

SPECIAL REPORT

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Telephony, the Next Generation

By Carl Weinschenk

Telephony, the Next Generation

Voice services were a great leap forward for cable operators. Suddenly, MSOs could battle the entrenched and powerful carriers on their own turf. It led to the triple play and was instrumental in making the cable industry a central player in the telecommunications world.

That was a long time ago. The quick emergence of new technology and new techniques during the past 20 years are changing the very definition of telephony. In our August Special Report, Broadband Technology Report takes a look at what is happening in the world of telephony.

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Next Gen Cable VoIP in the Cloud

Cable voice is strong, but the time for VoIP 2.0 is here. Cable companies were some of the first service providers to fully embrace VoIP as a legitimate technology to deliver voice services to their subscribers. Many telcos and established players stood on the sideline with legacy TDM systems while MSOs elevated their ARPU and won customers.

But that all started ten or more years ago. VoIP networks and solutions are aging—and in some cases are obsolete or have reached end of life—and the voice market dynamics are dictating that a change be made. The two broad themes for cable voice are:

Residential VoIP Transformation: The fixed voice market remains huge, totaling nearly \$80 billion in North America last year. Multi-play is the best way to win. But given competition, communication substitution (via OTT, social media, mobile) and future uncertainties on take rates and regulatory landscape, voice needs to be delivered in the lowest cost, least risky way possible to assure profitability. Residential voice is becoming a check-list feature (versus a subscription revenue source) and the cost to deliver it must align with that reality. At the same time, MSOs want to also deliver more value with innovative features such as soft client/WiFi extensions and virtual numbers. Many of today's networks do not do this.

Launch New Business Services: Business services represent a growth opportunity. Infonetix Research projects that the North American hosted business VoIP/unified communications market will reach \$5.6 billion in 2016. And MSOs can get to market: Heavy Reading says that cable HFC lines already pass more than three-quarters of the SMBs in the U.S. But, many early VoIP solutions will not support these services or require significant investments to do so.

Existing equipment or hosted white label solutions may no longer be adequate or cost effective. They may be abandoned by vendors.

Your Next Voice Platform is in the Cloud



Transform the way you win in the \$80 billion fixed voice market in North America.

Use the cloud for your next voice network. Gartner calls this approach “cloud sourcing.” The cloud transforms the business model to one that is risk-free and success-based versus the old-world build it and (hope) they come.

Leverage Alianza’s Cloud Voice Platform to deliver VoIP revenue.

- Reduce TCO and risk
- Innovate rapidly and launch new services
- Eliminate CAPEX with a SaaS model
- Refocus resources to grow your business

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This is painful as it means spending more money and embarking on a disruptive process in order to offer voice with the right feature set and margin profile. It means funneling resources and focus away from strategic projects.

The decision on Cable VoIP 2.0 looms. As voice networks age and enter their second decade,

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Kevin Mitchell, Vice President, Alianza

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The question is: With what? The classic approaches are finding a new hosted solution or rebuilding with a latest and greatest technology such as IP Multimedia Subsystem (IMS) or Network Functions Virtualization (NFV).

However, there is a third path that some companies are bringing to market. It's centered on the cloud. Cloud is not just the type of service MSOs deliver, but also the service delivery solution for communication services. That new service delivery option is the cloud voice platform, which is emerging as the way forward for next generation voice services.

Embracing the cloud means that cable providers can take advantage of the success-based SaaS model, which eliminates CAPEX and significantly improves the business case for VoIP services. It means leveraging NFV and cloud elasticity, without the significant capital investment and organizational distraction of building the next network. It means a rapid, easy, low-risk way to expand footprint or launch new services such as business unified communications, OTT and voice over WiFi services.

Market dynamics and the realities of today's aging networks mean that cable providers should consider new options for voice service delivery. Service providers are demanding not just the latest and greatest technology, but also a transformation of the business model. Cloud voice platforms provide that solution with future-proof technology that is easier to manage, less expensive, and more scalable than traditional approaches.

WebRTC Creates a Disruptive Opportunity for the Cable Operators

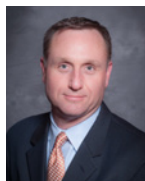
A decade ago, the triple play gave cable providers a value advantage that enabled them to disrupt the residential voice market and take share. Now Web Real-Time Communications (WebRTC) has the potential to do the same for business services. WebRTC and new Rest Representational State Transfer (REST) APIs are giving operators a way to level the playing field against entrenched incumbents.

This browser-centric technology makes it cheaper for MSOs to deliver hosted Unified Communications and Collaboration services

and easier for their customers to consume it. More importantly, if operators move faster than their traditional competitors to expose a new generation of open APIs for their networks, they have a chance to attract the web development community that will ultimately drive how cloud services get communications-enabled.

Disruptive Analysis reports that there are already 1 billion WebRTC-capable browsers in use. That number is expected to grow to 5 billion by 2017. This rapid acceptance means that cable providers that adopt WebRTC-based UC services won't have to spend the money

“WebRTC gives operators a chance to differentiate themselves by delivering a new class of connectivity even though they don't deliver the actual client.”



Greg Zweig, Director of Solutions Marketing, GENBAND

traditionally required to create, distribute and support discrete UC clients for every device and operating system. Users simply access a Web page to get a rich, real-time, unified communications experience. Advanced services can be smartly packaged or sold on an a la carte basis. The complexity of client upgrades is completely eliminated. With WebRTC cable providers gain a development/support cost advantage over traditional competitors as well

as a time-to-market advantage in rolling out capabilities.

Of course, browser-based user experiences are nothing new. In fact, the rapid migration of business applications to the cloud (CRM, ERP, HCM, e-mail, contact center, etc.) means that greater portions of business processes already rely on browser-based UIs. With business apps and real-time communications both in the browser, cable providers are well positioned to communications-enable those cloud apps.

By leveraging HTML5, JavaScript and REST it's possible for a traditional Web developer — as opposed to a specialized telecom developer — to rapidly integrate the cable provider's communications services into business apps. Leveraging these open APIs and common web tools, cable providers can be the first to offer customers one-click IM, voice or video call/conference inside common business applications, rather than forcing the users to a discrete app.

WebRTC gateway vendors are already publishing sample code and creating developer communities so communications integration can literally be cut and paste simple. It's true that forms of computer telephony integration have existed in concept for decades. The difference with WebRTC is the opportunity to dramatically decrease integration costs.

At GENBAND we can speak from our own experience. We've communications-enabled our Salesforce application so employees can make and receive voice/video calls. It offers the sales team more productivity, while managers gain automatic activity tracking using standard salesforce reports. WebRTC gives operators a chance to differentiate themselves by delivering

a new class of connectivity even though they don't deliver the actual client.

Many cable providers have traditionally shied away from business services, concerned about the cost of getting into the market and by the strength of premises-based PBXs vendors. Times have changed. The move to cloud-based applications suddenly gives UC providers who take this approach the upper hand as legacy PBX deployments are behind enterprise firewalls, inherently complicating cloud application integration. In addition, operators no longer have to build-out a whole new business services network. White label UC and WebRTC-based services reduce the traditional CAPEX barriers to entering a new market. The chance to disrupt the market has never been greater.

Scaling the Voice Network With IMS and NFV

Cable operators are continuing to evolve their voice networks, and two of the most significant changes to voice network architecture are represented by the acronyms IMS and NFV. While both terms are increasingly familiar and appealing to network operators, they take on renewed relevance now that operators are striving to become more flexible in the way that they deliver all communications services, especially voice.

Let's start with IP Multimedia Subsystem (IMS), which represents the very thing that will allow network operators of all sizes to offer new and innovative services and draw in new subscribers. It is a framework for network operators to consider, particularly when deploying a new SIP-based core network. It may take time to implement, but it does

enable the build-out of a best-of-breed multi-vendor network.

With the right technology in place today, operators can upgrade their voice networks to IP now and be ready to move to IMS when they are ready. If operators deploy a flexible enough network architecture, with IMS compatible products, they can mix and match their vendor selections to ensure they have the network that will best suit their current and future needs.

Key to this approach is selecting a Telephony Application Server (TAS), plus Access Gateway Control Function (AGCF) and Media Gateway Control Function (MGCF) capabilities that fully adhere to IMS specifications. An AGCF enables an IMS network to communicate with legacy non-SIP access networks through an Access Media Gateway (A-MGW). The MGCF enables an IMS network to communicate with classic circuit-switched networks and modern packet-switched networks through a Media Gateway (MGW).

Further, TAS clustering enables network operators to build load-balanced geographic redundancy across all their sites and take a step toward the virtualized network of the future. With clustering, network operators have a flexible solution that allows them to scale and increase their coverage using fewer sites and to achieve higher scale for less investment than traditional offerings.

Next on operators' horizons is Network Functions Virtualization (NFV), a network architecture concept using IT-related technologies to virtualize entire classes of network node functions into building blocks that may be connected, or chained, together to create communication services. The

benefits of NFV are well documented, and one of the main benefits is that NFV allows network operators to increase speed to market by minimizing the typical network operator cycle of innovation.

Interestingly, NFV enables all network operators to try IMS and be less fearful of it. IMS is one of the most logical elements to virtualize first in labs to test new service ideas. It enables operators to gain experience with NFV. Going

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Paul Brittain, Vice President of VoIP and Multimedia Products, Metaswitch

forward, network operators will adopt the same kind of approach toward NFV as the Internet application world has done for social networks, video delivery and other services. Indeed, with NFV, cable operators can start small and do things incrementally. They can see what works and what doesn't, using the same approach utilized to build applications. In this way, they will create infrastructure and transform their networks.

In closing, tomorrow's communications providers will be companies that fully embrace the power of software, virtualization and the cloud to transform the way they build networks and deliver services. IMS and NFV are important steps on this journey. This move to become more software-centric will require operators to foster innovation at every level of the network, working with new development communities and partners to replace multi-year network upgrade cycles with agile incremental market-driven network and service enhancements.

Navigating WiFi in the Increasingly More Connected Home

The average number of WiFi devices per household continues to grow at a fast pace. Our own internal research shows that, on average, there are now six active wireless devices in a home that share access to the home wireless network. This number will only grow.

To improve, WiFi solution providers need a focused approach that proactively addresses the top customer issues and measures customer satisfaction as improvements are implemented. Some tools can help to identify potential WiFi problems before they become customer issues. Others assist with WiFi network diagnostics and device installation. It will become even more critical to have the right tools and talent in place to drive continuous improvement in an increasingly complex home environment.

WiFi tools can help optimize the network performance of the entire home and ensure the appropriate speeds and quality for each IP-connected device. Self-help tools for the set up and management of the devices in the home

can also be valuable. Let's consider a customer that has just received a new home gateway device. The documentation for the gateway should be very intuitive, easy to read and allow an easy self-install or it could direct the consumer to a website or smartphone app for installation assistance.

Tech support providers estimate that one in five service calls can be solved by consumers. It follows that the more user-friendly and informative the documentation and/or website, the better the user experience – and the lower the call center costs.

The user experience can also be improved by deploying DOCSIS Gateways with more advanced WiFi technology. The DOCSIS Gateways of today increasingly have dual-band concurrent WiFi. These gateways have both 2.4GHz and 5.0 GHz radios and provide a choice of WiFi bands, which provide excellent flexibility by providing two independent networks. This is especially helpful in a home environment with an increasing number of potentially interfering devices.

The most popular WiFi standard for a few years now has been 802.11n, but the tide is now shifting to 802.11ac WiFi solutions to provide a faster WiFi connection in the home. With many broadband packages offering 100 Mbps or greater today, the DOCSIS CPE to support these speeds will increasingly support at least 16 downstream bonded channels — and many of these gateways will also include 802.11ac WiFi.

For the best user experience, it is also very important to pay close attention to the WiFi connection quality throughout the entire home and there are several design considerations here. Additional MIMO (Multiple Input Multiple

Output) antennas on access points can be used to create more data streams to increase the throughput and reliability of the WiFi connection in the home.

To increase the range of the WiFi access point in the home, the transmitter output power can be increased. And WiFi accessories such as repeaters or WiFi Ethernet Coax Bridges (WECB) can also be used to optimize WiFi service in the

“To improve, WiFi solution providers need a focused approach that proactively addresses the top customer issues and measures customer satisfaction as improvements are implemented.”



Tom Dunleavy, Vice President, Product Management, DOCSIS, ARRIS

home. They enhance connectivity and eliminate dead spots. These can often be used as part of an overall WiFi strategy in conjunction with a WiFi Gateway to deliver the most cost effective whole home coverage for various installation scenarios. WiFi tools can also help consumers determine whether or not WiFi accessories are needed and where they should be placed. A WiFi smartphone app could potentially be used to show a consumer where to install accessories as that consumer walks through their home.

As you can see, there are many WiFi design considerations and approaches that can directly influence the quality of the user experience and the associated total cost of ownership (TCO) and these should all be considered when evaluating the merits of a WiFi strategy. There are many WiFi related decisions and options to consider. And technology in this space has never moved faster. So it can be challenging to decide on the “right” WiFi strategy.

But the key to success really is customer satisfaction and making it happen *now* which brings us back to the importance of the continuous improvement of the user experience, measuring progress and using the right WiFi tools to help reach your goals. The companies that “do WiFi best” will win customer loyalty and will reap the rewards in the increasingly more connected homes of tomorrow.

Time to Move Beyond Stand-Alone Voice

Voice services have long been an important part of the service mix for cable MSOs – so long, in fact, that many operators now need to replace their aging, softswitch-based VoIP platforms. The need to upgrade their networks offers a great opportunity for operators to re-think how they deliver voice and other communication services. The emergence of cloud and virtualized platforms presents the opportunity to introduce greater flexibility into their networks to better address shifting demand and accelerate the delivery of new services.

As important, this transition point is a perfect time for cable MSOs to evaluate where voice fits in their service mix. Now is the time to look beyond voice as a stand-alone service, by considering the possibility of making voice and

other communication capabilities features of virtually every service they offer.

The Benefits of IMS: IMS (IP Multimedia Subsystem) is a platform that was originally developed to support IP communications services on 3G and 4G mobile networks. IMS has generally been seen as a critical platform to support voice services in the form of Voice over LTE (or VoLTE). The benefits of IMS are not limited to mobile operators, however. IMS has become a viable, even ideal option for cable MSOs. Why?

The move toward virtualized platforms has made the IMS deployment model much simpler for operators of all kinds. Today, IMS can now be offered as a cloud-based service, not just as dedicated infrastructure deployed in the operator’s network. This is not a capability offered by every vendor, but it offers a variety of benefits making it very worthwhile to explore.

First, because it is delivered using a cloud model, rising demand can be met in an incremental way, quickly and without major investment in new equipment.

Second, for larger MSOs this approach would enable them to support all of their customers without having to deploy systems in every market, a benefit available whether MSOs are delivering services from the cloud or using dedicated infrastructure.

Third, IMS is programmable – services can be introduced or modified through the use of application programming interfaces (APIs), the same approach widely used to build Web and mobile apps. This ensures that cable MSOs can introduce a wider variety of services, more quickly.

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much simpler for operators of all kinds.”

Sandip Mukerjee, Vice President of IP Platforms for the Americas, Alcatel-Lucent

Fourth, the rise of more advanced, IMS-based services has been complemented by the availability of automated customer care and device management tools to ensure that superior quality of experience is maintained.

As important, the move to IMS would ease the shift toward another communications technology now in vogue – WebRTC.

The promise of WebRTC: Interest in the cable community in WebRTC (Web Real-time Communication) has been growing, and for good reason: WebRTC gives a voice to any connected

device, Web page and Web app. With WebRTC, voice, video and messaging become features that can be embedded into any web application. Imagine adding video chat or click-to-dial service into a customer service portal without cobbling together a variety of network elements.

WebRTC also eliminates the need to create a customized client for each device or to pre-install apps on devices to support specific services, reducing the cost and hassle of creating and delivering new residential and business communications services.

In the end, every operator will need to chart its own evolutionary path, based on its business model, market profile, financial resources and competitive environment. For many operators, however, the combination of IMS and WebRTC could be a powerful new tool in their toolbox.



Carl Weinschenk is the Senior Editor of Broadband Technology Report. Contact him at carlw@pennwell.com.