

# Next-Generation Internet

Legacy cable and telco infrastructure was designed for the pre-Internet world. As the Internet evolves, the old infrastructure will fall increasingly short of consumer expectations.

By David Daugherty / *Korcett Holdings*

**R**oughly 319 million people live in the United States, and 84 percent of them, or about 270 million people, use the Internet daily. Given the vast array of people and equipment required to keep the Internet up and running, it's a wonder it works at all. To compound this problem, the rate of change for underlying technology and customer expectations is increasing. The result is a very complex ecosystem that often translates into a frustrating experience for subscribers and a nearly impossible mission for ISPs.

Two things are needed: a standards-based, future-proof approach to the design, construction and support of Internet services and a common, nontechnical way of quickly ascertaining operational health.

## INTERNET HEALTH

An intuitive, commonly used indicator of network health is a bandwidth utilization

report. IT professionals use this as a first-glance diagnostic tool the same way a cardiologist uses an electrocardiogram. It has a predictable sinus rhythm that is indicative of the health and performance of Internet service. Figure 1 shows a typical bandwidth utilization chart in a bulk service multifamily environment where subscribers have unrestricted or "uncapped" access to the Internet. (Of course, all Internet access is limited by network capacity, but in the example shown here, network capacity exceeds user demand, and the service provider is not artificially limiting access.)

However, most subscribers don't have unrestricted access. ISPs typically configure (or cap) subscribers' Internet service so they can't use more than their service plans stipulate. Most commercially available Internet service packages limit available bandwidth to, for example, 5Mbps downstream and 5 Mbps upstream; these packages have been designed to help drive the sale of additional bandwidth.

When an ISP or, in the case of multifamily properties, an owner, elects to limit the amount of available bandwidth, the report may look quite different. Figure 2 shows an environment in which access to bandwidth has been capped. In this environment, everything works well as long as subscriber devices and applications have ready access to the Internet before hitting the cap. As aggregate bandwidth demand approaches the bandwidth cap, network jitter and latency begin to increase, and things

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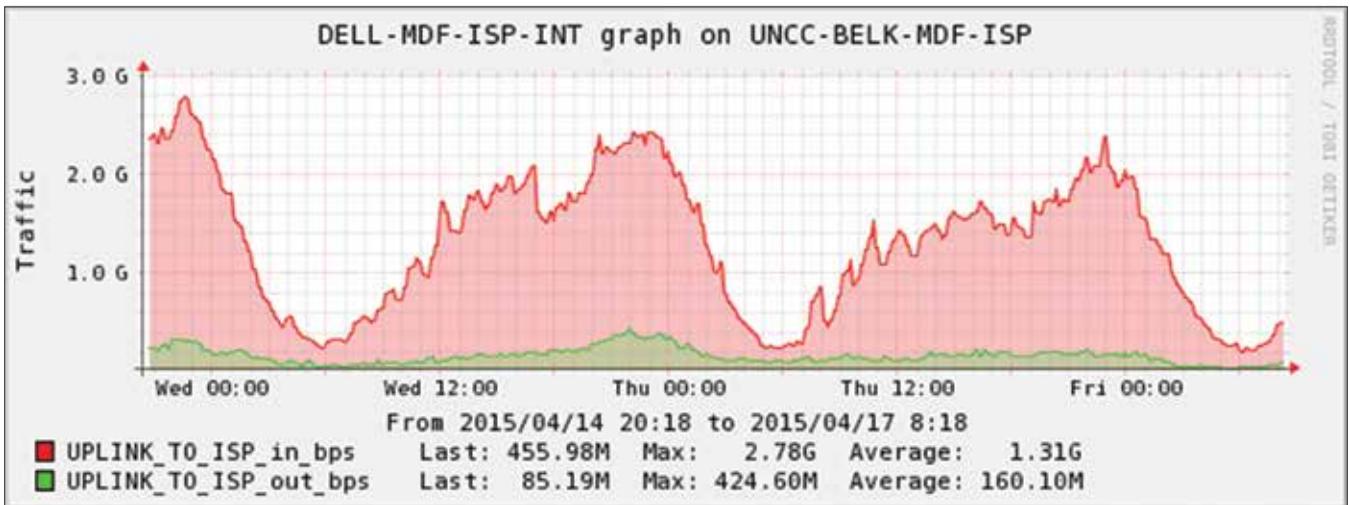


Figure 1: Bandwidth utilization report for network with uncapped Internet access

slow down. This is called bandwidth flatlining.

Unlike flatlining in living systems, network bandwidth flatlining is not a critical problem. If left unattended, however, it will most likely result in damage to the reputation of the service provider and the property owner (if this is a multifamily property). The good news is that this problem typically develops over time and can be easily detected and corrected – hence the importance of monitoring bandwidth utilization charts.

### NEXT-GENERATION, STANDARDS-BASED SERVICES

Over the years, although subscriber expectations have matured, legacy

infrastructure has remained fixed. Typically it delivers a limited (capped) amount of bandwidth. These inflexible limitations on the delivery of bandwidth are quickly becoming unacceptable. Traditional capped Internet services are increasingly unpopular and are not future-friendly.

Another important aspect of evolving Internet service is quick, competent customer support. Customers now expect the same kind of support from ISPs as they do from any other service provider. Whether they have problems with their bank, house cleaner or Internet service, they expect prompt, professional, courteous attention. This includes the rapid identification and resolution

of problems – otherwise known as customer support.

An important element of ISP customer support is time to repair. The more dependent subscribers become on ready, reliable access to the Internet, the less tolerant they become of poor performance and downtime. Translation: subscribers become more vocal (via social networking) as service deteriorates.

What is becoming painfully obvious to service providers and subscribers is that the delivery of stable Internet service is not optional. Consumer demand for reliable service is already fueling market evolution, and only the fittest will survive. This, in turn, is driving the adoption of mature,

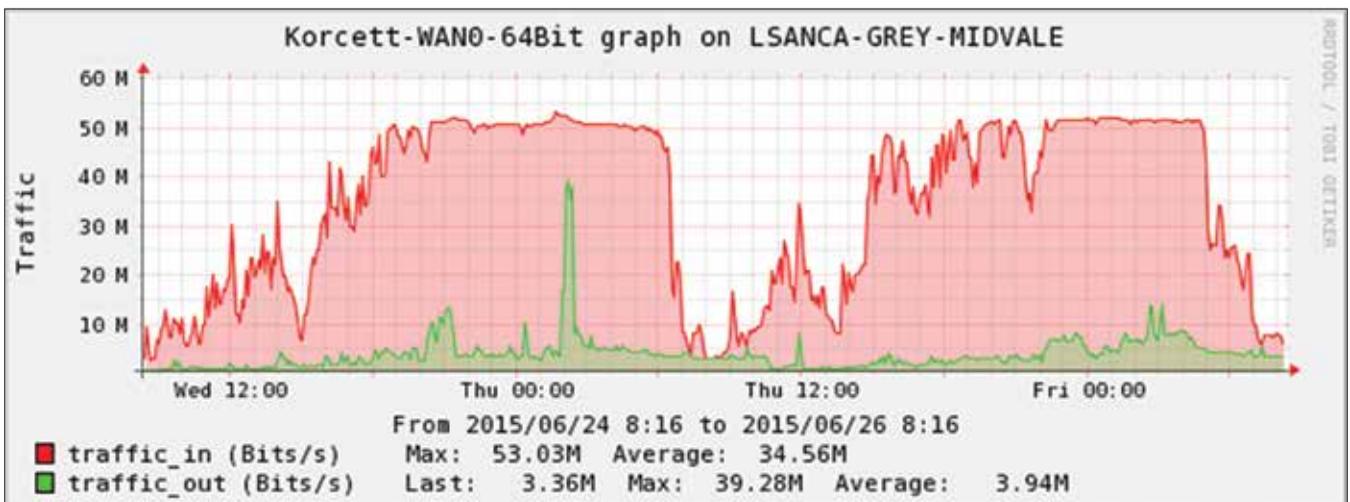


Figure 2: Bandwidth utilization report for network with capped Internet access

## Demand for managed Internet services is outpacing demand for unmanaged services.

standards-based, modular network design and installation and superior customer support. Regardless of what some ISPs might believe (and tell their customers), legacy infrastructure and support models will not satisfy current, much less future, customer expectations.

Legacy infrastructure used by ISPs to deliver Internet services is the byproduct of an evolution in network equipment. The underlying business motivation for the development and evolution of the current batch of ISPs was the sale of telephony and video services, not Internet access.

The rapidly growing demand for ubiquitous Internet access has resulted in an unprecedented growth in the

number of Internet-connected devices – Cisco estimates that the number of devices was double the global population in 2014 and will be triple the global population by 2019. This device proliferation fundamentally changes service delivery requirements and, more than any other aspect of Internet usage, will drive the formation and evolution of next-generation ISPs. Next-generation ISPs will not only need to provide access to the Internet but also need to manage those connections. This is called “managed services.” With the rapidly growing number of connected devices, the demand for managed Internet services is quickly outpacing the demand for unmanaged services.

Another mission-critical aspect of next-generation Internet services is the ability for intelligent systems to control service delivery. Internet-based service delivery systems must have the ability to communicate with customers and their devices and decide when and how services are delivered. This must be done *without* human intervention.

For example, if a customer who frequents Marriott hotels owns a half-dozen Internet-connected devices, the hotel’s Internet service delivery system must recognize each device, authenticate the customer and the device upon entry into any Marriott property and enable the correct level of service for that customer. The system must also be able to determine whether the device is properly authenticated – in other words, is it still in the possession of the correct customer? This kind of service and support automation is beyond the capability of legacy infrastructure and will become a staple of next-generation (managed) service.

### CONCLUSION

Even this simplistic snapshot of evolving requirements for Internet-based services illustrates the need for a radical new approach to network design, deployment and support. This problem is compounded by rapidly changing customer expectations and the lack of suitable alternatives – which is why Google Fiber and other fiber overbuilders can gain a foothold. Mounting demand for managed services has scrambled the current marketplace and is driving rapid evolution. In the next few years, market evolution will continue to drive rapid convergence within the cable and telecommunications industries. But no one, not even Google, has cracked the managed-service model. ❖

*David Daugherty is the CEO and founder of Korcett Holdings Inc. Korcett Holdings is dedicated to the development and marketing of next-generation service solutions. For more information about Korcett Holdings, visit [www.korcett.com](http://www.korcett.com).*

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