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Will the Real 4G Please Stand Up?

By Jesse Cryderman

I hereby submit 4G as a victim of abuse.

Yes, not since HD has a tech term been so thoroughly misused. From asterisk-laden "4G" ads, to carriers who advertise 4G that only serves USB dongles, there is considerable confusion in the marketplace around 4G, and for good reason: according to the International Telecommunications Union (ITU) standard of 100 mbps, no one even offers true 4G yet.

Even the government is getting involved, and asking CSPs' to be more transparent about what exactly their "4G" networks are delivering. Championed by Sen. Al Franken (who also has been pressing for info at the heart of the Carrier IQ controversy), the Next Generation Wireless Disclosure Act seeks to, "require accurate disclosures to consumers of the terms and conditions of 4G service and other advanced wireless mobile broadband service."

Other than a victim of egregious marketing abuse, what is fourth generation, or 4G, wireless?

In March of last year, I tried to answer some of these questions in an article entitled "Demystifying 4G." I was no less caustic in my summation of the 4G landscape then, writing, "Even though ITU has permitted networks whose evolution will reach the 4G standard to market themselves as 4G, labeling current next-gen networks "4G" is like calling a middle-school Little League pitcher a Cy Young candidate."

However, that was then, and this is now. What has changed in the last year, who is doing 4G right, what needs to be done to sell 4G to a cynical public, and what are some benefits—beyond lightning bolts on billboards—that we can expect to see in the near future as 4G networks light up?

Market Confusion

One thing that hasn't changed in 4G is the market confusion surrounding the term. A sad example of this came from Analysys Mason in a survey released in December that found that 46% of iPhone 4 users thought they were already on 4G service, as you can see in figure 1.

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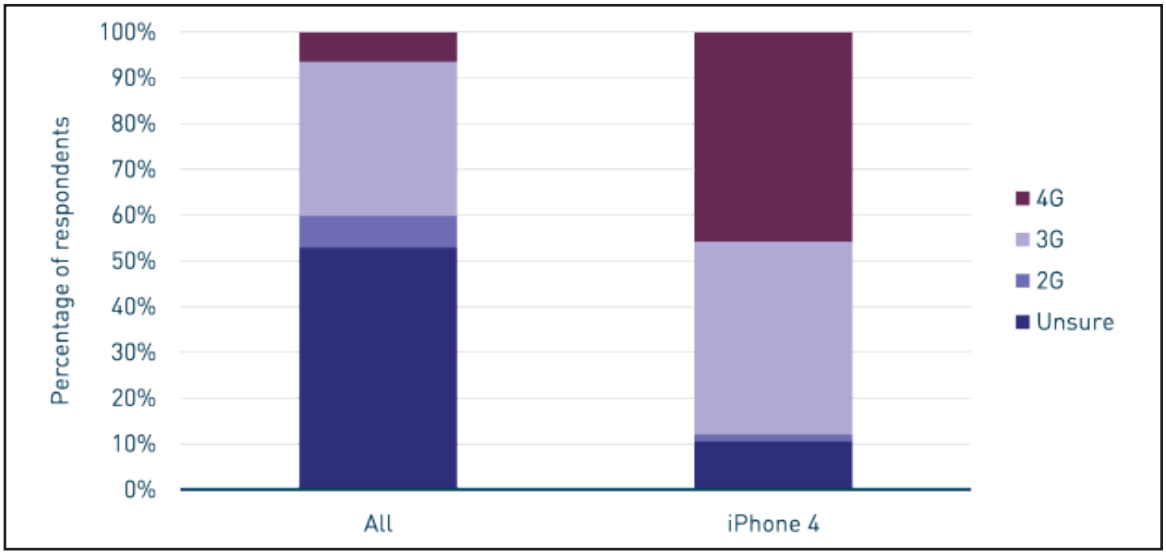

Analysys Mason, 2011

Equally sobering is the fact that over 50% of respondents were unsure as to their network technology.

I interviewed a handful of consumers on the streets of Chicago as to their impression of 4G. Here's some of the gems:

"Battery drain."

"4G is supposed to be faster downloads, isn't it?"

"My phone usually switches over to 3G on the highway and at home."

"I don't get 4G service on my work cellphone in my office. What's the point?"

True Benefits of 4G

When we talk about 4G in this article, we are actually talking about LTE, as it is the only technology that lays the foundation for true 4G speeds. "Currently HSPA delivers throughputs of 7.2 or 14.4 mbp/s at most. LTE promises between four to six times more." explains Jonathon Gordon, Director of Marketing, Allot Communications. The next generation, LTE-Advanced, will actually meet the 100 mbp/s standard.

While most of the public debate around 4G falls to discussions of speed claims, it is important to note that there are benefits to 4G beyond sheer speed. "Even at low broadband speeds, 4G offers a much lower over-latency compared to 3G, plus a near instantaneous connection experience for the user," explains Russ Hamilton, Director, Wireless Engineering at CHR Solutions. "Another advantage is the ability to provide true QoS guarantees across the whole network—offering the potential for an entirely new set of service options."

Additionally, 4G is based on an all-IP architecture, which is a significant departure from our current networks. "It's important to consider that with the ITU standard specifying a IMS core, there is a multitude of services that don't exist today, but certainly will, in the not so distant future," continued Hamilton. "4G enables longevity and scalability."

QoE is no longer a nice-to-have, but a differentiating MUST.

Even though VoLTE has been successfully trialed, and there are deployments in the works, the promise of VoLTE has yet to be realized as well, as 4G LTE exists only in the data realm at the moment.

Network Needs

I recently visited CHR Communications in Houston Texas, and got to see an Ericsson 4G LTE switch in action. The single switch can handle traffic from 2,000 macro cell towers. Those are big numbers, but they are balanced by small numbers—probably fewer than a dozen of these switches are currently deployed in the US. Networks have a lot of catching up to do before they can cash the checks their marketing departments are writing.

Despite the billboards, mobile networks are not keeping up with the demands being placed on them. According to a recent study by Allot Communications, the annual growth rate (CAGR) of mobile broadband consumption is already at 213%. "In other words, the evolution of mobile broadband networks is simply lagging behind the rate of data consumption – and unlikely to catch up in the foreseeable future," says Jonathon Gordon.

There are technological underpinnings that need to be implemented to reach the promise of 4G LTE. For instance, new radio technologies like OFDM enable operators to better utilize spectrum. Better backhaul solutions and accelerating the transition to all-IP is also critical.

The key to utilizing the speeds possible with the LTU-R standard is a flat Ethernet high-speed backhaul network," says Russ Hamilton. "Every effort should be placed on IP evolution—upgrading TDM based networks to a pure packet network will be pivotal in successful implementation. It is also recommended to push fiber as close to the site as possible due to the amount of data that a 4G site is capable of putting on a network. One of the most important things to be mindful of is ensuring low latency across the network."

There are several steps carriers can take that will have a profound effect on the perceived value of their 4G networks:

- Promote greater availability of LTE- enabled user devices
- Accelerate all-IP network evolution
- Implement dynamic policy control
- Push fiber as close to the cell site as possible
- Deploy OSS service assurance
- Intensify backhaul solutions

Also, as I explain in another article this month, small cell deployments as part of a heterogeneous network are critical to 4G deployments, as they rapidly address scalability, capacity, and cost needs.

How Can CSPs Sell 4G?

There are many, many advantages to a fourth-generation network, even before it meets the ITU speed test, but market confusion has impacted CSPs ability to sell 4G services. "In this reality, no wonder consumers are frustrated," said Jonathon Grodon. "They are asked to pay more for no added value. What compromises the brand identity of 4G is not its poor performance, but its inadequate pricing models. Selling bits and bytes simply doesn't cut it anymore. Strand Consult is predicting pricing model failure, suggesting that, "any operators that believe they can increase prices by [simply] introducing LTE are in our opinion naïve."

I would argue that customers derive value from services and devices that meet their needs, not network claims. As a result, modeling marketing and charging around value seems the best strategy. Unfortunately, many carriers are still marketing the very thing that threatens to commoditize them: their pipes.

As Russ Hamilton explained, there might not be a big value proposition around a service like Facebook when comparing 3G to 4G but, "other consumer and commercial services such as video conferencing and web-meeting apps have a significantly different experience when making the leap from 3G to 4G."

Again, Jonathon Gordon provides valuable insight: "LTE represents an opportunity for operators to come up with charging innovation and value-based pricing. Services like HD video, content (revenue-sharing) partnerships or operator-billing for OTT, deliver added value for which subscribers would be much more inclined to pay."

Not only is innovation in charging and partnerships exciting, it's critical for those CSPs who stay afloat. Why? It goes back to the OTT threat. "With its fully IP-based architecture, LTE networks are expected to bring OTT players into the video and voice delivery services," predicts Miguel Carrero, Director, Communications, HP Enterprise Services. "So, an OTT firm may offer voice communication or video services to the mass market."

Doing 4G Right

Fourth-generation is real, and it will be a game changer, but there is a mountain of work for carriers to do before they can cash in on the promise of 4G and rescue the term from its abusive relationship with marketing. While considerable network upgrades must occur, so must the way in which the services themselves that are enabled by 4G are marketed, bundled, billed, and monitored. Intelligent traffic management will permit operators to do more with less. Backhaul solutions that get traffic off the cell site as rapidly as possible must be implemented. Accelerating the move to all-IP and making partnership deals with other service providers is crucial. And as Jonathon Gordon said, "QoE is no longer nice-to-have, but a differentiating MUST."