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# INTERNET TELEPHONY®

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## Happy News

A study released in June by Infonetics Research discusses the likely potential

for a significant increase in spending from telecom carriers – in every area except TDM voice – this year. More specifically, the firm expects worldwide capex to spike in 2012, then level out in 2015 and 2016 at around \$345 billion.

This movement will be driven primarily by Clearwire, Sprint, and T-Mobile USA in the U.S.; NTT DoCoMo and Softbank Mobile in Japan; and KT, LGU+, and SK telecom in South Korea, according to Infonetics. The firm also notes that China has created a \$58 billion economic stimulus package for telecom infrastructure. And it says that telecom capex spending already is hot hot hot in Latin America, where capex on this front was up 25 percent in 2011.

“We’re expecting a telecom capex hike in 2012 as operators around the world ramp their spending like crazy to launch LTE networks, modernize their mobile networks, and carry out national wireline broadband initiatives,” says Stéphane Téral, principal analyst for mobile infrastructure and carrier economics at Infonetics Research. “Operators have to invest in their networks or they’ll disappear – competition is too cut-throat not to.”

Brian Farrar, founder and partner of strategic consulting firm Maven Wave Partners, says that the world of IT has “finally recorded several successive quarters of growth since the financial crisis of 2008 ended in the fourth quarter of 2010.”

He goes on to write that: “Dozens of analyses completed over the last few months, not to mention the latest fourth quarter 2011 update to the Maven Wave Partners study on corporate spending on hardware, software, and the IT workforce, confirm that we’re on a growth track.”

IT spending in the fourth quarter of 2011 maintained its strength (despite Maven Wave’s initial expectations that it would not), remaining essentially flat from the previous quarter, but outpacing the firm’s forecast by roughly 3.8 percent.

“The MIT rose to 142.7 in the fourth quarter of 2011, meeting our forecast for the end of 2012 exactly one full year early,” Farrar writes.

As a result, the firm has revised upward its forecast for 2012 from 142.6 to 154.7 – an increase of more than 8 percent.

“The revised positive projection syncs with our recent experience and conversations with clients, competitors and vendors in the market,” he says.

Speaking of the cloud, and to take this column full circle, last week I attended Cisco Live in San Diego. One of the terms I heard again and again was DCIM.

Research and Markets describes data center infrastructure management as “the integration of IT and facilities management to enable seamless monitoring of all systems across IT and facility infrastructures to improve the data center energy efficiency.”

Emerson Network Power’s Steve Blake-more, who I met with at Cisco Live, explained that as data centers become more complex and flexible because of virtualization, it is becoming more of a challenge to manage what used to be a static environment.

That’s why Emerson and others like Mirapath and Opengear are offering solutions to help businesses that use data centers to understand and manage the capacity and energy requirements of their applications. Blakemore and others also noted that this kind of thing blurs the line between facilities operations managers and IT folks.

“We’re seeing this melding of OT and IT,” Bob Waldie, chairman of Opengear, told me.

iTRACS Corp. says that “This kind of DCIM is going to be in demand moving forward, as it is specifically engineered to handle large, complex infrastructure environments.”

Gartner predicts DCIM will quickly become mainstream, growing from 1 percent penetration of data centers in 2010 to 60 percent in 2014. **IT**

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## Should RIM Be Judged on its Hires or Fires?

No company wants Apple as a competitor, as the company has more momentum than the euro crisis. But that is the challenge companies like Nokia and RIM face on a daily basis.

Recently I delved into the problems RIM faced because it had an email-centric view of the world which was just as keyboard-centered as it was focused on asynchronous corporate communications. I had a chance to speak with Luca Filigheddu, who is the new BlackBerry developer evangelist for the Italian market. As you may remember, I wrote about him three years ago when I toured the Italian island of Sardinia. Luca is a serial entrepreneur who founded Abbeynet, a company developing applications including click-to-call solutions for carriers. More recently he has launched a suite of social applications — one that has gained a good amount of traction is Twimbow, a colorful social interface you could describe as the result of Hootsuite and a box of crayons having a baby.

So what would make Luca, who seemed to be very happy being an entrepreneur, join RIM at this particular moment? In his words, the company was looking for someone with a business and tech background, and the company flew him to the BlackBerry World event and he came away impressed enough to take the position. He said he loves challenges and that BlackBerry 10 will be a breakthrough product, not just another OS.

The company realizes that developers are key to the success of its platform and as such is hiring developer evangelists in other countries as well. But, of course, the BlackBerry 10 delay is making developers and customers think about jumping ship entirely. To counter the anxiety in the market, Luca's boss and another prolific blogger who I have known for years, Alec Saunders, reiterated the company's support for developers by saying to them, "You've got businesses to run, rent to pay, and investors to answer to. You are the folks who have skin in the game now, and aren't just waiting for a new phone personally. We know this delay affects you, and we're sorry."

Moreover, Alec's ultimate boss, Thorsten Heins, the company's new CEO, said

the delay was warranted because the release had to be perfect. Luca for his part agrees and said, "If this delay means the mobile platform really meets the needs of developers and market that is okay."

It is worth pointing out that RIM has been a sponsor of an event called DevCon5, of which TMC is a co-owner, and which focuses on HTML5 and related development topics. I have seen firsthand how the company used the conference to woo developers.

Luca elaborated by saying the chance to work on a new platform is something that doesn't happen very often and that RIM is assembling an entrepreneurial team inside the company. Moreover he said, this platform is very different and the user experience focuses on BlackBerry people who need to get things done.

Other features he extolled in his blog include true multitasking and the ability to run native Android apps.

Of course the pressure to deliver something perfect is on and the good news is as a piece of software, even if it isn't exactly perfect, you can roll an update out fairly quickly to erase any problems. The Playbook OS and UI are pretty good in my opinion. This should mean that the BlackBerry 10 OS will be even better.

The challenge for every company competing with Apple is of course competing with Apple. RIM will need not only a great BlackBerry 10, but a blockbuster OS that makes the media scream with excitement.

Alec, Luca, Thorsten and the RIM team have their work cut out for them as all of this perfect execution has to happen while there are thousands of people being let go. The flipside is that they are hiring good people and Luca's description of a new entrepreneurial team is exactly what is needed. It is worth noting in conclusion that if you judge RIM on its hires and not its fires you get a much different impression. Once this new OS is revealed, the market of course will have the final say on the company's course change and whether the delay was worth it. **IT**

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By Hunter Newby



## “We Can’t Wait”... For Dark Fiber

On June 14, 2012, President Obama signed an Executive Order...to make broadband construction along Federal roadways and properties up to 90 percent cheaper and more efficient.” President Obama’s message to America, and the world, was “We can’t wait.”

This action begs the question, what are we waiting for?

Waiting implies that we do not have whatever it is. The fact that we are waiting also means that we need it, or else we wouldn’t need to wait for it. Finally, the words can’t wait mean that there is a high level of urgency in obtaining whatever it is we are waiting for. This isn’t some passive thing, or a nice-to-have. It is a must-have.

So, what is “it”, and why must we have it?

As the President puts it, “Building a nationwide broadband network will strengthen our economy and put Americans back to work”. What the President is saying is that the U.S. does not have a nationwide broadband network. This is a news flash for most, but a dirty little secret for the subscribers and operators of the slow networks in America.

Delving in to the semantics is a tricky business, and trying to understand the definition of words and terms is largely a tool used on the battlefield in lawyer-land. Manipulating definitions is clearly a tool turned weapon for most states, which have recast broadband to be defined as some very low, sub-megabit, speed at the behest of the incumbent telecom and cable operators that employ so many voters in the state. They do so as they wish to protect their home turf and ability to control the pace of change and their need to invest in proper infrastructure. This state-level manipulation is contrary to the economic health of the country and has now been publicly noticed by the President.

Speed, as in kilobits and megabits per second, has historically been a metric for defining broadband, but allowing the definition to exist at this level has exposed broadband to the constant manipulation it lives under. The true measure isn’t in the word broadband, but rather the word infrastructure. Infrastructure does not have a speed. The word conjures up images of buildings, steel, bricks and glass. Combining broadband and infrastructure brings to mind pieces of networking equipment and more importantly, how they are connected – fiber.

Looking more closely at the Executive Order President Obama has signed we can see that he has specifically called out the need for broadband infrastructure and his contribution to solving the issues of not having it and the

urgency in getting it built is to make the federal application process for rights of way more efficient and cost effective. So, basically what the President of the United States of America is saying is that we need more fiber built everywhere in the country to create jobs, drive the economy and that rights of way (dirt, land – the foundation of infrastructure) are essential in getting that done.

President Obama, you are correct! For those of you who still believe there is a fiber glut in America, sorry. This is its epitaph. Hopefully it is safe to say that the fiber glut myth is dead, but if anyone continues to wish that all is well with dark fiber availability in the country, please check your mobile device at the door. You obviously are not using it, so you must not need it, and if you do not understand the relationship between fiber and wireless then you really are not qualified to have an opinion on the state of broadband infrastructure anyway. Now it is time to get on to facing reality, dealing with facts, making a plan and building the new America. **IT**

*Hunter Newby is CEO of Allied Fiber ([www.alliedfiber.com](http://www.alliedfiber.com)).*

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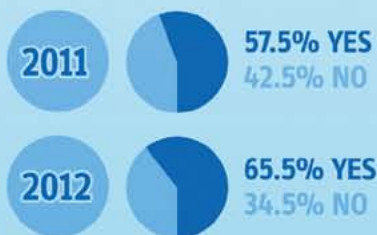


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By Michael Stanford



## The Grand Unification of VoIP

In previous columns I have bemoaned the lack of interoperability of video-phones. SIP was supposed to bring that. Apple's FaceTime is SIP-based, but the most widely used videophone service, Skype, isn't. Nor is Google Talk, nor the version of video calling currently used by about 100 cellular service providers around the world, 3G-324M.

Last year Google announced WebRTC, which seems likely to pull everybody together. The name WebRTC is used to mean three things:

1. A JavaScript API (specified in the W3C) for implementing real-time voice and video communications in web browsers.
2. All the code to implement the WebRTC API. The highest quality VoIP clients have for several years been based on code from a company called GIPS. Google acquired GIPS in 2010, and with Web RTC, open sourced all its code with a royalty-free license. This code includes capabilities to send and receive media streams over the Internet. It also includes the GIPS voice engine: all the low-level audio and packet processing needed to make calls sound great. This means echo cancellation, packet loss concealment, jitter buffering and so on. It also includes a high quality voice codec, iSAC. For WebRTC's video codec Google provided VP8, created by a company called On2, which Google acquired in 2009.
3. A Google-run open source initiative (WebRTC.org) that hosts the WebRTC code.

There are several reasons that WebRTC seems destined for success:

- WebRTC is a browser-based technology, standardized in

the W3C, making it interoperable across a multitude of devices, and embeddable in any web page.

- The major browsers will support it - Chrome, Firefox and Opera for certain and IE highly likely, leaving only Safari as a potential holdout.
- The technology is best-in-class, and it does all the technical heavy-lifting for anybody who wants to implement a videophone client.

- Skype appears to be on board for Web RTC, since the only modern voice codec specified in the IETF draft recommendation for WebRTC codecs is Opus, based on Skype's SILK. The only remaining hurdles to perfect interoperability are Apple's current non-endorsement, and the lack of a video codec in the specifications.

Last  
year Google  
announced  
WebRTC, which  
seems likely to  
pull everybody  
together.

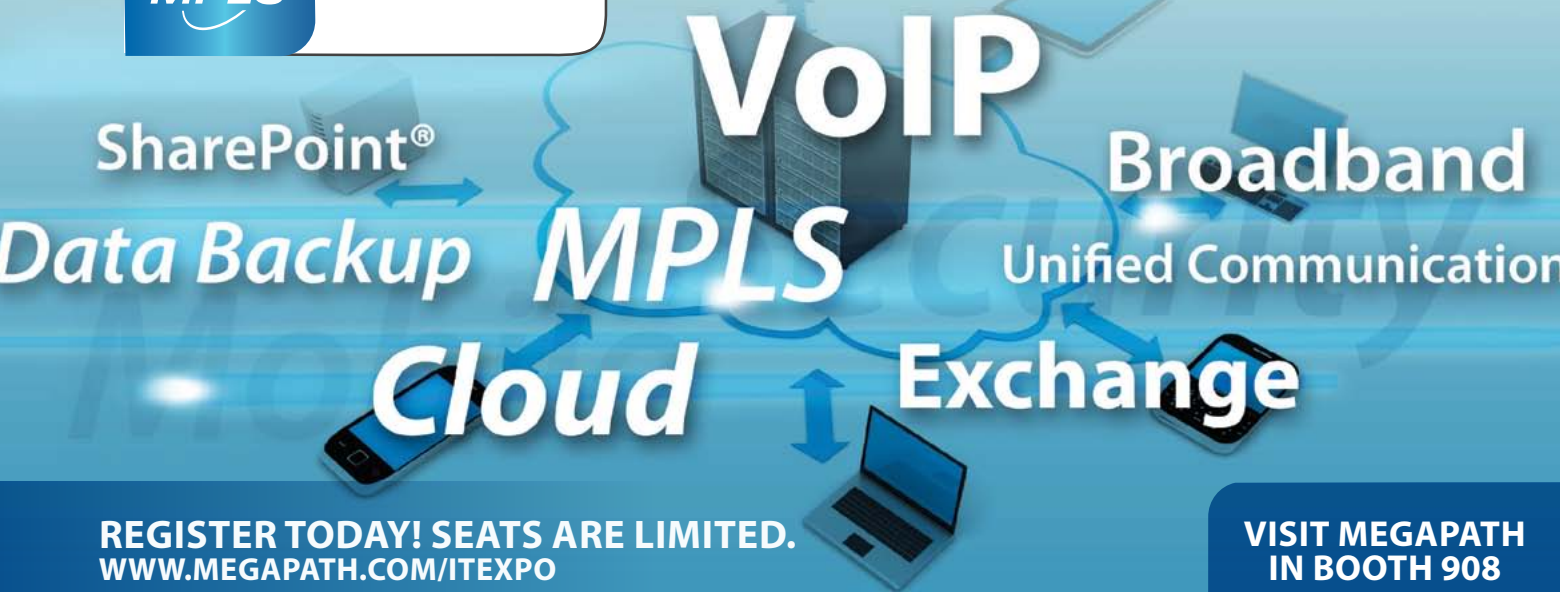
The VP8 video codec is in the WebRTC code, and it has the advantages of being high performance, widely used and royalty-free, but it is not required in any WebRTC specification, and it is not hardware-accelerated on handsets. The alternative to VP8, H.264, is royalty-burdened, but implemented in hardware in smartphones and tablets. This hardware implementation means that battery life will be better with H.264 than VP8. Google is presumably frantically engaging the chip vendors to incorporate hardware VP8 acceleration, but even if they succeed, that will take years to reach phones in the market. **IT**

*Michael Stanford has been an entrepreneur and strategist in VoIP for more than a decade. (Visit his blog at [www.wirevolution.com](http://www.wirevolution.com).)*





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By Mike Sheridan



## Enterprise Social Networking Goes Prime Time

A few years ago, it wasn't uncommon for business executives to view social networking with a mixture of derision and confusion. When leaders weren't trying to wish away Facebook and Twitter as trifles and time wasters, they were lamenting the fact that their company now had to add social media to its sales, marketing, and communications strategies.

It's funny how quickly the landscape evolves. As with so many technologies these days, consumers led the way and then companies played catch up. The mass adoption of social networking altered the way that individuals were used to communicating, and these habits bled into the corporate world. The challenge was to figure out how to provide employees with secure channels to exchange information and collaborate; the answer was enterprise social networks – the use of internal online networks to enable people to form groups and engage on shared business interests.

Businesses increasingly recognize that collaboration via the exchange of information and ideas are key drivers of productivity and growth. The combination of unified communications and enterprise social networking is where things start to get very interesting. Microsoft's recent purchase of Yammer, an enterprise social networking platform, is an indicator of the vast potential market for tools that enable people to connect and collaborate. Yammer boasts more than 4 million users at approximately 200,000 companies around the world and has been steadily adding new features to address business needs.

In a way, enterprise social networking represents the logical extension of unified communications. While UC has proved essential at connecting employees across an organization through tools such as screen sharing and rich presence, they still needed tools to support engagement among groups. Yammer provides this functionality, from the ability to collaborate on documents in real time and

store files to online groups that support conversations and information sharing.

Microsoft Lync and Yammer are complementary products that have the potential to change the way that companies operate – particularly businesses that rely on knowledge workers. Both platforms are device agnostic, and their focus on mobility means that employees can connect with one another from anywhere on any device. Industries from health care and manufacturing to professional services – basically, any business that relies on the timely exchange of information to support operations – will stand to benefit tremendously.

In the same way that unified communications altered how companies approach voice, enterprise social networking – now with the advantage of Microsoft's market reach – will enable people to connect in new and exciting ways. **IT**

*Mike Sheridan is executive vice president of worldwide sales with Aspect ([www.aspect.com](http://www.aspect.com)).*



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By Jon Arnold



## Tablets in the Workplace – Going Beyond BYOD

Given the focus of my column, this is as timely a topic as any. I could easily focus only on Apple and how much they're causing a re-think in communications, but would rather look at the tablet category than a particular brand. You don't have to look far to find stats and stories about tablet adoption, although the workplace is a world unto itself, and the impact there is less well understood, not to mention more complex than in the consumer space.

Of course, that's part of the problem, right? As with smartphones, the lines are pretty blurry between business and personal use for tablets. At this point in time, demand for tablets is almost entirely end user driven and is based on personal usage. While BYOD is a blessing for IT in terms of saving money, employees have legitimate expectations about how to use their tablets in the workplace. The days are long gone when IT could impose restrictions on personal communications during work, and BYOD is simply the latest wrinkle along that spectrum.

Aside from the work/personal communications spectrum, there's another dimension being really stretched by tablets – the balance of power between IT and end users. This has been going on since the advent of IP, and as intelligence pushed out to the end user, IT had to accept a loss of control over the network. In many ways, this made IT's job easier, since end users could now provision their own telephony features and relocate anywhere connected to the LAN without a service call. Tablets, however, take this to another level, since usage can be both on the LAN and off the LAN.

On one hand, tablets take employee productivity up a notch, but depending on the mode of connectivity, they also can function beyond the reach of IT. For old school network types, this may be too high a price to pay for BYOD, as this loss of control threatens to undermine their role. IT managers who are grounded in the Internet world are more accepting of the need to share control and welcome the openness that comes with personal devices.

At the root of all this is trust, and that's what will really determine the success of BYOD. IT needs to trust that employees will use their tablets responsibly and not congest the network – and drive up bandwidth costs – with too much personal activity at the office. Keep in mind I'm only talking about IT here – this says nothing about the need for employees to also make judicious use of their time during the work day.

There's also a key trust issue among employees. They're fully aware this is tricky territory, and bring tablets to work with the implicit expectation – or perhaps hope – that their privacy will be respected. Companies with advanced capabilities such as

WAN optimization have enough visibility across the network to identify the type of websites being visited and can throttle back bandwidth-intensive applications that are not deemed appropriate for business use. Clearly, there's a Big Brother element at play here, so trust is very much a two-way street.

These issues first came into focus with smartphones, but the stakes are even higher for tablets given how business-friendly they are, especially for supporting unified communications. They are also more challenging given the variety of types available. While the vast majority of tablets are made by consumer companies for the consumer market, both Avaya and others have offerings specifically for business. Interestingly, the same holds true for smartphones, with RIM being the business market vendor, and the rest being primarily targeted at consumers. The main twist, of course, is that smartphones were created for the business market, but have been eclipsed by demand from consumers. Tablets are unique in that their prime focus has been consumers, but their allure has proven irresistible for business applications.

I could parse out the nuances between smartphones and tablets quite a bit further, but that would take us too far from the topic at hand. The main theme is that tablets introduce a great deal of uncertainty but also opportunity for businesses of all sizes. In large enterprises, there are major policy issues to be addressed about ownership, privacy, security, etc., especially since most tablets will be BYOD. Business-only tablets like the Avaya Flare have great appeal by giving back some network control to IT, but most companies are not prepared to bear the cost, especially when employees are so willing to buy their own tablets. SMBs generally won't face this dilemma, and will instead welcome BYOD since it provides so much value that employees could not benefit from previously.

As such, flexibility needs to be the watchword with tablets. There is certainly a hard money equation to consider, and for now, BYOD is going to carry the day here. This means IT must accept an implicit trade-off between gaining some cost savings and conceding some network control and accountability to employees. Nobody said this was going to be easy, but you need to look beyond the trust issues and consider the upside. As dominant as the PBX has been until the advent of IP, mobility and video are poised to be the biggest value drivers in business communications, and nothing enables both of these as well as tablets. You can't put a price on this today, but no matter what business you're in, it's not hard to imagine the many ways your employees can be more effective with a tablet, especially when it was their idea in the first place. ■

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



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By Steven Johnson



## Software-Based SIP Trunking

The industry is moving toward software-based offerings as a means of consolidating existing hardware by virtualizing the hardware and running multiple applications on

the same platform. We also see that many companies have standardized on a single vendor server platform. In both cases there is a significant savings in hardware costs and ongoing maintenance.

At Ingate we're seeing a growth in demand for software-based session border controllers, and we have responded with the introduction of the Software SIParator.

For IP PBX vendors, the Software SIParator offers an opportunity to develop a single-box solution with SIP trunking functionality and enterprise session border controller capabilities fully integrated into their platform. For their customers, this is a level of convenience that further simplifies the migration to SIP and SIP trunking.

Resellers are also reaping the benefits of offering a single-box solution to their customers. They can also install the software on customers' own servers.

With the tremendous growth rate of SIP trunking adoption, it is no wonder that software-based SIP trunk solutions are becoming popular. Once in place, the same infrastructure can be used for full unified communications applications, so customers can benefit from remote worker applications, video, etc., whenever they're ready – without additional infrastructure purchases.

Learn more at the free SIP Trunk-Unified Communications Seminars at ITEXPO in Austin. We'll be there again this season with leading IP PBX vendors, SIP trunk service providers, and other industry visionaries. Hope to see you there! **IT**

*Steven Johnson is president of Ingate Systems ([www.ingate.com](http://www.ingate.com)).*

## E911 Watch

By Jerry Eisner



## End-to-End Solution Best NG911 Approach for On-Site PSAPs

If you're somewhat familiar with enhanced 911, you may well know that public safety answering points are the dispatch centers that receive 911 calls and send help to callers

in need of emergency assistance from police, fire or paramedics.

For a subset of large enterprise organizations, the PSAP isn't something "out there" but rather a function within the enterprise that must be managed. Many large colleges and universities, manufacturing facilities, hospitals and military bases answer all 911 calls dialed from phones on their network without sending them to municipal, county or regional PSAPs. The reasons for this strategic decision vary but range from the organization's ability to deliver faster emergency response to the security requirements of locations such as military bases.

Organizations that own the PSAP function are facing critical business decisions as they look to implement Next-Generation 911 and adopt the standards-based SIP network for handling voice, data, text and video emergency communications traffic. For these organizations, selecting a vendor that can implement an end-to-end NG911 solution has distinct advantages.

An end-to-end NG911 solution tracks phone locations inside and outside the enterprise, updates the private ALI databases that store location information for these endpoints, routes 911 calls to the PSAP, and provides the call handling technology required to receive and process the call. For NG911 to work properly, all components must work together flawlessly.

Absent an end-to-end solution, today's environment of specialization requires enterprise telecom managers to rely on each component vendor's assurance that their piece will work as part of the whole. ACDs, recording systems, CTI, all introduce some level of risk.

When drafting the requirements for your 911 environment, consider this: While NENA's i3 standards have been defined to help ensure interoperability between vendors, no level of risk is truly acceptable.

An end-to-end NG911 solution eliminates the risk of dealing with multiple vendors while reducing costs and increasing control over your 911 and E911 initiatives. **IT**

*Jerry Eisner is group director for public safety of RedSky Technologies ([www.redskyE911.com](http://www.redskyE911.com)).*

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By Jeff Hudgins



## A Better Way to Cool Your Rack

Electricity used in U.S. data centers likely accounts for 1.7 to 2.2 percent of total electricity use. This represents such a large overall financial impact that the time to drive more efficient power and cooling designs is now.

The traditional front-to-back rack server cooling design is where cool air is drawn in through the front of the servers and pushed out the back. Unfortunately heat rises, and the cool air becomes warm as it enters the rack. The greater the density of the rack, the greater the heat production. The two largest heat producers in a server are the power supplies and microprocessors and while Intel continues to improve the power efficiency of the processor, they still can represent as much as 75 percent of the heat that needs to be dissipated. Front-to-back cooling becomes less desirable as it can lead to data center hot spots, lower reliability, and inefficient power usage.

Similar to the front-to-back method, front-to-top cooling draws air through the front of the rack on both sides of the servers and hot air is pushed up to the top of the rack and exhausted. Unfortunately, not enough cold air can reach the top

of the racks utilizing this method, and the result is once again a less efficient cooling design.

A better way to cool a rack is to introduce cold air from the bottom of the rack so that it can flow over the components inside the rack. The air must move at a high enough velocity to minimize the cooling differential at each level of the rack so the equipment near the top of the rack gets the cooling it needs to function properly.

Cirrascale's Patented Vertical Cooling Technology creates such an environment by producing a high velocity stream of cool air driving away hot air created by high performance components and power supplies.

So what's the final score? Vertical Cooling Technology can be ideal for large scale data centers where floor cooling is efficiently utilized and exhausted into ceiling ducts. Vertical cooling draws cool air up from the floor and forces it through the entire rack and exhausts into the ceiling, creating a constantly cool environment for a data center. **IT**

*Jeff Hudgins is vice president of product management at NEI Inc. ([www.nei.com](http://www.nei.com)).*

## Enterprise View

By Max Schroeder



## A Continuing Educational Series To Send a Kiss by Messenger

Some things just work out better by being there in person. For example, sending a

kiss by messenger just doesn't cut it. The same holds for trade conferences and is particularly critical for ITEXO West this year. Frankly, there are just too many changes taking place in VoIP, FoIP, the cloud and IPv6 to miss this event.

Business buying patterns are based on the mental attitude of senior management. The current state of the economy has many managers still thinking in recessionary mode, but most organizations continue to buy if presented with intelligent choices. Two key decision criteria are the ROI and how the solution will improve the company's competitive position. However, to present intelligent choices, resellers must be current on the latest technologies and understand the current state of the communications environment.

Advance Weather Alert – Conditions in Austin are going to be very cloudy this October. You won't need an umbrella, but paying attention and taking notes is mandatory. Cloud solutions have been around for sometime, but the segment is hotter than ever. A key factor is that many organizations are now playing catch up after missing the boat on the earlier voyages. Fortunately, ITEXPO West has a full selection of conferences and exhibits to meet everyone's needs. Enterprises, government, SMB end users, resellers, service providers, manufacturers and developers will be able to choose from a wide selection of conference sessions and view demos on the expo floor. Plus, some co-located events like Cloud4SMB Expo with its focus on the unique needs of SMBs and the Cloud Communications Expo's series of educational sessions extend the ITEXPO selection even further.

Remember that attending a trade conference is a work-related activity and like any business project a game plan is critical. Review the list of conference topics and prioritize the sessions that are of greatest interest. Next, do the same with the exhibitor list, and do not hesitate to contact any company that you feel is mission critical to your project and schedule an appointment.

Since TMC is committed to enhancing the ITEXPO experience for all participants, the company has even posted a recent webinar by Linda Musgrove, the founder and president of TradeShow Teacher, to further improve the exhibitor experience.

Lastly, don't miss the Cloud Cruise this time – get moving and book the event. **IT**

*Max Schroeder is senior vice president of FaxCore Inc. ([www.faxcore.com](http://www.faxcore.com)) and managing director of the DPCF.*





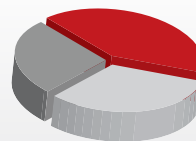
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By Lori MacVittie



## The Impact of HTML5 on Infrastructure

Generally speaking, web developers view the arrival of HTML5 in a positive light. Significant changes to error handling and stricter enforcement with the specification will bring much needed relief to those who struggle with cross-browser compatibility and hacks that have long been necessary to address the tag-soup approach supported by earlier versions.

For infrastructure vendors that interact with HTML for purposes of security and performance, however, the move to HTML5 poses challenges.

While the core framework within which HTML is delivered remains largely unchanged – the semantic construction of a web page continues to follow a DOM-like hierarchical set – the addition of elements and new capabilities will need to be supported by caches, application firewalls, and web acceleration solutions.

A good example of this is the inclusion of audio and video tags, which replace the traditional method of embedding external objects into the page. The HTML5 elements greatly normalize and therefore simplify the inclusion of such media into web applications, but require infrastructure to parse and interpret these new tags for purposes of security or caching or redirection to a CDN.

Most of the new elements, while requiring support, will not overly tax infrastructure vendors. What will be cause for head scratching are some of the new JavaScript APIs – particularly those involving client-side caching.

Past incarnations of HTML caching required a combination of meta-data tags or HTTP header entries indicating the cachability of content. HTML5, with its new Application Cache API, changes the way in which cacheable content is managed.

A new attribute on the HTML element, “manifest”, indicates the name of a manifest file describing which files the browser should cache for offline access. This file can be remote (accessed via a URI) or delivered inline. It requires support for a new content type: text/cache-manifest and, of course, the ability to parse and interpret the file.

A wide variety of web acceleration solutions rely heavily on caching on the server side as well as the client side. This often results in the insertion of cache-related headers and meta-data into HTML documents. Obviously, a brand

new mechanism for managing client-side caching capabilities will require new functionality for infrastructure, as well.

Other new APIs in HTML5 allow for a variety of functionality, including scripting and validation of forms. For security-focused infrastructure, these will prove frustrating, as they represent potential sources of exploitation. Web application firewalls and similar solutions will need to support means to constrain and further validate these tags lest they become easy pickings for those seeking to insert malicious code into websites or clients.

The advantage of HTML5 for developers and applications is undeniable. But organizations need to articulate clearly a strategy for adoption that takes into consideration the potential risks of adoption by developers without simultaneously ascertaining whether or not it will significantly impact security and performance-enhancing infrastructure services. **IT**

*Lori MacVittie is senior technical marketing manager at F5 Networks ([www.f5.com](http://www.f5.com)).*

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# A Teaser on the Keynotes

**I**TEXPO is just around the corner. We invite you to join us next month in Austin, Texas, to take part in the many educational, marketing and networking opportunities this TMC event provides.

Keynote speakers at ITEXPO West include Chris Hummel, chief commercial officer with Siemens Enterprise Communications, and David Tucker, vice president and general manager of the Small Business Unit at Cisco, both of whom will give afternoon addresses on Oct. 3, as well as Robert B. Carter, executive vice president of information services and CIO with FedEx, and Raymond P. Dolan, president and CEO at Sonus Networks, who are scheduled for Oct. 4.

Siemens Enterprise Communications is a player in the telephony and UC markets. Hummel notes that Dell'Oro Group recently promoted the company from the third to the second spot globally. A press release issued in June by Siemens Enterprise Communications says that Dell'Oro Group's 1Q12 Enterprise Telephony Quarterly report notes that the vendor's voice platforms, including OpenScape Voice, marked two consecutive quarters of consistent growth to capture new global enterprise voice market share, while leading competitors experienced ongoing revenue share loss. Hummel adds that Siemens Enterprise Communications tripled its U.S. marketshare over the last 18 months, from 0.9 to 2.7 share; that the company has grown more than 20 percent; and that its IP line shipments grew 52 percent year over year in the first quarter of 2012.

As chief commercial officer with Siemens Enterprise Communications, Hummel heads up the company's marketing efforts and global portfolio management, is in charge of indirect channels and global alliances, and is responsible for corporate development and strategy.

During ITEXPO, Hummel aims to tackle the subject of unified communications. UC as a term has become a little passé, he tells INTERNET TELEPHONY, as the general idea has been out there for about a decade now. Yet even after all this time, he adds, it remains far too difficult for enterprises to take advantage of the benefits UC can deliver. Nonetheless, he continues, the promise of bringing communications channels together in a unified workspace to enable people to collaborate and connect is

still there. Hummel's speech will address the existing barriers to UC and how customer companies can overcome them. Siemens Enterprise Communications, he adds, is doing all it can to help companies find their easiest path to UC.

"A lot of these communications revolutions are taking place outside the enterprise, and not inside the enterprise," Hummel says.

As a result, social, mobile, UC, and collaboration are still at the periphery of many businesses. The adoption rate of UC is in the 10 to 20 percent range, he continues, but if organizations amplify the way people work together via social, mobile, and UC solutions "you're going to see that adoption rate skyrocket."

ITEXPO's other Wednesday keynote speaker, David Tucker, vice president and general manager of the Small Business Unit at Cisco, meanwhile, will discuss how small businesses can leverage new communications technologies to their benefit.

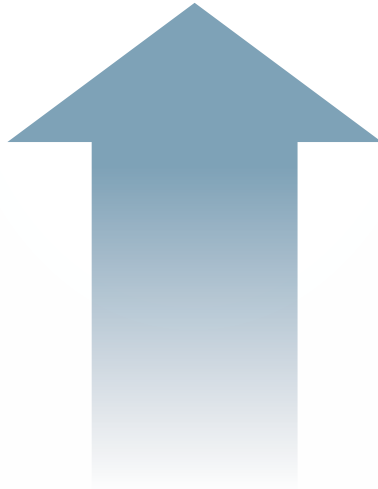


"Small businesses are generally the first to ride the wave of change that technology transitions provide, such as cloud applications, bring your own device, social communications, mobility and IP telephony," Tucker says. "It's about enabling the small business owner to do more with less people and fewer dollars. The trick to serving small businesses is providing very simple products to deploy and manage, with sophisticated functionality under the covers."

Tucker adds that the focus of small business continues to be a priority at Cisco in terms of not only product development, but how the company takes the product to market and builds small business-focused solutions for its partners and customers.

"On the product side, we develop products that are purpose-built for small, not scale enterprise solutions down," says Tucker. "A

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complete portfolio is critical to our growing success and focusing on how small business customers can easily and securely leverage mobility, cloud, voice, video and social networking trends and opportunities.”

Cisco’s Small Business Unit addresses switching, routing, storage and WLAN. Among the important developments happening on this front are 5G and 10G interfaces become more affordable thus enabling more switches in the small business area with these interfaces, says Tucker. That allows the connection of server and storage solutions at a very high speed, and also prepares the network to be fully ready for Wireless N speed and beyond (802.3ac), he says.

“Switches for small business customers have become quite intelligent and play a key part in the network,” he says. “A managed small business switch can be auto-provisioned, which is an important role for network security. Additionally, ports can be authenticated and set-up dynamically based on the connected device and/or user which enable features like network-wide voice and video settings.”

Tucker notes that additional switching and routing trends include application awareness, big data, more compliance requirements, and the proliferation of wireless devices.

“The BYOD trend is not limited to a certain company size as this is something we see in both small businesses and the enterprise,” Tucker says. “In fact, many employees in today’s small businesses

are already using their own devices. The benefits for small businesses include increased productivity and employee satisfaction by being able to use their preferred device. But, as the number of devices on a network increases so does the demand for ensuring that only certain devices can access specific data. For the small business, single user policies, threat management security at the edge and hotspot technologies are critical.”

The day following the Hummel and Tucker keynotes, ITEXPO attendees will hear from Dolan of Sonus, which in mid June announced its intent to buy Network Equipment Technologies, Inc. (NET) for approximately \$42 million.

“Vendors, analysts and users have all talked about applications such as unified communications or high-def, low bandwidth video for several years, but the promise has been unfulfilled for a number of reasons – with proprietary constraints, cost and complexity all near the top of the list,” Dolan says. “The steady increase in the availability of SIP trunks and the clear demand by end users for an open, standard-based environment have finally ignited the move to SIP-based applications.

“We see the industry heading toward a tipping point, in which the enterprise communications infrastructure in the form of premises-based PBX and desk phones of today will be disrupted by mobility and unified communications being offered by service providers through the cloud over SIP trunks. This is a big market – between \$9.5 and \$10 billion annually,” he adds.

“Sonus has been a leader in building out flexible, session-based infrastructures for service providers and enterprises with our SBC portfolio. With the addition of NET, Sonus will be able to deliver a purpose-built offering from core site locations out to small offices and branch offices. The promise of unified communications and other real-time dependent applications will only take hold when they can be deployed across disparate network topologies in a uniform manner across an organization and together with NET, Sonus will have the ability to finally address that need.”

Dolan notes that ITEXPO is a great venue to learn how great technology can be applied to change the trajectory of your business – whether as a service provider or an enterprise.

“The past decade has seen an amazing rise in technology tools and resources that were intended to make us more productive,” he adds. “Yet the most current U.S. Labor Department report shows that worker productivity is essentially stagnant. Frankly, the very tools designed to make us more productive have started to overwhelm us and have the opposite effect as we manage dozens of e-mails, text, video and voice interactions each day. The advent and adoption of SIP has reached a tipping point, and I look forward to sharing specific steps companies can take to bring speed and simplicity to their organizations so they can work smarter, faster and more collaboratively. Together, we can break through the complexity we as an industry have created and help reset productivity to a new level over the next decade.” **IT**



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*By Peter Radizeski*

## The Fight in the Channel

The channel is in flux as it tries to move away from commodity items like POTS, DSL and T1. As the carriers migrate to cloud, data centers, MPLS and SIP, they are hoping that the channel will shift with it. In that effort, the carriers have been in search of the new partner that will get cloud and sell cloud, without much hand holding. In that effort, everyone in the last 18 months has been chasing VARs.

VARs fear telecom due to uncertainty, like porting and FOC dates. MSPs are directly competing with carriers with their own cloud services. Agents are just trying to survive, while being screamed at to get cloud.

The problem lies in mentality. Many old telecom sales pros are Bell-heads, thinking in terms of TDM. Bell-heads understand telecom in terms of replacing services. Cable companies fill that spot nicely. Cable companies will likely own three-quarters of the broadband market in the U.S. and most of the telecom spend for the SMB space under \$750. The ILECs have conceded these areas. Cellular will be their avenue to revenue in the SMB market. The cellcos would like their channel

partners to swim in this red ocean. Admittedly, 4G connectivity should be in the ballpark for agents. It's kind of a safe bet.

Now, M2M solutions are more complex. They mainly involve ways to connect, track and gather data, people and things. This calls for Net-heads, folks who think in IP. The fight in the channel is to find Net-heads.

SIP over MPLS and private cloud offerings are composite answers to the convergence question. The ability to combine IT and telecom points into one reliable solution for the customer is the hallmark of a Net-head. Flexibility, efficiency, mobile, remote and virtual are inherent to Net-head proposals.

With the growing list of IP endpoints from smartphones to trackers to surveillance gear, the ability to combine hardware, software, services, connectivity and management is the holy grail of the new telecom. It is at these edges of what is possible that the channel needs to excel at to thrive. **IT**

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



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# Twelve Proven Tips to a Prosperous Master Agent Partnership

**B**eing a telecom agent doesn't mean going it alone in the job of providing clients with dependable carrier relationships and protecting your own financial success. In fact, partnering with a master telecom agent has become an attractive and strategic move for independent agents.

A master agent is a provider of telecommunication services working on behalf of service providers and benefits telecom agents through a shared set of resources. By assisting agents in managing partners, subagents, providing back-office support and expert product knowledge, partnering with a master agent can actually help you expand your clientele and secure a bright future of long-term residual sales commissions. However, not all master agents are alike. Making the wrong choice could have a negative effect on your clients, and a stinging impact on your commissions.

Much like separating the wheat from the chaff, agents must look closely at a promise vs. a proven track record. It all comes down to 12 simple considerations:

## Favorable Contracts

Determine if the master agent is protecting and preserving the most favorable contract terms and conditions possible. A strong master agent invests significant dollars every year – not just to negotiate higher percentages, but to improve the terms and conditions of their agreements. There is a huge value in the agreements that a master agent secures on behalf of its agents.

## Leverage

Because of high sales volume, a master agent will typically offer higher paying vendor contracts to agents, along with favorable renewals and post-termination protection.

## Intangibles

Don't overlook the importance of intangibles. For example, a good master agent demonstrates the ability to be a passionate voice for agents and advocate for best possible pre- and post-sales support for agents and their customers.

## Accessibility

How easy is it for an agent to connect

with a master agent each business day? Are the owners of the master agency involved in the day-to-day business? Do they care about what's going on? Look for a track record in response to your calls and requests for support, as well as how involved the master agent is in strategizing to grow your business.

## Involved

Let's face it, you want a master agent that is involved in the industry and with knowledge of where it's headed. A good master agent will likely sit on carrier advisory boards, is visible in the industry, highly regarded by peers and suppliers, and provide opportunities for agents to meet with channel chiefs and other industry leaders.

## Advocate

The No. 1 job of a master agent is to advocate for the independent agent. The feeling you should have is that your master agent has your back.

## Accountable

Ultimately, you are accountable to your client. But does your master agent hold its vendors to the same high standards as it relates to performance and commitment? Evaluating the master agent's strengths in handling call volume (good, bad and ugly), ensuring orders flow through to timely installation, billing and commissions is crucial. Another critical consideration is whether the master agent delivers accurate and timely commissions, ensuring that providers pay commissions on all your business transactions. Does the master agent perform audits of commissions?

## Attitude

Look for a prompt reply to e-mails, returned phone calls and a willingness to go the distance.



## Stuff Happens

Is your master agent in the trenches with you, fighting the tough fights and helping to shovel out toward daylight? Stuff happens and you want a master agent who can adapt to change, as well as the highs and lows that affect your clients.

## Tenure

It all boils down to experience. Does your master agent have plenty of experience in the telecom channel and street credibility?

## Understands Technology

A no-brainer, you would think, but a master agent must also have a working knowledge of technology solutions and what is a good fit for the customer. A good master agent provides strategic counsel on complex solutions.

## Rewards Success

At the end of the day, you want your sales commissions, but you want to be recognized for your efforts from time to time. A good master agent understands that and compensates you well for a job well done. Look for a master agent with a generous incentive program, multiple opportunities to celebrate success, socialize with channel executives and get your game face on. **IT**

*Ted Schuman is the founder and president of PlanetOne Communications ([www.PlanetOne.net](http://www.PlanetOne.net)).*

# Network • Packet • Broker [net-wurk] [pak-it] [broh-ker]

## /Best Monitoring ROI/ *noun*

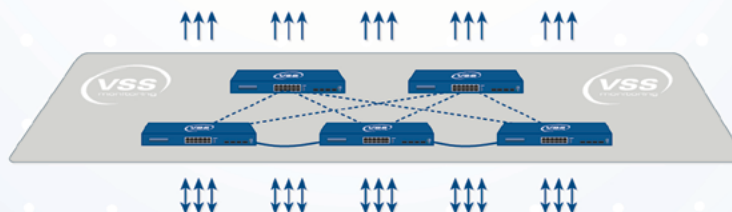
**1:** Network element or sub-layer which provides access, capture, aggregation, filtering, defragmentation, deduplication and regeneration of traffic flows between the network infrastructure and performance/security tools. Interconnection system necessary to scale today's networks and data centers whilst preserving link layer visibility and minimizing tool Capex/Opex.

<DERIVATIVES, Defunct> Traffic Visibility Fabric, Traffic Monitoring Switch, Aggregation Switch, Aggregator, Network TAP, Data Access Network, Distributed Traffic Capture

Performance/Security  
Tools Layer



Network Packet  
Broker Layer



Network/Cloud  
Switching Layer



Brokering Packets. Optimizing Tools.  
vssmonitoring.com



- Up to 80% Capex reduction in tool layer costs.  
Up to 50% Opex reduction in tool layer costs.
- Ability for network operations staff to better justify tool expense.
- 20% Network Packet Broker layer investment results in 80% tools layer saving.
- Less outages and reduced subscriber churn.  
Greater uptime and increased subscriber satisfaction ratings.
- Overcome the growing financial burden between subscriber ARPU and cost of network upgrades.

# Globalinx Tells Its Story of Customized End-to-End Business Solutions

If you're not yet familiar with Globalinx, chances are good that you soon will be. The company, which provides voice and data services, has positioned itself as a cloud services provider, and it aims to expand on that front both through acquisitions and organic growth. To push forward this strategy and the related messaging, Globalinx has been working on new branding and a revamped website, both of which are set to be unveiled this month.

INTERNET TELEPHONY recently interviewed Craig Jerabeck, president and CEO of Globalinx, to learn more about the company's value proposition to both customers and partners. Here's what he had to say.

## Globalinx has been around for seven years. How has it evolved over time?

Jerabeck: The company started as an agent and then became a reseller of hosted VoIP primarily in the residential market.

In 2007, we put into production our first softswitch and truly made the move to become a facilities-based VoIP company. I believe our evolution from agent to carrier has resonated with our partners in all of our sales channels as it gives us a unique perspective, and we can relate first hand to many of the challenges they face.

The company now has more than 250 employees between both coasts, dedicated to serving over 70,000 thousand customers in the VoIP and TDM space.

## Tell us more about Globalinx's platforms and product portfolio.

Jerabeck: Today we have a large suite of voice and data services that we provide to our customers. We own and operate our own IP network utilizing BroadSoft's BroadWorks platform. From this platform we deliver hosted PBX services as well as SIP trunking across the country and even internationally. The BroadSoft platform is ideally suited to provide carrier-class services to a wide breadth of customers based upon their needs and the solutions they desire.

We service customers ranging in size from the very small to the very large, multi-location enterprise. Through our acquisition of TMC Communications a few years ago, we began offering a full suite of traditional resold products through most of the major carriers across the country.



Craig Jerabeck, president and CEO of Globalinx

We also recently deployed our own MPLS network so that we can help customers prioritize their voice services across multiple locations – either all across our own network, and even using diverse providers for their access.

As you can see, there aren't many products that we can't support and deliver to any customer across the country, from one carrier all on one bill. Our deep product set and knowledge are key to help guide our customers through their evolution from TDM to VoIP. Some customers will get there much more quickly than others, but when the customer is ready, we'll be there to help them every step of the way.

## What are your target customers and applications?

Jerabeck: The company targets several different customer sets depending on the sales channel. Our direct selling channel primarily focuses on residential and some small SMB. Our wholesale customers are typically focused on SMB customers.

We consistently win SMB customers and enterprise accounts through our agent channel. We have been a consistently strong performer with call centers for both SIP and TDM voice solutions. We happen to have a handful of partners that excel in that space. We sell nationwide and



have deep DID/LNP capabilities with our VoIP offerings that make us attractive to business with multiple locations – even more so now with our own MPLS offering.

#### **What is your go-to-market to reach these customers and prospects?**

Jerabeck: The company uses channel partners exclusively for all customer segments. We do not deploy a direct sales channel.

All three of our distribution channels are indirect, with our agent channel being the largest from a revenue contribution perspective, accounting for approximately 57 percent of the revenue.

#### **Who do you see as your key competitors, and why does Globalinx do it better?**

Jerabeck: Our competition varies somewhat by product. We are a fairly large switchless reseller and operate our own IP network.

When we are competing on access opportunities we typically find ourselves competing head to head with one of the large carriers, like a CenturyLink or a Windstream. On the IP side there are several companies based on BroadSoft that we run into from time to time.

What we bring to the table that many of our competitors don't is our breadth of services. Whether it's on-net products or a combination of resold products, we can provide a cohesive solution for our customers – all from the same company and all across the country with really no geographic limitations. The smaller companies offering BroadSoft can't do that, and the tier 1's are restricted by their geography.

#### **Globalinx is working on new branding and a retooled website to be unveiled this month. Why now, and what is the messaging you want convey with these efforts?**

Jerabeck: We closed on our acquisition of TMC in January of 2011. Now that the dust has settled and we are fully integrated, it made sense to educate the marketplace about who Globalinx is and why customers and partners like to work with us.

Some people in the agent channel were not familiar with us, some were. But we need to do a better job of letting people know who we are, what we can do, and why they should choose us to do business with.

We are confident that our new look will help convey our value proposition, it will be clear that not only are we a presence in the market, but we are a very strong player with a tremendous breadth of product. Our financial strength and scale will allow us to win even more business. We will continue to deliver customer-focused solutions with a great experience for our partners and our customers.

#### **Anything else you can tell us about the new Globalinx branding?**

Jerabeck: The new branding effort will bring a voice and personality to the company. You will be able to see how we stand out in the marketplace, and how we value relationships. Customers can expect a more casual business approach combined with the technical experience and knowledge from a leading telecom provider.

#### **What is Globalinx's ownership and financial situation?**

Jerabeck: Globalinx is a privately held company, with the three founders owning the majority of the stock, and employees holding 10 percent. The owners are Craig Jerabeck, Jeb Tyler and Jason Guck. All of us have been in the telecom business for our entire professional careers.

I started my career with AT&T, where I spent eight years, and for two years I was a general manager for Cellular One. In 1994 I launched my own wireless retail business, then a wireless franchising company in 1999. Globalinx is my third venture.

Tyler and Guck were distributors for several large telecom companies prior to Globalinx and focus their attention on building distribution. They have built a very large and successful consumer business for Globalinx.

The company is very healthy financially. It will surpass \$100 million in sales in 2012 with a sound balance sheet and strong earnings. This would be slightly more than a 20 percent increase in revenue year over year. We have been profitable since 2006. The company has two equity sponsors that invested in 2006 and 2007, providing the necessary capital for the infrastructure build.

#### **What key growth areas is Globalinx moving to address?**

Jerabeck: We believe that customers will continue to gravitate to cloud solutions, and we are ready and willing to help them down that path. You will see us add services to our cloud offerings, and we will enhance our commercial offerings, building upon the success that we have had with some of our mobile video and voice apps for the residential marketplace.

People's smartphones are rapidly becoming the one device they want to use for everything. We have been selling a host of different mobile apps that support voice and video for a few years. Taking these apps and making them a part of customers' hosted solutions will give customers more functionality and freedom, all while still delivering a cost savings. The integration of customers' wireless and wireline needs will play a bigger role over the next few years, and we are well positioned to help customers navigate those options.

#### **What's next for Globalinx?**

Jerabeck: Given the company's strong balance sheet, we are in acquisition mode. We have made two acquisitions in the past several years and continue to look for synergistic opportunities. **IT**

# Making the Grade

## Strategic Testing Reduces Defects, Improves Customer Experience, Creates Savings

Savvy telco providers understand the importance of testing applications to identify performance issues before they occur. However, the vast range of services, plans and options available creates an unprecedented and exponential set of application test cases. As a result, it is nearly impossible to test manually each individual application. By implementing a strategic testing approach that pragmatically applies test automation across business processes tests and working with an outside specialist, telcos can reduce application defects, improve the customer experience and save on costs.



### Applications

Business and operational applications are the pulse of telecommunication providers. Telcos rely on these applications to run their companies efficiently and to create a positive user experience for their customers. By outlining and implementing a test program, telcos can reduce the risk of OSS/BSS application defects that compromise business operations.

Thoroughly planned and well-architected test programs allow telcos to adapt more quickly to changing market conditions and convergence of services – all while addressing the challenges of building quality, performance and security into business applications. By applying advanced testing systems, telcos can accelerate time to market, enhance the overall customer service experience and thrive in an age of instant expectations.

### Security

It is important to begin by thinking about security. As more and more applications and services become accessible via the web and mobile devices, the requirements for application security continue to grow. A breach can result in the loss of consumer confidence, which can have a lasting impact on brand perception and loyalty, not to mention the financial implications.

### SOA

With security in place, telcos should implement a mobile testing plan. The explosion of rich, new telecommunications services – and the mobile devices used to access them – present a serious challenge: how to deliver a consistently outstanding service experience across a rapidly expanding portfolio of services and devices.

Converged telecommunications services delivered across service-oriented architectures are helping providers open new

**By working with an outside specialist to implement a strategic testing approach that applies test automation across business operations, telcos can combat the unprecedented growth of complex business scenarios and test cases to ensure defects do not impact operations.**

revenue streams and drive additional return from existing services. New technologies enable network resources to be decoupled from the service elements, making it easier for new services to be rolled out to customers faster and at lower costs.

But before these new services are offered to customers, they must be rigorously tested and validated for functionality, scalability, security and quality – no matter on which digital devices customers use them.

### Pay-as-You-Go

New testing-as-a-service models include all of the people, process, tools and accelerators in flexible, consumable testing services. Telcos have the option to consume these services on a month-to-month basis, giving them the flexibility to test as much as they need to feel confident that a new release is not going to introduce a defect and cause a system outage.

By using a testing-as-a-service model that is unit-priced, telco providers can consume the units they need to test their release for functional quality and performance. Automated test cases are run on a fixed unit price, lowering the cost to test a release.

An automated regression test suite will reduce the test cycle time, enabling telcos to increase the speed to market of new application features and functionality. At the same time, it will reduce the release cycle and the risk that a defect that will escape to production, causing an outage that impacts business operations. **IT**

*Paul Ashwood is a manager for worldwide product marketing, Applications Services at HP Enterprise Services ([www.hp.com](http://www.hp.com)).*

**A NID is a NID  
is a NID. Right?**

**Not exactly.**



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YOUR NETWORK. OUR CONNECTION.



# The Future of Asset Tracking

Asset tracking solutions have been around for many years in the machine-to-machine space. These solutions, which incorporate wireless RFID, GPS, and other auto-ID sensors, location-based services, and real-time reporting, have allowed companies to remotely monitor and manage distributed assets and improve customer service levels. While these solutions have a deep history in the M2M space and have promised to revolutionize enterprise asset tracking, the true business benefits they have provided have been somewhat difficult to quantify, and actual business value has been a challenge to realize.

If we take a closer look at today's asset tracking solutions, the reason behind the unrealized business value is clear. The big problem with today's asset tracking solutions is that they focus on the asset, not the asset as it relates to your business and business processes.

However, recent technology advancements have created an opportunity for companies to fully capture the true business value of asset tracking. Modern advancements in the M2M technology space such as social collaboration, new intelligence tools, and seamless, bi-directional enterprise integration are creating opportunities for companies to take full advantage of this increasingly connected world to deliver truly innovative asset tracking solutions.

Historically, the key dimensions for business processes have been people and business resources. However, in today's connected world, businesses that operate with any level of intelligence and connectedness in their remote assets are facing increased pressure to provide innovative and differentiated solutions that center on those connected assets.

Naturally, it makes sense for a company to integrate connected assets into its business processes. For businesses to compete in this connected world, business processes must include three critical dimensions: people, systems, and the physical assets. RFID and other ID technologies are making tracking of equipment easier to manage, but real business value comes from context and correlations between the data and interactions of the three crucial dimensions of today's connected world – people, connected assets, and business systems.

Extending your business processes to include data and information from physical assets provides a core foundation for business innovation today. However, for data not immediately available,

tools such as search can be used to simultaneously find information across those three critical dimensions for asset tracking: unstructured data from human interactions, time-series data from connected assets, and structured data from business systems. By applying search to the world of connected assets, business users are empowered to find what they need and respond to real-time conditions in a Google-like manner. This is particularly important in business processes that deal with exception handling, such as a product recall in the food manufacturing space.

Integrating asset-tracking applications into business systems such as ERP, supply chain management, and distribution systems provides critical context into real-world conditions and complete enterprise visibility. Modern M2M platforms provide not only basic enterprise integration, but integration in a bi-directional fashion, allowing businesses to fully optimize their business processes with data and information from connected assets at the edge.

A simple example would be the case of a company that makes and distributes a food product that needs to be maintained within a narrow band of temperatures to meet its cold chain requirements. If a trailer load of product arrived spoiled, how would you go about finding the root cause?

RFID and other ID technologies are making tracking of equipment easier to manage, but real business value comes from context and correlations between the data and interactions of the three crucial dimensions of today's connected world – people, connected assets, and business systems.

In ThingWorx you can store, tag and relate unstructured collaboration data, structured data from business systems, and time series environmental data from the truck and associated trailer into an environment that allows you to ask (and answer) the following questions:

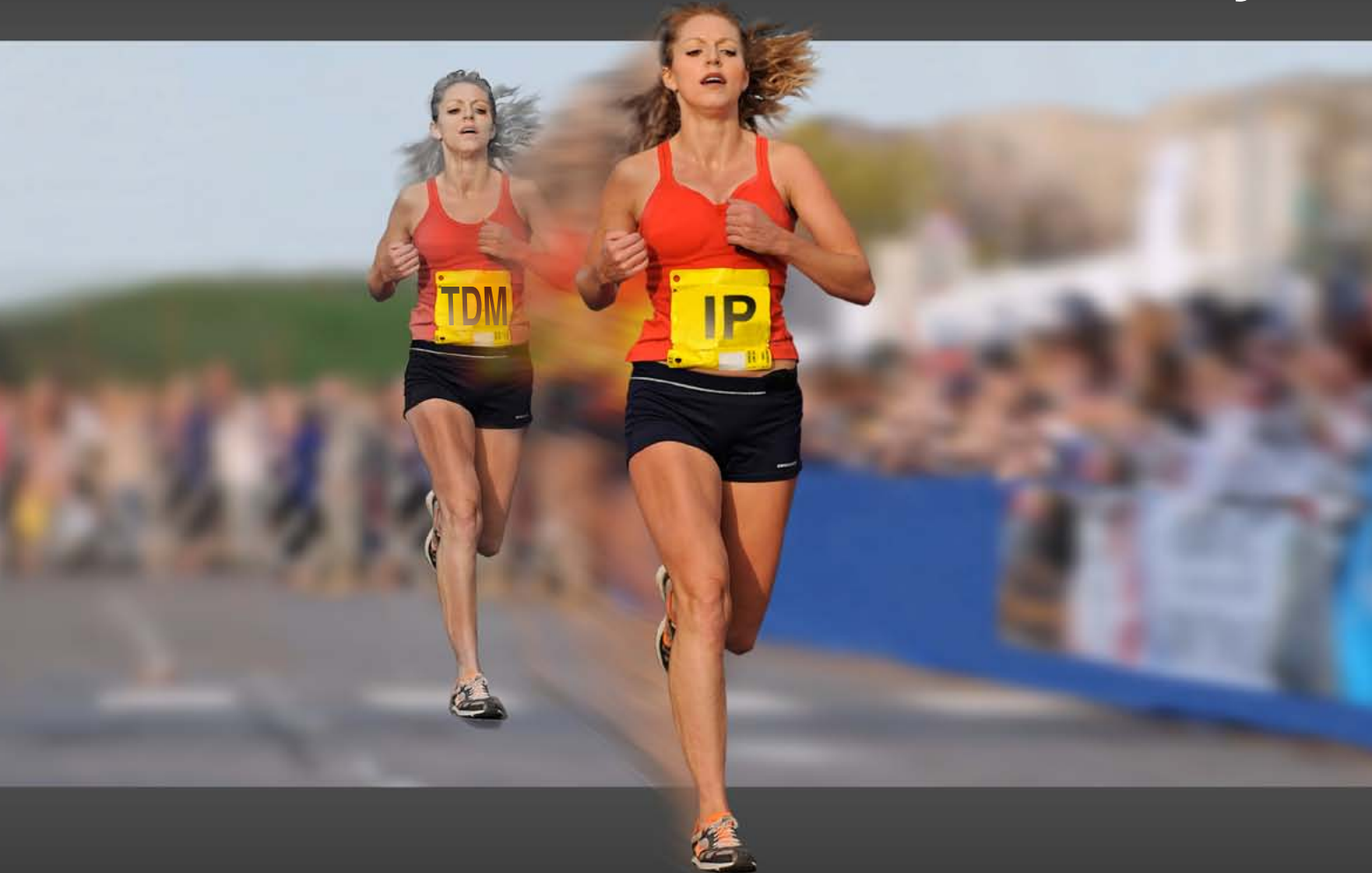
- Who was the driver of this truck?
- Has he/she ever had similar problems?
- Did the truck deviate from the normal route?
- What were the temperature conditions from the moment it was loaded until it arrived at the store and was found to be spoiled?
- What were the manufacturing conditions for this batch?

For companies in asset intensive industries, this provides the competitive advantage and business model innovation to succeed as a connected business. **IT**

*Chris Kuntz is director of marketing for ThingWorx ([www.thingworx.com](http://www.thingworx.com)), sponsor of next month's M2M Evolution Conference & Expo.*

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# Detecting Botnets in Service Provider Networks

## The Impact of CSRIC's U.S. Anti-Bot Code of Conduct

In March of this year, the Communications Security, Reliability and Interoperability Council Working Group 7 accepted the first of three reports containing recommendations to the FCC titled "U.S. Anti-Bot Code of Conduct for ISPs." The report – simply referred to as the "ABCs for ISPs" – describes the methodologies and motivations for ISPs in addressing bot activity in broadband networks.

The CSRIC tasked WG7, Botnet Remediation, with proposing a set of voluntary practices that could serve as the framework for an opt-in model in which ISPs and other broadband providers could help mitigate bots and botnets within residential networks. The working group itself consisted of key technology experts and representatives from major U.S. ISPs, telecommunication companies, financial institutes and security vendors, and was chaired by Michael O'Reirdan (who also serves as chairman of the Messaging, Malware, Mobile Anti-abuse Working Group). I was fortunate enough to be selected as a member of WG7 and was able to provide my experience in devising ways to combat botnets and the criminals that control them.

You'll note that there's a distinction between bots and botnets.

Bots are effectively the victim devices that have had malicious software installed on them to perpetuate crime, and which periodically connect back to a criminal's command infrastructure, seeking new instructions or the opportunities to hand over stolen information. A botnet is the aggregation of many bots affiliated with a specific criminal Internet infrastructure. It is typically managed remotely by criminals as a collective unit. In this day and age, there are literally thousands of criminal groups who own, operate and build their own botnets. Each criminal may control multiple botnets, each of which may include many millions of bot-infected devices from around the world.

The goals of WG7 are lofty – to create a voluntary code of conduct through which ISPs can take a leading role in combating the largest and most insidious threat facing all of us who access the Internet in some form or fashion, and to develop a set of guidelines that ISPs can follow and expand upon, and remediate bots and botnets.

To achieve these lofty goals, the Botnet Remediation working group, after several months of review, consultation and discussion, developed a code of conduct that encourages ISPs to participate

in activities in support of end user education to help prevent bot infections, detection of bots operating within their subscriber networks, notification practices for potential bot infections, best practices in remediating bot infections, and collaboration and data sharing from those participating in the code. However, the code was not envisaged to be an all-inclusive approach to online security, or to act as a technical implementation document.

At its heart, the voluntary code of conduct encourages ISPs to engage in at least one activity in each of the following five areas: education – to help increase end user education and awareness of botnet issues and how to prevent bot infections; detection – to identify botnet activity in the ISP's network, obtain information on botnet activity in the ISP's network, or enable end users to self-determine potential bot infections on their end-user devices; notification – to notify customers of suspected bot infection or enable customers to determine if they may be infected by a bot; remediation – to provide information to end users about how they can remediate bot infections, or to assist end users in remediating bot infections; and collaboration – to share with other ISPs feedback and experience learned from the participating ISP's code activities.

The goals of WG7 are lofty – to create a voluntary code of conduct ... and to develop a set of guidelines that ISPs can follow and expand upon, and remediate bots and botnets.

While the code itself goes into some discussion on each of these activity areas, the recommendations are not detailed in a technical manner (intentionally). Take for example the recommendations for detection. In that section of the code, three broad methods are listed: receiving notifications from external entities, particularly those designed to aid with the overall understanding and real-time dissemination of bot related data; deploying capabilities within their networks that aid in identifying potential bot infections; and directing customers to tools, a web portal or other resources that enable customers to self-identify a potential bot infection.

ISPs will need to conduct their own research in each of these methods and decide which best fit their business. That said, I believe that many large ISPs have already pursued tools or processes related to these three methods, and have likely had some limited experience in their success. I believe that a critical part of combating the global botnet wave of crime lies in ISP-level detection and notification.

From a detection perspective, receiving notifications from external entities of bot infections within your subscriber network isn't really a scalable solution. The reliance upon



other entities to pass infection information back to the ISP in an efficient and encompassing fashion is fraught with problems, not to mention the cost. Botnet monitoring through sinkhole and other active monitoring technologies does not come for free, and over recent years, an entirely new industry has sprung up to monetize this kind of information-gathering platform. It is likely that charges for these kinds of service will continue to increase.

Directing customers to tools and web portals for self-help diagnostics is likely a minimal cost route for many ISPs. However, it is unlikely to make much of an impact in the overall botnet problem. Time and again we have seen that the sophistication of the criminals tasked with infecting devices and building botnets far exceeds that of the victims. In many cases, the victims are tricked into thinking that they're actually helping to mitigate the threat by installing specialist detection and remediation tools, when in reality they end up installing the malicious agents they were so desperately looking to avoid.

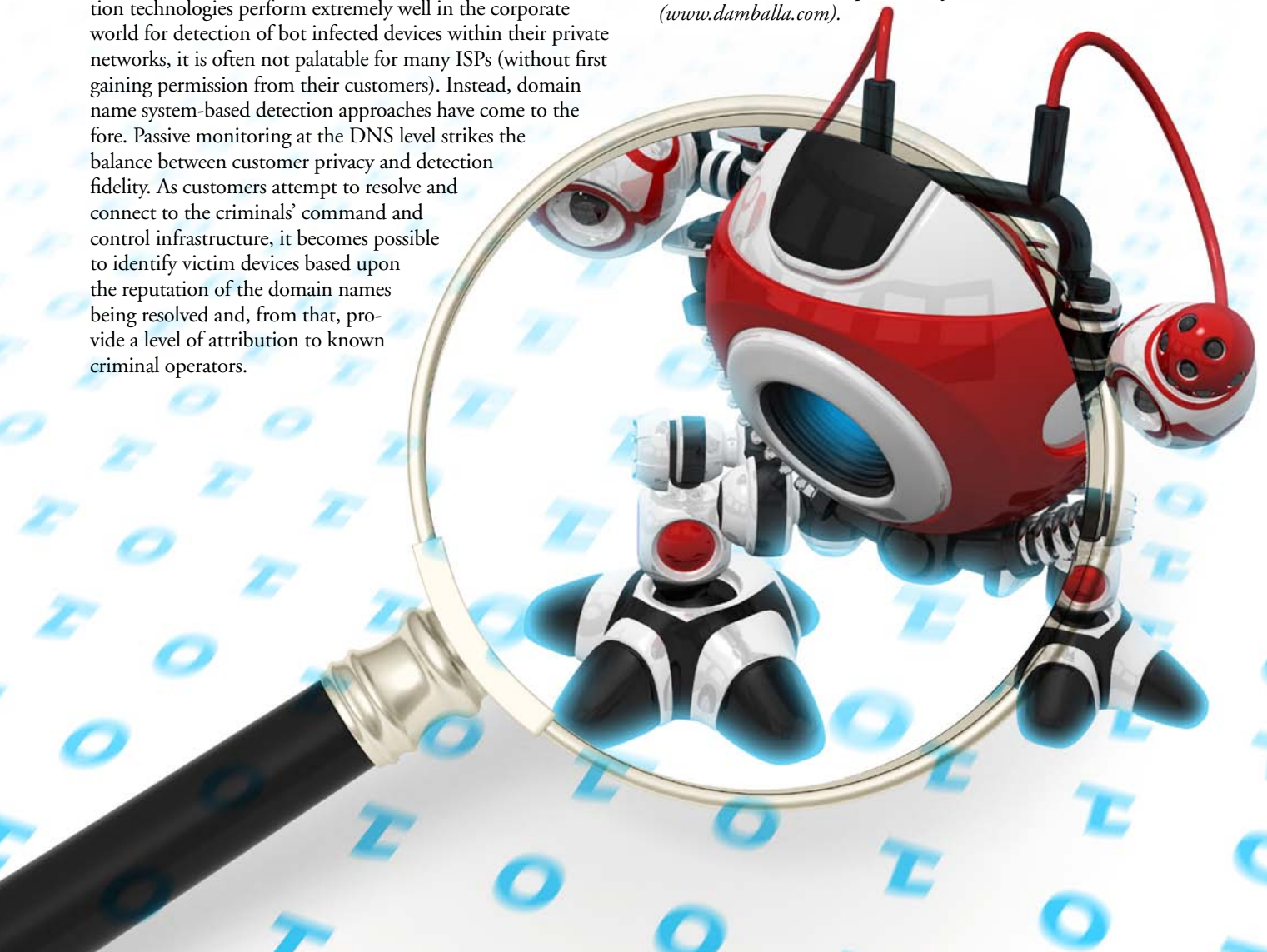
The most impactful detection route lies with the ISPs being capable of detecting botnets within their own network – ideally using passive detection technologies that do not require invasive data inspection techniques. While deep packet inspection technologies perform extremely well in the corporate world for detection of bot infected devices within their private networks, it is often not palatable for many ISPs (without first gaining permission from their customers). Instead, domain name system-based detection approaches have come to the fore. Passive monitoring at the DNS level strikes the balance between customer privacy and detection fidelity. As customers attempt to resolve and connect to the criminals' command and control infrastructure, it becomes possible to identify victim devices based upon the reputation of the domain names being resolved and, from that, provide a level of attribution to known criminal operators.

These passive detection approaches also allow ISPs to measure the size of particular botnets operating within their network, the rate they are growing or shrinking, tune alert and remediation advice to the victims and, last but not least, measure which alerting and remediation strategies are working best for their customers.

While the "ABCs for ISPs" report supports ISPs and other broadband providers in designing their anti-botnet strategies, it is just the first deliverable of what WG7 was tasked with. Later this year, the working group will publish a report covering "Barriers to Code Participation" and "Bot Remediation Performance Metrics".

That last report, Bot Remediation Performance Metrics, due in December, will be very important as it will define the ways in which both the code-participating ISPs specifically, and the Internet community generally, can measure success in combating bot-driven crime. Without an agreed upon and adequate frame of reference and the measurement practices to monitor it, how will ISPs know whether their anti-botnet strategies are succeeding? And, just as importantly, as a consumer who can select services from multiple Internet service providers, which ISP is going to offer me the best protection against those on-line criminals who are continuously targeting me? **IT**

*Gunter Ollmann is vice president of research at Damballa Inc. ([www.damballa.com](http://www.damballa.com)).*





### Avaya Closes Radvision Deal

Avaya this summer finalized the acquisition of Radvision, a deal it announced March 15. The \$230 million purchase of Radvision – which will operate as an indirect, wholly owned subsidiary of Avaya under the Radvision brand – marries two industry leaders and will enable Avaya to make video communications more accessible to more people in more locations, according to Avaya executives. During a press conference about the deal, Avaya leaders spoke of moving video out of the boardroom and bringing it to the masses. They also discussed Avaya's focus on video ease of use, and the ability to support ad hoc video communications and video in mobile environments. While there's already a high level of integration between Avaya Aura, Avaya Flare Experience on the Avaya Desktop Video Device, and Avaya UC 1000 series video endpoints, and Radvision's SCOPIA endpoints and infrastructure, Avaya executives said deeper levels of integration were expected soon. They added that these solutions can also work in multivendor scenarios and that the company will continue to support users on existing solutions.

### Votela Turns on VCP

Votela has unveiled the Votela Cloud Provider offering in support of value-added resellers and managed service providers. VCP is a customizable, reliable suite of cloud communications that MSPs and VARs can easily deploy to their customers, and through which they can develop a consistent carrier-generated revenue stream. Votela is a combined carrier and North America distributor for Siemens OpenScape Cloud Services.

### Carriers Collaborate on First OVCC Services

Four network service providers have developed the first Open Visual Communications Consortium-compliant interconnect network that provides the backbone to support video connections between carrier platforms. Those involved include AT&T, Bharti Airtel, Masergy, and Orange Business Services. OVCC members will connect into a backbone to offer network-agnostic video services. OVCC members to participate in the initial OVCC compliant services based on that interconnect network in fall 2012 include those listed above and BCS Global, BT, Glowpoint and Verizon. "These OVCC members will support and deliver the first high-quality, multi-network video calls that are as effortless for enterprise users as setting up an audio conference," says Andrew McFadzen, OVCC president. "The OVCC blueprint and best practices for multi-network video calls will remove the burden of technical details like network interoperability and service coordination from the enterprise so business users can focus on business."

### BroadSoft Unveils Enhanced SIP Trunking Solution

Service providers have the opportunity to significantly increase the value of their SIP trunks and generate improved average revenue per user if they use a new solution from BroadSoft. The application-oriented platform delivers both SIP connectivity and enhanced UC applications, in contrast to hardware-

based solutions that consist primarily of Class 4 switches and session border controllers, according to BroadSoft. With it, service providers can extend UC services to both fixed and mobile devices for all enterprises, even those with an existing PBX, offering centralized management and control and lowering operational costs. "The competitive landscape for SIP trunking is pressuring current pricing and ARPU models, requiring service providers to offer more than basic access and dial tone capabilities," says Leslie Ferry, vice president marketing of BroadSoft. "By UC-enabling SIP trunks, BroadSoft's BroadWorks platform arms service providers with a suite of advanced UC services designed to meet the communications needs of an increasingly mobile workforce seeking to use these services on their smartphones and tablet devices."

### Toshiba Adds Video to Telephone System

Toshiba America Information Systems Inc., Telecommunication Systems Division has announced a significant new upgrade (Release 1.2) to its IPedge family of IP business telephone systems for small to medium-sized businesses. New features include the addition of video into Toshiba's Meeting audio conferencing and web collaboration application and survivability of the Call Manager Unified Communications application. The Enterprise Manager system administration application has been enhanced to provide database survivability and additional easy-to-use installation wizards. "Now with built-in audio/video conferencing and Web collaboration plus survivability of the UC application, IPedge gives SMBs and multi-site companies more ways to communicate efficiently, cost effectively and reliably," says Brian Metherell, vice president and general manager of Toshiba America Information Systems Inc., Telecommunication Systems Division. "Even small offices now have the benefit of the built-in Meeting application on Toshiba's IPedge EP."

### Infonetics: Few bright Spots in 1Q12 Enterprise Voice

Infonetics Research has released excerpts from its first quarter 2012 Enterprise Unified Communication, VoIP, and TDM Equipment vendor market share report, which tracks traditional PBX and KTS phone systems, IP PBX systems, voice over IP gateways, unified communications applications, and IP phones. "We have been closely monitoring year-over-year growth rates for signs of a strengthening PBX market recovery, and the fact that global revenue in the first quarter of 2012 was down slightly (-0.6 percent) from the year-ago first quarter indicates that we are looking at another year of modest growth in the PBX market," notes Diane Myers, principal analyst for VoIP and IMS at Infonetics Research. Myers adds: "With businesses adding fewer employees or holding off on upgrades for as long as possible, the competition in the enterprise telephony market has gotten very aggressive. Cisco and Avaya, who've been battling neck-and-neck for more than 2 years, remain on top despite lower revenue this quarter. Meanwhile, NEC and Siemens Enterprise are two of the few vendors who managed to increase their PBX revenue this quarter."



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# Asking the Right Questions

## Other Disciplines Can Help Us Gain More from Big Data

**W**hy is everyone so hyped over big data? Possibly it's because people are now realizing the power of big data.

The security industry has realized that log data is an incredibly rich source of information for detecting security intrusions, and has since developed a taste for more and more logs.

Log correlation has since then followed as IT professionals realized that individual log entries by themselves meant very little, but when placed into context against one another illustrate more than just system-level events. They illustrate behavioral context – clusters of individual log lines that can be translated into records of human-readable actions.

Security is still in the early days of this science and practice of event correlation. Methods and results are rarely shared with the community, the target for what is effective keeps moving, and yet we're already talking about big data.

Vast databases of information being mined for emergent patterns and used to process simulations over and over are hardly new to the world. The finance, medical and aerospace industries have spent years in this realm.

How is it, then, that the security world has not previously tapped into this pool of expertise before now to help us glean the knowledge lying dormant within our vast supplies of data? Quite simply, it's because we still don't know what questions to ask in the first place.

It's worth performing a short recap on emerging big data technologies out there and why they differ from being just large databases.

Although there are many implementations of these technologies, they all derive from two core functions: NoSQL and MapReduce.

NoSQL is a difficult beast to define even among the experts in that field.

Unlike an RDBMS, where the schema must be well-defined before data is stored and changes to that schema, when live data is present it becomes increasingly more unfeasible, NoSQL data stores may freely adapt the nature of the records they store over time.

As the name implies, the SQL language is not used to retrieve information from these systems – many systems implement Javascript (JSON and BSON) to perform data queries. They are optimized for rapid retrieval of information at the possible expense



of consistency of data (they do not comply to ACID). To wit, they are excellent systems with which to do analytical work but have inherent issues if treated as the authoritative repository.

Accordingly for the same audience, MapReduce's key features include the ability to perform information retrieval and calculation over a widely distributed data storage. A practical example would be that if individual devices had their log storage implemented in a MapReduce-capable manner, then a centralized log storage mechanism may no longer be required – a single query could be performed across all logs on all devices simultaneously. Inversely, a centralized storage may still exist but spread out over a computing grid of commodity hardware (indeed, this was the reason for Google's creation of MapReduce).

Generally speaking, there is comparatively little need for the end user to optimize their query sets to take advantage of Map Reduce's distributed nature.

So, we can immediately see some of the reasons these two technologies have raised excitement and promise to the information security world.

Increased speed on complex queries across large quantities of data is a vital force-multiplier for security analysts; the ability to query every machine that has accessed a particular URI in the last 90 days in minutes (not hours or even days) cannot be overlooked.

The flexibility to bring additional data to supplement existing records works in lockstep with the inherent nature of security information: that it is comparatively a domain of unstructured data. Freedom from data schemas that fail to take into account the information that is vital to the organization we are trying

to defend will allow us to make better correlations and ask better questions from our data.

Between these two factors, we can see where the excitement comes from, and yet we still have to return back to the same issues we've struggled with before the advent of big data.

We still aren't very good at asking the right questions from our data.

In security analytics, it's often the relations between the data (not the data itself) that is important. Just as detective work is a matter of connecting the dots, so are the relations between our data points for the true information. (Log Correlation itself is about looking for and exposing those relations.)

As IT professionals, we share a particular reticence to trust anything we didn't do hands-on ourselves; as security professionals, this trait becomes magnified. Perhaps that's because of the fact that the concepts we are looking for (exposures, risks, threat surfaces) are so difficult to define that we are still stuck in the stone ages of bar charts and keyword searches when it comes to data analytics.

No amount of big data is going to save us until we can learn to formulate better questions for that data. Perhaps it's time that we accept that the problems we're approaching now (trying to boil an ocean of data points into digestible information) is not unique to us. Information security as a discipline may have much to learn from other technology fields. It's a tough pill to swallow when you think of how much we collectively berate the rest of IT as being the source of all our issues in the first place.

Bioinformatics places emphasis on discovering the nature of interactions and relations between their points of data, since this is intrinsic to how biology operates too. It won't take long before you find a plethora of advanced (and aesthetically pleasing) visualization techniques being used to present and explore data relations, like the CIRCOS system.

This field has made great strides in distilling down complex data relationships into advanced visualization techniques that maximize the ability of human pattern recognition abilities to discern inferences that are difficult to make programmatically. **IT**

*Conrad Constantine is research team engineer at AlienVault ([www.alienvault.com](http://www.alienvault.com)).*

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# Why DevCon5 is Not about Apple iOS

The link at Apple's HTML5 site says it best: "Every new Apple mobile device and every new Mac — along with the latest version of Apple's Safari web browser — supports web standards including HTML5, CSS3, and JavaScript. These web standards are open, reliable, highly secure, and efficient. They allow web designers and developers to create advanced graphics, typography, animations, and transitions. Standards aren't add-ons to the web. They are the web. And you can start using them today."

That is a pretty strong statement, and the fact the web is migrating this way has huge implications for everyone's business models. At our show, DevCon5, we have seen WebGL provide 3D-like and video-like rendering that would make every special effects artist wonder. We have also seen animation come from everywhere in the triumph of HTML5 software — from the canvas media call out, the CSS3 style sheet and the JavaScript programming.

The sites have become alive in animation, but the real dynamic is the way the big data is dynamically coming to the page from simpler client server commands as opposed to middleware of the past. While people call it big data, the reality is that the web itself is becoming a rich resource of APIs and data feeds that allow application developers to concentrate on a good user experience and leave the heavy lifting to the back end sources.

That makes the cloud something the nearer, but I doubt the term fog bank can sell well to IT.

So, if all this power is coming to the browser, does anyone need to develop for the client OS? The answer in the near term

is "yes", but in the long run it will be "less".

Let's look at Apple's recent World Wide Developer Conference and the announcements around iOS6 and Mountain Lion. While it would be easy just to focus on the 200-plus features added to iOS6, the bigger picture is how they are blending between the computer and the mobile device.

When you build with HTML5, there is the ability for the browser to communicate with the device OS to provide local storage and feature and function calls that are common to devices. In addition, with the SDK of a device you can blend between the web and the device features. Much of what you can do with the device and the browser can be the gateway for the experience.

For example, Apple has turned iCloud into a synchronizing solution between all of a user's Apple devices. Everything in what Apple is doing can be accomplished with HTML5, but in iCloud it's not about the technology, it's about the experience. In fact one interesting solution Apple provided was to make it so that when you are visiting a website the site's application is pushed at you as a reminder, like a coupon. I would call this App Sense, but others

may have that name elsewhere. From Apple's perspective, the experience is not to defer to the browser but to use the Internet without the browser. Siri, Facebook, Twitter, Yelp and OpenTable all are integrated into the device OS.

Now, for many application developers this may be a "Job - Send". (He's up there watching over all of them.) The user interface of Apple is always fresh and slick, and candidly, most of us can't do as well with our designs. Apple's goal is to put more of your experience under its control. This is great if you were looking to work with Yelp, but if your goal was to be Yelp, you now have a problem.

As more applications are integrated, the question remains: Will the App Store prove to be a farm club for the partnerships that Apple wants? It will be particularly interesting to see if app developers will be able to replicate the level of integration that Apple has provided for its partners. While I continue to have no proof of this premise today, my sense is that eventually feature interaction will rear its ugly head and partners will be seen as a priority to the rest of app community.

Over time as HTML5 gets further implemented, it will be hard to find a specific reason to make apps iOS-specific. Today Apple has a vibrant app ecosystem that is a mix of web and iOS solutions, and it is infinitely cooler to say my app is "in the App Store" than to say "it's on the web". **IT**

*Carl Ford is co-founder of Crossfire Media (www.crossfire.com), a TMC partner.*



## HTML5 & Mobile App Developers Conference





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# HTML5 Pioneers Weigh In

To get more input on where HTML5 is and where it's going, INTERNET TELEPHONY interviewed the DevCon5 New York sponsors, which included Kaazing, AppMobi and Viewbiquity. The next DevCon5 will be Oct. 3-5 in Austin, co-located with ITEXPO West.

## Jonas Jacobi, CEO & co-founder of Kaazing

### For the average web developer how different is HTML5 from the earlier web models?

Jacobi: From a developer's point of view it is not too different from previous versions of HTML in the sense that you can continue to use your favorite tools, the structure of the page is HTML markup, and the programming model is JavaScript. That said, HTML5's focus on web applications is much different from HTML4's website and page focus. This means that we have a ton of new features available to us that was previously only available in traditional client-server or plug-in technologies, making it easier to build truly interactive and live web applications.

These features, such as Canvas, Off-Line, Storage, Connectivity, etc., will require developers to upgrade their knowledge to fully utilize these features and to best architect, deploy, and run next-generation HTML applications. Again, we have seen that transforming your business to fully utilize this new HTML5 standard can improve productivity since it offers features that we traditionally have had to build ourselves or manage on the legacy web-tier.

### Where will they have the most difficulty adapting?

Jacobi: I would not use the term difficult. Instead I would use the word challenge. The challenge will be to address client platform incompatibilities between the enterprise, third-world countries, and the rest of the public web.

Within the enterprise and in many third-world countries we will [in the] foreseeable future continue to struggle with older platforms such as Internet Explorer 6 (yes, 6), 7, 8, and 9 that are not, or only partly, HTML5 capable. In the rest of the market, including mobile devices such as smartphones, this is a lesser issue since most modern browsers already support HTML5. One of the goals with HTML5 is to address just that – browser incompatibility.

### Much of the web is moving to mobile. Is HTML5 competing with device-specific OS, or should we expect to see a blend?

Jacobi: This is the same thing as asking, in the mid-90s, if the browser will compete with the desktop. There is a place and time for both, and they are not mutually exclusive. It depends on the application provider's appetite to maintain an OS-specific solution and what its customer base demands.

We are seeing an increasing number of customers leaning toward a hybrid model where the outer chrome of the application is OS specific and the actual application is built in HTML5 using something like PhoneGap.

### If it's a blend, what parts are critical to retain in HTML5, and what is critical to keep in the device OS?

Jacobi: We like the notion of an application store and the potential revenue it might bring, which if you develop a pure web solution you'll miss out on. We like HTML5 because it provides one platform that is independent of the underlying OS, thus providing us the reach and ubiquity of the web without major rewrites of our applications every time there is a major OS upgrade, and we are not beholden to the business model of the owner of the application store, e.g., the Apple Store.

Technically, it comes down to your application and its needs. If you are building an application that requires heavy computation and number crunching, you are better off with an OS-specific application. The HTML5 specification doesn't provide you with access to the device-specific APIs, so if you are looking to use hardware/device-specific features such as camera or the device's ecosystem such as iCloud, Google Now, etc., you have two options: build an OS-specific solution or an HTML5/OS-specific hybrid solution.

### There's a lot of discussion about big data and cloud services these days. Should we expect to revert to a client server model with HTML5, or is big data driving new middleware solutions?

Jacobi: I agree that there is a lot of buzz around big data and HTML5. We should not confuse these two concepts since they are addressing two different problems, although you could conceivably say that the proliferation of HTML5 and mobile devices, in combination with the desire to gather more data from users, is forcing the need to solve the big data problem.

The HTML5 standard, and in particular the WebSocket standard, will enable us to treat web-enabled clients/devices to be first class citizens in our enterprise networks, and provide equal or in many case a superior user experience to a traditional client-server solution. I would also argue that the web-tier segment of the industry is in desperate need of new solutions to address the scalability needs of the living web where everything is live, interactive and always connected. The current legacy web application servers are part of history and not designed to address the future of web computing.

Most Web developers have experience from both the client side and from the traditional web-tier whether it is JSP, Servlets, ASP, PHP etc., an architecture and design model that has been referred to as three-tier architecture or server-side rendered user interface model where the browser is assumed to be dumb and the server tier is serving up all the static and dynamic content. That is now changing



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rapidly with the adoption of more powerful laptops/mobile devices, HTML5, and the evolution of faster and faster web browsers. Combined it creates a client platform on which we can build desktop-style, or as you state client-server-style web applications that are cross platform, 100 percent cacheable, providing offline and storage capabilities, and much better ways of dealing with communication and connectivity. This is different from what we have been used to and trained to accept as web status quo. HTML5 changes this and allows us to unlock the full potential of the web. For example, we can now use HTTP for what it was intended for, e.g., serving static documents and files, and use the new HTML5 communication features, such as WebSocket, for everything else that is dynamic. With this great separation of UI and data we can move our web applications that are now static and downloadable desktop applications closer to the user by utilizing content delivery networks and only pass dynamic data traffic to and from our data centers. Benefits are much quicker download and connect times, greatly improved response times on dynamic and unique data, and massive reduction in web application server footprint.

#### **What is the biggest obstacle to HTML5 adoption?**

Jacobi: If you had asked me four years ago I would have said time and Microsoft's existing Internet Explorer user base. However, the current browser war and the growth of smartphones and tablets are already accelerating the adoption of HTML5 way beyond what I could have hoped for, or as late Steve Jobs said in January of 2010: 'The World is moving to HTML5.'

#### **DevCon5 has a tendency to focus on node.js, jquery and other Java-related platforms. What are the platforms you use to develop for HTML5?**

Jacobi: We use JQuery and other related JS libraries for client-side UI development, the Kaazing WebSocket Gateway for web communication, and depending on system on the back it can be anything from Node/JS-based business logic to enterprise Java systems built on top of Tibco EMS, Informatica UMQ, etc.

#### **Why?**

Jacobi: The world is moving from static, stale, and linear architectures to live, interactive, and event-driven architectures that support the living web, and there is no room for legacy web solutions. A combination of the best technologies the industry can offer from client technologies, web communication, to back-end middleware solutions, such as the ones I mention above, is the natural choice to build next-generation living web applications.

#### **Tyler Smith, software engineer at appMobi**

#### **For the average web developer how different is HTML5 from the earlier web models?**

Smith: Simply put, not that much. Now I'm not saying that HTML5 doesn't have huge advancements, but the process of adapting a new standard for the web is always glacially slow and continually building on itself. So when a new standard is being created, you slowly work with new APIs and attributes and the web as a whole starts to play with these new attributes until a general standard is created. On that account, HTML5

isn't even standardized yet. Developers are using a plethora of APIs that may be dropped or unsupported in the final standardized version, but such is life on the cutting edge of the web. Here's a list of the new API's in HTML5 for reference: [http://en.wikipedia.org/wiki/HTML5#New\\_APIs](http://en.wikipedia.org/wiki/HTML5#New_APIs)

#### **Where will they have the most difficulty adapting?**

Smith: It really depends on what the developer wants/needs to know. When web technologies grow, they tend to grow in all directions. So one developer may be focused on WebGL and 3D rendering on the web through the canvas element as another is more focused on learning the new drag and drop capability. The developer diving into WebGL may never have to use drag and drop, thus it's not too important to learn that attribute. You could try to learn all of the attributes of HTML5, but to fully understand how they all work in and out would be a great undertaking. To not avoid the question, the biggest new attribute that's been added would be the canvas element, which leads down a rabbit hole web developers just haven't really experienced before.

#### **What is the biggest obstacle to HTML5 adoption?**

Smith: As a mobile developer, I'd have to say the rendering speed of the canvas element on older and slower mobile devices.

#### **Tom Shafron, CEO & managing partner for Viewbiquity**

#### **For the average web developer how different is HTML5 from the earlier web models?**

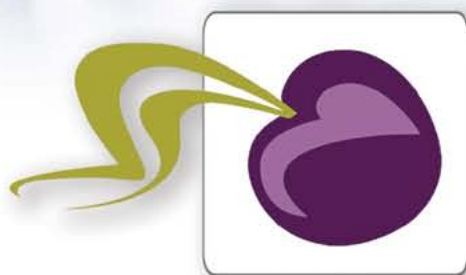
Shafron: HTML5 is a tremendously flexible and powerful development language. With HTML5, developers have a coding environment that reached the level of maturity that allows the creation of applications on par with those previously only possible as native compiled programs. When developers take advantage of the inherent structures, options, and capabilities of HTML5, they will be able to achieve much more than with previous web development models, and they will be able to do it with more ease.

#### **Where will they have the most difficulty adapting?**

Shafron: While HTML5 is backward compatible, as I noted above, to get the most out of HTML5 developers will have to change the way they approach coding when compared with previous version and models. If you want to take advantage of the full capabilities of HTML5 you have to adapt to the structures defined within the system. Key structures are Style, Design, and Program. Many developers integrate all of these elements throughout their code, but HTML5 provides a much more organized construct that is at odds with this somewhat random process. So for some, HTML5 will challenge designers to change the way they organize code, but once they adapt to the structured model the results have the potential to really stimulate innovation and creativity.

#### **Much of the web is moving to mobile. Is HTML5 competing with device-specific OS or should we expect to see a blend?**

Shafron: In the long run, HTML will be the primary language for mobile application development and deployment. However, for



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now, there are some features and capabilities that are not available. As HTML continues to add robust features, it will supersede the independent operating systems. The full transition to HTML will be driven by the development community's desire to eliminate the need to create and maintain an application in multiple environments. With a portable language like HTML, designers can create one version that works for every device.

**There's a lot of discussion about big data and cloud services these days. Should we expect that we revert to a client-server model with HTML5, or is big data driving new middleware solutions?**

Shafron: While big data is a hot topic lately, in our Viewbiquity Cloud Interface M2M platform we've been dealing with it for quite some time. Simple temperature, motion, and power sensors can generate millions of data points per hour. The Viewbiquity platform applies JavaScript-based automated data layer analysis tools to parse, analyze, and summarize critical data to make automated decisions and generate appropriate alerts. This is an example of big data that is comprised of small data elements and is very compatible with a cloud-based client-server architecture.

However, whether a traditional thin or dumb client paired with a server architecture will dominate the management of extremely large data sets is most likely to be application dependent. For example, high-def video surveillance can produce a huge amount of data, but the decision to store, manipulate, and analyze the data has more to do with the availability of transport bandwidth than processing power. If the bandwidth

is plentiful and cost-efficient, a centralized storage and analysis server make sense; but if not, then it makes better sense to manage it locally and only uplink analytical summaries.

Ultimately, there will be some big data solutions that require local processing and some that make sense for client-server. It all comes down to the application and a business decision.

**What is the biggest obstacle to HTML5 adoption?**

Shafron: The biggest obstacle today is the fragmentation of HTML5 client implementations in various popular browsers. This is further complicated by the lagging capabilities of many browsers implemented on mobile platforms. With the maturity and further development of HTML capabilities, the designers of browsers must start to consider more compatible or consistent implementation.

**DevCon5 has a tendency to focus on node.js, jquery and other Java-related platforms. What are the platforms you use to develop for HTML5?**

Shafron: At Viewbiquity we use a variety of JavaScript platforms including node.js, jquery, and our own Viewbiquity Development Platform.

**Why?**

Shafron: We typically select the platform that will foster speed, flexibility, and scalability for the development task at hand. However, regardless of the platform, we adhere to standardized data structure models to ensure portability across various JavaScript platforms. **IT**

**MapR Integrates with Amazon, Google**

MapR Distribution for Hadoop now is an option within the Amazon Elastic MapReduce service. As a result, customers can provision dynamically scalable MapR clusters while taking advantage of the flexibility, agility and massive scalability of Amazon Web Services. In addition, AWS has made its own Hadoop enhancements available to MapR customers, allowing them to seamlessly use MapR with other AWS offerings such as Amazon Simple Storage Service (Amazon S3), Amazon DynamoDB and Amazon CloudWatch. On a separate front, MapR's distribution for Hadoop is available on Google Compute Engine. Google pioneered MapReduce for its internal search framework, which inspired the community development of Hadoop. Now, through MapR's distribution for Hadoop, organizations are

able to benefit from Google's highly available, dependable, and scalable infrastructure for big data analytics, MapR says.

**OpenNebula Expands Management**

VMware hypervisors of the ESX family (3.x, 4.x and 5.0) are fully, out-of-the-box supported by the latest versions of OpenNebula (3.0+). That means organizations with server farms based on any of the ESX versions can make use of OpenNebula to better manage physical (and virtual) resources to build private cloud and provide virtualized environments. OpenNebula is an open-source alternative to VMware data center and cloud suite. OpenNebula improves the experience of managing VMware hypervisors with its ability to manage multiple storage backends, manage virtual networks, provide virtual machine

lifecycle management, a complete private cloud API, a powerful GUI, cloud bursting, multitenancy, role-based user management and more.

**Protecode Does Cloud-Based License Management**

Protecode has launched a hosted version of its System 4 open source scanning and license management solution. ProtecodeCloud is a SaaS-based code scanning tool that allows organizations to manage open source licenses and obligations in the cloud. Organizations can use it to create a software bill of materials that includes a list of all open source and third-party projects within their software. Reports on licenses, copyrights, license obligations, license compatibilities, security vulnerabilities, and export control designations are available with a single click.

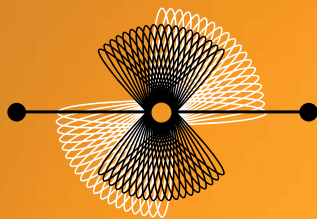


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# Community College Upgrades to CommScope Connectivity Standard

**R**owan-Cabarrus Community College in North Carolina offers more than 2,000 courses to a yearly enrolment exceeding 22,000 students. Its courses include fully accredited associate degree programs in more than 40 areas including arts and sciences, business, information technology, health and public services, engineering technologies, and biotechnology.

In 1991, RCCC became the state's first multi-campus community college when it opened its 24-acre South Campus, 20 miles south west of its North Campus in Salisbury. Since then, the college has continued to grow, opening four new sites in the area of Concord and Kannapolis. This strategy of expansion and improvement continues in the current eight-year forward plan.

In the past, when new sites were added to the college, each one built its own individual network infrastructure. As a result, the college had no common standard for connectivity to serve its students and staff, or its data centers. There was a mix of cabling solutions across the six sites and responsibility for supply and maintenance lay with several different organizations.

By 2010, inconsistent cabling was causing some serious system issues and its various suppliers were making troubleshooting a difficult process. For the next phase of the college's development, its president, her cabinet and the senior leadership team were determined to remedy this.

## Unifying Infrastructure

To find the optimum solution for its future connectivity, the college enlisted the help of VuePoint Consulting, a holistic technology specialist with expertise in network infrastructure, access control, surveillance, higher education audio-visual systems and data center and computer room design. A key part of the firm's brief was to compile a shortlist of single source suppliers that could meet all structured cabling needs on every site for the foreseeable future.

"With help from VuePoint, we aimed to choose the best infrastructure supplier for our new desktop strategy and all other connectivity needs at RCCC," says Bill Plyler, associate chief information officer, who led the project. "With our increasing emphasis on technology-based edu-

cation, we need a network infrastructure that helps unify the many different IT systems essential to implement our plans for the future.

"Every low voltage application across all our sites will be migrated to communication using Internet protocol, so we need structured cabling that really delivers in this environment – and we need it to be right the first time."

The college's plans included the introduction of Windows-based, thin client devices connected via gigabit Ethernet. This system, in particular, demands reliable, high performance network infrastructure to ensure fast access for staff and students across the campuses.

## Single Source Solution

After analyzing the requirements in cooperation with senior college staff, VuePoint recommended an end-to-end, single source infrastructure from CommScope. Having compared the short listed suppliers, it chose CommScope for its extensive, integrated range of proven, high performance copper and fiber solutions. Installation and support by certified business partners, and CommScope's warranties were also key factors in the decision.

The college chose Performance Cabling Technologies, a CommScope BusinessPartner based in Asheboro, N.C., to carry out the installation. During the project, Performance worked closely with VuePoint consultants who handled design and project management of the network infrastructure. The installation team varies in size according to the stages reached in the project but, at any time, there may be as many as 20 technicians and engineers deployed at the college. In total, the multiple buildings on the six sites have more than 500,000 square feet of floor space and almost all of this will eventually be re-cabled. At the time of writing, 2,000 outlets have been connected with the new CommScope cabling.

In many cases, old cabling have to be removed from existing conduits and additional cableways installed within and between buildings. Added to this, the new cabling is often laid as part of a full building refurbishment and so has to be scheduled alongside other work. Together with avoiding disruption of academic work, this calls for close coordination between planners, installers and the college.

### End-to-End Performance

For backbone connections across the sites and within larger buildings, Performance installed CommScope's LazrSPEED 300 multimode fiber solution. This exceeds specifications of the OM3 fiber standard, providing 10gbps data transmission speeds over distances up to 300m without need for expensive single mode electronics.

The LazrSPEED backbones link telecommunications rooms located across the sites. According to size, major buildings have between one and five of these rooms equipped with Uniprise Ready patching hardware for fiber connections. The Ready range makes use of MPO connector technology for speed of installation and maintenance.

From the communications rooms, the GigaSPEED XL copper solution is used to connect with outlets through-

out the buildings. This solution exceeds specifications of the Category 6 cabling standard and can deliver 1gbps performance from end-to-end in a 100m connection with up to six connectors.

Buildings re-cabled so far on the North and South campuses and the NC Biotechnology Research Park have between 200 and 500 hundred copper cable connections. Changes to these connections can be made using GigaSPEED XL modular patch panels and cords designed for compatibility with the cable. Design and testing tools developed by CommScope ensure components are manufactured such that end-to-end performance of connections is maintained even under adverse conditions. **IT**

*Laurie Oswald is North America vice president of sales at CommScope ([www.commscope.com](http://www.commscope.com)).*

The college's plans included the introduction of Windows-based, thin client devices connected via gigabit Ethernet.









# Making the Complex, Rather Simple.

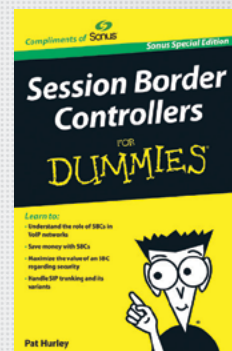
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\* Infonetics 1Q 2012 report "Service Provider VoIP and IMS Equipment and Subscribers"



# Mobile Backhaul Networks – The Next Generation

Mobile network operators across the globe are experiencing enormous growth – although voice communications are growing in a linear fashion, the demand for data services is increasing exponentially, with consumers increasingly opting for bandwidth-hungry mobile services such as Internet access, photo sharing and music downloads. At the same time mobile operators are under economic pressure, and their backhaul networks are experiencing bottlenecks due to scalability, flexibility, and cost concerns. Operators are therefore looking for ways to future-proof their backhaul architecture to support 3G traffic, with the global wave of 4G (LTE/WiMAX) adoption. They also want to be able to provide a clear migration path toward all-IP 4G networks.

More and more consumers are pushing an increasing number of applications via the mobile network rather than over wires, creating greater pressure on the backhaul network to meet the growing demand and maintain end-to-end user experience. While many consumers are still migrating from 2G to 3G, operators are already exploring and adopting 4G (LTE).

Long-term evolution offers high data rates at a reduced price per bit, better spectrum efficiency and latency. LTE also offers expected throughputs in the range of 100mbps and latency should be in the range of 20ms. This can offer a rich user experience, comparable to that of fixed connections. LTE will therefore enable new business models around emerging services such as real-time online gaming, HD video streaming, video blogging, and Peer2Peer file exchange.

Mobile backhaul is a crucial part of the mobile network, linking the radio access network and the mobile core network. In designing the end-to-end mobile infrastructure, no area of the mobile network feels the strain more than backhaul networks (in scalability, performance, cost and ease of migration from one generation to the next).

## A new approach to mobile backhaul infrastructure

Cell sites are becoming increasingly complex as operators adopt 3G technologies such as HSPA and EVDO and already look toward 4G technologies. Even as they migrate to these next-generation services and architectures, they realize that 4G technologies (IP/Ethernet) and emerging 3G (ATM) services will need to coexist with legacy 2G (TDM) for some time. However, as traffic for high-bandwidth data services continues to grow, operators must find ways to reduce the mobile backhaul costs. U.S. mobile operators have typically used leased T1/E1 lines in their mobile backhaul networks. In Western Europe and the greater part of

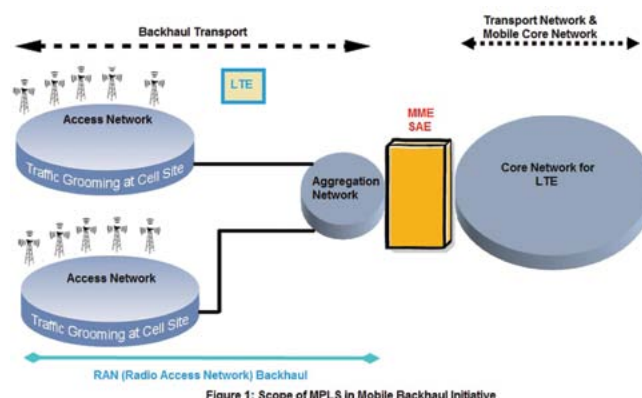
Asia-Pacific, microwave-based (TDM encapsulations) backhaul is widely deployed. TDM is known for its reliability, but it is expensive and does not scale easily.

Clearly, mobile operators need a new approach to scale their mobile backhaul networks cost-effectively, and many are shifting to Ethernet-based connectivity at cell sites. This approach must, in addition to being highly scalable and reliable, bridge the gap between legacy and next-generation networks and services – and provide the flexibility to support both.

## Defining next-generation mobile backhaul networks

The Broadband Forum, a global standards organization focused on end-to-end IP network optimization, is tackling these backhaul challenges via its MPLS in Mobile Backhaul Initiative (MMBI). This proposes a framework for the use of IP/MPLS technology to transport radio access network backhaul traffic over access, aggregation and core networks. It describes possible deployment scenarios and provides recommendations on how to deploy MPLS in these scenarios to design flexible, scalable and economical backhaul network.

The forum has an MMBI Framework and Requirements technical specification, and members are working together to define standards-based, interoperable architecture frameworks for 2G and 3G networks and for LTE networks.



MMBI architecture allows operators to leverage their existing last mile access technology, such as TDM, point-to-point microwave links, DSL, and satellite. It is flexible and offers various options that enable the deployment of MPLS as close to cell sites as will fit within their architecture. Satellite is expensive, but essential in regions such as Africa and remote parts of India, where fiber or copper is unavailable or uneconomical.

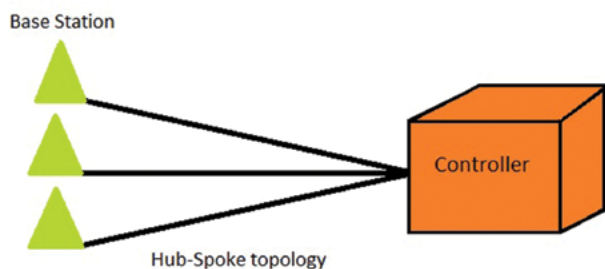
IP/MPLS is increasingly seen as the best strategic solution for backhaul. It offers the combination of cost, scalability and flex-



ibility that mobile operators need to leverage existing investments while building out capacity for growing data traffic, and it supports features such as:

- co-existence of TDM (2G), ATM (3G) and IP/Ethernet (4G) transport;
- ATM-like quality of service and traffic engineering techniques;
- rapid service restoration after failure detection; and
- future-proof investment for migrating from 3G to all-IP based 4G/LTE.

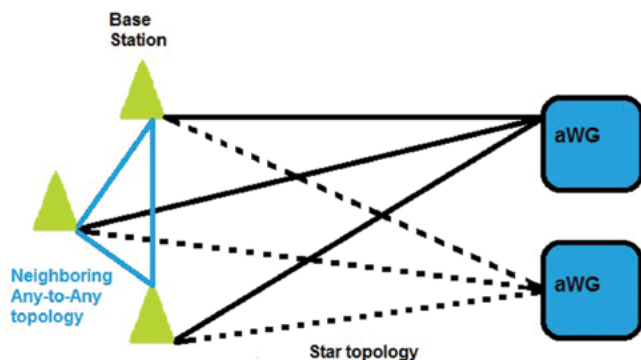
Many equipment vendors offer MPLS features within their products, but the lack of a commonly agreed framework, architectures and deployment scenarios often results in additional avoidable costs. To address this, the Broadband Forum now offers a certification program for vendors, enabling service providers to choose standards-based, deployment-ready products and expediting the deployment of backhaul solutions.



**Figure 2 - 2G/3G RAN Topology**

### Evolving from 2G/3G to 4G in the backhaul network

The Broadband Forum defines two architecture frameworks, one for 2G/3G and the other for 4G/LTE, corresponding to the 3rd Generation Partnership Project work. In 2G/3G RAN, base transceiver stations or simply base stations handle the radio interface with the mobile station and the base station controller manages one or more base stations to provide control functions such as radio-channel setup, handovers, etc. A hub-and-spoke topology enables communication from base station to controller and controller to base station. This topology is also known as centralized topology. In this architecture, T1/E1 connections (TDM for 2G and ATM for 3G) between BTS and the BSC are carried over IP/MPLS based packet backhaul using pseudo-wire technologies.



**Figure 3 - All-IP LTE RAN Topology**

In LTE RANs, the base station itself consists of controller functionality and communicates with another base station directly via any-to-any topology. LTE base stations communicate with access gateways via a star topology as shown in figure 3.

Coexistence, interoperability, roaming, and handover between LTE and existing 2G/3G networks and services are inherent design goals, so that full mobility support can be given from day one. In LTE networks, IP is the only protocol used to support connectivity between the different mobile nodes as defined by 3GPP. To achieve, any-to-any topology for LTE backhaul, the Broadband Forum has recommended leveraging Layer 2 virtual private networks, and Layer 3 VPN such as virtual private LAN service and border gateway protocol/ MPLS-based VPNs.

### Hybrid IP/MPLS and TDM backhaul architecture for 2G/3G

In a hybrid model, carriers can build out capacity to accommodate the data traffic growth without having to re-engineer the voice network. Operators can leverage cost-effective alternatives such as metro Ethernet networks or existing assets to support data traffic (e.g. using the DSL infrastructure to offload data traffic from the cell site). They are thus able to develop greater familiarity with IP/MPLS technology and integrate voice traffic into the packet-based infrastructure at a later date.

### Timing synchronization

Synchronization is critical to maintain good voice quality, reduce interference and manage call handovers between base stations. There are several approaches to achieve this timing synchronization, including synchronous Ethernet, adaptive clock recovery and IEEE 1588 v2. The Broadband Forum is currently assessing various requirements to support clock distribution to base stations, including frequency, phase, and time synchronization and provides recommendations in terms of QoS, resiliency, and efficient distribution based on topology (point-to-point or point-to-multipoint).

### Matching SONET/SDH-type reliability with IP/MPLS

Synchronous optical networking and synchronous digital hierarchy are known for high reliability and fast recovery from failures, and carriers expect new packet-based backhaul to match this level of resiliency. IP/MPLS has already proved itself in core networks to be as reliable as SONET/SDH. The combination of fast re-route and carefully engineered primary and secondary label-switched paths allows IP/MPLS-based network to recover in tens of milliseconds – on a par with SONET-based networks.

### Managing and troubleshooting IP/MPLS-based networks

In moving to a new transport technology, carriers need to feel confident in its operation, administration and management tools. With years of successful service provider deployments around the world, IP/MPLS includes a robust set of standards-based OAM tools as well. **IT**

*Robin Mersh is CEO, and Nikhil Shah is chairman of international development, at the Broadband Forum ([www.broadband-forum.org](http://www.broadband-forum.org)).*

# Carrier Ethernet Catches Mobile Backhaul Wave

The explosion of mobile data and the subsequent challenges of connecting a growing number of towers to the mobile core are well known by mobile network operators and wholesalers responsible for mobile backhaul networks. In fact, Infonetics Research forecasts that MNOs will spend a cumulative \$39 billion on mobile backhaul equipment between now and 2016. Furthermore, Infonetics reports that IP/Ethernet equipment makes up more than 90 percent of all mobile backhaul equipment spending, driven by operators looking to reduce mobile data traffic costs, accommodate the 3G mobile broadband data transition, and move to IP as the basic technology of LTE (and WiMAX).

With mobile backhaul networks representing about one-third of an MNO's operating costs, it is critical that service providers invest in technology that can sustain current and future network demands. In fact, mobile backhaul requirements will continue to evolve as MNOs accelerate network upgrades to cope with the ever-growing consumption of advanced multimedia services like mobile video, social networking, web browsing, and multimedia messaging. Cisco's latest Visual Networking Index indicates that in 2011 a 4G mobile connection generated 28 times more traffic on average than a non-4G connection. Although 4G connections represent only 0.2 percent of mobile connections today, they already account for 6 percent of mobile data traffic.

Given the ever-increasing popularity of smartphones and other intelligent mobile devices, MNOs recognize that revenue growth hinges upon their ability to deliver a growing list of mobile broadband applications and services, which require higher bandwidth and lower latency, to deliver the expected service quality. For example, a video stream viewed on a tablet computer might require HD-quality

bandwidth with rapid access to large cached over-the-top content files to achieve the video download consistency required for smooth playback. Putting this issue in perspective, Verizon's online data usage tool calculates that just one hour of 4G high-definition video streaming use will consume 2 gigabytes of bandwidth. While 4G combined with HD may deliver an incomparable viewing experience, usage habits like this place an enormous strain on mobile backhaul networks.

Additionally, a new influx of small cell technologies – ranging from microcells to picocells – is boosting demand for mobile backhaul even further. As mobile carriers increasingly deploy small cells to fill in their remaining coverage gaps and boost the capacity of 3G and 4G technologies in densely populated urban and indoor areas, they will need more backhaul capacity to handle that heavier traffic as well.

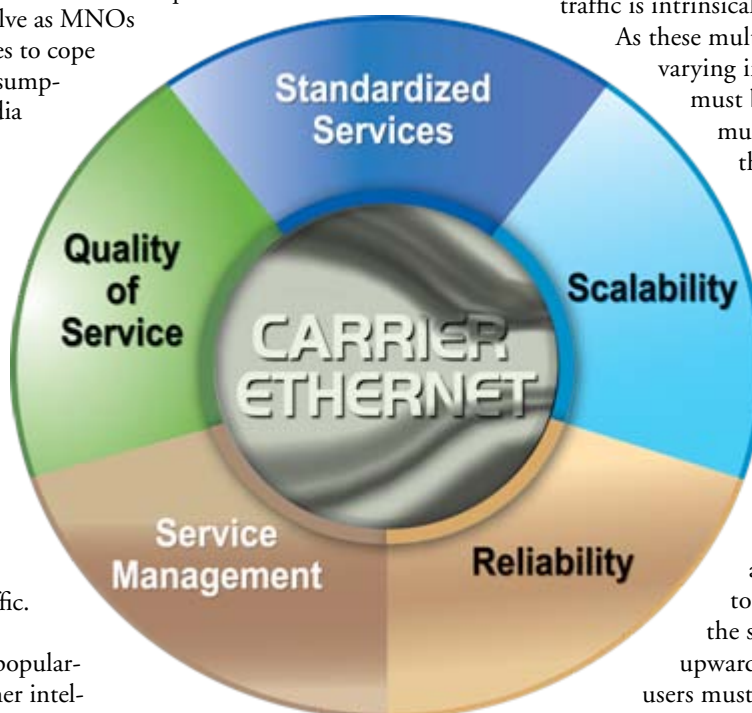
Accompanying the rise of mobile data volume has been a dramatic shift in traffic patterns. In stark contrast to the steady and predictable pattern of voice traffic, multimedia traffic is intrinsically bursty and unpredictable.

As these multimedia traffic flows are of varying importance, an LTE network must be engineered to support multiple class-of-service levels that can be assigned to an application based on its priority. For example, based on performance requirements a different CoS, with an accompanying service-level agreement, could be assigned to voice traffic (gold), streaming video (silver), and web access (bronze).

Further complexity arises as MNOs attempt to optimize airtime usage of the shared medium, over which upwards of one hundred or more users must be supported on a single

LTE base station (referred to as an eNodeB, or eNB) at any given time.

Smartphones use apps as a user interface to cloud services, but misbehaving or poorly designed apps can sometimes consume much more bandwidth than expected. In addition, smart devices can lock



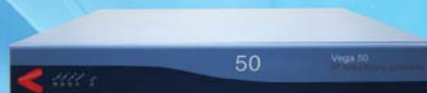


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up the allocated communication channel with a status of “in use” by periodically requesting information updates. This commonly occurs when communicating with social networking sites. In the end, additional effort is required to optimize use of the limited spectrum for the wireless link between user devices and the eNB.

In addition to dealing with overall raw capacity increases and new connection-oriented consumption patterns, operators engaged in mobile network upgrades must also consider variables like protocol stack complexity; network resilience attributes; equipment installation and activation velocity; and operations, administration, and maintenance tool requirements. All of these factors point toward Ethernet as the optimal mobile backhaul transport protocol.

The meteoric growth in mobile data traffic parallels a steady decline in the number of cell sites served by a TDM backhaul connection. According to a 2011 Heavy Reading report, less than half of global cell sites will be served by TDM in 2015 – down from 97 percent in 2010. The rationale behind this trend becomes clear when one realizes that the maximum traffic on 4G LTE systems, ranging from 300 to 450mbps in the near term, cannot be carried economically by old TDM and SONET/SDH systems. Unlike predictable voice traffic, 4G data applications generate bursty traffic patterns that require a packet backhaul network to efficiently utilize bandwidth resources. New applications such as VoIP and mobile video also require strict quality-of-service management. These new requirements for the backhaul network are driving a massive overhaul from circuit-switched to packet-based technologies.

According to Infonetics Research, “Carriers everywhere are increasing the bandwidth on their backhaul networks to handle this exploding IP data traffic, and the most efficient, cost-effective way to do that is to transition from TDM to packet IP/Ethernet, which is driving the mobile backhaul equipment market.” Unfortunately, IP/MPLS features an overly complex set of protocols that is better suited to the core where there is a smaller number of nodes with a higher volume of traffic, as opposed to a mobile backhaul network in which there are many more end sites (towers) with less traffic per end site. In contrast, Ethernet’s inherent simplicity and economic advantages render it ideally suited as a mobile backhaul packet transport solution.

Building further on this argument, Ethernet enjoys several important advantages that make it a superior alternative to IP/MPLS for mobile backhaul applications. For example, maintenance activities are greatly simplified due to the fact that IT personnel are already intimately familiar with the Ethernet protocol. In addition, with Ethernet these same IT personnel are not required to master complex WAN protocols.

Network security and control attributes also favor Ethernet over IP. With Ethernet, there is no need to coordinate IP routing tables with the operator(s). Also, superior security is ensured because networking/routing control functions are

maintained by the enterprise, which also controls end-to-end networking/routing decisions.

Cost is another important consideration that tips the scales toward Ethernet. In fact, Ethernet can deliver four times the bandwidth and 30 percent savings relative to its MPLS-equivalent when looking at total cost of ownership. This bottom line network cost differential is a key budget consideration, particularly for large multi-site networks.

IP-routed Layer 3 IP/MPLS network solutions add operational complexity and increase the cost to scale and operate the backhaul network. These solutions force backhaul providers to extend complex forwarding paradigms and complex dynamic routing and signaling protocols all the way from the core to the metro, and then into the access domain. The added complexity of IP/MPLS solutions can dramatically increase both capex and opex. The Ethernet layer, on the other hand, provides the right level of connectivity to address the backhaul problem most effectively.

Each protocol-specific forwarding plane has its own associated suite of OAM functionality. This introduces additional complexity when coordinating and managing OAM services across complex protocol stacks. Ethernet services are supported by an extensive standards-based OAM toolkit to monitor the status and performance of the network, systems, and services including tools to isolate and correct connectivity faults, monitor performance variables such as delay, jitter, and packet loss, and conduct performance benchmark tests.

**The meteoric growth in mobile data traffic parallels a steady decline in the number of cell sites served by a TDM backhaul connection.**

Ethernet-based services also incorporate sophisticated provisioning tools that can reduce the sales-to-installation cycle to immediate plug-and-play speeds, using automated activation of Ethernet switches at the customer site via remote provisioning and self-configuration. Field experience has shown that automation can reduce Ethernet switch installation and configuration times by 75 percent.

Thanks to all of this innovation, carrier Ethernet has proven to be the most technically and operationally proficient solution to address current and future mobile backhaul design flexibility, capacity, latency, resilience, and cost requirements. As a result, the vast majority of MNOs are turning to carrier Ethernet to efficiently carry wireless traffic to its final destination, whether the Internet, a private enterprise network, or government network. In May 2012 the General Services Administration reported that 319 mobile network operators worldwide had committed to LTE deployments or trials – a 60 percent increase over the previous year. **IT**

*Barry Zipp is industry marketing director at Ciena ([www.ciena.com](http://www.ciena.com)).*



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# TMC Congratulates 2012 INTERNET TELEPHONY Excellence Awards Winners

**T**MC, the parent of INTERNET TELEPHONY and a global, integrated media company helping clients build communities in print, in person, and online, is proud to announce the winners of the 2012 INTERNET TELEPHONY Excellence Awards. These awards recognize the creators of technology that demonstrate leadership and innovation to the global industry. As part of this awards effort, INTERNET TELEPHONY recognizes companies whose products have shown improvements in its clients' business and honors the best IP communications solutions in the world.

"The INTERNET TELEPHONY Excellence Awards were created to honor companies that have created products and



services that excel in the IP communications industry," says TMC CEO Rich Tehrani.

As part of the application process, companies provide case studies of IP communications success experienced by one of their clients after operating the product/service over the past year. **IT**

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Company	Product	Company	Product
ADTRAN Inc.	ADTRAN's Bluesocket Virtual WLAN (vWLAN)	PALOSANTO SOLUTIONS	ELASTIX
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Angel	Angel Mobile Caller First Analytics (CFA) app	Phone.com	Virtual Office
Broadview Networks	OfficeSuite Cloud-Based IP Phone Solution	Plixer International Inc.	Scrutinizer 9.0
Digium Inc.	Switchvox	PowerNet Global	NetDialer
EarthLink Inc.	Data Center Connect	Radware	Radware ADC Fabric
Ecessa Corp.	ClariLink for seamless SIP failover	Sangoma	Vega Gateways and SBCs
Ensim Corp.	Ensim Unify Service Provider	Sangoma	Sangoma A116 – 16-Span T1/E1/J1 Board
Enterasys	Mobile IAM	ShoreTel	ShoreTel UC Solution
Exinda	Exinda Edge Suite	Siemens Enterprise Communications	OpenScape Voice based on OpenScape UC Server
FonAngle	Hosted Office Phone System (HoPs)	Spirent Communications	Spirent TestCenter C100
Fortinet	FortiGate product family	Star2Star Communications	Star2Star Business Internet Communications System
InterCall	InterCall Unified Meeting	StartMeeting	StartMeeting Online Meeting/Conferencing
Internet Area Network	iAreaOffice	Toshiba America Information Systems, Telecom Systems Div.	IPedge EP
IPsmax Technology Inc.	Rapid PBX	UberConference	UberConference
Line Systems is an Integrated Communications Provider	Hosted PBX (HPBX)	Vertical	ViewPoint Mobile
M5 Networks, ShorTel's Cloud Division	M5 Networks Cloud-Based Phone System	Virtual PBX	Virtual PBX Complete with VoIP Anywhere
MegaPath	MegaPath Hosted Voice	Voice Carrier	Voice Carrier Office Hosted PBX
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By Paula Bernier

## Telco Depot Caters to VARs with its Turnkey Telecom Solutions

When it comes to providing telecom solutions to VARs and their customers, Telco Depot thinks outside the box. Not only does the company outfit its partners with a range of communications gear, Telco Depot also brings to the table years of experience.

"We don't just sell boxes, we sell knowledge," explains Ron Bregman, CEO and co-founder of Telco Depot.

Telco Depot has been in business more than two years, but Bregman has been involved in the telephone business since 1983, a year before the Bell System divestiture. Over the years he's been involved in the sales and marketing side of the communications industry, having worked in the voicemail business and acted as former president and CEO of Tadiran Telecom. Bregman's partner, co-founder Yaron Ram, meanwhile, is the technical brain behind the Telco Depot name. A hardware engineer, Ram has spent more than 20 years in the communications business.

The Telco Depot team also includes a staff of network engineers with knowledge across a range of disciplines and solutions, including VoIP, firewalls and converged networking. These experts are available to Telco Depot customers via a single 800 number.

"I will look to these guys first for all of my telecom needs in the future," says one Telco Depot customer. "While they are in New York and I'm in Georgia, they still manage to be more accessible than the local guys to answer my questions."

That's particularly important for VARs that have traditionally been computer focused and may not be as knowledgeable about VoIP, notes Bregman. "So we enable them to interact with our technical department, and they create a subnet as needed," he says.

While Telco Depot does not compete purely on price, and VARs may be able to buy some components here and there at individual lower prices, Bregman says that at end of day they will be more comfortable working with Telco Depot because the company offers a one-stop shop experience while being very competitive on prices and including a high level of support with

every sale. Telco Depot provides voice and data cable installation, office phone system installation, and ongoing support to ensure phone systems run flawlessly. Telco Depot also can handle specialized tasks such as preprogramming the keys on phones to meet individual customer requirements. And, in some cases, Telco Depot brands product to the VARs' requirements.

The voice products offered by Telco Depot range from inexpensive digital to higher-end multi-site VoIP solutions. Featured brands include Aastra, allworx, D-Link, Panasonic, Plantronics, Polycom, Syspine, Valcom and XBLUE Networks. Telco Depot also offers unique products such as the TD-100, an Asterisk-based VoIP server designed support two to 24 users. The system offers enterprise-level features while being very affordable.

As Telco Depot notes in its blog, there are many benefits to be derived by businesses that embrace voice over IP. Deploying VoIP can enable an organization to reduce its communications costs since interstate or international calls go through the Internet. It allows companies to establish rules on how calls are handled (leveraging software to do automatic call routing based on numbers, time of day, etc.); do call waiting; offer a call menu for incoming calls; get call reporting; send calls to voicemail, and more. VoIP creates a platform through which business users can make and receive calls from multiple devices. The technology is also noteworthy for its flexibility, which lets businesses easily add and move extensions as required, and allows employees to work from disparate locations but have the same calling features as they would if they were at headquarters. Once an organization moves to VoIP, they also open the door to a range of new communications possibilities including conferencing and collaboration.

But whatever the solution set, Telco Depot delivers complete solutions that specifically address the needs of its partners and customers, and that come with top-drawer support. Bregman says the company's 100 percent reseller rating attests to that fact.

"We go the extra mile to make our customers happy," he says. "We cater to their needs."



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By Erik Linask

## The Age of Acceleration

As you've thumbed the pages of INTERNET TELEPHONY over the years, you've been introduced to countless innovative communications technologies, their benefits, and the rationale for purchasing them. Very often, straight out cost savings has been the biggest driver and, for several years, that was enough to convince businesses to invest in these technologies, which led those early adopters to find even greater benefits and largely unquantifiable savings resulting from improved processes and a more agile business.

Lately, however, there has been an increased focus on those productivity enhancements and so-called soft savings that result from migrating to a unified communications platform and, as I found out recently, a need to quantify those soft benefits. It seems that, even though unified communications is becoming a mainstream technology, the basic cost savings aren't enough.

I had the pleasure of presenting at Sonus' Putting SIP to Work seminar series in Minneapolis and Chicago (TMC senior editor Peter Bernstein handled the Dallas, Boston, and New York events), with a deck loaded with statistics supporting the need for businesses to start making the move to a SIP-based communications environment in order to increase the speed at which they are able to operate. The overarching theme

of the seminar, which also included speakers from Sonus and its technology partner Arrow S3 and network partner Level 3, was a combination of the business case and technology basis for migrating to a SIP-based communications infrastructure.

The realization is simple: There is no choice. It's no longer a question of whether to make the move, but when, because the market demands it. The market – your colleagues, partners, suppliers, competitors, and customers – are all increasing the speed with which they communicate and expect to be communicated with. We're witnessing an Age of Acceleration, where time wasted easily results in business lost, and where communications are rapidly moving toward the real time, without regard for traditional limitations, like location and connectivity.

The UC and SIP trunking trends support the notion but, what was most evident was the response to statistics from various studies commissioned by M5 Networks (now part of ShoreTel, Fonality, and CDW). These studies demonstrated how much time the typical worker spends on routine tasks, like reaching the appropriate contacts, locating basic information, and scheduling; showed how much of that time can be saved through UC capabilities; and, most importantly, the savings derived from that time savings.

Not surprisingly, the most popular UC features and the biggest benefits mapped back

very closely to the overhead tasks that are the biggest contributors to lost time – or activities that decelerate communications.

What was surprising was the reaction from the audience at these events, with numerous attendees indicating that, while the adoption trends and hard savings compared to traditional telephony costs are great and support the movement to SIP-based UC, there is a very real need to be able to quantify the efficiency increases enabled by the migration to packet-switched communications.

Both the Fonality and M5 studies estimated the average knowledge worker can save just under two hours per day with unified communications. That's two hours they can spend more productively, generating revenue and supporting customers by being able to communicate more effectively and having access to the proper resources at all times.

When you combine that with the trend data, which clearly shows SIP trunking and UC adoption continuing to climb over the next four years, and the hard savings that can be enjoyed and the fact that a legacy infrastructure won't deliver the agility businesses need to stay competitive, the case is simple. In an Age of Acceleration, businesses can't afford to slow down their employees with outdated technology. ■

The Sonus Putting SIP to Work seminar series





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