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TMC

NGN™

Next Generation Networks

The Death of Least Cost Routing

GCS CEO Neal Axelrad

Also in This Issue:

N.C. Becomes Epicenter of Community Broadband Debate

Securing Content on Carrier Networks

Telcos Continue to Buy into the Cloud

Live Streaming Coverage of Events

with KenCast's Vazzt Video-On-The-Move (VOTM)

Vazzt Pro System

Vazzt Pro System consists of 2 Hardware units: the IBIS device for capture in the field and transmission of the live video to the studio; and the EdgeSpan appliance for reception and processing at the studio. The IBIS is a backpack on a Chip offering a professional solution to TV camera crews. It provides :

- Lightweight, 1 ½ pounds, which includes the battery (minimal weight, power, heat)
- Touch-screen operation for ease of use at critical events
- High Def (1280x720, 30 fps encoding), takes SDI input from camera
- 3G & 4G support (WiMAX and LTE), accepts up to 4 Carrier aircards for aggregation, plus on-board WiFi
- IBIS mounts right on the camera

Vazzt Turnkey System

Vazzt Turnkey System includes 2 software programs and a full delivery platform -- the VazztCaster program, typically used on a laptop, to capture and transmit live streaming coverage in the field to a hub, and the Enterprise Server program with the Mobile Video module for processing at the hub, and is ideal for public safety, military and homeland security, providing:

- Surveillance from pole-mounted cameras, moving vehicles, aircraft (up to 1,800 feet), or on foot
- The Turnkey system includes all the powerful IP networking features of the Pro System
- Provides "First Eyes on the Scene" for first responders from dashboard or handheld cameras
- Includes optional 256-bit AES encryption
- Very strong distribution options to desktop, laptop, netbooks, and most smartphones

Vazzt Service, SaaS

Vazzt Service, SaaS consists of a single software program, the VazztCaster, with hub/delivery from Vazzt. It enables Independent TV Producers to build their business without the need to invest in infrastructure for content delivery from the event, to the cloud, and out to the world on the Internet. Provides the tools the Producer needs to setup and operate a complete business:

- Support for any and all 3G/4G IP networ
- No theoretical limit on the number of IP networks that can be aggregated/bonded
- Support for HD+ and beyond (it has been used to deliver live video in 3-D to cinema screens)
- Full E-Commerce support with Pay Per View (PPV) and paid Subscription features
- Ideal companion for multiple camera operation with video switchers

KenCast, Inc., Stamford CT, USA; sales@kencast.com;
http://www.kencast.com/products/live-votm

KenCast

Editor's Notes

Broadband Atlas

by Paula Bernier

Broadband Wars was the headline of NGN Magazine's last cover story, which published in January. It talked about how big cable TV companies started out as the leaders in the broadband arena, being first to market with widespread high-speed Internet access, but how, over time, the balance has shifted between the telcos and cablecos in terms of which group offers the highest data rates and which has the most broadband customers.

Clearly, the companies that started life as cable TV companies and telephone companies are still the primary providers of broadband connectivity. Their position as owners and operators of these networks is both a huge strategic benefit for them in terms of their place in the market (although they are still settling on the business strategies to enable them to benefit from that fully) and something of a burden (given they have to continue to support broadband even when over-the-top competitors capture some of the spoils). And the rise of mobile broadband and smart devices, and the federal government's broadband stimulus program, has enabled further expansion of this opportunity for these facilities-based service providers.

But in recent months we've been hearing about moves by other players into the facilities-based broadband arena.

A little more than a year ago, friend of President Obama and Google Chairman and (now former) CEO Eric Schmidt started talking about the search giant's plan to bring 1-gigabit speeds to homes in select communities via fiber-to-the-home networks it promised to build. This FTTH network effort, which the federal government helped promote as part of its broadband stimulus program/National Broadband Plan effort, would help Google and the industry at large somehow gain a deeper understanding of broadband, it was said.

Google went on to invite U.S. communities to apply for the honor of being selected for this FTTH effort, and it reportedly received more than a thousand requests. Then, on March 30, Google finally selected a winner. And the winner is: Kansas City, Kan.

According to a Google blog, the company has signed a development agreement with the city and plans to work closely with local organizations including Kauffman Foundation, KCNet and the University of Kansas Medical Center to develop "gigabit applications of the future." Google selected Kansas City, it says, because it believes it's a place where it can "build efficiently, make an impact on the community and develop relationships with local government and community organizations."

This is clearly a move forward on the part of Google, which as a GigaOm story posted just days before the search giant made the announcement on March 30, was nearing the end of the first quarter of 2011 with no word yet on the FTTH effort. But the proof that Google is serious about this plan will come when the rubber hits the road (or the fiber hits the dirt, as it were).

Indeed, there is no doubt still more than a little skepticism about Google's true intentions to get into the business of building fiber-to-the-home networks.

GigaOm reporter Stacey Higginbotham probably spoke for many people in writing in the above-mentioned piece: "I'm left wondering if instead of wiring up a municipality, Google may have used its 'win a fiber network' contest as a threat to bring ISPs around to its way of thinking on issues such as network neutrality and tiered broadband."

The same piece questioned the credentials of Milo Medin, who Google has tapped to lead its FTTH effort, but who has less than a stellar record relative to his past broadband pursuits. (GigaOm reports that the former chairman of the California Broadband Task Force was chairman and CEO of M2Z Networks, which promised to bring free broadband to the masses, and was co-founder and CTO of the precursor to Excite@home.) **NGN**

NGN Next Generation Networks

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Cablevision iPad App Review

by Rich Tehrani

The battle to take control of TV 2.0 continues with a new application (iPad link) from Cablevision allowing customers with iPads to view about 300 channels and 2,000 videos on demand from anywhere in the house. I say in the house because you really aren't supposed to watch outside of your home according to the company's terms of service, and you must have a password-protected router, a secure Wi-Fi network and you must not stream Cablevision content via Apple Airplay to other devices. Customers must further agree to use the app for personal, not commercial, use and they can register three iPads and use two simultaneously. Support for other devices is said to be coming soon.

I asked this past January if pay TV companies including cablecos are suicidal because they were increasing prices at a time when so many people are giving up watching. So it makes sense to ask whether this app will help stem the tide of defections.

I am a news junkie – I can't get enough of it. And now I find I can set up my laptop anywhere in the house and watch news on my iPad while I work. For me, this is an invaluable application, making me even happier with my television service.

Time Warner was first with a tablet app, but reports say the company has only one-tenth the amount of content that Cablevision provides. That cable company has had to deal with angry content providers – many who feel their content cannot legally be seen on iPads and other devices without an amendment to current broadcast contracts. So we can potentially expect Cablevision to get sued or pull channels in the future. The company was sued a few years back over its DVR in the cloud strategy where it argued successfully in court that having DVRs in a data center is the equivalent of rolling them out in each subscriber home. The company likely feels that an application running on an iPad is the functional equivalent of a set-top box – the same way it believes a DVR in the home is the functional equivalent to a DVR in its offices.

Last September I wrote about what Cablevision and, by extension, the industry needs to do next; one area of improvement was the company's iPhone app, which was sluggish and didn't have a great user interface. This new application, however, is a leap forward – allowing you to set up favorite channels, browse content by genre, view on-demand content easily, get free programs and more. You can even set your DVR to record programs and see what's already scheduled for recording. But sadly, you can't watch any of the stored content on your iPad.

When you launch the application you are presented with a screen that shows you available on-demand content, live channels and a faded window with the last channel you were watching.

Unlike other cable companies' offerings, you don't even need to have Internet access from Cablevision or any Internet to be able to access this service, as you can get a special router that will stream your video content via Wi-Fi from within your home.

However, there's room for improvement. In a few hours of use the video streamed stopped a few times for no apparent reason. Closing and opening the program or changing channels were a few options that fixed the problem. I have suggested that Cablevision's remote control work over IP, and this application would ideally be configured to work with the set-top boxes in the home allowing users to quickly move content from the tablet to the television of choice. Another minor point is that when searching for content, you can press the play button even though a program is not currently playing. This causes the app to sputter and give a series of error messages.

I would like to also suggest a split screen with four windows that can be viewed at once. And, of course, an iPhone app with similar functionality can't hurt. **NGN**

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www.imsforum.org

Invitation to join the IMS and NGN Forum™ Applications Technical Working Group

Addressing the explosion in demand for new applications and revenues for fixed, cable and 3G/ 4G mobile broadband networks

You are invited to join the IMS and NGN Forum Working Group accelerating the development of IMS applications and services such as Voice over IP and Voice over LTE/WiMAX, SMS, Security, OSS/BSS and QoS. The group focuses on methods and business planning for delivery of new revenues from high quality end-user experiences that are consistent across fixed and mobile broadband networks, including 3G, 4G LTE and WiMAX.

These and other topics are scheduled for our Plugfest 9 interoperability test event in Q4 of 2010.

Technical / Business Working Group & Plugfest participation is open to all Operators, Integrators & Vendors

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http://tmcnet.com/58791.1

Powell Now Leads NCTA

Former Federal Communications Commission Chairman Michael Powell is the new president and CEO of cable's top trade group, the National Cable & Telecommunications Association. He replaces Kyle McSlarrow, who held the post for several years. Powell was nominated by President Bill Clinton to a Republican seat on the commission, and was sworn in on Nov. 3, 1997. He was designated chairman by President George W. Bush on Jan. 22, 2001, and served until March 17, 2005. Michael Powell is the son of former Secretary of State Colin Powell. Founded in 1952, NCTA represents cable operators serving more than 90 percent of the nation's cable television households and more than 200 cable program networks, as well as equipment suppliers and providers of other services to the cable industry.

www.fcc.org
www.ncta.com

http://tmcnet.com/58793.1

Broadband Subs Flock to Comcast

Comcast led the U.S. market in new broadband subscribers in 2010, adding one million net customers over the course of the year, according to a report by analyst firm Strategy Analytics. Comcast grew its subscriber rolls at nearly twice the rate of No. 2 broadband service provider, AT&T. Overall, U.S. broadband service providers added 4 million new subscribers in 2010, and 1.2 million in the fourth quarter alone. The number of new subscribers added in 2010 is identical to the 2009 figure, indicating a gradual plateauing of the U.S. residential broadband market.

www.att.com
www.comcast.com

http://tmcnet.com/58794.1

California Gets New Comcast Voice Services

Comcast has just introduced 100mbps voice and scalable voice service in California, and the bundle shows the cable provider is very serious about becoming a major player in the fixed-line voice and data business. Combining SharePoint, Exchange Server and antivirus software, Comcast Business Class Internet is aimed at companies that want to outsource much of their information technology needs. VoIP blogger and tech enthusiast Andy Abramson tells NGN Magazine: "This new effort combines the DOCSIS 3.0 cable modem standard with the acquisition of NGT by Comcast. The NGT purchase gave them a group with a deep understanding of the small and mid-size business market, who were buying telecom and data services that NGT was reselling from Level 3. This likely means that Comcast is now looking at becoming a bigger part of the business technology ecosystem, and in many ways competing with the same companies they have for years purchased massive amounts of bandwidth from. The voice for business is a SIP trunking like offer, but I would expect to see more 2.0 type voice services and applications come along soon."

www.comcast.com

http://tmcnet.com/58792.1

Forrester Forecasts Likely TV Defection Rates

It is a reasonable guess that, as people become more comfortable using online sources, they will start to use such services more regularly, creating more demand for online sources and creating additional pressure within the video delivery chain to offer more content using the online channel. The anchor for multichannel TV services will continue to be "live" events such as news, weather and sports, plus some major events (Super Bowl, Academy Awards). Forrester analyst James McQuivey argues that about half of all current cable, satellite or telco TV subscribers buy service largely for such real-time programming. But by the end of 2012, McQuirvey expects about 10 percent of cable, satellite and telco TV subscribers will have defected.

www.forrester.com

http://tmcnet.com/58795.1

TWC Eliminates Programming from iPad App

Time Warner Cable will drop a dozen cable channels from its iPad app after three big programmers complained that the company does not have the rights to distribute their content on the popular tablet device. Time Warner Cable's decision comes after News Corp.'s Fox Cable Networks, Viacom Inc. and Discovery Communications Inc. sent cease-and-desist letters warning that the cable company's iPad app was violating their programming contracts. The media companies want to extract more money from cable companies to distribute their programming on devices other than just television sets. But Time Warner maintains that its existing contracts give it the rights to do that.

www.timewarnercable.com

SECOND THOUGTS?
about the VoIP gateway decision

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Up to 30 calls	$460	SN4960/1E30V SN4960/4E30V	SN4961/1E30V SN4961/4E30V
Up to 48 calls	$750	SN4960/4E48V	SN4961/4E48V
Up to 60 calls	$850	SN4960/4E60V	SN4961/4E60V
Up to 96 calls	$1,100	SN4960/4E96V	SN4961/4E96V
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www.patton.com/voip/buyback

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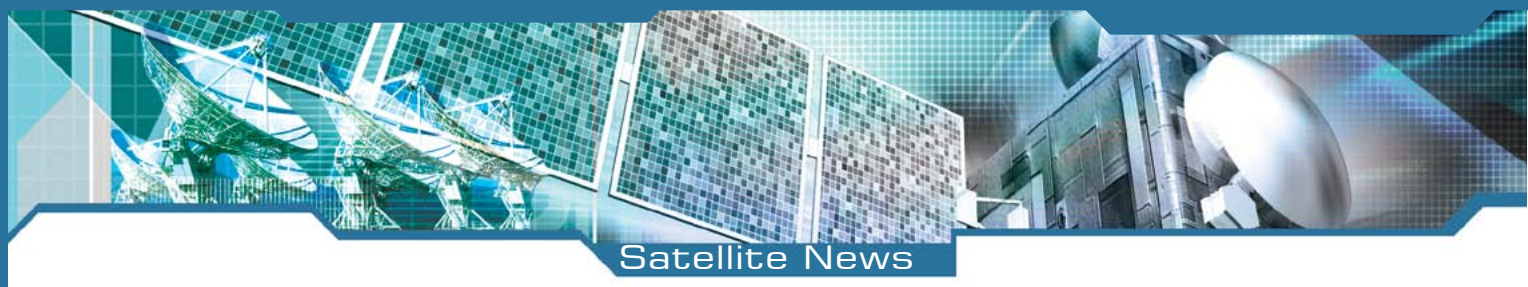

http://tmcnet.com/58785.1

State Lotteries Select Spacenet

Spacenet Inc. has been picked to provide, deploy, operate and maintain SkyEdge broadband satellite terminals to support state lotteries in Illinois and Texas. The company already operates managed satellite networks for state lotteries in Indiana, Iowa and Louisiana. The five networks, totaling almost 33,000 lottery sites, will benefit from SkyEdge's efficient bandwidth management, security and quality of service, according to the company. Spacenet, which specializes in supporting networks for the state gaming industry, optimizes the performance of lottery applications over satellite providing VSAT solutions.

www.spacenet.com

http://tmcnet.com/58786.1

Report Analyzes Satellite Space

According to NSR's newest market research report on satellite SCADA/M2M/LDR, new systems for blue force tracking, high throughput satellites and the ability to bundle broadband applications like CCTV for security purposes in this inherently narrowband market should warrant continued growth for the industry within this decade. While terrestrial competition is on the rise, specifically as coverage and cost advantages dilute some of satellite technology's advantages, innovation is leading to continued preference for satellite platforms in addressing many vital end user requirements. Whether it is securing the power grid, digitizing the oil field, safeguarding munitions, tracking friendly forces or making transportation assets work efficiently, innovation and the very nature of highly demanding end user requirements make satellite solutions indispensable and integral in the globe's key verticals.

www.nsr.com

http://tmcnet.com/58787.1

Satellite Outfits Form Hosted Payload Alliance

A group of satellite operators and satellite builders have formed an industry alliance to promote the benefits of hosted government payloads on commercial satellites. The Hosted Payload Alliance says it will serve as a bridge between government and private industry to promote communications between potential users and providers of hosted payload capabilities. Charter members of the HPA are Boeing, Intelsat, Iridium, Lockheed Martin, Orbital Sciences Corp., SES World Skies, and Space Systems/Loral. One important goal is to educate both government and the private sectors on the many opportunities for putting hosted payloads on commercial launch space craft to support applications such as communications, Earth observation, remote sensing, research and development, space situational awareness, and forecasting space weather that can affect satellite and ground operations.

www.boeing.com
www.intelsat.com
www.hostedpayloadalliance.org

http://tmcnet.com/58788.1

Satellites Offer Redundant Option

With the growing demand for remote access broadband services, satellite networks are becoming increasingly popular. Satellite links also provide a unique high-availability option as fail-over links to remote branches. Locations that would like to ensure connectivity in terrestrial network outages are utilizing satellite links to free themselves from those dependencies. With this increased popularity, satellite links are fast becoming a scarce commodity.

http://tmcnet.com/58789.1

U.K. Outfit Consolidates with Expand

Expand Networks, a provider of satellite optimization and WAN optimization for branch office consolidation and virtualization, announced it has enabled a company-wide server consolidation project at Thompsons Solicitors, one of the leading personal injury practices in the U.K. Thompsons Solicitors leveraged Expand's Accelerators to protect its branch office services from congestion, latency and delay, thereby enhancing application and data performance for Thompsons' 1,000-strong workforce, distributed in its branch offices nationwide. The solicitors firm embarked on a server consolidation strategy to simplify its IT infrastructure and reduce costs across the organization. Andrew Harris, IT operations manager at Thompsons, said, "We ran a trial to test the impact of the consolidation in just one of our offices and quickly realized that building WAN optimization into the project was a must. Serving our remote locations via Citrix, we knew that being able to optimize and control this ICA traffic was key to the whole project."

www.thompsons.law.co.uk
www.expand.com

http://tmcnet.com/58790.1

Star Taps Hughes

Hughes Networks Systems LLC, a provider of broadband satellite networks and satellite optimization services, recently secured an initial contract from Star Satellite Communications Company PJSC. Star Satellite is a wholly owned subsidiary of Al Yah Satellite Communications Company PrJSC (Yahsat), based in United Arab Emirates. Valued at more than $27 million, the contract will include Hughes providing its high performance, Ka-band HN broadband satellite system to Yahsat. This will also include gateway equipment and HN9200 and HN9400 terminals, with provisions for future expansion. A complete operational support system and back office support system solution for the YahClick service will be also delivered by Hughes as a part of the contract.

www.hughes.com

http://tmcnet.com/58797.1

Qwest is Now Part of CenturyLink

CenturyLink and Qwest Communications have finally completed their merger, getting the final state-level clearance for the deal from regulators in Oregon. The now-completed merger created the nation's third largest U.S. "telecommunications" company, operating in 37 states. If cable operators and telcos are ranked, then Comcast is the third-largest U.S. provider of voice services. Qwest is the latest acquisition for Centurylink, which in 2008 bought Embarq Corp., in 2002 bought 654,000 phone lines in Missouri and Alabama from Verizon, in 1997 bought Pacific Telecom Inc., and in 1972 bought the La Crosse, Wis. Telephone Corp.

www.centurylink.com

http://tmcnet.com/58798.1

Starz Expands Content Window for Netflix

A new decision by programming network Starz to delay the availability of new TV shows and movies to Netflix provides the latest evidence of growing concern on the part of media companies that Netflix has grown too powerful, and is another illustration of the gatekeeper role programming interests have in the growing online video business. Starz said that, beginning April 1, 2011, new episodes of its original shows, like the forthcoming "Camelot," will be delayed 90 days before being available on Netflix and a handful of other Internet services to which it licenses content. Starz added that exclusive first-run movies on the channel will be delayed as well. Meanwhile, Showtime recently said that a new deal with Netflix will no longer include access to some of its current shows, affecting series such as "Dexter" and "Californication."

www.netflix.com
www.starz.com

http://tmcnet.com/58799.1

Clearwire Mentions Bankruptcy

No investor in a company ever wants to hear the company name and "bankruptcy" in the same sentence. But that is precisely what Clearwire's interim CEO talked about at the recent CTIA show. Discussing Clearwire's current challenges, John Stanton, Clearwire chairman and interim CEO, said the firm remains focused on raising capital to continue to build out its network, but also said he didn't rule out bankruptcy as a possibility. The reason Clearwire even is talking about that possible contingency is that it is a public company and already knows it will run out of operating capital by the end of 2011 unless new investment can be found.

www.clearwire.com

http://tmcnet.com/58800.1

LightSquared Wins Best Buy Business

Best Buy Co. has signed an agreement to use the planned LightSquared fourth-generation network to support its Best Buy Connect mobile broadband service. Best Buy plans a trial in early 2012. LightSquared also recently received Leap Wireless International as a customer, but it will take many more customers of that size to generate sufficient sustainable revenue. It also must raise the money to build the network first; LightSquared is attempting to build a new 4G wireless network and a wholesale-only revenue model.

www.bestbuy.com
www.lightsquared.com

http://tmcnet.com/58801.1

T-Mobile Deal Won't Yield Industry-Changing Affects

AT&T and Verizon have been the two dominant firms in U.S. telecom since 1995, and if the former company's acquisition of T-Mobile goes through, it's not likely to change market dynamics or the strategies of either dominant firm all that much. AT&T was already committed to LTE, and T-Mobile USA's assets will simply help AT&T move a little faster, and gain important coverage. Verizon might, or might not, respond by buying a few firms in the wireless space of its own, but that will only allow it to increase its scale of operations.

www.att.com
www.verizon.com

http://tmcnet.com/58802.1

ATIS Requests Time to Address Phantom Traffic

The Alliance for Telecommunications Industry Solutions recently said it supports new measures to solve the problem of phantom traffic, but also requests sufficient time to revamp and create standardized reporting formats so that all terminated traffic can be identified and access charges paid for such traffic. The Federal Communications Commission, as part of its review of existing universal service and inter-carrier compensation programs, wants new measures whereby originating service providers reliably will provide the necessary billing information to terminating carriers. Phantom traffic, which affects revenue for telecom companies that terminate traffic without being able to bill for the completed sessions, is telephone traffic that terminates at local exchange carrier switches where the information needed for billing is missing. It is estimated that 20 percent of terminating traffic cannot be billed for this reason.

www.atis.org

by Grant Lenahan

Beyond SDPs

Years ago, The Economist famously defined a product (as opposed to a service) as "something that can be dropped on one's foot." We are in a similar definitional situation with one of the industry's most important concepts – the service delivery platform.

Every supplier claims to have one. Every operator knows they need one, and most have a fairly good idea of what they think one is. Every industry pundit has an SDP architecture. I'm here to weigh in on what exactly an SDP should be and shouldn't be, but most importantly, why. (Full disclosure: Telcordia markets service delivery solutions.) I'll draw on much more than a vendor's perspective in this task: I co-founded the TM Forum's team of Service Delivery Frameworks and chaired its SDP summit, so I've been down this road before.

SDPs have actually been with us for the better part of a decade. Their earliest appearance was in the mid-2000s as mobile operators needed add-on capability to vend software – ringtones, wallpaper, mobile pictures, and VAS messages. Legacy mobile OSS and BSS were not geared to these sorts of demand-based content, which had to be delivered in the right format for the right device, and might be part of a package. The SDP was born.

Since the original SDP's claim to fame was the quick and flexible addition of new SKUs, the industry began labeling all sorts of related products as SDPs – products that performed more flexible auxiliary rating and charging; others that allowed (in principle) internal service creation via mash-up; and content management systems that were tailored to the unique attributes of content – digital rights, various formats and transcodings, etc. All of these were in fact single products, often proprietary silos in fact, that you might be able to drop on your foot.

Somewhere in the last few years the industry made a major leap and began to think about SDPs architecturally – as a way to address fundamental change in our business.

In my opinion, the major changes are:

- The growing importance of content as a new revenue source: This extends from music to IPTV to web video to...anything.
- The emerging importance of third-party value chains, since third parties not only own most content, but many offer innovative services: If they remain over the top, both telcos and consumers lose. Telcos lose financially and consumers lose from a QOE perspective.
- To compete with the web giants (Netflix, YouTube, Google, etc.), CSPs need to innovate more quickly, and to create services that cross technology silos. In effect, service creation can no longer remain within platforms – say, your app server or messaging server – they must become CSP mash ups including charging, location, user interaction, etc.
- The emergence of handset apps as a way to deliver services: CSPs need to find a way to insert themselves in the value chain, initiatives such as WAC 3.0 with the inclusion of OneAPI can offer this essential linkage.

So those are the goals. Innovate quickly and cheaply. Create convergent services. Gain revenue in conjunction with third-party services. And enter the fray for digital content. Now, what's the implication for SDPs, and what you should buy?

Einstein once said that things should be made as simple as possible, but no simpler. In that spirit, let's cut to the chase. An SDP is a fundamental re-think of service creation. The idea of telco service creation goes back to the intelligent network. At its best, service creation has enabled innovation – witness the hyper competition and innovation in places like Latin America and India, often leveraging flexible prepaid. At its worst, service creation was a fancy toy that no one really employed. Much of the "advanced" regions went down this route. But service creation always remained within platform silos. IN had service creation. Very likely, so does your IMS app server, and your VAS messaging gateway. Maybe you can script your location system to generate alerts or respond with info. However, by and large, traditional service creation has the following limitations:

- It is not exposed efficiently to third-party use and innovation.
- Platform-to-platform communication is still achieved by costly SI and bespoke calls.
- Services are custom, and rarely re-used. Management support is completely bespoke; and traditionally has been one of the long poles in the tent.

A re-architected software innovation environment can overcome many of these limitations. Rather than generate bespoke apps, they can be composed from what are, in effect, objects (services). These can be exposed into a common composition environment that eliminates the need for bespoke SI. And a select set can be published to third parties – "the web" so that others can create end user services that take advantage of your network's capabilities – and share new revenues with you. (That's the goal, right?)

So an SDP is more of a framework, or an ecosystem, than a single product. It is also more than simply a composition environment or a web services exposure layer. It must meet the needs for real-time, fine-grained internal development, as well as the needs for coarser-grained, well-defined capabilities for public exposure. And finally, it should allow each of these objects to have associated management support (discovery, fulfillment, assurance, settlements). This last item, I'll point out, is the focus on the TM Forum's SDF initiative, now re-branded as the Software Enabled Systems Management Solution – not a pretty name, but one that's surprisingly descriptive, and one that's addressing the final frontier to efficient multi-party business models.

I encourage the industry to think about the SDP as a framework that can expand and evolve to streamline our business, make us more innovative, encourage the wealth of web developers to take advantage of our capabilities, and helps us transform our business – making change faster and cheaper – and leaving silos behind. **NGN**

Grant F. Lenahan is vice president and strategist for service delivery solutions at Telcordia Technologies (www.telcordia.com).

by Diane McCarthy

Digging In on Digging Safely

Roughly half of all Americans have done or are planning to do some type of digging project at home. Yet only a third of those call or will call to get their utility lines marked.

Before reaching for that shovel to start digging, these homeowners – and professional excavators – should call 811, the national call-before-you-dig number. 811 is the free, nationwide number established by the Federal Communications Commission in 2005 to prevent the unintentional strike of underground utility lines while digging.

April was National Safe Digging Month, designated to remind everyone that the land is made up of a complex underground infrastructure of pipelines, wires and cables. Each year there are 170,000 underground utilities damaged annually across the nation, and one out of every three incidents is the result of not calling before digging.

If an underground utility line is hit while digging, you can harm yourself or those around you, potentially be responsible for fines and repair costs, not to mention disrupt service to an entire area. (Do you want to be the neighbor who cuts the FiOS line during the big game?)

Safe digging is a shared responsibility. Even simple digging jobs can damage utility lines. Multiple utility lines can run in one area and because their exact locations may vary, it's important to get the lines marked.

Calling 811 is easy. It works this way: Call several days prior to digging to ensure enough time for utility lines to be properly marked. Advance notification requirements vary by state.

One free, simple phone call to 811 connects you to the local one-call center, which will notify all appropriate utility companies of your intent to dig.

A representative from the center will ask for the location and description of the digging project.

The center will notify affected utility companies, which will then send a professional locator to the proposed dig site to mark the approximate location of the lines.

Once lines have been properly marked, roll up those sleeves and carefully dig around the marked areas.

Verizon promotes awareness of safe digging in a variety of ways. Beyond the committee and board involvement at CGA, Verizon distributes hats, gloves and other promotional items with the 811 logo to Verizon field operations personnel who have cable locating, maintenance and emergency repair responsibilities as well as to outside plant engineering personnel who are responsible for construction, protection, location and permanent restoration activities. The company also distributes logoed items to excavators, locators, municipal employees and right-of-way providers with whom Verizon works. And, we continue to outfit our fleet vehicles with 811 bumper stickers.

Separately, but equally important, Verizon and other professional locators have the responsibility to respond in a timely manner and to accurately mark their own underground facilities when others are digging.

In addition to supporting and promoting Safe Digging Month, Verizon also participates in CGA's Damage Information Reporting Tool initiative. DIRT is a secure web application for collecting and reporting underground damage information. Each year, CGA collects the previous 12 months data and issues an annual DIRT Report. The intent of the report is to help users understand why events occur and how actions by industry can prevent these events in the future. Through root cause, trend analysis and education, Verizon and CGA hope to continuously reduce the number of underground damages occurring each year.

Verizon also works closely with the North American Telecommunications Damage Prevention Council, which has a long history of accomplishments in damage prevention, related specifically to the telecommunications industry.

In fact, each industry has a universal color that it uses to denote what is buried below. The seven colors and their associated industries are:

Red – Electric

Orange – Communications, telephone, cable and TV

Blue – Potable water

Green – Sewer/drainage

Yellow – Gas/petroleum pipe line

Purple – Reclaimed water

White – Premark site of intended excavation

Damage prevention and excavation safety only happen when all stakeholders work together. So, know what's below. Call before you dig. NGN

Diane McCarthy is senior vice president of Verizon Global Network Field Operations (www.verizon.com).

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Produced By: TMC crossfire media

by Laura Marriott

How to Achieve Success with Mobile Barcodes

Mobile barcodes are popping up everywhere. Browse through the pages of almost any newspaper or magazine, look around you at a retailer's point of sale, product packaging or even at billboard advertising campaigns lining any street and they will, in many cases, include a mobile barcode.

The integration of mobile barcodes into marketing and advertising initiatives is an ideal way for a brand to activate a campaign, making it engaging and interactive for the consumer. Mobile barcodes open up new opportunities for marketers to build lasting relationships with consumers in a targeted and measurable way. Consumers can connect with their favorite brands quickly and easily – not only participating in interactive communications at the moment of impulse to help foster the feeling that they are a valued customer but sometimes even helping them to make informed purchase decisions by providing comparative pricing, detailed product specifications and so on.

As new marketing and advertising channels become mainstream, like online and mobile, new media executions are becoming increasingly important components of any campaign. Consistent branded communications across a number of channels expand the reach and frequency of a message but also increase brand awareness. With these new media channels, it is important for brands to maximize the potential of their campaigns by ensuring all the elements are strategically planned at the outset of a campaign. For example, mobile barcodes should be incorporated as an integral part of the overall campaign and should be included as a key campaign element rather than being added as an afterthought. A plan for longer term consumer engagement should also be established as part of the overall campaign objectives so that the established dialogue can be maintained.

Mobile barcodes are becoming progressively more popular and in some cases even replacing more common calls to action like URLs, search or SMS shortcodes. Mobile barcodes fuse traditional and digital media instantaneously – all the consumers need to do is scan a mobile barcode to go to a website, access additional information or have multimedia content sent to their phones.

It is very important that the content is relevant and compelling, as consumers only opt in to receive communications when they perceive them to be of value. Whether that be in financial terms or in less tangible services based on entertainment and utility, it is important to consider how to incentivise a campaign, using fresh, relevant content, discount coupons, or exclusive information, for example, to encourage interaction. Many brands such as Calvin Klein, Nike, Sky and H&M already are successfully and repeatedly using mobile barcodes in this way in their campaigns.

The design of the advertisement is also of paramount importance for a strong consumer response. To grab attention, the mobile barcode should be positioned in a way that makes it easy to identify and scan, and placed in an area of prominence and on a flat surface. If possible, the barcode should also be printed in black and white to ensure ease of scanning by the majority of mobile devices and barcode readers.

The newness of barcodes to the mass market means that brands also need to consider placing descriptive copy next to the barcode, explaining what the code is, how it is used, how to download a reader and what it will provide them with. This will help to facilitate and encourage consumer participation.

Although putting a mobile barcode campaign together is relatively straightforward, choosing the right vendor to help guide and supply the necessary technology is an important first step. The right partner will provide solutions for mobile barcode creation, management, resolution, and data reporting, as well as ensuring global connectivity with built-in security, reliability and consistently high quality user experiences. There are also a number of different barcode symbologies available in the market, so it is advisable that marketers choose a vendor that does not use proprietary codes that can restrict the number of potential users due to the fact that they can only be decoded by a software client provided or licensed by the company that developed it. Non-proprietary codes on the other hand such as QR or Datamatrix have universal availability and can therefore be read by a larger number of mobile barcode readers.

The integration of mobile barcodes into marketing and advertising initiatives is an ideal way for a brand to activate a campaign.

Consumers will be deterred from using barcodes if they have an initial unsatisfactory experience. To ensure the greatest degree of success and ongoing consumer participation, barcodes should be tested using a variety of scanning software and mobile devices. It is also essential to ensure that the mobile pages and/or applications that are linked to codes are optimized for mobile viewing to guarantee the highest level of consumer satisfaction.

Mobile barcode interactions are also measurable, on a code by code basis, so brands can focus their spend on the most profitable channels or media locations. The ability to measure and analyze the data generated by a campaign determines success rates and ROI, helping to shape future campaigns and ensure effective consumer engagement. **NGN**

Laura Marriott is CEO at NeoMedia Technologies (www.neom.com).

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by Ken Osowski

A New Voice Being Heard?

New smartphone introductions seem to happen every week, with advanced capabilities that support thousands of applications, speed up Internet access, and even improve delivery of streaming video. It's now reasonable to question whether the primary purpose of these devices is to make phone calls. So what does this mean for mobile service providers? Is voice service as we know it a thing of the past? Will over-the-top applications using VoIP technology over commodity mobile broadband relegate circuit-switched mobile voice to an exhibit in the Smithsonian?

Analytics Research forecasts that mobile phone data traffic will increase tenfold through 2015, and this is expected to continue throughout this decade. After years of investment, the reality is that mobile broadband networks are here and growing in number. Mobile service providers are now starting the next generation investment cycle and are on a path to deliver higher data throughput while optimizing the usage of available wireless radio spectrum.They are deploying 4G networks to deliver higher speed data services than those available on 3G networks, and the focus of 4G marketing is squarely on faster data access and not voice. LTE is a 4G technology that will be built on an IMS service delivery network – it leaves behind legacy circuit switching for all-IP networks encompassing all services – data, voice and video.

SIP is the next-generation technology powering next-generation IP communications, enabling the replacement of legacy voice and messaging services. SIP, while not new, has not been widely deployed by mobile service providers to date, but this is about to change, with capabilities such as voice over LTE and the rich communications suite. The demand for HD voice will also become more commonplace in the mobile market as mobile service providers seek to differentiate their offerings from over-the-top applications. HD voice codecs are finding their way into mobile devices, which can only accelerate their usage.

Wi-Fi is another technology that mobile service providers are now leveraging to offload data from the macro network and conserve valuable wireless radio spectrum. Today mobile service providers support thousands of Wi-Fi hotspots around the world, and by encouraging subscribers to use Wi-Fi for Internet access they are not only conserving spectrum but also eliminating backhaul bottlenecks. However, this has also had perhaps the unintended consequence of enabling subscribers to use new end-to-end IP voice and video applications such as Skype and Apple FaceTime – applications that mobile service providers are not currently monetizing.

So will mobile service providers be motivated to roll out their own voice and video over Wi-Fi services in advance of new 4G services like voice over LTE? Should they use Wi-Fi-based mobile broadband to get a jumpstart on 4G service offerings, leveraging the same IMS-based service delivery architecture? If they choose this path, mobile service providers can start migrating to all-IP communications today, and more importantly participate directly in the monetization of new IP communications services and applications, including HD voice, video calling and unified communications. Voice service as we've known it for decades could soon be a thing of the past – something we'll look back on fondly like the days of the horse and buggy, but that doesn't mean we won't be using smartphones to make phone calls. It's just that the caller experience will be completely different, and calls may not even be made to actual phone numbers. **NGN**

Voice service as we've known it for decades could soon be a thing of the past, but that doesn't mean we won't be using smartphones to make phone calls.

Ken Osowski is director of service provider product marketing at Acme Packet (www.acmepacket.com).

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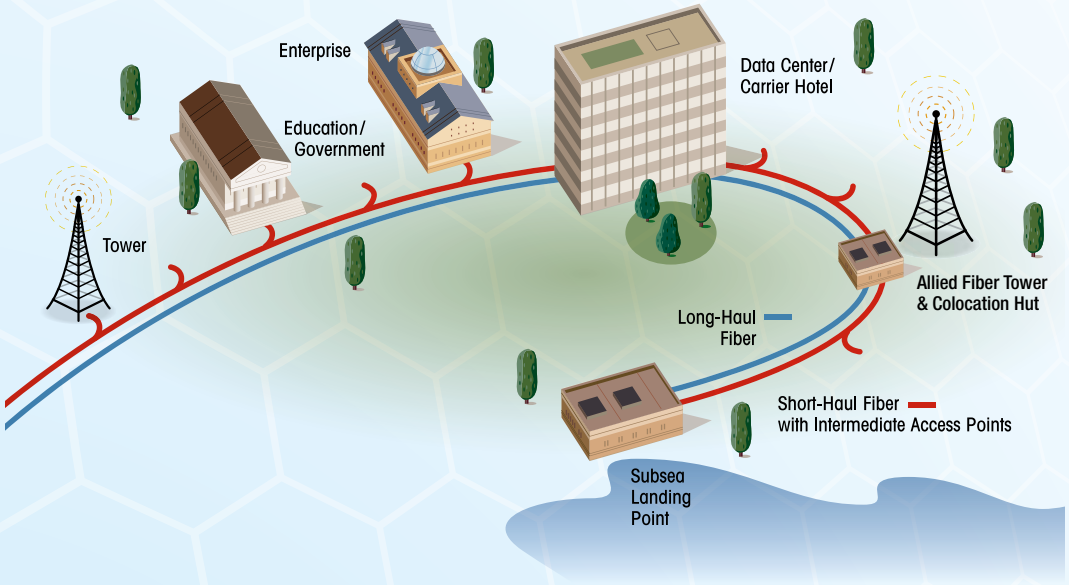

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by Brough Turner

Measuring Broadband Speed

Speed is the primary way people describe their Internet connection, but speed tests are often misleading or completely wrong. The FCC provides two tests at broadband.gov, one by Ookla (makers of speedtest.net) and one by M-Labs. But large differences are common (with Ookla giving larger numbers). What's up?

A recent paper, "Understanding Broadband Speed Measurements" by Steve Bauer, David Clark and William Lehr, reports on their review of 400,000 tests made using the M-Labs network diagnostic tool. Fully 38 percent of those tests never managed to fill the access link. This means 38 percent of the tests never measured the available speed!

Most measurement complexity comes from the behavior of transmission control protocol (the TCP in TCP/IP). TCP varies the rate at which a source transmits data in response to the network's ability to carry that data and the destination's ability to absorb it. Delaying the signals that TCP responds to reduces throughput, but the receiver's configuration can also be a limit. Remember, the first TCP/IP stacks were configured for 300bps modems and a 1.5mbps backbone.

For maximum speed, TCP needs both a large receive window at the destination and short round trip times. As speeds have increased, default windows sizes have grown, but many Windows XP systems remain in service and not all routers and firewalls implement TCP window scaling correctly, so small receive windows remain an issue. Meanwhile to deal with real world round trip times, the newest browsers open multiple TCP sessions in parallel.

One simple difference between the M-Labs and Ookla (Speedtest.net) tests is that M-Labs has servers in just 14 cities globally while Speedtest.net has servers in 680 cities across 135 countries. The nearest M-Labs server to Boston is in Atlanta, whereas Speedtest.net has servers right here in Boston. The difference is 98ms vs. 24ms, causing a significant impact on results.

There's also a structural difference between Speedtest.net and M-Labs. The M-Labs test uses a single TCP session while Ookla's Speedtest.net opens between one and eight TCP sessions in parallel in an attempt to, at least partially, get around TCP issues.

Today, Ookla's speedtest.net is more likely to reflect actual access link performance, but the M-Labs platform is more useful for researchers. M-Labs collects and stores more detailed information per test and makes all its data available to qualified researchers. And M-Labs is based on open source software, so how it works is visible and significant improvements may be contributed in the future.

Meanwhile, everyone talks about Internet speeds but few, in the ISP community or at the FCC, understand speed tests or understand which data is credible. Be careful when a politician quotes broadband data – it's quite possibly wrong. **NGN**

Brough Turner is founder and CTO at netBlazr Inc. (www.netBlazr.com).

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by Patrick Barnard

The DEATH of Least Cost Routing

Least cost routing has always been a headache for carriers due to its inherent complexity, but in recent years it's become even more challenging as a result of the dramatic increase in the number of carrier interconnects and the development of the voice peering fabric that have arisen, among other factors. Gone are the days when carriers interconnected with just a handful of other network operators – in the new world of VoIP peering they are interconnecting with dozens, sometimes even hundreds, of other operators for the purpose of capitalizing on the lowest available termination rates.

This increase in the number of interconnects – combined with the fact that carriers are constantly changing their rates – means carriers need new tools that give them the ability to change their LCR strategies quickly and easily to capitalize on the lowest cost for transport and termination. Considering that carriers today compete on such thin margins (in fact, often on the fraction of a penny), it's easy to understand why they would want to seize every opportunity to terminate traffic for less.

As a result, handling LCR the traditional way just doesn't cut it anymore: The traditional way of handling LCR is an arduous, time-consuming, mostly manual process involving teams of experts tasked with negotiating rates with suppliers; obtaining rate schedules; loading rate tables into spreadsheets to calculate and compare termination costs; selecting the best routes based on cost; manually propagating call routing tables to the switches; monitoring traffic volumes and margins through reports from the billing system; and, lastly, investigating connections which, for whatever reason, resulted in a loss, and taking action to prevent future losses. Considering the number of personnel needed to carry out all these tasks, it's easy to see how this approach results in high overhead costs. Thus, carriers are looking for ways to automate these processes and reduce overhead associated with LCR.

Also adding complexity to LCR management is the fact that today's communications networks are more heterogeneous in nature than ever before – that is to say, no two carrier networks are alike in terms of equipment used. As such, today's carriers must utilize flexible, full-featured and scalable call routing platforms that enable them to connect calls across any network, regardless of whose switches are being used.

Further changing the call routing paradigm is the fact that cost is not necessarily the primary factor that determines how a call is routed – quality is playing an increasingly important role in how carriers approach LCR, as are other factors such as jurisdiction, local number portability and peering.

All of this has predicated a major shift in how call routing is approached by carriers. In fact, the game has changed so much that some feel the term least cost routing has become a misnomer, as cost is now just one of the many criteria used to determine how calls are routed.

"Least cost routing as we once knew it is dead," proclaims Neal Axelrad, CEO of Global Convergence Solutions, a maker of next-generation call routing and rating platforms geared at tier 1 and 2 carriers. "So why do we say it's the death of LCR? Because today, cost is not the only thing carriers are looking at. Carriers today must route calls intelligently based on a range of criteria, including quality. They must have the ability to apply a greater range of business and network policies – and these policies must be applied to each and every call, on a call-by-call basis, in real time. This is what we call dynamic call routing."

GCS, which counts Vonage, KDDI and One Communications among its customers, is one of several call routing solutions providers to adopt a whole new data-based approach to call routing. The company's flagship product, Dynamic Route Manager, is a browser-based next-generation routing management system that gives carriers complete control over how every call is routed across the network by simplifying the creation of least cost routing tables and the overall management process. In addition, the company offers its Dynamic Rate Manager solution, which also is a browser-based solution that, in the words of Axelrad, " allows carriers to manage every aspect of inter-carrier relationships." That includes supplier management, CDR processing, rate deck management, credit and rich business analytics.

As Axelrad explains, the traditional approach to LCR, which involves the periodic loading of static routing tables into switches, is no longer practical because of the amount of data that now needs to be used to determine how each call is routed. In the traditional approach, large, complex call routing tables are created and then pushed out, or propagated, to all the switches on a network. The problem is, many of the next-generation and legacy switching platforms that are out there were

not designed to handle these massive call routing tables – which have grown exponentially larger (sometimes to millions of lines of codes and rate breakouts). In many cases loading these massive tables into the switches is becoming impossible; even if the switch allows these tables to be loaded, the sheer size of them is impacting switch performance.

With GCS' Dynamic Route Manager, however, all of the call routing tables reside in a database server that lives at the edge of the network. When a call hits the switch, the switch queries that database to get the routing policies that are applicable to that particular call. In this regard the solution applies call routing policies uniquely to each and every call, on a call-by-call basis, and in real time. This, in turn, gives carriers a far more granular level of control over their call routing schemas – and perhaps more importantly gives them the opportunity to capitalize on changing rates in near real time.

GCS' patent-pending approach to call routing is unique in that it utilizes the 300/302 redirect capability found natively in SIP to enable the switch to query the database and retrieve the call routing data for each and every call.

"The SIP protocol included a redirect methodology that GCS leveraged as its method of redirecting calls that hit the switch to the GCS Routing Engine for analyzing the best way to route that call given all the governing business, network and routing policies set by the carrier," explains Jay Meranchik, CTO and co-founder of GCS. "Once the optimal routing options are determined, the call is returned to the switch for completion with the routing instructions. So, what we have done is leverage the way SIP employs this re-direct methodology and used it as vehicle for acquiring routing instructions.

"This is powerful because it means we aren't performing complex analysis of large databases of rates and routes on the switch, which would place burden on the switches,"


GCS CEO Neal Axelrad

Meranchik adds. "The switches off-load that complex necessary activity to a machine that was designed for the express purpose of determining the optimal routing on a call-by-call basis, and the switch can now focus on its primary purpose – to manage media sessions."

What's revolutionary about this approach is that it means almost limitless amounts of data can be used to prescribe how each and every call is routed on a network.

"We have a developed a unique, patent-pending methodology that is utilizing SIP/300/302 to dynamically route calls. We're one of the few vendors out there who are leveraging this capability and building it to a scaleable, dependable carrier-grade architecture," says Axelrad.

Along with that approach come the "kernels of innovation" that GCS bundles into the platform. That includes a comprehensive toolset that enables carriers to acquire, manipulate, utilize and disseminate vast amounts of data in an automated real-time fashion for the purpose of accurately routing each and every call based on business policies.

"In the end, it's all about automation," Axelrad says. "In this day and age a carrier can't afford have an army of technicians in order to

properly operate its network, the margins are just no longer there. Considering the new technology that's available, this approach simply no longer makes sense. This new approach does an interesting thing for the industry – it brings down the cost tremendously in a way that margins per call are actually meaningful. While our market focus has been on the tier 1 and tier 2 carrier market, the power of our solution has enabled many service providers, new to the wholesale marketplace, – who never could have gotten into the industry before – to establish themselves quickly, because we allow them to do the technical things that they could never do before."

The GCS Dynamic solution suite allows multiple tools (and functions) that have traditionally been separated in the telco business model to be consolidated into a single solution that can be used to run practically every aspect of the business. By consolidating business policy engines, routing engines, and real-time analytic systems into a single solution, carriers can further reduce operating expenses, improve margins, and gain new levels of reliability through automation, all at the same time.

Importantly, the GCS Dynamic Route Manager interoperates with all the major switch vendors out there, including Acme Packet, GENBAND, Metaswitch, Sansay, Sonus, and Stratus – "pretty much every next- gen platform with significant deployment in the market today," Meranchik says.

Axelrad highlights a customer that has Sonus Excel switches and GENBAND SBCs deployed in its network. "With the GCS Dynamic Solutions suite they have taken all the work, all the different processes that support all those platforms, and centralized it in one database," he says. "As a result, they eliminated over 90 percent of their overhead related to LCR creation and management. The GCS Dynamic Solution eliminated all that wasted, unnecessary effort and the risks of human error – all of that was completely eradicated with the GCS Solution while providing them centralized network intelligence."

This is key for operators because it enables them to negotiate with the vendors they want, but not have to worry about how they're going to support a mixed switching environment from an operations standpoint.

Axelrad says today's carriers must start adopting next-generation switching solutions if they are to remain competitive and in business. The traditional OSS/BSS tools of the not-so-distant past no longer cut it.

"VoIP has enabled all carriers to interconnect in almost real time. Long gone are the days of 30-day to 60-day provisioning cycles – having to run cable, having to go to meet-me rooms, and having to do all those arcane, expensive and time-consuming activities just to send calls back and forth. Now it's just, give us your IP address, and we'll enter it into our softswitch or session border controller," he says. "As a result of that, carriers have gone from managing 10, 12 or 20 suppliers to managing dozens or even hundreds of suppliers. But the challenge is the sheer volume of data that you have to support and intelligently manage. The tools that were available to carriers in the past several years were unable to keep up with the pace of the market evolution. They relied too much on individuals. And, given the speed at which the market moves, the number of suppliers and amount of traffic, it's simply impossible to have human beings involved in the processing of this data. The GCS Dynamic Solutions suite turns these people into business policy managers, which allows them to be 10 times more effective than they were previously."

Recently GCS started offering its routing and billing/rating solutions on a hosted, software-as-a-service basis, which many carriers are gravitating to as a preferred delivery model. Axelrad says most customers are using the SaaS version while they migrate their switching platforms to next-gen platforms or to trial the software.

"It has worked out incredibly well for some of our providers who do not want to commit money to infrastructure," he says, adding that smaller carriers using mixed, hybrid environments in particular like the SaaS option. "They use it as a bridge to IP – and some even stay with it."

About 25 percent of the GCS business is now SaaS, but that figure is expected to grow. "We've probably tripled our hosted business in these past six months," he says.

Currently, GCS boasts 50-plus customers. Axelrad reports that as 2011 unfolds the company's success has drawn the attention of tier 1 operators. He says 2011 is shaping to be the company's best year on record, which, after its record 2010 year really is quite an achievement.

"We're now getting higher and higher up market, because we have this end-to-end solution and it all works natively together," he says, adding that the GCS team has deep roots in telecom and is well-seasoned, with the core team coming from pioneering companies such as ITXC and Nextone. "We're carrier guys, so we know exactly what you need when you run this business. We know where all the hidden issues lie, all the challenges carriers face, and how to compete in this industry. So when we provide our support with our product, the response has been no less than, 'wow these guys have a great product, and they are solving 90 percent of my back office issues.'" **NGN**

Patrick Barnard is the group managing editor for TMC, the parent company of NGN Magazine.

Check Out the GCS Community on TMCnet

The Next Gen Network Solutions Community hosted by GCS and powered by TMCnet provides a good resource to the carrier marketplace on next gen solutions that help carriers deliver the services the marketplace demands. At http://next-gen-network-solutions.tmcnet.com/ readers can find critical analysis about the challenges carriers are facing, what they must do to contend with the evolving marketplace from a technology and operations perspective, and what solutions are available to them. It also allows next gen solutions providers to weigh in on market trends and provide important insight to the community.

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by Paula Bernier

North Carolina Becomes Epicenter of Community-Owned Broadband Network Debate

Well over a hundred city-owned fiber networks exist in the U.S., bringing broadband to local residents and businesses that might not have otherwise been able to get connectivity – or connectivity at these data rates, anyway. But while communities seem to be digging these broadband efforts, some incumbent cableco and telco operators are not. And there is a renewed effort to put a stop to these grassroots initiatives. A case in point is what's happening in North Carolina.

A handful of communities already offer their own broadband to North Carolina residents, according to reports, and apparently Time Warner Cable, for one, doesn't want this kind of thing to go any further.

The cableco and its incumbent service provider allies in early April were successful in their push to get North Carolina's House of Representatives to pass legislation (in a 81-37 vote) that will make it much more difficult for municipalities to deliver broadband. Specifically, the legislation aims to block municipal entities' ability to borrow money to fund broadband efforts without voter approval and to block them from providing such services below cost or using city funds.

"Many of these [community-owned networks] were the first to bring broadband to their residents. Others offer some of the best deals available in the country."

– Christopher Mitchell of ILSR's Telecommunications as Commons Initiative

According to a piece on Think Progress, Time Warner and other incumbents, which donated more than $600,000 to North Carolina politicians in the last election cycle, got the votes of all Republicans and 15 Democrats in the state House for the "Level Playing Field/Local Gov't Competition" bill, which now moves to the state Senate.

The piece went on to quote Rep. Bill Faison (D) as saying: "This bill will make it practically impossible for cities to provide a fundamental service. Where's the bill to govern Time Warner? Let's be clear about whose bill this is. This is Time Warner's bill. You need to know who you're doing this for."

A DSL Reports piece on March 29 discusses how North Carolina incumbents AT&T, CenturyLink and Time Warner Cable have for four consecutive years "been trying to pass laws that either outright ban, or constrain the ability of individual communities to deploy fiber to local residents and businesses." The article says such efforts gained popularity a few years ago, when a dozen states passed such laws. But it goes on to comment that bills like this became less popular as opponents revealed them for what they are – an effort to protect incumbents that are unwilling to deliver broadband at the levels that communities seek.

The DSL Reports article explains: "Spearheaded by the towns of Salisbury and Wilson, these fiber efforts in North Carolina have been a very pronounced, community-driven response to limited competition and market failure. As a result, those cities now offer locals fiber to the home connections that vastly outperform anything provided by incumbents like Time Warner Cable. Local TV/Internet and voice bundles are now offered not only at speeds that outperform local incumbents, but at a reasonable price point as well."

According to a new report by the Institute for Local Self-Reliance, hundreds of U.S. communities have made substantial investments in communications networks established for use by their citizens and businesses.

"Today over 54 cities, big and small, own citywide fiber networks while another 79 own citywide cable networks," according to a statement issued by ILSR. "Over 3 million people have access to telecommunications networks whose objective is to maximize value to the community in which they are located rather than to distant stockholders and corporate executives."

To get a sense of where these networks exist in the U.S. today, visit www.muninetworks.org/community map, which includes information on community-owned FTTH and cable networks that are citywide or close to it. ILSR expects to add broadband stimulus and non-profit networks to the map in the future.

"The Community Broadband Map reveals the depth and breadth of publicly owned networks," says Christopher Mitchell, director of ILSR's Telecommunications as Commons Initiative. "Many of these were the first to bring broadband to their residents. Others offer some of the best deals available in the country." NGN

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by Paula Bernier

Securing Content on Carrier Networks

New Solutions Address App-Layer Attacks

Application-layer attacks have become the No. 1 security concern of businesses, according to a recent study by Arbor Networks.

Anonymous used application-layer attacks late last year in an attempt to bring down Amazon.com, MasterCard, PayPal, Visa and others that played a part in trying to stop WikiLeaks' online operations following the site's infamous release of U.S. government communications with other countries. But these are just some of the more high-profile instances of application-layer attacks, which Rakesh Shah, director of product marketing and strategy at Arbor Networks, says are on the rise.

Such attacks target HTTP, or web servers; e-mail servers; and DNS infrastructure, he explains. In the process they can effectively render services and websites unavailable.

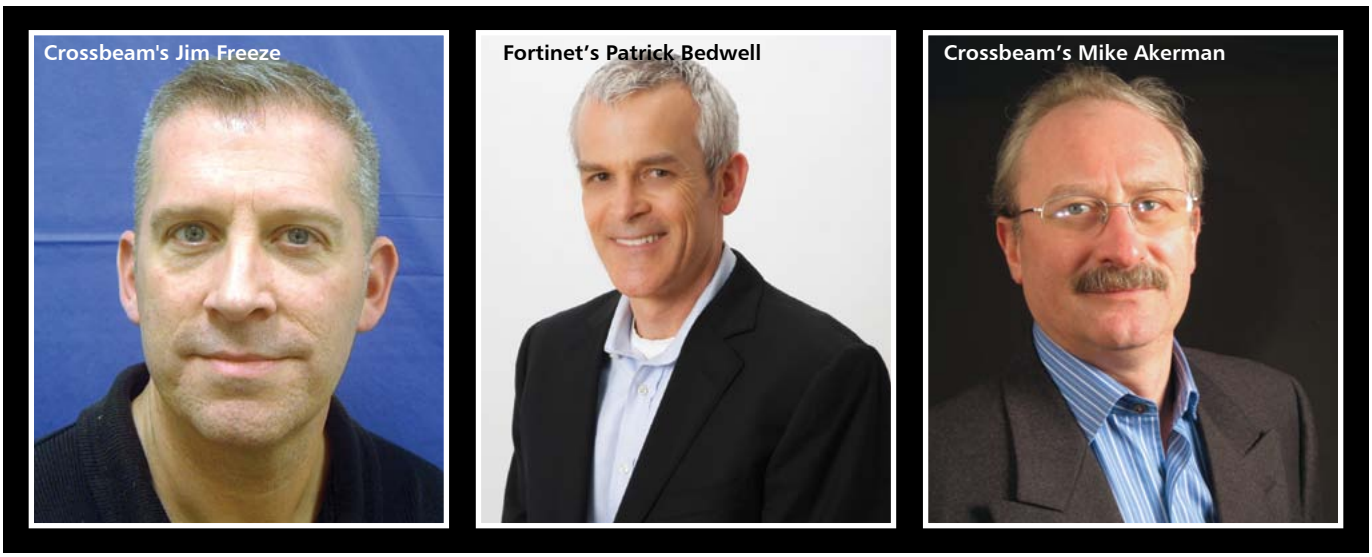
Confidentiality, integrity and availability are the three pillars of security, adds Shah, but if services aren't available due to an application-layer attack then the other two pillars are not all that relevant.

Arbor Networks has tools to detect and stop application-level distributed denial of service attacks. Shah says while some security tools, like firewalls, that claim to do DDoS actually were designed to solve other problems like confidentiality, which addresses things like preventing hackers from stealing data off servers. The Arbor Networks solutions instead look at NetFlow information and data coming from the routers at the gateways of data centers, he says. If an attack is detected, this solution cleans the infected data and reinjects it back into the data center. He adds that the company's solutions don't do traditional signature detection; instead, they look at baselines of normal traffic and if spikes are detected, they check to see if those spikes are legitimate traffic or attacks. Arbor Networks also sells an intelligence engine that collects data from a vast number of probes within a network to look for new threat types, he adds; that information is then compiled into an active threat feed.

Application-level security is "one of the emerging areas in security technology," agrees Fortinet Inc.'s Drew Savage, director MSSP Americas service provider and carrier group. Fortinet actually refers to this as application control, which Savage says is being driven by mobile data growth. Fortinet's application control solution makes securing content far more easy and efficient because it addresses security from the client, through the network and the server.

Jim Freeze, vice president of marketing and business development at Crossbeam Systems, which sells a platform used by large enterprises and service providers to consolidate their network security infrastructure, agrees that application-layer attacks are a growing problem. As a result, Crossbeam's partners are increasingly building application-awareness into their solutions, he says.

For example, Check Point has a new solution that identifies traffic at a granular level, so companies can allow or disallow certain applications that can be problematic as threats or malware, he says. Meanwhile, a new product from Actiance that recently was certified to run on the Crossbeam Systems' platform is focused on social media and financial services and other industries that use lots of social media to communicate. The Actiance technology provides content gateway services from stuff like Facebook and Twitter, which companies can't block access to, but that they need to offer security around, he says. The Actiance solution looks for abnormalities that might occur in certain social media apps, it scans



Crossbeam's Jim Freeze

Fortinet's Patrick Bedwell

Crossbeam's Mike Akerman

for malware, and it allows companies to set and enforce policies (like block access to certain stuff for certain people).

Crossbeam CTO Mike Akerman adds that one of the simplest approaches to content analysis is to use intrusion prevention, which typically involves the partial reconstruction of streams and looks for signatures that indicate an attack. But security devices that do partial reconstruction are not very aware when protocols are acting in a non-standard way, he says.

Akerman adds that last October an advanced evasion technique was introduced jointly to CERT and a appropriate vendors by Stonesoft and ICSA Labs. The technique is a mechanism to use normal protocols like HTTP, TCP, etc., in non-standard ways.

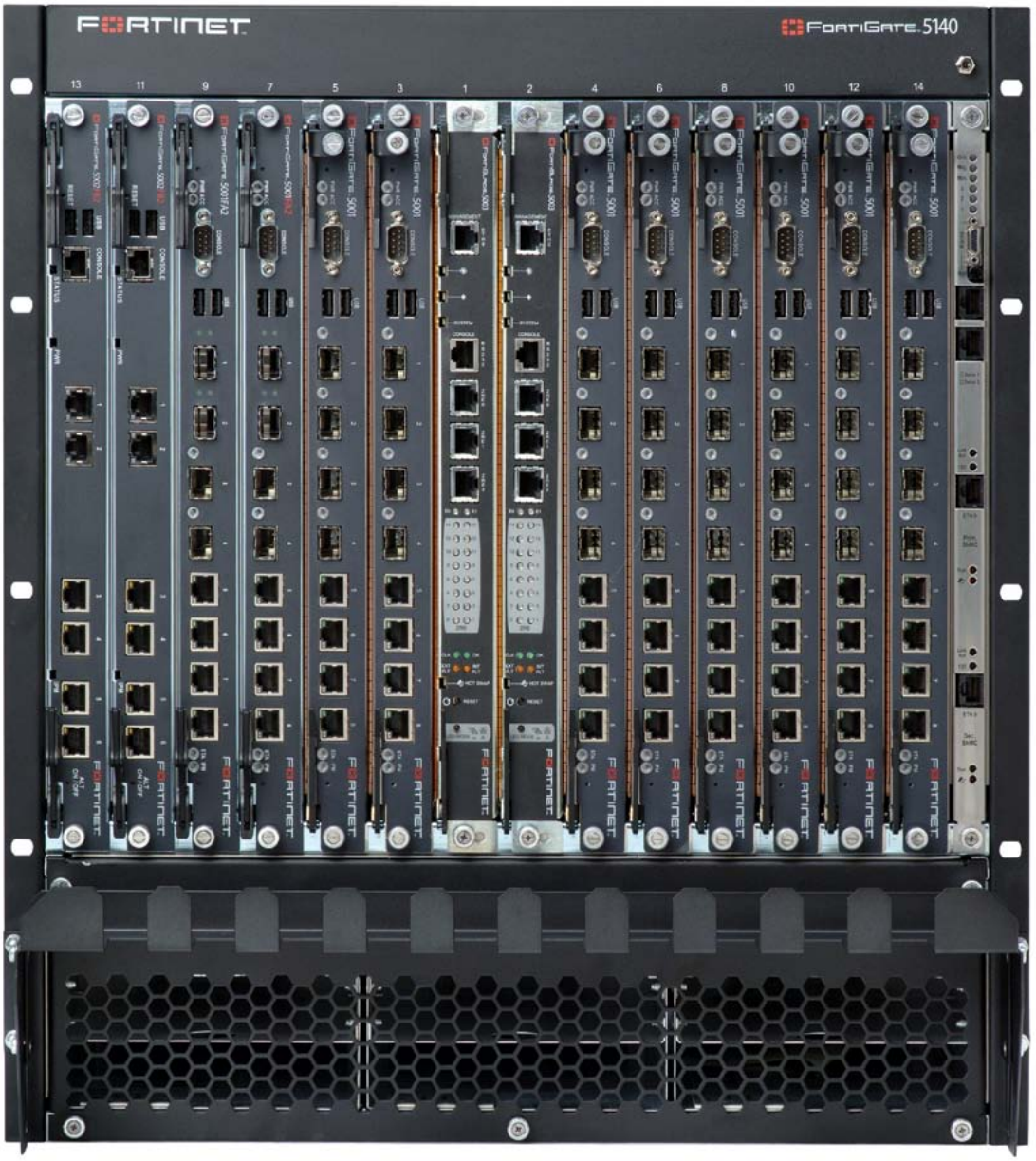
And we're going to see even more things to this affect as IPv6 adoption increases, he says, given IPv6 is lengthier and more complex.

"IPv6 is going to be a rat's nest for this kind of capability," he says.

David Aviv, vice president of advanced service at Radware, says the good news is that unlike IPv4, IPv6 has been developed with security in mind.

"The primary difference with IPv6 is that it uses IPsec as the main means of packet protection," Aviv adds. "However, the same threats, in particular DDoS and reflection DDoS attacks, will remain a persistent challenge especially during the migration phase from IPv4 to IPv6 whether the company opts for tunneling (6to4), transport relay translator, or dual-stack implementation. The key is to ensure upfront that security products such as IPS and WAF can perform the packet inspection required to identify malicious packets in the encapsulation." **NGN**

The FortiGate-5140



by Paula Bernier

Telcos Continue to Buy Into the Cloud

Fresh off from closing its purchase of Qwest, CenturyLink Inc. last month announced plans to buy Savvis Inc., a leader in the cloud infrastructure as a service and web hosting space, for $2.5 billion. The deal – which involves cash, stock valued at $40 per share, and the assumption of approximately $0.7 billion in debt – is just the latest move by a telco to purchase a web hosting company.

"It's been a pretty steady trend for just under a year," Bill Fathers, president of Savvis, told NGN Magazine in an April 1 interview, referring to the spate of telco-web hosting/data center company pairings.

Verizon recently completed its tender offer for all outstanding shares of Terremark Worldwide Inc. common stock. That $1.4 billion deal came in the wake of a bevy of somewhat similar pairings, including Cincinatti Bell's CyrusOne acquisition, Time Warner Cable's NaviSite buy, and many others.

"Telecom and cable companies are at a point where they need to join the cloud game, or be left behind," Robert Collazo, senior systems engineer at Savvis competitor Rackspace, recently told NGN Magazine. "Some are trying to catch up through acquisitions."

For Verizon, the Terremark deal means an expanded co-location footprint, Christopher Gesell, chief strategist for cloud services at Verizon Business, told NGN Magazine. The company provides a range of cloud, co-location, managed hosting, infrastructure-as-a-service and web hosting offerings.

"When you look at the co-location offering, the footprints are very complementary to each other," he said.

Gesell said that Verizon previous to the Terremark deal had a global co-location footprint that was larger than the acquired, and that Verizon has data centers in Asia Pac, Europe and North America. Terremark adds to that its data centers elsewhere in Europe and the U.S., as well as in Latin America, an area in which Verizon previously did not own data centers. Terremark also brought to the table a click-to-swipe solution that enables small and medium businesses to purchase IaaS using a credit card.

Verizon believes its significant footprint is its "special sauce" in the cloud/hosting/managed services arena. Gesell also noted Verizon's multilayer security; the fact that it operates the first SAP-certified cloud; its understanding of capacity management; and its patent-pending orchestration engine, which allows customers to see what's available and do self provisioning of resources, including virtual machines. The company is also working to develop its software partner ecosystem and expects to make moves on this front this year and next, Gesell added.

In the interview in early April, Fathers told NGN Magazine that in the short term, the Verizon-Terremark pairing was an opportunity for Savvis, which he said can continue to move ahead while the new partners have to focus on bringing together their organizations.

"That integration is painful," he said.

Bill Fathers of Savvis

Fathers went on to say that Savvis was in the thick of dozens of conversations with telcos that wanted to white label its cloud-based services. (Perhaps it's these discussions that led to its pairing with CenturyLink.) He added that the Savvis white-label service already has proven to be a success, as it represents 15 percent of the company's revenues and is used today by such big names as Bharti Airtel of India, Thomson Reuters and Virgin Business Media.

By purchasing Savvis, CenturyLink gets its hands on 34 data centers worldwide that serve customers in the financial, government, media and software verticals, as well as big consumer brands. Bank of America, Coca Cola, Deutsche Bank, Hallmark, Procter & Gamble and Unilever, and many of the world's stock exchanges, are customers of Savvis. At least 350 Savvis clients are on its cloud platform, which Gartner has named the leading cloud platform in the world, said Fathers, adding that the company has been doing IaaS for five to six years.

"If you outsource something like that that's mission critical, obviously they trust you," Fathers said. "We're not a book retailer online, and we're not a wacky start up."

"Telecom and cable companies are at a point where they need to join the cloud game. Some are trying to catch up through acquisitions."

– Rackspace's Robert Collazo

Fathers was obviously referring to Amazon in his comment about the online book retailer. By some analyst estimates of the cloud services space, Amazon web services had more than 40 percent market share in 2010.

Of course, Amazon made a splash a few years ago with its Elastic Cloud Compute platform and related services. Gartner has lauded Amazon for being a thought leader in this space and for its pureness of vision in delivering a highly automated, affordable and accessible solution on this front. The company is also known for its strong ecosystem of software partners. However, Forrester said that Amazon lacks the co-location, dedicated connectivity and servers, managed services and SLAs that many of the leaders in the cloud services/web hosting space have in their portfolios.

But then cloud computing clearly is the key growth area in this sector. Gartner forecasts that by the end of 2011 cloud services will account for almost a quarter of the overall hosting market (excluding co-location and mass-market hosting).

"Cloud computing and hosted managed services will without doubt become the primary method of IT delivery to organi[z]ations large and small," said Keith Bates, chairman of the Cloud Computing Centre.

Another leader in this space is Rackspace. It offers dedicated managed hosting, two IaaS products called Cloud Servers and Cloud Files, and various SaaS-based offers including Rackspace Email & Apps, Microsoft Exchange and Microsoft SharePoint hosting, through its nine data centers in Hong Kong, the U.K. and the U.S.

Rackspace has made a few acquisitions of its own. That includes CloudKick, a hosted SaaS platform, which provides fast setup, high availability, and monitoring from multiple Internet locations; and software developer Anso Labs, which is helping build up the OpenStack cloud computing project.

Collazo indicates there could be more to come.

"Rackspace is at scale," he says. "We are in the position to be the acquirer as evidenced by our recent acquisitions."

As the 2010 Gartner Magic Quadrant study on this sector notes: "This is a time of both great opportunities and great risks for the service providers in this market. New entrants are altering the landscape, and established hosters that previously lagged the market have been able to make bold investments in an attempt to catch, or even overtake, more established competitors. Most providers are investing aggressively in technology innovation and exploitation, and we believe that mergers and acquisitions will become more commonplace as vendors seek to decrease their time to market, obtain engineering expertise with new technologies, and build market share." NGN

by Paula Bernier

What the CenturyLink, Qwest Combo Means for Business Customers, Partners

No fooling. As of April 1, Qwest became part of CenturyLink. For business customers and channel partners of the newly joined entity, the deal means the on-boarding of the former Qwest's significant data center assets and cloud-based services to the CenturyLink product portfolio; a broader service footprint; and a bigger company with greater financial scale, which can as a result leverage that cash flow to invest in the products and services customers desire, says Christopher Ancell. The president of business markets with CenturyLink also tells NGN Magazine that the company expects to introduce new cloud and managed services in the not too distant future.

Going forward, the company's business markets group – which services both business customers and wholesale customers – will focus on three key areas, says Ancell, who previously held the post of Qwest's executive vice president-business markets group. That includes Ethernet as an access mechanism; big bandwidth; and managed and on-demand services.

The company expects to continue to expand Ethernet to more markets and major metro areas. Fiber to the cell tower also continues to be a big push for the company on the wholesale side.

Talking about big bandwidth, Ancell references the significant growth in bandwidth demand by the company's business customers, whose needs on this front will only continue to mount as more video-based applications – such as the ability for businesses to use video to demonstrate their products to customers, for example – come to the fore. To meet these needs, Ancell says, the company delivers pure private line and wavelength services. He also talks about delivering services to "pure IP-type customers" that just want 10gig IP pipes.

And, in an effort to help customers lower their capital expenditures, the company provides managed and on-demand services, including a back-up and recovery service; an on-demand IVR service; and various other services. Ancell notes that all that is part of a larger trend toward IP-enabled services that allow subscribers to consume storage, processing power or whatever resources they require on demand and pay for only what they use. With 17 hosting centers in operation, the former Qwest brought a wealth of assets to CenturyLink, which prior to the combination did not have products or services in the cloud/data center space, although it had been doing work to address business customers' managed services requirements.

All of the above will be supported over the CenturyLink network, which with the Qwest assets now includes 190,000 route-miles of fiber in 37 states. That combines local fiber from both CenturyLink and the former Qwest, as well as the former Qwest backbone network. For business customers that came from Qwest, Ancell says, this means improved access in areas of the Midwest and the Southeast.

CenturyLink's Christopher Ancell

Given wireless has come center stage in recent years, NGN Magazine asked Ancell about CenturyLink's wireless strategy. He says the company will continue its relationship with Verizon, whose wireless services the former Qwest resold. Ancell also notes the trend of wireless providers trying to get their traffic off the radio-based portion of cellular networks as soon as possible.

CenturyLink has been working to educate its direct and channel sales about the deal and what it means for them. Qwest has a history of channel partner relationships, and it will continue that, Ancell says. He adds that CenturyLink does as well, noting that CenturyLink has used the channel to reach customers down market, a strategy the company also plans to continue.

There will be no significant changes in how channel partners are compensated, trained or communicated with under the new company, according to Ancell, who says the company is pushing the message of service as a differentiator. He explains that addresses service in all its forms, including making sure service is available and delivered at the level of quality customers expect, responding to customer concerns in a timely and professional manner, and addressing the specific requests of customers during contract negotiations. NGN

by Paula Bernier

Next-Gen OSS
LTE Puts Planning and Policy Center Stage

Service providers continue to invest in their broadband networks as new customers, more connected devices, and a wide variety of bandwidth-loving applications seek connectivity. But even as these network operators pour more money into their infrastructure, there is real concern that they won't be able to keep up with demand.

Indeed, demand is booming. The latest Cisco Visual Networking Index forecasts that worldwide mobile data traffic will increase 26-fold between 2010 and 2015, which would represent a compound annual growth rate of 92 percent over the same period.

That said, it's going to be important for network operators to get a better handle on what's happening on their networks and where they are most likely to require upgrades (or, conversely, have extra resources) going forward.

Peter Briscoe, executive director of innovation and solutions in Telcordia's strategy office, says that one of the prevalent trends in next-generation OSS is a greater pull toward planning, especially in mobile networks. He says that OSS and network planning used to be two separate departments within service providers, which are in many cases now merging the groups that address these functions.

Leonard Sheahan, senior director of worldwide OSS product marketing at Oracle Communications, talks about the growing importance of planning for wireless networks as well. While mobile network operators are outlaying big capital expenditures on HSPA and LTE to increase capacity, he says, they're also struggling to predict where and how much capacity is needed. These carriers, he continues, need the tools to figure that out both before they turn up new networks and on an ongoing basis, especially as it relates to backhaul, he says. And that's a particularly difficult challenge for carriers that are deploying LTE networks, says Sheahan, who notes that the 4G technology is very different to what telcos are used to working with given it's all IP-based and typically uses Ethernet-based backhaul.

So service providers can either use their old tools as best they can, he says, or they can look for applications that understand packet-based networks and link-to-multilink services. Oracle Communications Network Intelligence, which the company announced this spring at Mobile World Congress now supports LTE, addresses these new requirements, says Sheahan.

Oracle Communications Network Intelligence reviews and analyzes network topologies and capacity upfront and can recommend changes to network, and once the network is live it can gather and offer statistics and predictions about where the network is likely to exhaust or have excess capacity. The wireline businesses-to-business group of Cable & Wireless in the U.K. is among the announced users of Oracle Communications Network Intelligence. Cable & Wireless uses the software to do costing so it can quickly and accurately put together bids for its customers, says Sheahan. Meteor, a wireless service provider in Ireland, also uses Oracle Communications Network Intelligence.

Speaking of Ireland, The NowFactory, which is also from the Emerald Isle, offers active subscriber intelligence solutions that allow service providers to see which customers are using what applications when and with what endpoints. The company offers probes that collect traffic information from mobile networks. But its special sauce is in its software applications, which give marketing; network planning and operations; and customer care folks at the operators new insight into subscriber behaviors and related traffic trends, explains Oliver Finn, marketing director.

These applications number six in all and are broken down into the three above-mentioned carrier employee interest groups. They present information in clean, multi-faceted formats – including pie charts, bar charts, matrixes, etc. That can help marketing get a better handle on who's doing what on the network so the department can more effectively customize packages for particular user groups. It can help engineers more effectively do network and capacity planning, including network investment prioritization (to ensure carrier capex is weighted most heavily to serve the highest margin customers and services). And it can provide customer care representatives with the plain language information they need about the network and subscriptions to assist customers that call in for help.

As mentioned in the previous issue of NGN Magazine, TheNowFactory has at least 31 customers, including such big names a T-Mobile and Vodafone, in 25 countries.

While these types of tools are coming into more widespread use, they're a significant departure from the back office systems that wireless network operators have employed in the past. Telcordia's Briscoe says that most mobile service providers haven't had a lot of in-depth experience with OSS because turn up in the past was pretty basic. But with LTE, he says, wireless service providers now require new platforms. For example, Telcordia recently helped Telenor put in place new tools that allow it to address next-generation network needs, including radio planning.

Briscoe goes on to say that OSS traditionally has been more centered on configuration, but now it's becoming more about real-time functions and policy, which can allow carriers to react to what's happening with the subscriber and/or the network at any given time. **NGN**

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by Paula Bernier

Entrepreneur Applies Telecom Lessons to Online Discount Site

You've heard about, and probably even used, online resources like Groupon, Orbitz and Priceline to find deals on travel, meals, spa services and the like. Well, just last month yet another online discount outfit joined the pack. It goes by the name bidmyway.com, and it's run by John Shave, the guy who built Globalcom into a multimillion-dollar business.

Shave clearly understands that the online discount business is already crowded and getting more competitive every day. Indeed, he compares it to a derby with horses lined up. But given the high stakes – hundreds of billions of dollars are spent locally, he says – running the race could result in a huge payoff.

"This is the beginning of an industry," says Shave. "Groupon has fundamentally uncovered something."

Shave is moving on the opportunity with the introduction of what he says is a unique spin on the online-to-offline commerce space, as he calls it.

He says bidmyway.com is the Priceline of online-to-offline commerce – allowing merchants to sell their wares without discounting their brands in front of the public. That means merchants don't have to expose to the potential buyers the prices at which they're willing to sell their products or services. Instead, merchants set custom profiles behind the scenes so bidmyway.com knows which bids are and are not acceptable. Those bidders whose offers are within the parameters set by the merchant get those products and services at the prices they offered. Those who don't meet the criteria, however, get a consolation e-mail that may include a marketing message for another offer.

"We're a true merchant marketing partner, and there's no need to disclose to the customer what you're willing to give your products and services up for," says Shave.

He adds that bidmyway.com also offers a "buy now" option, for which prices are exposed and customers are assured they will receive the goods and services of interest.

The bidmyway.com services will be available in 10 cities nationwide initially, with Chicago and Milwaukee the first to go live. Shave says he has six direct reps reaching out to potential merchant partners in each of the 10 markets. Additionally, bidmyway.com is working to drum up merchant support for its service via a group of inside sales reps in Chicago. If all goes well, bidmyway.com will likely to expand the sales effort to include an indirect sales program over time.

The company is also readying a mobile application called bidmybudget. Using this app, which is expected to launch around mid June, wireless subscribers will be able to enter information about what kind of food they desire and what they are willing to pay for a meal. The mobile app will then present information on bidmyway.com merchant partners that are offering deals that match these requests.

John Shave

Also on the drawing board, Shave tells NGN Magazine, is an online portal called Dr. Deals.com, which will focus on the medical space. He declined to elaborate on the specifics of what would be offered as part of this effort, but said we'd hear more about it in late summer.

Company management and an investment vehicle called Four Directions Holdings Co. that Shave controls provided the initial $1.315 million in funding for bidmyway.com. The online portal plans to complete a second round of funding in mid summer. And Shave estimates that bidmyway.com will be generating gross revenues of more than $21 million after 12 months in service, and exceed $150 million after its first 10 markets go live.

The reason bidmyway.com is going to be successful, says Shave, is because the space in which it exists has a lot of parallels with telecom, an area in which he already has shown his mettle.

Shave founded Globalcom as a Chicago-based phone services reseller in 1993 with $5,000 and sold the company, which had evolved into a facilities-based full service business service provider, 15 years later to First Communications for $58.5 million.

While Shave is clearly excited by telling his story about Globalcom, the experience was no walk in the park. In fact, he says, being in telecom has been "like going through a war."

But Shave is apparently ready get back in the battle. And he says that, as with Globalcom, the success of bidmyway.com will depend heavily upon building a strong direct sales force, modeling quotas per rep, taking care of the customer, and making sure service is always up and available. NGN

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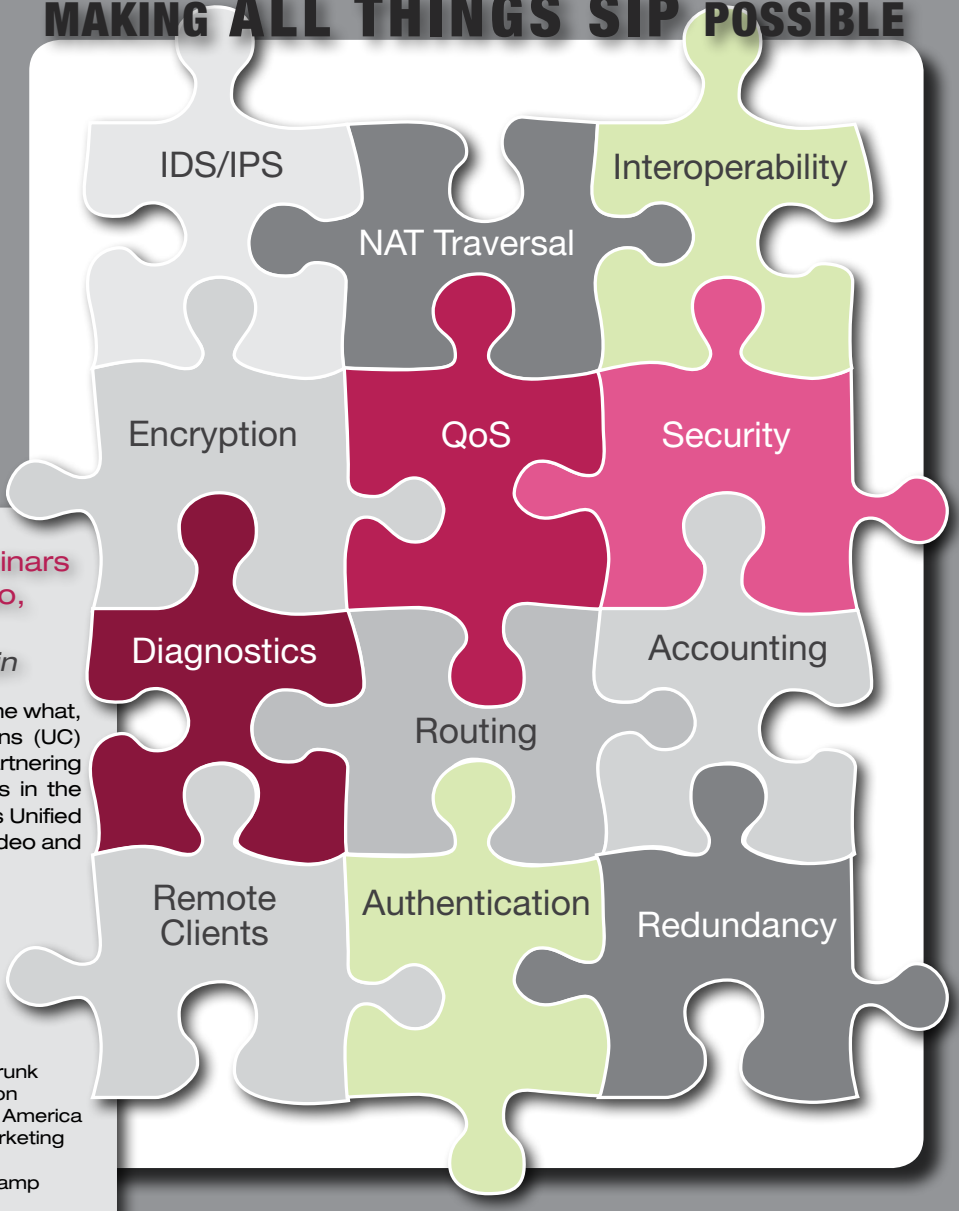

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by Paula Bernier

TMC Congratulates Winners of the NGN Leadership Awards

When TMC launched NGN Magazine in January 2009 – or, rather, rebranded its predecessor, IMS Magazine – it was with the understanding that while IMS would continue to play a major role in next-generation networks, other evolutionary technologies were also moving center stage to help shape the new world of networking.

That includes 4G wireless networks, which promise to further blur the lines between fixed and mobile applications and services. Meanwhile, we're seeing rapid growth of the software-as-a-service and infrastructure-as-a-service markets. Of course, these are just two key areas that have seen significant investment and adoption in recent months.

The second annual NGN Leadership Awards seeks to recognize the companies that personify that growth and evolution. And this year TMC and NGN Magazine recognize with these awards both companies in the area of network technology, and those that deliver services and applications. **NGN**

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by Michael Khalilian

Will Your Apps Work with New Converged IP Broadband? Find out at NGN IMS Forum Plugfest 9

As telecom service providers we are concerned how new applications will perform over the next generation networks to attract subscribers and enhance the user experience. Users have embraced new applications such as games, social media and content delivery and have periodically experienced lack of quality of service with the performance of such services.

NGN IP convergence is once again breaking out everywhere. We now have convergence of applications, content and services. Applications are downloaded onto user devices or service models are deployed where the user device only requires a browser. These processes place huge burdens on networks as many of us have seen with the introduction of the iPhone.

LTE may alleviate the problem but it is a long-term evolution, and the growth of smart devices is rapid. There is a need to know what performance is being delivered by networks and what extra capacity needs to be installed to provide a satisfactory user experience. We need to test and benchmark the performance and quality of experience of a vast array of applications over the new networks, so we can see where we are today and what remains to be done to ensure continued consumer enthusiasm for these exciting apps.

The NGN Forum Plugfest 9 – www.NGN-Forum.org/plugfest – (midyear 2011) is the event to test and verify interoperability today.

Convergence moves the network infrastructure toward commodity equipment and lower cost network provisioning. IP is the way to converge wireless as well as wireline networks. IP multimedia subsystem networks are playing a part in ensuring security and quality of service. IMS enables voice over IP, instant messaging and presence (a subscription/notification mechanism to provide information to a selected group of users). IMS is also deployed to provide rich communications suite to enable users to share content, chat using audio and video, and to be notified if their contacts are available (presence).

In addition to needing faster networks to pass more data rapidly, we also need tighter security mechanisms, more flexible billing management and protection against unauthorized network use. These enhanced mechanisms also require comprehensive testing.

Let's examine for a moment the mobile user. Accessing content, to which the user is entitled, requires authentication of mobile user devices from wherever they wish to connect to the network and download applications or content. For example, a user may find himself in a location that is covered by a roaming network. There needs to be a secure, reliable and efficient method to authenticate the user on his or her home network so that the full range of services subscribed to by the user can be accessible from his or her current location. In the future, a subscriber identity will be associated with software rather than a proprietary hardware device. So identity needs to be verified using a more robust authentication and authorization mechanism. We need to test not only that the user can be authenticated, but also that the correct authentication mechanism has been used, and if not, authentication is denied.

It is necessary to test and monitor the network to ensure that:

- network security is provided;
- users are authenticated correctly, and
- services are provided in an optimal way.

Access is controlled as some services may not be provided in the visited network while permitted in the home network, according to pre-defined policies implemented by network operators in the home and visited networks.

Only certain devices may authenticate groups of users. The flow of authentication messages or registration messages must flow through specific network elements, i.e. call session control function, to ensure subscribers' accounts are not being cloned or hijacked by a rogue user. Users must only be allowed to access the features and services they have subscribed to and each service must benefit from the quality of service that it needs to ensure satisfactory user experience and has been configured for it by the network administrator.

IMS involves complex message flows over a system under test which comprises multiple network elements – for example proxy CSCF (P-CSCF); interrogating CSCF (I-CSCF); serving CSCF (S-CSCF) and home subscriber server (HSS) plus interconnection to the legacy SS7 network. Although testing in the laboratory prior to deployment in the network is usually extensive, there may not be the necessary test infrastructure available comprising multi-vendor equipment with a range of switch software releases or implementations. Testing must be an ongoing process that extends into network operations or first office application to test with high load and traffic patterns sometimes only experienced in a live network.

For example, it would be valuable to know that an I-CSCF is not allowing services to a roaming user endpoint before that user has effectively authenticated on his or her home HSS. Conversely, it would be valuable to know that if a user has authenticated on his or her home HSS, that he or she can use the services subscribed to.

All these scenarios and more will be addressed at the upcoming NGN Forum Plugfest 9 to be held during the second half of this year. This event will be attended by all the leading infrastructure vendors. Don't miss this opportunity to test your equipment and services over these extensive next-generation networks.

In 2011 NGN Forum working group documents will develop business models illustrating different technologies such as 4G, IMS, service delivery platform, NGN IT with cloud, M2M and smart grid.

We are also working on the test plan for our next IMS Plugfest and NGN Plugfest interoperability test event, which will test out many of these business models along with others.

Registration for this Plugfest and Working Groups is now open to any service providers, integrators, vendors, apps developers, utility companies and governmental agencies that would like to participate to determine the final test plan (www.IMSforum.org/Plugfest). For additional information please contact Admin@NGNforum.org **NGN**

Michael Khalilian is president of NGN, IMS and Smart Grid Forum (www.NGNforum.org).

Contributions for this article were provided by Richard Jobson NGN Forum Plugfest PM (Teraquant), Jean-Luc Bouthemy (T-Mobile) and Leslie D'Souza (Tech Mahindra).

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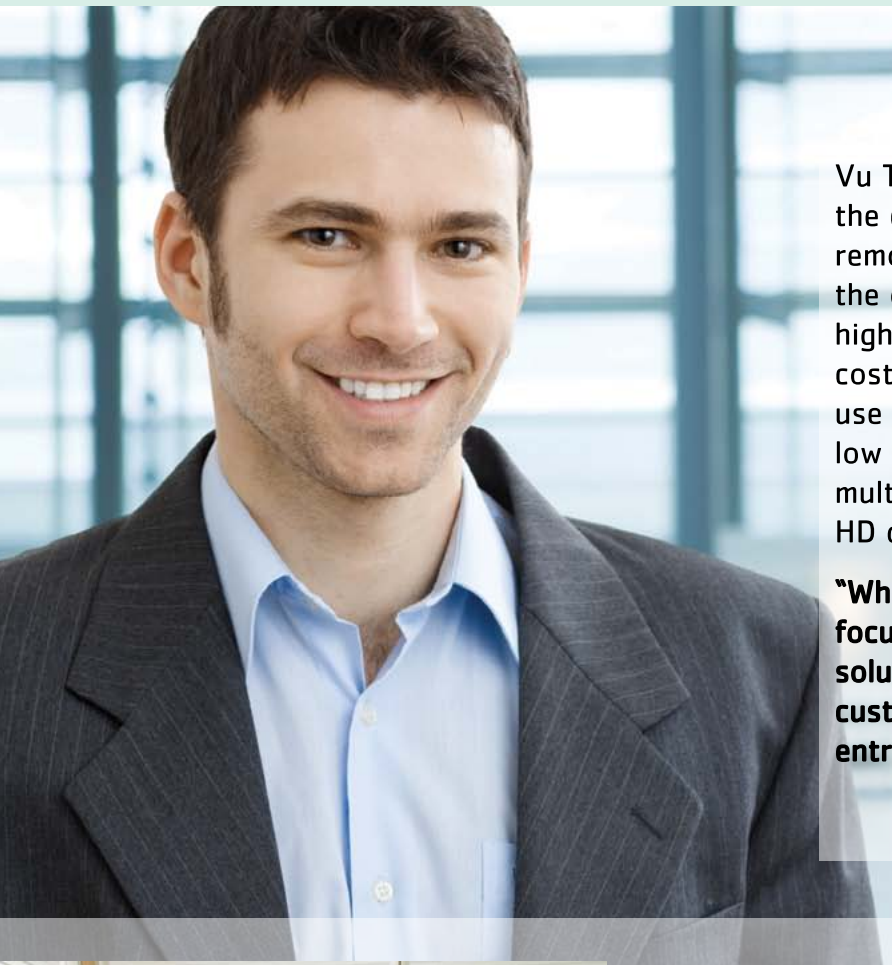

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