## Clouds Ahead:
A New Look At Convergence

By: Tim Young

Convergence: For a washed-up marketing term, it still has a way to go before it fulfills its promise. Since the first time the word was uttered in reference to the communications space, through its flurry of dotcom-era buzz and its eventual decline from overuse and periodic reemergence, convergence has been a catch-all term for a very good idea. It's the idea of a user-experience that is well-integrated and seamless from the moment a prospective customer begins shopping for service, through activation, provisioning, customer care, service changes, rating, charging, billing, and every other piece of interaction between customer and device, network, and service provider.

For a long time, this seamless user experience was focused on voice. Fixed-mobile convergence meant that customers could roam freely with a single device and be charged according to the network location of their calls, rather than the device on which those calls were made. The charges would be handled appropriately, paired with charges for other products used by the customer, and the whole enchilada would be sent out on a single bill.

Well, not only has this single-bill, single-device
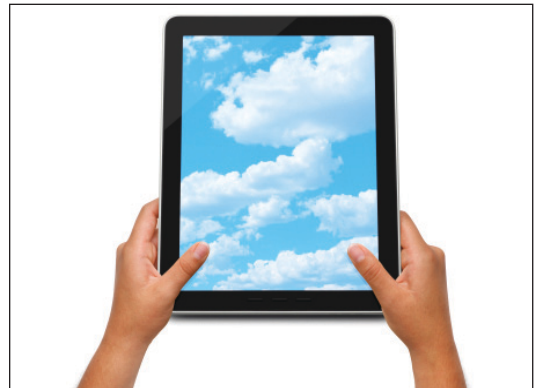
environment failed to emerge in the voice space, end-users have gone and made the whole interaction even more complex by demanding that other service (video, most notably) be offered in the same seamless way that fixed-mobile convergence was to provide voice service.

Furthermore, both enterprise and consumer-market subscribers are increasingly interested in being able to access not only voice and video from any device at any time, but are also interested in having the same level of access to personal data, regardless of their location or the device they're using to access the data. Ideally, that personal data, along with video programming, music, contact lists, messages, and other bits and bytes that a user might want to access,

should be kept somewhere safe and accessible. And these days, you can't talk about some place safe and accessible without talking about the cloud (a data concept that is named after a natural phenomenon that is neither safe nor accessible, but that's neither here nor there).

In endeavoring to characterize the nature of the internet of tomorrow, the UK's national innovation agency, the Technology Strategy Board, defines "The Future Internet" as, "an evolving convergent Internet of things and services that is available anywhere, anytime as part of an all-pervasive omnipresent socio−economic fabric, made up of converged services, shared data and an advanced wireless and fixed infrastructure linking people and machines to provide advanced services to business and citizens." (The entire report is available as a PDF here, and kudos to DarkStar Cloud's blog for pointing us in that direction.)

Converged services. Shared data. An advanced wireless and fixed infrastructure. This isn't just a vision for the future of the internet. It's a vision for the future of communications. As many service providers edge closer and closer to an all-IP environment, they are extremely well-prepared to not only facilitate, but to directly fulfill this vision of the future of communications.

And the TSB isn't the only group out there who sees these trends coming down the pike. Gartner released its annual trend predictions for strategic

> **This isn't just a vision for the future of the internet. It's a vision for the future of communications.**

technologies for the coming year a few weeks ago, and a converged communications experience plays a starring role in the analyst firm's outlook. Predictions for the year to come include a continued enthusiasm for media tablets, but the firm warns IT departments to look beyond the current mobile device landscape to anticipate the next big thing. "IT leaders need a managed diversity program to address multiple form factors," Gartner says, "as well as employees bringing their own smartphones and tablet devices into the workplace." The last point is an important one, which we'll revisit in a moment.

Other trends of note in the Gartner report include mobile-centric applications and interfaces, contextual and social user experience, and the "Internet of Things", or IoT. Each of these touches on the idea of the seamless user experience in different ways. The mobile-centric interface issue centers on the notion that different devices require and promote different ways of interacting with data, incorporating touch, voice, or even gesture. A seamless user experience, therefore, is not necessarily a uniform user experience. A great deal of legwork is required to ensure that a consumer's access to data or content

is of the highest possible quality on any device. This not only requires a thorough understanding of how to really make each device sing, but also, according to Gartner, "an understanding of fragmented building blocks and an adaptable programming structure that assembles them into optimized content for each device."

The contextual and social user experience, meanwhile, involves using information about the location, preferences, activities, and other contextual attributes of the user to enhance that user's experience. This idea overlaps with the IoT, in that the concept of an "Internet of Things" is rooted in the increasing connectivity of devices through sensors, image recognition software, NFC payments, and other technologies that facilitate increased connectivity that goes beyond traditional user activity to include a flurry of M2M contact conducted on behalf of the user. That's a whole new sort of converged experience. (By the way, you can read more about Gartner's predictions here.)

Going back to the point about employees bringing their personal devices into the workplace, this is another new frontier in the area of convergence: The union of the "personal me" and the "professional me". This fusion is pointed out in a great presentation from a few months back by Cisco's crack in-house consultancy team, the Internet Business Solutions Group (IBSG), which I caught up with on SlideShare recently. When exploring the top-five mobile cloud predictions for the next few years, IBSG Vice President

Scott Puopolo predicts that boundaries will blur between the professional and personal spheres of mobile use, with business users demanding, "a unified mobile cloud experience to access both professional and personal content from one device."

In addition, the IBSG predicts an increased demand for a replication of the desktop experience on mobile devices, as well as more business customers using their devices (which the group predicts will be less-frequently smartphones and more-frequently thin-client, cloud-based mobile devices) to attend video conferences. This is a convergence of not only the fixed voice or data line and its mobile counterpart, but the coming-together of a laundry list of usage silos into a new class of user experience.

But of course, in an app-heavy mobile environment, the question of how much communications service providers have to do in all of this inevitably emerges. However, the IBSG folks assert that the CSPs can serve as a "natural fit" to deliver this collaborative mobile cloud environment. The ability to enable fixed-mobile convergence is something that non-CSP players can't provide, and can only replicate. Meanwhile, CSPs can create mobile cloud offerings that help to capitalize on the mobile lifestyle, and can provide insight into the entire process that over-the-top players can't.

And the cloud can play a major part in CSPs' fight for the keys to the converged future in a number of ways. Not only can CSPs build and enable usage of these centralized data resources, but they can also leverage the cloud to bill for this new and rapidly shifting spate of sources, as well.

Increasingly, billing-as-a-service (BaaS) has become a key strategy for both upstart and traditional billing vendors looking to offer their clients greater flexibility, lower costs, and decreased time-to-market for new services. Companies from Zuora to Redknee to MetraTech have made the advantages of a cloud-based billing model known, and the rapid pace of

change in the world of converged communication makes all of these benefits that much more attractive to service providers looking to remain competitive. Analyst firm Innovation Observatory announced recently that they predict the cloud-based telecom billing market to swell to USD 1.4BN by 2015, with BaaS providers controlling some 11% of that market.

Classic concerns about the safety and reliability of the cloud haven't gone away by any stretch, but the sheer variety and complexity of the cloud environment, combined with a rampant craving for content and data to be available anywhere, do create a compelling proposition: What's better-suited for access from anywhere than information that is stored nowhere and everywhere at once?

In the new converged environment, the cloud is worthy of consideration as both a tool for facilitation and a tool for cost reduction. Perhaps it's time for CSPs to drink their own champagne while simultaneously serving it up to their subscribers. Then again, with the way end-users are constantly moving, perhaps even metaphorical champagne is a bad idea.