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ITEXPO Panel Sees M2M, WebRTC, Wearable Tech as Game Changers

If you think the world is connected now, you ain't see nothing yet.

That was the gist of the opening panel on innovation at ITEXPO Vegas in August. The session featured James Brehm of Compass Intelligence; Phil Edholm of PKE Consulting; Carl Ford of Crossfire Media; Larry Lisser of Embrase Business Consulting; and Peter Bernstein and Erik Linask of Technology Marketing Corp.

HTML5, M2M, WebRTC, and the move from IPv4 to IPv6 – which will support the wearable technology and connected machine movements – will all be game changers that will enable us and our stuff to be connected in a much bigger way, said Bernstein.

Ford noted a car advertisement that talks about how the vehicle can help prevent collisions and added that high-end cars commonly have about 200 sensors.

Edholm added that smart TVs from Samsung, for example, are now also connected. He also talked about how we can expect more change in the exploding area of personal devices, which tend to see a sea change every three to four years.

"So there's an incredible amount of change coming in terms of devices," said Edholm.

One of the more interesting ideas from the panel came from moderator Rich Tehrani, TMC's CEO, who said that in the future our lives will become like never-ending reality TV programs in that they will be captured on video and available for consumption by others. This concept was jarring to some, but while today's adults might find this idea uncomfortable, the younger set is probably completely confortable with this idea.

Brehm indicated that the always-on lifestyle and wearable tech will "push us over the edge." Linask said, perhaps, but it won't have that effect on our kids, who have been raised in a connected world.

Agreed.

I have a 13-year-old daughter. She uses Instragram, Kik and Skype to some extent, but would probably use them a lot more if their use was more seamless to her interests and lifestyle. We spend a lot of our time at her softball and soccer events. Most of the other kids and parents I know are similarly engaged in heavy schedules involving their children's baseball, climbing, dance, softball, soccer, and other athletic pursuits.

These kids are already using texting and social networking to share their athlete successes (sharing tournament win pictures, for example). But it would be really cool if they could go the extra yard and share their winning goal kick or homerun hit or lights-out pitching. Wearable technology could enable cameras to be built into helmets or headbands or cleats to capture this kind of thing. Then, that video could potentially be aggregated to softball or soccer online channels at which sellers of appropriate sporting goods and services (I'm seeing a lot of young athletes at the physical therapist these days) could advertise their wears.

OK, just spit-balling here.

In addition to discussing wearable tech, the panel talked about contextuality, personalization and personal privacy. As part of this discussion, Brehm mentioned that the cellular operators recently have changed their terms and conditions to enable them to aggregate customer information and sell it in bulk to third parties. The next step, he said, will be for them to sell identity information individually. When Brehm asked an executive for the value of an individual's identity information, he said, that exec quickly responded $108.

Rather than allowing others to sell your information, or offering it up for free yourself, Brehm suggested that individuals could take that data to the bank.

"You yourself can sell that," said Brehm. "You have value. You're worth a whole lot more than you believe you are as an individual." **IT**

Microsoft Buys Nokia Device and Services Business

"What's good for Windows phones will be good for the Windows ecosystem," said Steve Ballmer to CNBC regarding the company's acquisition of Nokia's services and device business.

He went on to explain that this deal will help Lenovo and Dell. Of course he said this precisely because this strategy is going to cause problems with Microsoft's relationship with other hardware manufacturers company relies on. The goal, of course, is to thread the needle – similar to Google, by producing hardware and licensing Android to others.

Under the terms of the agreement, Microsoft will pay EUR 3.79 billion to purchase substantially all of Nokia's Devices & Services business, and EUR 1.65 billion to license Nokia's patents, for a total transaction price of EUR 5.44 billion in cash. Microsoft will draw upon its overseas cash resources to fund the transaction.

Some analysts believe access to these fundamental mobile device patents will allow Redmond to produce even cheaper smartphones.

"In addition to their innovation and strength in phones at all price points, Nokia brings proven capability and talent in critical areas such as hardware design and engineering, supply chain and manufacturing management, and hardware sales, marketing and distribution," said Microsoft CEO Steve Ballmer.

Although this deal has been rumored for many years, critics are quick to point out the transaction may not really help Microsoft so much, as Nokia may as well be a division of Microsoft based on the fact that the company has bet the farm on the Windows Phone OS.

This move comes at an interesting time – just days after Ballmer announced he will step down as CEO of Microsoft within a year. This move may be the most important one the outgoing CEO could make, and it sets up the company to become a much stronger mobile player.

Moreover, it allows Microsoft to produce a mobile device without the microscope the markets will place on its results. In other words, if the company was to produce its own phone, analysts and the media would be all over it, immediately trying to ascertain how many devices were sold – comparing the results to Android and iOS.

Of course the fact that Redmond had to write down $900 million of Surface RT tablets had to factor into the decision to buy an existing concern rather than going it alone.

As part of the transaction, Nokia is assigning to Microsoft its long-term patent licensing agreement with Qualcomm, as well as other licensing agreements. Nokia will retain its patent portfolio and will grant Microsoft a 10-year license to its patents at the time of the closing. Microsoft will grant Nokia reciprocal rights to use Microsoft patents in its HERE services. In addition, Nokia will grant Microsoft an option to extend this mutual patent agreement in perpetuity. Microsoft will become a strategic licensee of the HERE platform, and will separately pay Nokia for a four-year license.

Microsoft will also immediately make available to Nokia EUR 1.5 billion of financing in the form of three EUR 500 million tranches of convertible notes that Microsoft would fund from overseas resources. If Nokia decides to draw down on this financing option, Nokia would pay back these notes to Microsoft from the proceeds of the deal upon closing. The financing is not conditional on the transaction closing.

This transaction shows how the rest of the market continues to chase Apple's business model. Once it was thought that licensing software to multiple hardware companies was the winning model. After all, this is part of the reason the PC beat the Mac. But the success of the iPhone and iPad showed that controlling both hardware and software was a more successful strategy.

This deal also brings a relatively strong mobile line to Microsoft stores – meaning potentially getting much-needed traffic into them. If these additional customers end up buying video game consoles and other Microsoft products, this deal could make a lot more sense. IT

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By Barlow Keener

What the Het?

In 2012 the term small cell networks started being used to describe femtocells, picocells, and microcells. Everyone seemed to understand what a small cell network was: anything smaller than a cell tower.

From 2008 to 2013, rather than seeing massive small cell deployments in homes and businesses as mobile RAN industry leaders had projected, carriers and DAS providers constructed DAS networks alongside macro cell tower construction. DAS uses multiple antennas connected by long fiber runs on utility poles or in buildings to a single, central base station radio. Small cells, unlike DAS, are each very small standalone BTS radios and antennas much like Wi-Fi access points. DAS was initially designed for inside large buildings or stadiums. However, because municipalities had become so adverse to allowing new tower construction, DAS providers like NextG (acquired by Crown Castle for $1 billion in April 2012) and Extenet began deploying neutral host DAS networks outside of buildings on street utility poles as a supplement for cell towers. Neutral hosted DAS can serve multiple mobile providers using one DAS system. DAS placed on utility poles enabled the carriers to fill in gaps not covered well by macro towers urban and suburban areas, significantly helping mobile carriers to lower customer churn through increased coverage.

By 2012, the problem was clear, and hetnets were the solution. Rather than have many uncoordinated, separate RAN networks like DAS, small cells, macro towers, and Wi-Fi access points, why not use a hetnet incorporating them all. Hetnets leveraged the Self Organizing Network, or SON, software to coordinate the use of the various RAN radios. SK Telecom discussed the use of SON for hetnets as early as 2010. If there was heavy demand on a macro cell tower, for example, during an event like a marathon or parade in a downtown area, the SON could push connections to Wi-Fi access points or to available small cells.

In the past, carriers have avoided the solution of driving users to Wi-Fi, but users have become comfortable with the delivery of voice and data on Wi-Fi. In home environments, smartphone subscribers principally access Wi-Fi for both data needs, like YouTube watching, and voice needs, accessing Google voice or Skype. There are industry rumblings that major carriers are going to being using SON to push subscribers onto carrier controlled Wi-Fi access points. Users' iPhones and Samsung Galaxy S4s will automatically access the Wi-Fi networks, preferentially, driven or pushed by the SON knowing the location of the device and identifying the phone passing by a Wi-Fi access point.

As small cells start to populate homes, businesses, and buildings, it is expected that mobile RAN SON will also push mobile smartphone users onto these small cell radios.

Hetnets and small cells have entered the regulatory arena. On Dec. 12, 2012, the FCC opened the 3.5gHz Notice of Proposed Rule Making. One of the principal purposes of the FCC docket is to examine the proposal to allocate dedicated or shared spectrum for use by mobile carriers' small cells and hetnets. Mobile carriers are generally supporting the position to use part of the 3.5gHz band as dedicated, exclusive backhaul spectrum for the massive deployment of hetnet infrastructure coming in the next few years. Other commenters, such as Google, however, are urging the FCC to take advantage of the opportunity in the 3.5gHz NPRM to create a spectrum sharing strategy for 3.5gHz that could be applied across all spectrum in the future.

Spectrum sharing, building on the database model applied in the 700mHz White Spaces FCC rule making, would enable a more efficient use of the scarce spectrum resources.

Spectrum sharing, building on the database model applied in the 700mHz White Spaces FCC rule making, would enable a more efficient use of the scarce spectrum resources. If one carrier was not using the spectrum, another carrier could use it. Everyone would benefit, the carriers, their competitors, the subscribers, and the public. IT

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

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By Hunter Newby

The U.S. Fiber Gap

There seems to be little to no argument left around the need for fiber-based networking around the world. Even the mobile network operators prefer fiber for their wireless backhaul. Beyond the enlightenment of the need, though, there still seems to be some lingering haze around the state of dark fiber availability throughout the United States.

To be clear, not all fiber is, or was, created equal here in this country. Much of the fiber outside of a few major metros and fewer lower-tier cities is carrier-owned and therefore not readily available for lease, or IRU on any terms let alone reasonable ones. This is just a matter of course for carriers that do not wish to enable their competitors with the same benefit of control of fiber from their own inventory. Therein lies a conundrum.

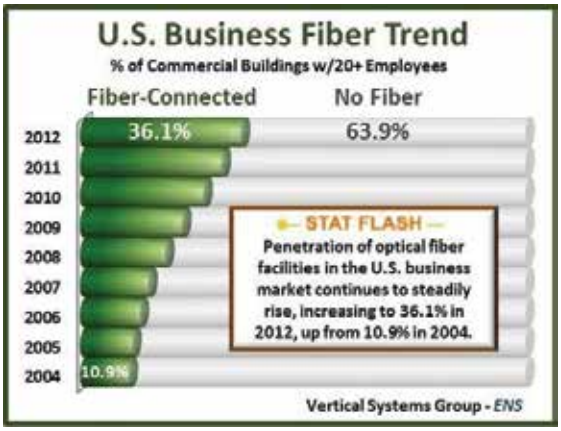
Aside from an outright acquisition of a fiber-based network operator when leasing or buying dark fiber pairs, the only alternative is to build a new fiber route. The cost to build a new fiber route where one does not exist (to a tower, town, data center, office building, school, etc.) includes procuring rights of way that are typically costly, as are the time and materials expense of building a fiber cable and, or conduit/duct for a buried route and the placing of it. For long-haul routes, there is also the time and expense of building conditioned space for housing optical amplification equipment.

This effort and expense logically compels network planners to over-size the fiber cable since labor and rights of way are essentially fixed and the incremental cost of fiber pairs in a cable is not that much. The scenario does not make sense to the finance department though, as they would prefer just to lease or purchase only the amount of fiber the network needs for its own internal purposes and not have to build it from scratch. They also do not ultimately want to overbuild a fiber cable and be left with excess fiber that they are not willing to sell to competitors anyway. Therein lies another conundrum.

In addition to these conundrums there have been several years of dark fiber network mergers and acquisitions, consolidation and sales of fiber inventory that have now left the U.S in a state of fiber exhaust in many places in the country. In other places there is not any dark fiber at all as it has just simply not been built there yet, but now there is a need such as at a wireless tower. Add to that the fact that network operators do not wish to spend their own capital to build new. They would much prefer someone else to do it and they then just lease dark fiber from that provider. As a result, we have the great fiber standoff, or fiber gap, that we now face.

The U.S. lags behind most developed countries as far as Internet speed is concerned. Optical fiber facilities currently reach only 36.1 percent of U.S. commercial buildings, leaving the remaining 63.9 percent in the fiber gap.

Fiber Availability - % of Buildings with 20+ Employees



Looking at the data from Vertical Systems Group it is evident that the fiber gap for commercial office buildings has closed a mere 25.2 percent since 2004, when the penetration rate was 10.9 percent, representing a compound annual growth rate of only 16.1 percent. At that rate, it will take another 18 years for the U.S. to reach 95 percent-plus fiber penetration to commercial office buildings.

"Direct fiber is clearly the preferred access technology for carrier Ethernet services, as well as for higher speed connectivity to IP VPNs, cloud-based applications and the Internet. Enterprise customers prefer direct fiber due to the benefits of scalability to multi-gigabit speeds plus lower bandwidth costs as compared to other access options," says Rosemary Cochran of Vertical Systems Group.

The percentage of fiber penetration to wireless towers and tower sites is about the same in the U.S. with around 30 percent of the 300,000 towers and tower sites (antenna attachments to structures other than a tower, i.e. a building) in the U.S. having fiber access and the remainder having no fiber at all. Without an investment in new dark fiber the U.S. will simply not be able to grow at a rate to keep pace with the rest of the developed word. Given the statistics the need for increased fiber availability is clear and the only lingering haze is the fog of ignorance that blocks the view of those that still don't get it. IT

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

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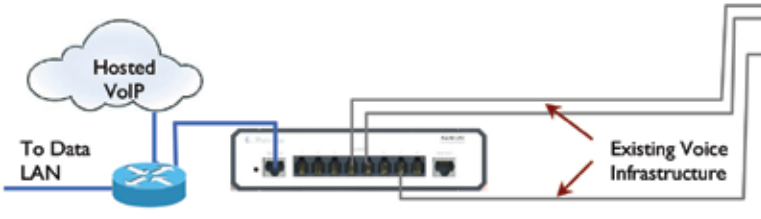

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By Jeff Canter

U.S. Patent Law is Broken, Here's How to Fix It

In 1895, George Selden patented the "improved road engine" powered by a "liquid-hydrocarbon engine of the compression type." In other words, he patented the car.

In 2003, Apple patented the glass staircase that appears in some of its stores.

In 2012, Apple successfully sued Samsung for creating a screen that can distinguish between one or two fingers touching it. Apple also sued Samsung for copying the iPhone shapes, white and black colors, and rounded icons, among other things.

And today, Google Maps might get shut down in Germany for violating Microsoft's patent on a "computer system for identifying local resources and method therefor."

Of the above cases, only Selden's patent was successfully challenged in 1911, thanks to Henry Ford. The others still stand along with Amazon's patent on a one-click purchase button, the Motorized Ice Cream Cone, the Banana Suitcase, and the Gas Grabber (don't ask).

The absurdity of these patents is not even half as frustrating as the shameless efforts to exploit the broken system. Apple, Samsung, Microsoft, Google, Nokia, and HTC spend billions in the so-called smartphone wars trying to strangle each other in the courts, rather than spending hard-earned cash on R&D. Patent assertion entities, also known as patent trolls, acquire patents with no intention to ever develop the products or processes: they simply aim to collect licensing fees or blackmail companies into settlements.

If Selden could not maintain such an absurd patent in 1911, why can software companies today secure even more preposterous patents? Why can companies exploit erroneous patents to bleed out competitors, stifle innovation, and squash upstarts? Why can patent trolls so easily exploit America's innovators?

Legislation Has Fallen Short

The U.S. patent system is not only broken – it's being flagrantly abused to stifle innovation, penalize inventors, and lock great companies into epically pointless litigation from which only lawyers leave the better.

Government efforts to address this issue have been underwhelming and ineffective.

On Sept. 16, 2011, President Obama signed the Leahy-Smith America Invents Act, aiming to protect startup innovators from legal tricks utilized by moneyed infringers. However, the AIA did not go far enough, and has in fact backfired. Ex parte patent reexaminations have tripled since the bill came into force because patent infringers now blackmail patent-holders with the threat of reexamination. The bill was supposed to reduce legal threats.

> Suits brought by patent trolls have actually increased from 29 percent of all infringement suits to 62 percent of all infringement suits over the last 2 years alone.

The new First Inventor to File rules, which replaced the age-old First to Invent standard, have also reduced startup access to venture capital, since startups often do not have a sufficient conception, proof of functionality, and business plan until after they earn venture backing. Conversely, venture capitalists cannot risk backing companies until they have the patent. Both investors and high-tech startups now struggle with this Catch-22.

The problem is getting worse: Suits brought by patent trolls have actually increased from 29 percent of all infringement suits to 62 percent of all infringement suits over the last 2 years alone. The White House claims that trolls may have threatened more than 100,000 companies in the past year.

At this point, the patent system cannot be band-aided so easily, despite the White House's best intentions. On June 4, the

Obama administration announced five executive actions and seven legislative recommendations to better protect America's innovators. They are a mixed bag.

Encouragingly, the White House wants Congress to give district courts discretion to make abusive plaintiffs responsible for the defendant's legal fees, and they want Congress to incentivize public filing of demand letters to limit abusive suits. Making plaintiffs responsible for legal fees could deter unscrupulous companies from attempting to hemorrhage competitors.

The Executive Orders demand:
1. That patent applicants and owners regularly update ownership information so that trolls cannot use shell companies to hide the full extent of their patent holdings from companies they target in abusive litigation.
2. That the PTO train examiners to weed out overly broad software patent claims.
3. That the PTO creates "education and outreach materials" that "offer answers to common questions by those facing demands from a possible troll."
4. That more research, discussion, and data production occur.
5. A review of procedures that Custom and Borders Protection and the International Trade Commission use to evaluate exclusions barring the import of infringing goods.

Despite the nice intentions, the White House has not done enough to stem abusive patent litigation. As it stands, a company could probably patent the process of embedding Google Maps on a webpage – or patent the ability to purchase products and services inside a mobile app. Oh, wait, Lodsys already has that patent.

If profoundly ludicrous patents breeze through the Patent and Trademark Office, trolls prey on companies, big companies prey on little companies, and tech giants slap lawsuits to each other like leeches, clearly patent law is broken. Uncle Sam must take stronger measures to stop the bullying and set America back a path of innovation.

In line with the Electronic Frontier Foundation's Defend Innovation Project, I recommend seven simple changes to patent law that would stem the unchecked growth of exploitive litigation:

1. Software patents should last no longer than five years from the application date.
Currently, patents last 20 years, which is an outdated timeframe given the pace of software innovation. Patent lengths should reflect the speed of innovation within individual industries.

2. If a patent is invalid or there is not infringement, the plaintiff should be responsible for the legal fees.
Trolls and predatory tech companies frequently use the threat of a protracted legal battle to blackmail alleged infringers into an out-of-court settlement, even though the defendant would probably win in court. Making the plaintiff responsible will discourage this abuse.

3. Patent applicants should be required to provide an example of running software code for each claim in the patent.
If a patent troll lacks the ability to implement a software concept, why does it deserve a patent? Do I deserve a patent for a hovering skateboard that I cannot create? Absolutely not. This requirement would prevent trolls from patenting concepts and processes that they intend to exploit rather than produce. This will let great thinkers and inventors actually bring these ideas to market.

4. Infringers should not be liable for independently arriving at a patented invention.
Software code is mathematics; therefore, it should come as no surprise that multiple people often reach the same or similar code. Making such independent innovators liable is like accusing a student of plagiarism because he or she solved a math problem but submitted the exam after another student. You should not be able to patent common sense processes and single-answer solutions.

5. Patents and licenses should be public right away.
Otherwise, how can innovators know if they are infringing on a patent? It's wrong to let enterprising coders invest time, money, and passion into a product only to fall into a patent troll's booby trap. Patent owners should be required to keep their public records up to date.

6. Patent law should limit damages so that a patent owner cannot collect millions of dollars if the patent represented only a tiny fraction of a defendant's product.
Should a teenager get the death penalty for stealing a candy bar? No. Then why should a startup be given the fiscal death penalty for infringing on a patent that is a miniscule component of their software? If an alleged infringer is not making millions on a patent, they should not be liable for millions.

7. Congress should commission a study and hold hearings to examine whether software patents actually benefit the economy.
According to researchers form the Technical University of Lisbon, a stunning 91 percent of all technologies that have received an R&D 100 Award from the academic journal Research & Development between 1977 and 2004 were not patented. Across the board, scholarly studies have challenged the notion that patents protect economically useful inventions. Indeed, mounting evidence shows that the opposite is true – patents stifle more innovations than they protect.

Only countries with enlightened legal institutions can sustain long-term economic growth, facilitate innovation, and benefit from the genius of resourceful creators. So long as malicious companies and opportunistic patent assertion entities can cannibalize the productivity and ingenuity of America's tech community, advancements will stall, great ideas will crash before they ever take off, and the global community will miss out on opportunities to improve the human condition. IT

Jeff Canter is president and CEO of CallCopy (www.callcopy.com).

By Jon Arnold

The Upside of Personalization

By its nature, collaboration requires interaction among parties, and for that reason I've been exploring what this means to different stakeholders. Some people collaborate more effectively than others, and that can mean many things. On one level, there are good team players, while others just want to be left alone to do their thing. Then you have group dynamics where certain functions or departments interact easily with peers doing similar types of work, but not so well will those who work in completely unrelated areas.

Another important factor is how well employees are able to use the tools that unified communications supports. There are many social and interpersonal factors to consider, but independent of this will be their comfort level with communications technology. This is where things get interesting, but not really in ways that vendors are addressing.

In my last post, I talked about the downside of personalization, and how this can really undermine UC, especially among Millennials who have grown up with the Internet. They may have great intuition with all things digital, but their expectations regarding social interactions will be very different from their older generation co-workers. This means they could be the savviest users of UC tools, but if they're just not inclined to engage on group projects, you have a different problem on your hands. In other cases, they may be the go-to people to show others how to use these tools, and even though they're willing to be good team players, they're just not very good at it.

Of course, businesses wouldn't have this problem if all workers were bots and had exactly the same skill sets. There would be no interpersonal issues or variances to mess up the process and everyone would simply do as they were told. On paper, sure, this would make UC wonderfully productive, but the whole point of collaborating is to bring together disparate and unique skill sets to achieve better results than if we all just stayed at our desks hiding behind our PC screens.

So, which would you rather have? Most of your older employees are probably good team players with fair-to-middling technology skills. Within that cohort you will certainly have some with sharp technology skills, and they will be your collaboration stars. However, most may see UC as intimidating or something they use around the edges. Unless you're willing and/or able to provide training to specifically address these deficiencies, be careful where you set the productivity bar here.

Just as I argued in my last post that personalization can undermine UC, I can also take the opposite position. This may seem contradictory – and these are the types of ideas I'm trying to raise in this column – and it's really just a matter of perspective. If you study Millennials, you'll find that they actually collaborate very well, particularly among themselves since they have a common frame of reference and sensibility about how to get things done.

If they have an active hand in defining the UC toolset, Millennials will feel a greater sense of ownership that will allow personalization to have a positive impact on collaboration.

However, this reality may not square up well with the processes you have in place today, and would explain why you don't think they get the collaboration concept. This is why Millennials tend to thrive in startups, where everyone is from the same generation, and knows how to use the same tools. Shift them to an enterprise setting with a lot of processes and hierarchies, and they have a much harder time.

Personalization can certainly make it easy for employees to tune out and build roadblocks that interfere with collaboration. However, if UC is introduced and deployed in ways that resonate with them, their affinity to personalize everything they do can more easily extend to UC. In other words, if they have an active hand in defining the UC toolset, Millennials will feel a greater sense of ownership that will allow personalization to have a positive impact on collaboration.

This may be hard to envision, but there is definitely upside to be had here – you just have to see it from their point of view. Can you do that? Just remember, learning is dynamic – Millennials have a lot to learn from the older generation, but this will be their world someday, and they have a lot to teach us as well. IT

Jon Arnold is principal of J Arnold & Associates, an independent telecom analyst and marketing consultancy.

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It's no secret that conferencing has forever altered the way we communicate. It has changed the way we interact, collaborate, and perform tasks at work. It has helped friends and families separated by distance reconnect, regardless of time and place. The Projectphone series of conferencing units are now found in business environments in which conference calls and face-to-face interactions via video conferencing are the norm. With implementation, conferencing has changed greatly, companies now rely on the ability to see the faces of the other conferencing parties and in addition these participants can share various materials which encourage strong, sound, two way talks.

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By Steven Johnson

Q&A: What is an E-SBC?

At Ingate's SIP Trunking Academy at IT-EXPO we held several sessions on the role of E-SBCs and SIP trunking. We talked the nuts and bolts of session border controllers, security, interoperability, WebRTC… you name it. I wanted to share some of the Q&As.

What does an E-SBC do?
E-SBCs sit at the edge of the enterprise network to provide control over the SIP traffic. They serve as a crucial element in enabling SIP deployments for SIP trunking, UC and soon, WebRTC.

E-SBCs resolve NAT traversal issues by securely permitting SIP signaling and related media to traverse the enterprise firewall. Without this function most companies will have one-way audio only.

Is that all that the E-SBC does?
No. E-SBCs do many other things in today's SIP installations that make them a critical piece of the deployment. For example they can facilitate interoperability between the PBX and the service provider, regardless of which IP PBX or ITSP you're using.

And the E-SBC does much more including:

- **Disaster Recovery:** E-SBCs can reroute SIP traffic to a secondary office to keep business up and running. The E-SBC can also shift traffic to alternate service providers, or load balance to multiple PBXs on the customer's network.
- **Quality of Service:** QoS is becoming increasingly critical as high-bandwidth applications become more popular.
- **Security:** The first line of defense, E-SBCs can provide authentication (which some IP PBXs do not natively support) and encryption. Deep packet inspection protects against buffer overflow attacks, denial of service attacks, sophisticated intrusions and a small percentage of worms that fit within a single packet.

Intrusion detection/prevention detects DoS attacks based on SIP, and blocks malicious SIP signaling packets designed to attack certain SIP phones, servers or other devices on the LAN.

How long does it take to deploy a SIP trunk?
With the E-SBC two networks can be connected in a matter of minutes.

Do I need to interop test my PBX and ITSP?
No. Since E-SBCs facilitate interoperability, there is no need to conduct extensive trial and error between your PBX and ITSP to get the two systems to work together. This also gives more choices to the enterprise when selecting a service provider, and permits the service provider to interact with more IP-PBXs than would be possible otherwise. **IT**

Steven Johnson is president of Ingate Systems (www.ingate.com).

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Many who try to climb it fail, and never get
to try again. The fall breaks them.
And some are given a chance to climb, but refuse.
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or the gods…illusions. Only the ladder is real.
The climb is all there is..”**

— Littlefinger

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By Frank Yue

NFV: Virtualization Leads to Dynamic Services

Today's communications service providers are looking at virtualization technologies for their core network infrastructure services. A lot of talk about cloud has transitioned to discussions surrounding SDN, and now CSPs are creating a lot of buzz of their own with the development of network functions virtualization.

NFV is a working group within the European Telecommunications Standards Institute to determine how the drive for software and virtualization can benefit CSPs. NFV is designed to virtualize services in the next-generation networks such as 4G LTE's evolved packet core. This means that services such as VoIP and rich communications services could migrate from proprietary platforms to COTS hardware as virtualized software running on industry standardized platforms. Services within the CSP network such as the SBC or SIP proxy are primary targets for virtualization and the NFV committee.

While virtualization and the elimination of hardware dependency is one of the primary goals of NFV, it is important to understand that the full benefit of this transition to a software-based model is not only due to the cost savings from COTS hardware. Once the applications and services become virtualized, it's possible to create a managed and orchestrated ecosystem that is able to leverage the benefits of not having services associated with discrete performance, availability, and distribution restrictions.

Virtualization is the foundation that enables all of the other NFV benefits. Without proprietary hardware, the availability and performance of services becomes much more dynamic because resources can be added and removed as necessary and the services can be enabled in locations based on need rather than physical proximity. This abstraction of the service means that the operator has the flexibility to apply resources only as necessary. It also means that the service can be made available anywhere, as long as the virtualization infrastructure has been established. The application resource may be available and enabled in one or more locations while being utilized by customers in other non-distinct locations.

The abstraction of the application is actuated through the programmability of the infrastructure. It does not make sense to create a flexible and dynamic environment if it still requires custom interfaces and manual management of individual elements such as the virtual machines, network elements and traffic steering application delivery controllers. For NFV to succeed, standard and open interfaces need to be made available throughout all of the infrastructure elements. These APIs need to allow for the collection of analytics and data from the network elements and also be able to deliver remote management control capabilities to configure and control these functions. Programmability also gives the operator the flexibility to adjust the delivery of the services provided as business and network needs change over time.

Abstraction of the service means that the operator has the flexibility to apply resources only as necessary.

Last, to create a unified, flexible ecosystem, it is necessary to orchestrate all of these services and components that have been delivered by multiple vendors and solution providers. Orchestration provides the means to analyze the data received from all of the disparate elements. At the same time, operator defined policies can be used to automatically determine the proper actions and reactions needed to adjust these same elements (as well as other components) to create a robust and dynamic ecosystem.

With these four key aspects – virtualization, abstraction, programmability and orchestration – the creation of a dynamic, flexible, service-oriented infrastructure starts to become a reality. The ability to automatically add and remove capacity based on real-time demands and without physical constraints becomes a reality. NFV is helping drive operators and providers toward this goal by delivering a common vision and architecture. Virtualization has become the driver to create the self-aware and self-healing network that everyone has been promised, and NFV is poised to deliver the framework. IT

Frank Yue is technical marketing manager at F5 Networks (www.f5.com).

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Cloud-based or On-premises

Kontron MS2900 No Ordinary Server

By Jeff Hudgins

The explosive growth in cloud-based applications and big data analytics has presented some interesting challenges for servers designed for these data intensive environments. The three primary challenges for cloud servers typically are performance, scale, and maintainability.

A new product recently released by Kontron called the SymKloud MS2900 is not just another ordinary server, but instead is targeted at solving the critical challenges of cloud-based applications. The product is certainly feature rich, but the four features that clearly distinguish the new MS2900 are its switching, load balancing, modularity, and reliability. This new platform takes the modularity and switching strengths from the ATCA standard and combines them with the lower profile and price of a standard 2U rack mount server.

The MS2900 has integrated switching up to layer 7 as well as node and cluster load balancing. The server is designed to meet NEBS Level 3 carrier grade environments with five 9's reliability. The server is also equipped with easy to maintain Easy 1-Click updates.

The server is designed with complete modularity, but the unit does not sacrifice performance. With up to 24 TB of storage, eight Xeon processors, and up to eight servers in a cluster, the MS2900 is ready to handle large workloads. The SymKloud MS2900's integrated switching, load balancing and processing in a 3-in-1 modular platform is well suited for cloud-based transcoding and content delivery infrastrucure applications.

So what's the final score? The MS2900 appears to solve the key cloud server challenges in a well designed compact 2U modular form factor. If the price tag to get all of these features in a modular server is reasonable, then this platform is really application ready. IT

Jeff Hudgins is vice president of marketing for UNICOM Engineering (www.unicomengineering.com).

FCC E-Rate Overhaul Could Affect VoIP Eligibility

By William B. Wilhelm and Jeffrey R. Strenkowski

On July 23, 2013, the FCC released a Notice of Proposed Rulemaking aimed at updating the E-Rate program, which subsidizes communications service and technology purchases by schools and libraries. The NPRM proposes three overarching goals: ensuring schools and libraries have affordable access to 21st Century broadband that supports digital learning, maximizing the cost-effectiveness of E-rate funds, and streamlining the administration of the E-Rate program.

As part of its planned overhaul of the program, the FCC has requested comment on whether to phase out support for certain "outdated" services (i.e., paging, directory assistance, custom calling features, inside wiring maintenance, call blocking, text messaging), as well as other types of services such as e-mail, web hosting, basic maintenance of internal connections (BMIC), cellular data plans and air cards, and possibly all basic phone service. Importantly, in light of its consideration of which types of services should be phased out, it also asks whether VoIP provides a viable alternative to public switched telephone service, whether the advent of increased broadband speeds in schools and libraries has made VoIP service a more cost-efficient and attractive way to receive voice services, and how the E-Rate rules can and should accommodate the needs of schools and libraries in areas without VoIP services, including some tribal lands. Alternatively, the FCC asks whether it should simply phase out funding for all voice services altogether, including VoIP service.

Thus, the FCC could: retain the status quo (retain eligibility for VoIP and non-VoIP voice services); reduce support for non-VoIP voice services (leaving VoIP eligible); or remove all voice services (including VoIP) from the E-Rate program. As such, the NPRM poses significant questions for VoIP providers that are providing services to E-Rate eligible institutions. IT

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

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By Ken Osowski

It's Prime Time to Monetize OTT Video

Currently mobile video usage habits are more about viewing shorter length video content from sites such as YouTube than renting longer TV episodes and feature-length movies, primarily because of data usage limits imposed by existing mobile data service plans. But the popularity of fixed network video streaming has created a broad diversity of licensed content accessible through cost-effective, monthly subscription services from Netflix, Hulu and others that mobile device users in fact may already subscribe to. At the same time, mobile device manufacturers are introducing a wide range of mobile devices with even higher resolution screens and processing speeds that are capable of supporting the highest resolution video streaming available from these services.

For mobile operators, all of these factors combine to create challenges to overcome along with revenue opportunities to seize when looking to encourage OTT video usage. But this has to be achieved without operators breaking their networks, depleting the consumer's bank account, providing a poor quality experience, or worse yet modifying the consumer's behavior to only watch streamed video content on Wi-Fi access networks. The time for mobile operators to capitalize on mobile OTT video usage is now and so is the technology needed to make it happen.

Mobile subscribers want more granular video pricing models and content selection. This has been the key issue for consumers deciding to use OTT services in fixed line networks. Fixed line operators have traditionally created video service plans that bundle specific channels and premium content. OTT video services break this model and give consumers the choice to pay for what they like at a price they are willing to pay. Ultimately, this will put the subscribers in charge of deciding what mobile video services they will use, whether or not mobile network operators embrace it. While heavy users of mobile video are willing to consume video on mobile networks, current usage quotas are too low for extensive viewing.

Awareness of what is happening in their network is the first step for mobile network operators to understand OTT video usage in their network. Service planning should be centered initially around subscriber, device, location, and application awareness in the operator's network, helping the marketing team understand mobile video usage characteristics and patterns that can help them to define service plans for which users would be willing to pay. Understanding the popular content providers, areas experiencing heaviest video usage, and video consumption across different service tiers are all critical to understand, and then optimize and monetize, OTT video.

Optimization is the next step, allowing mobile network operator to enhance users' quality of service and quality of experience when streaming video to their mobile devices. This directly improves customer satisfaction and, ultimately, reduces churn rates. Traffic management, prioritization, video optimization, and congestion management techniques can be used to control bandwidth-intensive video streaming to improve the bandwidth per subscriber, application, device, service plans, and other traffic classifications.

At the heart of monetization is the paradigm shift from usage-based to value-based pricing service plans that encourage mobile OTT usage. This includes service-centric pricing that accounts for who, what, when, where, and how subscribers are using their OTT video subscriptions in the operator's network. Value-based service plan pricing matches subscribers' usage patterns to pricing based on what device(s) they are using, usage location, time of day, video-specific usage volumes, and video application prioritization. Because an approach too aggressive can limit monetization opportunities, detailed analytics to optimize pricing plans are critical to success.

Unless mobile operators embrace and monetize OTT mobile video as a prime time strategy, OTT mobile video will remain a threat to their strained business models.

Video content-aware services can be created to build incremental video service to the mobile operator's base data plans, including:

- zero-rated video plans;
- time-of-day video prioritization or charging;
- video bandwidth prioritization;
- location-based video plans;
- multiple video device shared data plan usage;
- specific time-of-day and day-of-week video service plan options;
- video QoS management;
- incremental video specific service plan quotas; and
- subscriber-specified video limits.

OTT video services can threaten a mobile operator's service revenues and margins while OTT video content providers reap the benefits of the revenue they generate. Their video service pricing does not have to account for network costs since the mobile operator makes this investment. This puts a significant strain on the operator's profit and loss statement since its network resources can be disproportionally consumed by video streaming when compared to its baseline data services without a tangible revenue offset. So unless mobile operators embrace and monetize OTT mobile video as a prime time strategy, OTT mobile video will remain a threat to their strained business models. IT

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

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Continuity Planning 101 – A Continuing Educational Series

Listen Up Already

By Rich Tehrani & Max Schroeder

The October 2012 Disaster Preparedness column titled "How the Cow Ate the Cabbage" referenced a frequently used Texas folk saying included by former Texas Gov. Ann Richards in her speech at the 1988 Democratic convention. The generally accepted meaning is to tell someone a truth they do not want to hear. Hopefully TMC readers in the Northeast listened and acted quickly as disaster was just around the corner.

In the past, the Northeastern U.S. including New York, New Jersey and Connecticut (Tri-State Area) seldom experienced major disasters like hurricanes and massive floods. It is a good example of how individuals or businesses can be lulled into a cavalier approach to business continuity planning when things are going well. Everyone in the Northeast is now fully aware of the need for a good BC/DR plan but, unfortunately, many people and businesses suffered enormously. However, despite the massive destruction and power outages some businesses and individuals managed quite well. How did they do it?

The commonality of most companies that survived well is that they had avoided the tendency to procrastinate and got serious about putting a solid plan in place. This is not to say that everything was easy and stress-free, but business continuity was achievable. They were ready when the storms hit and implemented their BC/DR plans. As with any other business strategy, the companies with the most comprehensive plans in place faired the best.

TMC is a good example. Although 50 percent of the state's electric customers were without power due to Hurricane Irene in 2011, TMC remained fully operational. The same held true in 2012 when the Tri-State Area was hit with Hurricane Sandy and a Nor'easter followed 10 days later when many (including one of the column's authors) were still without electrical power and other normal services for weeks.

The good news for company planners is that advances in communications, cloud technology and converged messaging platforms make BC implementations more affordable and easier than ever. Many of these components will also reduce overhead, make operations more efficient and add to the bottom-line immediately. Therefore, the old BC/DR constraint of having to sell it to management is no longer applicable.

So listen up already and get started.

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

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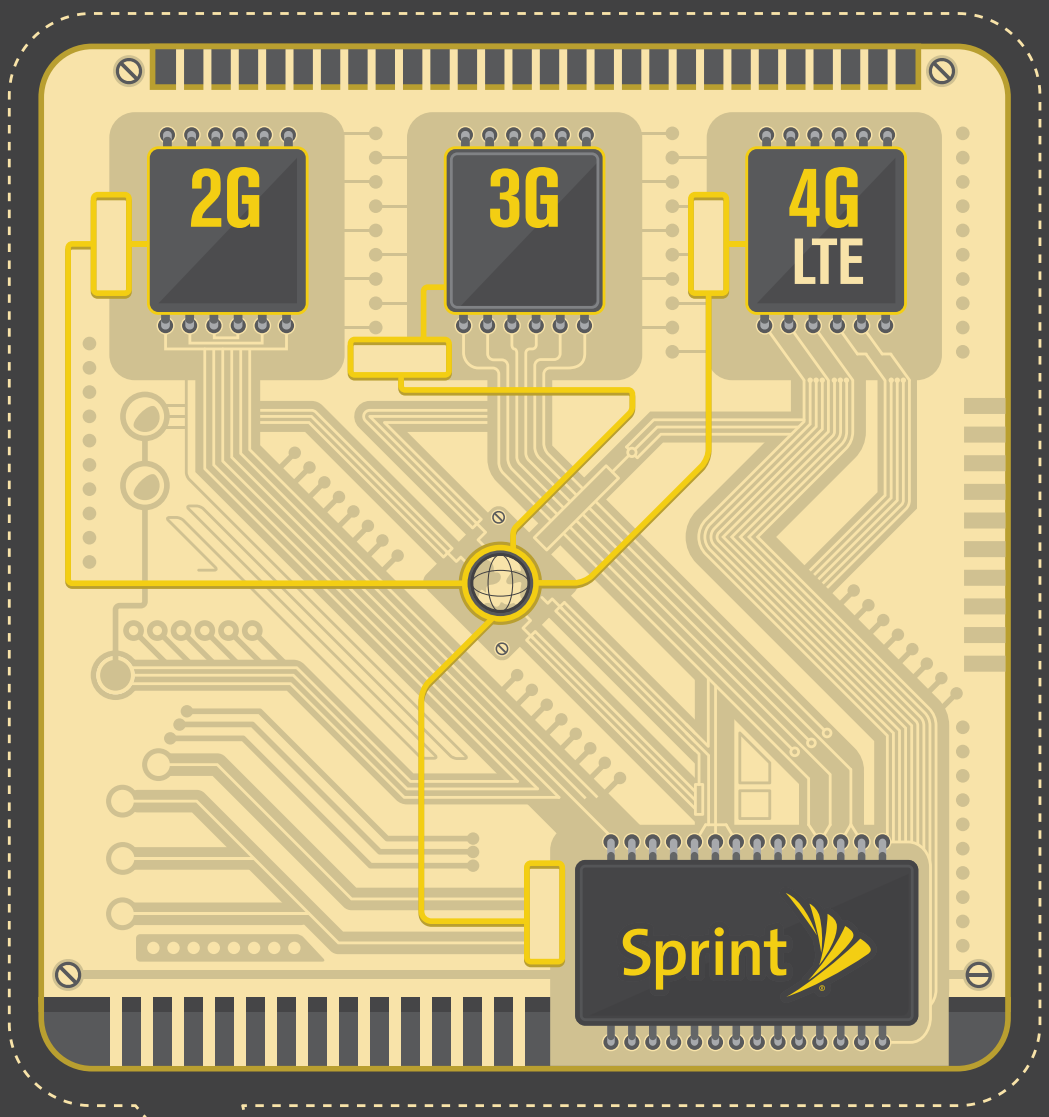

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By Chris Koziol

Eliminating Disconnects Through Omnichannel Communications

In the business world, we hear the word integration all the time – integration of processes, of technology, of people. But when thinking about the word integration, what does it really mean? Is it just a buzzword, or is there something behind it?

Well when it comes to customer service, integration is the Holy Grail. But the key to this so-called integration imperative is getting past the jargon and to the real factors behind connecting people, processes and technology to improve the customer experience.

In today's customer service landscape, bringing together the growing number of channels available for the consumer to interact with a company is essential. From social and mobile to chat and phone, consumers are more in the driver's seat of the customer-company relationship than ever, and brands must keep pace by offering service on all channels, making sure that service works seamlessly from one to the next, and ensuring the experience across all channels is consistent.

The key to this so-called integration imperative is getting past the jargon and to the real factors behind connecting people, processes and technology to improve the customer experience.

Seamless transition from channel to channel is what's commonly referred to as omnichannel. To retailers, omnichannel means one thing, but in the customer service world, it means the data, the information, the experience should move from one channel to another with no disconnects, no asks to repeat your information, no hiccups.

Unifying technology is also essential to get your front of house and back office working in tandem. Take an airline or hotel contact center for example – the technology that tells you that summer is a high consumer traffic time should also tell you the appropriate number of staff members with the specific skill sets necessary to handle that influx. And it should provide data that allows for teaching moments with agents based on their interactions.

What your customers do, see and experience should be closely tied to how the workforce is managed, from scheduling and skills-based forecasting to performance management.

Lastly, connecting people – that is, getting everyone in your organization on the same page when it comes to the customer experience – is paramount to delivering a seamless, omnichannel experience. For example, during a customer service interaction, contact center agents should be able to easily bring appropriate people from other departments into the conversation to resolve the customer's issues.

And each time your company interacts with a customer, there is valuable data to be collected and used to your business' advantage. But that data can only work for you if you use it effectively across departments rather than keeping different employees from different departments in siloes. Customer service representatives should interact with product managers (to influence product roadmaps), who should be on the same page as marketing executives (to develop targeted marketing plans), and the list goes on. This results in ultimately driving overall business planning and objectives based on customer input.

The consumer experience has become increasingly important as brands battle in a market where attracting and retaining customers is tougher than ever. For a successful customer service operation, and frankly a successful business, a company's people, processes and technologies must work as one unit. It's easy to say that these things need to be integrated, but getting past using the word integration for integration's sake and identifying what it really means to your business is where the real success lies. **IT**

Chris Koziol is president and general manager, interaction management, at Aspect Software (www.aspect.com).

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By Paula Bernier

Gaining Momentum in the Channel

Hosted VoIP Provider's Valued Partner Program Off to a Strong Start

Hosted VoIP is supposed to be easy to deliver, but the plug-and-play method of installation doesn't always work so great for customers, or the agents that sell them such solutions. The true path to hosted VoIP success is to take the time to visit the customer location, do a site survey, handle the installation rather than just ship the customer phones, and offer ongoing support and quality monitoring throughout the life of the customer and channel partner relationship.

At least that's the view of Momentum Telecom, which works with value-added resellers to bring its hosted PBX, SIP trunking, hosted Exchange services, unified communications tools, and call center applications to small and medium business customers throughout the continental United States.

"We make it work, and the implementation process is a very important piece to us," says Jamie Minner, vice president of sales at Momentum Telecom. "So that's our guiding principal, and the channel has been very responsive."

Momentum Telecom's move to embrace the channel is a fairly recent endeavor, but one long in the making. The idea was sparked nearly 3 years ago. Since then, Momentum Telecom has spent significant time and effort developing products and procedures for the channel. That included bringing Minner and new President and CEO Bill Fox aboard to lead the charge.

"We were very deliberate about how we did this, and built it from the ground up," says Fox of the channel effort.

Since its launch a year ago last month, the Momentum Valued Partner (MVP) program has attracted 117 channel partners, including one master agent. Most of those partners signed on this year, as Momentum Telecom wanted to start out slow, so it brought aboard 10 agents last year, another 10 at the turn of the year, and the rest since February.

"We don't partner with just anybody, we want to make sure to have the right fit," says Minner, who previously worked with Cbeyond and IP5280.

Momentum Telecom is looking for partners who will help it change the perception of VoIP and assist it in maintaining the company's good reputation, he says. In return, the company is committed to providing those partners with the remuneration and support they need to build their businesses. The effort has already seen good success, says Fox, explaining channel sales have grown 500 percent year-to-date.

The Momentum Valued Partner Program has a tiered agent payment structure. Those who sell up to $15,000 a month receive a 15 percent commission; partners with between $15,000 and $30,000 in monthly sales earn 17 percent; and at $30,000 or more in monthly sales, the agent gets 20 percent of the sale. The company also offers upfronts in select cases.

When it comes to selling the Momentum Telecom solutions, not only can partners promote the ease of maintenance and cost savings of these cloud-based solutions, and the productivity benefits of unified communications, they also can tout the company's geo-redundant network and call quality monitoring and control.

Service providers commonly talk about geo-redundancy, says Minner, who adds that one competitor who made that claim experienced a six-week outage during Superstorm Sandy. Momentum Telecom, however, offers true geo-redundancy, leveraging its multimillion-dollar data centers in Atlanta and Las Vegas, he says. Since creating its geo-redundant network in 2010 – an effort that involved using the network assets acquired from CommPartners Connect and investing in new gear from Brocade, Cisco and Juniper – Momentum Telecom has not experienced a single minute of core network down time.

Momentum Telecom also provides its channel partners and end customers with transparency into its network, delivering monthly reports on mean opinion scores (MOS), which reflect call quality ratings. Its proprietary probes offer a view and MOS parameters for the Momentum Telecom network, the customer network, and both ends of the access networks. That helps channel partners and their customers better understand what's happening within their networks and assists in troubleshooting when required.

The company's voice services run entirely on its own network. The data network Momentum Telecom uses to deliver services is 50 percent owned by the company, and it relies on NNI agreements with several other carriers, from which it brings back traffic to its own facilities. As a result, it can provide quality of service on 80 percent of the circuits sold to those customers.

In terms of support, Momentum Telecom has a partner coordinator to onboard newcomers, offering training on contract and sales best practices and procedures; providing marketing materials, which can be customized to particular geographies or industry verticals; and familiarizing them with how to use the partner portal to track their commissions.

Momentum Telecom has laid out a channel strategy whereby agents learn about and sell its products incrementally. It first offers training on its core products, which are hosted PBX and trunking. After the agent and some of its smaller customers have some experience with these offerings, Momentum provides training related to its conferencing and unified communications services, which can help the channel partner up his or her commission rate.

Once an agent delivers a prospect, Momentum Telecom connects the partner with the engineer and implementation manager in that city to design the customer network and lay out an implementation plan. That involves the engineer visiting the customer site and then creating a diagram of the current setup and a second schematic of what it will

Bill Fox, Momentum Telecom's President and CEO

Jamie Minner, Momentum Telecom's VP of Sales

Debra Dellaposta of Momentum Telecom partner WPS

look like with Momentum in the mix. The agent then delivers the proposal including that information to the customer. When the customer signs the contract, the engineer does the configuration, including call flow, etc. And the implementation program manager gets on the phone with the customer to discuss expectations for the next 30 days, during which time most customers get up and running (it may take slightly longer for very large customers).

Momentum Telecom inputs orders into its system for agents, but after that the channel partners can access the system to track the status of the order and, if there are issues with the order, see what they are. Moves, adds, changes and disconnects are all automated as well. Fox notes that this system, which Momentum Telecom built itself, not only enables the company to make these processes transparent to its partners, it also lowers the likelihood of error.

WPS is a VAR partner that sells Momentum Telecom's hosted PBX and SIP trunking services – in addition to its own business process mapping, document management, print services, and office equipment – to businesses in western Maryland, and parts of Pennsylvania, Virginia and West Virginia.

"Anything that's on the network is something we're going to handle now because of the services side of the business," says Debra Dellaposta, chief innovation officer of WPS Solutions, which has been a Momentum partner for about two years. "Customers want one throat to choke. Even if we don't provide that service, we want to find best-of-class providers."

The relationship with Momentum Telecom both enables WPS to keep as much of its customers' business in house as possible, and it provides the company with an important source of recurring revenue. Partnering with Momentum, Dellaposta says, has helped WPS move from a one-time sale to a recurring revenue organization. So now, WPS not only sells a $4,500 multi-functional printer, through Momentum it can add to that with another $500 to $600 a month in recurring revenue.

"We have quite a few customers" using the Momentum Telecom solutions, says Dellaposta, who comments that customers are particularly keen on the voicemail-to-email, and email to smartphone features available. "I checked with [one] the other day and she was raving about the service that she's been getting."

Dellaposta adds that Momentum Telecom's technical team makes the process of proposing and implementing customer solutions painless.

"It's easy to do business with Momentum Telecom, and it's an easy solution to implement to your customers so they get the latest in business communications," she says. "It's not difficult at all. And it's a nice way to add recurring revenue."

Fox adds that the company's product portfolio stacks up against anybody's in the industry, but that it's the commitment to service level and making solutions work for both channel partners and their customers that truly differentiate Momentum Telecom.

Customers have taken notice.

Many have sent Fox e-mails expressing their extreme satisfaction with their experiences. To ensure a high level of customer satisfaction going forward, and ongoing growth, Momentum Telecom plans to continue its investment in people, partners and solutions.

"We've had a lot of growth," says Fox, "but we still have a long way to go." IT

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By Peter Radizeski

Why You Need the CRM Habit

Sales consultants will tell business executives that they need to have a customer relationship management system. How else do you get a look at the sales activity in your firm? There are many different kinds of CRM systems with various strengths and weaknesses and price points. How to choose one?

Well, one factor is ease of use. Sales people don't want to use CRM anyway. It's paperwork. Sales guys hate paperwork. CRM has to be frictionless – maybe even intuitive. A good user interface is essential. Integration with e-mail is optional. The ability to add notes and e-mails has to be simple. If you can find one that is voice integrated, bingo!

For managers, it has to have a clear dashboard for a quick view of the funnel – both the sales and the disconnects.

For investors, it not only has to be used and up-to-date, but demonstrate the ability to pull reports about the sales funnel and data points like post-ink churn.

If you turn over even one salesperson per year, a CRM system is necessary to capture the work of the salesperson after he leaves. You paid for his time; you should have something to show for the effort, even if it is only contacts.

If your company has a virtual work force, CRM is vital for collaboration among members of management, sales and marketing. Even support staff will find it helpful to have notes on the customers that they are assisting. It isn't just the notes being available to other employees; it's that the customer or prospect doesn't want to explain the same things to each employee. The appearance to the customers that you have a shared data system and that everyone in the organization is on the same page is important. Sales is about trust. Who is going to trust a business that can't communicate internally?

Customer knowledge is indispensable for an organization. From investors to management to support, the information accumulated during the sales process (including contract details) needs to be available to all members of the organization that are responsible for sales delivery. CRM is the best way to capture and house that information. Make CRM a habit. IT

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

Suddenlink Partners with Telarus

Telarus Inc. has entered into an agreement to sell the Suddenlink portfolio of small, medium, and enterprise broadband and voice solutions. The agreement, through which Telarus will be the first master agent in the new program, marks Suddenlink's entry into the outside sales channel, enhancing its ability to reach higher-end business clientele. Telarus is a value-added distributor that has been named the top Master Agent by the members of the Telecom Association in each of the past three years. Suddenlink is the seventh largest cable operator in the United States, serving approximately 1.4 million residential and commercial customers in Arkansas, Louisiana, North Carolina, Oklahoma, Texas, West Virginia and elsewhere.

VAR SYNNEX Helps Comcast Deliver

SYNNEX Corp., a distributor of IT products and services to thousands of U.S. value-added resellers, has joined the Comcast Business Solutions Provider Program. SYNNEX is the first distributor in the program to serve as a master agent. The Comcast Business services involved in the relationship include the network operators' Ethernet, Internet, voice, cloud and TV offerings. These services are offered through the SYNNEX MOBILITYSolv effort. "We are very excited about the relationship with Comcast Business, a key platform of fixed line service offerings in our MOBILITYSolv strategy," said Kevin Murai, president and CEO of SYNNEX. "Comcast's large national footprint of connectivity solutions along with their hosted voice and video solutions provide a natural complement to the needs of SYNNEX customers. By offering these services, our VARs can now provide a singular source to the end user – a true differentiator which allows them to grow their recurring revenues at an accelerated pace."

XO Heads North

XO Communications has announced its expansion in the Canadian market where, through its Canadian subsidiary, it can now offer route-diverse, high-speed network services across all of Canada's six time zones. XO network services, which are now available throughout Canada, include dedicated Internet access, high-speed IP transit, MPLS IP-VPN, VPLS, Ethernet, private line and wavelength services for enterprise and wholesale customers. "Our Canadian expansion is an example of the progressive organic growth we've experienced since implementing our initial network hub in Toronto and the growing demand from our customers for end-to-end network service capabilities throughout Canada," said Don MacNeil, chief marketing officer for XO Communications. "Our further expansion across Canada will enable XO Communications to continue to provide high-capacity network services to enterprise and wholesale customers, whether they need connectivity within Canada or high-speed access to markets in the U.S."

Masergy Awards PlanetOne, TBI the Platinum

PlanetOne and Telecom Brokerage Inc. both have attained Masergy's Platinum partner status within the company's Global Partner Program. PlanetOne is a leading master agent based out of Scottsdale, Ariz. TBI, based in Chicago, represents more than 50 industry providers. John Dumbleton, senior vice president of business development for Masergy, said: "Our Platinum partners have proven their capabilities by extending our services through innovative solutions and exceptional client attention. Masergy is proud to continue assembling such an exemplary group of channel partners who consistently contribute over 20 percent year-over-year revenue growth – and last fiscal year was no exception."

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By Theresa Wabler

Create Loyalty with a Cloud-based Sales Channel

The reseller market is shrinking. Traditional value-added resellers are consolidating and born-in-the-cloud resellers are starting to make their mark. Increased competition is emerging from many directions, including telecommunications and new cloud technology vendors. So, what's a company to do to ensure its sales are maintained amidst this changing landscape of sales channels?

First, embrace the change. It's not coming tomorrow. It's here today, so it's time to transition. In the increasingly complex world of cloud resellers, it's important to remember the sales channel basics: reward partner engagement, incent product knowledge, maximize sales tool utilization, and celebrate closed deals. Then, start with these action items to leverage your existing sales partner strategies.

Build relationships. Support retention.
In the cloud, sales channel success is not just about the initial win or product training, it's all about how connected your resellers are to their customers over time. As the vendor, you must facilitate this client connectedness. One-off e-mails or short campaigns for your resellers to brand and send are no longer enough. You must build end-to-end, targeted campaigns that drive product utilization and loyalty.

The right partner relationship management platform can take a smart communication plan and use it for lead nurturing and loyalty building. Here's the key, though: You need a plan. So reach out to your marketing resources to develop communications that focus on usability and adoption, not just buy-now product offers.

Control churn. Invest in loyalty.
For hybrid and cloud-based resellers, churn is one of the greatest challenges. In a traditional VAR model, partner activity is often evaluated in six- to 12-month summaries. With cloud-based resellers, it is no longer sufficient to reward big blocks of revenue. Loyalty needs to be measured and reinforced on an ongoing basis.

As a vendor, how do you identify, drive and incent this loyalty with partners? A recent Forrester study identified five key qualifiers: wallet share, certification investment, tenure, transaction frequency and portfolio breadth. Model your partner scorecard to reward these triggers.

Align with your customers.
You've heard it before, but it bears repeating: The hybrid and cloud market is more vertical, more industry-specific, and more solution-oriented. Want to stay competitive? You need to empower your sales partners to think like their customers. Send your partners to conferences that offer industry insights. Encourage your best generalists to attend specialist-level workshops and networking events. Enable them to understand pain points so they can sell solutions. These experiences will also deepen their loyalty to you.

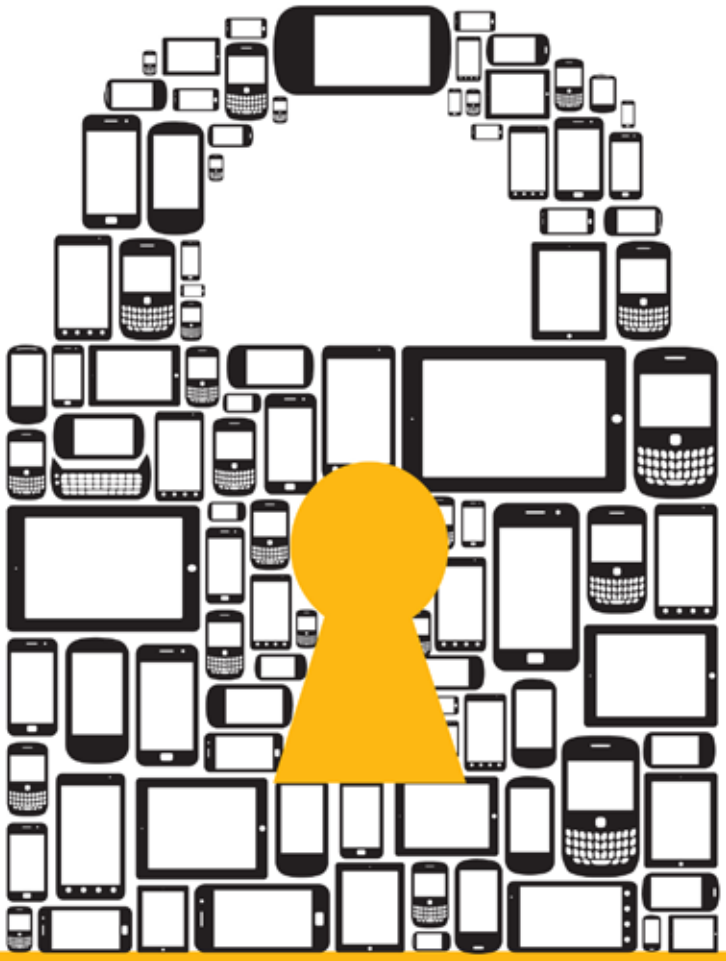
Work smart. Incent smarter.
Your partners are worried about revenue impact as they transform their business. To them, an unknown migration to recurring revenue may mean college tuition or a family vacation. To keep them loyal, put some money where your mouth is. Use your existing channel budget to bridge the gap and drive goals:

- market development funds to educate your VARs via eLearning, conferences, certification programs and more;
- front-loaded incentives for signed, ongoing cloud-based services contracts;
- rewards your partners really want, such as prepaid debit cards;
- engagement incentives with and for propagation of your end user communication plan; and
- marketing concierge services to support business transition and new go-to-market techniques.

Most importantly of all, you must use a partner platform to elevate the awareness of these opportunities. A robust channel management system can promote, measure and reward in real time for real loyalty-building engagement.

You need your resellers' loyalty now more than ever. In the long run, you can't retrofit your traditional go-to-market tactics to satisfy a new breed of VARs. But today, you can stay in the game if you're nimble and responsive. IT

Theresa Wabler is global director of marketing for Parago (www.parago.com), a global incentives and engagement company.



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By Matt Jackels

5 Components to Consider Before Choosing a Cloud Provider

Today, organizations and employees are being asked to do more with little or no increase in material or human resources. Factor in demands for greater efficiency, expense reduction or just keeping up with new communication channels, and you've begun to overwhelm an organization's ability to meet the demands of the business and its customers. This is where offloading these demands to the cloud makes sense.

Companies are now being besieged by new vendors and service delivery models promising the delivery of a wide array of solutions and services. When investigating a migration of critical customer-facing applications to the cloud, organizations need to thoroughly investigate vendors and delivery models to ensure business operations are not disrupted and that benefits touted are real.

Special focus should be given to the following components of a hosted solution to ensure you're making the appropriate decision for your business.

1.) Security Measures to Employ
Security is perhaps the greatest concern when considering a move to the cloud. Security requirements vary by industry, so a thorough understanding of a vendor's security solutions is critical. Naturally, all vendors will tout their cloud security, but the ability for vendors to provide end-to-end security is in part predicated on a vendor's architecture and delivery model. Vendors that utilize a multi-tenant, or shared infrastructure, and/or the Internet as a transport model typically have more potential for security violations than vendors that offer dedicated private cloud and private network solutions. Insist on reviewing service provider security certifications such as SOX, SSAE-16 and PCI compliance as well as any independent audit reports. The recommendation is to use caution and demand the most secured solutions available.

2.) Service Reliability
The migration of business-critical applications to the cloud requires business-class service reliability. The vendor selection process shouldn't only include service availability of the core applications, but also the quality of the service. Service providers need to have the appropriate data replication processes in place, as well as geographic core redundancy for application failover, but should also employ service level agreements on the quality of the service. Attaching SLAs to the quality of the service will typically require a managed network environment to ensure quality of service for IP voice applications, as well as other speed-sensitive applications, such as CTI screen pops.

3.) Day 2 Managed Services
In addition to service reliability, Day 2 Managed Services are one of the most critical elements of the vendor selection process. There are numerous viable solutions available today, and what happens once you've migrated from implementation into a normal production mode validates the business decision to migrate to a cloud-based solution. Vendor Day 2 Managed Services also needs to be governed by SLAs to ensure that vendors are delivering in a timely manner. Your service level agreements should be negotiable to meet unique business requirements. As you enter into a day-to-day production cloud environment, Day 2 Managed Services becomes one of the most critical and impressive components of cloud solution service delivery.

4.) Control: Give a Little, Get a Lot
Moving to cloud-based services means sacrificing a degree of control – a difficult thing for organizations to relinquish. Your cloud service provider not only needs to provide the ability to customize your Day 2 Managed Services support of your solution, but the degree of control and visibility of your solution platform is critical as well. As part of the evaluation process in selecting a cloud service provider, you need to understand what the vendor's maintenance windows and platform upgrade policies are, and the potential impact on service delivery and back-end integrations. Additionally, service providers need to provide their customers the data necessary to manage, make sound business decisions and understand the effectiveness of customer care strategies and initiatives.

5.) Business Experts and Application of Solutions
Migrating to cloud-based services provides businesses the opportunity to re-evaluate their current customer care strategies, and gives you the opportunity to introduce new technologies and applications that can impact customer care and create new revenue opportunities. It's important that when selecting vendors, you investigate their business experience in the application of new technologies and solutions. Your hosted vendor should be asking you about your business needs and have a full understanding of your customer care strategy and vision to implement the appropriate new technologies.

Considering the cloud as a platform for delivering applications can be a sound business decision. There is a wide array of benefits ranging from quick access to new technologies and support for new customer care strategies. Financial benefits can include a reduction in total cost of ownership, reduced internal resource requirements, elimination of life-cycle concerns and a consistent cost model. The right cloud vendor will want to assist you in defining and delivering on these benefits. IT

Matt Jackels is the product manager of Convergys Cloud Solutions at Spanlink Communications (www.spanlink.com). Spanlink partners with Convergys Corp. to deliver cloud-based Cisco contact center and customer collaboration solutions.

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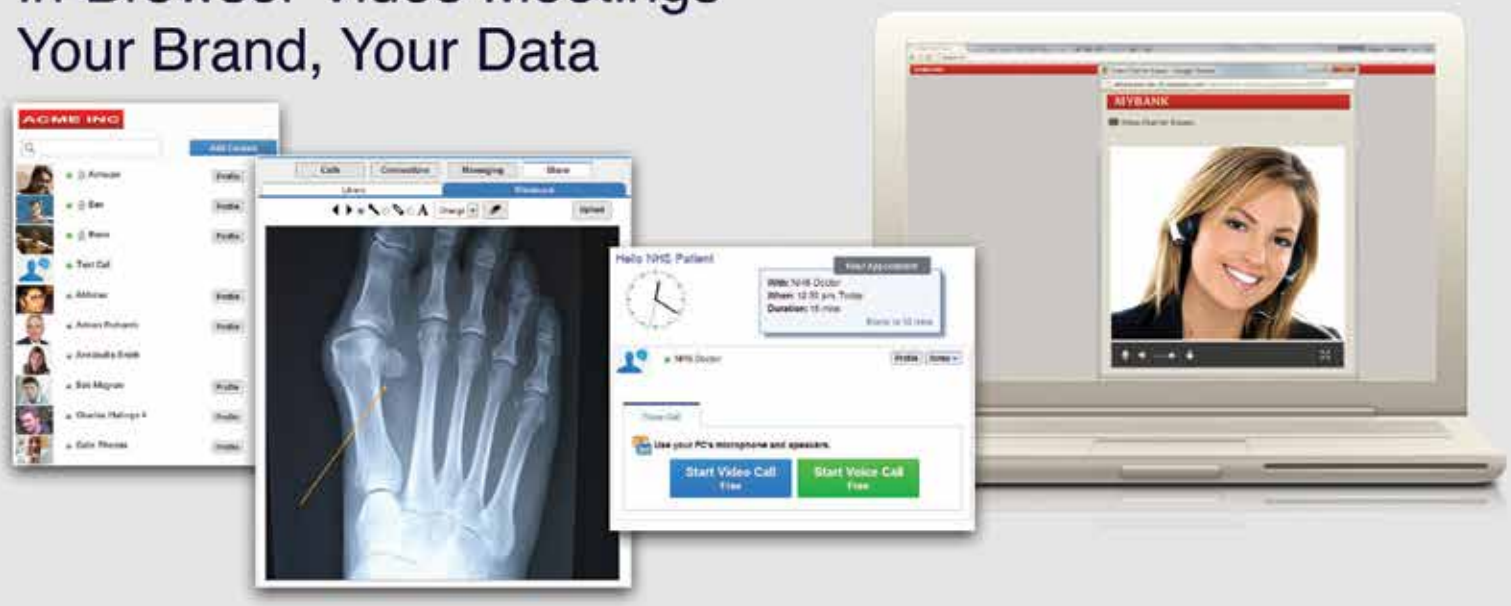

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By Paula Bernier

Ahead of the Curve

Sansay Leads the Pack on Virtualization, WebRTC

The term network functions virtualization has been getting a lot of attention lately as a way to help telcos save money and increase their ability to quickly introduce new services. But Sansay, which opened for business more than a decade ago, has designed everything it's built to run on standard Intel servers from day one and that helps it function in the NFV world.

Sansay offers what it says is the highest performing VoIP session controller available in the market. It enables the delivery of hosted PBX and SIP trunking services and is being used commercially on more than 350 service provider networks worldwide.

When Sansay was established, the company wanted to do signaling and media processing for telcos, but it sought out a new approach to make it competitive, said Max Sheng, COO and executive vice president of R&D. So Sansay decided to leverage a standard server and OS. That positioned Sansay well for the important new move to virtualization, Sheng said, and it will enable customers to run the Sansay system on their existing VMware solutions.

"The design approach we used at the time was to make very efficient software in order to wring the most performance out of a commercial server. We had to use some pretty novel techniques to get the DB and media switching performance needed for the wholesale carrier market," said Sheng. Those techniques are now being applied to the virtual machine deployments.

Being able to run the software on industry-standard servers means customers can benefit from Moore's law. Indeed, software that Sansay wrote a decade ago can now run six times faster, and with no additional investment, as a result of improvements in Moore's law, said CTO Jerry Ryner.

You don't hear a whole lot from other NFV vendors about handling signaling vs. handling media in the cloud, added

Left to right: Glen Gerhard, Jerry Ryner, Max Sheng and Andy Voss of Sansay

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Ryner. That's because signaling and media handling are two very different things, with different requirements. Putting a large amount of media in a virtual environment can be especially problematic without the right technology in place, he said. But Sansay uses technology that takes control of Intel cores and doesn't need to run Linux on those cores, explained Ryner. As a result, it can get the level of performance, which once required proprietary hardware, from off-the-shelf hardware.

The company also has been doing a lot of work around route servers. In fact, Sansay executives said its query per second performance on this front is the highest in the industry. That's important, particularly for large VoIP service providers switching wholesale traffic, explained Glen Gerhard, vice president of product management.

The company has been doing a lot of work around route servers. Sansay executives said its query per second performance on this front is the highest in the industry.

Gerhard said these service providers need to make very refined routing decisions with high volume traffic. To enable that, he said, Sansay off-boarded the route lookup functionality from its session border controller to the ROME HRS system. As a result, he added, Sansay can employ jurisdiction-based routing and process 15,000 calls per second with very large route tables. This kind of performance means Sansay has the horsepower to route all the calls for most customers in a single server.

"In order to keep the termination costs the lowest we can work with multiple consortium number pools within the route tables for direct user termination," said Gerhard. This kind of large database is not feasible to reside on the SBC itself, but can be centralized within the route servers for high performance lookups. "This approach also lends itself to NFV deployments. In order to provide sufficient switching capacity within VMs it needs to scale horizontally. The ability to centralize the route management function reduces the management overhead as the customer dynamically creates new SBC instances."

"Existing tier 1 vendors can't touch our performance on this," added Ryner. And, Ryner continued, Sansay doesn't require telcos to invest in a pricey IMS core to get this kind of performance. "The IMS scalability is useful but comes with an expensive price tag. By simplifying the network architecture and supporting NFV with high performance solutions service providers can dramatically reduce their cost of operations."

In addition to being a leader on the telco virtualization front, Sansay is also a first mover in the important new area of WebRTC.

WebRTC enables browser-to-browser phone or video calls, and without the need for a client download. This technology can also be used to enable other communications, like between a browser and a gaming network or a mobile network, for example. But while WebRTC is expected to break down the barriers to true unified communications, it also has some challenges, such as how to enable interoperability, interworking and secure communications between WebRTC and non-WebRTC solutions or between different WebRTC networks.

Sansay's new WebSBC offers transcoding, decryption, security, and other functionality that WebRTC applications will require to move into the mainstream. It will eliminate the need for a TURN server or a SIP-to-web gateway. The Sansay solution also can do forking or recording of media streams which are important value-added functions for application developers. Sansay is able to capitalize on their previous efforts for media handling through standard servers to make the WebSBC highly scalable and reliable.

The WebSBC is an evolution of the company's VSXi SBC, which more than 350 service providers worldwide currently rely on to maximize the performance, profitability and growth of their VoIP networks and services. The WebSBC is available now for evaluation in both service provider hosted and platform-as-a-service models.

Sansay also recently introduced the Real-Time Application Developer, or RAPID, program. The effort aims to minimize the time to market for creating and deploying WebRTC applications for both service provider and enterprise markets. RAPID includes a Restful Web API for WebRTC media plane control and WebRTC-SIP interconnect, sample app articles and a developer Q&A forum. The RAPID program is available now at developer.sansay.com.

"Sansay's experience with manageable large-scale application development will ease deployment efforts and deliver revenue generating applications for new business lines quickly," said Gerhard. "WebRTC is an important tool for app developers and the ability to provide these new apps reliably will determine who gains market share." IT

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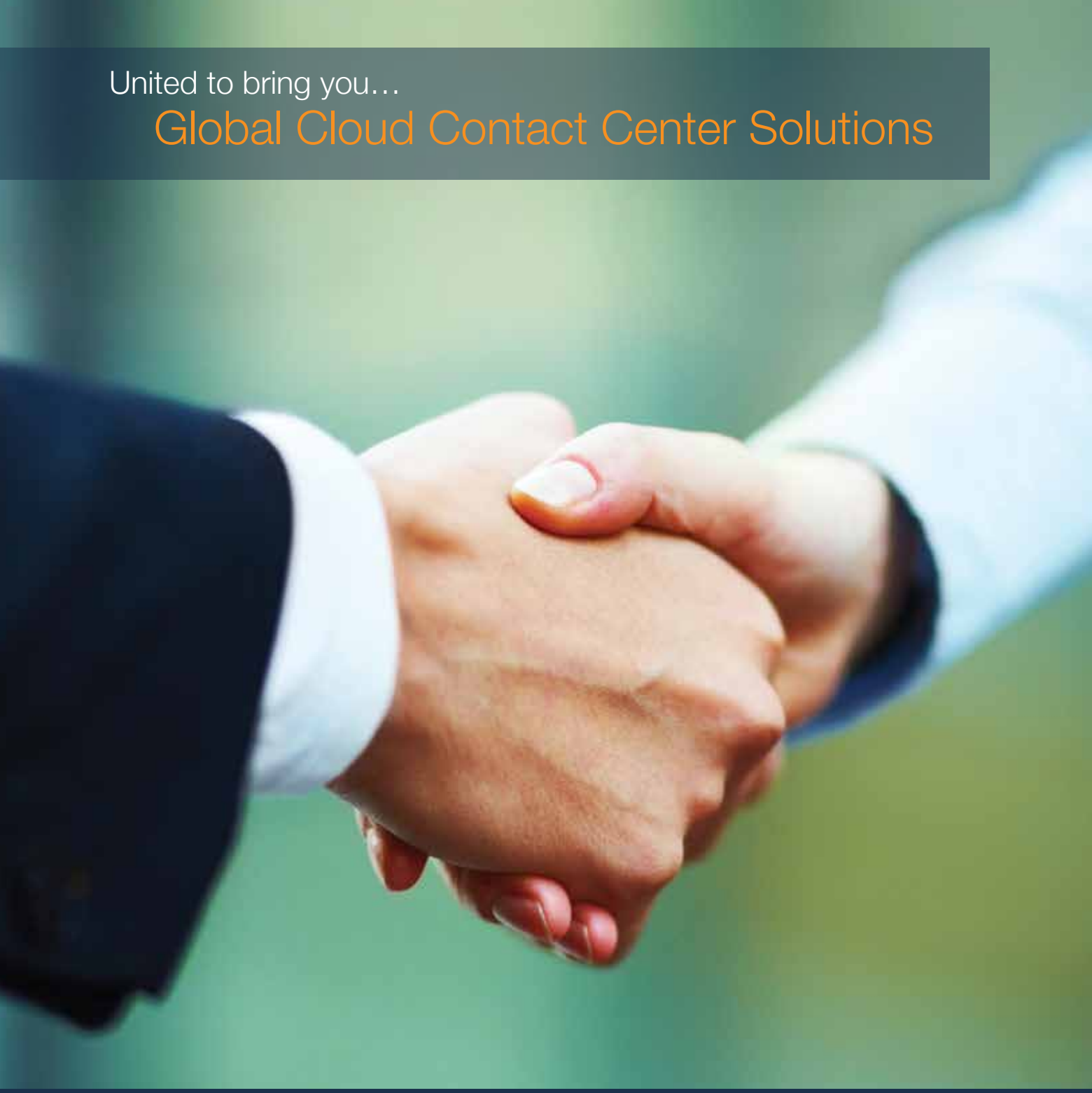

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By Tom Nolle

Network Functions Virtualization and the Real NGN

Computers and software have gotten a lot more powerful and flexible over the last couple of decades, and this has brought networking to the point where it's logical to start thinking of network/service features as being something you host in a server and not embed in a device.

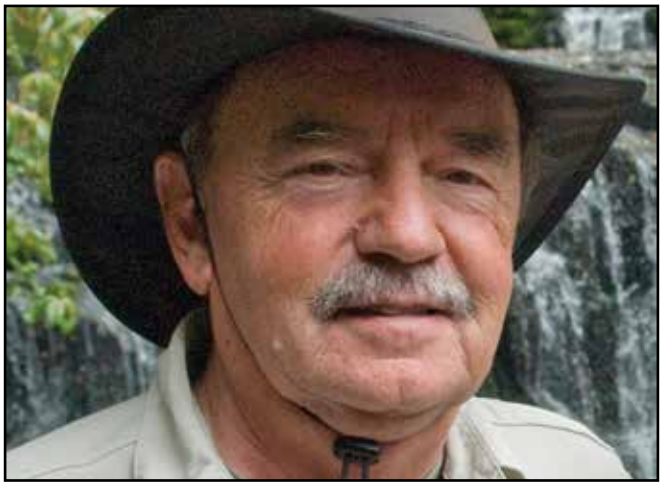
Virtual switching/routing has been around a long time, and software-defined networking depends on software control of packet forwarding. In a limited way, we're already using software to define the next-generation network, or NGN. What's missing is a generalized model to support any network feature through hosted software. That could save a lot in capital costs by substituting inexpensive servers for proprietary appliances, but it could also create a more agile network, a network better able to respond to market changes and opportunities. If that's not what the NGN is supposed to be, I'm missing something.

But this utopian model of generic hosting of features is missing a few things too. How do we deploy software elements to perform what hard-wired boxes used to do? Where's the best place to put a virtual component of a service, how do we connect the pieces, and how do we manage the whole collection of virtual service stuff without driving operations cost increases that would overwhelm any capital cost saving? This is the question network operators undertook to answer with their "Call for Action" on NFV in the fall of 2012, and the question that the ETSI Industry Specification Group on NFV was formed to address. It's a revolutionary, perhaps even visionary, goal.

The NFV ISG is working to define the broad rules for deploying services based in whole or in part on virtual functions, and managing them efficiently once they're deployed. While this work is targeted initially at displacing purpose-built appliances in favor of hosted software components, it is also generating a model for the creation of future services based on virtual devices that may not even exist today.

Unlike networks of real devices whose features change slowly with time, networks of virtual devices can support any service feature you can imagine – and that you can develop as a software component. That sort of thing can be a game-changer for network operators that have been trying to monetize their own expensive infrastructure, to get into the higher-level service game. Because of that, NFV could define a shift of network infrastructure investment away from boxes and toward data centers and software – toward the cloud.

NFV has to address three questions. First, where do the virtual functions that make up services and replace devices come from? Will vendors be willing to make software versions of their products available, or will a developer community provide the resources needed? Second, how are these virtual functions deployed? Do we support the cloud, or virtualization, or bare-metal servers, or even blades in existing network devices – perhaps all of the above? Finally, how can virtual resources be managed so that operations costs don't eradicate cost savings on equipment?



The first question is fairly easy. We have a whole industry of open-source developers that can be harnessed, and competitive pressure is likely to induce most vendors to provide at least some of their products in software form. For the second question, logic says that most virtual functions will be hosted in the cloud eventually, but more specialized hosting might prevail in early deployment. That means that the NGN might be a supercloud, a cross between the Internet and virtualized resources and software. For management, current OSS/BSS systems will have to be accommodated, but also evolved to meet the needs of virtual management.

The devil is in the details, as always, and the only way we'll get to them is through implementation. The NFV ISG is not only permitting but encouraging prototyping of its concepts even before everything is firm. I know of seven implementations under way, of which three (Alcatel-Lucent's CloudBand, Amartus SDS, and CloudNFV, a project driven by a group vendors) are public at this point.

Multiplicity here isn't an invitation to proprietary solutions either. All implementations will likely conform to the work of the NFV ISG when that work is completed. More approaches now means better feedback into the ISG's work and a better solution for all. In fact, we'll need some real-world comparisons and competition to bring out the implementation issues – and to show us that elusive NGN just as soon as possible. IT

Tom Nolle is president and founder of consulting and analyst firm CIMI Corp. (www.cimicorp.com) and a founding member of the CloudNFV initiative.

By Alex Bailes

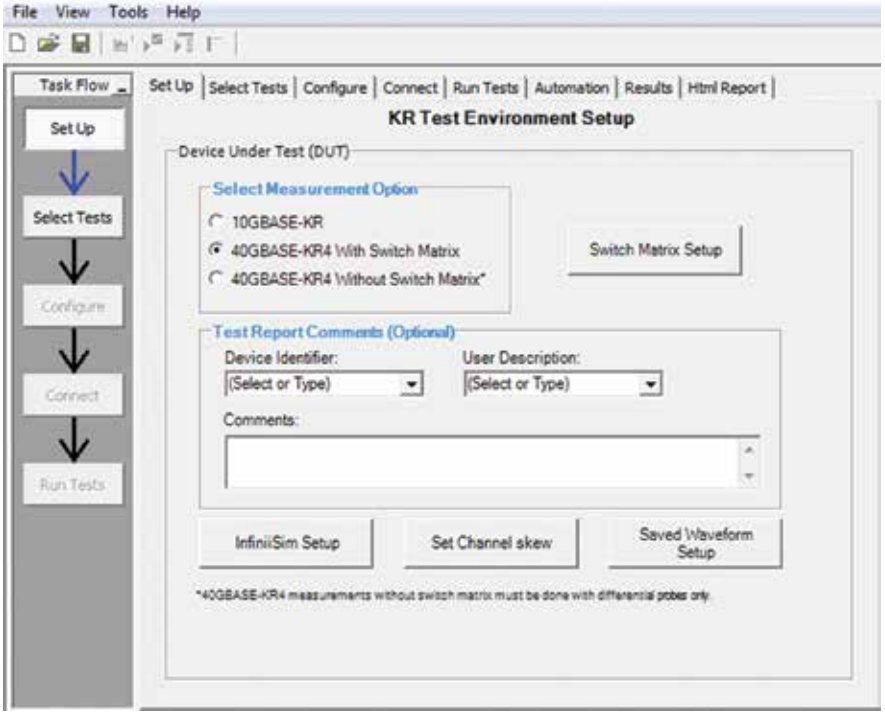
Easy, or a Pain in the Backplane?

10GBase-KR Ethernet Backplane Compliance Testing

Increased demand from consumers through cloud computing has helped drive more demand from Ethernet backplane servers, routers and switches. To help increase bandwidth requirements 10GBASE-KR and 40GBASE-KR4 have helped provide the additional bandwidth in the Ethernet backplane arena. The higher bandwidth, however, has created some challenges in interoperability between these devices. The result is a very precise physical layer developed from the IEEE 802.3ap Ethernet Backplane specification. Oscilloscopes play a critical role in testing the physical-layer compliance testing. What are the challenges in selecting the right oscilloscope to ensure that the 10GBASE-KR specification is being met?

10GBASE-KR Technology Basics

10GBase-KR is backplane Ethernet. The full definition comes from 10G (speed), BASE (BASEband), K (bacKplane) and R (Random signaling). Backplanes are used in an Advanced Telecommunication Computing Architecture shelf. The ATCA shelf can hold a mixture blades consisting of servers, processors, and routers. The fabric backplane, as it is called, is the communication channel that all of these blades use to talk to one another.10GBASE-KR (or, KR for short) is one of these technologies that is supported in this backplane architecture. 40GBASE-KR4 is simply four lanes of 10GBASE-KR and is typically referred to as KR4 for short. Let's focus now on the physical layer of this technology. 10GBASE-KR is a single differential channel running at 10.3125 GBd and uses 64B/66B encoding. However, there is a bit more going on underneath the hood. For example, KR is a closed eye specification. This means that if an engineer probes the signal at the receiver, the user will not see an open eye on the oscilloscope making the measurement. The equalizer inside of the receiver is what opens the eye. So transmitters and receivers must work around this using equalization and forward error correction techniques to recover the signal. It is therefore critical that the KR signal be compliant with the specification.



This picture shows the user interface of the N8814A 10GBASE-KR Compliance application, supporting both 10GBASE-KR and 40GBASE-KR4 technologies.

10GBASE-KR Compliance Application – Easy to setup and run

Oscilloscope vendors have engineers who translate the physical layer test specification into an automated application that runs on a Windows-based oscilloscope. For example, Agilent offers a N8814A 10GBASE-KR compliance application that runs on all currently shipping 90000X/Q Infiniium oscilloscope families. The application takes the IEEE 802.3ap specification and puts it into an easy-to-use application that runs on an Infiniium oscilloscope. The application can be purchased initially with a new scope, or can be added to an existing Infiniium oscilloscope as a software upgrade.

The 10GBASE-KR compliance application runs all of the required tests to verify that the device is working properly, or a user can choose

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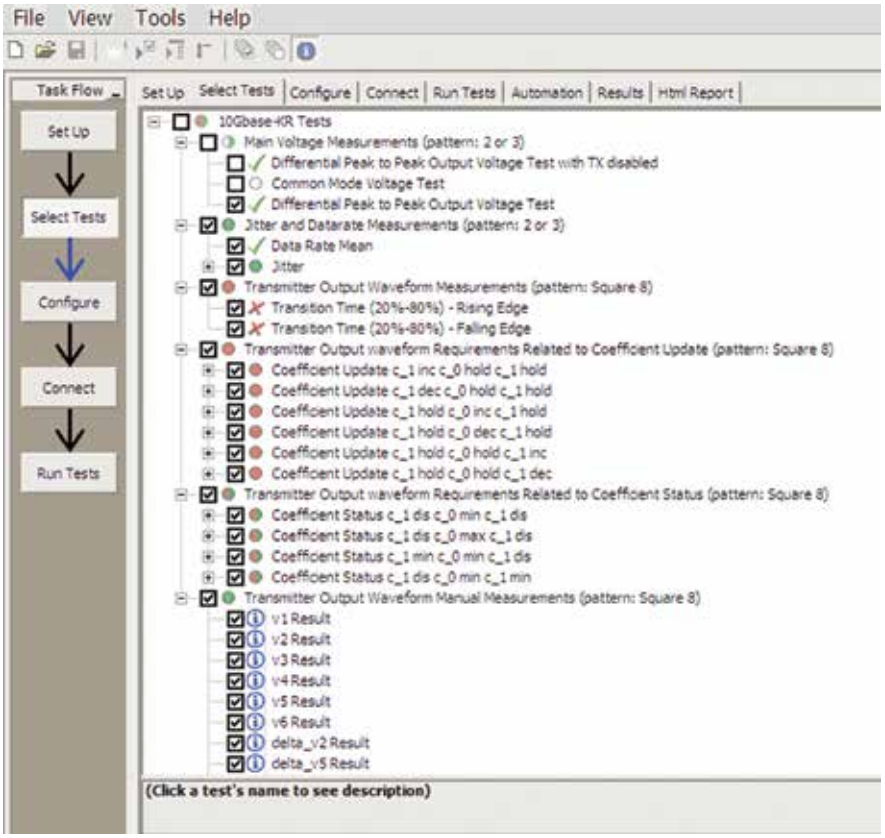

Figure 2. A variety of tests are included in the application that verifies the PHY is compliant to the standard.

to run a subset of the tests as shown in figure 2. The results are shown as pass/fail and also show margins of how close the test passed or failed. Details will show the limits of the test, actual values as well as the name of the test. Multiple trials as well as different devices can be compared.

When appropriate the application will display a screenshot of the measurement. The report is generated using HTML format so that reports can be shared using Internet Explorer. This makes it easy to document or share testing results as no oscilloscope is required to view the report as shown in figure 3.

Here are some oscilloscope capabilities that are required and others that should be considered when choosing an oscilloscope for testing 10GBASE-KR standards. The oscilloscope will need to be one that runs Microsoft Windows as compliance applications do not run on scopes with embedded operating systems. For example, the basic setup requirement is a 25gHz or faster Infiniium oscilloscope, the N8814A 10GBASE-KR compliance application, a differential probe, and typically a solder-in probe head. A starting configuration will run about $260,000.

If you are considering incorporating 10GBASE-KR in your next-generation Ethernet Backplane design, discuss your upcoming needs with your oscilloscope vendor. They can talk to you about what standards they support, what configuration is needed, and should be able to do a quick demo for you, or provide loaner equipment to evaluate. IT

Alex Bailes is product manager Ethernet and wireline applications for the oscilloscope and protocol division at Agilent Technologies Inc. (www.agilent.com).

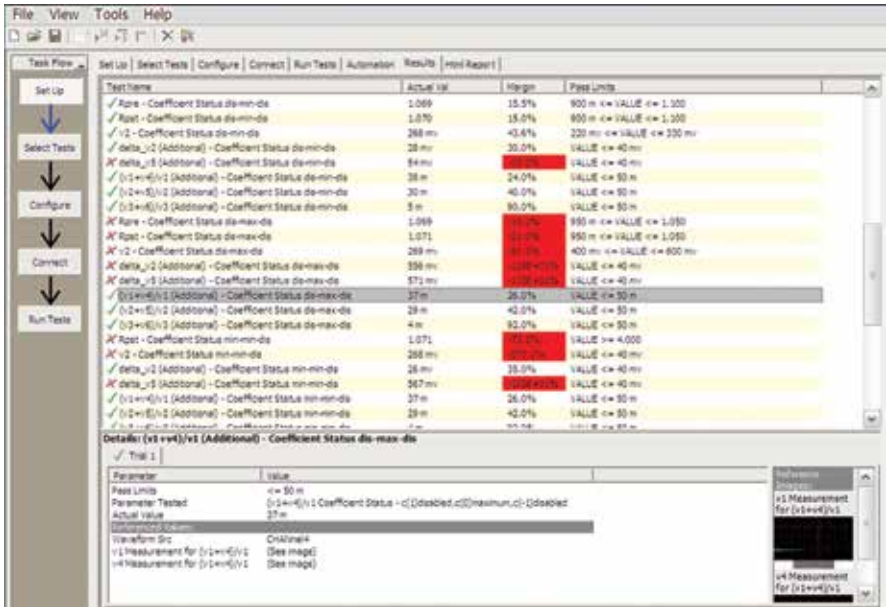

Figure 3. Test results show test limits, margin as well as actual measured values.

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By Vincent Berk

Test, Measurement & Monitoring

Six Things To Keep Your VoIP Systems Running Smoothly

It's the call that no network manager wants to get – your CEO is trying to make a VoIP call and the connection is choppy, making it very difficult to conduct business.

Communicating via Internet telephony requires real-time bandwidth, yet the Internet was not built to carry this type of communication information quickly. Anything else that requires a large amount of bandwidth (images or videos) can interrupt VoIP calls.

While Netflix and YouTube are able to just load a few minutes of a video at a time, VoIP calls are happening in real time, and network managers face the task of creating crystal clear and frustration free communication.

Here are six things network managers can do to keep their VoIP systems running smoothly.

1.) Deploy monitoring points far and wide

You can't troubleshoot a problem that you can't see. Yet, network administrators continually run into infrastructure that has been insufficiently instrumented and monitoring points are only set up at the perimeter.

To get a broader view into potential bottlenecks, network managers should use sources such as NetFlow or sFlow that can be generated by any router or switch inside the network. This is a quick and easy solution that doesn't need any extra investment.

NetFlow and sFlow act as a pen register for individual communications at specific points. Monitoring device, volume, and time they fluidly track the ongoing competition for network resources, and provide fast answers to questions like:

- Is a link down, overloading an alternate?
- Is someone listening to Internet radio, watching Netflix or YouTube, or downloading large files?
- Is the CEO's VoIP call being assigned the correct QoS level?
- Who is using bandwidth at each link, and what are they doing?
- Are the highest consumers of bandwidth internal or external?
- Is the high bandwidth sustained (leading to more uniform choppiness), or are there sporadic peaks (leading to bad-connection bursts)?

Knowing the type of traffic (VoIP) and the time of the choppy call makes it simple to zero in on and visualize the utilized links

– whether they are the expected links for that traffic or not – and identify at a glance which segments are seeing high traffic and what that traffic is. In this way, a network operator makes best use of its time, and stands a much better chance of clearing up poor performance fast.

2.) Understand typical link usage and learn users' peak times

Knowing your network is key to keeping your VoIP infrastructure up to par. Generally there are times throughout the day when problems are most likely to occur or users need more bandwidth. Additionally, certain locations within the network tend to be more prone to bottlenecks.

The human mind is actually the best anomaly detector, so having knowledge of this typical link usage is crucial for quickly finding and solving potential issues. For example, you may

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determine that any link that approaches 70 percent peak utilization is a potential hazard to your VoIP calls. Or you may find that specific links are more or less tolerant of high utilization, and so need different rules, or that a specific link in the critical path is prone to bursts of high traffic.

While some network tasks generate bursts of traffic by design – automated backups, database synchronizations, operating system updates, and other scheduled tasks that can be turned off or rescheduled – much of a network's emergent behavior stems from human users. Break times during which people surf the web, meeting times prior to which the participants all download materials, quitting time when people start checking in code and saving files to shared drives, all can seem to synchronize out of nowhere and cause bottlenecks. Zooming out to see multiple days' traffic levels divided by application will make these patterns clear, and show where a confluence of factors leads to a perfect bandwidth storm.

It's important to ask as well, which recent VoIP calls were clear? If 70 percent peak utilization is a potential hazard, even 65 percent could be fine. Knowing the times to examine and what the outcomes were will help you learn exactly how your network affects your mission.

3.) Watch for bandwidth hogs

Unmetered content that can be downloaded at maximum line rate can pose a major risk to your crystal clear VoIP calls. YouTube videos, streaming Netflix, WebEx and Facebook can temporarily suck available bandwidth, and degrade voice calls, even when marked as bulk traffic. Priority is not destiny: Your devices may make a best-effort attempt to prioritize VoIP traffic, but even polite protocols can, in sufficient quantity, clog a network.

Network managers should use their widely deployed sensor networks to watch for common paths this bulk traffic takes. They can then determine if they are able to isolate it, traffic-shape it, create a rate-limit, reclassify it as scavenger or best-effort, or reroute the traffic altogether. Expanding the range of quality of service classes in use can allow for more fine-tuned managing of traffic. Rather than adding to the monitoring burden, this can actually make monitoring easier.

Knowing details of the traffic at each QoS level will also help. Bulk TCP traffic will attempt to manage congestion by backing off, but will also attempt redelivery of lost packets, leading to greater bandwidth use over time. Streaming or interactive video can be a one-two punch of high and unpredictable bandwidth with higher DSCP numbers than any user traffic except voice, and yet when deployed is often valuable. This is where bandwidth and policy intersect, and where scrupulous traffic monitoring can inform decisions when mission priorities conflict.

4.) Beware of log anomalies

Most switches start dropping packets well before they fail. Additionally, most routers show a high CPU load well before they go offline. Anomalies such as packet drops or high latencies, especially during low traffic loads, are often an indication that you're about to stay at work for the night.

Being aware of what has been working well, and what has given you trouble in the past, will help you solve any log anomaly problems easier.

5.) Secure your network

If systems on your network have been subverted by a hacker, they may be used in a distributed denial of service attack. This would result in immediate loss of many VOIP calls as network resources are consumed outside the expected bounds and without regard to ordinary policy. Such traffic may be tagged with high QoS levels or may otherwise masquerade as high-priority traffic. Knowing your network will help you spot these fakes.

Keep your security tools up to date for maximal protection. Subscribe to malware detection mailing lists to keep your pulse on the threats seen by other companies and learn what warning signs to look for in your traffic. Lists of known-bad IP addresses and suspicious ports are easy to turn into monitoring or firewall rules.

6.) Plan, plan, plan

Capacity planning is everything. If you build up an understanding of the maximum capacity you need, then planning your network becomes much easier. Here are a few of things to keep in mind:

- the maximum traffic capacity required if all phones were used at the same time;
- the paths this traffic takes and the required capacity;
- your failover options;
- security defenses that directly examine traffic and generate alerts, and the network manager time needed to investigate those alerts; and
- a monitoring infrastructure that will grow with your network and allow you to assess the effectiveness of the above points.

Failover options are of upmost importance. Whatever your failover strategy may be, you must test it. There is nothing worse than a backup plan that doesn't work because it wasn't tested. If you study your network and know when it's busy, the best times to test will be clear.

By keeping an eye on your network and planning ahead, the calls about choppy VoIP calls should decrease, and you'll have a lot more peace of mind. **IT**

Vincent Berk is founder and CEO of FlowTraq (http://www.flowtraq.com/).

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By Paula Bernier

HBGary Director Talks Security

The definition of security is a tricky one. It typically has to do with safeguarding yourself and your assets. But, in fact, there's no foolproof way of doing so. There are, however, some steps you can take to lessen the likelihood of a security breach at your home or organization, and there are additional measures you can put in place to minimize breaches once they happen, says Matthew Standart, director of threat intelligence at HBGary, a 10-year-old security software and services company now owned by ManTech.

HBGary got its start when co-founder Greg Hoglund, who invented the first root kit software, joined forces on a research project funded by the Air Force and the Department of Homeland Security. The effort revolved around finding a solution to detect hidden software. That led to HBGary's Digital DNA software, which is now the basis for all the company's solutions.

But although the company helps others, even the federal government, with security, HBGary itself was the target of a security breach by the group Anonymous. This happened in early 2011 when the head of HBGary Federal announced he had uncovered the identities of Anonymous leaders and planned to reveal them at a security conference. Anonymous responded by breaching the HBGary network, posting archives of its executive e-mails, issuing a statement on the HBGary website, and overtaking some HBGary employee Twitter accounts.

So between its own hacking experience and its involvement in helping others with security, HBGary has certainly had its fair share of experience and lessons learned on the security front.

"It's probably not a matter if you're going to be breached, it's a matter of when," Standart says.

To attempt to avoid a breach, Standart suggests that organizations do a risk assessment to understand where there are risks – both internally and externally – and figure out a plan for what to do about them. Organizations need to anticipate threats that face them daily, he adds.

Many breaches, he continues, happen because people are not following policy. As a result, some of the most severe incidents have been detected by simplistic methods. For example, employees traveling outside the company may ignore or not be aware of a company policy requiring that they connect to the company VPN before accessing a public network because it's easier to just connect to the Internet directly, he says. But that can introduce significant risk so should be policed, he says.

When it comes to significant breaches, the role of insiders should not be downplayed, he adds. For example, Vodafone was recently compromised when someone with knowledge of the organization accessed and stole its customer lists, including payment information.

"So it's not always the guy outside," says Standart.

He goes on to mention Edward Snowden, the National Security Agency contractor who leaked classified information about the government's surveillance efforts, was a relatively new employee yet had access to a great deal of information. That said, Standart suggests that organizations get to know employees for a while before handing over the keys to the kingdom; instead, he says, they may want to give employees access to systems and data a little at a time and only as needed. IT

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By Greg Cannon

Security & the iPhone 5s – Separating Fact from Fiction

After just two days on the market, the new iPhone 5s fingerprint reader was spoofed, making for some spirited debate. After reading these stories, some have jumped to the conclusion that biometrics are an immature technology not ready for broad consumer use. As biometric identification technologies continue to become more and more a part of our everyday lives, it is essential to separate fact from fiction using science, not sensationalism, as our guide.

Apple's initial premise for the introduction of the TouchID fingerprint sensor in the new iPhone 5s is, at its core, a convenience feature. More than 50 percent of current iPhone users cannot be bothered to protect their phones with a simple four-digit pin code; a simple biometric scan offers an effortless alternative. But most users don't make the distinction between convenience of a biometric and the level of security it provides in certain applications.

There is a tradeoff between security and convenience. On one hand, we could simply have no security, with the benefit that our iPhone is instantly and effortlessly ready to use. That might be acceptable if the phone isn't used to store sensitive data or enable purchases or other financial transactions. At the other end of the spectrum, we might want to strongly protect our iPhone, requiring us to enter lengthy pin codes, passwords, or even custom gestures. What Apple has done is to introduce a new operating point on this continuum. A biometric is obviously more secure than a simple slider, and the marriage of a biometric with a pin code delivers all three of the key elements of identity authentication – something you are, something you have, and something you know – providing an exceptional level of security.

We should also remember that the effort an attacker would need to spoof a biometric may be more difficult than using surveillance techniques to acquire a user's pin code. Additionally, Apple's implementation of the technology requires multiple levels of security, such that a user must at times provide both the biometric and the pin code. Again, it is not about a failsafe lock, but rather managing expectations of the technology's intended use, and establishing an effective operating point that combines a mix of convenience and security that users are comfortable adopting.

It is important to note that biometrics speak to our identity – who we are, and as such are not necessarily secret. The image of your face is not a private matter. You leave your fingerprints on most of the surfaces you touch. While they are not private, they are associated with you. This leads to several use cases for which biometrics are ideally suited.

When faced with the challenge of identifying someone without a credential, a biometric is the best known technology. This capability has been effectively used to enroll individuals for trusted credential programs, perform background checks, authenticate transactions, combat identity fraud, and safeguard against multiple enrollments for the same individual. For identity verification on an iPhone, we can understand that while we might be able to envision a process by which we can manufacture fake fingerprints, it is obviously more secure than a simple slider or unlock gesture. Furthermore, the costs to fake a fingerprint are not trivial. It is expensive to obtain, manufacture, and tricky to apply – making it ineffective in an attended biometric capture scenario, and highly challenging even in an unmonitored scenario.

The important thing to understand about this technology, in this application, is consumer value. Apple has correctly deemed that not having to enter a four-digit pin code to access the iPhone 5 is valuable to a consumer and that this feature makes the device, more not less secure. The world is shifting rapidly to biometrics to facilitate secure transactions pervasive in our everyday lives. Just as innovations such as Velcro and GPS migrated from military and national security realms to the consumer, so too are biometrics. Our health records, banking and access to data is becoming more and more linked to unique biological identifiers rather than biographical identifiers that can easily be stolen or faked. Much like the iPhone itself, these technologies, driven by consumer demand and expectations, will become invaluable tools to safeguard our privacy while adding value and convenience to our daily lives. IT

Greg Cannon is senior vice president of standards and architecture for Cross Match Technologies Inc. (www.crossmatch.com).

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By Andy McLoughlin

You've Established A Successful Start-up, Now What?

As a growing start-up, expanding your business internationally is far from easy, as well as a significant investment. Regardless of how successful you are on your home turf, don't expect to jump off the plane and be welcomed with open arms by the local press, find yourself a trendy loft apartment and hire your team in the space of a few weeks. The reality is that it's hard work, and tech start-ups considering taking the plunge should always (always!) ask themselves: Is international expansion really necessary?

Do Your Homework

The first step is to sit down and establish whether at this point in your business it's worth the time, expense and distraction. If international expansion is genuinely worth the effort, you need to ensure that the foundations for your business are in place well before you open your new office doors. In my case, by the time I relocated to San Francisco with Huddle, I'd been visiting the West Coast five or six times a year for the previous couple of years. By spending time familiarizing yourself with the local technology market, influencers and the culture, you'll be much better prepared to hit the ground running.

Communication and More Communication

One of the challenges that comes with international expansion is maintaining effective communication with your team. Naturally, it's easy to hold the assumption that everyone in your company knows what's going on when you're all in one location. However, when employees are thousands of miles away, you have to assume that people may not be as in the loop as you think. As such, you need to take action in driving the communication between offices. No surprise, I'm a big fan of taking full advantage of collaboration technology, including online collaboration for documents and knowledge sharing, IM, and videoconferencing. The more you can get out of and away from e-mail as your primary communication tool, the better.

The New 9-to-5

To keep communication flowing across time zones, you'll find that it's important to get into a regular rhythm that fosters real-time interactions. For example, I reserve my early mornings for communicating with colleagues in London. Setting regular meetings with your team and sticking to them can help make sure everyone remains in the loop and accountable, no matter where they are located.

Know the Risks

The biggest risk businesses take when they expand, internationally or otherwise, is growing too fast. Often times, companies decide to expand without having the revenue (or funding!) to grow properly or, worse, don't maintain the quality of early employees. Then they end up losing the company culture that the business was founded on.

The right time to expand is all based on cold, hard cash. If you're growing as the business grows, as soon as you have the money to hire, you do it. If your business is looking to attract venture capital, suddenly expansion can happen much faster and therefore, you need to be really clear on where you want to place that investment. If international expansion is a priority, it's important to partner with investors that have a firm understanding of the region you are expanding into, and can help facilitate key introductions and offer meaningful guidance.

The biggest risk businesses take when they expand, internationally or otherwise, is growing too fast.

Drive Innovation Regardless of Location

You have a vision and you need to do everything you can to stay true to it. You have to balance this vision as the company grows and must realize that you can't do everything yourself. That's why you need to hire great people in your region and beyond, who can deliver excellence and help you achieve your business goals. Balancing your vision with the vision of the great people you hire is what drives innovation, even as your company expands.

Making the decision to expand is really about understanding where your target market is, and putting real time and resources behind such expansion. One salesperson sitting alone in an office is not going to set you up for long-term success. Ultimately, you need to be where your customers are. IT

Andy McLoughlin is executive vice president of strategy and co-founder of collaboration company Huddle (www.huddle.com).

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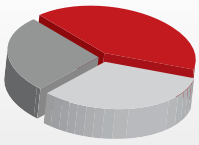

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By Paul Marra

Gaining a Competitive Edge with Hosted VoIP

When a major commercial real-estate company in the Midwest recently moved from its headquarters to a nearby location, it was eager to leave the phone system behind. At the old location, employees dealt with constant static on the line, not to mention dropped calls. Worse yet, the entire service would routinely crash, causing no less than 10 minutes of downtime every month.

True, 10 minutes a month amounts to just a couple minutes total within an average work week. But, for a property company that oversees millions of square feet of commercial property, the volume of dropped calls and/or network crashes often disrupted important business communications. When the system went down, all incoming calls automatically defaulted to the cell phone of the office manager, who doubled as the receptionist. So she'd have to literally run around the floor, relaying messages to employees.

Fortunately, this company has found a better way, by switching from a traditional, on-premises system to a hosted voice solution. It's a move businesses are making for a variety of reasons, including cost savings and improved functionality. It also enables IT staff/departments to offload a great deal of tasks related to voice and data operations, as the hosted model transfers this burden to the telecom provider.

This remains key, as IT is playing an increasing role in business operations, as opposed to being relegated to the role of a less strategic keep the buses running on time department which ensures all the tech stuff works right. In fact, nearly nine of 10 IT professionals meet at least once a month with executive leaders from their organization, according to research from Cisco. However, these IT pros are struggling with reduced staffing due to continued fallout from the most recent recession, and their budgets are often either stagnant or shrinking. Thus, they're advising those leaders about voice and data solutions that allow them to buy better, instead of more.

As companies are finding, this is where hosted VoIP comes in: VoIP/unified communications revenues now total an estimated $63 billion, a figure that will double by 2016, according to a forecast from Infonetics Research. With demand rising for hybrid solutions featuring enterprise cloud-based services, VoIP and UC revenue is growing 17 percent annually, Infonetics reports. By the end of 2013, there will be 288 million mobile VoIP users, according to In-Stat, another market-research firm.

This should continue to surge, given the rise of mobile-device dependence and bring your own device acceptance. The number of mobile employees will reach 1.2 billion by the end of the year, reports IDC, and in the U.S., they'll account for three-quarters of the workforce. And four of five adults use at least one personally owned electronic device for their jobs, according to Harris Interactive.

Multiple Benefits Abound

For companies, hybrid voice solutions cover a wide range of divergent needs. Previously, multi-site enterprises paid dearly for voice, especially because they had to cover the expense of idle lines and trunks. With a hybrid model that supports multiple handoff types, they can get SIP or PRI trunking for the headquarters and branch offices, and then hosted VoIP seats for remote workers and satellite offices. This opens up the opportunity for consolidation and other streamlining/cost-saving measures. Through call capacity sharing, a single corporate unit – such as a data center – can share capacity with another data center supplying a similar function within the organization.

Hosted voice solutions integrate Internet access and voice on a single-access circuit. They take advantage of unlimited local and domestic long distance, greatly reducing expenses. To offset initial start-up investment, providers will kick in free phones or phone rentals. Given that the monthly fee covers everything – including administration on the part of the provider – customers save 20 percent on up-front expenses in switching, and then 50 percent off of their monthly bill.

The stakes are too high to cling to outdated legacy models: For a typical, multi-site business, a 50 percent reduction in telecom spending can result in substantial savings every single month enterprise-wide. We know a housing-assistance non-profit that is saving up to $800 per location every month after transitioning to hosted voice. When you multiply those savings by more than 300 locations, the monthly savings quickly add up to well into the six figures.

Budget-Minded Breakdown

How exactly does hosted VoIP save so much money and (for those overworked IT staffers) time? VoIP solutions like SIP can emulate legacy handoffs, like PRI and analog lines that can leverage existing PBX equipment, which further eliminates unnecessary capital expense. Working with a single provider across all locations also allows businesses to centralize IT management and simplify administration, documentation and training. This helps them take full advantage of the wealth of features that hosted VoIP allows.

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WebRTC Areas of Focus

Enterprise Collaboration, B-B & B-C, New Business Models)

WebRTC Standards
- Standards Reports & Issues
- W3C Activities
- IETF Activities
- Browser, Codec & Oher Challenges

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Every day, IT innovators are coming up with new ways to offer mobile-friendly products and functionality to boost productivity, efficiency and overall performance. This includes audio conferencing, point-to-point video and sophisticated smartphone integration. It's easy now to program routing so users appear to be phoning from their regular, in-office line with that number displayed, when they're really dialing from any one of a number of personal mobile devices they use for work. (That's important. To cite one of many examples, sales team members could lose potential customer opportunities if prospects ignore incoming calls because the phone exchange on their screen looks like an unfamiliar, personal number, as opposed to a business one with which they're acquainted.)

With visual voicemail and transcription functionality, employees can see all of their voice messages in an e-mail inbox and no longer spend time dialing in and inputting a bunch of pass codes to get them, or view voicemails while they're tied up on back-to-back conference calls. (And you can even send fax messages to the e-mail inbox, for customers still using the fax machine.)

Visual voicemail has worked out great for that real-estate firm in the Midwest, particularly for regional managers who travel all the time. They used to dial into voicemail, and the old system would cause delays in getting urgent messages about property matters. Through visual voicemail, voicemails are transcribed and immediately sent to voicemail so they can be viewed on any device. If they're already on an important call, they don't have to end the conversation to get incoming messages. If there's important information in those voicemails – like a property address, phone number, bid price, etc. – they don't need to jot it down on paper, since it's already transcribed.

All of the great features in the world don't amount to much of anything if the actual voice and data experience is shoddy. To ensure exceptional voice quality, voice traffic must be prioritized over a private network that guarantees quality of service. This means that voice traffic is prioritized over other application traffic, such as e-mail and file-sharing.

There are many VoIP providers to choose from, so it's imperative to know what to look for. You don't want your business-critical voice traffic sent across the public Internet or you're sure to experience jitter and packet-loss issues. So how can you tell if a potential partner will support a quality experience? For starters, ask if they own their own private, secure MPLS-enabled network that supports bi-directional QoS for optimum voice quality.

By conducting appropriate vetting, VoIP calls will present a superior conversation experience, with a crystal-clear connection that doesn't get dropped. Downtime due to provider-network crashes will be dramatically reduced. Because everything is based in the cloud, the system automatically initiates built-in, redundant business continuity if there's a power blackout or some other sort of catastrophe in one vendor's operations area.

General industry consensus is that traditional phone systems will go away as early as 2018. But we're already seeing a huge exodus, as cloud-based communications are proving to serve as a strategic way to improved performance and gain a competitive edge. IT

Paul Marra is director of product management for voice and UC at MegaPath (www.megapath.com).

Is It Time to Make a Change?

If you're weighing whether it's time to move your organization to a hosted VoIP system, here are a few steps you can take, and questions you should ask yourself, to help find an answer.

Assess the Age of your Current System

If it's seven years old or more, you very well could be at a competitive disadvantage by not switching to a hosted solution.

Check your E-mail

Are e-mails, file sends and other e-transmissions bogging down and/or aborting entirely in mid-stream? If so, then you should explore the bandwidth advantages of hosted VoIP.

Consider the Mobile Movement

Are a sizable portion of your employees considered part of the mobile generation? Are they always in the field and/or using either organization-provided or personal mobile devices for work? If your business is like the majority of others, we'd gather you'd answer "yes" to this question. If not now, then you will in the near future. VoIP is essentially created for mobility.

Explore Potential Cost Savings

Even if it's a newer system, have you thoroughly explored all of the cost-savings/productivity-boosting advantages of hosted VoIP? If you connect with a vendor that can configure VoIP using your existing PBX via a PRI or analog line, you'll ease the transition while saving a bundle on up-front capital investment. Also, are you still paying for individual local and domestic long-distance calls? This concept has gone the way of the vinyl record album. The unlimited plan is now universally available, for far less.

Plan for the Future, Whatever It Brings

Will your current service scale? Can it grow as you grow without pain points? Hosted VoIP solutions can expand tenfold or more within the same infrastructure, with no associated migration expenses. That's not so for traditional systems. Also, is your system ready for a disaster? It's doubtful it can command the same level of automated failover/redundancy as a VoIP alternative option.

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By Ron Hill

Thinking Big about Getting Small

HetNet Deployment Considerations

According to Pew Research, 56 percent of adults now have smartphones. More surprising, though, is that 37 percent of teens now have these devices and are using them as the primary mechanism to access the Internet and communicate – via text and increasingly video – with their peers. Given that this demographic typically foreshadows how new tools will be used, many believe there is no end in sight for the current exponential surge in data traffic. The question becomes, is the telecommunications network ready to handle this type of growth?

To keep pace with this growth, the industry is shifting away from legacy network designs and architectures that were originally built for voice, as these networks were simply not designed to handle today's bandwidth-intensive customer applications and the resulting wireless traffic tsunami.

For network operators, the game has changed from providing coverage to finding ways to increase capacity and improve the overall subscriber experience. Adding to the challenge is the limited amount of spectrum currently available for operators, which makes this goal significantly more daunting. As a result, operators are striving to seamlessly put users on the most efficient network technology capable of supporting the specific applications they are using (i.e., not surprisingly, high-definition streaming video is more efficiently delivered over 4G/Wi-Fi than 2G/3G technologies).

As far as subscribers are concerned, they just want it to work – every application, every day and everywhere. They have little tolerance for network service interruptions, and research shows quality of experience as a key factor in choosing between carriers and ongoing customer loyalty. This volatility adds increased pressure on operators that risk losing subscriber revenue due to poor network performance.

What's Needed

There is no single, one-size fits all solution to this challenge; tomorrow's networks will employ multiple types of access technologies, which will be determined by how the network is being used in a given area. Dense urban areas will have completely different needs than suburban or rural areas. Future networks will be multi-layer, multi-band and multi-technology, collectively forming the building blocks of what is becoming known in the industry as a heterogeneous Network. These hetnets may include a combination of macro, small cell (micro, pico, femto), DAS and Wi-Fi technologies all seamlessly working together with self-organizing/self-optimizing/self-healing capabilities.

However, the migration toward hetnet architectures does not spell the end of the legacy macro networks. In fact, it's just the opposite; in the hetnet model they still play an important role. Most major operators expect to significantly increase the number of macro sites deployed in their networks over the next several years. Operators realize, however, that small cell technologies can be extremely useful in making more efficient use of existing spectrum while also providing additional capacity in those areas consistently experiencing heavy traffic and bandwidth limitations.

In addition to improving the subscriber experience and achieving better utilization

of available spectrum, small cells adoption also provides operators with several other benefits more closely aligned with the bottom line. Specifically, when you consider that a typical carrier spends significantly higher portion of its budget on opex, it stands to reason that achieving operational savings is a key objective. To that point, many in the industry believe that operators can experience anywhere between 38 percent and 45 percent in total cost of ownership savings by deploying small cells in their networks. These savings are realized by reducing the cost of small cell sand its deployment by using self-organizing networking's plug-and-play capabilities, and by reductions in both site rental and backhaul costs.

Market Traction

By shifting toward hetnet architectures, service providers are also adding a significant number of nodes to the network in an attempt to improve the signal quality and the subscriber experience by moving antennas as close to the user as possible. Many industry observers believe this shift has the potential to more than double the size of today's networks over the next few years.

AT&T has already successfully deployed small cells in its network, and has said publicly that over the next three years it plans to deploy 40,000 additional small cells across its network in areas with existing wireless network limitations with a focus on providing enhanced coverage to customers where it is needed most.

Verizon has also stated that it will deploy small cell technology as part of its existing LTE network, primarily to enhance capacity and coverage in complement to its existing deployments of distributed antenna systems. Sprint has also endorsed small cells as a future direction, particularly for macro network traffic offload. According to Informa Telecoms & Media, Small Cells will make up almost 90 percent of all base stations by 2016.

Just think about what that will mean, not only in terms of scale, but also in terms of the complexity of these networks.

Big Considerations

Don't be confused by the nomenclature – the solution may be small, but the deployment of small cell networks will be anything but trivial.

While macro sites (such as cell towers) are much larger and require considerably more power and bandwidth than small cell networks, their deployment has become fairly standard – almost cookie-cutter – as many of the challenges and kinks of deployment have been worked out over time. Conversely, in these early days of small cell deployments, there are considerably more variables and challenges to consider, a fact that is only exacerbated by the sheer volume and rapid deployment schedules that operators are targeting.

While never easy, macro sites have been fairly consistent in terms of where they are deployed – predominantly outside, and normally located on a tower or rooftop. With the introduction of small cells, that deployment predictability goes away. They can be deployed virtually anywhere – inside, outside, on walls, on lamp poles, etc. As a result of this variability, and the vast number of network elements involved, the support services associated with these deployments become all the more complex, and all the more critical.

Adding additional complexity from a network design and planning perspective, small cell coverage is measured in feet in contrast to macro deployments, which are measured in miles. As a result, even minor adjustments in location can significantly impact coverage and quality – not to mention the fact that the process has to be iteratively repeated dozens of times within a given objective area to get the best results.

Choose Wisely

While operators are responsible for the overall network strategy, budget and deployment timeline for nationwide rollouts, many large operators have developed a reliance on integration partners to ensure the successful and timely deployment of next-generation networks.

Just like no two hetnet deployments will be identical, these integration and deployment partners vary widely in terms of the solutions they offer, the values they subscribe to, and their ability to manage large-scale projects with fixed deadlines and budgets. Some specialize on the construction and engineering side, while others are capable of delivering higher-level services in the areas of network design, integration and maintenance. Very few, however, possess the complete range of end-to-end capabilities that are needed to successfully deliver the large-scale projects service providers are currently rolling out.

Carriers are looking for partners that possess a deep understanding of their legacy networks as well as today's IP networks, as integration and interoperability between all these layers will be a key requirement for the foreseeable future. Another consideration is the partner's neutrality in terms of the technology or the vendor utilized in the deployment, as having the flexibility to consider other solutions and approaches can sometimes mean the difference between success and failure when deployments move from the lab to the real world.

Don't be confused by the nomenclature – the solution may be small, but the deployment of small cell networks will be anything but trivial.

While it may seem crystal clear where the industry is headed in terms of technology, true success will be determined by a host of factors including network planning, design and deployment. As such, operators will need to ensure that they have chosen both the right technology and the right partners. With a sea of connected consumers that is growing every day – and a rising tide of traffic – failure to choose correctly in both areas could determine whether the operator sinks or swims. IT

Ron Hill is president and CEO, at Goodman Networks (www.goodmannetworks.com).

By Antonio Garcia

How TDD Small Cells Can Save Money

It is odd how a fast moving industry like wireless has stayed with so many outdated paradigms, wasting money as it does so. Even when the world was moving to Internet, and 3G was described as mobile Internet, WCDMA was very much a circuit-switched system.

And now, at a time when operators must face huge traffic increases and are worried about spectrum shortages, it is remarkable they are still sticking an inefficient spectrum system designed for voice. By switching to a more data optimized system, downlink capacity could be increased by 77 percent and an operator could reduce total cost by 44 percent.

The cellular industry has used frequency division duplex for virtually every standard until LTE. The main reason behind that was the importance of symmetric voice services.

However, the world has changed. Particularly, the success of smartphones and new devices has made data traffic overtake voice traffic.

But data flow in real networks is significant asymmetric. This is very well known in wired networks: obviously, it is why ADSL is asymmetric DSL, as are cable modems.

The obvious advantage of TDD is the ability to map uplink and downlink resources to the traffic patterns. More spectrum can be dedicated to the busier downlink traffic (the bottleneck in symmetric FDD), and less to uplink data, underused in symmetric FDD.

A more subtle benefit is leveraging the more efficient technology available to the downlink: MIMO and modulation techniques. The more resources dedicated to the downlink, they more they benefit from these, resulting in a better total spectral efficiency.

And yet while TDD is well suited to data, it is rarely being used.

The other huge trend in recent years is the rise of small cells. According to Informa, 98 percent of carriers are planning to use these for their LTE rollouts. Even more oddly, given that small cells are also suited to data, there are few TDD small cells available.

The TCO for an LTE small cell deployment is almost entirely dominated by the per-node cost.

In a capacity-limited deployment, TDD could increase the total capacity of the spectrum by up to 38 percent and the downlink capacity by up to 77 percent over FDD. In other words, an FDD operator would need to deploy more cells than a TDD competitor and hence have a higher total cost of ownership.

The TCO for an LTE small cell deployment is almost entirely dominated by the per-node cost: capex (cost of the actual eNB, site acquisition and installation, backhaul setup) and opex (backhaul, power, site rental, OAMP).

In a typical urban small cell deployment FDD would need to increase the number of small cells (and hence the TCO by 77 percent) to match the TDD network. Or, to put it differently, the LTE TDD small cell network would be 44 percent cheaper. It is also worth noting that TDD spectrum has been generally cheaper and that LTE TDD enables operators to take advantage of unused spectrum – reducing spectrum investment and amortized cost.

For frequencies below 2gHz it makes sense to continue to deploy large cells for coverage in the traditional LTE FDD model. At higher frequencies, in particular the key bands from 2.3 to 2.7gHz and 3.4 to 3.6gHz, LTE TDD should become the default technology for cost-effective capacity for urban deployment.

Operators that adopt TDD will enjoy a significant technical and commercial advantage, including those in possession of a paired frequency allocation.

LTE finally delivers a single worldwide cellular standard after decades of battles and fragmentation. However, the industry and the regulators need to move effectively from a voice-centric traditional symmetric communication paradigm to a data-centric, all-IP, flexible approach to data asymmetry. To make the best use of the spectrum, and deliver the best return to shareholders, operators should be using small cells more – and should be looking at TDD small cells in particular. IT

Antonio Garcia is director of product management at Accelleran (www.accelleran.com).

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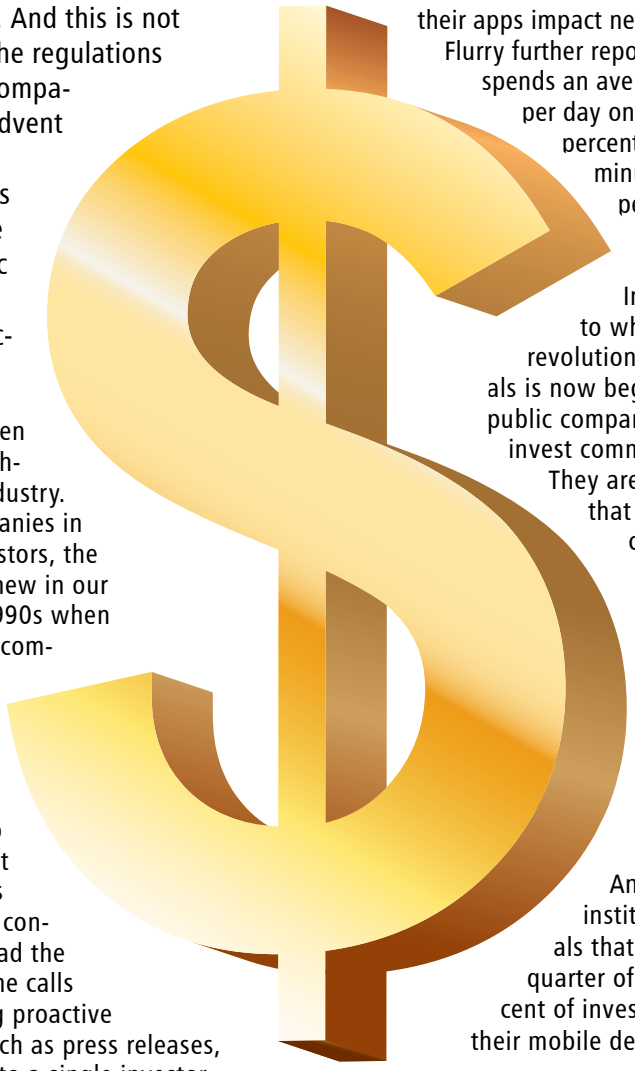
By Jeff Corbin

The New Paradigm in Technology for Investor Communications

The communications industry is a multi-billion dollar one that is slow to move and not prone to thinking outside of the box when it comes to the use of technology, let alone the creation of new technologies. This is particularly true in the investor relations industry, in which public companies communicate with their investors. And this is not surprising considering all of the regulations and legal constraints public companies face. Nevertheless, the advent of social media and the rapid proliferation of mobile devices as a platform to communicate create opportunities for public companies to establish a closer and more direct connection with their investors.



For the past 15 years, I have been a victim to the technological lethargy that has plagued the IR industry. As a consultant for public companies in their communications with investors, the last time there was something new in our industry was back in the late 1990s when the Internet was just becoming commonplace. It was then that public companies began to realize that the desktop to which they were imprisoned came loaded with a browser that could be used as a place to aggregate all of the content that was important to their investors via a website. This was a novel concept because now a company had the ability to preempt investor phone calls requesting information by being proactive and posting investor content such as press releases, SEC filings, presentations, etc., to a single investor zone on the corporate website.

With the proliferation of mobile devices, there can be no question that people are less dependent now on the Internet via desktop computing. Personal computers lost market share in 2012, with shipments dropping 5.9 percent with 303.2 million units shipped, according to Taipei-based TrendForce, which together with research peer Gartner says PC shipments will shrink another 4 percent in 2013. App analytics firm Flurry in April, 2013 reported that "more than a billion consumers are glued to mobile devices, and their apps impact nearly every aspect of their lives." Flurry further reported that the U.S. consumer spends an average of 2 hours and 38 minutes per day on smartphones and tablets. 80 percent of that time (2 hours and 7 minutes) is spent inside apps and 20 percent (31 minutes) is spent on the mobile web.

Investors are not an exception to what is taking place in the mobile revolution. This group of professionals is now beginning to demand that the public companies and funds in which they invest communicate with them via mobile. They are requiring that the content that exists on the IR section of the corporate website also be made available to them on their mobile devices.

Financial news and analysis firm InvestmentNews in a study released in April 2013 said that 88 percent of top-performing investment advisors now use smartphones and 65 percent use tablets. And, according to a survey of 200 institutional investment professionals that was conducted during the first quarter of 2013 by my company, 83 percent of investors surveyed said they rely on their mobile devices rather than the desktop.

The survey also revealed the following:

- 47 percent of investors said that the device type most conducive to obtaining information is an Apple device (iPhone, iPad or iPad Mini);

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- 21 percent said the BlackBerry was sufficient; and
- 7 percent rely on Android devices.

While many business professionals still rely on BlackBerry devices, especially for dealing with e-mail, 68 percent of those surveyed also purchased additional devices on their own to leverage the power of iOS and Android to do their work. Interestingly, 41 percent of the respondents carry and use two devices (including the one provided by the employer) and 26 percent carry and use three devices (including the one provided by the employer).

So, how are investors consuming IR content via mobile? Public companies are now weighing whether to simply extend the IR section of their websites to mobile devices via responsive design or HTML5 coding or go the native app route. Many global companies have opted to go the latter and for the right reason. There is a world of communications opportunity that lies in a native app that just cannot be replicated by taking a website mobile.

Take for example Marathon Oil which, similar to companies like Colgate-Palmolive, Walmart and Campbell's Soup, recently published an IR app for both Apple and Android devices. Marathon Oil's IR app allows users to receive unique corporate information including audiocast conference calls, investor presentations, videos and other qualitative content directly to their mobile devices. Through a native app, unlike a responsive design website, this information can be pushed to their device in a very personal way considering the fact that those downloading the IR app have voluntarily chosen to do so.

The table below demonstrates the main points of differentiation between a native app solution and HTML5 responsive design websites.

There is a world of communications opportunity that lies in a native app that just cannot be replicated by taking a website mobile.

As the founder of theIRapp, I am definitely biased when it comes to recommending a native app solution over an optimized website. However, as an investor relations consultant for more than a decade and a half, when thinking about the future of mobile technology, I believe a significant opportunity awaits public companies in their communications with investors that can only take place via a native app on the App Store and Google Play.

Apple and Google definitely have an agenda beyond apps representing fun and games. Indeed, Gartner in a recent Hype Cycle report stated that HTML5 is still 10 years away from becoming a suitable basis for businesses technology. While I am a gambling man, I am not one to bet against Apple and Google. Native apps present an opportunity to create an ecosystem of investor communications activity. Presently native apps are being used as a means to push important content to investors. However, greater potential exists and eventually will come to fruition. Given the nature of the mobile device, especially with regard to video and telephone, significant potential exists via the native app environment to create a direct dialogue and establish a closer connection with investors worldwide. IT

Jeff Corbin is founder of theIRapp (www.theirapp.com).

NATIVE APP	HTML 5 MOBILE WEBSITE
An App on the App Store and Google Play; 80+ percent of the mobile market	Launched through a browser – not an app on the App Store or Google Play; 80+ percent of the mobile market
Doesn't require strong Internet connectivity to perform well	Requires strong Internet connectivity to perform well
Able to have push notifications and offline storage	Not able to offer push notifications or offline storage
Free download for investors: no charge from Apple and Google for download	Not an app – no charge

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By Michael Ritter

Converting Backhaul Networks into a Storage and Application Cloud

Mobile networks are evolving at a phenomenal pace. People want mobile content wherever they are and whenever they need it. To achieve this, the delivery of high quality, rich content over mobile networks will be necessary going forward. The fierce growth in mobile Internet traffic on their networks has impacted mobile operators. This trend was originally driven by the proliferation of smartphones such as the iPhone. Now, iPads and Android tablet devices with their larger screens and more powerful processors are driving even more mobile data consumption.

The degree to which an operator can consistently provide content to the subscriber with high quality has become a primary source of brand differentiation. At the same time, operators are conscious of the cost impact of all this content traffic on their networks. New solutions are required to monetize Internet traffic passing through operator's networks. Dramatically reducing transport costs while improving user experience and developing new revenue opportunities is of key importance.

Optimized content delivery with caching at the edge of mobile backhaul networks helps operators to handle growing data volumes by making their networks more efficient. Popular content is detected automatically, stored and served from locations as close to the radio access network as possible, which means it doesn't have to travel across the whole backhaul network every time a user wants to have access. Optimizing content delivery at the network edge helps mobile operators in two ways. First, it reduces network costs associated with constantly having to expand the backhaul network and Internet peering connections. Second, it provides better performance and therefore improves subscriber quality of experience.

The download time for a web page on most mobile networks is in the range of 10 seconds today or might take even longer. Subscribers expect more responsive networks with a time-to-first-byte lasting significantly less than a second and higher quality for media streaming. Through the optimization of content delivery and content caching at the edge of the backhaul network to cater to the inevitable surge in video traffic, it is possible to alleviate the load on backhaul networks, deliver subscriber profiled content and a better quality of experience for multimedia content.

Implementing a distributed content caching architecture is essential for any application that demands performance and scalability. It distributes the content across multiple entities in a cluster while still providing a logical view of a single cache. Forming a collaborative cache grid at the edge of the mobile backhaul network has additional benefits. The relatively small population of subscribers associated with a single mobile base station is virtually increased and the hit ratio is therefore dramatically improved. Video content downloaded once from a subscriber connected to a specific base station becomes accessible to all other subscribers connected to base stations associated with the same cache cluster.

Time-to-first-byte can be dramatically reduced when delivering DNS services directly from the network edge. Receiving DNS responses from the local content delivery entity instead of a DNS server in a central location helps to achieve network response times of much less than a second and provides subscribers with a significantly enhanced quality of experience when surfing the Internet and accessing popular web pages.

In addition, the combination of content delivery at the edge of the mobile backhaul network and local DNS services enables exciting new revenue opportunities for operators by offering localized services. The capability to deliver location-dependent services to mobile devices when issuing a DNS resolution request – for example, an advertisement customized to the geographical position – enables operators to increase monetization of their infrastructure investment and establish new revenue sources from delivering content over the top.

Last but not least, the implementation of an optimized content delivery solution based on distributed caching can reduce the load on the mobile backhaul network significantly. This results in lower operating costs through capacity savings on the backhaul network and increased network scalability to counteract the fierce increase in multimedia traffic to be delivered over mobile networks.

Optimized content delivery with caching at the edge of the backhaul network is an accelerator and enabler at the same time. It is designed to improve user experience and monetization, and ultimately reduces subscriber churn for the mobile operator, gained from improved quality of experience when accessing multimedia services from mobile devices. IT

Michael Ritter is vice president of technical marketing and analyst relations at ADVA Optical Networking (www.advaoptical.com).

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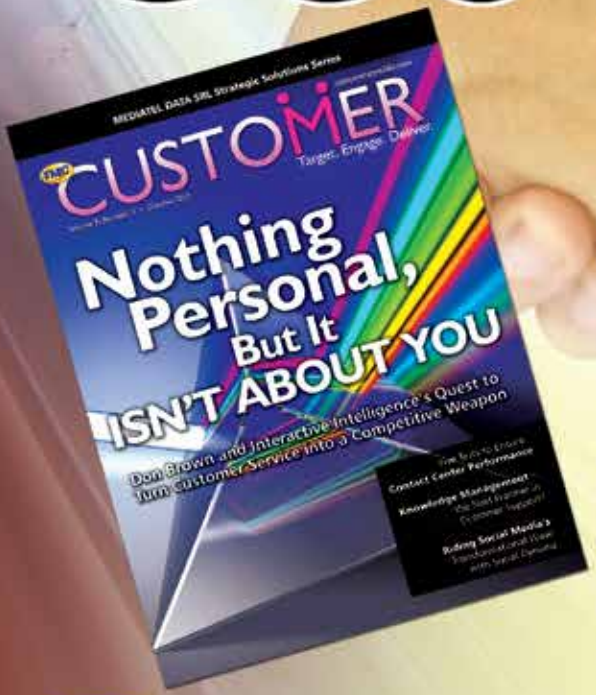

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By Paula Bernier

Playing It Safe

Connected Technologies Address Safety, Performance, Efficiency and Good Calls

Connected technologies are suiting up in a variety of sports venues to do everything from measuring physical impacts on players, to gauging and improving the performance of athletes, eliminating incorrect judgment calls, and even enabling fans to spend less time in beer and bathroom lines at stadiums.

Head in the Game

Sports safety is one of the big arenas in which connected technology has become a marquee player.

Concussions recently have become a huge issue in sports. The Centers for Disease Control and Prevention estimate that millions of sports-related concussions and mild traumatic brain injuries, which can cause long-term damage, occur annually.

Reports and studies indicate that professional athletes who are exposed to repetitive mild traumatic brain injuries may develop ongoing impairment such as chronic traumatic encephalopathy, a degenerative condition caused by a build up of tau protein, according to a January article on the UCLA newsroom, which adds that CTE has been associated with memory loss, confusion, progressive dementia, depression, suicidal behavior, personality changes, abnormal gait and tremors.

"Now, for the first time, UCLA researchers have used a brain-imaging tool to identify the abnormal tau proteins associated with this type of repetitive injury in five retired National Football League players who are still living," the article goes on to say. "Previously, confirmation of the presence of this protein, which is also associated with Alzheimer's disease, could only be established by an autopsy."

The heavy interest in concussions follows some high-profile pro football injuries and related lawsuits, which ultimately forced the National Football League to build a campaign around how it is addressing the problem. The NFL has altered some rules with an eye toward safety, created committees to focus on other safety-enhancing efforts, and committed $30 million to the Foundation for the National Institutes of Health for medical research on brain injuries and related topics. And as part of the NFL and NFL Players Association's latest collective bargaining agreement, the two organizations agreed to commit $100 million to medical research over the next 10 years.

Concern about the sometimes extreme and long-term effects of concussions has led some to forecast the end of football as we know it. The Atlantic in January ran a piece in which senior editor Ta-Nehisi Coates opined "you tell a parent that their kid has a five percent chance of developing crippling brain damage through playing a sport, and you will see the end of Pop Warner and probably the end of high school football. Colleges would likely follow. (How common are college boxing teams these days?) After that, I don't know how pro football can stand for long."

Of course, the risk of sports-related head injuries is not specific to professional football (or to the sport of football for that matter, although because it's a contact sport football has become the center activity on this issue). Other professional, as well as amateur, sports leagues and teams are also becoming more familiar with the risks and some are instituting new measures to address them.

The NFL website on July 30 featured a story that reported "In 2012, the national Pop Warner organization mandated that no more than one-third of practice time, or about 40 minutes a week, could be devoted to full-speed contact." (The main focus of the piece, however, was about a study indicating that head impacts for Pop Warner players as a whole are decreasing and that reducing contact-related "could limit the efforts to teach proper tackling techniques.") In similar developments on this front, The Alabama High School Athletic Association recently announced new practice guidelines, which include a limit of 90 minutes of full-contact practice a week.

Lawmakers and their constituents are playing a role in the fight to lessen the impact of sports-related head injuries as well. For example, the Tennessee state legislature recently passed a new youth sports concussion law. The state of Washington, meanwhile, has the Zackery Lystedt Law, named after a middle schooler from the state who sustained significant brain injury after returning to play football during a game in which he got a concussion. The Lystedt law says that athletes, coaches and parents must be educated each year about the dangers of concussions; a young athlete suspected of having a concussion must be removed and kept out from a game or practice; and a licensed health care professional must clear the young athlete to return to play in the subsequent days or weeks.

Sports gear companies continue to do research and development to improve the safety of their equipment. For example, Rawlings sells the S100 Pro Comp helmet, the official batting helmet of Major League Baseball, which absorbs 75 percent of the impact of a 100mph pitch.

As advanced as helmets, mouth guards and other gear have become, however, no piece of equipment can completely eliminate the risk of a concussion or other injury. Sports are unpredictable; that's part of the reason sports are so interesting. As a result, a variety of products that measure impact – to

help coaches, trainers and parents decide whether to remove an athlete from the field – have recently been unveiled.

One of those products comes from Connecticut-based i1 biometrics. It's a mouth guard that detects both linear and rotational acceleration of a player's head upon impact. And it instantly transfers that information to a computer or smartphone on the sidelines, so involved parties can analyze the data.

MC10 has developed a sensor, which is fitted into a mesh cap, that senses when the athlete has taken a hit. When the Reebok-branded device displays a yellow light, it signals a moderate impact; a red light indicates a severe hit.

A TIME article on the device quotes NFL veteran linebacker Isaiah Kacyvenski, who by the way is on the MC10 advisory board, saying "The whole point of the CheckLight system is that you don't want the red or yellow light to be triggered. In our field tests, the majority of coaches reported that their athletes were more cognizant of keeping their head out of the path of impact. This is a real-time teaching tool to give you instantaneous feedback."

(Maybe so, but some recent reports on protective headgear for soccer players have indicated that such gear may make players more aggressive in their play. However, that anecdotal evidence applies to protective headgear and amateur soccer; whereas the CheckLight solution is a sensor, not an active protection device, which appears to be targeted at professional athletes.)

A different but somewhat similar product, this one designed for student athletes, comes from X2 Biosystems. In fact, founder and CMO Rich Able came up with the idea after his son was knocked unconscious during a high school football game and suffered major subsequent attention, behavioral and mood problems.

The X2 solution, which at the end of July was still in preproduction, consists of software and the little xPatch, a sensor that attaches like a bandage onto the athlete's skin (a photo shows it behind the ear of Morgan Swanson, a former UW soccer player). The device gathers information about head impacts and uses the X2Net wireless protocol to communicate the details of it to an X2 access point on the sidelines.

The Seattle-based company's website homepage features the following quote from a Dr. Stanley Herring, which it credits with getting the Lystedt Law passed: "Concussion is a problem that will be solved with knowledge, not helmets."

Peak Performance

Sensors also can be, and increasingly are, being used to track the performance of athletes during practice, training and even during games.

A July Sports Illustrated article talks about how "a small black-and-orange gadget about the size of a hockey pock" was spotted on the back of Connor Barwin's uniform during a recent practice and that the 30-gram device "contained a GPS, magnetometer, accelerometer and gyroscope that had just recorded his every movement on the practice field."

The article went on to note that Eagles invested $1 million into technology upgrades during the offseason and has hired on Shaun Huls to occupy the new position of sports science coordinator.

Sports Illustrated in the same piece says: "The array of technology creates a physiological dashboard for each player. Among the equipment: Catapult Sports' OptimEye sensors, which Barwin was wearing; heart-rate monitors from Polar; an Omegawave system that measures an athlete's readiness for training and competition; and weight-lifting technology from a company named EliteForm, with 3-D cameras that record not just how much an athlete is lifting but how quickly he is doing it. There is also the low-tech end: Players are asked to urinate in a cup before practice to check their hydration levels.

"The result is a data-driven approach to training, which is compatible with and perhaps even necessary for the way [Chip] Kelly coaches," SI says. "In the up-tempo style he brought from Oregon – the Ducks averaged more than 81 offensive plays per game last season – players are perpetually on the move. Some sports scientists, like the University of Connecticut's William Kraemer, say research does not support the perception that an up-tempo pace imposes extreme fitness and recovery demands. But even so, sports-science technology can play an important role in preventing overuse, overtraining and the often accompanying soft-tissue injuries."

The Verdict

Technology is also starting to play a larger role in helping officials make the correct calls.

Introducing technology for this purpose has, of course, been a long time coming. But it has been a hairy issue that involves balancing the human elements of the game and a desire to keep the action moving forward with an obvious interest to leave important – and often game-changing – calls to chance, or at least to human error.

The latest convert to embrace goal-line technology is FIFA. The soccer association in February announced it will use the technology at the 2014 World Cup in Brazil.

FIFA in April announced it had selected GoalControl to provide goal-line technology for next year's World Cup. Other contenders were Cairos, GoalRef and Hawk-Eye, the first two of which leverage magnetic sensor fields, and the third of which uses another camera system and reportedly had been considered the favorite.

GoalControl-4D includes 14 high-speed cameras focused on both goals and capture the ball's position continuously in three dimensions when it is close to the goal. When the ball passes the goal line, the system sends an encrypted radio signal to the referee's watch within less than a second.

Other Lines

Speaking of lines, select sports venues are also now leveraging technology to avoid lengthy lines at stadium bathrooms, and food and beverage stands.

For example, the new 49ers Levi's Stadium in Santa Clara, Calif., which will host Super Bowl in 2016, will have a mobile app to help fans locate the on-premises bathrooms and beer concessions with the shortest lines. IT

By Tom Keating

Akkadian Labs Provisioning Manager Express Makes Configuration Quick and Simple

Last week your organization successfully implemented a new IP based Unified Communication system. The vendor is closing out the final issues and providing your staff with a few hours of training. This is a great achievement and all the new features will have a very positive impact on the user community, but what about ongoing operations?

Next month you have twenty new hires, not to mention the additional features you plan to deploy. Your staff is already overwhelmed handling other IT related issues. Are they going to continue provisioning new users properly? Will they remember to configure all the settings, such as class of service, speed dials, and application subscriptions? How do you continue to keep the system configuration consistent? You don't want your new system to look like the last PBX!

One of the most globally prevalent unified communication systems, especially for larger deployments, is Cisco Unified Communications Manager (CUCM). Obviously, CUCM currently has web-based provisioning capabilities, but it has several limitations and pain points that create numerous challenges in the enterprise. Cisco offers something called the Bulk Administration Tool to assist in provisioning multiple phones, but for daily operations, it's complicated and not proficient for daily moves, adds and changes. What if you could ease the provisioning process with templates, automation, scheduled provisioning, and more? That's where Akkadian Labs Provisioning Manager Express (PME) comes into play. TMC Labs took PME for a test drive and interviewed Akkadian Labs to get a comprehensive view into the solution.

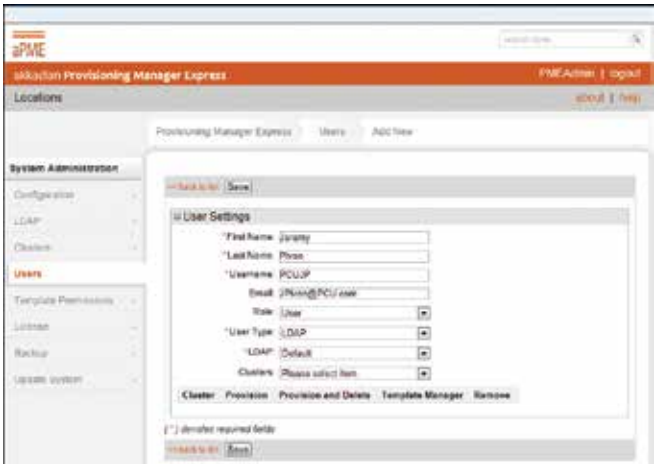
PME's inherent simplicity and utilization of provisioning templates enables corporations to drastically reduce their provisioning time or shift provisioning responsibilities from more costly, skilled engineers to lower cost roles. Additionally, it can improve service level response times by reducing administrative overhead typically requiring a ticketing and review process. With PME, a first level contact can provision devices, and perform moves and changes with engineer-created and verified templates. Engineers no longer have to spend their valuable time on these tedious day-to-day activities. PME's consistent delivery and ease of use enable corporations to become much more efficient in their provisioning activities.

Akkadian Labs explained that PME was developed for a large organization, which it can't name, to manage more than 40,000 devices. "Existing products on the market weren't easy to use, installation was extremely painful, and they weren't really solving a lot of the pain points that clients were facing," said Geoffrey Turner, Director of Product Management, Akkadian Labs.

Provisioning an IP phone is not as simple as management would like to believe. You just assign an extension, plug in the phone and you can make calls, right? Not so fast. What if department X doesn't want to display outbound CallerID and department Y has a special call coverage requirement? In many cases, different departments have various needs? Sure, you can manually configure these settings using the CUCM administration interface, but you either need to recall or document all the configuration details for every task. PME simplifies these repeatable tasks by capturing the configuration in a reusable template. What if the rules for a specific department change, requiring a settings change? Now you need to document the change and ensure your team follows the new process. With PME, on the other hand, it simpy requires you to modify the template once; those changes are then reflected in all future provisioning tasks.

Further, manually provisioning has other drawbacks such as inconsistent configurations, failure to delete unused devices resulting in higher licensing and maintenance costs and of course greater potential for configuration errors leading to interruption of services.

"In the last 12 years we've been doing business, it never fails – there's always some sort of outage, not necessarily a



PME users and security access levels

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catastrophic event luckily, but to have to go back and figure out what individuals did within the system is extremely painful and time-consuming," said Geoffrey Turner, Director of Product Management, Akkadian Labs. "With PME, we alleviate all of those concerns."

PME handles it using a single application user to interface with CUCM. Provisioning access is front ended by PME, reducing exposure to the CUCM administration interface. Although CUCM does offer some simple read/write security levels, it allows you to see information (at read-level permission) that you shouldn't be viewing. Should you need access to add a phone, you'd require write access, which exposes access to other critical settings.

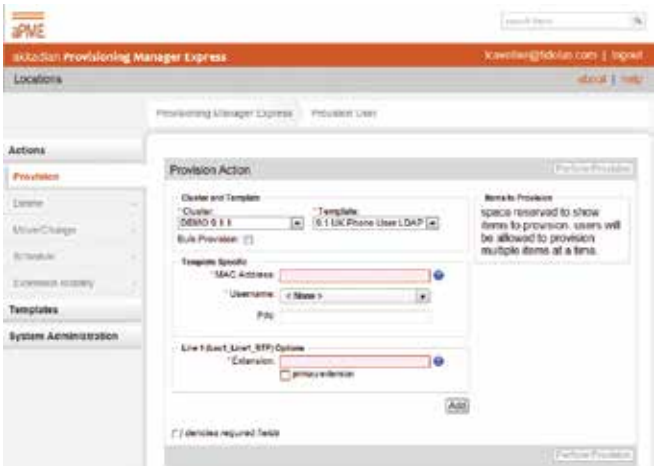
CUCM can communicate with Active Directory using LDAP to handle employee turnover; however, it's a big assumption that every single business uses Active Directory. Many organizations use local authentication for their Cisco CUCM platform. Further, with Cisco, often other applications such as voicemail means another server that you have to login to perform moves/adds/changes. Now imagine creating the phone, the line, configuring control of the device, CTI device association, adding a user, and associating voicemail. It's a complex procedure in and of itself, but deleting it is a pain point since you need to login to multiple servers. Imagine if you could provision the user in one step as well as delete the user in a single step. That's exactly what PME allows you to do. Deleting is especially important due to cost of Cisco's UC licensing.

Akkadian Labs explained that a typical scenario is someone deleted a user, but forgot to delete the DID. Someone deleted the DID, but forgot to delete the phone. Someone deleted the user and the phone, but forgot to delete the DID and the voicemail. So when they try and do something the system will return an error message that they've run out of licenses. It's a time consuming process to find out what's available, what's not, and what can be deleted to free up licenses.

As you add multiple clusters in a large deployment, keeping a consistent user interface with a single sign-on is a huge advantage of PME. Without PME you have to log into each cluster separately and potentially remember the credentials for each cluster. PME's user interface gives you centralized administration functionality.

The system requirements for PME are very lightweight. Only one virtual CPU is required with 2GB RAM and 2GB hard drive space even at 10,000 users. It supports VMware ESX5, and the next release will support Linux OVA (Open Virtualization Alliance), thus eliminating the need to pay for Microsoft licensing to run the software.

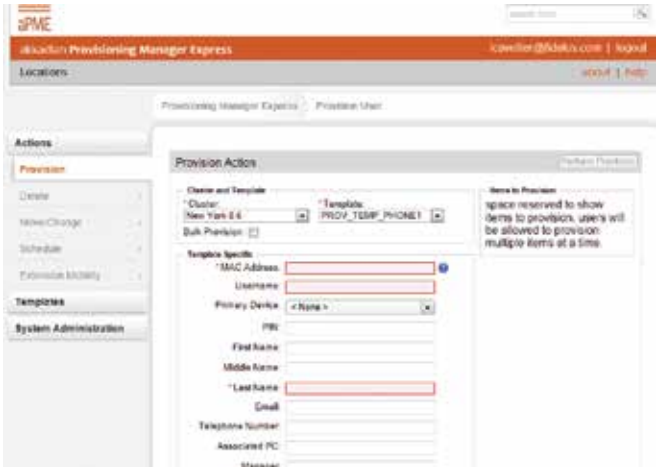
The automated Provisioning Manager Express solution consolidates the task of adding user configurations into one simple web-based interface. For one of the simpler templates with less fields, when adding a user all we needed to do was add



Adding a new user with just three required fields (after picking cluster & template)

the MAC address and pick the appropriate cluster and template from the drop-down box. That's it.

The pre-defined template(s) take care of setting the username, description, speed dials, etc. For more advanced templates with Active Directory fields, you can see what that looks like here:



Adding user with a template containing Active Directory fields

When creating templates you can easily copy an existing template as a base, make a couple changes, and save it as a new template. Within PME the fields are very intuitive and red asterisks denote required fields. Variables can be inserted into the fields using curly brackets for variables e.g. {Firstname} as seen in the screenshot at the top of the following page.

These variables can be coded into speed dials or other buttons. PME can be used to fully customize all the buttons on Cisco phones to ensure users have a consistent experience.

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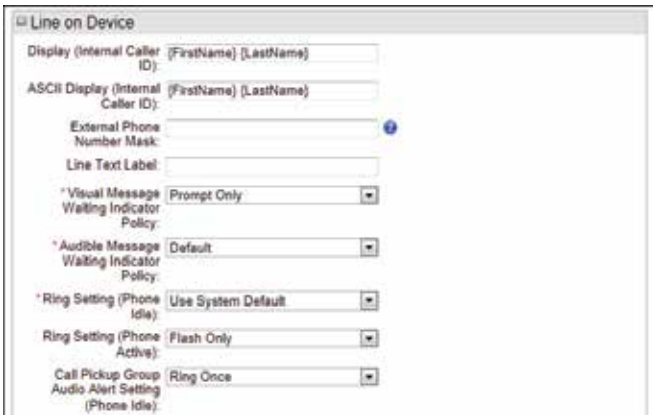


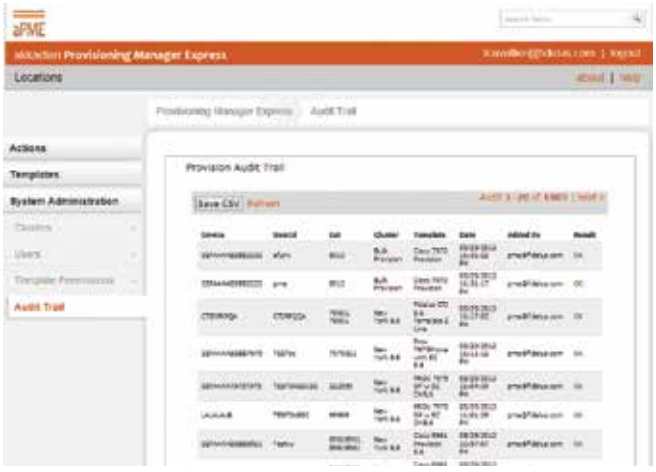
Adding variables to a line template using curly brackets to define the variables

If PME is tied to a CUCM LDAP integrated environment, it will pull via LDAP into the relevant fields within PME's web user interface. Similarly, if not using LDAP and simply using local authentication against Cisco's CUCM database, it can pull relevant information into the relevant form fields.

After using PME to provision a phone using a template, we were able to verify within Cisco's CUCM web interface that the directory name was correctly set, as was the route partition, the description, the device association, the display, the ASCII display, the external phone mask, and the user. In just a few clicks within PME we were able to quickly provision a user.

Provisioning Audit

Importantly, PME has a comprehensive provisioning auditing trail, which allows you to easily figure out what user was added at what time, by who, and at what cluster. Within CUCM it's extremely difficult to figure it out. There are third-party utilities, such as ISI, that integrate with Cisco and charge thousands for this feature. Akkadian Labs gives you this auditing capability as part of the software.



Comprehensive auditing trail

Single Phone Logout

PME has another nice feature that allows you to logout a specific user's phone. This is important if the user logged into a phone and forgot to logout. When that happens, the cubicle neighbors have to listen to the phone ring or if it's a common area phone logged in, everyone around that phone has to listen to the ringing. Cisco created a service URL to be able to logout that user, but it actually logs out every single phone, not just for that user. Akkadian Labs told TMC Labs that people have lost their jobs because of this. PME, on the other hand, only logs out just that one phone. Seems like a no-brainer for Cisco to implement, but apparently, they haven't.

Schedule Provisioning

Akkadian Labs mentioned that some of its customers are so risk adverse they will only allow provisioning of new phone devices during maintenance windows, which can be weekends or, say, at 11 p.m. on a Wednesday. PME allows you to schedule provisioning. TMC Labs simply selected one of the available templates and downloaded it as a CSV file. We picked a very basic template that only required three fields, but more elaborate templates with more fields can also be selected. We edited the CSV file in Excel, put in first name, last name, and MAC address, saved it, re-uploaded it back into PME, and scheduled it to bulk provision at a certain date and time. Now IT staff doesn't need to stay late or use personal time to provision phones.

Room for Improvement

The one feature that administrators may find useful is to have a button that automatically pulls the next available DID or extension number into web form when provisioning a phone. This would allow administrators to add a phone quickly without having to look up the next available number via a separate PME browser tab. That said, the software tells you if you attempt to provision a phone to a DID or extension currently in use. We approached Akkadian Labs with this observation, and they mentioned that this functionality is coming down the pipe and should be part of the next release of PME.

Conclusion

Provisioning Manager Express does a superb job of simplifying the task of adding, modifying, and deleting user, profile and device configurations. Through its use of centralized templates, provisioning such things as users or devices in Cisco Unified Communications Manager can be done quite easily with practically no training required. TMC Labs was impressed with the ease of use of Akkadian Lab's Provisioning Manager Express and how it can easily lower the TCO for CUCM environments, making the product pay for itself. Using PME to lower the TCO, reduce the chance of human error, and greatly reduce the time to deploy and maintain hundreds of IP phones make Akkadian Lab's PME a no-brainer and TMC Labs highly recommends it. IT

Tom Keating heads up TMC Labs and is vice president and CTO of Technology Marketing Corp. (www.tmcnet.com).

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By Erik Linask

App Economy Means Software Telcos

There's no denying the pace of technology change has increased to a point where it has become a daily expectation. We don't always know what the next change will be, but we can be fairly certain the rising of the sun tomorrow will bring with it a new application, service, device, architecture, delivery method, or something else. That's the world in which we live – nothing is constant but change.

Whether we can credit (or blame) Microsoft for putting it all in motion with its original OCS release back in 2007 – and the corresponding decree that it would bring us to a new world of communication, independent of location, network, or device – or not, can be debated. What is certain, however, is that announcement accelerated the emergence of an endless development cycle built upon the concept of truly unified communications.

That concept, along with the unheralded mobilization of our economy – in fact, mobile devices will soon outnumber people on a global scale. Because of this, we have moved beyond a web-centric economy to an app-centric economy. We don't ask, "Is there an app for that" – rather, we simply assume there is (unless you are a BlackBerry or Windows phone user, in which case there probably isn't).

Cisco CEO John Chambers, discussing the evolution of the tech world at Interop recently, added that, "You haven't seen anything yet – applications, intelligent networks, security, and scalability will power our industry for decades."

In addition to new applications and services, built on a foundation of mobility and user data, this new economy will require new operating principles, with success being built on parallel pillars of agility, simplicity, programmability/automation, scalability and performance, security, and openness.

The only way this will work, from a service delivery perspective, is by a parallel move from traditional network designs to software-based networks and virtualized network components to enable these pillars of success, which is specifically what the upcoming Software Telco Congress (www.softwaretelco.com) is designed to address.

The move to a software-based and virtualized provider infrastructure will enable the flexibility, scalability, and agility that will be required in an app-centric world, where delay to market means revenue loss, and time to market is measured in incrementally shorter segments.

"Software telcos should see a higher rate of service velocity," explained Jim Machi, Dialogic's vice president of product management. "That is, they should be able to roll out new services more quickly and, aditionally, let's say there is a known spike coming, like a large tradeshow or a large sporting event such as the Olympics or the World Cup – resources can be added on an as-needed basis to cover the spike. This is huge."

One of the significant shortcomings of traditional appliance-centric provider models has been their inability to both roll-out new services as quickly as their OTT competitors, and their ability to adapt to spikes in usage beyond their hardware capabilities. Either way, OTT providers will be running across the same pipes – a software telco, will however, be able to compete more effectively with its flexible infrastructure.

OTT providers will be running across the same pipes – a software telco, will however, be able to compete more effectively with its flexible infrastructure.

How quickly will this change take place? First, it has already begun, when you consider nearly every SBC vendor has announced a software version of what were traditionally purpose-built appliances. But, the very concept of a true software telco is built upon the premise of an all-IP world, which won't be a global reality for at least a decade. So, while limitations of the PSTN will continue to be an issue, as new generations of processors and chips are developed by the Intels and TIs and Samsungs of the world and as we continue to move towards and all-IP community, software running on standard, open servers will continue to overtake single-use appliances, increasing the delivery capabilities of service providers and enhancing the end user experience.

As Chambers noted, all of these concepts (programmability, automation, scalability, etc.) have to be designed into products, software, and new architectures. While we've started to see this from the vendor community – Chambers says Cisco has been working under this principle for a few years, as has HP (which recently launched its Open SDN Ecosystem) – and others as well, given how profoundly these changes will impact the tech community, there are many questions surrounding implementation, interoperability, existing infrastructure, timing and other deployment challenges, and more. These issues and others will all be part of the discussion at Software Telco Congress in November in Santa Clara. Be part of it and be part of the evolution. IT

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Founded in 2001, Yealink, a leading provider of VoIP Phone and IP communication solutions, has been focusing on VoIP products characterized by reliable quality, easy deployment and affordable price for over a decade. Today, customers from over 140 countries rely on Yealink as the backbone of global collaboration to extend the value of network communications. Email: sales@yealink.com Website: www.yealink.com