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The Future is Life-Mobile Convergence

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The latest Cisco VNI for mobile was just released, and as always, the forecast is one of crazy growth on the mobile front. By 2021—a scant four years away—we could be looking at 5.5 billion mobile users worldwide. Global networks will be tasked with supporting 12 billion mobile-ready devices and connections. And those devices will chew through some major traffic, with a predicted seven-fold increase in global data traffic by 2021. That's a CAGR of 47 percent.

And while, at the moment, the majority of objects added to the network are smartphones, tablets, and PCs, there is a growing percentage of "things"—IoT modules—being added as well. The former is forecast to eclipse the latter by 2019.

Smartphones will be responsible for 48% of *all* traffic, fixed and mobile, thanks in part to WiFi offloading.

And I find that significant and interesting. In my early days as a telecom beat reporter, I distinctly remember sitting down with companies like Cramer and Syndesis at Supercomm 2005 and talking about fixed-mobile convergence. Specifically, I remember chatting about the BT "BluePhone," later known as BT Fusion.

Way beyond FMC

The idea that a single handset could transition seamlessly from fixed to wireless networks without dropping a call was exciting and interesting, especially since we were still so accustomed to the wireless experience and the fixed experience to be so incredibly distinct from one another at the time. My little Nokia 1100 sure as heck didn't have a web browser. It didn't even have a color screen. I could make calls, send the (very) occasional text message (though it took FOREVER), and play Snake. It also had a built-in flashlight. Come to think of it, I miss that little phone.

Point is, there was no confusing my barebones mobile experience with what I had at home, with my cable box, my landline phone, and my handy-dandy desktop computer (complete with 21-inch CRT monitor).

A dozen years later, the experience is practically seamless and I watch movies on my iPad in bed. We've got one great TV that's good for football games and family movie nights, but even that ends up getting fed content by the tiny computer I carry with me everywhere I go. That little bugger's got a data cap, but I rarely even come close to going over because, unless I'm in my car, I'm pretty much on WiFi.

So did we fulfill that dream of fixed-mobile convergence? Sure. Maybe not in the way we thought we would, but the two have blended so fully that the divide is almost meaningless from an end-user's perspective.

In a recent *Forbes* article, author John Koetsier gave the last word to wireless industry consultant Chetan Sharma, who summed up the trajectory of the industry by saying, "Mobile is everywhere and in everything to a point we will stop using the word mobile."

And there are so many other factors to consider. At CES last month, we saw flexible displays, tons of wearable tech, new generations of drones, connected home devices, and lots more that suggests that our networks are going to get more and more complicated.

Gartner's 2017 prediction paper from last fall, "Surviving the Storm Winds of Digital Disruption," has some pretty fascinating notions in it as well. For instance, the analysts propose that by 2020, 100 million customers will shop in augmented reality and that 30% of web browsing sessions will be done without a screen. It also predicts that through 2019, every dollar spent on innovation will require $7 in core execution costs, and that by 2019, 20% of brands will abandon their mobile apps. So there will be growing pains ahead.

But the benefits will likely be enormous. The paper posits that by 2022, IoT will save consumers and businesses a staggering $1 trillion in maintenance, services, and consumables.

It's clear we're in a new world.

With that in mind, here are a few things I think we can watch for in the next few months and years as we work our way toward the world foretold by the VNI:

The spread of LPWANs

Low power wireless access networks, such as LoRaWAN, are ideal for large-scale, low-cost networks that will be the backbone of IoT. We wrote about these at some length a few months ago, and these networks have continued to gain traction.

One research firm postulates that the LPWAN market will grow at a CAGR of 90% from 2016-2022. Even if the growth is not quite as robust, the growing work to reconsider what a network built with IoT in mind can and should look like is noteworthy.

It's all part of the growth of the wider IoT market, which the analysts at BI Intelligence expect to receive $4.8 trillion in aggregate investment between now and 2021. By that year, they expect there to be 22.5 billion IoT devices, up from 6.6 billion in 2016.

Wireless network security

Security is a big issue, and for good reason. Last year's reveal of the SS7 vulnerability that allowed hackers the ability to read text messages, listen to phone calls, and track location (with only a phone number to work with) is just one example, and there are hundreds or thousands of others.

The growth of IoT exacerbates the issue. According to cybersecurity vendor ForeScout, many IoT devices can be hacked in three minutes or less, and hackers can leave backdoors that they can later use to launch massive botnet attacks.

One target of a Mirai botnet attack last year, web hosting firm OVH, demonstrates how massive modern botnet attacks can be. Octave Klaba, the French company's founder, claims the attack they

experienced was launched by 150,000 hacked IoT devices such as CCTV cameras and digital video recorders, and that at its peak, the datastream hitting their servers exceeded 1.5 Tbps.

We all know that these are big issues with big stakes, and there is a tremendous need (and opportunity) here for stronger wireless network security measures. For instance, Technavio predicts that the Wireless LAN Security market will grow at a CAGR of nearly 20% through 2020.

5G creeps forward

The next big thing in wireless continues to emerge, even if it will be years before the full impact is felt.

Pretty much everyone is hard at work. Ericsson, Qualcomm, and AT&T just announced their collaboration on 5G New Radio trials, set to launch in the second half of this year. Verizon's chief information and technology architect, Roger Gurnanis said, they're starting trials later this year, too. Providers in South Korea are hard at work trying to get a trial 5G network in place in time for the 2018 Pyeongchang Winter Olympics, while in Japan, work is well underway to get 5G in place in time for the 2020 Tokyo Summer Olympics.

But no one expects an instant overnight shift. Going back to Cisco's VNI, it predicts that by 2021, 5G will still only represent 0.2 percent of connections (around 25 million), though that tiny slice will still manage to generate 1.5% of total data traffic. They estimate that a 5G connection will average 4.7 times more traffic than a 4G connection.

It's a long road, but the destination looks to be compelling.

App fatigue and seamless personalization

Going back to Gartner's prediction that 20% of brands will abandon their mobile apps by 2019. (Sidenote: I hope they abandon them the same way Warner Bros. abandoned its original website for the movie Space Jam. It's a beautiful time capsule of 1996, and I pray it never changes. But I digress.)

Forrester Research, as quoted in Chris Nierney's recent piece on HPE's enterprise.nxt blog, writes that "consumer app fatigue is forcing digital business professionals to offer a portfolio of mobile experiences that go beyond apps and depend on ecosystem partners, [to] pull mobile in-house [and to] operate as a collection of synced agile teams building better customer experiences."

Nierney translates that to mean that consumers are demanding a seamless and personalized mobile experience that spans platforms and devices. He expects more enterprises to follow the model of eBay 4.0, which offers customers an integrated, customizable, and personalized experience across all devices.

And what's good for enterprises is good for CSPs, who still have significant ground to cover in the realm of seamless and personalized experiences—both from a technological standpoint and in terms of the overall *customer* experience. Having seamless digital interaction with my devices is great, but I would also be happy with getting a unified experience between my wireless carrier's retail store and its website. (Which is not to pick on wireless CSPs. We live in an age of great wonders, but I still have to call my Internet provider every six months when my promotional pricing runs out and do the whole elevation song and dance if I want to save a few bucks.)

Life-mobile convergence

But these trends are just small parts of the picture. The mobile experience continues to melt into not only the wider communications landscape, but into every aspect of our daily lives. Smart and careful CSPs are figuring out how to do more, faster and more securely. It's up to the rest of us to help them get there.