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Change seems to be the only constant in the communications space. And, so, I wanted to use this space to review and comment on a handful of the important developments at the forefront of communications at the moment.

First, as you probably already know, the Federal Communications Commission is seeing a fair amount of turnover. FCC Commissioner Robert McDowell in March announced his intentions to step down, and just a few days later FCC Chairman Julius Genachowski said he will also be leaving the commission.

That raises the question as to likely candidates that will fill these new commission roles, particularly the chairmanship.

Candidates being considered for the top FCC post as of late March reportedly included Karen Kornbluh, U.S. ambassador to the Organization for Economic Cooperation and Development; Catherine Sandoval, a member of the California Public Utilities Commission; Lawrence Strickling, a top Obama administration advisor on telecom and technology policy; and Tom Wheeler, the former CTIA head who in recent years has been a venture capitalist.

I'm not terribly familiar with the others, but it seems to me that Wheeler would be a very strong candidate. He's a dynamic leader who headed up the wireless association for many years and is a fixture in the wireless industry. Given wireless has come center stage in recent years, Wheeler's knowledge of this space could be a great asset to the FCC. At the same time, however, some might argue that he would favor the interests of the large wireless service providers, the key constituency of the CTIA.

While we're on the topic of the FCC, I think it's also worth noting that the commission reportedly is looking at whether it might make sense to allow VoIP providers to get phone numbers direct rather than by way of local exchange carriers. Vonage sparked this discussion when it sent a request to this effect last year to the FCC saying this move could "reduce the number of hand-offs involved in a Vonage call, thereby improving call quality, reducing delay, and eliminating opportunities for routing errors."

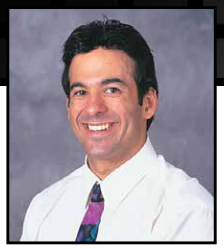
Some have been quick to note that if this were to happen, phone numbers would no longer necessarily be connected to a particular geography. In fact, I heard a report on NPR the other day about this, in which some plucky communications pundits opined about how very connected they feel to their phone numbers. I found this a bit odd, particularly in a world in which many of us program numbers into our devices, so we often aren't even able to recall our own numbers. That said, I'm always on board when people find meaning in the little things in life.

And since we're on the topic of regulation as it relates to wireless, I also want to take this opportunity to officially welcome Barlow Keener as a standing columnist in INTERNET TELEPHONY magazine. Barlow is the principal with Keener Law Group out of Boston, and he's been a long-time contributor to the Super Wi-Fi event that Crossfire Media puts on in collaboration with TMC at our ITEXPO conference and exposition.

I also wanted to mention one more thing here, and I don't have any mildly clever segue to this particular topic. It's about network virtualization and the software-defined telco, two related areas that are really heating up right now.

Andreessen was writing primarily about the move to applications and the cloud.

For more on Oracle/Tekelec, NFV and SDN, see the Network Infrastructure section of this issue.



Research Shows More Innovation under a Joint Chairman/CEO

Many of us know people who struck it rich in an IPO and then decided to retire or take time off. If a percentage of people in a company decide to leave the organization when it decides to go public, it is logical to conclude that innovation at the organization will begin to slow.

A new study by Stanford's Shai Bernstein involved extensive analysis of patents from nearly 2,000 companies and discovered the patents at public firms were more incremental than those at private firms. In order to determine the value of a patent she analyzed the amount of times a patent application was cited in other applications. The idea being that breakthrough patents are cited more often and are of greater quality.

certain point – a corporate culture can go from being hungry to satisfied when there is enough money available. The saying "fat cats don't hunt" is fairly accurate, and the proof may be that inventors who stayed at companies after an IPO experienced a 48 percent decline in the quality of their patents, according to Bernstein's research.

What we don't know from the research, however, is whether the more innovative companies are more competitive, make more sales and/or make more profit. It's one thing to have a great patent, yet another to make a product, and even more of a challenge to have it be something the market wants.

If you are wondering just how much less innovative public companies are than their private counterparts the answer may surprise you – there was a 40 percent decline in patent citations five years after a company went public.

If you are wondering just how much less innovative public companies are than their private counterparts the answer may surprise you – there was a 40 percent decline in patent citations five years after a company went public.

Other than brain drain, reasons for a loss of innovation likely have to do with companies becoming more cautious when dealing with public markets, which expect an easily digestible story and consistent earnings improvements.

This thought is backed up by the research as companies with separate board chairs and chief executives had less innovation and inventors were also more likely to leave such organizations.

Other reasons for less innovation could be people become comfortable at a

If we assume innovation is roughly equal to profitability level, this research may change the way companies are organized over time. I recently explored how Steve Jobs transformed our views on management as he became an often-cited reason for supporting the founder over an outside management team. Now, however, we may need to also rethink how boards are organized and whether it is a good idea to have the CEO be the chairman of the board as well.

Before we jump to any conclusions it's worth pointing out that PWC research shows 43 percent of the S&P 500 boards separate the roles and half the companies with a combined role have discussed the possibility of splitting the roles at the next CEO succession.

Whether this research becomes fodder for boardroom discussions is unknown at this time, but we think it is worthy of consideration.

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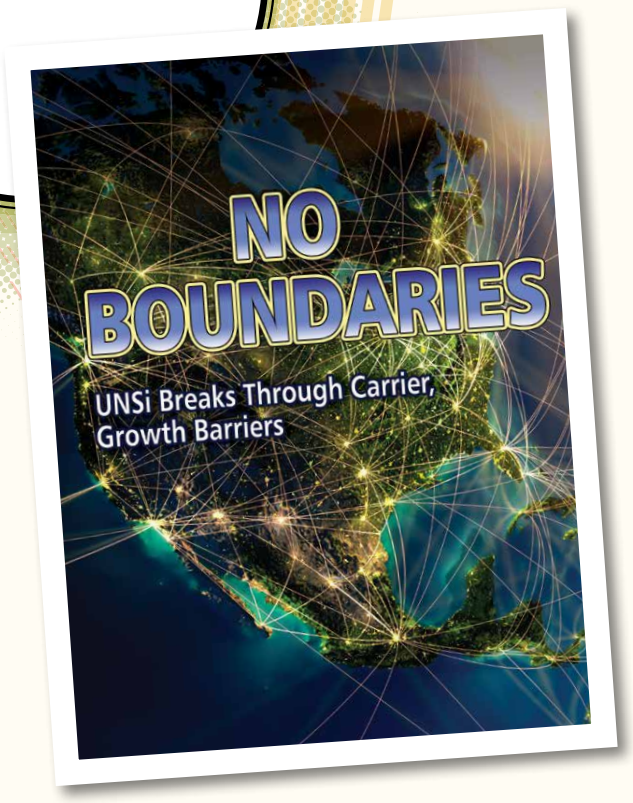

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By Barlow Keener

White Spaces and the TV Incentive Auction: It is Not Simple

White Spaces seems to be the antithesis of the TV Incentive Auction. But it is not. Mobile carriers participating in the auction and the new White Spaces industry vendors can plan a new mobile ecosystem where unlicensed will support licensed use, the way Wi-Fi now supports licensed use.

Coordinating, cooperating, and planning by mobile policy makers and mobile network engineers are the key to a successful new mobile ecosystem. However, traditionally, mobile carrier engineers have not seen the value of unlicensed Wi-Fi and of unlicensed wireless networks built by 80 million U.S. homeowners. The mobile engineers have focused on and depended on cell towers with air-conditioned huts at the tower base and backup generators supporting the huts. All this cost in the mobile network demands and requires licensed spectrum. But Wi-Fi use in the home, relied on by the majority of 120 million smartphone users, defies the mobile engineers' reality based on costly towers and licensed spectrum. A compromise between licensed and unlicensed is needed, and indeed required, for our mobile future.

White Space is unlicensed like Wi-Fi. Wi-Fi uses unlicensed spectrum from 2.400 to 2.4835gHz (83.5mHz) and from 5.725 to 5.875gHz (150mHz). White Spaces uses free TV channels from 54mHz and 698mHz (TV channels 2-51).

The FCC created White Spaces over a period of six years culminating in a FCC September 2010 order. Chairman Genachowski, in one of the highlights of his chairmanship, coined the White Spaces, "Super Wi-Fi," because the low 600mHz spectrum allows excellent radio propagation through walls and trees and into our basements and backyards, something Wi-Fi using 2.4gHz has trouble doing.

Unlike White Spaces, the FCC's TV Incentive Auction will create "exclusive licensed" spectrum taking spectrum that is now allocated for unlicensed White Spaces and licensed TV channels. The FCC TV Incentive Auction (the formal FCC matter is called "Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions") was mandated by Congress in the Spectrum Act of 2012 to a) raise money for a nationwide public safety mobile network and to b) sell spectrum to the mobile carriers. The auction will eventually (it is scheduled for 2014, but TV stations are complaining this is too fast) buy spectrum from TV stations that will exit the TV business and then simultaneously, within minutes or hours, sell the freed TV station spectrum to the highest mobile company bidder. The TV spectrum includes a total 294mHz of potential spectrum for sale across all geographies, with the likely auctionable spectrum coming from TV channels 14 to 51 (470-698mHz).

> Unlicensed spectrum has been the savior of mobile carriers rolling out the most amazing devices we have ever held.

Unlicensed spectrum has been the savior of mobile carriers rolling out the most amazing devices we have ever held. These devices are more reliant for data use on unlicensed Wi-Fi than on the carriers' licensed spectrum and multi-billion dollar cellular macro networks sitting on towers across the landscape. Even those folks not in the telecom industry know the term cell tower, which says it all regarding the huge size of the investment. And these folks know the problem with the towers.

The average user knows that where there are no cell towers there is not service, or poor service. Voice calls made outside in urban and rural areas drop regularly and are inconsistent in quality. "Can you hear me?" is said daily across the country. It is the new voice norm. Users have grown to expect the poor voice QoS when outside. Poor service is poor QoS for a mobile engineer. Some have argued that poor QoS is caused not by a lack of licensed spectrum but by a lack of towers or micro and pico cells, known as small cells. However, these same customers know that if they can get to a Wi-Fi router using unlicensed spectrum their new amazing phone will work and QoS goes to 100 percent.

Today, users don't blame the carriers as they did a couple of years ago. They just hunt for a Wi-Fi network, find one and smile once their Galaxy SIII connects to Gmail, Google Plus, Twitter and Facebook. Users ignore the QoS problem caused by a limited macro tower mobile network. And users know that there are mobile data caps and are careful to ensure that their photos are synched on Wi-Fi only and that their Dropbox is Wi-Fi only and that Amazon Audible downloads on Wi-Fi only all in an effort to prevent hitting the mobile data caps. When inside at home or at Starbucks or an office meeting, the users depend on Wi-Fi as unlimited, dependable, and unlicensed.

Unlicensed White Spaces will deliver the wireless network redundancy, like Wi-Fi does today, for the mobile carriers that win the TV spectrum auctions. It is anticipated that mobile carriers winning TV spectrum will build a wireless ecosystem that incorporates the use of unlicensed spectrum. That unlicensed spectrum can include White Spaces.

There are two principal uses for unlicensed White Spaces that winning mobile carriers can use: a) backhaul using point-to-point radios for urban and rural small cells and b) short-haul LAN Wi-Fi-type use with 802.11af. 802.11af is getting traction with IEEE for TV White Spaces. 802.11af devices are hoped to be in production before the TV Incentive Auction takes place in 2014. White Spaces point-to-point radios can easily penetrate tree foliage allowing mobile carriers to deliver broadband to small cells and hetnets at a much lower cost in certain rural and urban areas than building fiber (new fiber construction costs around $50,000 per mile if placed on poles and $120,000 per mile if in conduit).

Short-haul LAN White Spaces based on 802.11af will be able to be used in homes and businesses, allowing mobile carriers to offload even larger data requirements to the customer's local FTTH Internet using White Spaces equipment owned by the home owner. Home and small business owners in the U.S. purchase an estimated $10 billion-plus per year in wireless network equipment in the form of Wi-Fi access points – 90 million homes and businesses x $120 per Wi-Fi access point. It is projected that 800 million homes worldwide will have Wi-Fi by 2016, which equates to home owners purchasing an estimated $90 billion in wireless network equipment, possibly exceeding the total amount of equipment capital expenditures by all the mobile carriers worldwide.

The FCC is going to decide in the TV Incentive Auction proceeding how much unlicensed nationwide spectrum to allocate to White Spaces in the urban areas. In rural areas, where there are few TV stations and where demand for licensed spectrum will be limited, White Spaces will continue to have many available channels. (A TV channel is 6mHz. The TV Auction proceeding is considering changing these channels to 5mHz to match the 3GPP LTE band plan requirements.) LTE, as defined by 3GPP, requires a large guard band for frequency division duplex of 10-16mHz and a large duplex gap of an additional 20mHz between the LTE uplink and downlink, much larger than 6mHz guard bands required by White Spaces devices today separating TVWS from TV stations.

In the comments filed with the FCC, Google and Microsoft proposed that the FCC not auction off, but keep for public unlicensed use, the large 20mHz duplex gap and the guard bands required by LTE for a nationwide, unlicensed White Spaces band. The large guard band and duplex gap would allow White Spaces devices to deliver up to 50mbps speeds, or around 10mHz per 6mHz channel.

Unlicensed White Spaces – post TV Incentive Auction – will complement and support the mobile carriers, not compete with them. More significantly, the plan of using a dedicated nationwide, unlicensed White Spaces spectrum band would support the growing data demands required for a healthy economy. Mobile carriers purchasing the surrounding TV spectrum for exclusive licensed use would have the confidence that their customers' aggregated multi-billion dollar home wireless networks using 802.11af unlicensed White Spaces spectrum devices were efficiently and effectively offloading the heavy data demand that would otherwise be solely dependent on the new LTE networks.

Such free offloading to White Spaces, at no cost to the mobile 600mHz network owners, would support their future customers' high-demand QoS requirements that the mobile network engineers know has to be met once construction of the new LTE networks is completed.

Barlow Keener is the principal with Keener Law Group (www.keenerlawgroup.com) out of Boston.

By Steve Bock

Wiretapping's Real Threat: Non-Compliance

A child is abducted by a convicted sex offender. When law enforcement asks the communications service provider for technical assistance with the monitoring of the criminal's phone conversations, they cannot access the communications because the CSP has not complied with The Communications Assistance for Law Enforcement Act.

CALEA is the federal law requiring CSPs to provide technical assistance to law enforcement agents engaged in lawful electronic surveillance of criminal suspects. The technical nature of the law makes it one of telecom's least understood and, for carriers, hard to implement mandates.

In the eyes of the law, however, it's no excuse to ignore CALEA due to lack of engineering expertise. With the variety of telecom services available to criminals and the rise of court orders for electronic surveillance, sooner or later any CSP could receive a court order requiring CALEA assistance. When that day arrives, the CSP can expect heightened scrutiny for compliance. Many aren't ready.

How CALEA is "Tough" on CSPs

To comply with CALEA, carriers need more than engineers. Stumbling blocks to compliance may include:

- Cost: Traditional compliance solutions can strain the budgets of smaller CSPs.
- Hardware mysteries: Some equipment manufacturers aren't familiar with the nuances of U.S. electronic surveillance standards.
- Rising demand: Although lawful intercepts dipped slightly in 2011, the number nearly doubled over the previous decade to 2,732 authorized wiretaps, and likely rose once more in 2012.
- Legal staff: Not all court orders are written correctly. To avoid legal issues, CSPs need, but often lack, the legal support to review and validate incoming court orders.
- Shifting policy: Since technology is outpacing electronic surveillance laws, updates to the law may be required, adding new complexity for CSPs.

The CALEA Nobody Knows

CALEA technical standards both define and limit the types of communications that an intercept solution may deliver to law enforcement. That point is often overlooked. In the digital era, CALEA stands as a bulwark of individual privacy so that law enforcement monitors only the communications described in the given court order and does not engage in fishing expeditions.

CSPs that are not CALEA-compliant find themselves scrambling when a court order arrives. The resulting delay could frustrate a law enforcement investigation and even lead to loss of life. In addition, the carrier could become subject to a costly CALEA enforcement action.

Because wiretapping in this country is conducted under the strict oversight of due process standards, most people accept the practice as a necessary law enforcement tool. What the public may not realize is how valuable the tool is. Lawful surveillance has repeatedly led to the rescue of kidnapped children and the apprehension of terrorists, drug lords, murderers, and child pornographers. These and similar real-life heroics of law enforcement working with CALEA-compliant CSPs play out quietly to bring many crimes to a non-violent resolution.

CSPs that are not CALEA-compliant find themselves scrambling when a court order arrives. The resulting delay could frustrate a law enforcement investigation and even lead to loss of life. In addition, the carrier could become subject to a costly CALEA enforcement action.

CSPs should install the required CALEA capabilities without waiting for a law enforcement crisis to occur. It's the law.

Steve Bock is president of Subsentio (www.subsentio.com), a third-party service bureau for lawfully authorized electronic surveillance.

By Spence Mallder

Collaboration is at the Heart of the Telecommuting Debate

The merits and minuses of telecommuting have certainly been part of a lively business discussion in the aftermath of Marissa Mayer's announcement of the cancellation of telecommuting at Yahoo. Are people less productive when they work from home? Is accountability more difficult see? Further, when employees aren't physically in the office, does collective creativity, collaboration and productivity in the workplace as a whole suffer?

While these are the issues under analysis, enterprises should think about the issue more holistically when contemplating the benefits in-person collaboration can have on productivity. While restricting telecommuting can be effective for improving collaboration in the central office or within regional locations, global organizations need to consider what strategies to pursue to enhance real-time collaboration as a whole. Leveraging enterprise collaboration philosophies and technologies is essential because effective collaboration cannot always happen on its own regardless of location.

The principles of social business and innovations in technology have obviously improved the ability to work from across offices, regions, and countries. But collaboration technologies don't just enable employee interaction remotely but also can benefit on-site communications as well. Employees can manage availability and activity through telepresence; they can use group chats to hold impromptu meetings; they can share documents and computer screens to collaborate on projects. All this has given companies the ability to increase collaboration both on and off site, institute more unified business processes, expand knowledge and idea sharing, and in the process, eliminating workplace silos.

Unified communications and collaboration technologies play a major role enabling the infrastructure to organize and optimize intra-enterprise communications in a ways not possible before. UCC technology is essential to business' efforts to organize people and processes and information around eliminating fragmented, uncoordinated efforts across various functional departments and offices.

Yes, in-person proximity can foster more creativity and productivity than telecommuting, but that's not to say work-from-home programs or office-to-office collaboration can't be successful with the right technologies and processes.

Collaboration technologies don't just enable employee interaction remotely but also can benefit on-site communications as well.

Take, for example, the customer service industry. Collaboration technologies can help work-at-home agents engage and chat with sales representatives, tap product and subject matter experts through tools like Microsoft' SharePoint, and participate on team calls via video. This type of collaboration improves resolution time and customer satisfaction without necessarily tethering the agent to a desk. This is imperceptible to the customer, and collaboration is not compromised while providing access to a larger skill and talent pool.

The bottom line is while higher productivity through collaboration can best be achieved in person, it is not necessarily dependent on it. Whether employees are in another cube or another continent, companies have to take a global view in order to leverage collaboration technology and get the most out of their workforce.

Spence Mallder is general manager of workforce optimization and CTO at Aspect (www.aspect.com).

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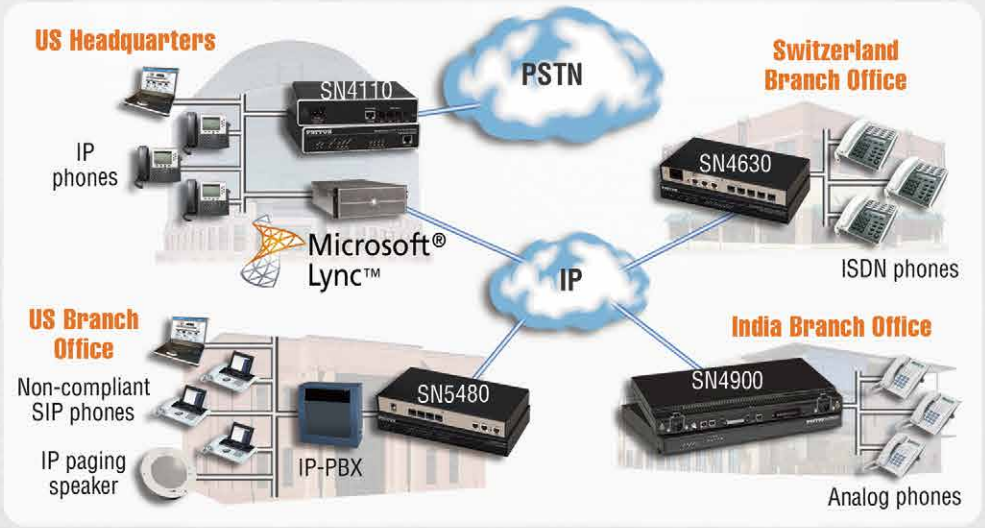

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By Jon Arnold

Unified Communications in 2013 – Reality Check

When I talk about rethinking communications in this column, it's hard not to include unified communications on some level. As much as this is a nice problem to have, it's still a problem.

The good part of the problem is the simple fact that UC covers most all the tools we use every day to get our work done, so virtually any type of business can benefit. The bad part of the problem is the not-so-simple fact that UC covers all these tools.

The bigger picture promise of improved productivity is a great selling point, and for the most part, the technology can deliver if deployed right. However, among the analysts and consultants who follow UC, we know how difficult that value proposition can be to understand, let alone support a business decision to invest in it. With all the vendors chasing customers with various flavors of UC, they risk making it an all-purpose solution. Of course, their motivation is keep customers in the fold as they migrate to VoIP or graduate up to UC. As a result, the UC concept has become pretty amorphous, and if vendors aren't careful, it can become as generic as legacy telephony, and there's not much future in that.

Vendors have struggled with this dilemma for some time, and things aren't getting any easier in 2013. Businesses are still trying to extend the life of their legacy systems to manage shrinking budgets, and without a tangible cost reduction story, they're still hesitant to move ahead with UC. Some definitely understand the productivity angle, but others remain skeptical, leaving most of the buyers in the realm of early adopters.

Greenfields and PBX replacement scenarios are no brainers for UC, but in a stagnant economy no vendor can count on the former to build a business around. Given the long life spans of legacy systems, the organic turnover for replacement is under 10 percent, so you need much more to make a go in this market.

This may seem like a gloomy scenario, but the outlook for UC is actually pretty good. Not everything moves at Internet speed, and that's certainly true for UC. For any market to truly hit its stride, demand must be the driver, and not supply. UC vendors are constantly tweaking both the value proposition and the deployment models, especially now that cloud has emerged as a force in the communications space. Not only will this help make UC more saleable to IT decision makers, but also for the channels, through which most of the business flows. We're not there yet in 2013, but we're definitely on the right track.

To quantify this bright future, I'm going to cite some high-level data points from a recent report you should take a closer look at if you're still on the fence with UC. The study is titled "Unified Communications & Collaboration Market 2011-2016", and was recently jointly published by COMMfusion LLC and UCStrategies.com. On a global basis, the research pegs the 2012 market at $13.4 billion, growing modestly to $20.8 billion by 2016. Clearly, there's a large opportunity here, but no hockey stick takeoff is expected. Their forecast works out to a 9.1 percent CAGR – not terribly exciting, but totally respectable given a weak economy.

I should also explain that this market sizing is based what the research calls "UC capable", which is larger than another definition called "True UC". The report explains this in detail, especially around the challenge of defining – and measuring – what exactly constitutes UC. In short, the nature of UC is as difficult for seasoned analysts to understand as it is for IT decision makers, which alone helps explain why this market is taking some time to become mainstream.

The key here, then, is setting realistic expectations as to how UC's future will unfold. For those who are patient and think things through, the payoff can be great – for businesses, vendors and channels. There's a lot to understand, but there are a lot of benefits, and that's why UC will eventually find a home in most all businesses.

To better articulate this, I'd like to add some thoughts from the study's author and analyst colleague, Blair Pleasant, who is president and principal analyst of COMMfusion, and co-founder of UCStrategies. "Collaboration is becoming a business-level driver now, and tools such as conferencing, document sharing and presence are key enablers. UC does all this and more, and with distributed workforces becoming essential to support global operations, the value proposition becomes even stronger."

Another factor that will drive growth is the ability for vendors to support truly integrated solutions, not just with their own applications, but from other vendors and applications ecosystems. Standardization has long been a work-in-progress with all things IP, and as that advances, so will the demand for things like UC.

As Blair notes, "most companies are deploying the various UC components as silos. Businesses are used to using their applications in isolation, but in time, they will see greater benefit from integrating them. Our research supports this, and we expect to see integrated solutions accounting for 40 percent of the UC market by 2016."

To sum up, just because UC isn't on every desktop doesn't mean it can't help your business. Someday it will, and maybe you just don't know it yet. There are great solutions out there right now, but you need more than technology to make a market. A lot of other things have to line up around that, and it's clear to me that process is well under way. If you want to know just how well under way all that is, Blair's report has those answers, and after you follow up with her, I hope to see you back here in the next issue of INTERNET TELEPHONY magazine.

Jon Arnold is principal of J Arnold & Associates, an independent telecom analyst and marketing consultancy with a focus on IP communications, and writes the Analyst 2.0 blog. Previously, he was the VoIP program leader at Frost & Sullivan.

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By Martin Steinmann, CEO, eZuce

It's Time for a Change: Slow Innovation and Stagnation in the UC industry

Not much has happened in terms of product or business model innovation in the PBX and UC industry over the last decade. The transition from TDM voice to VoIP happened gradually and as a slow technology evolution. VoIP capabilities were added to existing products without renewing the core architecture. The business model and distribution channel strategy and relationships remained the same; vertical integration and proprietary implementations prevailed. The adoption of VoIP allowed customers to benefit from a consolidation of the cabling plant and the industry learned how to establish QoS and VoIP-enabled enterprise networks, but phones remain limited by hardware constraints, resulting in a specialized and expensive device used to enable basic voice communications.

The transition to a software model has not been easy and the solution focus remains on voice and recently video, failing to realize the importance of presence. The UC industry continues to operate as a separate vertical, not part of IT.

As CIOs take over responsibility for telephony, business processes are being re-examined. Assessments are made of why telephony solutions are so expensive to operate and why maintenance costs remain high. The attachment of telephony to proprietary hardware is viewed as an impediment to renewing the IT compute infrastructure and transitioning to virtualization. Innovation at the device level and new trends such as bring your own device collide with the vertically integrated business model and the slow pace of innovation shown by the telephony vendors.

The opportunity is to absorb unified communications into IT. We call it UC cubed. UC cubed represents unified communications delivered via a unified and standardized cloud infrastructure and integrated with IT best practices.

UC cubed supports virtualized communications based on an architecture designed for the cloud from the ground up. It solves ITs' main problems with UC. Delivered as a pure software solution, it significantly reduces operating costs, and it enables the CIO to consolidate the telephony organization into IT.

After two decades of slow innovation that gave us a consolidated cable plant, it is time to open up a new chapter. UC cubed represents an entirely new paradigm on how to operate a communications and collaboration solution.

Martin Steinmann is CEO at eZuce (www.ezuce.com).

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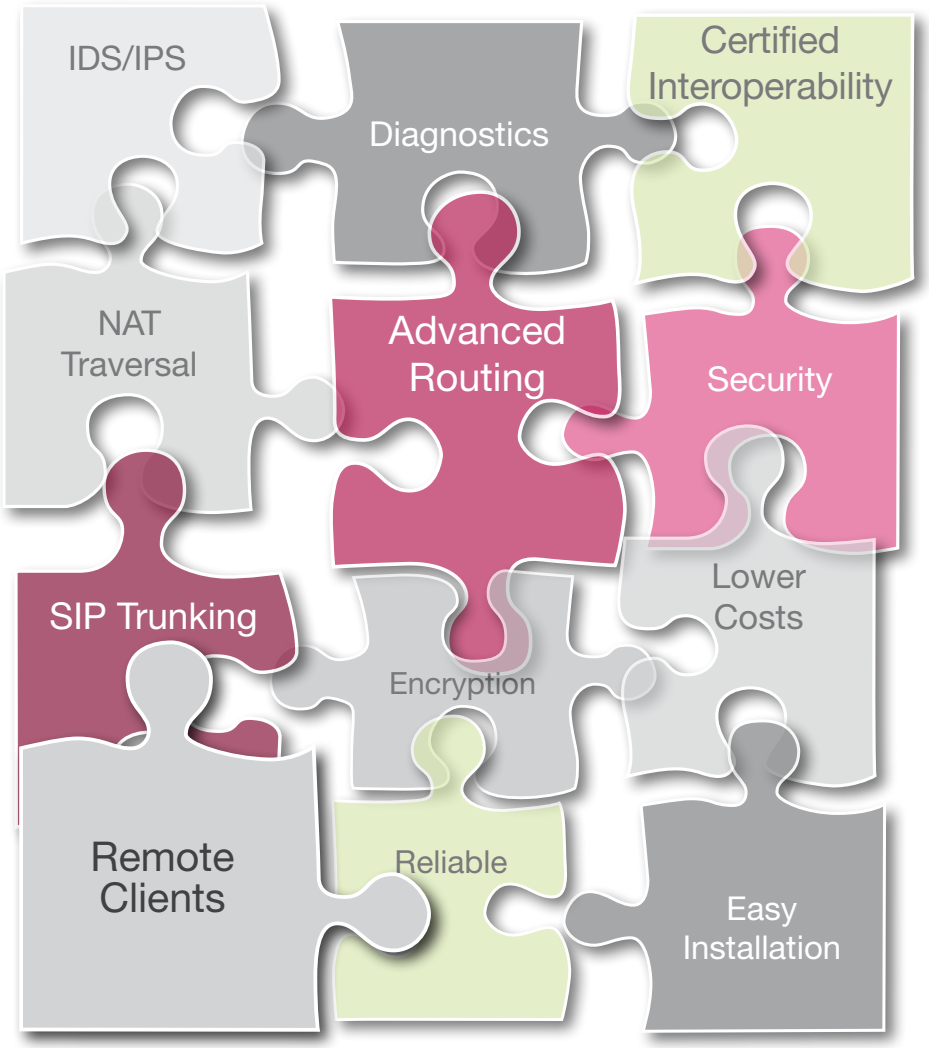

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BRINGING IT ALL TOGETHER

By Lori MacVittie

Virtual Gateways

While software-defined networks may be slow taking hold in organizations, there are network protocols that are generally associated with SDN that are beginning to see an upswing in adoption such as VXLAN (VMware and Cisco) and NVGRE (Microsoft, Intel, Dell, Broadcom, and Arista).

The introduction of virtualization and the resulting mobility of application instances implied by cloud computing models into the network are generally considered to have exposed two key problems with traditional networking models and protocols.

First, existing network isolation protocols such as VLAN and VRF cannot support large cloud deployments because of limitations on the number of network segments available. Second, the mobility of applications via virtual machine migration is hindered by an inability to cross layer 3 boundaries. This can ultimately limit scalability of applications by reducing the total pool of resources available within a layer 3 network silo.

A virtual network gateway can enable communication between application tiers, for instance, where a very dynamic web tier might be deployed using VXLAN to ensure scalability but communicates with a database host still residing on a traditional network that employs VLANs.

Virtual network overlay protocols (tunnels, to be more precise), of which VXLAN and NVGRE are the most often referenced, seek to overcome these limitations by creating a virtual network overlay that scales past existing limitations and can scale across layer 3 boundaries. It is important to note that both proposals are limited to the logical network; neither provides a means of crossing L2 boundaries. Both also rely on multicast, which is typically eschewed by network architects as it increases the load on the network.

Problems arise when we start trying to implement overlay tunnels on physical devices, which need to communicate with hosts residing on these virtual networks. To resolve the communication problem between non-virtual and virtual networks, a gateway is required.

Virtual network gateways, for lack of a better term, provide translation from non-virtual networks to virtual networks. For example, inbound requests to public IP addresses must be translated and ultimately directed to the appropriate host. If that host resides in a virtual network domain, the device or service providing the translation must also be able to speak, as it were, the virtual network language. They accomplish this by implementing the appropriate endpoint technology required to participate in the virtual network. For example, a gateway might natively act as a vTEP (VXLAN tunnel endpoint) in a VXLAN-enabled virtual network, providing the necessary bridging technology that exchanges the encapsulated network traffic between IP networks.

The virtual network gateway enables communicating by bridging frames between VLAN-connected hosts and VXLAN tunnels, transforming Ethernet broadcast frames into the appropriate multicast protocol-encapsulated packets. In this way, a virtual network gateway can enable communication between application tiers, for instance, where a very dynamic web tier might be deployed using VXLAN to ensure scalability but communicates with a database host still residing on a traditional network that employs VLANs.

This is particularly important for key cloud and virtualization technologies that must interact directly with hosts on virtual networks and on traditional networks. It also provides a more topologically advantageous virtual endpoint through which intra-vm network traffic can be routed to reduce or eliminate tromboning traffic patterns.

Virtual network gateways will proliferate as the use of virtual networking continues to grow to support the increasingly dynamic and mobile nature of application workloads communicating with each other and requiring connectivity to services remaining hosted on more traditional network technologies.

Lori MacVittie is senior technical marketing manager at F5 Networks (www.f5.com).

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YOUR NETWORK. OUR CONNECTION.

By Hunter Newby

FirstNet – Follow The Money

During the first week of March 2013, FirstNet Chairman Sam Ginn gave a presentation to the all important Governors of the States within the United States at the National Governors Association meeting in Washington D.C. Chairman Ginn's comments were very telling about the inner workings of FirstNet and what its intended course and potentially largest obstacle may be.

He spoke of cost savings for the states and their local first responders as well as wireless coverage superior to that which the nation and all of its states has today. He also spoke of "local control in times of emergency". These were all very well thought out and delivered points intelligently summed up in a few quotes.

"This is the largest telecommunications project in the history of the United States," said Ginn. "It's going to cover every square meter in the United States. It's going to be able to penetrate the basements of Manhattan and cover the forest fires in the Sierra Nevada."

The existence of FirstNet proves the point that we must not have a true nationwide broadband wireless network, or this would not be happening. FirstNet is happening because we do not have the national infrastructure to support true, national broadband wireless, and we need it. Chairman Ginn goes on to back up his statement.

"...most nationwide cellular networks actually cover about 65 percent to 70 percent of the United States, from a geographical standpoint," said Ginn. "The broadband system that will be deployed by FirstNet will provide much more comprehensive coverage."

Notice the use of the words actually, cellular, broadband and comprehensive. The percentage of wireless coverage is actually (meaning truthfully) less than what most have been led to believe, and even that is of an inferior variety (cellular, not broadband). What FirstNet is being presented as is an honest, true and better offering. Of course the best sales pitch is always presented with the primary objection and how it is overcome as we see here in the next quote.

"The first [statement] that we typically get is: 'This is going to be a nationwide network, so we will lose local control, and we won't be able to run our own operations.' That's not conceptually what we're talking about here," said Ginn.

The "typical" statement (objection) is coming from the prospective buyer (governors) and it is centered on local control. The main issue is then interlaced with the word "operations" which would lead someone to believe that this is about network operations, seemingly a technical matter. Also, the word "conceptually" leaves the door open for interpretation, or negotiation, either way. The next quote is where the value proposition of the product comes in.

"Conceptually, what we're trying to do here is we're trying to put [wireless broadband] across your entire state, and then you can plug in the applications and the capabilities that you want, in the degree that you want them and in the amount that you want them to run your state," said Ginn.

"We're going to need to have your help and your cooperation," Ginn added. "We're going to make a number of visits to your state, because it's very important that we understand the facilities that you have and the requirements that you want, so we can take those back and feed them into a national architecture."

Notice the use of "your entire state, your, you" and how you can do this and run that how you want and it is all really good for you to have control over those things. Well, that's the pitch. How can anyone say no to that?

And then there was Maryland Gov. Martin O'Malley. He had a different definition of the term "local control". The governor wants the ability for states to negotiate deals themselves directly with partners to help generate revenue for the state.

"I hope that you'll also give us the capacity to let us work out leases that give us the priority – and give us the ability to pre-empt – but also allow us to raise some dollars at the local level, so we can buy and invest in the 700mHz network," said O'Malley.

Ginn said that the concept of negotiating deals with potential partners will be a key component of the ongoing plans for the FirstNet network, but he was not specific on how that would happen, or who would be negotiating.

"The question is: Could the individual states do better in negotiating with an AT&T, Sprint or Verizon, or could we cut a better deal nationwide?" said Ginn.

So, who is this FirstNet nationwide broadband wireless, largest communications project in the history of the United States, multi-billion dollar government funded network infrastructure really for – the first responders, or AT&T, Sprint and Verizon?

And, who is best to negotiate with AT&T, Sprint and Verizon – disparate, individual states, or a single entity, or board?

"If partnerships are negotiated by the FirstNet board, then it is especially important that a governor be included on the board," said O'Malley.

The governors want that especially important board representation to raise some local dollars from where the real revenue and purpose of FirstNet is derived – leasing the mobile network operators their brand new, nationwide, turnkey, multi-decade, Layer 1-2 spectrum and backhaul combination service.

The presentation by Chairman Ginn to the NGA and exchange with Gov. O'Malley was very helpful in shedding light on FirstNet's underlying directive and simultaneously providing clarity on what FirstNet needs in order to succeed – the "help and cooperation" of the United States' governors. FirstNet has just about everything else it could ever need, but without the governors' support, how will FirstNet ever get built?

Hunter Newby is CEO of Allied Fiber (www.alliedfiber.com).

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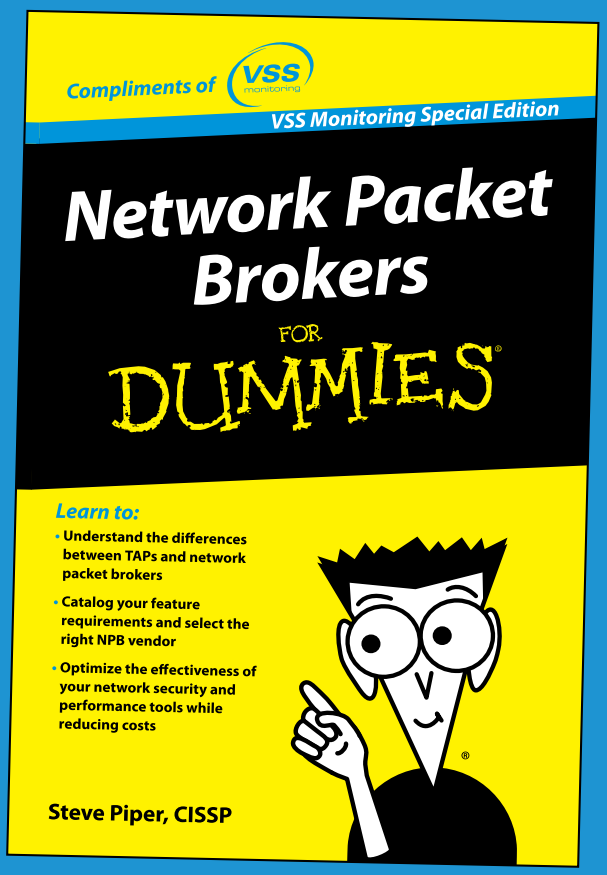

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By Ken Osowski

Life of DPI

Here we go with another magazine article about dots per inch, otherwise known as dpi. I'm joking, of course.

Fortunately, for you the reader I will be tackling another acronym with the same letters, but it stands for deep packet inspection, or DPI, and has much more meat on the bone as far as technologies go.

Acronyms are everywhere in high tech, and this is yet another example of the confusion they can create regarding which technology they are referring to. Dots per inch is a lowercase acronym, and deep packet inspection is an uppercase one, so this should help to eliminate any confusion. In this monthly column I will attempt to demystify DPI and show by example how useful this technology is for both private network owners and public network operators.

Packet inspection is the process by which network data traffic flows or sessions are examined. It can take the form of a network appliance that performs a specific function like a firewall or residential gateway, or it can be implemented as a purpose-built platform whose only role is to examine network data traffic for the sake of monitoring it and classifying it. In the appliance case, specific actions are taken based on what the DPI is looking for and what it finds. In the purpose-built case, traffic statistics are gathered in real-time and then reported on later. If policy management is associated with DPI to provide intelligent enforcement, then custom actions can be taken that help service providers to define specific subscriber services. Carrier-grade, purpose-built DPI platforms deployed in large service provider networks may in fact report on network traffic in real time, opening up a dynamic new view to what their network and subscribers are doing.

Deep Dive is a new standing column in INTERNET TELEPHONY that focuses on new developments related to deep packet inspection.

What makes deep packet inspection deep? Is there shallow packet inspection? These questions can be answered by looking at what the packet is referring to. Packets can be described at the mile-high view as representing either header or payload data. The header includes the sender's and recipient's Internet protocol address for network routing, protocol usage, and information to re-assemble packets at the destination. Payload packets represent the data, what format it is in, whether it is encrypted or not, and the application used to interpret the data. So the word deep in DPI refers to examining the payload data packets and not just the headers. Shallow packet inspection refers to the processing of packet headers. The ironic part of this is that DPI is processed at the upper layers of the OSI 7-layer model, in layers 5, 6, and 7. Payload packets represent content, and as we all know content is king on the Internet.

So how do DPI platforms examine and classify traffic? To classify traffic in real-time, DPI platforms compare the traffic they see with a database including thousands of known traffic signatures. These signatures are syntactically unambiguous definitions of how protocols and services are recognized – like SMTP or HTTP – and how they are used in the context of application usage such as Flash Video over HTTP. Creating and maintaining signatures requires constant vigilance on the part of a DPI vendor to understand how emerging protocol usage should be classified to create an accurate, fine-grained picture of network usage. And just like ongoing efforts to combat new Internet viruses, developing relevant signatures can involve employing network forensics when creating new signatures for recognition. For example, network users can mask their traffic to avoid classification of their lengthy P2P file transfers by using protocols that are not usually associated with P2P file transfers such as SIP or RTP.

There are a few DPI analogies that can be made with the recent movie "Life of Pi". The first is that one needs to get the signatures right, because, like the characters in the movie, they may not be who they appear to be. If signatures are not recognized properly, then the network analysis will suffer with inconsistencies or errors. Second, staying alive in a lifeboat and analyzing network traffic are both real-time activities. Real-time statistics reporting brings immediate clarity to what the network is doing by identifying who and what are consuming the bandwidth. When that information is used properly it can directly translate into improved network QoS and survivability. For enterprises and service providers utilizing DPI, it is not all about avoiding storms that may or may not bring down the ship, but it will certainly make for smoother sailing and a better balance sheet.

Ken Osowski is director of solutions marketing at Procera Networks (proceranetworks.com).

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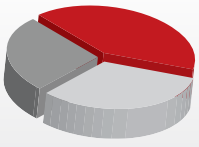

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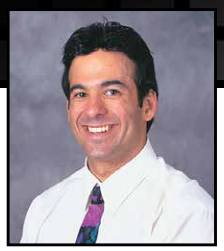



Continuity Planning 101 – A Continuing Educational Series

Hot Markets for Resellers – Regulatory Compliance and the Cloud

By Rich Tehrani & Max Schroeder

Recently government regulators have added some changes to the Health Insurance Portability and Accountability Act. The move has been interpreted by some as an attempt to slow down the migration to the cloud due to security concerns. The real question is whether any identified security breaches are due to the inherent architecture of the cloud or selecting the incorrect mix of products and services. This is a critical aspect as HIPAA also mandates that business continuity/disaster recovery be included in any deployment and cloud solutions provide the simplest and least expensive BC/DR solutions.

First and foremost, many cloud solutions are fully HIPAA compliant so that is not the real issue. The HIPAA Security Rule for all protected health information, applies to all data that is stored, accessed transmitted or audited so it is covers a lot of ground and can be complex. When assessing solutions you need to be thorough. Seeking the assistance of a HIPAA consultant or a reseller that specializes in cloud technologies is advisable. That said, many decisions are clear cut.

For example, fax devices and solutions are generally HIPAA compliant. E-mail, including most fax/e-mail combinations, is not. For enhanced data security, there are hybrid fax service solutions available that provide the convenience of an in-house fax server that also combine BC/DR features. Text messaging, normally considered risky at best, can be made fully secure using an application from a company named Protected Mobility. Health care services like visiting nurses medical office personnel can now communicate securely with a FIPS 140-2 certified HIPAA-compliant encryption technology and API suite. Solutions like the above provide the health care community with the necessary tools to be HIPAA compliant yet still utilize the latest in efficient cloud and communications technologies. A bonus for resellers is that many of these solutions also apply to Sarbanes-Oxley and the PCI DSS security standard developed by the PCI Security Standards Council. Used for enhancing payment account data security, the PCI DSS standard can also be an essential component of a HIPAA solution.

Companies in the health care industry are concerned about the new regulations as the fines for non-compliance can be significant and would welcome the guidance of experienced communications and cloud professionals. Sounds like a good reseller opportunity.

Max Schroeder is the senior vice president of FaxCore Inc. (www.faxcore.com). Rich Tehrani is the CEO and group editor-in-chief at TMC, and conference chairman of ITEXPO.


VoIP Regulation Debate Heats Up in Kansas

By William B. Wilhelm and Jeffrey R. Strenkowski

On Jan. 30, 2013, the Kansas Corporation Commission released an order finding that TWC Digital Phone LLC should be classified as a "public utility" due to its provision of fixed interconnected VoIP services in the state. The KCC determined that TWC must obtain a certificate of convenience and authority authorizing it to offer services in Kansas, and have an approved tariff on file. The KCC rejected TWC's arguments that the 2004 FCC Vonage Order preempted state regulation of TWC's service. Instead, the KCC found that unlike Vonage's nomadic service, TWC's service was fixed. Noting that the FCC's preemption decision was primarily based on the VoIP provider's inability to geographically locate the customer, it found the Vonage Order inapplicable to TWC's fixed service.

Two weeks after the KCC's order, legislation was introduced in the Kansas House of Representatives to deregulate VoIP and other IP-enabled services in the state. If passed, VoIP would remain subject to state Universal Service Fund and 911 obligations, but would not be otherwise subject to regulation by the KCC. The legislation was passed by the Kansas House of Representatives on Feb. 28, and was sent to the Senate for consideration.

The KCC's action to regulate fixed interconnected VoIP services follows a long line of cases in the states considering the limits of the Vonage Order with respect to fixed VoIP services. A number of state regulators over the years have struggled with this issue, with several concluding that fixed VoIP should be regulated in the same manner as traditional telecommunications services. The Kansas legislation, however, seeks to overturn the KCC's decision, and if passed, Kansas would join the ranks of several other states to have recently taken a legislative deregulatory approach to VoIP services.

William B. Wilhelm is a partner and Jeffrey R. Strenkowski is of counsel at the global law firm Bingham McCutchen LLP (www.bingham.com).

By Jim Machi

LTE (and thus Diameter) Interworking Moves Center Stage

As LTE rollouts occur and create yet another network (an awesome and fast one) with lots of subscribers, the need for these subscribers to connect to other networks arises. At first glance, these subscribers may look like they live in a bubble, since their faces are seemingly stuck to their tablets or smartphones all the time, but they don't actually live in a bubble. In reality, subscribers move around both physically and cyberspace-ically. If you just want to use the network to be a mobile on-ramp to the Internet and watch YouTube or get to Facebook faster, that's fine. But all of these subscribers actually move around one way or another, and the need to connect to these other networks becomes important for revenue generation. Additionally, the carriers proactively direct smart devices to Wi-Fi so they can offload traffic from their cellular networks.

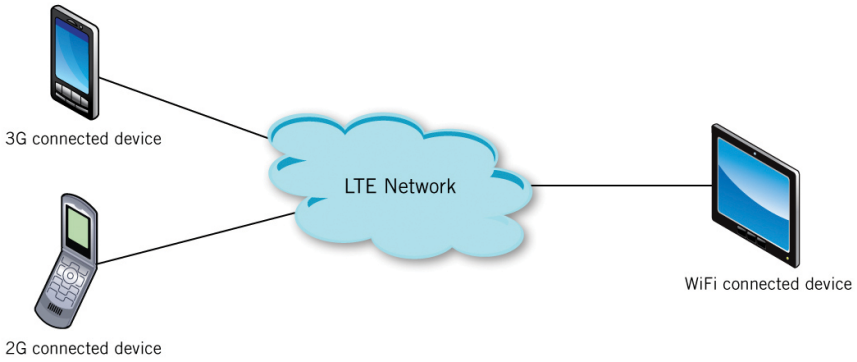
Since LTE uses Diameter as a signaling protocol, operators have a need for Diameter interworking with the signaling technologies used in other networks. This has given rise to the Diameter Interworking Gateway function, which moved onto the center stage at Mobile World Congress this year. It's a critical element to enable the successful rollout of LTE and a seamless user experience across different networks.

Let's take a look at some of the key use cases:

1. Legacy network interworking, namely signaling conversation from Diameter to SS7/MAP: Sub-scenarios here include roaming between LTE and 2G/3G networks, security hand-off and home location register subscriber authentication. Since LTE will only account for 10 percent of all access networks by 2017, this roaming use case will be critical for LTE-legacy network interoperability.

2. Wi-Fi interworking: Wi-Fi interworking requires signaling conversion from RADIUS to Diameter to connect the Wi-Fi network to the carrier's central traffic management and charging systems. This allows carriers to offer subscriptions that combine mobile and Wi-Fi connectivity into a single bundle.

3. IT interworking: This requires connecting the new Diameter-based systems, such as a PCRF or a Diameter signaling controller, to either SOAP or XML/HTTP so IT information systems, such as CRM and subscriber databases, can be used for policy and routing decisions.



4. LTE to IMS: On the surface, both LTE and IMS use Diameter, so why would interworking between these be required? Because, as you readers know, in the VoIP world, just because SIP is on one device doesn't mean it talks to another SIP device automatically. Different SIP versions might be used, or the vendors might have interpreted the specs just a little differently, both of which result in poor interworking. It will be the same story for Diameter, and I understand there are close to 70 different variants of Diameter alone right now.

So, if you are a network operator, are these issues real? Well, they're real enough that the 3GPP and GSMA have identified elements called Diameter Routing Agent (DRA), Diameter Edge Agent (DEA), and Diameter InterWorking Function (IWF), which is more closely aligned to the interworking described above. And these issues are real enough that addressing them took up a good portion of my Mobile World Congress week. And they're real enough that Infonetics identifies the Diameter signaling controller market in a recent report with an almost 40 percent compound annual growth rate through 2017.

Given that these issues are real, how do you address them? I mean, basically, if you look at the above four items as requirements, you need a box that connects the carrier LTE/IMS and policy control environment to existing 2G/3G/Wi-Fi and back office environments. You need a box that bridges different technologies and overcomes incompatibilities through configuration, not R&D. That is a fancy way of saying the use cases need to be considered ahead of time. Dialogic prides itself on any-to-any connectivity, as we have been in this game a long time and provide this service as our business. But even to us, this is not a snap. It's difficult. Nonetheless, the fast pace of change during the past 15 years proves that the communications industry is up to the challenge. Vendors will solve this problem, and subscribers won't even know what is happening in the background. They'll just know it works.

Jim Machi is vice president of product management at Dialogic Inc. (www.dialogic.com).

By Paula Bernier

No Boundaries

UNSi Breaks Through Carrier, Growth Barriers

Chances are good that you've never heard of UNSi. The company traditionally has been the kind of organization that just blended into the woodwork. However, UNSi is now breaking out in a big way – with an aggressive growth strategy, relatively new leadership, and a plan to reach $62 million in revenues by 2015.

All this is seems a fitting strategy for a company whose tagline is No Boundaries.

UNSi, a next generation carrier and provider of Internet and managed services that delivers custom connectivity solutions for multi-location business clients using both its own facilities and the network assets of a variety of local access carriers has moved, and intends to continuously and aggressively move, the needle upward in a big way in 2013 via planned acquisitions, investments in network expansions and strengthening of in-house technical operations.

"The company's blueprint for growth incorporates an organic growth plan coupled with a merger and acquisition strategy," Francis John told INTERNET TELEPHONY. "The company's total revenues grew by $8.1 million, or 41 percent, to $27.7 million in 2012. Our organic growth plan projects revenues at $34 million in 2013 and $62 million by 2015."

John, who joined privately-owned UNSi as president and CEO two years ago, was always an active investor in UNSi and served on the company's board of directors since 2006, was tapped to take the company to the next level through both organic growth and acquisition.

Growing Up

With executive management experience as chairman, CEO and president of public and private companies in the energy, health care, hospitality and telecommunications verticals, John has led more than 100 acquisitions, and raised more than $3 billion in debt and equity. While chairman and CEO of Key Energy Services, he reorganized and grew the small West Texas oilfield services company from $15 million to $1 billion in revenues. He's also served as executive vice president and CFO for pharmaceutical and dialysis company Delmed, a publicly traded company for which he staged a turnaround.

> "UNSi is becoming a leading single-source vendor for telecom services because of our extensive reach and the ability to provide premiere connectivity solutions anywhere in the U.S. to companies with multiple locations on one bill."
>
> - UNSi President and CEO Francis John

John's first move on the acquisitions front while at UNSi involved the purchase of IPNetZone, a next generation MPLS network provider which helped evolve UNSi as a major player in the managed network services space gaining their own advanced backbone network. At the time of the deal, IPNetZone had just five points of presence, but UNSi has since expanded the size, service capability and number of those POPs.

"Last year we established our own 18-node MPLS and carrier Ethernet network with the acquisition of IPNetZone, which allowed us to enhance UNSi's position serving both the enterprise and carrier markets," John told INTERNET TELEPHONY. "The acquisition strengthened our core services of providing intelligent connectivity solutions

for companies with multiple locations, monitoring and securing critical network infrastructures and consolidating telecom billing platforms.

"Over the past year we have invested in expanding our network in the Midwest and Southwest regions and adding several new NNI's with various wholesale carriers throughout the United States," John added. "UNSi is becoming a leading single-source vendor for telecom services because of our extensive reach and the ability to provide premiere connectivity solutions anywhere in the U.S. to companies with multiple locations on one bill, with one contact and one single set of SLA's for both enterprises and channel partners."

Why UNSi

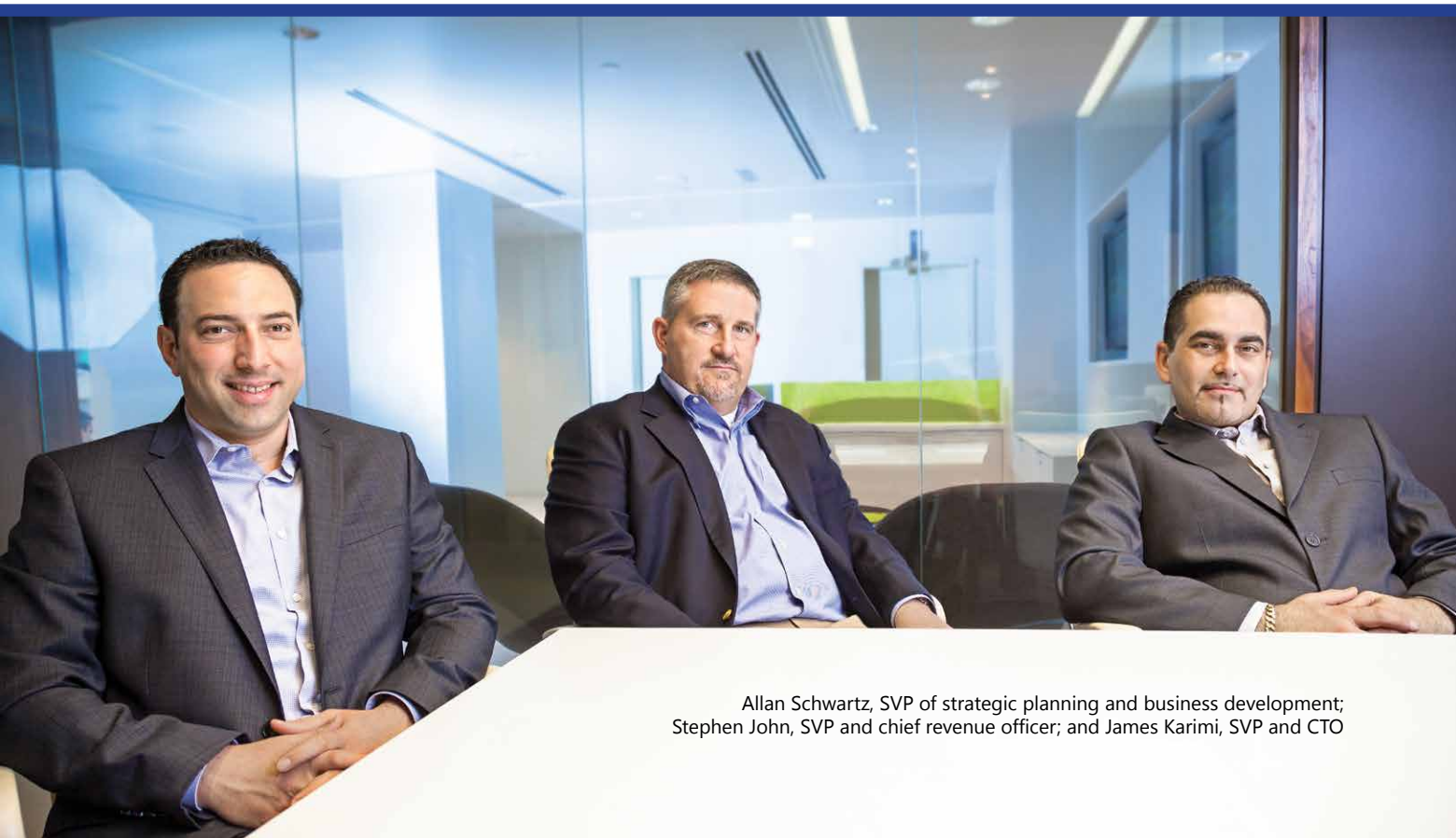
UNSi offers custom managed services to layer on top of transport services. Its product portfolio consists of Carrier Ethernet, Dedicated Internet Access and MPLS services. It provides these services out of 18 carrier-neutral facilities at which UNSi has NNIs to numerous carriers and application service providers. As a result, business customers are able to get back to the UNSi network, and from there access their cloud services, affordably and efficiently, explained Allan Schwartz, UNSi's senior vice president of strategic planning and business development.

He added that UNSi can provide connectivity anywhere in the U.S. because it has relationships with more than 2,000 providers; its network doesn't conform to the LATA-based boundaries to which incumbent and competitive local exchange carriers have traditionally been confined; and it can support customers using any kind of access method. The fact that the UNSi network model is based on metro Ethernet, he added, makes its solutions more cost-effective and scalable for customers, as businesses can "slice and dice" such connections for a variety of services as their needs require.

Cablecos, CLECs and ILECs "have their network footprint and then their network footprint ends somewhere, and then they have to go across the street. So they are really focused on selling within their existing footprints," Schwartz said. "We're not encumbered by the fiber in the ground," he added. "With our tagline of No Boundaries, you never have red zones. It's always green with us."

UNSi's services are backed up by geographically dispersed network operations centers with stringent disaster recovery and redundancy standards, 18 regional POPs, more than 150 NNIs, and a large broadband aggregation database.

Because UNSi typically doesn't own the transport facilities over which customer traffic flows, it also offers traffic management and monitoring as a value-added service to its customers. This is a broad offering that brings together under one pane of glass the multiple underlying service providers a customer is using, and looks at everything from the circuit, to the services running over that connection, to the servers and disk space, BGCP



Allan Schwartz, SVP of strategic planning and business development; Stephen John, SVP and chief revenue officer; and James Karimi, SVP and CTO

UNSi President and CEO Francis John

status, amount of bandwidth used and by what users, and more.

More than 250,000 buildings around the country are now within reach of UNSi solutions. The company has been particularly successful in the health care and retail verticals.

As an example of this success in the health care space, UNSi has outfitted a hospital corporation with what it describes as complex networking, broadband and hosted monitoring services in a multi-state area.

"Connecting over 150 hospitals, imaging centers, doctor's offices and data centers together in a seamless network allows the hospital corporation to run medical applications and transmit MRIs and electronic medical records directly to other doctors and specialists in a secure and un-interrupted networking environment," explained Paula Como Kauth, UNSi's director of marketing. "Previously this organization had many different broadband providers nationwide, and needed a company to manage its network and provide one network on one bill. Leveraging UNSi's relationships with over 2,000 service providers, UNSi made all the arrangements with each different provider (more than 50 providers) to consolidate services under one umbrella, one bill and take the headache away from its finance and IT departments, all the while locating additional savings and proposing ways to leverage newer technology to increase efficiency."

UNSi also provides a customer solution that includes DIA, Ethernet over copper, managed co-location, managed firewall, managed LAN, and managed router to the fourth most widely circulated daily newspaper in the United States.

"This organization came to UNSi to provide a highly secure and reliable networking solution with IP redundancy ensuring their company website and network, which supports hundreds of concurrent streaming content sessions daily, is always up and running with no interruptions," explained Como Kauth. "In October of 2012 during Superstorm Sandy, UNSi worked 24x7 ensuring its network was uninterrupted, which was due to the highly reliable redundancy solutions in place already and the network monitoring and management services provided to them by UNSi. They were one of very few businesses on the East Coast that did not lose connectivity of their network and site."

Reaching Out

To date, UNSi has relied primarily on an ecosystem of switchless and hosted application providers to bring its services to market. In many cases, those are wholesale relationships, which explains why UNSi has not been particularly high profile up until this point, said Schwartz.

Now UNSi is embracing the channel.

Last year the company launched its channel program, which interfaces with independent agents and master agents. As of late March, UNSi had 35 channel partners, including three master agents, and it's continuing to recruit channel partners. Master agent ADVODA Communications came aboard earlier this year, bringing with it a multi-location customer that is now leveraging UNSi for MPLS with cable modem backup infrastructure connecting into multiple data centers for redundancy. For this customer, UNSi has brought together nine underlying physical network providers.

Schwartz said UNSi's new channel-based go-to-market strategy more closely aligns with its strong engineering talent. UNSi has always considered itself a network engineering organization that helps customers create the networks they require, explained Schwartz, who said that the earlier agents can bring UNSi into the discussion, the more creative solutions they can put together for business customers.

M&A Expansion

As UNSi is looking to grow by acquisition and mergers, they are targeting companies that will help expand their network and go-to-market reach in key metro areas in addition to adding complimentary technologies to their existing service portfolio. Their niche is providing business class Internet and network services to companies with multiple locations nationwide. That's what they do best and why large franchise and health care organizations are key customers for UNSi. They streamline their connectivity services for companies across all of their company sites, aggregating both broadband and intelligent high speed, highly secure connectivity services like MPLS and VPLS. Companies trust them, their networks and skilled professionals. Companies don't have to worry about developing relationships with multiple carriers in each region they need connectivity in. They leverage UNSi's aggregation expertise and network reach to help them securely connect their employees, partners and office locations nationwide and just receive one monthly invoice vs. multiple vendor invoices.

Como Kauth added that the customer remains the center of the UNSi universe as the company continues to grow. In fact, she said, UNSi has launched an internal campaign to exceed customer expectations in every way.

Added John: "We are continually pursuing future technologies and acquisition targets to support our growth strategy, remaining ahead of the competition to exceed future client and market demands."

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By Peter Radizeski

A Look at the VAR World

Channel programs are chasing the VAR space heavy. There are estimates that there are more than 100,000 VARs in the U.S. Let's say that is true.

Using Pareto's Principle, 20 percent of that group – or 20,000 – will become their own cloud service provider or managed service provider. Some of those services will be delivered by white-label (where they still bill).

The bottom 20 percent will drop out of the VAR space. Why? The VAR space is a lot like the ISP space. Most of the ISP owners were techies who just wanted to create themselves a job that would be fun. They liked the tech side of the business and did not want to sell or market or worry about the financials. Even talking with Harry Belsford, we can agree that up to 25 percent of the VARs will not survive.

I am already seeing Microsoft partners migrate to programming or software integration, certainly not channel partners for the duopoly.

Then there is the next 20 percent from the bottom who do not want to sell or market. The duopoly – the telcos and cablecos – want partners who will actively sell their stuff. That won't be this group. They will be more like referral partners, but ones who want residuals. They will sell to their base or adjacent to their base. The median customer base is about 500 customers. They will hit 10 to 15 percent of that base with a new service in the first year. They will see the commission checks as a bonus, not a viable revenue stream.

In VoIP we see this with interconnects who still think of the premises PBX as the best choice for businesses, including their own. No matter the revenue model, some interconnects see their current business model as the most profitable they can be. Honestly, this is why many go with ShoreTel, Star2Star or the like – they still get to sell hardware, which is all they know. They get to make money on the install just like before. The recurring commission is a bonus, but in their eyes doesn't replace their collection of maintenance fees.

The duopoly will need to pitch their services inside these models, since only about 20 percent will embrace the duopoly as they are. Now 20,000 possible feet on the street is bigger than the agent space, but the agents are a true sales force. Everything else will be pockets of sales to an existing base of customers by VARs. I wonder if the channel heads grasp this.

Peter Radizeski is head of telecom consulting agency RAD-INFO Inc. (http://rad-info.net/).

Novus, Sennheiser Partner

Boutique telecommunications and IP distributor Novus is expanding its offering of Microsoft Lync-optimized and VoIP headsets through a distribution agreement with wired and wireless office call center and VoIP headset equipment supplier Sennheiser. According to Novus, "Sennheiser is the acknowledged world leader in microphone technology, RF-wireless and infrared sound transmission, headphone transducer technology, and in the development of active noise-cancellation." Sennheiser recently expanded its line of Microsoft Lync-optimized business phone headsets, introducing new models in its wired Circle Series and wireless DW Series.

Bigcommerce Launches Global Partner Program

Austin, Texas-based Bigcommerce has launched a global partner program for web professionals, designers and resellers. The company sells an e-commerce platform that it says allows SMBs to quickly set up an online store. Partners accepted into the program will receive co-marketing materials and promotional opportunities; an assigned partner executive who will provide onboarding, product training and ongoing support; new commission options; and joint social media and PR initiatives.

Ingram Micro Expands HCS

The North American services division of Ingram Micro Inc. had released a beta version of its Cisco-powered Hosted Collaboration Solution, which initially was available only to select Ingram Micro channel partners. The company more recently made the cloud solution available to qualified Cisco channel partners across the U.S. and Canada. Ingram Micro Inc. is a wholesale technology distributor specializing in IT supply. It is a distribution partner for Cisco technologies as well as a service provider for Cisco HCS.

Atos Taps MATRIXX Software

MATRIXX Software has announced a global reseller agreement with Atos, an international IT services company. Atos will resell the MATRIXX Charging Engine as the core component in its Next Generation Business Support Systems for Communications Service Providers. The Atos Next Generation BSS provides CSPs a cost effective platform to launch new offerings for LTE. "With LTE, new charging models such as shared data bundles are a big opportunity for CSPs to differentiate their offerings. But rolling them out quickly presents challenges for network and IT groups due to the coexistence of LTE with existing network infrastructure, including the respective control and charging layers," said Bruno Fabre, executive vice president for the global telco, media and technology market at Atos. "Our vast BSS experience and system integration capabilities coupled with the most modern, scalable and flexible technology from MATRIXX Software will empower CSPs to rapidly roll out new LTE offerings while operating the underlying control and charging infrastructure economically."

Maxatec Brings MDM to U.K. Channel Partners

Maxatec, a value-added supplier of specialist IT hardware, software and services to the mobile enterprise, is now distributing SOTI's mobile device management solutions to its U.K. channel partners. Under the new distribution agreement signed between the two companies, Maxatec will distribute SOTI's MobiControl software to its channel partners.

Scout Analytics Unveils Usage Data Hub

Cloud-based recurring revenue management company Scout Analytics has launched Scout Usage Data Hub, an analytics platform that transforms usage data into actionable metrics and custom reports. The company also unveiled new predictive modeling and segmentation capabilities within its Yield, Rate Plan and Customer Success Optimizers that empower marketing, sales and customer success teams to reduce churn and maximize customer lifetime value. These features aid subscription businesses in identifying retention risks and in up-selling and cross-selling. "We've calculated that subscription businesses are missing a staggering $40 billion or more in revenue opportunities each year," said Matt Shanahan, senior vice president of strategy at Scout Analytics. "Usage data is the foundation to understanding customer value and identifying hidden revenue opportunities. Scout empowers businesses to intervene with high risk customers, and turn up-sell or cross-sell opportunities into revenue." Scout Usage Data Hub is available immediately and starts at $1,500 per month. Individual Optimizers start at $750 per month.

CyrusOne Partners with Infinera

Global data center services provider CyrusOne has tapped Infinera to provide DTN, 100gbps photonic integrated circuits to provide high-speed cloud-based services between CyrusOne's major facilities and third-party carrier hotels in Austin, Dallas, Houston, and San Antonio, as well as to customer data center locations. The DTN platform allows CyrusOne to quickly and easily provision bandwidth circuits on its own schedule and as needed. "The deployment of Infinera's Digital Optical Network provides us with a robust platform for high-speed cloud-based services that will ensure service flexibility, minimize bandwidth costs, simplify network operations, and consolidate network architecture. In addition, the Infinera solution reduces latency for active-active disaster recovery requirements," said Josh Snowhorn, vice president and general manager of interconnection at CyrusOne. "Infinera is one of the most respected optical telecommunications suppliers in the world. To provide this level of technology and support demonstrates our level of dedication to the CyrusOne Texas IX platform."

Mobility, Cloud Services Considered Top Network Challenges

A recent survey by CommScope shows that enterprise mobility and cloud services beat out infrastructure intelligence, 40/100GbE and green power initiatives as the top challenges facing company networks around the world. More than 1,100 IT professionals from 63 nations participated in the study. According to the survey, an average of 43 percent of all phone calls originating within an enterprise facility involves a mobile phone, yet only 30 percent of these businesses say their carrier-provided in-building signal coverage and capacity are sufficient to handle the mobile traffic. This had more than three-quarters of respondents admitting that employees had to roam around the office, or even go outside, to get an adequate signal for a call. Forty-four percent of surveyed respondents also pointed to cloud services as a top game-changer and expect that importance to grow. While 21 percent currently rely on cloud technology to run more than half of their applications, 52 percent believe that by 2017 more than half of their applications will reside off-site in the cloud.

Alike Backup and DR Capabilities Expanded

QuorumSoft, a provider of the best backup and disaster recovery solution for Citrix XenServer, is expanding the capabilities of its Alike solution to support the Microsoft Hyper-V hypervisor. The new Alike Version 3.0 will give companies a single backup and DR solution to manage their multi-hypervisor environment. "Expanding our support for Hyper-V is a critical component in our long-term technology roadmap and a direct response to market demand for real innovation in backup and DR protection for multi-hypervisor environments," said Phil Baskette, co-founder and CEO Quorum Software Inc. "Delivering this expanded capability is a major milestone and one that will deliver significant new value to our global customer base."

Cbeyond Intros Cloud-Based Certified Application Servers

New Certified Application Servers, a service for the small and mid-sized business market, are now available from Cbyeond. This enables users to securely access and run their most frequently used business productivity applications from anywhere, any time and on any device. Cbeyond's Certified Application Servers allow businesses to take an existing enterprise application and associated data to a secure cloud environment and give them confidence that the migration, performance and operation of that application in the cloud will mirror their on-premises server experience.

IBM Lands $267M Contract from State of Ohio

Big Blue has won a $267 million contract from the State of Ohio to build a private cloud computing system as part of a 10-year project aimed at updating the State of Ohio Computing Center, the state's information technology infrastructure. The project will also include the use of other hardware, software and services from IBM to improve data center operations and increase services for state agencies, according to Stu Davis, the State of Ohio's chief information officer. "This is a foundational component of Ohio's IT Optimization efforts that will result in savings and culminate in the consolidation of the state's IT assets into a primary state data center," Davis said. "This provides agencies with services they require and ensures we are spending taxpayers' dollars once."

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By Tony Rizzo

What Oracle Is Doing with Its Tekelec Acquisition

In February Oracle bought Acme Packet. And in early March it picked up Nimbula, a startup specializing in private cloud infrastructure management software. As of late March, when this issue of INTERNET TELEPHONY was getting ready to head out the door, Oracle had done it again – swooping in to snap up Tekelec, which only a short time ago had decided to take itself private.

Tekelec is certainly no stranger in the communications space. It has delivered a number of communications solutions over the years and most recently it has been known more specifically for communications capabilities that handle network signaling, policy control, and subscriber data management solutions for communications networks. Oracle, meanwhile, believes that these services are becoming of vital importance, and it sees Tekelec as the smart way to own a reputable solution here. It's not exactly a strategy that is hard to argue against.

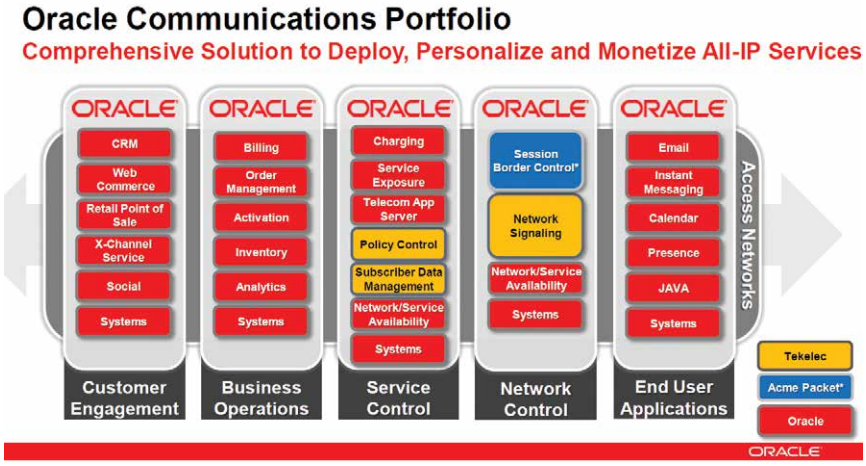
Oracle's view of the communications market is that it is entering a new phase of rapid growth, and it clearly has targeted the space as a means for Oracle itself to develop what it hopes will be significantly enhanced global revenue opportunities. We look at it as a strategic reach – by no means is Tekelec a tactical piece of tuck-in technology. Rather, it adds a core technology solution to what Oracle clearly believes it needs to deliver on to offer a complete, one-stop communications solution for today's communications market.

Without a doubt, the proliferation of smart devices, mobile applications, and connected services has led to an exponential and unprecedented increase in network signaling and data traffic. Service providers now have a major – and hurried – need for intelligent network control and security technologies to address ever increasing network workloads and subscriber security and privacy concerns. Perhaps more important, the communications players also need significant help in both deploying and monetizing cloud and over-the-top services.

Tekelec's solutions allow communications vendors to deliver, control and monetize personalized communications services. Tekelec's network signaling, policy control and subscriber data management solutions complement Oracle Communications' mission-critical operational support systems, service delivery platforms, and business support systems, and are expected to help service providers efficiently allocate and monetize network resources. The acquisition will allow Oracle to deliver quickly on this.

Ron de Lange, president and CEO, Tekelec agreed with our assessment: "In an increasingly mobile and social world, customer experience is about optimizing network performance and personalizing services based on what engages, moves, and inspires people. Together with Oracle, we expect to accelerate the pace of service innovation by helping service providers transform the way they manage and monetize the explosive growth in signaling and data traffic on their networks."

A picture here is worth well more than a 1,000 words, so let's take a look at what Oracle's entire platform consists of, and note specifically where both Acme and Tekelec fit into the puzzle.



As we mentioned earlier, this clearly isn't simply a minor technology tuck-in buy (nor was Acme). We can define the three key solutions Tekelec brings to the game for Oracle as follows:

- Network signaling acts as the network's nervous system and allows service providers to manage network signaling traffic. Tekelec's Diameter/

SS7 solution provides a flexible, scalable signaling solution that covers 2G, 3G, and 4G LTE networks. Integrated applications include local number portability, equipment identity register, 3G to Voice over LTE migration, load balancing, congestion control, and protocol mediation. The platform also provides easy interconnection to roaming partners and over-the-top application providers.

- Policy control acts as the network's brain and allows service providers to apply business rules governing how network resources are allocated and services are defined. Also scalable and flexible, Tekelec's solution allows its customers to define policies, and apply them across an entire network – from the network core out to the edge where mobile devices and over-the-top applications sit. Customers can easily create, launch and monetize communications services, including application and content-based service tiers.

- Subscriber data management acts as the network's memory and allows service providers to personalize the experience based on user characteristics. Tekelec's solution delivers dynamic subscriber data for policy control and routing signaling traffic. This is the piece of technology that allows carriers to deliver personalized services specifically based on subscriber data. Customers are able to deliver a consistent user experience regardless of network device, application and location – this is a key customer experience issue. Finally, this component is responsible for safeguarding the security and privacy of subscriber data; for the end user/subscriber this is critical.

Where do we think Oracle truly sees the value in the partnership? The Tekelec technology of and by itself is impressive, but that would not be enough for Oracle. Keep in mind that we are speaking here about Oracle seizing the moment to create a new strategic revenue stream for itself. Toward this critical end, Tekelec's three solution sets brings the following to Oracle's game:

- network signaling: Over 300 customers in over 100 countries;
- policy control: 60 customers - including 51 Tier 1 service providers; and
- subscriber data management: 46 customers across 33 countries;

Fifty one tier 1 service providers.

What's not to like - or rather love - this deal? For Oracle the numbers shown in the second set of bullets above are just as critical to it as the solutions themselves.

The graphic above shows how the Oracle platform puzzle ends up coming together when the Oracle, Tekelec and Acme pieces are all integrated into a whole platform. Kudos to Oracle for completing the puzzle. The technology side is now complete – or rather it will be once both the Tekelec and Acme deals formally close. All that remains is for the sales teams to kick into high gear and start pulling in the new revenue.

Oracle's view of the communications market is that it is entering a new phase of rapid growth, and it clearly has targeted the space as a means for Oracle itself to develop what it hopes will be significantly enhanced global revenue opportunities.

Ultimately how much the communications business adds to its top line as a result of these Oracle purchases will be the report card that counts. It will be a number of quarters before we will know the grade, but a B+ and likely higher is in the cards.

Tony Rizzo is senior editor of TechZone360, a content community within TMCnet, the online entity of INTERNET TELEPHONY parent company TMC.

By Paula Bernier

New Developments in Network Virtualization, SDN

NTT's Enterprise Cloud Goes Global, Major TEMs Reveal SDN Strategies

In the March issue of INTERNET TELEPHONY, we talked about the flurry of activity – and acquisitions around – software-defined networking. In the April issue, TMC leader Rich Tehrani asked: Are You Ready to be a Software Telco? And now, in this issue, we look at the most recent developments on the SDN front, which includes new data on the level of deployment of SDN, an update on NTT's commercial SDN-based service, and the strategies of several leading telecom equipment vendors.

If you're not yet familiar with SDN, it's an architecture that separates the control and data planes of the network and automatically looks at flows in the network, understanding the requirements of those different flows, and using the network to provide those flows with the appropriate bandwidth and other network resources. This applications-first networking mindset is a significant change from how networks are designed and work today.

SDN Deployment

It's early days for SDN. But it's being used, or considered, for a variety of applications – including to interconnect data centers, and to allow broadband service providers to operate their networks more efficiently and flexibility so they can better respond to the over-the-top threat.

"Nearly 1/4 of the enterprises we interviewed for our new data center and SDN survey have already deployed SDN technology in their data centers, and 1/3 plan to do so by the end of next year," said Sam Barnett, directing analyst for data center and cloud at Infonetics Research. "This is impressive given the nascent nature of most SDN technologies and the relatively sophisticated IT community required to implement them."

"IDC believes that the rapid global growth of data and video traffic across all networks, the increasing use of public and private cloud services, and the desire from consumers and enterprises for faster, more agile service and application delivery are driving the telecom markets toward an inevitable era of network virtualization," said Nav Chander, research manager for telecom services and network infrastructure at IDC. "SDN and large-scale network virtualization will become a game shifter, providing important building blocks for delivering future enterprise and hybrid, private, and public cloud services."

IDC's Chander added that CSP networking of large data centers is the first area of focus for SDN.

NTT's Enterprise Cloud

Indeed. NTT Communications has been an early adopter of SDN with the launch of its Enterprise Cloud, a service targeted at multinational organizations looking for highly flexible compute and other data center resources and capabilities. Enterprise Cloud, an SDN-based virtualized infrastructure-as-a-service offering, is now available via multiple data centers around the world. In June of 2012 the service went live at data centers in Hong Kong and Japan. This February it was added at data centers in California and Virginia, England, and Singapore. And in March it opened data centers in Australia, Malaysia and Thailand.

Nayan Naik, director of product strategy for the data center services business unit at NTT America Inc., told INTERNET TELEPHONY that the company's SDN architecture (based on OpenFlow controllers from NEC) allows for automation and virtualization of the network. That lets customers adjust their resources as needed and offers the ability to connect their private networks to the cloud quickly and seamlessly.

The NTT Communications Enterprise Cloud

Global solutions: With service in eight countries and nine locations, Enterprise Cloud offers seamless global linkage, supported by global data backup, meeting the needs of multinational businesses, especially those with strategic developments in Asia Pacific.

Cost optimization: Clients architect their cloud according to need, enabling just the right resources to be utilized and pay-per-use invoicing.

Flexibility & Scalability: Clients have 100 percent guaranteed compute resources and can begin with as little as 1 GHz CPU, 50GB storage and GB memory, increasing incrementally to meet their overall requirements. With SDN/Openflow, BoD allows for faster backups.

Simplicity: An SDN-driven portal gives clients a single dashboard to obtain real-time resource use; to configure virtual machines, firewalls and load balancers; and to make other add/modify/delete changes without opening a support ticket.

Free access to service: Clients who use NTT Com's Arcstar Universal One, MPLS-based VPN, which reaches more than 140 secure data centers worldwide, gain access to the Enterprise Cloud over this connection without charge.

High availability: NTT Communications' Enterprise Cloud features service level agreements of 99.99 percent availability and advanced security through a variety of options.

That's happening today, and delivering significant benefits to NTT Communications customers. For example, NTT Communications reports that one manufacturer customer has "realized dramatic results after integrating systems to the cloud that had become scattered as a result of rapid globalization: From 1700 servers to 500 servers and 500 virtual machines; from 200 locations with an on-premise system to 50; and from 20 network carriers to 1." Meanwhile, a retailer was able to reduce its IT costs by going from five data centers to one, and move to centralized operations, by adopting Enterprise Cloud. And a large media company was able to reduce its overconcentration of data centers in one metropolis and total cost of ownership for ICT systems by migrating from a system with 500 servers to an integrated platform using cloud hosting and 90 servers.

NTT Communcations' long-term vision is to leverage SDN to enable enterprise customers to shift workloads among international locations without requiring massive reconfigurations of virtual machines and other network assets. That, Naik said, should begin to happen in 2014.

Another thing that SDN and Enterprise Cloud will help enable going forward, he added, is the introduction of services, both from NTT Communications and from third-party cloud providers. An early example of this is NTT Communications' recently introduced recovery-as-a-service portfolio, which includes cloud recovery and archiving that allow enterprises to back up their workloads, select from various disaster recovery options, and more.

Alan Weckel, vice president at Dell'Oro Group, said: "For the first time in the market, customers are consolidating data centers and connecting those servers to the network with three different speeds, gigabit Ethernet, 10 gigabit Ethernet, and 40 gigabit Ethernet. Moving infrastructure towards the hosted environment of the cloud and looking towards software-defined networking is resulting in a battle for supremacy in data center. It is also causing unique requirements and solutions across the customers. The result is that there has never been a better time for new entrants or a better opportunity for existing vendors to gain share."

More M&A

This helps explain the wide array of SDN upstarts, many of which already have been snapped up by established network infrastructure providers.

As discussed in INTERNET TELEPHONY's March issue story on SDN, VMware Inc. in July cut a deal to buy Nicira Inc. for $1.26 billion. That same month, Oracle followed suit with its purchase of privately owned Xsigo. Things picked up on the SDN acquisition front again in November, with Brocade revealing plans to acquire Vyatta, and Cisco announcing its intent to buy privately held Cariden Technologies, which reportedly has done some SDN work. Then, in December, Juniper Networks quietly made its move to bring SDN startup Contrail Systems into the fold.

Since then we've seen at least one more SDN-related acquisition. That one had F5 Networks Inc. buying LineRate Systems, which brings to the table layer 7+ networking services technology, intellectual property, and engineering talent.

"While SDN conversations have primarily been tied to L2-3 networking, F5's view is that organizations will be able to make their systems much more nimble and efficient by combining the application intelligence of layer 7 – a key area of LineRate's technology – with SDN efforts further down the stack," Jason Needham,

vice president of product management and product marketing at F5, told INTERNET TELEPHONY. "With the LineRate acquisition, we saw an opportunity to extend the programmability of our application delivery-focused offerings and enhance the capabilities we can offer customers. Through a broader lens, the acquisition is very much aligned with our continued approach of adding intelligence to the network and scaling services across x86 hardware. Looking forward, customers will see advances to F5's existing portfolio of BIG-IP products, as well as new offerings to the market around SDN."

Stand-alone Startups

But while many SDN specialists recently have been digested by larger organizations, several remain as stand-alone entities. The latter list includes Big Switch Networks, Compass-EOS, Embrane, ConteXtream, PLUMgrid, Midokura, and Pica8.

Compass-EOS on March 12 formally announced the r10004 core-grade modular routers, based on the company's own chip-to-chip direct silicon-to-photonics implementation, and designed to increase network capacity and speed.

The devices already are at customer locations around the world. For example, a voice, Internet and cable provider in Japan uses the routers at the termination points of its transpacific high capacity network, and a U.S.-based media and technology company is leveraging the solution for high-bandwidth connectivity between the data centers that power its content delivery network.

"A major concern for service providers today is how to scale their networks while simplifying operations and improving utilization. We set out to address that concern by building a new breed of routers," said Gadi Bahat, CEO of Compass-EOS, whose investors include Cisco Systems, Comcast Ventures, T-Ventures, as well as Benchmark Capital, Crescent Point, Northbridge Venture Partners and Pitango Venture Capital. "Our revolutionary router design built on icPhotonics simplifies the network, brings about cost savings, moves service providers toward SDN and network virtualization, and allows for better utilization."

Another SDN company that recently came out of stealth mode is three-year-old Pica8, which raised $6.6 million in funding from Vantage Point Capital, and offers what it bills as the world's first open, hardware-independent switching system. The company's switches already are in production networks, including with Baidu and Yahoo Japan, Steve Garrison, vice president of product marketing at Pica8, said.

At the moment, these industry giants are using the Pica8 solution as a top-of-rack replacement for legacy switches, said Garrison, but he added that these companies brought in the SDN solution provider to help them migrate to a programmable fabric. An SDN-based programmable fabric, he explained, will make it easy to move workloads between racks, rows or data centers, which today is a challenge.

Garrison added that although Pica8 today sells switches, it's doing that just to get the marketing moving, and that it's long-term plans are to sell only software. He added that Pica8 is more of a competitive threat to legacy switch vendors than anyone in the SDN space because it enables users to customize its OS, which has never before been done in switching. And, he added, users can program the Pica8 solution with external devices as long as they support OpenFlow.

Pica8 likes to talk about what it sees as the three stages of SDN. Stage one involves the use of OpenFlow. Stage two, which is where we are today, has Pica8 customers building solutions based on its reference design, which it made available in December and was expected to provide more detail on in the March/April time frame (after this issue went to press). Stage three is what Garrison referred to as the "ah ha" stage, where companies figure out what kind of new capabilities and services SDN can make possible.

To rewind to present day and stage two, the reference architecture is a development solution that combines the popular Open vSwitch 1.7.1 virtual switch with OpenFlow 1.2 implemented in Pica8's PicOS operating system. Garrison said this spring Pica8 would have a better understanding of how its 20 cloud provider partners have been playing with the reference architecture in their labs so it can decide where to take the solution next.

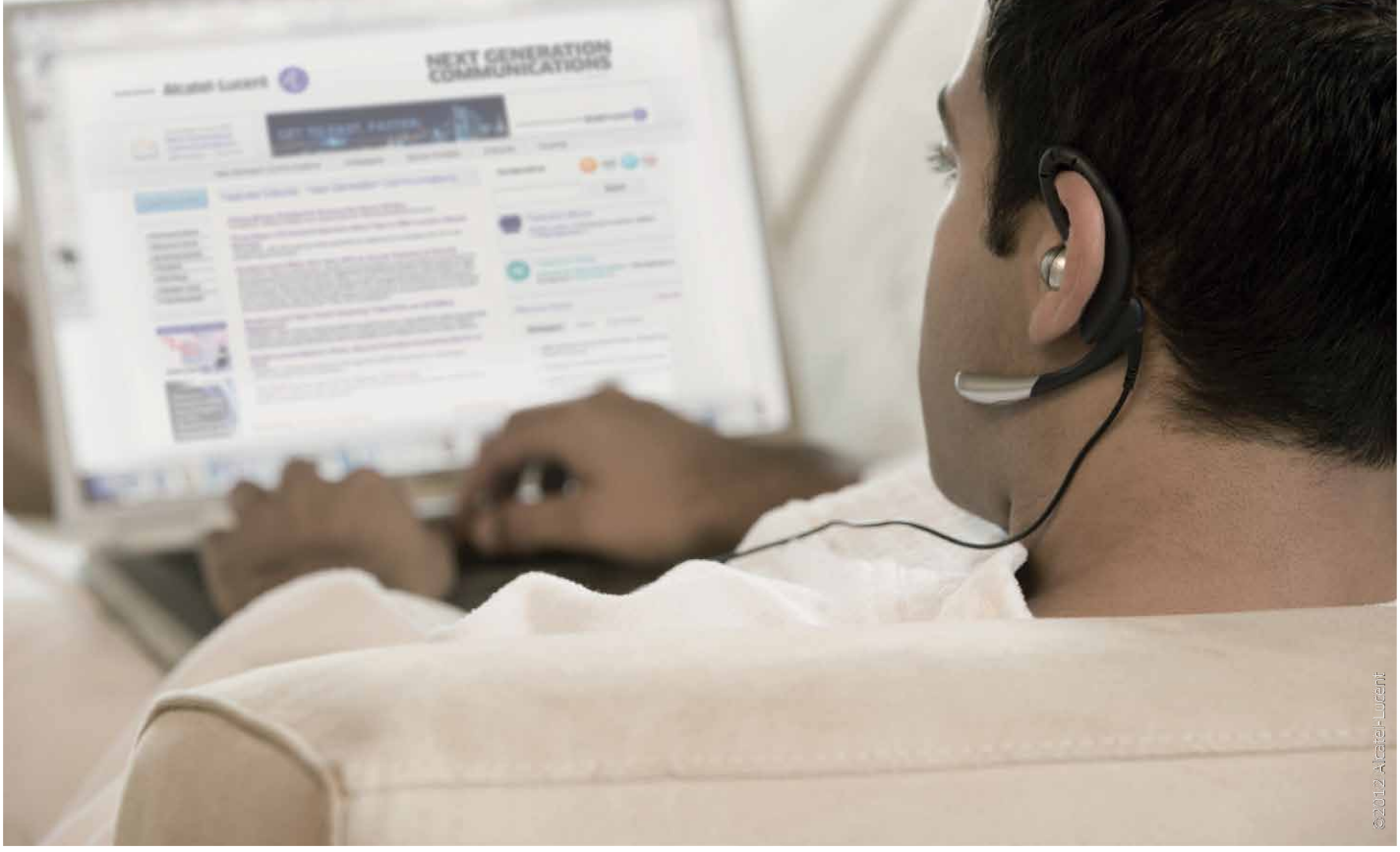
It also should be noted that Pica8 is using an open source controller called Ryu, which came out of NTT.

"The Ryu open source controller helps data centers enjoy the benefits of SDN by providing a platform for the deployment of a wide range of network applications including cloud services," said Fujita Tomonori, RYU chief maintainer at NTT Software Innovation Center. "We are proud to see Ryu being leveraged for cloud services and excited to see Pica8's ongoing work to commercialize NTT Laboratories' efforts and bring value to their customers and partners."

TEMs Tell Their Stories

Meanwhile, leading telecom equipment vendors Alcatel-Lucent, Ericsson and Juniper Networks have fleshed out their SDN stories. And in early April, just as this issue was going to print, there was at least one report circulating indicating that several major vendors as well as some SDN specialists – including Alcatel-Lucent, Arista Networks, Big Switch, Brocade, Cisco, Citrix, Dell, Ericsson, HP, Intel, Microsoft, aand NEC – have joined an open source SDN effort called OpenDaylight. A Computer World story compared OpenDaylight to Hadoop and WebKit.

Alcatel-Lucent's SDN venture Nuage Networks last month announced an open software-based solution that it says addresses key data center network constraints that limit cloud services adoption. The solution, called Virtualized Services Platform, is aimed at enabling enterprises such as banking, health care and utilities, as well as large Internet-based companies like telcos, scale and secure their clouds. Trials of this solution launched last month with U.K. cloud service provider Exponential-e;



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AT THE SPEED OF IDEAS™

French telco SFR, Canadian telco Telus, and U.S. health care organization University of Pittsburgh Medical Center. VSP is slated for general availability toward the middle of this year.

"It's exciting to start my first day as CEO of Alcatel-Lucent with an announcement that expands our addressable market. Alcatel-Lucent's SDN strategy and the Nuage Networks branded portfolio … builds on the cloud orchestration we already provide with our CloudBand Management System," said new Alcatel-Lucent CEO Michel Combes. "We are very well positioned to help telecom and cloud service providers build large scale cloud infrastructure and services, opening up new revenue opportunities for our customers and ourselves."

Ericsson in February introduced the Ericsson Cloud System, which will package some of the company's existing applications and equipment in a virtualized format, and pair them with an OpenStack-based KVM hypervisor called Ericsson Cloud Executive Environment. Existing parts of the solution include the Ericsson Blade System and the Ericsson Smarter Service Router, as well as the company's operations support system, which under this new solution is being called the Ericsson Cloud Manager. The company also plans to develop an app store of telecom applications as part of the offer, Magnus Furustam, vice president of product area core and IMS at Ericsson, told INTERNET TELEPHONY earlier this year. He added that Ericsson Cloud System will be an open environment, so will support both Ericsson apps as well as third-party software.

At Mobile World Congress, Ericsson demonstrated two service provider SDN applications using Ericsson Cloud System. Those applications included network virtualization and service chaining, both of which will be delivered commercially by Ericsson starting in the fourth quarter. Service chaining, Furustam explained, enables network operators to create what are essentially catalogs of network resources and related policies (like QoS parameters and bandwidth) to which applications can be applied as they move onto the network.

Since buying Contrail Systems in December and detailing its SDN strategy in January, Juniper more recently has unveiled new software and services aimed at mobile service providers.

"Mobile networks are perfectly suited to benefit from Juniper Network's SDN approach," said Bob Muglia, executive vice president of the software solutions division at Juniper. "Exponential mobile data usage coupled with an increasingly wide array of multimedia smartphones and tablets put enormous demands on high-performance networking."

That includes the new Juniper Networks Junos Space Services Activation Director application, which enables service providers to provision thousands of seamless services, including MPLS and Carrier Ethernet for mobile backhaul. Also new is the Juniper

What's the Difference between SDN and NFV?

While SDN is typically associated with the separation of the control and data planes, as well as with OpenFlow, network function virtualization is aimed at virtualizing functionality such as firewalls, IDS and more so they can run on off-the-shelf hardware as opposed to packaged as specialized appliances, explains Mark Durrett, Overture director of marketing.

The two technologies are related, he adds, but NFV doesn't necessarily require the separation of the control and data planes, or the use of OpenFlow.

Travis Russell, technologist of strategic marketing at Tekelec, adds that service providers such as telcos tend to think of SDN as the longer term goal, but are now focused on NFV, which has to do with virtualizing specific aspects of the network related to functions like deep packet inspection and the HSS, as two examples.

TMC's Rich Tehrani talked about this important new trend in his column, titled "Are You Ready to be a Software Telco?", in the last issue of INTERNET TELEPHONY.

Networks Mobile Control Gateway running as a virtualized function on the JunosV App Engine to provide signaling and control functions on 2G, 3G and LTE networks. It was developed in partnership with Hitachi. And Juniper's JunosV App Engine centralizes the development, provisioning and management of Juniper Networks and third-party applications on a common platform.

Juniper says that, based on data from ACG Research, it expects customers of these solutions will see up to 65 percent in opex and up to 54 percent reduction in total cost of ownership.

"With mobile traffic growth exploding, operators need a virtualized mobile packet core for scaling capacity up and down to both increase service velocity and control costs," said Ray Mota, managing partner for ACG Research. "Our research has validated that Juniper's virtual Mobile Control Gateway has a 54 percent lower total cost of ownership over five years and the time to deploy the initial implementation is 46 percent faster than a standalone appliance-based solution. In addition, the virtual MCG provides incremental capacity additions in 87 percent less time, enabling operators to address the volatility of mobile control plane traffic driven by smartphones and smartphones apps."

Overture in March introduced its Ensemble Open Service Architecture and the first product family, the 6500 series, under the Ensemble OSA umbrella. The Ensemble OSA architecture, which embraces the principles of SDN and network function virtualization, brings the benefits of cloud – including automation, accelerated innovation, and more – to the metro edge, according to Overture Director of Marketing Mark Durrett.

The 6500, which comes in three versions, is the first and only carrier Ethernet 2.0 aggregation solution that can support any access method, says Vijay Raman, Overture's vice president of product management and marketing. It will initially be available for active Ethernet over fiber. Later releases will be for Ethernet over copper, Ethernet over SONET/SDH, and Ethernet over TDM. Use cases for this product include multiservice aggregating; ring homing, which Overture says is big in cellular networks; and wholesale Ethernet.

The Ensemble OSA architecture has three layers. The resources layer includes elements that provide connect, compute, and storage functionality. They may consist of physical devices such as switches, servers and storage arrays, and/or software functions running on virtual machines. The orchestration and control is software for data plane control, resource abstraction, and network management. And network applications include software packages that leverage the orchestration and control part and tie into a service provider's back office systems and that of their business partners to create a service or network function. Overture offers some of the components found within each layer, but Durrett says the company doesn't expect to do it all for all service providers, so it built OSA as an open platform, and all the layers are connected via open APIs.

Overture last year did a proof-of-concept for OSA with two applications, a bandwidth on demand one and virtual firewall one. As part of that work, it did basic orchestration and control (including OpenFlow and VM support), and at the resources layer it added OpenFlow and another API to the 6500. It tested all this and shared it with Overture's carrier customers. Then it started investing in this in a big way – creating and hiring a team. This year Overture is working on customer proofs-of-concept and custom projects; building out an ecosystem partners; doing the first customer installs; and introducing Ensemble-powered hardware. By next year, Overture expects to introduce a wider array of Ensemble OSA products; move all its products under the Ensemble umbrella; integrate with third-party applications and devices; and do additional customer installations.

"SDN will fundamentally impact the networks we create daily to become a source and foundation of power and innovation." – Infoblox's Stuart Bailey

"We are on the cusp of a radical economic and cultural transformation driven by the network," says Stuart Bailey, Infoblox's founder and CTO. "But to really unleash its potential, our network needs to be set free. We've been stuck in the world of hardware-defined networking, but the software defined networking control plane will prove to be the new operating system for the universe. SDN will fundamentally impact the networks we create daily to become a source and foundation of power and innovation. By shifting toward a model based on inexpensive, programmable switches driven by intelligent software, we can expect to meet growing network complexity head-on and scale for the challenges posed by BYOD, cloud computing/virtualization and future technologies."

By Paula Bernier

Telarix Makes Intercarrier Interactions More Efficient

For all the state-of-the-art technology in use within service provider networks, it's surprising how unsophisticated some back office platforms and processes at these same companies sometimes are – or were, until fairly recently.

The process to place orders and handle settlements among different telecom service providers traditionally has been a manual one, involving faxed forms or e-mail communications, says Vic Bozzo, senior vice president of sales at Telarix Inc. That, he says, is like a bank executing a wire transfer by having a guy write a check and run down the street to deliver it.

"The telecom industry needs to transform into one that is efficient and electronic," says Bozzo.

To allow for more efficient service provider interactions, Telarix offers iXLink, which enables carriers, resellers and emerging market providers to automate their wholesale interconnect purchase processes.

Telarix customers include such major service providers as KDDI, Sprint, Telecom Italia, Telus and Verizon. Telarix has more than 3,000 members, which exchange more than 40,000 documents monthly via iXlink.

Those documents include price list receipt, price list distribution, bill receipt and bill distribution services. Carrier customers also can select from premium features such as dial code analysis and discrepancy management, line-by-line invoice reconciliation and audit and listed least cost routing report. Because carrier customers of Telarix have multiple POPs in which they buy and sell, iXLink was designed to allow different parts of the carrier organizations to leverage the system, while enabling the carrier to manage it all from a global perspective.

Telarix got its start providing tier 1 carriers with software for least-cost routing management. It later introduced a billing solution for this same customer set. Then, about four years ago, customers asked Telarix to deliver a solution to help them more efficiently upload data to and manage these systems, so it introduced the iXLink product. Once customers started using it, Telarix realized they were leveraging it to interact with each other. In February 2013 alone, iXLink was used by 3,000 carriers to handle 50,000 rate sheets.

Today, about 80 percent of the Telarix business has to do with voice traffic. But the company says the platform has big potential for other applications such as SMS and video.

The iXTools Solution Suite

iXConnect: iXConnect is a business intelligence platform and serves as the core module for the iXTools Suite. As the central point of management and control, it collects and manages all business information such as network infrastructure elements, products, route plans, rates and agreements.

iXRoute: iXRoute enables service providers to identify and automatically implement optimal routing strategies, providing an unprecedented level of visibility and control of their interconnect traffic. iXRoute leverages Telarix's patented routing algorithm to incorporate vendor agreements, complex rate schedules, network data, quality of service requirements and other user-defined criteria to produce the optimal commercial and technical routes. The system's workflow management tool tracks routing changes from creation to network implementation, enabling business users to define acceptable routing implementation parameters and receive real-time alerts when those parameters are exceeded.

iXTrade: iXTrade is an offer management and decision support solution, which allows service providers to simplify and automate the buy and sell processes within the wholesale interconnect business. Users are able to manage the international interconnect complexities resulting from non-standardized numbering plans for country, city and mobile termination. Service providers can rate calls based on each partner's specific numbering plan to obtain near real-time margin visibility.

iXBill: iXBill, one part of Telarix's revenue assurance solution, is an interconnect billing system that allows service providers to eliminate revenue leakage by ensuring that every call is captured, rated and invoiced correctly. Integrated with iXConnect, the solution is able to define and manage an infinite number of interconnect agreements with other carriers and content partners, regardless of the level of complexity. This enables a service provider to support a variety of agreement types and rating scenarios including multi-party settlements and sophisticated revenue sharing partnerships.

iXAudit: iXAudit, the second part of Telarix's revenue assurance solution, is an end-to-end audit and dispute management system designed to streamline the validation of interconnect invoices, reconcile charges and manage settlements. The system provides a data repository for all service provider invoices and a flexible workflow to expedite the identification and management of disputes.

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By Paula Bernier

WebRTC Will Deliver a Seamless Customer Experience

Organizations tend to have a website group and a contact center group. But, in the future, it is very likely that many companies will move to integrate the two in an effort to deliver a better customer experience while at the same time lowering their costs. WebRTC is expected to be a linchpin in bringing all this together.

In the interview below Chris Vitek, president of WebRTC Strategies Inc. and a speaker at the upcoming WebRTC Conference & Expo in Atlanta, explains how and why, and what it all means for companies like yours.

What's your background?
Vitek: I've been working in the communications industry for the last 30 years. For the last 17 years I have been an independent consultant in the contact center and unified communications sectors. I currently am a member of the Board of Directors of the Society of Telecommunications Consultants and a member of the Society of Workforce Planning Professionals. Additionally, I am the editor of www.STCblog.com.

What is WebRTC?
Vitek: Web real-time communications is a new, open source communications standard that is sponsored by Google with both the IETF and W3C. Specifically, it supports browser-to-browser communications via text, file transfer, audio or video without the need to download an app. It works on any device that supports a browser – smartphone, tablet or PC.

Many people first visit a company website before reaching out to the same company's contact center. Yet there is clearly a disconnect between website and contact center interactions today. How can WebRTC change that?
Vitek: By merging the web and telephony experience the context of a call to a contact center is greatly enhanced. Web browsing history, cookied data and information about the web page that was being viewed at the moment of connection can all be considered in framing the context of a call. IVR, authentication and routing are not necessary for these calls.

WebRTC represents the opportunity to collaborate with customers in either the traditional web model or audio of video communications. This is the opportunity to enrich customer communications to make them more precise and anticipatory. Add to this the ability to use big data to formulate real-time marketing offers and talking points that support the customer's needs. This approach can profoundly reduce mass media marketing spend and enhance customer loyalty by reducing customer effort.

To Learn More About WebRTC

The WebRTC Conference & Expo will take place June 25-27 at the Cobb Galleria in Atlanta.

For more information, visit: www.webrtcworld.com/conference

One reason for the disconnect between contact centers and websites, I think, is that the contact center is a unique part of the enterprise run by a services team while the website tends to be managed by the marketing department. How can we overcome this divide?
Vitek: I do not think that this divide will be around for much longer. Marketing budgets in many enterprises dwarf that of the contact center operations. Once upper management understands that they can reduce marketing expenses by a greater amount than the contact center operations budget, these organizations will by pushed together very quickly. Currently, websites tend to map to data while contact center technologies tend to map to people. Creating a website mapping that is consistent for both will require the input of both the marketing and contact center operations.

How do you suggest companies manage the transition that's coming between contact centers and web environments?
Vitek: Given the right approach, the transition can be smooth with minimal risk. The reorganization of marketing and contact center staff should be fairly logical. Many of these folks will have the same responsibility, but with newer, more functional tools.

From a technology perspective, there are at least six enterprise contact center product manufacturers that have plans to introduce WebRTC products this year. Additionally, there are at least 11 different manufacturers of media servers that already offer WebRTC products or are a software release away. WebRTC products will be ubiquitous by Q3, 2013 (about the time the IETF RFC will be ratified). The key will be to figure out which product fits your customers' needs the best.

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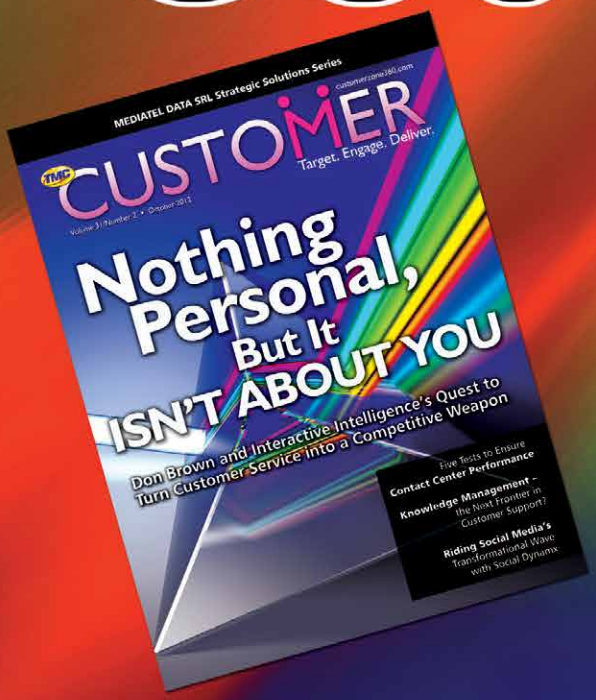

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By Jason Thompson

In the Wrong Hands

How Bad Practices Can Leave SSH Networks At Risk & What to Do About It

The secure shell data-in-transit protocol has been deployed millions of times by organizations of all kinds and sizes since its inception nearly 20 years ago. Today, it is recognized as an industry gold standard, capable both of securely moving data from one machine to another and providing remote administrator access. Linux, Unix, and Mac OS all ship a version of SSH with every version of their software, and SSH is gaining momentum in the Windows market as well.

These SSH deployments have secured billions of business transactions without any major security breaches by the protocol itself. However, while the SSH protocol itself is highly secure, organizations today face the risk of suffering debilitating security breaches if they are not managing their SSH environments. Major changes in how hackers approach secured network environments now require large enterprises, federal agencies and financial institutions to improve how they manage their SSH keys to protect their sensitive data adequately.

A Brave New World

SSH is used to transmit valuable business intelligence within the network environment, including personally identifiable information, health care records, credit card numbers and classified information. To a malicious insider or an attacker, then, SSH is a fortified channel that carries along the most valuable data a company possesses. Yet since the protocol itself is impermeable, hackers must find a shortcut.

The shortcut lies in how SSH keys are managed, or mismanaged.

To create an encryption channel between the user's computer and the server – a channel often referred to as a trust relationship, network administrators make a cryptographic key pair, installing one key on the server and the other key on the user's machine. These trust relationships are established and managed internally, sometimes on systems dating from the mid '90s. These systems do not have the capabilities to search trust relationships; as such, tracking the locations of these trust relationships must be done manually. It is therefore inevitable that a significant number of trust relationships will be lost when a network has potentially hundreds of thousands of keys. If an internal or external malicious actor gains access to one of these keys, he or she can mimic an authorized user and exploit sensitive data.

Therefore, improper management of SSH keys presents an opportunity for an attacker to exploit a serious vulnerability and gain access to sensitive intelligence. The scope of the issue is sobering. (See text box.)

With advanced persistent threats becoming increasingly common, the risks faced by organizations without proper SSH key management protocols in place are substantial. These risks increase proportionately to the company's variance from a best practices approach to SSH key management.

In addition to the clear security implications of SSH key mismanagement, organizations must be conscientious of federal compliance standards – including PCI, SOX, NIST and HIPAA – that demand a high degree of control over access to sensitive network information. If these standards are not met, the company risks failing an audit and being hit with expensive fines.

In addition, SSH key mismanagement is simply an inefficient way of doing business. Many organizations today have more than 20,000 servers, which makes the cost of manual SSH key management $40 million over 10 years. The costs plus the significant reputation damage that follows a security breach give organizations a lot of incentives to take a closer look at their SSH key management practices.

Improving SSH Key Management

IT operations must be involved in fixing the issue because the vulnerability is typically found in all Unix/Linux servers and many Windows servers. Yet the IT department cannot solve this issue alone. Executive management must also be aware of the problems and willing to help in whatever ways they can since the potential liability and compliance issues of doing nothing are so great.

Best practices to rectify the problem include:

- uncovering all existing users, public and private keys, and outlining trust between machines and users;
- observing the environment to determine which keys are actually used, and eliminating keys no longer in use;
- executing proper approvals for every key setup;
- diminishing manual work and human errors by automating key setups and key removals;
- circulating keys regularly, so that copied keys no longer work and proper termination of access is ensured; and
- limiting where each key has access and what commands can be executed using the key.

To further reduce risk, network environment boundaries within the organization must be a critical component of proper key management. These boundaries should clearly delineate key-based trust relationships' access while enforcing strict IP address and forced command regulations for all authorized keys concerning trust relationships exceeding such boundaries.

The SSH protocol has done a great job in protecting data-in-transit at a tactical level, but that doesn't combat the increasing number of threat vectors that leave even the most secure network operations at risk. Regardless of the security levels of SSH protocols for data-in-transit, organizations must reevaluate their management systems for allowing access to their encrypted networks to keep up with the current threat landscape. Effective management of the SSH environment is critical to eliminating network vulnerabilities that have costly consequences when exploited. The best practices for security identified above can prepare your enterprise for security threats and new compliance mandates before they occur.

Jason Thompson is director of global marketing for SSH Communications Security (www.ssh.com).

A study of the management operations of some of the largest organizations in the world brings to light some disturbing trends:

- Approximately 10 percent of all SSH user keys allow root access, creating a major compliance and security issue.
- The same SSH host keys are often shared across thousands of computers, making the network vulnerable to man-in-the-middle attacks.
- Enterprises seldom know what each key is used for, presenting not only a security risk, but also a business continuity risk.
- Many SSH keys that permit access to critical servers are orphaned and no longer in use.
- Some organizations allow administrators to create or delete SSH user keys without approvals or control, essentially granting unrestricted, permanent access to people and systems.
- Organizations rarely rotate SSH user keys, and often don't even delete them when a user leaves or an application is deactivated.
- Key-based access grants are basically permanent, in direct violation of SOX, PCI and FISMA requirements for proper termination of access. This practice leaves the network vulnerable to attack.

By Goran Velickovski

Preventing Costly Mistakes When Installing Enterprise-Wide Communications Solutions

It is not always an easy task installing an enterprise-wide IT solution. In fact, when it comes to communications solutions, namely unified communications, the effort is arguably even more intensified. Costly mistakes are preventable if an organization is exhaustively equipped before embarking on the selection and deployment of such significant technology to a business.

UC is particularly challenging within the enterprise infrastructure because of the varied application needs of users, the mobile nature of a business, or the geographic strains on the overall solution. So, it is no wonder that costly mistakes can be made and some stand out more than others when it comes to UC deployments.

First, it is extremely important that IT evaluate how all UC services (voice, video, instant messaging, collaboration, and mobile) are used in the organization. This requires due diligence and a thorough understanding of the business and its operations. Do you have to support a mobile workforce? What are the geographical demands for the solution – regionally, countrywide, and globally? These and other issues need to be thoroughly vetted before going too far down the deployment path.

One issue seen too often is organizations trying to tackle everything at once, i.e. addressing all the communications demands as an all-encompassing project. Such an approach is not recommended. Trying to deploy every communications tool at the same time will most likely create a project that will be impossible to manage, impossible to deploy, and one fraught with missed deadlines. It will ultimately be viewed as a failure. The desired goal is to arrive at an optimal end state for users and to support the overall business in a managed, well-organized fashion.

Another common mistake is that during TCO/ROI modeling, IT often creates unrealistic scenarios that don't take into account both hard and soft costs. Hard costs are easy to quantify as they are hardware, software, vendor implementation and support, PSTN and network charges. Soft costs, on the other hand, are difficult to capture, but they are every bit as real and should be part of every TCO model. Included in those costs are not only things such as productivity, customer satisfaction, and resource management, but also opportunity costs associated with what the business is missing without having the new deployment to improve the operations.

One of the biggest mistakes concerns hosted solutions. During the evaluation process, don't dismiss UC as a service as unproven, unreliable or not secure, regardless of your industry. In fact, hosted solutions should be looked at as a primary option since they require less capital expense, are quicker to implement, provide a better scale, and are easier to evaluate financially. Also, it is a misconception that on-premises and hosted solutions cannot be integrated. They actually can and are effective in meeting business needs. Hosted solution implementations are trending up and offer a lot of flexibility regardless of the industry. Deploying in whole or in part some hosted solutions in an organization is inevitable considering today's computing environments and the distinct business advantages they offer.

Wainhouse Research predicts that UCaaS revenue will grow 47 percent from 2011 to 2015. Frost & Sullivan is even more aggressive, predicting the UCaaS market will total nearly $2 billion in 2013.

For organizations pursuing hosted solutions, it is important to understand how they are delivered and supported. The ever increasing mistake IT organizations are making is they will evaluate on features and price, but fail to understand how UC will be delivered and impact their networks. Also important is evaluating the actual hosted service provider and making sure you can trust what is said and delivered. Will voice and data be delivered on the same pipe? How will the networks work together – yours and the provider's? And, what support is there for redundancy? These and other questions are important to address, and a clear understanding of delivery and support is essential.

And, finally, when choosing a supplier, it is important that the supplier, from the very beginning of the engagement, is a trusted partner and one that is committed to helping you solve your business challenges with communications solutions. A good supplier will be one who even well before the contract is awarded works with you to understand end user needs, organizational needs, and what the end state should look like. People buy from people, and people buy ideas. Quite often, you are buying a mindset and a working relationship more than a product or solution. A good supplier will offer added value throughout the process and stick with you from beginning to end.

When it comes to addressing your communications needs, the best approach is to crawl, then walk, before you run. The approach will pay off in the long term for your organization.

Goran Velickovski is director of engineering for West IP Communications (www.westipc.com), a provider of cloud-based communications for enterprise and mid-market companies.

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By Lee Ho

Making Connections

Manufacturer Wilson Hurd Pulls Things Together with Esna Cloudlink

Founded in 1904 in Wisconsin, Wilson Hurd is a leading manufacturer of custom metal nameplates, plastic overlays, POP display components and electronic control products. About a year ago, the company began looking for ways to reduce IT cost levels and support time. Executive leadership reviewed various cloud and virtualization technologies that could help them reach these goals and, as a result, the company decided to move away from using Microsoft Exchange for enterprise e-mail to a more cost-effective Google Apps solution that included Gmail.

The move to Google Apps was expected to reduce significantly the amount of time Wilson Hurd's IT department had to spend on maintaining and upgrading its Exchange servers, as well as reducing costs associated with its annual Exchange and Outlook licenses. The only stumbling block was the need to be able to connect Wilson Hurd's Cisco Unity Connection solution for unified messaging to Google's Gmail. The company's employees were used to the productivity-enhancing benefits of unified messaging and it was important not to lose this capability.

The task of finding out how to make the systems work together fell to Wilson Hurd's Network Engineer Scott Berg. Berg talked with both his Google Apps reseller, Cloud Sherpas, and with his Cisco VAR, CDW, and learned that while Cisco did not have a native connection to Google, Esna Technologies offered a solution that had been proven already within other organizations that required this kind of integration.

Berg began an evaluation of the Esna Cloudlink solution for Cisco and he saw several immediate benefits Cloudlink would offer to Wilson Hurd:

- seamless, tight integration between Cisco Unity Connection, Cisco CallManager and Google Apps / Gmail;
- the ability to virtualize the solution onsite, reducing on-premises space and infrastructure needs;
- easy configuration and installation;
- a rich feature set including unified messaging, presence, click-to-dial and secure controls; and
- a highly cost-effective solution as compared to Microsoft Exchange.

"In addition to these benefits, Esna's Cloudlink solution offered a number of great unified communications features, like presence and click-to-dial, that we thought our users would grow to like," said Berg. "The critical thing was, of course, to maintain our integration to Unity Connection and CallManager so we did not lose unified messaging capability."

Decision made, Berg began to plan the Cloudlink deployment. After an initial call with Esna, he prepared a single, virtual server for implementation. In an abundance of caution, he also asked his Cisco VAR to be available on the day, in case any configuration changes for CallManager were necessary.

"It turned out we didn't actually need CDW expertise," Berg said. "Within an hour we were up and running with all our users. It was far easier than my best expectations – we could have done it over the lunch hour."

Wilson Hurd employees noticed no difference in service. Moving from an on-premises solution to a hybrid on-premises/web solution had no impact on the user experience. This seamless transition meant no need for user training and no adoption barriers to overcome. Wilson Hurd productivity remained at normal levels.

Wilson Hurd takes a simple approach to measuring the value of the Cloudlink solution. A straightforward comparison of the cost of the annual Microsoft Exchange and Outlook licenses vs. the cost of a Google and Esna solution showed immediate savings.

Other positive cost benefits were simply icing on the cake: reduction in hardware cost and space required, reduction in power use and cooling expense, reduction in maintenance time on equipment and the requisite software. Not to mention the savings in the time necessary to manage users. With Esna's Cloudlink solution, Berg creates his user e-mail accounts in Unity Connection, and those are automatically federated across Google Apps.

"I spent more time worrying about planning the initial deployment than I have spent thinking about the product in the almost year since it was installed," said Berg. "And Esna's support is top-notch; they are only a phone call away if I ever need them."

Lee Ho is vice president of marketing for Esna (www.esna.com).

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EXPERIENCE

SYS-CON EVENTS' 2013 CONFERENCES & EXPOS

By Paula Bernier

Unified Office Introduces Total Connect Now

Unified Office is a new service provider on the scene that aims to make the kind of UC solutions that were once only available to the largest companies accessible to the small and medium business set. The company this spring formally unveiled it service, called Total Connect Now, which is a private cloud-based managed service that addresses worker mobility and the bring-your-own-device trend.

Total Connect Now delivers an integrated communications experience to workers whether they're at their desktop in the office or using a wireless device to conduct business from the office or a remote location. The aim of this service is to remove the complexity of unified communications and remote work for both employee and employer, says Ray Pasquale, CEO and founder of Unified Office.

"I don't think the large carriers are capable of doing that," he adds.

The service leverages VoIP, so wireless device users won't rack up cellular voice bills. And Unified Office monitors and offers backup for the service, so businesses don't have to manage the network, he adds.

To get companies started on the service, Unified Office provides a site survey, installs a small device at the business premises and does engineering on the system to ensure a high-level end user experience. Unified Office will even work to interface with organizations' existing systems; for example, it recently interfaced one of its academic customer's school intercom systems to Total Connect Now, he says.

Pasquale emphasizes that Unified Office is bullish on open systems and emerging standards such as WebRTC and HTML5. Initially, the company is using HTML5 to embed call control in click-to-call applications. But while HTML5 can take a few seconds to work, WebRTC is embedded in the browser so can trigger communications immediately, he says.

Unified Office was founded about 18 months ago and this announcement signals that it's coming out of beta and going into production. The company brings Total Connect Now to market exclusively through its ecosystem of PBX resellers and managed service providers.

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New Solutions Make WebRTC Simple

Thrupoint has a new WebRTC-to-SIP solution that establishes secure video collaboration between WebRTC-capable and SIP-enabled enterprise endpoints, be they company issued or bring-your-own clients, applications and devices. The company says its new software development kit, Thrupoint Fusion Client SDK, gives web developers easy-to-use APIs for mobile and desktop platforms that mash up existing corporate voice, video, presence and messaging capabilities together with business applications to create seamless collaboration experiences. Thrupoint also has introduced Release 4.1 of its Fusion Service Broker product, which features many new capabilities for advanced session management and service delivery. "WebRTC is evolving at a blistering pace, with innovative prototypes and early commercial offerings cropping up almost daily, even before the standards are finalized," said Dean Bubley, founder of Disruptive Analysis. "There is significant value for developers and enterprises from companies offering simple enablers for WebRTC, in terms of client-side SDKs, signaling and media components. Especially on mobile devices, this will help accelerate market penetration and address key collaboration and contact-center use cases."

Blue Jeans Unveils Room to Remote

Video collaboration services provider Blue Jeans Network has enhanced its cloud-based offering with a new mobile application for iPad and iPhone; a partnership with Tely Labs that allows it to turn any meeting room into an HD videoconference room; and dual HD streams for interactive video and content sharing and a slider for layout control so video and content can be individually controlled by each meeting participant.

Vidtel, Compunetix Partner

The Compunetix Inc. Video Systems Division and Vidtel have partnered to deliver solutions that unify traditional videoconferencing equipment with WebRTC-based browsers, Google Talk, and Skype. The partnership is enabled through Chorus Call, a provider of premium international audio conferencing, videoconferencing, audio and video media streaming, and collaboration tools. Eric Murphy, global solutions manager of VSD, said: "As the market moves more towards the cloud it is constantly redefining what is traditional and what is emerging; we're on the cutting edge of tailoring customized solutions to meet any variety of needs."

Onvelop Provides UC for Mobile Devices

AgreeYa Mobility, a mobile-engineering product and service firm headquartered in Mountain View, Calif., has introduced Onvelop. This unified collaboration and communication platform utilizes licensed Microsoft protocols to provide secure access to enterprise server software such as SharePoint, Lync, Office 365 and more from iOS, Android and Windows 8 devices. "Today's companies spend exorbitant amounts of time, money and resources on the software and infrastructure that help employees work and collaborate efficiently and effectively," said Krish Kupathil, CEO of AgreeYa Mobility. "But until now, those employees were handcuffed to computers and unable to access those tools on their mobile devices. Thanks in part to monumental agreements with Microsoft and Samsung, we're able to provide that access while maintaining the high level of data security that companies require – even on employees' personal mobile devices."

911 Goes Multichannel

One of the first Text to 911 services in the country has gone live in Frederick County, Md. The solution is a joint effort provided by TeleCommunication Systems and Verizon Wireless. Frederick County is the home of the Maryland School for the Deaf, so county commissioners, at the request of the Division of Emergency Management, decided to take the first steps forward with this technology.

Siemens Unveils OpenScape Enterprise Express

Starting this month, OpenScape Enterprise Express is available from Siemens Enterprise Communications. This integrated solution was designed to improve team productivity for mid-sized companies. It includes VoIP, unified communications and contact center capabilities.

U.K. Health Care Outfit Chooses NextiraOne

NextiraOne has been selected to implement its unified communications solutions across four B. Braun Medical Ltd. sites in the U.K. The solution includes IP telephony to enable employees make calls from their computers, as well as an integrated contact center solution. The platform uses Cisco virtual servers at each site, with Cisco Unified Communications Manager, Unity Connection Voice Messaging, and Unified Contact Center Express. It's configured for 330 users, with a contact center for handling agents and supervisors, and a Symon Wallboard solution that can display important information from the staff.

Avaya Enhances SBC Solution

The new release of Avaya Session Border Controller for Enterprise offers enhanced security for mobile collaboration. This is provided through new Avaya SBCE support for the Avaya Flare Experience on Apple iPad devices, as well as for Avaya one-X Mobile applications on iPhones. Meanwhile, users can have a secure, business-dedicated deskphone or softphone that automatically authenticates to one IP address on a single SBCE, without connecting to a virtual private network.

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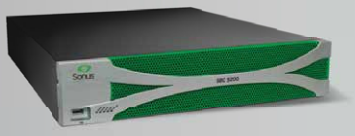
Integration	 Sonus SBC 5100 Up to 10K Sessions	 Sonus SBC 5200 Up to 64K Sessions
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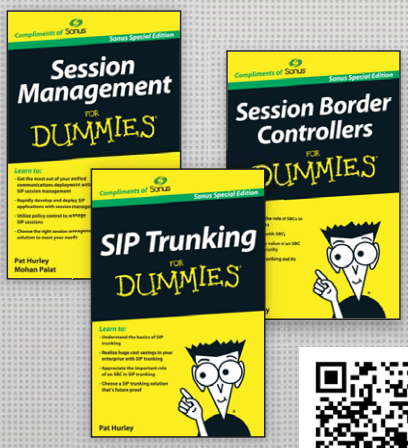

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* Infonetics 2Q 2012 report "Service Provider VoIP and IMS Equipment and Subscribers

By Uday Mudoi

Timing-Aware Ethernet Backhaul Helps Carriers Survive the Wireless Multimedia Explosion

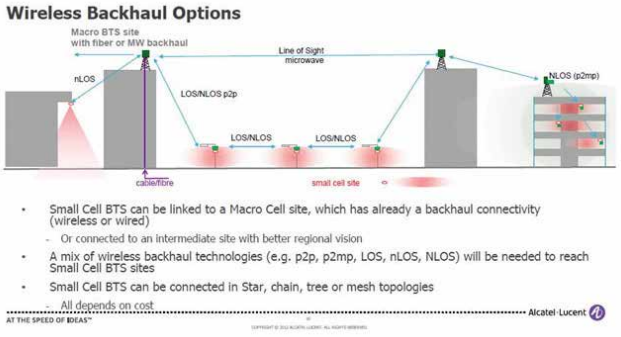
Broadcast and cable providers are struggling to adapt as the public's media viewing habits shift from traditional services to fixed and mobile IP streams. For both fixed and mobile service providers, success will hinge on an infrastructure equipped to deliver the raw bandwidth and quality of service necessary to ensure a seamless digital multimedia experience. As we'll see, the IEEE 1588v2 precision timing protocol, and products that support it, will play an essential role in building and managing timing-aware IP networks. Without accurate timing and synchronization, calls drop and video streams are disrupted. In addition, delivering mobile broadband services in dense, complex urban environments, or inside buildings, will require operators to enhance 4G/LTE network coverage and capacity with small cell clusters.

The Great IP Migration Continues

According to a recent Reuters article, the cable industry is losing subscribers who opt for less expensive and more targeted broadband services, which deliver streaming multimedia from both from the carrier's content partners and third-party over-the-top services. Typical of this trend is Comcast, which reportedly lost 117,000 video customers in the third quarter of 2012. While revenues from traditional media services continue to erode, some carriers are going on the offensive by offering premium-level services capable of supporting multiple channels of streaming multimedia, a strategy that requires nearly all carriers to upgrade their infrastructures.

Mobile service providers face even bigger challenges as their customers' viewing habits shift from the big screen to the screens of smartphones and 4G-enabled tablet devices. This growing demand for wireless video dramatically multiplies the need for bandwidth in the mobile network – both at the base stations and the backhaul links that feed them. As a result, wireless operators must rely increasingly on IP/Ethernet-based backhaul to cost effectively upgrade existing network capacity.

Today, many small cell deployments are done purely to improve coverage in spots where the nearby cell tower coverage may be weak. However, as the number of 4G/LTE device users increases, operators will have to rely on small cells to support the bandwidth demand growth cost effectively. While small cells promise a better capex and opex model than today, they also pose a new challenge for accurate timing and synchronization, which is essential for delivering voice and video quality. Many carriers are using GPS for delivering timing and synchronization today. But small cells sitting on the top of lampposts and traffic signals won't have good line of site to GPS satellites. They will also be more susceptible to jamming and snooping at or close to street level. Hence, an alternative based on 1588 to the current timing and synchronization model is imperative, when carriers are looking to support a cost-effective model to support 4G/LTE bandwidth demand driven by multimedia applications.

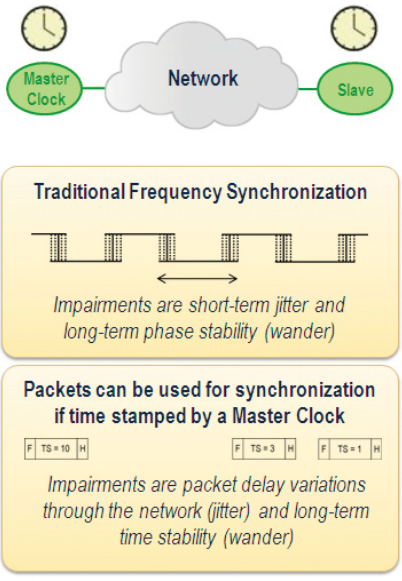


Small cell networks are often used to enhance a 4G/LTE network's coverage in dense, complex urban environments, or provide reliable in-building service. The microwave links and complex topologies frequently found in small cell backhaul networks add to the challenges of maintaining the stringent timing requirements of LTE/LTE-A systems. (Image courtesy of Alcatel-Lucent)

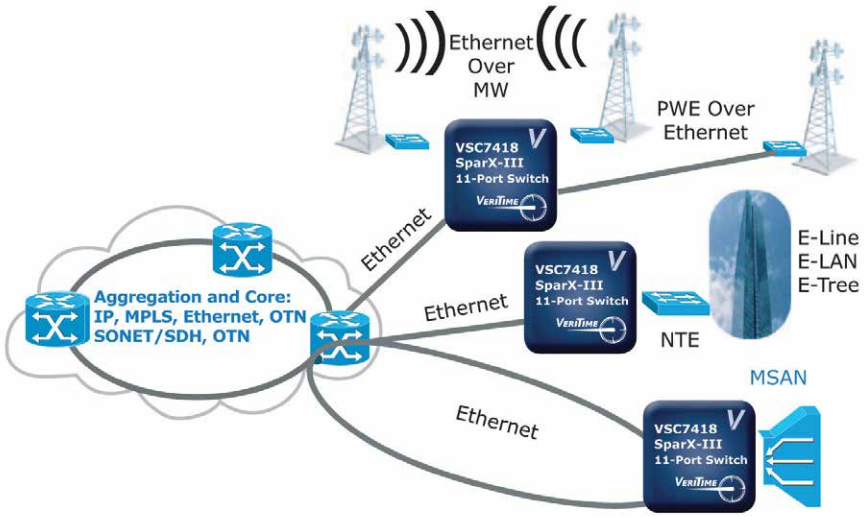
It is important to note that delivering quality of multimedia experience to users requires a certain level of 1588 timing and synchronization accuracy. This is typically determined by the carrier's wireless technology accuracy requirements. Normally such requirements are defined by the difference in the primary reference clock in the core of the network and recovered clock at a base station or other endpoint (i.e. the synchronization error). Multimedia streams require that modern 4G networks have end-to-end time-of-day synchronization requirements ranging from 1.5usec to as low as 0.5usec. If the timing derived by two base stations

differs by more than the specified amount, a mobile user will drop his or her call or video stream when moving from one base station coverage area to the next. In a real-world cellular system, part of this timing budget is consumed by the latency variations in RF links and other timing variations inherent in various parts of the network. Another portion of the timing budget is consumed by the interference mitigation techniques used to combat the effects of multipath reflections and noise found in the urban corridors and indoor environments where small cell networks are used.

As a result, the synchronization error budget available to the small cell base stations and networking equipment in a typical 4G system shrinks to roughly 160ns. Assuming a timing packet may have to traverse as many as six nodes between a network node generating the master clock and the base station recovering the clock, each node's timing variation budget must not exceed 20ns.



The IEEE 1588v2 precision timing protocol estimates the time at the slave by calculating the propagation delay between master/slave via a series of time-stamped messages. But packet networks can have large packet delay variations, which, if left uncorrected, can introduce timing inaccuracies.



Wireless carriers are expanding the capacity and reach of their existing backhaul infrastructures with Ethernet links across multiple timing domains. Equipment in these networks often use IEEE 1588v2 PTP to maintain synchronization across the timing domains that lie between the base stations and the rest of the network.

PTP to the Rescue

Developed primarily to meet the needs of packet-based backhaul networks, the PTP standard builds on synchronous Ethernet, which brought frequency synchronization to the packet world, but did not provide the necessary time-of-day synchronization required for LTE and LTE-A. To fill this gap, PTP carries time of day information (also known as timestamps) directly within the data packets. The packets carrying the timestamps flow along with the rest of the data traffic in the network from networking equipment that generates the timestamps (also known as primary reference clock) all the way to base station equipment where these timestamps are used to recover the original time using 1588.

Look for "PTP Inside"

Network equipment supporting 1588 can be implemented using either boundary clocks, transparent clocks or both. A node using BC regenerates the timing based on the timestamps that it receives, while TC node can simply forward the incoming timestamps after correcting for any error it may introduce.

As a result, TC is simpler and cheaper to implement compared to BC. Manufacturers of IP-based backhaul equipment can implement the TC function using inexpensive 1588-compliant PHYs or switch chip sets. As a result, Sprint customers may roam into an AT&T network, while streaming their Netflix movie, but expect uninterrupted service regardless of whose network space they're in. This requires a service provider to guarantee user experience over another operator network. It requires additional feature support by the network equipment in the form of multi-operator management and measurement capabilities. Fortunately, solutions for timing-aware Ethernet backhaul do exist and will ultimately enable carriers to adapt and accommodate this wireless multimedia explosion.

Uday Mudoi is director of marketing at Vitesse Semiconductor (www.vitesse.com).

FCC Sees Leadership Changes

Federal Communications Commission Chairman Julius Genachowski and Commissioner Robert McDowell in March both announced plans to step down. As of March 26, when this issue was readying to go to print, a new FCC chairman had yet to be named. However, candidates reportedly being considered for the top FCC post included Karen Kornbluh, U.S. ambassador to the Organization for Economic Cooperation and Development; Catherine Sandoval, a member of the California Public Utilities Commission; Lawrence Strickling, a top Obama administration advisor on telecom and technology policy; and Tom Wheeler, the former CTIA head who in recent years has been a venture capitalist. Genachowski's time at the FCC will probably be best remembered for his successful challenge to AT&T's proposed merger with T-Mobile USA.

Google Android Chief Walks

Andy Rubin – the first chief of Google Android and the man credited with putting this mobile system in the No. 2 position, second only to Apple iPhone – has left Google. Details of the reason for his departure were not disclosed. It was unclear as of press time in late March what Rubin's plans going forward will be.

T-Mobile USA Unveils 'Uncarrier' Push

In late March, T-Mobile USA unveiled what it calls its "uncarrier" remake, shifting to no contract service for its entire set of service plans. The biggest unknown is whether the shift to no-contract service will work out as T-Mobile USA plans. Among the biggest issues is whether consumers really are willing to pay full retail price for their smartphones.

U.S. Mobile Market on Its Way to $90B

The U.S. mobile data market grew 3 percent quarter over quarter and 15 percent year over year to cross the $20 billion mark for the first time in the fourth quarter of 2012. Data now accounts for nearly 44 percent of U.S. mobile industry service revenues. For the year 2012, the market ended up with $79 billion in data revenues, while overall mobile service revenues were $182 billion. However, new connections for the year were down 56 percent from the previous year at 9 million. This year mobile data service revenues in the U.S. are expected to hit $90 billion.

MetroPCS Picks Ericsson for EPC

Dallas-based wireless carrier MetroPCS Communications Inc. has tapped Ericsson as the supplier of equipment and services for its nationwide Evolved Packet Core network. The effort will enhance key services including high-speed data, voice over LTE and Rich Communication Services. Ericsson is the project's prime integrator with responsibility for design, installation and commissioning, and post-launch customer support. The solution will include Ericsson's Evolved Packet Gateway on the SSR 8000 family of Smart Service Routers; Mobility Management Entity on the Ericsson Blade System, MkVIII platform; and integrated multi-technology operations support systems.

InterDigital, ip.access Demo LTE-to-Wi-Fi Handoff

InterDigital and ip.access at Mobile World Congress earlier this year joined forces to demonstrate how network operators can move calls and data back and forth between LTE and Wi-Fi-based carrier connections to ensure optimal customer connectivity. That way, if a customer with an LTE-capable handset is using a Wi-Fi network that becomes congested, the network can dynamically switch that customer to LTE to maintain the required quality of the service to that user, explained Emmanuela Micallef, ip.access senior marketing manager. Of course, that's different than the traditional method of moving between cellular and Wi-Fi networks, as the current method relies on customers manually turning off Wi-Fi on their mobile devices so they're forced to run on the cellular network.

Distribution Giant Goes Shopping

Avnet Inc. in March acquired the shares of RTI Holdings Ltd., a value-added distributor of wireless, optical, telecom, data communications, and industrial components in Hong Kong and the People's Republic of China. Avnet will also buy the shares of three related entities, RTI Technology China LTd., Eastele Technology China Ltd., and SDP Solutions Ltd. Avnet says the deal will give Avnet Electronics Marketing a stronger position as it moves to expand its presence in Asia.

Rivada Picks Radisys

Radisys Corp.'s LTE network solutions and professional services have enabled Rivada Networks' Dynamic Spectrum Arbitrage, the companies have announced. DSA is a solution that enables public safety market players to allocate excess spectrum to other network providers, and to do it in real time. The Radisys solution includes its Trillium TOTALeNodeB and evolved packet core software.

Mobiquity Acquires Vertical Performance Partners

Mobiquity, a professional services firm, has announced its acquisition of Providence, R.I.-based Vertical Performance Partners. VPP is an enterprise-class mobile software provider. Mobiquity now will offer Velocity, VPP's customizable software for branded interactive live meetings, events and training sessions, to its enterprise client base. The entire VPP team has joined the newly formed Mobiquity Velocity Solutions, Inc., led by Carl Wooten as vice president and general manager. "The pharmaceutical and mHealth sectors are key verticals for Mobiquity's continued growth. The acquisition of Velocity enables us to broaden our client base and provides us another enterprise-class solution we can introduce to our clients," said Bill Seibel, founder, chairman and CEO of Mobiquity. "By combining our professional services capabilities with products and frameworks that target key verticals, we're able to bring innovative solutions to market faster and at a lower cost."

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By Erik Linask

WebRTC: It's a SIP World After All

Unified communications – the ideal of anywhere, anytime, any medium, any device, any network access to communications resource – carries with it one major flaw. Specifically, despite the unprecedented advances in UC, which enable communications and collaboration in a variety of environments and situations, UC remains tied to specific applications and services, delivering true geographic transparency only within the confines of proprietary systems, despite the notion of standardization. The idea of a truly agnostic communications platform – being able to leverage UC capabilities, independent of application, device, or network – remains elusive.

"It's about enabling users/employees to perform their work functions with geographic transparency and in time slices of their choosing, enabled by the new devices that are coming out," Grant Sainsbury, vice president of advanced solutions at Dimension Data, explained quite effectively, adding that, "UC is the only technology that has been launching for 16 years."

WebRTC, based on straight browser-to-browser connectivity, is perhaps the hottest topic in communications circles today. Conceptually, it holds the promise to end that decade-and-a-half launch and overcome the device and application barrier, allowing communication between any two web-enabled devices, anywhere, simply through the use of a web browser.

WebRTC CONFERENCE & EXPO

WebRTC isn't as simple as clicking a link – at least not yet. ... But if the conversation around it is any indication, WebRTC is anything but a flash in the pan.

Click the link to connect via voice or video, just as you would open a website. It sounds simple, right?

In theory, yes. But, as with any other technology, it has to play nicely in the sandbox. In this case, it has to integrate easily into existing communications environments. For one thing, businesses have made investments and are looking to achieve high ROI, so WebRTC will need to be an easy add-on to their existing capabilities.

"People aren't going to throw away their existing hardware or applications," Sajeel Hussain, vice president of product marketing at Thrupoint, says. "But, WebRTC can unlock the power of UC and extend that to all users."

The second point, of course, is standardization and interop. There are many technologies that have shown promise in their early stages, but have failed to achieve greatness due to lack of agreement by key players. UC adoption has been slower than expected due to the many different flavors of SIP, limiting much of its usefulness to in-house users. (Devices like enterprise SBCs are now helping overcome that obstacle.) HD Voice has suffered a similar fate, as interconnects between different network operators have not materialized as we may have hoped, leaving disparate HD islands to enjoy unparalleled audio quality on their own.

Standardization, interoperability and integration – the bane of all communications technologies – will be critical to the widespread adoption of WebRTC. In a closed environment, it will gain little traction and be limited to small groups of users on the same platform. It will also need to be delivered in a way that will allow it to blend into a SIP world – which is why gateway and SBC vendors are so interested. Sonus' David Tipping, in fact, notes that while WebRTC will be the next easy way to communicate without being tied to a device, the SBC's role is going to be the same, providing interworking back over to SIP on the back end or securing the app.

Yes, add in the security, along with regulatory and compliance considerations, all of which will forever be part of communications evolution, and it's clear WebRTC isn't as simple as clicking a link – at least not yet. The surface has barely been scratched, and there are major hurdles to overcome (remember, the SIP interop issue has still not been fully solved), but WebRTC is creating a real stir. But if the conversation around it is any indication, WebRTC is anything but a flash in the pan. We started the conversation last year at the WebRTC Conference and Expo in San Francisco; we'll be expanding on that great conversation in Atlanta this June (www.webrtcexpo.com), with comments from Alcatel-Lucent, Ericsson, Tokbox, Dialogic, and many more. Where the conversation will end, nobody is sure, but Atlanta will, without doubt, provide insight into how and where WebRTC will evolve in the short and long term.

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