 some are forecasting the mobile digital ad market to exceed that of Pay-TV. The two dominant players in the digital ad space are Google, dominant on desktop and web-based ads: and Facebook, dominant on mobile and app-based ads. While the digital ad space has been growing rapidly and shifting more and more to mobile usage, the Pay-TV ad market has so far weathered this storm, and is still growing, albeit slowly. A key difference between the digital space and the Pay-TV space has been the nature of the ads themselves, with “action” ads playing a major role in digital and “brand” ads playing a major role in Pay-TV.

The two most interesting aspects of Snapchat are one, its dominance of the US millennial market, and two, its superior ability to embrace brand ads and thus more likely pull dollars away from the Pay-TV budget.

Snap has 158 million daily users, predominantly US-based millennials, who collectively watch 10 billion short videos per day. As the user numbers were built, the service provided videos or photo sharing with friends which disappeared in 10 seconds, yielding a very difficult monetization problem in spite of rapid user growth. The first phase of monetization for Snap was to introduce Stories which consisted of user-generated strings of videos and/or photos which would last for 24 hours before disappearing. Once the user base embraced this concept, a series of commercial partners were chosen and paid to insert professional content. This was done so well that the user base did not adversely react, and, in fact, have actively embraced the information and entertainment provided by these professional partners. The Discover section of the app, which users can choose instead of the standard friends feed, includes media brands which produce curated stories. Now a series of “original productions” are being generated by folks like Disney, NBCU, and Turner Networks to increase the perceived value of the service to the millennial user base. The overall impact is to create a “millennial skinny bundle,” entirely ad funded, which may prove very successful as it ramps up.

The Snap ad model is less targeted than existing digital ads, more like a brand rather than an action ad, and hence more threatening to the Pay-TV status quo. Three “ten-second” non-skippable ads are inserted into every one-and-a-half to two-minute story in the Snap model vs. a 15 or 30 second pre-roll every few videos used in the YouTube model.

This has allowed Snap to grow revenues from \$58 million in 2015 to \$405 million last year, with close to \$1 billion expected this year. This rapid growth has yielded an IPO valuation of

\$24 billion. Many advertisers are coming to the realization that traditional Pay-TV advertising is less and less likely to reach the millennial base, and this SNAP-based alternative provides a very promising model to target this highly desirable market segment.

The biggest threat to the success of Snap comes from Facebook, which has repeatedly but unsuccessfully tried to buy them, with the latest offer being \$3 billion in 2014. Facebook has now turned to the "if you can't beat them, copy them" playbook. Similar features were introduced in 2015 into Facebook-owned Instagram, which has now grown to 100 million daily users. As this feature ramped up, the growth rate of new Snapchat users correspondingly ramped down. Now, Facebook has significantly turned up the heat by deploying these copycat features on Messenger and WhatsApp, and will most likely deploy to the Facebook app itself. From the point of view of Snap, this is clearly a major problem, but from the point of view of making the market, it significantly increases the likelihood of success. Facebook's other major video initiative, Facebook Live, has a more difficult monetization process ahead, and I expect to see the video sharing initiative on all of their platforms receive increased attention and, hence, more likely pull advertising dollars away from Pay-TV budgets.

YouTube, meanwhile, is targeting Facebook Live by adding mobile live-streaming to its app, and is getting ready to introduce an V-MVPD service to compete with DirecTV Now, Sling TV, and Vue. It has no play in the Snap-type ad model since it has not, to date, had a viable messaging play.

The Pay-TV industry needs to pay very close attention to the performance of Snap and the Facebook-owned clones over the next 6-to-12 months to gauge the potentially large impact of this competitive threat via a preferred path to the coveted millennial dollars.

Network Update - Is a Gig Enough?

As consumers continue to embrace HD streaming video, emerging 4K video, and even higher bandwidth services on the horizon, such as augmented and virtual reality, there is ongoing pressure for Service Providers to continually increase data speeds. Fiber-based access, which wins the bandwidth game, continues to grow but is limited by its high costs. The MSO's data standard, DOCSIS, has proved to be extremely resilient, with significant runway still ahead for capacity and speed increases. Looming in the distance is 5G wireless as a potential disruptor. Let's take a look at each of these three technologies to see where things stand today, and where they are potentially going.

Beginning with fiber access, Verizon, the pioneer, spent a significant amount of time and capital rolling out FiOS as its triple play offering but has now retrenched into its core metropolitan markets and has sold off less strategic deployments. Google Fiber, having launched in 2010 and built up service in nine markets, has taken a pause, announcing delays in eight new cities and cutting staff in October 2016 and again in February. AT&T, as part of its DirecTV purchase, committed to have fiber deployed to 12.5 million locations by end of 2019. It currently has fiber deployed to 51 metropolitan areas across 21 states, covering four million customer locations, of which 650,000 are MDUs. They have reported a 30% take rate for the one gig offering for customers who choose data on this network. Comcast has deployed, in key locations, a 10 gig fiber offer for businesses and a two gig symmetrical fiber offer for residential service. Having done this to stay competitive on the residential side, they are aggressively rolling out DOCSIS 3.1 to get to a much lower cost structure. The most interesting industry play here was the recent announcement by Altice that they will roll out fiber to the home to all 4.6 million customers instead of upgrading to DOCSIS 3.1. They appear to be leveraging their experience in Europe where they plan to complete fiber deployment to 5.3 million homes in Portugal by 2021, and 22 million homes in France by 2023. The fiber battle is being played out early in cities like Huntsville and Chattanooga, where over-builders have raised the bar with fiber-based offerings.

All of the MSOs have deployed DOCSIS 3.0 based service, with some limiting the offering to 300 Mb/s down stream and some offering higher bit rates, up to one gig, with this technology. The DOCSIS 3.1 standard allows significantly more bandwidth both upstream and downstream and requires new network gear, new gateways and modems, but no plant upgrades. Comcast has been the most aggressive advocate of this technology, committing to be rolled out in fifteen cities "by early 2017". RCN, an over-builder, is going head-to-head with Comcast in Washington and Philadelphia. Wide Open West is moving ahead, as is Videotron in Canada. All the other MSOs are still formulating their plans, except Altice, as mentioned above which plans to deploy fiber to the home instead.

CableLabs, meanwhile, are beginning specifications for a full duplex DOCSIS 3.1, and are also recommending a shift to coherent optics for short-haul fiber connections, giving a 50X improvement over analog optics.

Looming on the horizon as a potential disruptor is 5G wireless technology. With plans for multi-gig speeds, particularly in a fixed configuration to the home, 5G has the possibility to be a real competitive threat. Cost will be a big factor for 5G however, and it is too soon, in my opinion, to know how this will really shake out. It is interesting to note, given the dominant share of data capacity used by consumers for video services, that the six biggest Pay-TV service providers covering most of the market all are either existing wireless players, have announced intent to enter the wireless business, or own significant wireless spectrum. Having the most to lose from the collapse of traditional Pay-TV to streaming offerings over time, it makes a lot of sense to control the “new pipe” as well as the streaming content itself.

So, how will this play out? Fiber clearly makes sense as a business offering for the foreseeable future. There will be more momentum for fiber-based residential services via AT&T, Altice, and, possibly Google Fiber, but these services will remain available to a relatively low percentage of the marketplace.

The MSOs, excepting Altice, having built a very strong position with DOCSIS 3.0 technology, will likely continue to profitably grow their business, deploying DOCSIS 3.1 as their business cases warrant.

Fixed 5G wireless access will likely be deployed by 2019. We will know within the next year or so whether capacity and cost targets will be able to be achieved to make this a viable Disruptive Technology choice.

All of this is actually good news for consumers, who continue to vote with their dollars to feed their insatiable need for speed.

Wireless Update - A Very Complex Space

The mobile services market in the United States is in a very complex place right now. Widely differing incumbent strategies, new entrants coming from the Pay-TV space, merger and acquisition possibilities, the strengthening connection of mobility and video, competitive need for unlimited data, and last, but certainly not least, the required launch of a brand-new 5G network, are all redefining the rules for success.

Beginning with the two major incumbent players, namely AT&T and Verizon, we see each of them pursuing very different paths for future business growth as they continue to battle it out in the highly competitive wireless space. Both companies made an expensive foray into the Pay-TV market with their U-Verse and FiOS offerings, respectively, but neither was able to generate more than a few points of market share, although they did gain a knowledge of video technology and the Pay-TV business. From here, they went down two very different paths. AT&T became the biggest Pay-TV supplier in the country through its acquisition of DirecTV. Verizon, having made a huge investment consolidating its wireless business by buying out Vodafone, de-emphasized their role as a Pay-TV supplier and instead acquired AOL for \$4.4 billion, yielding them a billion digital users and a programmatic ad capability to allow them, in theory, to directly compete with the two giants in that space - Google and Facebook. Consistent with this strategy, they launched an ad-based video service targeted at millennials: go90. Doubling down on this strategy, they acquired Yahoo's digital businesses for \$4.5 billion, which significantly increased their digital user base to the planet scale required to compete.

So how is it working out for each of these strategies? For AT&T, they have succeeded in becoming the biggest Pay-TV player, pitting them directly against Comcast. After recognizing the need to shift off of their current video delivery technologies of fiber and satellite, and seeing an opportunity to do a much better job at targeted advertising than the industry has done, they have launched DirecTV Now to take the lead at migrating the industry to a streaming IP model. Further recognizing the importance of coupling content and video delivery to increase the effectiveness of targeted ads, AT&T have made a bid for Time Warner Inc, giving them the competitive heft to match Comcast's NBCU acquisition, especially with Comcast's stated intention to enter the wireless space. For Verizon, their launch of go90 has not, to date, been a strong success. They are also backing away from plans to produce premium video content with AwesomenessTV, in which they invested \$160 million last year. Furthermore, their acquisition of the Yahoo properties has been plagued by the hacking disclosures of Yahoo users. It is not clear to me that they will be able to effectively compete with Google and Facebook for programmatic ad success in the digital world.

So this means you have AT&T, inside the Pay-TV tent, competing with Comcast and using innovation to hold off the expected entrance of streaming players such as Google and Amazon. Verizon, by contrast, will be one of those streaming players outside the Pay-TV tent trying to enter the video space while competing directly with Google and Facebook.

Meanwhile the other two major wireless suppliers, Sprint and T-Mobile, have both been gaining subs through disruptive strategies, such as unlimited data, but both struggle to generate profitability. Both are foreign owned and probably have a better chance for long-term survival via merger or acquisition of some type. Both Verizon and AT&T have reacted to the pain of subscriber losses to Sprint and T-Mobile by rolling out unlimited data plans of their own, including zero-rated data for video.

Both Sprint and T-Mobile are possible M&A candidates, either merging with each other, or linking up with Dish or one of the MSOs. T-Mobile have also publicly mused about entering the Pay-TV space, disrupting things in the same way as they have done in the wireless space. Verizon have been taking a look at a Charter merger and may also be the likely buyers of Dish spectrum holdings. The 600 MHz spectrum auction has kept people from talking, to date, but as it winds down, expect M&A activity to ramp up. That auction, by the way, which was expected by many to exceed the \$45 billion AWS-3 results, looks to be raising about \$20 billion.

As consumers are once again given the expectation of unlimited data, this puts wireless access in a much stronger position for streaming video. Delivering this capability via the LTE network will become problematic if the service is too successful. Nevertheless, Parks Associates predicts that 10% of US BB households are likely to cancel their service over the next year in favor of wireless data access.

Looming over all this, however, is the introduction of 5G technology, which yields a huge bandwidth increase and equally significant improvement in latency. This network will require an enormous commitment of capital for both network and spectrum. It will target both the high-end, high-bandwidth video capability, and lower bandwidth, low latency needs of the Internet of Things market, including such huge potential applications as self-driving cars. Expect to see commercial fixed hotspot deployments in 2019 and smartphones a year later.

The entry of Comcast and Charter into the existing wireless space, using their historical Verizon MVNO agreement, is really an opportunistic way to drive up ARPU and drive down churn, but their potential entry into the 5G space is a much more serious threat to the incumbent wireless players. Comcast have made strong indications of their intent to play in this arena, setting up a long-term battle with AT&T for dominance of the US consumer services market.