Necessity Breeds Creativity in the Mobile Data Debate

BY SAM NOYD

We live in a mobile world. It's hard to look around these days without seeing something that has been shaped, transformed, or created as a result of mobility. Phones, tablets, wireless cameras, connected cars, and wireless water meters are transforming the way we interact and do business. What powers all of these devices? Mobile data.

We've all heard that mobile data is increasing, but exactly how much? According to a report from Cisco in February 2013, the world's mobile data traffic grew by 70 percent between 2011 and 2012. Between 2012 and 2017, mobile data traffic is expected to increase 13-fold.

What's driving this explosion of mobile data?

One reason is an increasing number of connected devices. We've seen a tremendous spike in the number of connected devices recently, including e-Readers, tablets, wireless cameras, and even wireless water meters. In the coming years, we'll also start to see an increase in the number of connected cars.

A second driving force behind the increase in bandwidth is mobile video. According to the same Cisco report, video traffic made up more than half of all mobile traffic in 2012. Netflix and YouTube are two of the most easily recognized names in this space, but it's also products like Microsoft's Skype, Google's Hangouts, and Apple's FaceTime that contribute. Security systems, video games, and video infant and pet monitors add even more. The increase in usage is not limited to just consumers. Enterprises are utilizing sub-second, real-time sales platforms to enable their businesses to expand.

The cloud is helping to fuel the increase in consumption as well. Storing data in one location and accessing it in another automatically leads to a growth in traffic.

Enterprises with personnel in the field are increasingly providing those employees with ways to access data on the go. This not only applies to enterprises, but also to cloud solutions that are aimed at consumers. Streaming music from the cloud, navigation apps based in the cloud, and apps that automatically back-up pictures or other data to the cloud drive up consumption.

Increasing speed of the network has also caused an increase in bandwidth consumption. According to a study by Alcatel-Lucent, North American 4G LTE users gobble up 168 percent more mobile data, on average, than 3G users per day. The increasing speed brought by advances in network technology such as 4G LTE or WiMax creates an interesting shift. Cellular network speeds are starting to surpass some of the speeds that users have via Wi-Fi at home. With advances in network speed, users aren't as incented to switch to Wi-Fi while at home, and this increases the load placed on the cellular network

What might drive consumption in the future?

Mobile phones, tablets, and other connected devices will become increasingly valuable targets for malicious intent. As the processing power, bandwidth, and capabilities of mobile devices increase, they become more valuable targets for those wishing to do harm. Security threats are issues by their very nature, but they also present issues for bandwidth because

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every bit of data being used for malicious purposes, such as a Denial of Service attack, also takes away from capacity.

Secure mobile payments may also add to the increase in bandwidth usage, not because these transactions require a particularly large amount of bandwidth by themselves, but because as mobile payments gain traction, the sheer number of transactions could become a consideration.

How can we add more capacity?

Many bright and creative minds are trying to accommodate the increase in data consumption by finding new ways to add capacity. We're seeing the carriers adding capacity with additional towers, rolling out advances in networking technology such as 4G LTE or WiMax, and directing the signal from cellular towers downward to allow for placing towers closer together. All of these advances allow for more efficient spectrum use in dense areas.

Special teams now focus on large events. Imagine a sporting event with thousands of people in a relatively small area like a stadium. By using microcells, which are low-powered cellular base stations, carriers can temporarily add capacity in areas of extremely dense usage.

We're also seeing consolidation of companies that use the spectrum. Purchases of spectrum are making the headlines and commanding high prices. Cox Communications sold part of their spectrum in late 2011 for $315M USD. Clearwire Corp recently put up its spectrum for sale and reports from the *Wall Street Journal* indicate they've been offered as much as $1.5B USD.

Since there is a finite amount of spectrum to work with, we're also seeing a trend of repurposing existing spectrum. The transition from analog to digital TV allows for more efficient use, and the spectrum saved can be auctioned off and reallocated. Some companies are also looking to repurpose their existing 2G spectrum for use by either 3G or 4G networks.

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How can we get more creative?

We can add more capacity, but it's expensive, and it won't completely solve the problem. We also need to be more efficient in how we use what we have. Sometimes to be more efficient, you have to get a little creative.

That's where tools like Wi-Fi offloading come in, which pushes data over Wi-Fi networks where possible to free up capacity on the cellular network. Progress has been made in this area and last year, about a third of mobile data traffic was offloaded, according to the same Cisco report.

Even relatively simple changes to apps that allow for downloading updates or syncing files only on Wi-Fi have helped consumers limit their data consumption to avoid overages and free up capacity. It hasn't always been a seamless experience for users though, in part because of privacy concerns and general integration challenges. It will be interesting to see if Wi-Fi offloading decreases as cellular network speeds start to surpass the speeds some users see over Wi-Fi in their homes.

According to a *Wall Street Journal* article from May 2013, ESPN is in talks with a major U.S. carrier about an agreement that would subsidize the data plans of consumers so any videos and content streamed from ESPN's site wouldn't count towards a wireless visitor's data plan. The additional revenue stream for the carriers could pave the way for growth of the network. No deal is in place, but even discussions of this nature show remarkable creativity.

An increasing emphasis on designing and optimizing for mobile is also helping, and mobile compression is a great example of this. A beta version of Google's Chrome browser and other apps now offer compression by making use of a proxy server to limit the amount of data transmitted. Compression on mobile devices has been a challenge in the past, but many start-ups and large companies are looking into this area to see if they can assist.

Developer education on best practices and how to more efficiently make use of data connections has also made a difference. As previously mentioned, having apps download updates only on Wi-Fi or personal cloud solutions for consumers that only upload on Wi-Fi helps limit consumption.

What's on the horizon?

Mobile data traffic is projected to increase 13-fold between 2012 and 2017, and that data won't be confined to just smartphones. It will come from a wide range of mobile devices. As carriers get more creative with plans to entice customers to add tablets, cameras, and other mobile devices, these devices will add to consumption. As cars become more connected, they will consume and produce more data. Another growth area is in machine-to-machine devices. Connected water meters, refrigerators, and security systems, just to name a few, will become more prevalent. Enterprises will find ways to create value for their business and their customers using mobile data. Security and mobile payments will also drive consumption as capabilities of mobile devices and adoption of mobile payment platforms increase.

Our thirst for data may be constantly growing, but it is this data that is helping to enable a wave of creativity that paves the way for progress. It shapes new industries, breathes life into old ones, creates jobs, and reinvents the way we interact with one another.

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