Student Housing Technology: Predictions Versus Reality

A technology seer re-examines some bold predictions he made in 2012. The verdict: Not too bad.

By Andrew Marshall, Campus Technologies Inc, April 2019

Predicting anything in the technology sector is a risky business. Predicting anything five or even 10 years ahead is extraordinarily risky.

Nonetheless, in December 2007, I wrote the first of a series of white papers on future bandwidth requirements and the operation of student housing networks. This was revised every couple of years, and in October 2012, Broadband Communities published an overview of the July 2012 edition of that white paper.

Seven years on, how did we do? I have to admit I approached this review with some trepidation, but in reality, we did pretty well, given the subject matter and the number of years out we were looking. Inevitably, we fell short in a couple of areas.

Per-User Bandwidth Requirements

In the 2012 paper, I used Nielsen's law (bandwidth available to a high-end user will increase by 50 percent a year) to extrapolate high-end and average U.S. user bandwidth.

At the five-year mark, in 2017, we estimated 1,748 Mbps for a high-end user and 336 Mbps for an average user. By 2019, those numbers were estimated to be 3,933 Mbps and 756 Mbps.

The real results (especially for average users) were significantly lower for three main reasons. First, the technology and its deployment has not kept up with demand by consumers – many U.S. subscribers have no high-bandwidth choice at all. Second, the applications and content are not there to drive increased demand (for example, online gaming and 4K streaming consume only 25–30 Mbps. Third, the consumer electronics industry stalled at a 1 Gbps connection for consumer devices and has not seen the need to go above that rate. It is worthy to note, that several residential providers have announced 10 Gigabit residential services. This has very limited availability and while it validates our predictions we think it is prudent to not include them in our scoring.

Interestingly, many student housing communities now offer gigabit to the bed and, as a result, are much closer to my predictions than single-family or other MDU communities.

It is a chicken and egg situation: Technologies that consume and require large amounts of bandwidth won't be developed or rolled out until networks are available for consumers to access them, and networks won't be built out until there is consumer demand.

Edge Bandwidth for Student Housing

In 2012, I predicted that, by 2017, a 200-bed community would be connected with a pipe at least 880 Mbps and a 500-bed community with a pipe at least 3,303 Mbps.

I was very close with this prediction. Campus Technologies now routinely provisions 5 or 10 Gbps circuits for student housing communities. In 2017, 1 gigabit for a smaller community and 3 or more gigabits for a larger one was the norm.

Past the five-year mark in 2017, predictions run slightly too high, mainly because demand has slowed due to the lack of applications and technologies to consume it.

Interface Cards in Computers

In 2012, I said, "The majority of network-connected devices will likely be gigabit-capable within two years."

That was correct.

Carrier (Cellular) Wireless

My 2012 prediction was that "Carrier wireless (3G or 4G) is unlikely to have a significant impact on bandwidth requirements at student housing properties."

That was correct. At the time of writing in 2012, there was much speculation about fixed 4G wireless rendering Wi-Fi obsolete. If that sounds familiar today, it's because many of the same things are being claimed for 5G.

Ethernet Switches

In 2012, I said, "All new access layer switches deployed today, whether as upgrades or for new construction, should provide 1 Gbps access layer ports to connect to individual users and

should provide either a 10 Gbps uplink or the ability to field upgrade to a 10 Gbps uplink."

That was also correct, and it still holds true today.

Contracts

In 2012, I cautioned that "All owners and operators must carefully examine the contract position of their assets with regard to internet provisioning and maintain a high level of flexibility in future years."

Correct. This has become the standard operating procedure for most large student housing operators, who now exercise tighter contract control, limit contract terms to three years and take other steps to ensure that they can meet resident needs.

Bandwidth Conservation

In 2012, I said, "The growing trend of using the public internet to stream multimedia will give rise to new bandwidth-conservation technologies."

I was mainly wrong with this one. Bandwidth increases became less expensive than introducing bandwidth conservation.

So where does that leave us? Although I predicted student housing demands and trends pretty closely, I was overoptimistic about the general population. It appears that Nielsen's law will need updating or discarding from now on, as there seems to be very low growth in the bandwidth available to most U.S. residents.

Although there are tantalizing glimpses of technologies that could become high-bandwidth-consuming applications in the

future, few would have the ability to utilize them, and this may hamper adoption.

In student housing, there is an inexorable move toward reducing or eliminating traditional cable and video amenities. This will have an effect on bandwidth required at the edge in student housing properties, but it will be incremental and not radical.

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Campus Technologies is a national vertically integrated managed network service provider designing, building and operating highly effective wired and wireless networks exclusively in student housing. See more at www.campustechnologies.com