



international operations where the residential satellite speeds are even more competitive). The majority of the subscriber bases at rural telcos, such as Windstream, Qwest (CTL), and Frontier, take speeds at 50 Mbps or below. While those capabilities are improving over time, the launch of Jupiter-3 and ViaSat-3 in the beginning of the next decade is going to provide the satellite industry with a big opportunity to expand its tangible addressable market with both constellations able to offer speeds in excess of 100 Mbps. The issue that still weighs heavily in the favor of DSL providers is one of cost. We still think DSL will price itself at a cost level that will provide some insurance policy against a wholesale loss of customers. We do think, though, that there is a market in the embedded base of DSL subscribers where some would gladly pay more for higher levels of throughput.

On the enterprise-facing side of the business, providers are in the process of changing the landscape and opportunities as the major players have launched the next gen High Throughput Satellites (HTS). In Network Services, while the new capabilities provide many new benefits such as added capacity and new addressable end markets, the earliest impact of the advanced technology was significant pressure on pricing that the industry experienced throughout 2016 and early 2017. As we've progressed through the year, commentary from management teams have acknowledged pricing has stabilized in the last 6 months or so. With legacy services declining due to the proliferation of fiber in certain geographies coupled with pricing pressure, the offsetting growth has had to come from mobility, enterprise, cell backhaul, etc, but the pick-up in those services is slow in aggregate. Mobility picked up quickly considering it's the only game in town.

Speaking directly on Intelsat, management has spoken of a longer-than expected sales lead cycle of selling the new HTS capacity into customers. Currently, this appears to be taking on the form of "when" not "if" as we continue to expect that the industrial logic of the industry upgrading its capacity makes inherent sense. We believe this will prove to be one of the situations where carriers such as Intelsat will need to help develop the customer solution set and then sell those end services into customers and drive revenue. While this implies that we do not expect a "line out the door" to sign up for this new capacity, we are still convinced that the ramp in revenue will come, but that there is still work to do by Intelsat and others to help develop the solutions sets that customers will then buy to address future business needs.

Spectrum Monetization?: Following an NOI from the FCC in August 2017, which asked the question of how to free up valuable C-band spectrum (3.7-4.2 GHz), Intelsat responded proactively with a proposal alongside Intel that would allow the satellite industry (90% of C-band is owned by Intelsat and SES) to sell swaths of frequencies to the mobile industry as we get closer to the arrival of 5G technology in the next few years. If we study the industry responses to Intelsat and Intel's joint proposal, overall the wide majority of ex parte filers are overwhelmingly supportive of freeing up spectrum in this band. Where differences lie is in how that plan would be implemented, whether the FCC needs to be involved and how quickly this plan could be brought to reality. We expect the FCC (this is a rather broad and uninformed guess) to provide feedback to Intelsat and Intel's proposals as well as the industry's ex parte filings in late 1Q18 or early 2Q18. At that point, the process could potentially take on many forms, including an accelerated path under which Intelsat and Intel could start forming a consortium to start a private clearing and sales process or a more public NPRM process that look to have the FCC involved in something that more closely resembles a public auction. Undoubtedly there are also lots of other options in between. Important in our mind, though, is the notion that the FCC very much wants to free up spectrum in this band (ideally suited for many future 5G applications), the wireless industry very much wants

Industry-wide pressures have only been partially offset by growth in new revenue lines with next-gen HTS services.

Intelsat management has spoken on "longer sales cycles". That's industry-speak for demand not yet coming close to catching up with supply. We expect Intelsat to develop customer solutions with its new HTS capacity to help stimulate demand growth.

The FCC wants to free up C-Band spectrum, the wireless industry would be willing to pay for access to it and Intelsat and SES are rich in this valuable asset. Sure, this could still go wrong and not materialize in a way that could meaningfully help fix INTEL's cap structure flaws, but the signs seem to line up to a credible path for partial monetization.