THE CABLE AND BROADBAND SURVEY - 3Q18

THE COWEN INSIGHT

We publish our “Cable and Broadband Survey” each quarter in front of earnings. Our focus on cross-tabulating the data provides an invaluable level of customer detail not seen in company reported results. Our survey indicates Cable will continue to steal Telco share and a slight uptick in otherwise steady OTT migration. We remain bullish on ATUS into the print, CHTR on overall stock appreciation.

Survey suggests Cable broadband growth to continue through share stealing.

In 2Q18, the industry surprisingly gained 2.4% broadband subscribers Y/Y, an uptick after the previous two quarters of 2.1% growth. We attribute the strength to the economy (broadband penetration to lower-income households) and as broadband has more convincingly become a utility-like necessity. Though market saturation is inching closer, and investors worry about broadband moderation, our survey data reaffirms the highly favorable market dynamics for Cable providers over Telcos. Specifically, 37% of dissatisfied cable subs have not switched because of “no alternative” (23% plan on switching). Meanwhile, 36% of dissatisfied telco subs plan on switching, implying that until 5G becomes a viable option (we note not for the foreseeable future), cable operators have continued growth opportunities via stealing share (Figure 52).

Price still the reason for OTT migration, by far, but Cable plays price defense.

As we’ve previously noted, the largest problem for traditional MVPD’s, in our view, is that many OTT providers have no economic mandate for stand-alone operating profit as we consider AT&T (bundled for lower churn), Sling (eventual pivot to wireless), YouTube (Google ad eyeballs), and Amazon (Prime subscriptions). Streaming is not about technology threat as much as it’s simply a pricing threat by “irrational” players. Our survey still shows price remains (by far) the primary reason for cord cutting (Figure 18). That said, Cable operators make the price-value decision more difficult by increasing the stand-alone broadband price. Meanwhile “irrational” OTT players are not immune to programming costs, as we note Sling and DTV Now recently raised rates by ~$5/mo. To that point, interestingly our survey shows that for those cable subs that haven’t cut the cord, the #3 reason is because “the monthly savings are not compelling enough” (Figure 19).

Survey suggests a slight uptick in otherwise steady cord cutting trends.

Industrywide Y/Y Video losses have stabilized in the -3.5% range over the past four consecutive quarters, noting slight improvement in 2Q18. With the vMVPD landscape showing more visibility and predictability (no new large, aggressive entrants to speak of), we should expect video losses to remain in the 3.4-3.6% range with a bias toward the downside in 2H18. On that note, the latest survey results suggests a slight uptick in cord cutting trends. Specifically the average Y/Y adoption is up 20 bps (to up 3.2% Y/Y) vs. the long-term adoption (of up 3.0% Y/Y losses, Figures 2-4). That said, we continue to note OTT migration has minimal impacts on margin (see takeaway #7).
Top 10 Observations - 3Q18 Cable & Broadband Survey

1) Survey suggests Cable broadband growth to continue through share stealing.
In 2Q18, the industry surprisingly gained 2.4% broadband subscribers Y/Y, an uptick after the previous two quarters of 2.1% growth. We attribute the strength to the economy (broadband penetration to lower-income households) and as broadband has more convincingly become a utility-like necessity. Though market saturation is inching closer, and investors worry about broadband moderation, our survey data reaffirms the highly favorable market dynamics for Cable providers over Telcos. Specifically, 37% of dissatisfied cable subs have not switched because of "no alternative" (23% plan on switching). Meanwhile, 36% of dissatisfied telco subs plan on switching, implying that until 5G becomes a viable option (we note not for the foreseeable future), cable operators have continued growth opportunities via stealing share (Figure 52).

2) Price still the reason for OTT migration, by far, but Cable plays price defense.
As we’ve previously noted, the largest problem for traditional MVPD’s, in our view, is that many OTT providers have no economic mandate for stand-alone operating profit as we consider AT&T (bundled for lower churn), Sling (eventual pivot to wireless), YouTube (Google ad eyeballs), and Amazon (Prime subscriptions). Streaming is not a technology threat as much as it’s simply a pricing threat by “irrational” players. Our survey still shows price remains (by far) the primary reason for cord cutting (Figure 18). That said, Cable operators make the price-value decision more difficult by increasing the stand-alone broadband price. Meanwhile “irrational” OTT players are not immune to programming costs, as we note Sling and DTV Now recently raised rates by ~$5/mo. To that point, interestingly our survey shows that for those cable subs that haven’t cut the cord, the #3 reason is because “the monthly savings are not compelling enough” (Figure 19).

3) Survey suggests slight uptick in otherwise largely steady cord cutting trends.
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4) Cord cutters/nevers not just a young person’s game. We’ve noted in the past the high propensity for younger cohorts to forgo traditional video, (not just driven by price, but for the experience as the younger cohort prefers consumption on devices, short-form video, and has an adversity to ad loads), essentially making it a generational battle. That said, our survey suggests the continued adoption of OTT and cord-cutting is more recently being driven by older cohorts. Specifically, the 30-44 age group shows a 41% take rate of OTT-only video, up from 32% in 2Q18 and 24% in 1Q18. The 45-60 age group shows similar trends but to a lesser degree with a 22% take rate vs. 21% in 2Q18 and 12% in 1Q18 (Figures 8-10).

Relevant Reports

<table>
<thead>
<tr>
<th>Relevant Reports</th>
<th>Link</th>
</tr>
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<tbody>
<tr>
<td>2Q18 Cable Survey</td>
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<tr>
<td>1Q18 Cable Survey</td>
<td>REPORT</td>
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<tr>
<td>The Cable Quarterly - Post 2Q18</td>
<td>REPORT</td>
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<tr>
<td>The Cable Quarterly - Post 1Q18</td>
<td>REPORT</td>
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<td>Navigating the OTT Era</td>
<td>REPORT</td>
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<tr>
<td>(Cowen Ahead of the Curve)</td>
<td>REPORT</td>
</tr>
<tr>
<td>Takeaways from the Pay TV Show</td>
<td>REPORT</td>
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5) Traditional video not dead yet: more cord cutters/nevers considering returning/subscribing. In 1Q18 we began asking cord cutters/nevers “do you ever anticipate subscribing to traditional Pay TV?” and at the time we found only 17% would consider the idea. Not surprisingly, the 18-24 group had the lowest inclination (preferring OTT/short-form video), while for the 25-29 cohort, signing up for traditional TV was highest, and we found for them that lack of Pay TV adoption is a money/income issue (Figure 6). That said, in our latest survey 71% of cord cutters/nevers do not anticipate ever subscribing to traditional Pay TV, and while that number is high, it’s been dropping steadily and significantly over the past two surveys (from 83% in 1Q18, Figure 7) as we note the improve traditional TV experience (X1, World Box, Altice One platforms) and price hikes with the OTT operators, closing the price/value gap.

6) Content still the key for Cable to keep video subs. We’ve continued to argue that Cable will still play solid defense on Video with programming/content. Our survey again shows that content such as local TV/sports is the #1 reason to keep traditional TV in lieu of cord cutting (Figure 19). To that end, the 22 Disney/Fox RSN’s are up for sale, and Big Cable would bid up for these RSNs, though only making sense in their respective MSO footprints; breaking the RSN’s up could prove difficult. Meanwhile Comcast’s will need to keep Premier League for Sky (in order to keep the Sky sub base and/or migrate to Now TV), which could prove challenging when the 3-year cycle ends with new entrants (Amazon/NFL streaming rights), keeping us skeptical on the Sky acquisition.

7) OTT migration still little/no impact on cable margins. Similar to prior surveys and our industry analysis, we find OTT has only a modest impact on margins. Figure 32 shows implied double play video ARPU of ~$58/month which is largely in-line with (rising) programming costs per month. Thus, as video subscribers drop their video service for a stand-alone broadband package (or a broadband/voice package), Cable providers shed the commensurate programming cost with it. The only significant risk is if subscribers drop the cable provider all together and leave for the telco broadband provider. To that point, we saw some telco strength in 2Q18 (and in our current survey, see Takeaway #10 below) but overall Telco should lose the long-term battle with an inferior price-value proposition as consumers will demand higher speeds.

8) Stand-alone broadband continues to rise, but only at Cable (not telcos). The impact of OTT adoption is continuing to show in survey results in many ways, including product/plan adoption. Specifically, our survey shows that stand-alone broadband adoption is steadily increasing with cable providers at 29% adoption, up from 23% in 4Q17, led by Charter and Cox (lagged by Altice). Conversely triple play adoption continues to erode (shedding video), declining to 29% from 33% in 4Q17. Interestingly, we are not seeing this same dynamic within Telco broadband as stand-alone broadband remains more muted and with no clear upward trajectory (Figures 31 and 33).
9) **Higher speeds adoption takes a pause.** As industrywide broadband growth should moderate given that we will reach household penetration maturity, the opportunity for growth will come from rate hikes and higher speed adoption. To that last point, near-term ARPU growth via higher speed adoption will only continue up to a point (especially as MSO’s are giving it away for free such as at Charter), until bandwidth rich apps such as 4KTV and VR enter the market driving a need for higher speeds. While one survey does not make a trend, our most recent data suggests we could be reaching a near-term pause in the adoption of higher speeds. Specifically, our survey shows 69% of Cable subs are taking >50 Mbps speeds, a decline after consistent and steady increases since 4Q17. Telco adoption of >50 Mbps has been flat for 3 consecutive quarters at 60% (Figure 43).

10) **Telcos show resurgence, taking share from DBS.** Past surveys have shown Cable’s inherent price-value advantage over telco, and we believe that dynamic remains, however we’ve seen a pocket of resurgence from telco players (including 2Q18 actuals) driven by FTTH buildouts (U-Verse) and copper bonding/vectoring deployment. To that point, our latest survey shows Telcos are taking an outsized share of the cord cutters, as Figures 16 shows Telcos taking 40% of the recent cord cutters (vs. the Telco national broadband share of 35%). Specifically, the Telcos are taking largely from DBS cutters, and interestingly not driven by a DirecTV to U-Verse broadband migration, which would seem the obvious answer.
Survey Footprint

Figure 1 Cable Footprint Profile for Survey Respondents

Respondent Footprint %
(Avg. Since 4Q17 Survey)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
OTT Adoption and Cord Cutting Trends

Figure 2 Cord Cutting Adoption Increases After Steady Previous Seven Months in Late 2017/Early 2018

How Do You Access TV Programming? (% Answered "Cord Cutter")

Source: Cowen and Company Internet/New Media Tracker – Aug 2018 (analyst John Blackledge)
Figure 3: Cord Cutting Y/Y Migration % is Increasing to an Average of 3.2% for 2018, Slightly Up from the 3.0% Historical Average. Source: Cowen and Company Internet/New Media Tracker – Aug 2018 (analyst John Blackledge).

How Do You Access TV Programming?
Y/Y % Change of Those Answered “Cord Cutter”

Figure 4: Percentage of Cord Cutting and Cord Nevers Base Continues to Increase, Though at a Decreasing Rate. Source: Cowen and Company 1Q18-3Q18 Cable & Broadband Surveys.
Figure 5: Cord Cutting and Churn Increases Across All Large Cable Operators vs. Prior Survey

Has Your Household Discontinued Cable/Satellite Pay TV in the Past 6 Months?
(% Answered "Yes")

<table>
<thead>
<tr>
<th></th>
<th>Comcast Footprint</th>
<th>Charter Footprint</th>
<th>Cox Footprint</th>
<th>Altice Footprint</th>
<th>Total Footprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q17</td>
<td>16.2%</td>
<td>17.5%</td>
<td>21.6%</td>
<td>19.2%</td>
<td>18.1%</td>
</tr>
<tr>
<td>1Q18</td>
<td>14.7%</td>
<td>14.5%</td>
<td>20.8%</td>
<td>17.8%</td>
<td>16.0%</td>
</tr>
<tr>
<td>2Q18</td>
<td>16.0%</td>
<td>16.3%</td>
<td>16.0%</td>
<td>10.3%</td>
<td>15.9%</td>
</tr>
<tr>
<td>3Q18</td>
<td>25.0%</td>
<td></td>
<td>17.4%</td>
<td>16.1%</td>
<td>16.0%</td>
</tr>
</tbody>
</table>

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 6 26% of Cord Cutters/Nevers Age 18-24 Will Consider Traditional Pay TV, Similar Levels for Age 30+ Cohorts...

Do You Ever Anticipate Subscribing to Traditional Pay TV?
(cord-cutter and cord never respondents only)

- No, I used to subscribe to a Pay TV service, and don’t plan on going back
- No, I never subscribed to a Pay TV service, and I don’t ever plan to
- Yes, when I make more money, but currently it’s too expensive
- Yes

Source: Cowen and Company 2018 Cable & Broadband Survey

Figure 7 ...71% of All Cord Cutters/Nevers Don’t Plan on Going Back, but That Level is Down from Prior Two Surveys

Do You Ever Anticipate Subscribing to Traditional Pay TV?
(cord-cutter and cord-never respondents only that answered “Yes”)

1Q18: 17%
2Q18: 24%
3Q18: 29%

Source: Cowen and Company Cable & Broadband Surveys 1Q18-3Q18
Figure 8 OTT by Age Group: 30-44 Continues to be Highest, Over-Indexing the US Population Mix; Younger Cohorts Flat vs. Prior Survey; 45-60 Cohort Steady Increase

Figure 9 Pay TV Take Rate by Age: Traditional TV Adoption Generally Increases with Age While OTT Decreases with Age; 30-44 Cohort Showing OTT Adoption Strength

Source: US Census, Cowen and Company Cable & Broadband Surveys 1Q18-3Q18

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 10 OTT-Only Take Rate by Age: Highest in 25-29 Age Group; The 30-44 Cohort Showing Strong and Increasing Take Rates

Take Rate of OTT-Only by Age Group

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 11 Pay TV Take Rate by Age: Cable Adoption Generally Increases with Age, OTT Highest Among Younger Respondents, but Showing Strength in 30-44 Cohort

Figure 12 Vast Majority of Cord Cutter/Never OTT-Only Subs Use Cable (Over Telco) as Broadband Provider...

Figure 13 ...71% of Cord Cutter/Never OTT-Only Subs Take Cable Internet (Over Telco/Other Internet), Above the U.S. Broadband Average (65% of Broadband Subs are Cable Broadband)
Figure 14: Recent Cord Cutting Still Highest in 18-24 Age Cohort

Has Your Household Discontinued Pay TV Service in the Past 6 Months? (% Answered "Yes")

Source: Cowen and Company 3Q18 Wireless Surveys

Figure 15: 64% of Recent Cord Cutters Subscribe to Cable Internet, Mostly In Line with US Cable’s Broadband Share Average

Cord Cutters in the Past 6 Months: Current Internet Provider

Source: Cowen and Company 1Q18-3Q18 Wireless Surveys
Figure 16 Cable is Taking 60% of the Recent Cutters, Telco Taking the Remaining 40% (Outsizing its US Broadband Share)

Who Was Your Previous TV/Video Provider that You Discontinued Service With?
(for those that discontinued video service in the past 6 months)

Source: Cowen and Company 3Q18 Cable & Broadband Survey

Figure 17 Telco Taking 48% of the Recent DBS Cutters

Who Was Your Previous TV/Video Provider that You Discontinued Service With?
(for those that discontinued video service in the past 6 months)

Source: Cowen and Company 3Q18 Cable & Broadband Survey

Figure 18 Price Still (By Far) the Primary Reason for Cord Cutting, and at Record Levels

Why Did You Discontinue Your Pay TV Subscription?
(for respondents that discontinued the past 6 months)

Source: Cowen and Company 1Q18-3Q18 Cable & Broadband Surveys
### Why Haven’t You “Cut the Cord”? (Check All That Apply)

<table>
<thead>
<tr>
<th>Most Popular Answers</th>
<th>% of Total Responses</th>
<th>% 2Q18 Survey</th>
<th>% 1Q18 Survey</th>
<th>% 4Q17 Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>I prefer the content (such as local TV, sports) of traditional TV</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td>I’m happy with my TV provider</td>
<td>11%</td>
<td>10%</td>
<td>13%</td>
<td>N/A - New</td>
</tr>
<tr>
<td>The monthly savings are not compelling enough</td>
<td>11%</td>
<td>6%</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>I prefer the bundle</td>
<td>9%</td>
<td>10%</td>
<td>N/A - New</td>
<td>N/A - New</td>
</tr>
<tr>
<td>I don’t know how/which services to use</td>
<td>8%</td>
<td>8%</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>I would need to switch to too many video providers to get my desired programs</td>
<td>8%</td>
<td>7%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>I don’t have equipment to adequately watch online video (Smart TV, Apple TV, Xbox, Roku box, Firestick, etc.)</td>
<td>7%</td>
<td>7%</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>I prefer the experience of traditional TV (DVR)</td>
<td>6%</td>
<td>7%</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>I don’t have a good/reliable internet connection</td>
<td>6%</td>
<td>6%</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td>I prefer the video quality of traditional TV</td>
<td>5%</td>
<td>7%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>I’m not satisfied and I’m seriously considering “cutting the cord”</td>
<td>5%</td>
<td>5%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>I’m not the decision maker in the household</td>
<td>4%</td>
<td>3%</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>Too difficult with my family</td>
<td>4%</td>
<td>2%</td>
<td>4%</td>
<td>4%</td>
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<tr>
<td>My apartment/building complex provides cable</td>
<td>2%</td>
<td>2%</td>
<td>N/A - New</td>
<td>N/A - New</td>
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<tr>
<td>My broadband speed is not fast enough</td>
<td>2%</td>
<td>2%</td>
<td>N/A - New</td>
<td>N/A - New</td>
</tr>
<tr>
<td>Other reason for not cutting the cord</td>
<td>0%</td>
<td>5%</td>
<td>8%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 20 66% of Respondents Subscribe to OTT Providers, 68% of Cable BB Subs Take OTT and Only 55% of Telco BB Subs Take OTT

Do you Subscribe to an "Over the Top" or Online Video Provider (% Answered "Yes")

<table>
<thead>
<tr>
<th>4Q17</th>
<th>1Q18</th>
<th>2Q18</th>
<th>3Q18</th>
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<tr>
<td>Total Cable Subs</td>
<td>59%</td>
<td>62%</td>
<td>65%</td>
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<tr>
<td>Total Telco BB Subs</td>
<td>53%</td>
<td>54%</td>
<td>55%</td>
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<tr>
<td>Total DBS Subs</td>
<td>45%</td>
<td>48%</td>
<td>48%</td>
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<tr>
<td>Total Survey</td>
<td>56%</td>
<td>57%</td>
<td>61%</td>
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Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 21 Cable Subs Subscribe to OTT at Higher Rates than Telco Broadband Subs

Do You Subscribe to an "Over the Top" or Online Video Provider?

- Yes
- Yes, and I borrowed a log-in from a friend/family for another online video provider in the past month
- No
- No, but I borrowed a log-in from a friend/family in the past month

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 22 OTT Adoption Peak Still at 25-29 and Generally Decline with Age

Do You Subscribe to an “Over the Top” or Online Video Provider?

Source: Cowen and Company 3Q18 Cable & Broadband Survey

Figure 23 Speed Matters, OTT Adoption Steps Up at 20 Mbps (Telcos) and Again at 100 Mbps (Cable)

Do You Subscribe to an “Over the Top” or Online Video Provider?

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 24 Netflix Dominates Online Video Subscriptions, Followed by Amazon and Hulu

Source: Cowen and Company 3Q18 Cable & Broadband Surveys
Figure 25 Cable Subs Have ~1.7 OTT Subscriptions, On Average, Compared to Telco Broadband Subs ~1.5 (Meaningful Increase Q/Q)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 26 The Need for Speed: Number of OTT Providers Steps Up at 20+ Mbps, then Again at 100 Mbps, the Large Step Up with OTT Power Users at 1+ Gbps

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 27 Pay TV Weekly Video Consumption Mostly Unchanged, OTT Video Increases

Hours of Cable and OTT Video Watched per Week

- Wtd. Avg. Hours on Cable TV per Week (per Pay TV subscriber)
- Wtd. Avg. Hours on OTT Video per Week (per OTT subscriber/borrower)

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<tr>
<th>Quarter</th>
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<td>Cable</td>
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<td>OTT</td>
<td>11.9</td>
<td>11.9</td>
<td>11.4</td>
<td>13.6</td>
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</table>

Source: Cowen and Company 4Q17-3Q18 Surveys
Cord Shaving Trends

Figure 28 Recent Skinny Bundle Adoption Highest at Cox, but no Meaningful Differences

Have You Changed Your Plan to a Lower Pay TV Plan (Fewer Channels) in the Past 6 Months?

![Bar Chart]

Source: Cowen and Company 3Q18 Cable & Broadband Survey

Figure 29 Skinny Bundle Adoption Slightly Down, Still Around Low-20%

Have You Changed Your Plan to a Lower Pay TV Plan (Fewer Channels) in the Past 6 Months?
(Answered “Yes”)

![Bar Chart]

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 30 Skinny Bundle Adoption Lowest in Youngest and Oldest Cohorts

Have You Changed Your Plan to a Lower Pay TV Plan (Fewer Channels) in the Past 6 Months?
(% Answered “Yes”)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
**Plan and ARPU Trends**

**Figure 31** Cable Triple Play Mix Remains Around 30% Though Decreasing as Stand-Alone Broadband Climbs

![Total Cable Subscriber Plan Take Rate](chart)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

**Figure 32** The Implied Double Play Video ARPU ~$58 Past 4 Surveys, Only Slightly Higher than Average Programming Costs/Month

![What is Your All-In Bill Size with Your Cable Provider, Including Taxes/Fees?](chart)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

**Figure 33** Telco Subs Also See Triple Play Mix Declines, though Stand-Alone Broadband Remains Muted Compared to Cable

![Total Telco Subscriber Plan Take Rate](chart)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

**Figure 34** Implied Double Play Video ARPU Increases to ~$41, Still Suggests Cord Cutting No Impact to Margins

![What is Your All-In Bill Size with Your Telco Provider, Including Taxes/Fees?](chart)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 35 Internet Only Subscribers Increases to 29% at Big Cable Led by Charter

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 36: Stand-Alone Internet vs. All Services by Age Group

Does Your Household Subscribe to Your Cable Provider for Pay TV, Internet, and/or Phone Service? Service by Age Cohort

- Yes - for internet only
- All Services

Source: Cowen and Company 3Q18 Cable & Broadband Survey

Figure 37: Overall Pay TV Take Rate Continues to Decline...

% Pay TV Subscribers of Total Sub Base

- Comcast
- Charter
- Cox
- Total Altice
- Total Big Cable

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 38: ...Triple Play (Higher Value Subs) Also Down

% Triple Play Subscribers of Total Sub Base

- Comcast
- Charter
- Cox
- Total Altice
- Total Big Cable

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 39 Avg. Bill Size: Cable Spend ~$123 vs. Telco ~$106; Optimum, Comcast, and Verizon Among Highest

Average Bill Size (including taxes, fees) per Month (Avg. Since 4Q17)

Source: Cowen and Company Q3 2018 Cable & Broadband Survey
Figure 40 Detailed Product Take Rates by Subscribers: Optimum and Verizon Still Dominate Triple Play; Cable Still Dominates the BB/TV Double Play Over Telco; Cable Also Dominates Single Play BB, Good for OTT Defense

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 41 Detailed Product Take Rates by Respective Provider Footprint (Example: CenturyLink Taking Telco Plan, Charter Taking Cable Plan)

Service Take Rate for Those Subscribing to Telco and/or Cable Provider

- Yes - for Pay TV and phone
- Yes - for internet and phone
- Yes - for phone only
- Yes - for pay TV, internet, and phone
- Yes - for pay TV and internet
- Yes - for internet only
- Yes - for pay TV only
- No

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 42 Subscriber Product Take Rates by Age Group: As Expected Triple Play Dominated by Older Cohorts

Does Your Household Subscribe to Your Cable Provider for Pay TV, Internet, and/or Phone Service?

Source: Cowen and Company

Figure 43 Higher Speed Take Rates Takes a Breather at Cable, Flat at Telco

>50 Mbps Take Rate

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 44: Speed Drives ARPU, Especially at 1 Gbps

What is Your All-In Bill Size Including Taxes and Fees?
(Cable Subscribers)

Source: Cowen and Company Q18 Cable & Broadband Survey
Wireline Overlap Analysis

Figure 45 Cable Footprint Overlap with Telcos; Comcast, Charter, Cox Highest with AT&T, Cablevision (Optimum) with Verizon, Suddenlink with AT&T and CenturyLink

Telco/Cable Footprint Overlap (Avg. Since 4Q17 Survey)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 46 Respondent Take Rate of Cable Services by Footprint, Take Rates (of Some Type of Cable MSO Service) in ~70% Range of HHP

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 47 Verizon Has Relative Success in Comcast Footprint

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 48 Frontier and AT&T Have Relative Success in Charter Footprint

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
**Figure 49 Telco Footprint Exposure to Cable**

Cable Overlap in Telco Footprint
(Avg. Since 4Q17 Survey)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 50: Suddenlink and Cox Footprint (More Rural) Have Highest DBS Penetration

Does Your Household Subscribe to Satellite TV?
(Avg. Since 4Q17 Survey)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Customer Satisfaction

Figure 51 Suddenlink Highest Satisfaction for Broadband Service, Windstream Lowest; Frontier Shows Improvement; Overall Cable and Telco Satisfaction Up

Are You Satisfied With Your Broadband Provider?

(Very Dissatisfied=0, Dissatisfied=1, Somewhat dissatisfied=2, Neutral=3, Somewhat satisfied=4, Satisfied=5, Very satisfied=6)

Comcast: 4.3, 4.1, 4.0, 4.0, 4.1, 4.2
Charter: 3.9, 4.0, 4.0, 4.0, 4.2, 4.2
Cox: 4.1, 4.2, 4.0, 4.1, 4.2, 4.2
Optimum: 4.0, 4.0, 4.0, 4.0, 4.0, 4.0
Suddenlink: 4.7, 4.5, 4.4, 4.4, 4.4, 4.4
Total Cable: 4.0, 4.2, 4.2, 4.2, 4.2, 4.2
AT&T: 3.6, 3.6, 4.1, 4.1, 4.1, 4.1
CenturyLink: 3.8, 3.8, 3.8, 3.8, 3.8, 3.8
Frontier: 3.0, 3.0, 3.0, 3.0, 3.0, 3.0
Verizon: 3.5, 3.5, 3.5, 3.5, 3.5, 3.5
Windstream: 3.8, 3.8, 3.8, 3.8, 3.8, 3.8
Total Telco: 4.3, 4.3, 4.3, 4.3, 4.3, 4.3

Source: Cowen and Company 3Q18 Cable & Broadband Survey
Figure 52 25% of Dissatisfied Broadband Customers Plan on Switching; 18% of Telco Subs and 37% Cable Subs Don’t Switch Because No Alternative; Only Few Leave Because of Price

<table>
<thead>
<tr>
<th>Reason</th>
<th>Dissatisfied Cable Subs</th>
<th>Dissatisfied Telco BB</th>
<th>All Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>There is no alternative</td>
<td>33%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>It’s not my decision in the household</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>I plan on switching</td>
<td>4%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>The alternative has poor customer service</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>The alternative is unreliable</td>
<td>4%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>The alternative provider speeds are too slow</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>My provider has a better price</td>
<td>7%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

For Those That Are Dissatisfied, Why Have You Not Switched to Another Internet Provider? (Since 2Q18)

Source: Cowen and Company 2Q18-3Q18 Cable & Broadband Surveys
Wireless and Xfinity Mobile

Figure 53 Cable Footprint Overlap with Wireless

Who is Your Wireless Carrier?
(Avg. Since 4Q17 Survey)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 54 Cable Subscriber Overlap with Wireless: Dish Highest with VZ, DirecTV with T, Suddenlink with T, all Other Cable Operators Highest with VZ

Who is Your Wireless Carrier?
(Avg. Since 4Q17 Survey)

Source: Cowen and Company 4Q17-2Q18 Cable & Broadband Surveys
Figure 55 Cable Footprint by Wireless Subscribers: T-Mobile Outsized Overlap with Comcast

Who is Your Cable Provider (Even if You Do Not Subscribe to Them)?
(Avg. Since 4Q17 Survey; excludes "I Don't Know" and "No Cable")

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 56 Xfinity Mobile Subs are Generally Older

Please Provide Your Age
(Wtd. Avg. Age, Since 4Q17 Surveys)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 57 Sprint and Xfinity Mobile Subs Have Highest Cable Bills

What is Your All In Bill Size with Your Cable Provider Including Taxes/Fees?
(Avg. Since 4Q17 Survey)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 58 Xfinity Mobile and AT&T Subs have Highest HHI

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 59 Xfinity Mobile Subscribers Subscribe to Just 1.0 OTT Provider, on Average

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys

Figure 60 8% of Xfinity Mobile Subs Not Satisfied and Consider Cutting the Cord

“I’m Not Satisfied with My Video Provider and I’m Seriously Considering Cutting the Cord”
(% of Pay TV Respondents Since 4Q17 Surveys)

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
Figure 61: Household Income by Provider/Product: Optimum Leads the Cable Providers; Those Taking Telco Broadband Generally Lower Income

Source: Cowen and Company 4Q17-3Q18 Cable & Broadband Surveys
<table>
<thead>
<tr>
<th>Company</th>
<th>Ticker</th>
<th>Rating</th>
<th>Price</th>
<th>Net Cap</th>
<th>EV</th>
<th>Sales</th>
<th>Growth</th>
<th>Valuation</th>
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<tr>
<td>Altice USA</td>
<td>ALTICE</td>
<td>NM</td>
<td>29.48</td>
<td>3,900</td>
<td>2.6</td>
<td>15.4%</td>
<td>4.2%</td>
<td>5.7%</td>
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<tr>
<td>Charter</td>
<td>CBHRA **</td>
<td>NM</td>
<td>46.17</td>
<td>4,000</td>
<td>2.8</td>
<td>15.3%</td>
<td>4.8%</td>
<td>5.4%</td>
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<tr>
<td>Comcast</td>
<td>CMCSA</td>
<td>3</td>
<td>297.03</td>
<td>19,000</td>
<td>8.7</td>
<td>17.9%</td>
<td>4.6%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Cable One</td>
<td>CABO</td>
<td>NR</td>
<td>48.76</td>
<td>500</td>
<td>2.8</td>
<td>16.9%</td>
<td>3.8%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Dish</td>
<td>DISH</td>
<td>**</td>
<td>36.48</td>
<td>2,100</td>
<td>4.6</td>
<td>17.4%</td>
<td>4.2%</td>
<td>5.4%</td>
</tr>
<tr>
<td>DirecTV</td>
<td>DIS</td>
<td>NM</td>
<td>34.73</td>
<td>2,200</td>
<td>3.5</td>
<td>16.7%</td>
<td>3.9%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Windstream</td>
<td>WIND</td>
<td>***</td>
<td>27.87</td>
<td>500</td>
<td>2.4</td>
<td>15.8%</td>
<td>3.7%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Wireline</td>
<td>WIRE</td>
<td>NM</td>
<td>53.06</td>
<td>1,000</td>
<td>3.9</td>
<td>16.1%</td>
<td>4.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
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**Note:** Thomson One, Cowen and Company estimates

1 = Outperform | 2 = Market Perform | 3 = Underperform | NR = Not Rated
*Covered by Gobby Spreen | **Covered by Jonathan Charapowicz | ***Covered by Gregory Williams

Source: Thomson One, Cowen and Company estimates
<table>
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<th>Price*</th>
<th>Price Target</th>
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<td>ATUS</td>
<td>Outperform</td>
<td>$18.33</td>
<td>$25.00</td>
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<td>CTL</td>
<td>Market Perform</td>
<td>$21.89</td>
<td>$20.00</td>
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<tr>
<td>CMCSA</td>
<td>Market Perform</td>
<td>35.19</td>
<td>$40.00</td>
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<td>FTR</td>
<td>Market Perform</td>
<td>$6.88</td>
<td>$6.00</td>
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<tr>
<td>TMUS</td>
<td>Outperform</td>
<td>$68.98</td>
<td>$79.00</td>
</tr>
<tr>
<td>WIN</td>
<td>Outperform</td>
<td>$4.88</td>
<td>$8.00</td>
</tr>
<tr>
<td>T</td>
<td>Market Perform</td>
<td>$33.92</td>
<td>$34.00</td>
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<td>CHTR</td>
<td>Outperform</td>
<td>$325.29</td>
<td>$341.00</td>
</tr>
<tr>
<td>DISH</td>
<td>Outperform</td>
<td>36.15</td>
<td>$60.00</td>
</tr>
<tr>
<td>S</td>
<td>Market Perform</td>
<td>$6.50</td>
<td>$4.90</td>
</tr>
<tr>
<td>VZ</td>
<td>Market Perform</td>
<td>$54.29</td>
<td>$56.00</td>
</tr>
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*As of 10/03/2018

**VALUATION METHODOLOGY AND RISKS**

**Valuation Methodology**

**Telecom Services:**

Our valuation methodology consists of an absolute and relative value approach. We arrive at a fair value utilizing a five-year discounted cash flow (DCF) and when appropriate a segmented sum-of-parts (SOP) analysis. Our relative value approach takes into account EV/EBITDA, P/FCF, and P/E and, when applicable, P/AFFO and dividend yield.

**Cable & Satellite Services:**

Our valuation methodology consists of an absolute and relative value approach. We arrive at a fair value utilizing a five-year discounted cash flow (DCF) and when appropriate a segmented sum-of-parts (SOP) analysis. Our relative value approach takes into account EV/EBITDA, P/FCF, FCF Yield, P/E and, when applicable, P/AFFO and dividend yield.

**Investment Risks**

**Telecom Services:**

Risks Include: (1) many companies within Telecom Services are highly regulated where a change in rules could lead to unfavorable conditions; (2) rapidly changing/disruptive technology, new product/service offerings, and evolving industry/technology standards could have an impact on demand and/or pricing; and (3) deterioration in the macro environment both domestically and internationally could lead to a reduction in demand and a consequent impact on valuation multiples.

**Cable & Satellite Services:**

Risks Include: (1) rapidly changing/disruptive technology (specifically the threat of OTT video on traditional video services), new product/service offerings, and evolving industry/technology standards could have an impact on demand and/or pricing; (2) many companies within Cable & Satellite Services are highly regulated where a change in rules could lead to unfavorable conditions; and (3) deterioration in the macro environment could lead to a reduction in demand and a consequent impact on valuation multiples.
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COWEN
EQUITY RESEARCH

October 4, 2018

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Assumption: The expected total return calculation includes anticipated dividend yield

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<th>Rating</th>
<th>Count</th>
<th>Ratings Distribution</th>
<th>Count</th>
<th>IB Services/Past 12 Months</th>
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<td>472</td>
<td>63.44%</td>
<td>115</td>
<td>24.36%</td>
</tr>
<tr>
<td>Hold (b)</td>
<td>266</td>
<td>35.75%</td>
<td>23</td>
<td>8.65%</td>
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<tr>
<td>Sell (c)</td>
<td>6</td>
<td>0.81%</td>
<td>0</td>
<td>0.00%</td>
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