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Top of Mind

Too Much and Never Enough

My husband and I have spent the last few evenings sifting through our cabinets, closets, and garage to clean out broken, too tight, unused, and unwanted camping gear, clothing, sporting goods, and tchotchkes. It's the community-wide garage sale in our neighborhood, so it's a great opportunity to do some purging.

The last place we lived was a tiny bungalow in the Chicago suburbs. Our current place is more than twice the size of the last one. And, yet, every cabinet, every closet, every drawer, and every shelf and corner in the garage is full to the gills. I guess it's true that the amount of stuff we amass is proportional to the space we have in which to put it.

It's kind of like what's happening with our networks lately. As soon as new bandwidth becomes available, we fill it up and are quickly looking for more.

The fact that about 60 percent of Americans use smartphones, which are bandwidthloving devices, is one key factor contributing to this trend. According to Cisco's Visual Networking Index, worldwide mobile data traffic will increase nearly 11-fold in the next four years to reach an annual run rate of 190 exabytes by 2018.

That's why the Federal Communications Commission continues to make available new spectrum. It's why the cellular carriers and their suppliers, which just recently implemented 4G LTE, are already talking about 5G and are deploying DAS, small cell, and Wi-Fi technologies to augment existing networks.

But for all the advances we've seen in broadband, we still hear about how not everybody is benefitting from our great growing networks, either because of their location, their financial situation, or a lack of education.

Some folks in rural areas still don't have access to broadband, as you're probably already aware, but there are even some businesses in tier 1 cities that lack the broadband resources they require, as discussed in this issue's piece on DAS and in past issues of INTERNET TELEPHONY magazine.

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FCC Chairman Tom Wheeler recently blogged that spectrum below 1 gHz – such as the spectrum that will be available via the Incentive Auction, which is expected to take place next year – has physical properties that increase the reach of mobile networks over long distances.

"The effect of such properties is that fewer base stations and other infrastructure are required to build out a mobile network. This makes low-band particularly important in rural areas. A legacy of earlier spectrum assignments, however, is that two national carriers control the vast majority of low-band spectrum. As a result, rural consumers are denied the competition and choice that would be available if more wireless competitors also had access to low-band spectrum."

Wheeler and the FCC are working to address that. Also on the rural front, the FCC continues to implement the Connect America Fund, which has invested more than \$438 million to bring broadband to 1.6 million previously unserved Americans and invested \$300 million to expand advanced mobile wireless service and nearly \$50 million for better mobile voice and broadband on Tribal lands. And that's just Phase 1 of the project.

Meanwhile, Google is working to bring broadband and the Internet to more people via its FTTH builds in places like Kansas City, where an organization called Arts Tech has created a program (and won a grant) to help with the education barrier relative to broadband.

"Instead of sleeping in on Saturday mornings, students join us to learn about computer hardware, in-home networking, the Internet and computer software," Dave Sullivan, executive director of Arts Tech wrote in an April 14 Google fiber blog. "They're also learning how to work with seniors, and how to develop their very own digital literacy curriculum (like planning classes on how to create email addresses, and how to use social networks to connect with friends) that they'll be able to teach by the end of the program."

Publisher's Outlook

Carriers Need to Get in the Game



Carriers are losing control over core network services such as voice and text. This is in-turn making them dumb-pipe providers. While wireless is still a profitable business, the presence of companies like T-Mobile and Sprint in the U.S. makes it more difficult than ever for carriers like AT&T and Verizon to keep their higher than industry-average margins.

Partnering with an app company is one way carriers can add value to their offerings. Apps like Pele King of Football, (Google Play) – which after being out for two weeks has had more than 300,000 downloads – is incredibly addictive. What distinguishes this game from many others is the tie in to soccer, the world's most popular sport, and Pele, the world's most famous soccer player.

You may think no one young knows who Pele is, but Josh Blitz, CEO of Cosi Productions LLC, the company behind the game, says you would be surprised at how many kids know the great Pele. Whether or not they have heard of Pele, however, players of the game are peppered with facts about Pele's life and get to see exclusive video content about the champion.

Blitz says the company is working to partner with carriers that are looking for an association with Pele and the World Cup. The game has all sorts of mini-contests included in it, enabling players to win things like tickets to the World Cup. This got me thinking that carriers are missing out on the app world – the most exciting part of mobile, according to some. I'm just saying, King Digital Entertainment has a market cap far north of \$5 billion, and it makes just one game, Candy Crush.

Zynga was early to the world of Facebook games and was fortunate enough to be able to use the social network as a free marketing vehicle, which enabled it to have an IPO where its shares were soon valued at almost \$15 each. Even as of today, when the shares are at \$4.35, the company's market cap is a staggering \$3.81 billion dollars.

Let's think this through for a second. Carriers are in an all-out battle to make profit in

what is obviously a pricing war, and Zynga shows us a game that can get a \$10 billion increase in market cap thanks to third-party marketing through a network – in this case social. Did you digest that?

Carriers are storehouses of value that may never be tapped – because they are busy being carriers and don't think like entrepreneurs. You can't blame them; they have massive infrastructure, towers, unions, FCC regulations, and more lawyers than most companies have paper clips. But I tell you, the best way for AT&T, Verizon, Sprint, etc. to unlock value is to figure out how to get involved in the app and specifically, the gaming, market.

If we use the Pele game as an example, I could see this being a two-way relationship. On the one hand, they partner with the game, which offers all sorts of things you can win. But the carrier could throw in incentives for playing, such as a bucket of free SMS minutes, a free month of service, \$10 worth of international calling, 10 percent off your next device purchase, etc. In addition, they could take an equity stake in games like this and then promote them like crazy.

Amazon is going to come out with a phone, and the company will likely subsidize the device. Content and services will be the way phone service is paid for. What will this do to carrier margins? It could be highly problematic for the service providers that aren't chosen by Amazon.

So carriers, I am telling you: Start exploring your options. Try out this game now — if you like it, give the company call. Alternatively, pick any game vendor out there that is new and exciting, and reach out.

Yes, it stinks to be in a business that is commoditized where the smaller players have to drop prices to gain share, and the leaders have to follow suit. Alternatively, we talk often of the ecosystem Apple and Google enjoy. You know what? Carriers have ecosystems too. They just don't seem to realize they have them and haven't figured out how to maximize the revenue they could generate. Getting more involved with gaming seems to be a logical way to explore your options.



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USAC Turns up the Heat on E-Rate Price Requirement

The Universal Service Administrative Company has begun issuing Payment Quality Assurance assessments to E-Rate service providers in the Schools and Libraries Program. E-Rate is a federal program that provides eligible K-12 public schools and libraries discounts on approved telecommunications services, broadband Internet access, and internal network connections.

Although PQAs are generally common, the circumstances surrounding this round of PQAs warrants special attention. That's because this round requires service providers to certify compliance with the lowest corresponding price requirement – a requirement that is a well-documented source of confusion.

It appears that USAC is using the PQA process, and a formal certification of LCP compliance, to test LCP requirements, despite the unanswered questions.

The LCP is "the lowest price that a service provider charges to non-residential customers who are similarly situated to a particular school, library, or library consortium for similar services." The LCP rule states: "Providers of eligible services shall not charge schools, school districts, libraries, library consortia, or consortia including any of these entities a price above the lowest corresponding price for supported services, unless the Commission, with respect to inter-

Commission, with respect to interstate services or the state commission with respect to intrastate services, finds that the lowest corresponding price is not compensatory."

Although the LCP requirement is not new, there is little regulatory guidance available and as a result, there is significant confusion on how to comply. Even the Federal Communications Commission, under whose direction USAC administers the program, acknowledges this lack of clarity.

In March 2013, the FCC raised the question of LCP certification, when it released a Public Notice seeking comment on proposed revisions to certain E-Rate forms, including Form 473, the Service Provider Annual Certification Form. The FCC proposed adding the following certification: "I certify that this Service Provider is in compliance with and has taken reasonable steps to implement the lowest corresponding price rule as required by the Commission's rules at 47 C.F.R. § 54.511(b)." Interestingly, the FCC ultimately decided against adding this express certification, and the current Form 473 does not include it.

On July 23, 2013, the FCC released a Notice of Proposed Rulemaking seeking comments on E-Rate topics in an effort to modernize the program. Significantly, the NPRM addressed the LCP requirement.

For example, the FCC sought comments on

• whether to measure compliance with the LCP rule as a measure of affordability;

• the extent to which the LCP rule helps ensure that service providers charge cost-effective prices and its role in competitive bidding; and

• if clarification of the LCP rule is needed regarding (1) whether the obligation applies only to competitive bids submitted in response to a Form 470, (2) whether compliance is a continuing obligation throughout the contract term, (3) whether there are procedures to ensure compliance, (4) how the LCP requirement applies to service bundles, and (5) whether, if challenged, the initial burden falls on the challenger to demonstrate noncompliance.

Other issues the FCC has not addressed include the geographic scope of the requirement, any distinctions between Priority 1 and Priority 2 services, and whether state master contract prices are presumptively compliant. Hundreds of comments were received, but the FCC has not issued a final rule.

Meanwhile, USAC has issued requests for LCP certifications to service providers, apparently for the first time. The PQA Program is essentially an auditing program under which USAC reviews funding payments to determine if they were accurate, properly documented, and in compliance with regulations.

Having elected not to issue formal guidance on the LCP rule or modify Form 473 to include an LCP certification, it appears that USAC is using the PQA process, and a formal certification of LCP compliance, to test LCP requirements, despite the unanswered questions. This is especially curious given that USAC's website states that PQAs will be directed only at applicants, and the PQA document request list relates to applicants, not service providers.

Although these PQAs may appear innocuous, they could pose a major risk for service providers and expose them to liability for already-paid invoices. We advise all service providers to scrutinize their pricing practices – even in the face of aggressive E-Rate competitions – to ensure a good faith basis exists for each price invoiced to the applicant and USAC.

Jeffrey A. Belkin is a partner & Jessica L. Sharron is a senior associate with Alston & Bird LLP (www.alston.com).

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Dark Fiber's Long Tail – The Digital Deserts of America

A recent article written by Scott Amundson highlighted the New York City Economic Development Corp's. ConnectNYC Fiber Challenge to address the so-called digital deserts in New York City. These are the buildings, neighborhoods, and areas within the largest city in the United States that have no fiber-based network services at all. These are real places that exist today and are, unfortunately, vast. They are dry spots on the major metropolitan landscape where barely any forms of innovation, creativity, or economic life can grow, flourish, and thrive.

The concept of a fiber drought anywhere in America, let alone in the middle of New York City, is shocking to many. The shocked have been deluged with the common, mass-market notion of a metropolis being advanced in all aspects.

Waking up to the reality that fiber brings economic growth necessitates the evalua-

tion of where fiber is and is not presently available. This is the premise of the ConnectNYC Fiber Challenge.

The places where there is no fiber require a plan, investment and construction to bring fiber to them. The biggest challenge faced in trying to connect fiber optic cables to the city's businesses is physical access to the endpoints and the rights of way and costs associated with the process of finding and utilizing any existing physical assets and/or creating new paths. The three major components/impediments of physical access are the congestion of New York City's underground fiber optic conduit system, the points of entry into the buildings themselves, and the in-building riser to get to the actual business point of demarcation. The need for these elements, the system with laterals to the points of entry and the risers to the demarcation points, are a global constant.

"The majority of the time is spent figuring out how to get the fiber where it needs to go," notes Shrihari Pandit, CEO of Stealth Communications.

By Hunter Newby

If this is the case in New York City, then imagine the fiber drought conditions in every other city and all of the places in between in the U.S. If the U.S. economy is the size that it is presently with such conditions, then imagine what it would be with a plan to bring fiber everywhere it needs to go.

What this country needs is a ConnectAmerica Fiber Challenge! The need is known, and the reality is rising like the sun. The plan and its stakeholders, the businesses in America, must come together to bring fiber to all of the digital deserts, and this will spring economic life all throughout the land.

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

UC Unplugged

Customer Obsession – The Path to Gaining a Competitive Edge

Today's tech-savvy consumer is very skilled at juggling multiple communication modes. Consumers expect their questions and concerns to be addressed in the same speed that they themselves consume information: through seamless and contiguous interaction on multiple channels and platforms. They want an omni-channel service experience where they are able to move from chat to phone without the hassle of repeating their personal details and experiences, or getting different answers from different people.

One of the industry leaders in omni-channel customer service today is Trupanion, a provider of medical insurance for pets. Trupanion recognized that having omni-channel customer service capabilities would give it a competitive edge. It had several disparate systems in place: e-mail, chat, and phone, with a lack of support and significant switching costs. The company recognized customers' frustrations and the impact they had on the company's bottom line.

As a result, Aspect worked with Trupanion to overhaul its entire customer contact and workforce optimization infrastructure. The overhaul has allowed Trupanion customers to manage the interactions they have with the company's agents on their terms. By putting customers in control of how they want to engage with the company, Trupanion is living up to its motto, "customer preferences first." Regardless of whether customers use chat or phone to initiate contact, they can move seamlessly from channel to channel and connect to the same agent. Not only has this resulted in increased efficiency in resolving issues, more importantly, Trupanion customers can now get questions answered and issues resolved on their terms while developing deeper relationships with the agents with whom they interact.

The success of Trupanion's omni-channel capabilities is a clear sign of where the contact center industry is headed. Companies creating customer obsession cultures and placing the consumers' experience above everything else will give them a competitive advantage. Delivering truly remarkable experiences will keep their customers loyal and help them win the hearts and the wallets of today's consumer.

Chris Koziol is president and general manager of the interaction management division at Aspect (www.aspect).









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By Jon Arnold

Personal Video and UC. Part 2 – What are You Afraid Of?



As screens get bigger and keypads recede into the background, it's clear that mobile devices are data-centric, not voice-centric, and a big part of their appeal comes from enabling a quality video streaming experience. Today's younger workers are both mobile-savvy and video-savvy, and this is having a major impact on how they communicate, both at work and at play.

With this preamble in place, I'm going take things in another direction and shift to text and messaging, but at the end, you'll see why this relates to video.

In my last post, I mentioned Viber, a company that went from obscure startup with nominal revenues to a \$900 million exit in less than four years. Its niche is a messaging platform that works across all major smartphones. Viber's platform is primarily for text messaging, but also supports sending images, as well as audio and video messages. These small-scale modes are free, and drive most of the traffic, but the platform was enhanced recently by Viber Out, which allows the company to generate revenue by enabling calls In the business to mobile and space, Viber's \$900 mil-

acquisition is another validation of video's potential. fixed line phone numbers. This doesn't sound like much for lion, but the value lies in Viber's massive footprint of 300 million users across 193 countries.

The story gets

more interesting

when you consider who bought the company. Japan-based Rakuten may be the biggest company you've never heard of, but for them. Viber is one small piece in a complex jigsaw puzzle that is defining the emerging world of mobile e-commerce. Skype is the forerunner for businesses like Rakuten, where the name of the game is to first build up a substantial user base by offering free services,

and in time, figure out the business model. The latter has yet to really happen for Skype, but it demonstrated the power of the web to scale at practically no cost and create a borderless, global community in very little time.

Many similar platforms have since come along, and with the advent of social media, what Rakuten saw in Viber is exactly what Facebook sees in WhatsApp. Mobile broadband and smartphones have created an unprecedented opportunity for players like Rakuten to assemble an ecosystem with the likes of Viber to ultimately monetize their hundreds of millions of users.

Text messaging is the starting point, and its appeal is understandable since you previously had to pay to do messaging beyond your native mobile network. Mobility defines how people do things today, and companies like Viber create a lot of stickiness when you consider how much this generation uses text and chat. Now that you have them doing that, adding images, video and voice is relatively easy. This is exactly the path that Facebook is on with WhatsApp, but where the stakes get much higher is when you factor in e-commerce and video.

If you only think about the consumer-oriented possibilities, these developments put Rakuten on course to compete against Amazon and even Netflix if you consider how popular streaming video has become on mobile devices. In the business space, however, Viber's acquisition is another validation of video's potential. Video is not a big focus now, but it's part of the platform.

So, let's come back to the title of this article – what are you afraid of? Certainly, employees will make use of personal video for social purposes during work time, but that will prove secondary once they discover the business value. As noted in Part 1, if personal video delivers a great experience, they will guickly adopt it as part of their everyday toolbox.

As companies like Rakuten make it possible to do voice and video across all mobile networks, employees will have more options for using personal video with each other and even to engage with customers. Sticking with Rakuten, think about how adding an e-commerce engine can make it easier for customers to do business with you. Some mobile purchases can easily be facilitated with basic voice or messaging, but personal video certainly has a role to play for more complex, show-and-tell situations.

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



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By Steven Johnson

What is Necessary for SIP Trunking – The E-SBC



Enterprise session border controllers serve as a crucial and necessary element in deployments for SIP trunking, UC, and soon, WebRTC.

E-SBCs sit at the edge of the enterprise network to provide control over the SIP traffic. The enterprise edge component can either be a firewall with complete support for SIP or an edge device connected to the firewall, handling the management of the SIP traffic.

The E-SBC performs several critical functions.

First, firewall traversal – E-SBCs provide SIP protocol routing to resolve NAT traversal issues by securely permitting SIP signaling and related media to traverse the enterprise firewall. Traditional firewalls block SIP traffic because they don't recognize the protocol. E-SBCs rewrite the publicly routable IP address in the header information to the private IP address of the PBX. This permits the SIP traffic to go through the firewall. Without this capability, the PBX would have to be on the outside of the firewall, exposing it to the Internet, or if the PBX is placed on the inside of the firewall, there will be one-way media. rity of the enterprise LAN network. In addition, safeguards can be added to protect against buffer overflow attacks, denial of service attacks, sophisticated intrusions, and a small percentage of worms that fit within a single packet. Any of these attacks could be highly detrimental to an enterprise's business activities, or worse, could result in theft of services with significant financial consequences.

Fourth, the E-SBC also enables remote SIP connectivity or far-end NAT traversal, where remote users (or workers) can leverage the SIP capabilities of their businesses' IP PBX. For example, workers based at a separate location (home office, satellite office, working on an oil rig, etc.) can, over an Internet connection, use their company's SIP service (audio, video, etc.) from anywhere without the need for additional hardware at the remote site. This can eliminate the need for second phone lines in home offices, the use of expensive hotel phone services, or cell phones, adding to the cost savings of employing SIP trunking.

Today's E-SBCs are also called upon to add other services to the environment to further enhance the SIP trunking implementation: • **Disaster Recovery:** E-SBCs can reroute SIP traffic to a secondary PBX or to an alternate service provider to keep business

The E-SBC performs several critical functions, including firewall traversal, interoperability, security, remote SIP connectivity or far-end NAT traversal, and more.

The second important function is interoperability. While SIP is a standard protocol developed and published by the IETF, the language of the protocol permits several different methods to be used to accomplish the same telephony function. No one method is considered right, nor even the best, way to accomplish the task. The E-SBC, because it employs a Back-to-Back-User-Agent, is able to stop and restart the call implementing the appropriate method for the receiving environment. In this manner, E-SBCs can fix these types of disparity issues and create instant interoperability – paving the way to a faster deployment. Since E-SBCs facilitate interoperability, there is no need to conduct extensive trial and error between your PBX and ITSP to get the two systems to work together. This also gives more choices to the enterprise when selecting a service provider, and permits the service provider to interact with more IP PBXs than would be possible otherwise.

The third important function is security. The first line of defense, E-SBCs can provide authentication (which some IP PBXs do not natively support) and deep packet inspection to preserve the integup and running should there be a failure. The E-SBC can also load balance to multiple PBXs on the customer's network based on a user-defined algorithm.

• **Quality of Service:** Increasingly critical as high-bandwidth applications become more popular, the E-SBC can tag packets so that other devices in the LAN can give voice packets priority over data packets.

• The E-SBC can add encryption of the signaling and/or the media.

• **Diagnostics:** The best E-SBCs have extensive diagnostic features which not only supply event logs, but also can be used to capture wire-shark traces that can find issues quickly. In addition, the E-SBC can report on Mean Opinion Scores for each call made so that the administrator can watch for degradation of service and take proactive steps to cure impending issues.

• The E-SBC also can be used to supply the information to populate call detail records and invoices.

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

EXPERIENCE ORLANDO'S NEWEST THRILL RIDE AT GENBAND'S PERSPECTIVES 14

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The 2012 President's Council of Advisors on Science and Technology report strongly encouraged more sharing of federal spectrum as a way to solve our insatiable demand for using wireless to connect. Now, the FCC in the 5gHz rulemaking is starting to take steps toward efficiently sharing more federal (used by radar) and non-federal (used for satellite communication) spectrum. On March 31, 2014, the FCC made 100mHz more spectrum available for utilization. The 5gHz spectrum includes 5.15-35gHz and 5.47-85gHz.

The Shared Experience

Wireless Wonk

As users of Wi-Fi know, 5gHz range signals propagate longer distances than at 2.4gHz, delivering lots of bandwidth. But that requires line of sight – in other words, no buildings and no trees. IEEE was working on making 802.11 a standard for unlicensed wireless local access network sharing and settling on 2.4gHz as the first spectrum to be used. Each part of the 5gHz spectrum has a different UNII band assigned to it for a different unlicensed use.

Licensed users in the UNII band include airport FAA Doppler weather radar that uses 5.250-5.350gHz and 5.470-5.725gHz. Because the radar helps planes safely use airports, something we all care about, the FCC issued new rules to ensure that unlicensed Wi-Fi outdoor users do not interfere with the radar. In 2009, the FAA discovered that unlicensed broadband radios were open all through the 5gHz band and were interfering with the radar. The new FCC order requires 100,000 Wi-Fi outdoor access points. This new growth in outdoor Wi-Fi could greatly benefit from using the UNII spectrum. The FCC solved the UNII-1 dilemma by saying that UNII-1 outdoor radios can have an antenna pointing up in the sky as long as the devices operate at a lower power of 250mW (a typical indoor Wi-Fi device uses 50mW of power). If a company, like Comcast, deploys more than 1,000 UNII devices outdoors, the provider is required to notify the FCC and take action to eliminate interference if found. UNII-1 outdoor Wi-Fi devices could operate at a higher power level, 1W, if the antennas do not point above 30 degrees.

The FCC is moving toward spectrum sharing that will use a database in the

Using a database in the cloud decoupled from the radios would ensure more efficient use of spectrum.

Almost every Wi-Fi router uses 5gHz spectrum now. The IEEE standards used for unlicensed devices in 5gHz are 802.11a, 802.11n, and 802.11ac. FCC Chairman Tom Wheeler pointed out that unlicensed and licensed are playing well together, making the user experience better and better: "They are less oil and vinegar and more peanut butter and jelly." The FCC's technical solutions, contained in the order, for sharing spectrum in 5gHz are more about creating methods of efficiently using lightly-used spectrum by all users, licensed and unlicensed, and less about an unlicensed versus licensed battle.

In 1997, the FCC gave the name Unlicensed National Information Infrastructure to radios using unlicensed 5gHz spectrum. That was about the same time UNII devices to have software that locks the device out of the radar's 5.6-5.65gHz spectrum. Hacking radio spectrum use is now eliminated by software.

The other licensed use is for satellite communications. In 1997, the FCC limited UNII-1 to indoor use and lower power because, five years earlier, 5.096-250gHz had been assigned by the ITU, then followed by the FCC, to mobile satellite service. The unlicensed spectrum allowed use inside buildings but not outdoors. The cable industry wanted to open up outdoor use without interfering with MSS satellite communications. If the UNII-1 and UNII-2 devices could use all the spectrum, the 802.11ac could approach, outdoors, gig Wi-Fi speeds on 160mHz in the bands. Cable companies like Comcast have deployed more than

cloud to deliver location and power information, just like that used in the lower 700mHz bands. The radio could switch automatically to another available spectrum. The database would automatically inform an MSS or the FCC when more than 1,000 radios are operating and where they are operating, giving enough information to power the radios down, up, or off and protect the safety critical satellite communication signal.

Using a database in the cloud decoupled from the radios, with all radios connected to it, would ensure more efficient use of spectrum than the more manual methods deployed in the new 5gHz order.

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

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The Only Constant Is Change

By Max Schroeder



The above statement is attributed to Heraclitus, a Greek philosopher from around 500 BCE. Interestingly, that was a time when change was moving at a snail's pace as compared to today. People would even have had considerable time to actually reflect on the philosopher's message. In today's world the only reflection time most of us get is when looking in a mirror.

Albert Einstein's Special Theory of Relativity revealed that time slows down (time dilation) when you approach the speed of light. Unfortunately, we earthbound humans traveling at a much slower speed have to deal with an unvarying 24-hour day, and there's no known technique of stretching time other than careful time management.

This column has covered the importance of time management in the past but those discussions were limited to personal time management. However, your customers and prospective customers also have serious time constraints. Decision makers, in particular, have very little time to consider options and make a choice, plus almost zero time for learning a new technology. This means you have to help manage their time for them, from the onset of the sales cycle to post-sales support.

The key to success is to pick your target markets carefully based on your organization's skill set. Customize your sales efforts accordingly. For example, some resellers have a wealth of technical personnel but few sales personnel with technical skills. Pair them into two-person teams for pre-sales support. This ensures that any questions will be answered promptly and correctly from both a technical and a sales perspective. The pair-model is particularly suited to industries like health care where time is quite limited. This is partly due to their having to allocate a lot of time to maintain a proficiency in their medical specialty, which results in a limited knowledge outside their industry.

The pair-model will showcase your organization's high degree of knowledge at the onset of the relationship, plus demonstrate your respect for the prospect's time constraints. The sales strategy is also a great method to introduce and justify the concept of a premium price for a premium product.

Change may be a constant, but the rate of change is variable and increasing rapidly. Time to get moving.

Max Schroeder is vice president emeritus of FaxCore Inc. (www. faxcore.com).

Enterprise Mobility



The Dawn of the Web App Age

When Steve Jobs first announced the iPhone in 2007, he explained that it was designed to run web apps in the browser. There was no need to write programs directly to iOS, because the browser had a set of user interface elements callable from JavaScript that mimicked the look and feel of the native apps.

Perhaps because developers were not impressed with this notion, Apple announced a native SDK for the iPhone less than a year later. In retrospect, this turns out to have been a very good move. Apple App Store revenue in 2013 was \$10 billion.

But the long arc of software history may yet turn out to vindicate Jobs' original vision. HTML5 has gone a long way toward making the browser environment as smooth as the native environment, to the point that Firefox is now promoting a smartphone OS that is basically an embedded browser. The only kind of app that is supported on that platform is a web app, written in JavaScript, HTML and CSS. Mozilla's goal is that these apps will be equally capable in every way as native apps on iOS or Android.

This capability is not exclusive to the Firefox OS. The Cordova (aka PhoneGap) framework extends to all the other main mobile operating systems the ability to write apps in JavaScript that to the user are indistinguishable from native apps. With Cordova any engineer capable of creating a web page and writing Java-Script can create such an app. By definition, native apps run more smoothly than Cordova apps, and there are some things that Cordova apps can't do. But a carefully designed Cordova app, addressing appropriate capabilities, can be indistinguishable from a native app.

The kicker is that a Cordova app doesn't need to be rewritten to go from iOS to Android. So, in many cases, Cordova yields apps that are just as good as native apps, but covering all the main platforms with dramatically less effort. And as HTML5 and Cordova evolve, the necessity for native apps will continue to diminish.

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

WebRTC to WebComm

The Video Conundrum

By Phil Edholm



Google is adamant

web technology must

that WebRTC as a

be unencumbered

by the licensing

constraints of

past codecs.

You can't spend much time around WebRTC without hearing about the video issue. For most of us this is news, as we did not even know there were video issues. The issue of which codecs will dominate in the future is a question of the web world vs. the traditional telecom world.

Modern digital video is a truly amazing thing: with 24 color bits, sensor video bandwidth varies from .75gbps for 1080i video at 30 frames per second to 2.99gbps for 1080p video at 60 fps. Modern video codecs can reduce that huge stream to between .5 to 3mbps with little visual consequence. Video broadcasts (cable, VDSL, and satellite) operate between 2.5 and 3mbps. Blu-ray average bit rates are 10 to more than 30mbps with dynamic bit rates tailored to the scene.

This is possible by the incredible advances in video codecs, crucial pieces of technology that strip out the meaningless bits and leave only those that our eyes can see. The technology that makes this possible is based on literally hundreds of innovations over the last 30 years, resulting in a technology that, driven by Moore's Law, is actually reducing the bandwidth needed for a specific level of visual presentation by about 50 percent every 5 to 7 years.

However, the codecs are encumbered by the very innovation that enables them. Dozens of companies, from the telecom space to computing, video, and entertainment, have developed and patented the techniques that go into today's codecs. These companies have a goal to monetize those investments. To accomplish this, in the telecom and entertainment industries, standards have been agreed to that incorporate the innovations and patents, and an organization called the MPEG-LA licenses commercial use in PCs, mobile phones, and disc players.

The challenge has come in the way these are licensed. While your smartphone may have a license for a specific codec like the H.264 standard, a software application loading on the phone requires a separate license for the same codec. This is very contrary to the way the web works, with open interfaces and code. Google developed a new codec called VP8 that it offered as open source unlicensed code. Google even negotiated with the MPEG-LA for unlimited use licensing of this codec. (However, some codec patent holders claim they have patents that are infringed on by VP8 and are outside the MPEG-LA license, and have said they will sue VP8 implementers.)

For Google, reducing cost and simplifying is critical. Google has spent a large amount of money and time on Android to eliminate the cost of the mobile OS, reducing codec cost is the next step.

This battle is impacting WebRTC. Google is adamant that WebRTC as a web technology must be unencumbered by the

licensing constraints of past codecs. Google believes this is essential to enabling the next explosion of web users and innovation. Companies that have invested millions in developing the underlying technologies that are used by modern codecs feel strongly that they should be compensated for their use.

At this point WebRTC is caught in the middle.

There is a huge challenge as to how to resolve the issue. The IETF Working Group has taken an extraordinary step of calling for a vote on preference to try to resolve the issue. While WebRTC has rolled out, primarily with VP8, it impacts other players like Apple, which has implemented H.264 acceleration in

hardware in iOS devices, a function that would be lost with VP8.

While the IETF vote may produce a winner, I believe it is time to move to a reasonable licensing for the intellectual property in codecs. Device manufacturers are paying for the codec license on the devices. That license should extend to any software running on that device.

Regardless of the codec decision, the power of WebRTC is the enablement of a web communications paradigm. The next generation of codecs (currently H.265 and VP9) deliver a 50 percent bandwidth reduction, or a doubling of quality in the same bandwidth. The power of 60 fps HD video at 1080p enables telepresence-level video on virtually any device. How this will change the way we communicate will be profound.

Phil Edholm is the president and founder of PKE Consulting LLC (www.pkeconsulting.com) and works with INTERNET TELEPHONY parent company TMC to stage the WebRTC Conference & Expo, which will be held next time from June 17 to 19 in Atlanta.





Smooth Operator

Phybridge Enables Businesses to Confidently Migrate to IP

strategy is to

partner with companies

and work with them to

help them migrate their

customer base to IP."

Phybridge CEO

John Croce

he communications space is constantly evolving. Sometimes the changes create minimal interruption. Other times, they can lead to upheavals.

Phybridge is a company that provides solutions to make the migration to IP voice (and soon, IP cameras) as seamless and affordable as possible.

That's important given infrastructure upgrade costs are a significant and frequently overlooked cost of IP telephony and unified communications deployments, as noted by Nemertes Research.

"When accounting for capital and operational costs, LAN upgrades actually can exceed the cost of the IP telephony deployment itself," writes Robin Gereiss, executive vice president and senior founding partner of Nemertes Research. "As a result, it's imperative for IT leaders to understand the cost components associated with LAN upgrades."

"When the world moved from analog to digital infrastructure, it didn't create any Earth-shattering challenges," says Oliver Emmanuel, president and founder of Phybridge. "But the adoption of IP phones was different, in that it exposed LAN infrastructure limitations that could adversely impact quality of service. Those limitations include Ethernet's limited (~300-foot) reach, quality of service, and the fact that IP phones can create 911 emergency service challenges due to their nomadic nature."

A handful of vendors came forward to try to solve these problems, Emmanuel says, but their approaches were vendorspecific and involved too many trade-offs. So Phybridge stepped in to fill the gap by providing a bridge between new IP endpoints and the IP PBX.

"Moving the convergence point from the phone to the central closet is beneficial because it eliminates infrastructure barriers that can prevent customers from migrating to IP," says CEO John Croce. "With Phybridge, users don't have to redo their IDF closets, and they don't have to go through the cost and hassle of rewiring."

Instead, customers can simply deploy a Phybridge switch, which delivers Ethernet and Power over Ethernet, providing four times the reach of the typical Ethernet solution. That enables businesses to migrate from TDM to IP and still be able to leverage their existing, proven-reliable voice infrastructure with a point-to-point topology designed for real-time voice application.

TransUnion Credit in Chicago is just one example of a customer that benefitted from the Phybridge solution. The business was looking to migrate its 1,400 employees to IP phones, and had a

budget of \$1.8 million for the new infrastructure (including new cable and IDF closets that met PoE requirements) it thought it needed to make that transition. But Phybridge was able to deliver a solution that eliminated the requirement of new cable installation and heavy-duty IDF closet changes, saving TransUnion a whopping \$1.5 million in the process.

"We saved \$1.5 million, fast-tracked our IP telephony migration by 6 months, and successfully completed our 1,400 user migration in a single weekend thanks to the Phybridge switch innovation," says Tony Christopher, network voice and data manager for TransUnion Credit.

According to a study of nearly 1,400 companies by Nemertes, 43 percent of capital costs for IP telephony implementations come from the LAN upgrades. That means the costs related to the LAN average \$860,000 in a \$2-million implementation, says Nemertes. Another research firm notes that a single new drop alone can run in the \$400 range.

"The more users you have, the more complex the network becomes, and the more value our offering brings to that customer base," says Phybridge's Croce. "More important than the cost savings, however, is maximizing the return on investment for organizations while building a sound network foundation," Croce adds. "The ROI comes from using the productivity-enhancing and cost-saving applications. There is no return in infrastructure and network complexity. The Phybridge backbone is proven to save organizations money, allowing them to allocate more of their budget on these applications. In addition, Phybridge solutions provide the converged infrastructure necessary to offer the quality of service needed for voice services."

Phybridge technology can keep voice service up and running even in cases in which denial of service attacks take out the data LAN. What's more, with Phybridge, businesses don't need to update their voice infrastructure every time they want to do a data network refresh, such as moving to a higher bandwidth LAN.

The company, which sells its products through a network of partners, is certified with all the major voice vendors – including Aastra, Avaya, BroadSoft, Cisco, Mitel, NEC, Polycom, Shoretel, Snom, Unify (the former Siemens Enterprise Communications), and Zultys.

"Our go-to-market strategy is to partner with companies and work with them to help them migrate their customer base to IP," explains Croce.

More than 250,000 users globally are now on the Phybridge backbone. Those customers include leaders in academia (such

Customer Benefits of the Phybridge Solution

- lower overall total cost of ownership, allowing customers to allocate more of their budgets on applications and driving a better return on investment;
- voice quality of service, regardless of data loads and with no data LAN dependencies;
- voice continuity, even if data LAN fails;
- the most secure network topology, given the physical separation of voice;
- an easy to manage network, given the physical separation of voice; and
- a future-proofed LAN, since there's no need to change IP phones or PoE with every LAN upgrade.

as New Mexico State University, Arizona State University, Georgia Tech, Texas A&M, and Virginia Tech), in government (such as British embassies around the world), in hospitality





(such as Marriott, Princess Cruise Lines, and Starwood Hotels), and at many other Fortune 500 companies.

Phybridge outfits such industry-leading businesses with solutions from its growing product portfolio.

UniPhyer was Phybridge's first product to market. It's an Ethernet and Power over Ethernet switch that works over one set of wires, and comes in 24- and 48-port varieties. It leverages existing telephone cabling infrastructure to create a parallel network with PoE.

Last year Phybridge added to that with the introduction of its PoLRE family of switches. PoLRE stands for Power over Long Reach Ethernet. These products, which come in 8-, 24- and 48-port versions, deliver Ethernet and PoE over one pair of wires with four times the reach of traditional switches.

The company's PowerWise technology enables four of the PoLRE switches to work together in a stack, and if one switch has an outage the stack goes into power sharing mode and can continue to deliver PoE to connected endpoints. The switches support AC and DC power, and the power supply is hot swappable.

"This summer Phybridge will make generally available a new switch that addresses the analog to IP migration of cameras."

- Phybridge CEO John Croce

"This summer Phybridge will make generally available a new switch that addresses the analog to IP migration of cameras. The camera migration is trailing the IP phone movement by about a decade," says Croce. The new CLEER and EC solutions, which the company was showing at a recent surveillance event, will initially be available in 10port unmanaged and 24-port managed form factors.

Phybridge also has a variety of other products and capabilities in the pipeline. The company later this year expects to unveil a failover adaptor that connects two LANs but keeps them physically separate. The adapter will be able snoop the health of the Phybridge voice and data LAN networks, and if the data LAN fails, all traffic can go over the Phybridge network. It's also a power failover solution for the IP phone. Additionally, Phybridge expects to add Wi-Fi adapter capabilities to its products in the future.

Whatever the particular product, however, the overarching goal at Phybridge is to deliver cost-effective, simple to deploy and manage, and robust solutions that eliminate the infrastructure barriers involved in IP migrations – enabling customers to know they're on firm footing as they make the move to IP.

The Channel – Magnified.

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E-Blast Examples







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By Paula Bernier



Yorktel Makes Complicated Simple

n business for more than 29 years, Yorktel has built its name as an AV integrator. As its expertise grew along with the trends in the video communications marketplace, Yorktel has evolved to meet the demand for video managed services, cloud services, and unified communications and collaboration. INTERNET TELEPHONY recently interviewed Ron Gaboury, CEO of Yorktel, to get the latest on the company and its value proposition.

Yorktel is expanding its focus from being a video managed service provider to address unified communications at large. Why, and why now?

Video has expanded beyond expensive conference rooms. The workforce calls for mobility and interoperability between disparate conferencing systems. Enterprises increasingly want – and need – to integrate various communication mediums, video, audio, IM, collaboration, presence, and more. A true end-to-end provider must address today's needs, as well as advise customers on how to adapt to new technologies for tomorrow's needs. This often means expanding your offerings.

What will that mean for Yorktel customers?

This means that our customers can communicate both internally and externally without the hassle of the many video complexities and can stay productive, regardless of participant location, device or OS. It also means a single-vendor solution.

How did the rise of the smartphone, and of applications, drive Yorktel's strategy on this front?

Mobility has also sparked Yorktel's enablement of UCC and WebRTC applications, another fast growing trend, into our current offerings and cloud infrastructure. Extending videoconferencing capabilities to remote workers and external parties is where traditional business technologies fall short. Through its use of open standards, WebRTC simplifies and extends voice and video communication solutions to a much wider audience.

What are the key solutions offered by Yorktel?

As a cloud, UCC and video managed services provider, we offer a single source solution for unified and visual communications. Our services include professional consulting, through assessment, design and implementation. This complements our post implementation offerings: Managed Services (maintenance, troubleshooting, scheduling/ launching, and on site staffing) and VideoCloud VaaS (public, private and hybrid options; self-service or managed). As video communications moves beyond corporate settings, we recently expanded into verticalized applications, including our VideoKiosk, mobile Tele-Health carts, and iRobot's Ava500. One division that truly differentiates Yorktel from competing MSPs is our Media Services practice with video production and post-production, webcasting, and asset hosting, among others.

Who is Yorktel's target customer?

Yorktel works with U.S. government agencies, the public sector, and global enterprises. With offices in the U.S., U.K., Ireland and France, the key commercial verticals we target are financial, pharmaceutical, retail, and media/entertainment. We are also seeing a shift in targeted functions beyond just IT as human resources and finance are finding benefits in video.

Microsoft Lync has seen great success, with more than 90 percent of Fortune 100 companies using



the Lync solution. What is Yorktel offering to support these users?

Yorktel VideoCloud supports full integration with Microsoft Lync and Office 365. Users can connect to videoconferencing systems from Cisco, Polycom, Avaya (Radvision), LifeSize, Vidyo, and other vendors. Tight integration and federated user identities across IT and communications are key to building secure, reliable, and seamless communication.

One of the challenges for videoconferencing is that different videoconferencing systems operate as islands. How is Yorktel addressing that?

Yorktel addresses these challenges with Yorktel VideoCloud, where any device, platform, network or enterprise can connect to solve interoperability problems or network complexities.

If there's just one thing you want customers and prospects to know about Yorktel and its value proposition, what is that one thing? Yorktel makes complicated simple. We strike a balance between a customerfirst approach and keeping our finger on the pulse of industry advancements. Really understanding the customer and the technology has allowed Yorktel to not only grow, but also evolve alongside a global market.







Welcome to WebRTC

f you're reading this supplement, chances are good that you've already heard about WebRTC. But, like much of the rest of the industry, you may not be completely dear about what WebRTC is, where it came from, why it's important, and where it fits to in the larger communications picture. So here's a bit of background to get you prepped for the rest of this WebRTC supplement and for WebRTC Conference & Expo IV, which takes place June 17 through 19 at the Cobb Galleria in Atlanta.

What It Is

WebRTC stands for web real-time communication. The technology allows for real-time voice and video interactions from a web browser or other peer node without requiring special client software or requiring a server between the two endpoints.

WebRTC is interesting because it puts us on a path to what Phil Edholm calls the webification of communications.

then in 2012 with early evangelists and companies, and it continues to snowball.

Why It's Important

The jury is still out as to whether tech giants Apple and Microsoft will endorse, ignore, or – worst case scenario – interfere with, the advancement of WebRTC. Nonetheless, prospects for the technology appear bright. For instance, ABI Research expects 4.7 billion WebRTC devices to be out in the world by 2018. (For more on what to expect for WebRTC, see our story in this supplement about the WebRTC Outlook 2014 Report.)

> WebRTC is interesting not only because it enables two endpoints to easily connect and conduct rich media sessions including data, video, and voice, or some combination thereof, but also because it puts us on a path to what Phil Edholm of PKE Consulting LLC calls the webification of communications.

"The webification of communications is not a single technology, but rather a transformation of the basics of communications," says Edholm. "Instead of having a single server that manages all of my communications, the webification process will free me to interact directly with millions of web servers to manage a succession of independent communications events, each tuned to the specific needs and requirements of the event, not an arbitrary vendor paradigm. Just as we all have huns of different web information experiences monthly.

dreds of different web information experiences monthly, each web communications experience can be defined by the suite hosting the event."

Where It Fits

The possibilities for WebRTC are endless, but some of the first places we are seeing it in use are in customer care/contact center, and conferencing applications.

"WebRTC applications will both delight and amaze us," says Edholm. "While many WebRTC implementations will be extensions of existing communications solutions, many will emerge that will use WebRTC to deliver communications in contexts we have yet to imagine.

"The change of communications from a separate service or capability to being integrated with applications and other activities will become obvious," Edholm says. "With this we will see the emergence of asymmetrical communications solutions where the experience is different dependent on the role of each individual."

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It takes the components of a typical VoIP media engine into a browser or any other peer endpoint with a simple API that a web server can control. That means developers can build real-time communication into web pages, and do so more easily than they could've in the past.

Where It Came From

The seeds of WebRTC came from Global IP Solutions, a company that provided the technology to such large VoIP companies as Avaya, Cisco, Nortel, and others. Google purchased GIPS in 2011, and shortly after that made its technology open source, which kicked off the WebRTC movement.

Google has been a leading advocate of WebRTC ever since, and today supports WebRTC in its Chrome browser. (WebRTC is also supported in the Mozilla Firefox and Opera browsers. There's no word yet on whether Apple and Microsoft will support WebRTC in their browsers, which is an area of much interest.)

The WebRTC ecosystem and community continue to grow. It started in 2010 with a small group at Google, expanded in 2011 with a strong group of standards advocates, and

APPLY YOURSELF. How creative will you be?



LET'S GET CREATIVE TOGETHER as we all set out to build a new world of web interactions. Join our developer community, and work with some of the most talented minds in WebRTC today. Learn more about our gateway and how it can optimize the experience while protecting businesses and consumers.



Scan the code to learn more about GENBAND's SPiDR WebRTC Gateway.



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ebRTC is a technology that will initiate a fundamental change in the communications market and in how all of us communicate. WebRTC changes the paradigm of communications managed by two service providers interacting for their users (the PSTN) or having to join a club (Skype) to communicate. With WebRTC, any website can be a communications "host" and the entire communications market is open to the same webification that has transformed the information market over the last 20 years.

How this will impact all of us in the communications industry and who will be impacted is a critical question. The figure on this page shows the four industry segments where WebRTC will have significant impact. Whether leveraged by an enterprise, service provider, or website, WebRTC changes the market. And it opens up a huge new set of blue ocean opportunities for new offers, just as the information web has created Google and Facebook.

For all of these markets, WebRTC changes the business, the value proposition, the customer interaction, potentially much of what we do today. And for all of them, the development team that needs to deliver the solution is critical to the success of the effort. WebRTC is a great technology, but combining the web; the network; and real-time video, audio, and information into a cohesive solution that creates value is a new challenge for everyone.

The WebRTC market appears to be huge. Initial estimates are that the



market in 2016 will contain 4 billion to more than 6 billion devices. With WebRTC being implemented in browsers and even in dedicated devices, this explosion is creating opportunities for tools, components, consulting, and other capabilities to be delivered to the WebRTC marketplace. While estimates vary about the rate of adoption, Skype has more than 300 billion minutes of video, and WebRTC will enable video to an even larger market. With 70 to 90 percent of all contact center transactions preceded by a website visit, the integration of WebRTC and real-time capabilities into the website could move 50 percent of 800 calling to WebRTC in the next 3 to 5 years.

Part of the WebRTC transformation involves the ecosystem of tool vendors, contractors, consultants, and service providers that are delivering WebRTC components. The WebRTC ecosystem is a rich environment with more 200 companies that provide media servers, SBCs, development platforms, cloud implementations, consulting, and other components and services. These organizations range from companies like Vidyo, which is bringing its video media servers to the UC market; to Plantronics, which has enabled its personal devices to integrate with WebRTC; to companies like TokBox, which has an advanced WebRTC platform. There are also companies like Priologic with a freemium model for basic capabilities and advanced services. Service provider vendors like Alcatel-Lucent, Ericsson, and Oracle are also supporting WebRTC in their portfolios.

BRTC SUPPLEMEI

Creating and delivering a WebRTC solution or enabling your organization and employees to take advantage of WebRTC involves a number of components. For each of the segments above, having a clear view of how WebRTC will impact your business and be implemented and delivered is a clear requirement.

The WebRTC Conference & Expo is the global event where any of the segments of the WebRTC market can come to learn more about the technology, the business models, the tools, the components, and who are your best partners for implementation. For anyone in the communications, collaboration, or interaction markets, this is the best way to understand and evaluate the options and path forward.

Phil Edholm is the president and founder of PKE Consulting LLC (www.pkeconsulting.com).







WebRTC Conference & Expo – The Global Best of WebRTC



ebRTC Conference & Expo is the leading event for WebRTC worldwide. The event – which takes place June 17 through 19 at the Cobb Galleria in Atlanta – brings together the technical and business leaders in WebRTC along with the leading companies that are enabling and using WebRTC in their businesses. With WebRTC moving so fast, each WebRTC Conference & Expo reflects huge changes in the market and involves new sponsors, attendees, and WebRTC examples and knowledge.

Demos & Workshops

WebRTC Conference & Expo IV in Atlanta will feature Demo Forum presentations by a wide array of companies, which on Wednesday and Thursday will demonstrate their WebRTC products live in front of the conference audience. The audience will then be invited to cast their ballots for the companies they consider the strongest contenders. Award categories will include Best in Show, Beyond the Call, Best Conferencing, Best Team Excitement/Energy, Best WebRTC Tool, Easiest to Apply, Editor's Choice, Ready Now, Visionary, and Wow Factor.

Another great opportunity at WebRTC in Atlanta this year is Wednesday night at 7:30 p.m., when Priologic will serve up free pizza, wings, and beer, and the opportunity to learn about its EasyRTC Open Source solutions.

Expo Hall

WebRTC Conference & Expo attendees will also have the opportunity to experience and network with a wide variety of organizations within the WebRTC ecosystem on the event show floor. Exhibits are open Tuesday, June 17 from 5 p.m. to 7:30 p.m., and starting at 8 a.m. on Wednesday and Thursday.

Keynotes

As of press time, the keynotes for

WebRTC Conference & Expo IV included such industry experts as:

- Avaya's Gary Barnett
- Dialogic's Andrew Goldberg
- GENBAND's Brad Bush
- Google's Serge Lachapelle
- Requestec's Ben Weekes
- Temasys's Bill Lewis
- Tokbox's Ian Small, and
- Vidyo's Alex Eleftheriadis

Tracks & Sessions

For this event, the focus has been sharpened to address four key areas of WebRTC as illustrated by the business applications, developer, enterprise, and service provider tracks. The agenda also includes a special session addressing key vertical markets in which WebRTC will drive significant change and advantage.

The conference includes three days of developer focus. That includes six extended workshops for the developer community on Tuesday. These workshops are designed to cover specific technical topics in detail. This is followed on Wednesday and Thursday by six other sessions and the peer-to-peer conference networking and education sessions on Thursday morning that will enable technical attendees to interact with leading implementers and vendors on specific topics. On Tuesday, there is a set of general business sessions that are designed to help business teams understand the WebRTC deployment and ecosystem as well as how WebRTC can impact businesses generally.

RTC SUPPLEMEN

This is followed by separate service provider and enterprise tracks on Wednesday and Thursday. In addition to a rich set of sessions, both tracks include a special focus on Thursday morning. In the service provider focus a debate session will focus on the role of IMS in WebRTC deployment and whether WebRTC applications should be tightly integrated into IMS or operated as a separate system. On the enterprise track, the decision session will focus on the contact center and customer interaction and support. The session will explore whether extending the current call center to WebRTC is the right answer. In addition, a special focus track will address vertical markets like health care and advanced solutions like contact center.

Join Us!

The WebRTC Conference & Expo is the best place in the industry to get up to speed on WebRTC and to understand how this disruptive and transformational technology and the webification that comes with it will impact your business and how to best deploy WebRTC for strategic advantage. We look forward to seeing you June 17 through 19 at the Atlanta event, and again Nov. 18 through 20 at WebRTC Conference & Expo in San Jose.

Phil Edholm is the president and founder of PKE Consulting LLC (www.pkeconsulting.com).

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The Outlook for WebRTC in 2014 and Beyond

he outlook for WebRTC is a positive one, but questions persist as to whether and when this technology will cross the chasm from early adoption to mass-market embrace – and what it will take for WebRTC to make that leap. That's according to the WebRTC Outlook 2014 Report, which is based on a December 2013 survey of more than 100 leading entrepreneurs, users, and vendors in the WebRTC ecosystem.

The survey had 13 questions, eight of which were multiple choice and five of which were open-ended. Both the survey and responses were organized into five categories addressing trends in WebRTC, user adoption, industry adoption and impact, WebRTC plans, and barriers to the technology.

Most survey respondents believe WebRTC adoption will be in the 50 million to 200 million range by the end of this year, but some surveyed said their applications will reach a billion users in 2014. Meanwhile, most survey respondents believe the number of devices that will be WebRTC enabled by the end of 2014 will either be in the 100-300 million device range or in the one to two billion range.

"This data reflects much of the earlier data where about 30-35 percent of the respondents had a relatively low expectation of the outlook for growth in 2014, while the remainders were more positive," according to the report. "It also reflects a greater view that WebRTC is so large and divergent that it is hard to make predictions."

WebRTC will cause major disruption in the areas of contact center, videoconferencing, and web conferencing – all of which are expected to experience dramatic change due to WebRTC, according to many survey respondents.

"Overall, contact centers have more new business focus by the respondents than any other area," according to the report.

Customer care and contact centers are also expected to be the first area to see widespread WebRTC adoption, followed by social media, BYOD, general video, health care, service providers, and then financial services. Nonetheless, more than 68 percent of the survey respondents indicated they do not believe that WebRTC will emerge from the chasm in 2014, but rather think we will continue to see initial deployments and niches with a possibility of major deployments. However, the report states, "there is virtually universal agreement that given standard stabilization and Microsoft and Apple support, WebRTC will emerge as a major market force."

Although the fact that Apple and Microsoft are not at the moment supporting WebRTC looms large with survey respondents, who ranked it second on the technology's top barriers to adoption, it is lack of awareness relative to WebRTC that the survey group sees as the No. 1 barrier. That means that industry events like WebRTC Conference & Expo IV and articles like this one are of the utmost importance to move the effort forward. Other top barriers for WebRTC, according to survey respondents, include unspecified codec standards, limited features, lack of developers, lack of standards, and mobile support.

Many of those respondents who said 2014 will not be the year WebRTC crosses the chasm attributed that to the need for Apple and Microsoft to join the market first. Other reasons were a lack of well-defined use cases and ROI for WebRTC, the fact that the standards process remains a stalemate, that WebRTC made too much noise for the few applications to which it provides real value, and the idea that there are no big companies deploying WebRTC. Meanwhile, some who are undecided about the timing of mass-market adoption for WebRTC indicated that there has to be a trigger for widespread adoption, such as a service provider or device supporting WebRTC natively.

"Overall, the general view is that WebRTC is gaining velocity and is viewed even more favorably at the beginning of 2014 than at the beginning of 2013," according to the report. "When it comes to 2014 growth and adoption, the community is split, with an equal number believing that 2014 will be the year versus 2015 or beyond. While the large group of respondents indicating that they feel the big surprise will be Microsoft and/or Apple delivering supported products, this may be as much hope as insight, though perhaps there is some level of knowledge in the responses."

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By Phil Edholm

An Enterprising View on WebRTC

he enterprise has numerous uses for WebRTC, including enabling the bring your own device model, allowing for next generation customer interaction through web integration, and establishing direct communications between employees and the outside world. Because WebRTC creates an experience that comes from the host web server, the experience the enterprise provides can be unique and tailored to deliver advantage.

BYOD

The combination of HTML5 and WebRTC opens the world of BYOD in a powerful new way. With HTML5 and WebRTC, any compliant device can become a highly integrated endpoint without running an application and without local data storage. This is a solution to the huge issue of maintaining privacy and compliance for data. By only sending the data to the device that will actually be displayed and using the built in HTML5 and WebRTC technologies, a new generation of highly secure implementations are possible. With the emerging 4G networking technologies, the performance and feel of these applications will be equivalent or better than current local apps.

Customer Interaction

Between 70 and 80 percent of contact center interactions in Western business are proceeded by a website visit, yet many businesses treat the contact center interactions and website visits as if they are unrelated events. WebRTC enables the customer interaction to come directly from the web page and drive how that interaction is handled through the business logic of the website. As a result, the business can define the skills required to meet the customer need and get new information about the success or failure points of the web presence. With an average web interaction costing a small fraction of an agent interaction, this optimization can create huge returns.

For organizations with agents, the use of WebRTC enables a new paradigm where a direct connection is started by clicking on an object on any web page. This can allow for agent selection, and enable the agent to be on any WebRTC device. While this type of system could be integrated using SIP devices on the agent side,

GoTo

using WebRTC enables similar device independence. That makes incorporating home agents much easier as their device type is not important to how they interact with the control system.

The integration between the web side and the contact center side can be accomplished by implementing a completely new system, with the website at the core, or by integrating WebRTC into existing environments.

Of course, adding a media server into the mix enables functions like call recording, IVR, moderated interactions, speech recognition-based tools, etc. And there can be multiple media servers that can be mixed, both in type (premises or cloud) and in network/geographical location. This can enable new capabilities.





For example, when looking to buy something, the website visitor on the review site could trigger a conference with a knowledgeable agent. And when going to another page the agent could change. This concept of context and state related to a specific web page is an interesting capability that WebRTC enables.

This can all be done as an extension to existing contact centers, of course. But with WebRTC this capability will become ubiquitous and the choice for future integration will be based on whether to extend the legacy contact center into the web world or begin a new customer interaction methodology based on and integrated to the company website.

WebRTC and BYOD

WebRTC also can be used to integrate open BYOD devices into a more traditional unified communications architecture. For vendors like Avaya, Cisco, Microsoft, ShoreTel, and Unify (the former Siemens Enterprise Communications), the use of WebRTC is a logical way to integrate another set of devices. If anyone can go to anyone else's system and get essentially the same level of capability as the direct participants, the need to federate between systems may go away. That's because if I need to collaborate with Bob at XYZ Company, I just point my browser at the guest URL on his system and now we are collaborating with all of the tools his system can provide.

However, unless the vendor chooses to enable its SIP operated devices to integrate with WebRTC devices directly, a gateway – probably implemented as a media server – may be required. In this architecture, the WebRTC client is talking to the media server using WebRTC signaling, protocols, and codecs. Similarly, the SIP client is using SIP signaling, protocols, and codecs based on the vendor choices. The media server is providing any required translation of the codec streams as well as providing a port-level interface that will connect to each client.

The Enterprise Portal

One potential significant application of WebRTC in the enterprise is an enterprise portal that enables external access to individuals through WebRTC. The concept of an enterprise portal is a website that allows external access using WebRTC.

An example would work like this: On the "Contact Us" webpage there would be a link "Web Interaction" or "Browser Communications". That link would link to a URL/web server that is the enterprise portal. Upon arriving at the enterprise portal, the visitor would be asked to enter the name of the person with whom he or she wants to interact. Alternatively, the company may just decide to publish a directory. After selecting the employee, the visitor is taken to the employee's access page, which could have presence and availability information, potentially tuned to who the visitor is based on cookies or other certificates such as LinkedIn or Facebook. For most visitors, the page would offer an opportunity to interact by entering the visitor name and a short explanation on why an interaction is needed. This request can then be sent to the employee, enabling him or her to decide if it is important now. If the employee wants to interact, he or she can push the interact button and the visitor is connected through WebRTC. It also can become a form of instant chat. If the employee is in a meeting, he or she might type a response suggesting the visitor come back at a specified time later in the day. The key point of the enterprise portal is that each visit to the web page is a unique experience.

For the enterprise, understanding WebRTC is critical. So it's important both to understand how your current vendors intend to use WebRTC and how WebRTC could change both the enterprise communications landscape and the vendors you use.

Phil Edholm is the president and founder of PKE Consulting LLC (www.pkeconsulting.com).



WebRTC's Impact on Service Providers

isruptive Analysis believes that WebRTC is one of the most important telecom technologies that has emerged in the past 10 years or more. It will radically alter the landscape for voice, video, and data real-time communications, as it helps democratize them – allowing them to be combined directly with a variety of applications, websites, and devices.

WebRTC capability is already supported by around 1 billion endpoints – predominantly PCs, but also increasing numbers of tablets and smartphones – and Disruptive Analysis forecasts that figure will rise to 5 billion by 2017, spanning both browsers and native applications.

There are three main domains touched by WebRTC:

• enterprise communications (such as contact centrers, UC and conferencing);

• telecom service providers (including fixed, mobile, and cable players); and

• consumer web and mobile apps (including social media, gaming, etc.)

These areas all form an overlapping three-way Venn diagram – and the intersections will yield some of the most powerful effects. Telecom service providers' adoption of WebRTC will in many cases link to their enterprise service portfolios and market positioning.

WebRTC is a double-edged sword for service providers. For the most imaginative and aggressive, it could bolster their enterprise presence by enabling innovative cloud video propositions, or adding value to IP telephony platforms. But at the same time, for those service providers already worried about the threat of so-called OTT players' incursion into their market for commodity voice, they will likely face additional and worsening threats.

For telcos, WebRTC makes opportunities larger, threats worse, and everything faster.

Although the focus of WebRTC vendor attention for telcos has been integration with IMS, that probably accounts only for 20 to 30 percent of the total service provider effort around the technology, and is likely to be the slowest to emerge, given the complexities of core networks and typical conservatism of the relevant teams. Instead, the wisest network operators are ensuring that multiple internal teams and stakeholders assess WebRTC independently, and wherever possible act to put solutions into the market as quickly as possible. This may manifest in several forms relevant to enterprise users:

• Service providers are likely to become important retail channels for certain classes of WebRTC-based, or WebRTC-enabled, services from third parties – notably audio- and videoconferencing. Others will deploy their own WebRTC conferencing platforms, either standalone web-based tools competing with Google Hangouts and Skype (Telenor has already launched appear.in), or, later, integrated with their core networks and billing systems.



 Where service providers have existing contact center and hosted UC businesses, it is likely that these will evolve to support WebRTC capabilities, broadly in line with the pace of the rest of the market. Again, these will likely span both stand-alone and IMSbased options.

• A number of service providers are already exploring the market for cloud-based WebRTC-asa-service, competing against (or acquiring) various specialist API providers targeting application

For telcos, WebRTC makes opportunities larger, threats worse, and everything faster.

with occasional embedded voice connectivity, or even lowlatency streaming data, for example.

> Lastly, a broader renaissance in voice/video applications is on the horizon, taking communications beyond the call into areas such as biometrics, hypervoice, recording, and analytics. WebRTC will be an enabler – and telecom service providers may be present as hosts or innovators.

> > Taken together, many service providers are likely to deploy WebRTC services – and in Disruptive Analysis' view, much of the low-hanging fruit lies in servicing the needs of corporate communications and developers.

Dean Bubley is director and founder of Disruptive Analysis (disruptivewireless. blogspot.com), a London-based research firm and consultancy, covering voice, video and mobile network technologies.

and web developers. While these are mainly targeting businesses' external-facing websites and mobile apps, it can be expected that others will focus on internal enterprise developers in due course. Telefonica Tokbox and NTT Skyway are already present here.Telcos may also offer thin cloud-based slices of WebRTC infrastructure, such as hosted TURN servers, or voice/ video transcoding-as-a-service.

• Some service providers have deep and extensive presence in certain vertical sectors such as health care, education, or finance – for example, providing integrated solutions to hospitals or schools. Where these involve communication elements, expect WebRTC to appear as a means to reduce time-to-market and development effort.

• WebRTC-enabled applications will likely form part of some operators' SaaS portfolios, either as horizontal tools, or embedded into vertical forms such as salesforce automation or industry-specific packaged applications.

• As operators deploy IMS-based VoIP and VoLTE, they will look for ways to extend reach to other devices or users that do not support native clients or softphones, such as employees' PCs and tablets with suitable browsers.

There will likely be numerous other touchpoints with enterprise for telcos' WebRTC efforts. Disruptive Analysis has already encountered examples of operators looking at embedding real-time communications into M2M or new Internet of Things uses. Corporate fleet-management systems may be upgraded Temasys

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 NTERNET TELEPHONY recently spoke to Priologic Software Inc. CEO Doug Pelton about the state of WebRTC and how this important
 new technology is impacting its business.

How is WebRTC integrated into your business today?

Priologic Software has developed three products using WebRTC. The EasyRTC Open Source framework; Tawk.com, a frictionless WebRTCbased conference/collaboration service; and PrioPhone, a WebRTCenabled softphone that works against the Oracle WebRTC Session Controller. Our team has produced some great software, and it is selling.

Does WebRTC open a new market opportunity for your business/product line?

Yes. For WebRTC to be useful there are a bunch of missing pieces that are needed. Each of those missing pieces is a huge opportunity. We think WebRTC will change the world a lot over the next 5 years.

How does the lack of support of Apple's Safari and Microsoft's Internet Explorer impact your implementation?

Safari doesn't matter much, as Chrome will work on Mac OSX. We are working on an IE plug-in that will enable WebRTC, or at least our EasyRTC Javascript API. We hope to release it for developers soon.

Has the data channel in WebRTC opened up new opportunities in the enterprise?

Yes. We use the data channel to support file sharing and instant messaging. We also have some experimental WebRTC-based CDN in our lab. And we're keen to use the data channel to control machines sometime soon. We think data channel has great potential.

What verticals are the early adopters for WebRTC?

I think finance, contact centers, health care and education are all good sectors to explore. There is lots of opportunity to embrace verticals now that the underpinnings of WebRTC are strong.

Where are we on the WebRTC adoption curve?

Last year corporations were talking about doing proof-of-concept jobs. This year they are doing proof-of-concept jobs.

Do you support the VP8 or H.264 codec?

We like both. We'll be trying to support both codecs where possible.

In theory, HTML5 and WebRTC can eliminate native apps. Do you have plans for native mobile application with WebRTC or the Google Media Engine? We think web browsers are too restrictive for some applications. We

have a working EasyRTC ActiveX control, and we'll likely have something for native MacOSX apps soon.

How often do you have to explain what WebRTC is to your potential customers?

Less and less. They've heard of it and may just need a bit more technical information this year.

How does the WebRTC Conference & Expo help the WebRTC community?

It is invaluable. We've really gotten to know the players in the industry by attending these conferences. It is still a very intimate conference. You can talk to almost everyone.



What do you expect to be the hot topics at the event?

Why haven't Apple and Microsoft stepped up to do WebRTC yet? Should we build native apps, and when will they be best used? How do we do a mobile application for iOS or Android that uses WebRTC? What cool new data channel use cases are there?

What will Priologic be doing at the WebRTC Conference & Expo in Atlanta?

We'll be showing lots of native mobile apps, and hopefully showing our new IE plugin. We'll be showing new features on Tawk.com and our PrioPhone products. We'll be talking about our EasyRTC open source platform. We'll have our entire Web-RTC engineering team there. I think we're speaking in three sessions and putting on our third EasyRTC Pizza, Wings and Beer learning event.

Why did you decide to attend the WebRTC Conference & Expo?

We have made a huge investment in WebRTC tooling, and we feel this is the premier show in the space. We've attended three shows so far and have won three awards. We're trying for four.

What do you hope attendees will learn about Priologic at the event?

Attendees who are developers, enterprises or service providers such as telcos or cable companies should consider leveraging our open source EasyRTC or our other licensed Web-RTC products in their projects. We can help them get them to market faster and reduce many of the risks in their projects. We are one of the few vendors that provide a full-stack solution that can be housed in the cloud or on premises.



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Acision: WebRTC is Moving Beyond the Hoo-Ha

NTERNET TELEPHONY recently spoke to Acision Engineering Director John Parr about WebRTC, what the company is doing in this realm, and its plans for WebRTC Conference & Expo.

What do people need to know about Acision?

Acision connects the world by powering relevant, seamless mobile engagement services that interoperate across all IP platforms and enrich the user experience, creating value and new communication opportunities for carriers, enterprises, and consumers across the world. After leading the mobile messaging industry for over 20 years, Acision is uniquely positioned at the convergence of next generation mobile communications, which is built upon carrier-grade technology, infrastructure, security, and support.

How is WebRTC part of your business today?

WebRTC is integrated into our rich communication client FuseMe and Forge product.

How is your partnership with Crocodile going?

Crocodile has integrated well into the Acision core business and its technology and assets are an extremely good fit within the Acision product portfolio, providing additional value-add capabilities and functionality, particularly to new products such as FuseMe and Forge by Acision. It also means Acision can now extend its new mobile engagement services to beyond mobile operators to the enterprise and developer community.

Has the data channel in WebRTC opened up new opportunities in the enterprise?

The data channel is very useful for some applications, but there are many enterprise use-cases that still require data and messaging to be routed through the network (for policy control, audit trails, and interworking).

What are your expectations for WebRTC adoption?

We believe by the end of the year we'll see many examples of WebRTC being used in consumer applications, and it will be standard for enterprise unified communications and conferencing.

Do you have plans for native mobile application with WebRTC or the Google Media Engine?

WebRTC and HTML5 cannot really replace native apps today as you still need a solution for push notification and multi-tasking/back-grounding of web apps. Once those features are available web apps will be capable of doing what native apps can do today – but by that point there will doubtlessly be new native OS features used in native apps that web-apps can't support. I think there will be a good case for native apps in many situations for the foreseeable future. The Acision SDK has native libraries for Android and iOS that use the Google Media Engine.

How do events like the WebRTC Conference & Expo help the WebRTC community?

Sharing ideas for different applications of WebRTC stimulates creativity in the industry.

What do you expect to be the hot topics at the event?

We think the debate will have moved on from the previous hoo-ha around video codecs and signaling and will be centered on practical integration and implementation issues. There will be more emphasis on native mobile implementations and use cases than previously.

What will you be doing at the WebRTC Conference & Expo in Atlanta?

We'll be demonstrating various applications built on the Acision SDK, implemented as web apps and natively for mobile, including our Engage demo for customer service and sales in a retail environment.

Why did you decide to attend the event?

We believe out of all of the WebRTC-focused events, this is one that provides us with great value, networking opportunities, and positive exposure in front of the right audiences.

What do you hope attendees will learn about Acision at the event?

We want them to understand how we have changed since the Acision partnership, the benefits this has brought to our WebRTC business proposition, and how we have evolved. We have lots to show and offer this year with new ideas and initiatives we want to share, so we value the opportunity to do this at WebRTC Conference & Expo.



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Avaya Offers a Practical View of WebRTC



EBRTC SUPPLEMENT

NTERNET TELEPHONY recently spoke to Val Matula about WebRTC. Avaya's senior director of analytics and multimedia says WebRTC will be an integral offer to the company's enterprise-wide Avaya Aura Collaboration Environment framework.

Does WebRTC open a new market opportunity for your product line?

Definitely. Just to start, WebRTC will enable our customers to offer consumers the ability to connect into their customer service centers using only their WebRTC-capable browser on their Android device, Chromebook, or PC browser. This extends the capabilities of our thin-client customer service offers, as it adds WebRTC to the portfolio, which is in addition to our Adobe Flash-based Avaya One Touch Video offer.

Is the data channel in WebRTC creating new possibilities in the enterprise?

It will, but these are likely to move along more slowly as there are numerous alternatives for client/server data exchange.

What vertical industries are early adopters of WebRTC?

In general, we believe that WebRTC (along with non-WebRTC technologies, such as co-browsing and co-piloting) will make the consumer experience more friendly and quicker – for finance, home mortgage processing, health care advising, and potentially any online retail experience.

Where are we on the WebRTC adoption curve?

Clearly, a portion of the browsers [are] support enough to make WebRTC useful. Whether this will be a technology for a significant fraction of users or whether this will become nearly ubiquitous across most users is still to be seen.

Do you support VP8 or H.264? Why?

Audio is well understood, and Avaya is planning to broadly support Opus. What is also clear is that neither VP8 nor H.264 will be chosen as the standard anytime soon, and thus we are making appropriate plans to offer [a] solution in this market.

In theory, HTML5 and WebRTC can eliminate native apps. Do you have plans for native mobile application with WebRTC or the Google Media Engine?

Avaya believes that there is a continuing role for users to have native apps if the installation process is acceptable to them. Avaya today has offers based on the Google Media Engine to prove this out.

How often do you have to explain what WebRTC is to customers and prospects?

It's not a question of 'have to explain,' rather, we are making sure we take every opportunity to explain Avaya's role in helping to shape the standard, support technologies like Opus outside of just browsers, and finally, demonstrate interoperability between WebRTC and current industry solutions for UC and customer service.

How do events like the WebRTC Conference & Expo help the WebRTC community succeed?

The event helps to raise awareness, provide a cadence of events where significant announcements can be made, and provides a forum for efficiently promoting our view of the technology and impact.

What do you expect to be the hot topics at the event this time around?

Personally, not so much the issue of video, but rather, the role of all-browser/closed garden solutions vs. an integrated suite such as Avaya's WebRTC, native app, and core enterprise infrastructure solutions.

What will you be doing at the WebRTC Conference & Expo in Atlanta?

Avaya's Gary Barnett, senior vice president and general manager of collaboration, will present a keynote. In addition, I will be a member of several panels related to the use of WebRTC in customer service. We will have an expo position demonstrating our WebRTC capabilities as well.

Why did you decide to attend the WebRTC Conference & Expo?

We thought this was an excellent opportunity to show attendees the capabilities of our solutions, and get the word out on their value.

What do you hope attendees will learn about Avaya at the event?

I think they'll get a practical view of the use of the technology – as an extremely valuable technology addition to a full suite of communication and collaboration capabilities already present in our portfolio.



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By Paula Bernier



CafeX Dishes on WebRTC



NTERNET TELEPHONY recently spoke to Sajeel Hussain, vice president of marketing and partner development of CaféX Communications, about the company's offerings in the WebRTC arena, industry trends, and the WebRTC Conference & Expo in Atlanta.

Tell us about CaféX.

CaféX is a leading provider of real-time customer engagement solutions. CaféX software for WebRTC and mobile collaboration solutions seamlessly connect customers to businesses from within mobile and web applications. We offer powerful developer toolkits and server components that embed existing enterprise communications within applications on smartphones, tablets and desktops, enabling businesses to deliver omni-channel experiences that are characterized by consistent, integrated and personalized customer interactions with context across multiple channels. Our solutions not only provide high definition voice, video and IM but also Live Assist features such as screen sharing, remote control, document push and annotation, all of which are enabled via two lines of code on either a mobile or a web app. We also offer robust integration with leading contact centers to ensure proper queuing, context passing and routing. CaféX solutions support Android and iOS mobile as well as H.264 and VP8 video including transcoding between traditional H.264 endpoint and VP8 specific browsers. CaféX has deployed its award winning technology solutions through OEM relationships with six global banks and a range of businesses that range from Fortune 100 to medium-sized enterprises.

How has CaféX positioned its WebRTC solutions?

Our approach to date has been to focus less on technology and more on the business outcomes. We see that once customers see the results, and experience how relatively simple integration and deployment is, the high-level questions surrounding the 'what is WebRTC' transform into 'how can I apply this technology to my business.'

How big is the WebRTC opportunity?

We see the biggest opportunity in redefining customer experience management with contextual intelligence, to drive predictable outcomes and higher Net Promoter Scores. This is where technologies such as WebRTC can play a critical role as [WebRTC's] simplicity provides a solid foundation for innovating and optimizing many business and operational processes. The size of the opportunity will be determined by the quality, friendliness, and facility of the applications and services that use the technology. We are seeing intense interest in the CaféX Fusion Live Assist solution that leverages WebRTC technology to light up nearly any website or mobile app with integrated live video assistance. In addition, our Fusion Palettes solution simplifies integration of mobile consumer apps with a variety of contact center platforms with live video and contextual communications.

How does the lack of support of Apple's Safari and Microsoft's Internet Explorer impact you? Have you had to enable work-arounds?

CaféX has taken the initiative to produce plug-ins with native H.264 support for Internet Explorer and Safari browsers to enable enterprises to take advantage of its Fusion Live Assist and Fusion Palettes solutions in nearly any computing or mobile environment. The advantage with this approach is that it not only provides cross browser support, but also minimizes any transcoding while interoperating into an existing SIP environment.

How has the data channel impacted WebRTC in the enterprise?

CaféX Fusion Live Assist uses WebSocket rather than the data channel, as WebSocket is more standardized and therefore supported across mobile devices such as tablets as well as major web browsers, and has more conventional ways to secure data, and handles firewall traversal more easily. Also, in most cases, data that enters the enterprise must pass through a server first to satisfy compliance constraints, which can be problematic for peer-to-peer technologies like the WebRTC data channel. Fusion Live Assist can also utilize WebSocket to support application sharing sessions among multiple participants.

What is the impact of WebRTC Conference & Expo on the WebRTC community?

CaféX has found the WebRTC Conferences to provide a fertile atmosphere for creativity and innovation that has helped accelerate exposure and acceptance of WebRTC across the telecommunications industry. We appreciate the various philosophies and perspectives that different providers bring to the event. With WebRTC still in its adolescence, events like the WebRTC Conference play a vital role in helping customers and providers understand the dynamics that are taking place in the market.



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We have developed

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SDKs that developers

can use to build their

own native apps for

these platforms.

NTERNET TELEPHONY recently spoke to Chip Wilcox of Temasys Communications Pte Ltd. about WebRTC. The CEO says WebRTC is the foundation on which Temasys – which says it is leading the new wave of innovation in web and mobile communications and collaboration – has built its business.

What sort of opportunities does WebRTC allow for?

There is a phenomenal opportunity for businesses that choose to innovate with WebRTC. The Internet was never really built to support interactivity – between people, devices, applications, and so on. One only has to look at the hacks that we've implemented to make online interaction possible in the last 17 years. WebRTC gives us the first opportunity to see how things work when a technology is invented specifically to facilitate interactivity online. It's going to change the world, dramatically.

Google has incorporated WebRTC into Google Hangouts. How does that integration impact your view of WebRTC and your business plans, if at all?

Google Hangouts is one flavor of the way WebRTC can be implemented. It is a good example of the first major use case many people think of when they hear about WebRTC - web-based communication and collaboration. There are many other use cases and types of applications that WebRTC will support, especially when one looks to the data channel and getting creative with the technology to suit different use cases beyond the UC perspective.

Tell us more about the data channel in WebRTC.

The data channel is the newest component of the draft standard, and it is generating a lot of excitement. What will matter more is who can get really creative with it and execute on some of the big ideas that are floating around out there in terms of how to leverage it. We are pursuing some very exciting opportunities where the data channel will play a major part in driving innovation and collaboration with customers, but it is early days, still.



BRTC SUPPLEMEN

Have we moved past the codec war? The MTI codec is just here as a fallback for minimum interoperability. We feel that it has been used as an excuse to create fear, uncertainty and doubt (the usual FUD). In practice, it is a non-issue.

Do you have plans for native mobile application with WebRTC or the Google Media Engine?

Yes. It's our opinion that for the time being, the best way to support WebRTC on iOS and Android mobile devices is with native apps. We have developed

> Android and iOS reference clients, and SDKs that developers can use to build their own native apps for these platforms.

What will you be doing at the WebRTC Conference & Expo in Atlanta?

We are a sponsor of the Expo, so we'll be giving a keynote presentation and participating in a number of panel discussions. We will also be doing a live demo of some of our innovations over the last 6 to 8 months and those about to launch.

What do you hope attendees will learn about Temasys at the event?

We think we have a unique position and value proposition for customers and collaborators, and we'll use the Atlanta event as an opportunity to showcase our capabilities. Historically, we have shied away from doing a lot of marketing and PR for PR's sake. That said, we think it's time to look under the hood, which is our theme for the conference.



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Talk is cheap, show me the code. Linus Torvalds, August 25, 2000

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The GLOBALINX Masterstream Solution

A Tool to Help Agents Spend Time Selling Rather Than Doing Quoting

LOBALINX is a fast-growing, hosted services provider that offers a complete line of hosted products for agents and wholesale customers. Recently GLOBALINX changed its billing strategy – moving from a multi-line bill listing CPE and service, to combining both with a competitive single MRC pricing strategy named 1Price. Since advertised, we've decided to dive deeper to see how competitive this 1Price offer really is.

One proof point of GLOBALINX's strength in the industry is the fact that the company has been on the Inc. 500/5000 list of the fastest growing privately held companies for eight consecutive years. GLOBALINX has also been on the Rochester Top 100, a program that recognizes the fastest growing privately owned companies in the Greater Rochester region.

The new 1Price billing, which was launched late last year, is a more competitive and simplified pricing system for agents and customers. It includes all calling features and any customer selected add-on services as part of a single monthly charge. The 1Price model also includes maintenance, professional installation, 24/7 service, award-winning U.S.-based customer service, and more which we found unique compared to other resellers offering similar bundles

"It's our goal to make the decision-making process as easy as possible for our customers and to provide them with a great experience," says Michael Machonkin, GLOBALINX Vice President of Business Development. "One price that includes everything a



customer thinks they need, while delivering everything they will need is as simple as it gets."

To view this new pricing strategy, we were able to tryout GLOBALINX's customized new quoting software, called Masterstream, with which many agents already are familiar. GLOBALINX customized Masterstream to allow agents to turn a quote into an order – allowing electronic signatures from customers, order updates, and more. Agents have the ability to upload their unique logos and have them appear in the top right hand corner of proposals.

We really liked that the Masterstream home screen includes a bulletin board allowing agents to see messages about important items such as new sales contests and new cross-sell or up-sell opportunities.

Speaking of productivity, we liked the Quote Ready feature, which allows canned text to be written once and included on the proposals in an automated fashion. Each user can customize his or her own letter with numerous messages and unique signatures. It's worth mentioning the standardized letter can be edited before sending – allowing you to add niceties like, "Good luck at the triathlon this weekend," etc.







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Unique hosted solutions are just one of the many reasons why agents choose GLOBALINX.

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Perhaps one of the more important parts of the solution is its ability to notify when a customer looks at an order. The default is off, but you should turn it on.

We believe the interface, while good, can be more intuitive. If you go through an hour of training or so, you will be able to navigate it effectively, but I get the sense that there is much more power here than most people will use. This is a typical challenge with full-featured solutions such as word processing as well; but I think the agents will likely sell more effectively if they are able to take advantage of all of the powerful features under the hood. It is worth mentioning there is a basic bubble-help system which we believe helps a lot.

Master agents will love the reporting feature, which lets you search for orders, RFQs, and other activity based on where it is in the order funnel. A system administrator can add users who could be sub-agents. A total of 99 sales managers can be added and each manager can have 9,999 reports, each with their own ability to login with a unique ID, orders, etc. People can see down but not up, meaning a salesperson cannot look to see what the manager is up to or what the master agent above him is doing; but master agents and managers can look below.

The Resources link allows users to enter in NPANXX codes to determine who the carrier is corresponding to the area code and prefix. We performed testing with numbers in California and Connecticut, and it was accurate each time with responses such as "SOUTHERN NEW ENGLAND TELEPHONE CO" now part of AT&T and in another search, "CELLCO PARTNERSHIP DBA VERIZON WIRELESS - CA." You also can find out the wire center identification code serving this number. Moreover, this can be a handy mileage tool which allows you to determine the distance from a wire center to an address. We tested this feature within Fairfield County, in Connecticut, and it was accurate.

When entering a new RFQ you can add a new customer, modify existing locations, and import a CSV file for multiple locations. Error checking was pretty good. In our testing, it caught addresses which were invalid as well as e-mail addresses without the @ sign. The system has the ability to match addresses, which are entered against the U.S. Post Office database, and when they are validated, the location name is displayed in capital letters to assure you the address is correct. If you enter an invalid address, which we did – you are alerted to this fact and given the option to add it anyway.

When adding network services, you can choose between one and three years and then select the network beyond GLOBALINX - the company suggests you choose "no preference" but you can narrow the list down by selecting specific network(s) the customer requests. In our tests we selected an existing customer from the prepopulated test database, selected MPLS, GLO-BALINX as the carrier, a 20 percent commission, Ethernet at 10mbps, voice service, and a managed router. If you have a customer in a GLOBALINX location you can opt for hosted PBX as a service as mentioned above. At this point you are prompted to select various devices from categories such as office station or reception. You can also choose from various purchase options, and you can easily present various payment options to your customers.

One great option we liked was the ability to duplicate options so they can be changed and presented to customers for their evaluation. At this point the system goes out to the carriers and processes the orders. The quotes come back very quickly, but the processing status stays there until they are sure the price is correct.

Another great benefit of the system is customized pricing request that lets you let GLOBALINX know what you need to ensure you win the business. GLOBALINX can then lower the price based on your probability of winning the business, and it then shows the new price in the system.

Once sold, you can track the order as it moves through the provisioning system of GLOBALINX – similar to how you might track a package from FedEx.

In short, the GLOBALINX Masterstream system is quite powerful and the customizations made to it have improved the service dramatically, meaning agents can spend time selling and not performing data entry.

The new 1Price billing, which was launched late last year, is a more competitive and simplified pricing system for agents and customers.



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Roundup

IP Cameras

he market for IP cameras continues to expand at a respectable clip. The global market for video surveillance and video surveillance as a service is expected to be worth \$42.81 billion by 2019, growing at a compound annual growth rate of 19.1 percent from 2013 to 2019, according to Transparency Market Research's November study on the matter.

"By system, [the] IP-based video surveillance market is expected to grow rapidly at a compound annual growth rate of 24.2 percent during the forecast period from 2013 to 2019," according to the Transparency Market Research study. "Growing installations of IP cameras and need for surveillance cameras with better video quality is driving the demand for IP-based video surveillance systems, globally."

As noted in a Markets and Markets September 2013 report: "Security concerns and the recent spate in terrorist activities have forced governments around the world to invest in video surveillance technologies for homeland security. This has significantly boosted the growth of the global video surveillance market. Video surveillance is now migrating towards computer networks, transmitting video by IP protocol, in an Intranet or the Internet."

That's in addition to the use of IP cameras in commercial, infrastructure, industrial and residential building applications, the firm notes. "IP video surveillance has surfaced as an irreversible trend for the future," according to the report.

Here's a quick rundown of some of the companies and offerings in the IP camera arena.

Bosch Security Systems Inc. www.boschsecurity.us

Bosch offers IP cameras to meet a range of budget and image quality requirements – from good, to better, to best. The range includes affordable IP cameras for offices, schools and retail shops to highperformance cameras for the most demanding environments. All of the latest Bosch IP cameras feature unique intelligent dynamic image noise reduction, which dynamically tunes the degree of noise reduction based upon an analysis of important objects moving through the camera's field of view. When no motion is present, bit rates are minimized. When an important object is detected, bit



rates increase to capture movement with maximum details. This enables the IP cameras to deliver the highest quality images while lowering bandwidth and storage requirements by up to 50 percent, which reduces total system costs. This technology becomes increasingly important as the security industry moves toward the next generation of imaging: 4K ultra HD resolution with even higher data volumes and higher bandwidth and storage requirements. This year, Bosch introduced its first 4K ultra HD camera for video surveillance. It joins the complete Bosch IP camera portfolio, which includes HD and megapixel cameras for standard lighting, harsh lighting, and starlight cameras for low light areas.

Cisco www.cisco.com/go/physec



The Cisco family of IP cameras is comprised of a variety of cameras that range in resolution from 720p through 5MP and are available in indoor and outdoor models with a wide variety of mounting options. The key highlight of Cisco IP cameras is the added functionality above and beyond that of a typical surveillance system through a robust and flexible software solution. In a Medianet supported network, cameras can automatically configure and register themselves and also automatically help report and repair network problems.

Cisco cameras are also an open platform for applications that can be run directly on the cameras. Cisco offers video and audio analytic applications but also offers unique applications not typically found in a video surveillance system. Cisco offers a scripting application, based on the LUA lightweight scripting language, where users can create custom scripts to execute specific actions based on a catalog of triggers and events. A SIP client is also available to very easily add two-way audio communications to a Cisco IP camera.

D-Link Systems www.dlink.com



D-Link Systems offers a full line up of IP surveillance solutions for small, medium and enterprise business IT environments. D-Link's latest HD Mini Dome Network Camera (DCS-6004L) and the Full HD Mini Pan and Tilt Dome Network Camera (DCS-5615) are ideal for the business looking for a discrete surveillance solution. The DCS-6004L is a mydlink-enabled camera featuring Power over Ethernet and a compact form factor, making it ideal for monitoring areas that are hard to reach or require discrete surveillance. The DCS-5615 features high definition (full 1080p HD) megapixel resolution with 360-degree pan and 80-degree tilt control. In addition, with D-Link's Full HD Mini Fixed Dome Network Camera (DCS-6210), businesses can keep an eye on outside environments with ease. Designed for operation in the harshest of conditions, the DCS-6210 is ideal for transportation, retail and school environments. Featuring a rugged industry-certified IK10 (vandal proof) and IP66 (weatherproof) housing, the compact DCS-6210L is designed to withstand sudden high impact and extreme weather conditions.

INSTEON

www.insteon.com

Creator of the best-selling home automation and control technology, INSTEON offers smart home enthusiasts two different wireless IP cameras: one for outdoors and one for indoors. The INSTEON Wireless IP Camera (indoor) includes pan and tilt features and is available in black or white, while the silver INSTEON Wireless IP Camera (outdoor) has a weatherproof casing. Both of INSTEON's Wireless IP Cameras have night vision, motion-sensing capabilities, and the ability to send still shots via e-mail when motion is detected. INSTEON's IP security cameras were designed with functionality, simplicity, and affordability in mind. INSTEON's mobile app for iOS and Android allows users to connect with the IP cameras using their smartphones;



whether at home or on-the-go, INSTEON's Wireless IP Cameras allow you to monitor your home or business to ensure that everything is as it should be. To purchase either of the INSTEON Wireless IP Cameras, visit Smarthome.com. These products are also available from brickand-mortar retailers, including Best Buy and Home Depot.

March Networks www.marchnetworks.com



March Networks offers a portfolio of high-definition, megapixel, and standard-definition IP cameras as part of a complete IP video solution. Most recently, the company introduced a new MegaPX 360 Indoor Dome IP camera designed specifically for bank branches, convenience stores, and other similarly-sized locations. The fixed, indoor dome reduces the number of cameras you need to install and maintain. It captures 360-degree and 180-degree panoramic overviews of an entire location in 5 MP resolution – eliminating blind spots and the need to deploy multiple cameras to capture the same area from every possible angle. In addition, the 360 Indoor Dome features a digital PTZ function that makes it easy to zoom-in in 360-degree mode and capture multiple views at the same time. Because the full

Roundup

field of view is recorded and dewarped in the client software – not on the camera itself – you can always go back to recorded video to view any area at any time. The dome integrates seamlessly with March Networks Command video management software and hybrid NVRs for convenient, browser-based management. It is a perfect complement to other March Networks HD and WDR cameras optimized for installation behind teller stations or point-of-sale devices, in ATM lobbies, and other dedicated areas.

Panasonic System Communications Company of North America

http://us.panasonic.com/business-solutions/ Panasonic's weather- and vandal-resistant 6 Series i-PRO fixed dome network cameras, available in HD (WV-SFV611L) and Full HD (WV-SFV631L) models, are engineered to capture high-quality images under any lighting conditions. Featuring Panasonic's next-generation UniPhier LSI processors, 6 Series cameras deliver high-definition guality at 60 frames per second and the ability to encode up to four H.264 streams simultaneously, as well as improved compression efficiency via the new UniPhier Shadow Compression Engine. In addition, Panasonic's Enhanced Super Dynamic and Super Chroma Compensation technologies and built-in LED illumination mechanisms enable up to 130db video dynamic range, allowing for reliable performance even in the most dynamic and challenging lighting conditions, while dual SDXC memory card slots are also supported for high-capacity edge recording. Complete with new mechanical designs, Auto Back Focus and Motorized Zoom lenses for easier installation. Panasonic's 6 Series fixed dome network cameras are ideal for security applications in low-light or even no-light conditions.

Pelco

www.pelco.com

Pelco by Schneider Electric is a world leader in the design, development, and manufacture of open, standards-based IP video security cameras. With an ever-expanding portfolio ideal for any lighting condition, environment, and application, Pelco is focused on delivering the products our industry demands backed by an unprecedented commitment to customer service and satisfaction. From high-definition megapixel to standard-definition, Pelco offers the industry's widest selection of fixed and positioning IP camera systems available, delivering high-resolution image quality and full frame-rate video. The Sarix Professional and Enhanced Ranges are fixed IP cameras featuring up to 5MP resolution and include models with SureVision 2.0, which delivers the best possible image when the scene contains extremely difficult lighting conditions. Most recently, Pelco has partnered with Oncam Grandeye to offer the Evolution 360-Degree Panoramic IP camera. Designed to deliver total situational awareness, Evolution 360 is a 5MP camera available with a range of housings to allow for indoor, outdoor, surface mount and concealed applications. The Pelco IP Camera portfolio also includes the Spectra HD high-speed dome positioning camera, the Esprit fully integrated PTZ camera system, Sarix TI Thermal Imaging for low-light and nolight applications, as well as the ExSite IP explosion-proof camera for hazardous-location applications.

Toshiba Surveillance & IP Video www.toshibasecurity.com



Toshiba Surveillance & IP Video provides a comprehensive line of IP cameras that keep a vigilant eye on physical security locations. Leveraging its position as a technology leader, Toshiba is changing the face of IP video with best-of-breed cameras designed to simplify deployment in new and existing installations, to reduce costs, and to assure the absolute highest quality images indoors and outdoors. Based on open IP standards, they'll connect to any IP network including the Internet. The IK-WR14A HD IP vandal-dome camera reduces upfront installation time with its incorporation of remote optical zoom, onetouch remote focus, and a new cable management system based on PoE. Its H.264 and SRLED allow capture of 1080p video at 30 fps in challenging lighting conditions, while ONVIF means it is interoperable with third-party solutions. The IK-WR05A outdoor IP mini-dome has a wide angle, pre-focused lens and IR LEDs, making it ideal for large area surveillance. With a 110-degree viewing angle, 1080p and IR LEDs, it can cover almost all surveillance requirements. The IK-WB81A IP is a 1080p IP bullet camera with remote zoom and onetouch auto focus capabilities. With 3 advanced SRLED IR illuminators, mechanical IR filter, and wide dynamic range, it is a full-featured IP camera ready for outdoor deployments.

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By Peter Radizeski

Don't Be Like House Hunters

I'm watching House Hunters where the buyers looked at 15 homes in their budget and complain about each of them. I can relate. Due to broadband marketing and pricing, buyers get

shell-shocked with the price of dedicated Internet bandwidth.

Buyers hear 10mbps of Internet for less than \$200. However, what they don't hear is that broadband is best effort service with up to 10mbps, which experiences congestion due to oversubscription of the service. In an article about ConnectNYC, there is a reference to Verizon FiOS having "a load factor that causes it to perform like a DSL connection."

Broadband also means that over the top services like VoIP or cloud services may experience unexpected hiccups. With dedicated Internet circuits, there aren't any restrictions on the access to the whole Internet. There's no port blocking or oversubscription. Dedicated Internet is your own unrestricted pipe to the Internet.

Sometimes the construction time and cost for fiber optic pipes throw the buyers off. Construction can be as quick as 90 days and as long as a year. The uncertainty is a challenge. Buyer expectations have to be managed; the project itself also has to be supervised.

In the article about ConnectNYC, it's noted that the NYC Economic Development Corp. pays out \$50,000 to connect businesses to dedicated fiber connections to the Internet. Construction costs can easily reach that. Also, there is some hardware and preparation required at the buyer's premises to terminate the fiber optic circuit.

Once fiber is connected though, there isn't a limit on the speed of access. Buyers can receive anywhere from 10 MB to 1 gigabit to 100 gigabits of access. And this is symmetric access – 10 x 10 or 1 GB x 1 GB. Broadband is asymmetric, with the upload speed usually a fraction of the download speed. This primarily will affect data backup, large file uploads, real-time communications, and VPN connection.

Like the Realtor explaining to the buyers the comparables and home value, agents should be painting a picture of the reality of broadband Internet access vs. dedicated Internet access – especially for a company that is leveraging cloud services and real-time communications.

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



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Cloud & Data Center

The Challenges of Moving Data To the Cloud

ccording to recent study from Cloudability, 86 percent of companies currently use more than one type of cloud service. But before you rush off to the great big service in the sky, it's vitally important to understand both the pros and the cons and ask yourself all the right questions.

What Are the Challenges?

It's no secret that data is increasingly growing larger in nature. As a result companies need to pose the question: How do we manage such large amounts of data?

There are a number of different factors that drive the use and popularity of big data, including new ways of linking datasets, creative approaches to visualizing data, and improved statistical and computational methods to name a few. Another challenge that big data has brought into consideration is when do you move the data to the processor (e.g. shipping data from the cloud into a data center) vs. moving the processor to the data?

The second challenge is making sure there are processes and procedures in place to manage the privacy and security of customer data. There is a surge in compliance-related issues, including data breaches, that are toxic to corporate reputations.

Another issue is retention time. How long should you store that data? Not all data is equal. Because there is so much data, containing different information, companies have a hard time determining how long they should store and have access to certain data, and when it's okay erase it from its storage.

The cost of data storage is another consideration, so you may want to look at tiered storage. Data you need to constantly have access to requires a very fast storage platform, which is one of the most expensive types of storage platforms available. But, if you don't necessarily need access to all of your data all of the time, you can use a less expensive option.

What Are the Risks?

According to the Ponemon Institute's December 2013 Study, the cost of data center downtime across industries is approximately \$7,900 per minute. Whether it's caused by a natural disaster, human error, or IT failure, how many organizations can really afford that kind of loss?

The big risk to an organization in terms of handling its reputation is to make sure customer-facing data are pro-

tected. A high risk area is when mission-critical data and apps lack a focus on business continuity and public disaster recovery. If you are down, your reputation will likely suffer if your competition is down less or not at all. Establishing criteria for recovery time and what the right recovery point is depends on the specific applications. You can't have a one size fits all.

A business impact analysis forces organizations to look at infrastructure and realize what are the critical apps and data.

Overcoming These Challenges

Figure out the functions of the data, rather than focusing on the content of the data. Function shipping is the process of moving logical services to the physical areas of a system where they can be optimally run.

Move the functions to the cloud so they can be actionable on the data that is stored there. Moving large amounts of data to and from the cloud is a bad strategy – it's hard to move, especially big data.

For an instant recovery, ship the functions. This means having a DR solution that moves functions back to the cloud along with your data for instant recovery. You want a recovery that allows for an automated, physical-to-virtual conversion so that the physical data center server can be moved as a virtual machine into the cloud.

Choose a solution for how the data will be used. If it's longterm data storage, then you would go a different direction, such as Amazon Glacier, which is an extremely low cost storage service that provides data and backup for the infrequently accessed data, in which slow retrieval time is acceptable. If you are trying to achieve instant recovery, you will need a very different storage platform.

There are tons of standards around security, especially in the cloud. Ensure the solutions you consider are PCI compliant, and don't be shy about talking to auditors.

Finally, do a lot of testing. Test yourself to run your operations in a number of situations and test for security. You will need to test for when your app is running the cloud vs. the data center – any situation you might theoretically encounter.

John Gallagher is vice president of marketing at Quorum (www.quorum.net).

Service Control: The Obvious Answer to the OSS/BSS Conundrum

evenues from traditional telco services are eroding $^\prime$ rapidly. For example, the rapid disruption of SMS revenue streams by WhatsApp provides a scary preview of what will happen when OTT players enable voice. Service providers will be in trouble if they can't move to enabling and monetizing new services and service bundles quickly and cost effectively. While revenues are declining, it's no wonder telco CEOs say their number one frustration is slow time to market for new services that could increase their competitiveness.

There is a major problem. Today, business support systems for communications service providers are costly, inflexible, monolithic, and time consuming to change. At a time of rapid evolution in both the network and network-born services, this presents a challenge. And it's one that software providers aren't helping to solve. If they acknowledge it at all, many vendors hide behind the often-cited assumption of complexity argument with which many readers may be familiar. That is, they claim that while nextgeneration BSS may appear costly and constrained in terms of delivering fast time to market, such a reality is inevitable given the speed of service change in the industry itself, particularly where new services are ever more complex than their predecessors.

Upon close examination, the complexity argument quickly reveals itself to be a red herring. While some new mobile CSP services are indeed complex in terms of the partner chain that needs to be settled and the parties that need to be remunerated, the vast majority (possibly as much as 85 percent) are based on straightforward paradigms that require only a simple, or lean IT approach – ironically, one that is often simpler than the legacy BSS system that needs to be replaced.

The question that the CSP faces is what's the alternative and what to do about it? One emerging school of thought argues that by re-distributing some traditional functions to new locations in the BSS stack, new services can rapidly be enabled and monetized without de-stabilizing any legacy infrastructure. The new approach, which is known as service control, significantly benefits the operator by mitigating the risks commonly associated with IT change and reducing time to market.

To illustrate this, let's look more closely at a specific scenario. More and more services are based on bundles, and in such cases rating only needs to occur at the point when usage crosses such bundles. This potentially causes a split between bundling and rating where both may become independent modules within a BSS, and each can be optimized separately according to market forces.

In this scenario, counting for the bundle can be managed as a new and separate pre-step prior to billing, within the mediation module. The value of doing this includes complexity reduction, storage reduction, and reduced load on downstream pricing/rating/billing applications as the majority of the usage records will be handled in the pre-processing step, thus fulfilling an offloading function.

So why should a service control architecture be considered? For one thing, the simplification and commoditization of IT architectures are inevitable. Cost reduction is a major driver, as is the need to lower reliance on single, complex software systems. Market forces drive costs down in a modular architecture, as each module is independent and can be individually commoditized. Service control delivers on all these fronts. Given the reality that the vast majority of usage records related to common services require only simple rating, the logic is obvious. Mediation platforms, unlike other applications, are inherently flexible and therefore easy and quick to adjust and able to enable new services when they are placed in the control path.

The force of the argument explains why a growing number of operators are now adopting service control. Examples include lean counting to enable innovative services, the fast enablement of disruptive business models that tap new revenue streams from the OTT providers like sponsored data or toll-free data and rapid service enablement to secure new revenue streams with products like roaming buckets while on vacation. This interest is global; operators from Europe to Asia to North America have already deployed the service control approach.

CRM and product catalogues must become key components holding all data for customers of value. Service providers will almost certainly have a growing reliance on these systems, making them difficult to replace. In such a context, the mediation module becomes the orchestration module that manages the control and information flow between other modules. Changes should be made in this layer instead of configured elsewhere in the network layer, where change is more costly.

We see a growing number of carriers turning to a service control approach to address the increasingly familiar situation where their cost for the network is steadily decreasing while their OSS/BSS opex and capex are fixed and thus form an everlarger percentage of their total cost base. Change for the better in the form of approaches like service control is, in light of this, something we think is inevitable.

Thomas Vasen is vice president of product management and marketing at DigitalRoute (www.digitalroute.com).



DAS Crazy Distributed Antennae Systems Hit the Big Time

mall cell solutions have grabbed headlines in recent years for their ability to add capacity and indoor coverage to cellular networks. But while these offerings have gotten off to a slow start, DAS continues to make gains in large indoor environments including highend malls like Galleria Dallas, high-rise office and residential spaces, hospitals, and sports arenas.

"As we anticipated, the great small cell ramp did not happen in 2013 as many in the industry had hoped. Testing activity remained solid, but actual deployments were modest. Small cell revenue was just \$771 million last year, a sharp contrast to the \$24 billion 2G/3G RAN market," reports Stéphane Téral, principal analyst for mobile infrastructure and carrier economics at Infonetics Research.

ABI Research, meanwhile, says that the in-building market continues to grow, with DAS equipment revenues up by more than 10 percent year over year and almost \$1.4 billion being spent on in-building coverage in 2013.

While small cells and Wi-Fi have their place and grab a lot of headlines, at the end of the day if you are holding a big event for which you need communications to operate smoothly, DAS is the answer, says Téral.

"The Super Bowl could've never happened without DAS," opines Téral.

Perhaps. In any case, some folks are now referring to DAS as the fourth utility (with water, gas, and electricity as the other three).

Sizing Up the Market

At the moment, DAS is a \$2 billion worldwide market, and that's despite the big drop in investment for this kind of infrastructure in China, where DAS upgrades were just recently completed, says Téral. But the \$2 billion just represents the hardware piece, he adds, the related engineering and support services are worth another \$5 billion.

DAS hardware vendors, many of which also have professional services practices, include industry leaders Corning Mobile Access, CommScope, and TE Connectivity, as well as Axell Wireless, Comba (out of Hong Kong), Ericsson, Kathrein-Werke, NSN, Optiway, PowerWave Technologies, Solid, and Zinwave. And AT&T, one of the world's largest cellular services providers, has a large and growing DAS practice. Typical DAS solutions consist of an existing macro base station that sits somewhere within the venue; that connects to a DAS hub that propagates and/or converts, processes or controls the communication signals transmitted and received through the DAS nodes, each including at least one antenna for the transmission and reception of a wireless service provider's RF signals and one remote radio head; and on-site fiber is used to distribute signals to remote radios heads throughout the defined area.



environments including airports, convention centers, high rises (including New York's iconic Rockefeller Center), and stadiums.

DAS allows AT&T to hit the capacity demands people have with the speeds they expect, Townes says. He adds that DAS is good for large-scale venues whereas small cells (at least today) are better for "small rifle shot" applications, and that AT&T is leveraging both technologies where appropriate. DAS is also attractive because it enables a neutral host model, in which multiple cellular carriers can share the infrastructure (a good thing for venue owners such as stadiums), and because it can carry all frequencies.

AT&T treats DAS as any other node in its network, so customers have the same experience whether they're on cellular or DAS infrastructure, says Townes. Some companies use repeaters in their DAS deployments, adds Townes, but AT&T doesn't because repeaters just boost signal strength but they don't add capacity.

Townes says AT&T views DAS as being critically important to its success. His team of 1,000 employees, which was established about four years ago, does about 1,000 3G and LTE DAS deployments a year. Last year, he adds, AT&T spent seven to eight times the capital on DAS that it spent just three years ago.

Axell Wireless, which ABI Research says is one of the most innovative companies in the DAS equipment space and

is No. 3 in worldwide DAS market share, provides its equipment to more than 170 service providers around the world, including T-Mobile, Verizon Wireless, and Vodafone, says Matt Thompson, vice president of sales for the Americas at Axell Wireless.

Eighty of world's largest subway systems have deployed DAS networks with the Axell gear, which is now being used to build out a DAS solution in the Paris Metro. Axell powers the DAS network in the Chunnel, a train route connecting London and Paris. Its gear is in some of the world's large buildings, including Dubai's Burj Khalifa, the Department of Homeland Security campus, the Pentagon, and the World Cup stadiums in Brazil. Axell gear was used in indoor and outdoor environments in the 2012 Olympics. It's also used in pipeline deployments, as well as in public safety applications, a space in which Axell claims No. 1 DAS market share.

Small cells today generally only support a single band and a single operator, whereas, as noted above, DAS solutions can work on all frequencies and enable multiple carriers to come aboard.

The BYOD phenomenon, and the fact that around 80 percent of mobile data traffic is streamed indoors, also are contributing to the success of DAS, says Thompson. As noted above, cellular companies are active users of DAS. But because the BYOD craze can dilute the number of subscribers each service provider has with a company, the service provider might not think the number of subscribers in a particular location warrants a DAS build, he says. In that case, the company itself may want to make an investment in DAS.

The Latest Thing

Téral of Infonetics sees big buildings in tier one cities like Chicago, Los Angeles, New York City, and San Francisco being the next frontier for DAS and what he considers DAS-like solutions.

DAS vendors are adding Wi-Fi and small cell capabilities to their systems to capture share in this area and others, says Téral. Meanwhile, solutions like AtomCel from Huawei, Cube from Alcatel-Lucent, and Radio Dot from Ericsson, which Téral says is based on the same basic architecture as DAS, are going after some of the same opportunities.

"We are going into a mixed up jungle, and they are all going into the untapped market," Téral says.

In a jungle environment, only the strongest survive, and Axell believes its product, which Thompson calls the first point-topoint DAS solution, is giving it an edge over the competition. He says the solution works in a similar way to a Cisco routing system, by going through a centralized hub and being able to send packetized data to any remote in the system. That's beneficial, he says, because it opens the door to capacity shifting.

Typically, DAS solutions are designed to support the heaviest traffic load expected, but the Axell solution allows the base stations to shift capacity between the buildings they service, so if one location in a multi-building deployment has more capacity needs on a given day, it can shift more capacity in that direction, Thompson explains, adding that other DAS solutions tend to use a simulcast model. Capacity shifting creates savings for the DAS system owner because it means fewer base stations are needed, says Thompson, who adds that DAS base stations typically cost between \$50,00 and \$150,000 each.

Axell's DAS solution is also futureproof, he says, because if you want to add another sector/base station, and assign some remotes to that new base station, you don't have to rewire as you do with some DAS solutions. Instead, he says, you can make the change using the Axell software.

Although Ericsson has been pushing its Radio Dot solution – which is in trials with several large cellular carriers including AT&T and Verizon, and several abroad, and which will begin shipping later this year, Ericsson Networks Head Johan Wibergh in a recent interview with INTERNET TELEPHONY said Ericsson offers a DAS solution as well and called DAS a well proven technology that is applicable to certain types of buildings. About 100 buildings in Manhattan are now served by DAS, he said, but he added that Radio Dot is much more cost competitive and easier to install.



By Paula Como Kauth

Transbeam Addresses the Needs of Post Acute Partners – Stat

growing multi-division health care company with a complex IT infrastructure wanted to incorporate new data and voice services to meet its expanding needs, which included the addition of new office space. But the company needed to ensure that the new solution was able to house all of its highly confidential customer files securely. And it hoped to implement the solution in a very short timeframe and during the hectic December holiday season in New York City.

Getting Vertical

This company, named Post Acute Partners, envisioned having to hire multiple companies – including a network designer, a wireless network specialist, phone installers, an Internet service provider, a consultant, and a project manager – to do the job. It quickly began evaluations of architects, designers, and interior decorators to get the ball rolling. The problem was, the company had no idea what it really needed in terms of a solution to address its requirements.

So Post Acute Partners called on Transbeam Inc. to help it assess its goals. Founded in 1996, Transbeam provides private data networking, high-speed Internet access, integrated voice and data solutions, and managed IT services for businesses nationwide.

Transbeam consulted with Post Acute Partners to determine what its technology needs were right then and in the future so Transbeam could design a network that would meet both the customer's current technical and business requirements, and could scale as it grew.

They met with the office environment planners to design a single wired and



wireless network that could serve the unique needs of four different business units. After careful planning, Transbeam incorporated an Ethernet over Copper solution over which to deliver dedicated Internet access and private line services. Transbeam also installed a hosted PBX network running over the EoC infrastructure. Transbeam incorporated these new services with minimal space requirements at a greatly reduced cost compared to traditional PBX systems - saving the customer money and effectively utilizing its New York City office space. In addition, Transbeam wired the entire office without causing delays in the overall project.

When the physical elements were in place, Transbeam was responsible for moving Post Acute Partners' IT infrastructure, including servers and firewalls, from the old to the new office and completing a Wi-Fi installation for the entire new office.

The result was a seamless transition from the old to the new – no missed calls, no

network issues.By incorporating Transbeam's services, Post Acute gained a reliable, affordable high-speed Internet and voice solution for its businesses that will continue to scale and support the future growth of its business.

"Transbeam was instrumental in helping us move our network infrastructure for our New York City headquarters that supported four of our key divisions of our health care company," says Warren Cole, co-CEO of Post Acute Partners. "It completed this large task during the peak of the holiday season within a very short deadline date. [It] not only managed the entire process seamlessly, but was very careful with details and understanding our technology needs to help us build out our network, thinking about our future needs. Transbeam was highly reliable, and we would not trust anyone else with our network going forward."

Paula Como Kauth is director of marketing at Transbeam Inc. (www.transbeam.com).

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By Erik Linask



Network Forensics – The Forgotten Need for IT

With all the talk about cloud and virtualization taking center stage in networking, as enterprises seek to leverage the latest technologies to increase efficiency and reduce costs, many of them – 55 percent, according to WildPackets – are neglecting network forensics. With network technology and business applications evolving at such a torrid pace, it's easy to see how it can become lost in the mix, and for many, forensics seems too costly an investment.

The truth is that, when it comes to security and risk, businesses often feel they are playing from behind in a reactionary manner anyway; not realizing proper network forensics can put them in a position to proactively mitigate risk. Even a 10 percent increase in utilization from last year has largely been a reaction to recent highly publicized breaches at Target and Neiman Marcus. The truth is the flows would have to the the cloud. The truth is the cloud in a the cloud is the cloud in the cloud. The truth is the flows would have to the the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have to the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the flows would have the cloud. The truth is the cloud have the cl

Further adding to the confusion is that with so many applications and services now being moved into cloud and virtual environments, network forensics appliances still have to be deployed on-premises, which as executives seek to reduce costs, seems at first glance, counterproductive.

"People invest so much in surveillance, so why not network recording as well?" asks Jay Botelho, director or product management at WildPackets. "If there is an issue or breach, businesses can look back at what happened and quickly mitigate or eliminate any impact on the network, data, or devices."

In an era in which the network access is increasing exponentially due to an ongoing explosion of applications and connected devices, most companies have made at least some level of investment in data center visibility, but have neglected the local networks. Take the retail industry, for instance. Businesses are starting to leverage customer data in astounding new ways, even to the point of developing apps that interact with them immediately as they enter their facilities. But most have little idea of what may actually be happening with their local networks, which are often prone to misuse or breach.

In theory, forensics could be done in the cloud, but it would be highly inefficient, as traffic flows would have to pass to the cloud before accessing the local networks, or the flows would have to be duplicated to apply forensics in the cloud.

> "It has to be inexpensive to deploy locally," says Botelho. "It also has to come from the top down – the C-level executives are responsible for managing risk at the corporate level, and that's where the investment has to be made."

There is also, in many cases, a misperception that network forensics appliances aren't capable of handling the migration to 10G or 40G networks, which Botelho savs isn't the case. But, when undertaking such a migration, businesses with existing forensics tools in place don't necessarily have to replace or upgrade them immediately. In most cases, the traffic flow won't increase much at the outset, perhaps from 1G to 1.5G

or 2G, which most existing forensics products can easily handle. But, they have to start planning and budgeting for upgrades as traffic does increase.

With risk models guaranteed to increase in the age of mobility and IoT, businesses should be sure to ensure they have security policies and measures in place, but even those aren't foolproof. They need to also have the ability to track incidents when they do happen, whether it's a full-blown breach, a virus infecting the network, or simply unauthorized access of applications or data, either maliciously or inadvertently. It's the responsible thing to do.

so why not network

recording as well?"

- Jay Botelho of

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