Volume 2/Number 4 July 2010 www.ngnmag.com

TMC

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Next Generation Networks

Globalstar Gets Its Mojo Working

Upcoming Satellite Launch, New GPS Devices, Federal Broadband Efforts Fuel Excitement

Economy Creates the Perfect Storm for Cloud Services
What Can the Industry Do to Keep Customers Rolling In?

MindTree Grows in New Directions
Helps TEMs Build Products So They Can Focus on Services

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Tony Navarra,
President of Global Operations at Globalstar

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Editor's Notes

The Broadband Stimulus – Where Are We Now?

by Paula Bernier

It's been about two months since the last of the first round stimulus awards were announced. The NTIA as part of BTOP will distribute $1.2 billion in federal funding among 82 grants. I didn't do the math on the RUS awards, but you can see the summaries for that agency's BIP awards at www.broadbandusa.gov.

So, where are we now?

The answer at press time in early June was that while round-one award winners have been named, the actual money had yet to be distributed. That's because NTIA and RUS were (and likely now are still) working with awardees to dot the i's and cross the t's on the documents required to process the funds.

But the process is moving things forward. And, wisely, many of the winning applicants simultaneously have been selecting equipment suppliers, seeking loans for their matching funds, hiring folks and otherwise getting ready to ensure they can get the broadband ball rolling as soon as possible.

For example, TEC, the holding company for several telecom service providers in the Southeast, recently announced its selection of ADTRAN gear for its broadband stimulus upgrade project at Bay Springs Telephone Co. TEC received a RUS award in the first round to upgrade its transport network and push fiber deeper into the Bay Springs Network for enhanced broadband delivery.

Meanwhile, some other first round award winners have applied for bank loans and added staff in efforts to keep things moving forward. That is expected to be especially important for awardees that are building broadband networks that involve digs and will be located in parts of the country in which the earth freezes during the fall and winter months.

However, while the federal government has not been particularly quick in its dispersal of the broadband stimulus funds, the good news is that we can soon expect to see a real impact in terms of spending and broadband expansion given these monies are likely to be released very shortly – possibly even before this issue makes it to print and onto the TMCnet Web site.

Another bit of uplifting news is that while we've all been waiting for the broadband stimulus to make Internet access more widely available and high-quality in rural and other markets, broadband penetration has continued to climb.

According to digital measurement firm comScore, broadband penetration in rural markets has seen double-digit growth in the past year as regional providers capture an increasing share of the market in these areas.

Leichtman Research Group Inc. says the 19 largest U.S. cablecos and telcos, which represent about 93 percent of the market, added more than 1.4 million high-speed Internet subscribers in the first quarter of 2010. That means there are 73 million subscribers between them – with cable companies having 40.2 million broadband customers and telcos having nearly 32.9 million subscribers.

But for all the talk about the need for more, and higher-speed, broadband, it's interesting to note that most folks haven't a clue as to what speeds they're actually getting from their providers.

Indeed, the Federal Communications Commission last month released the results of a survey on the consumer broadband experience, which found that 80 percent of U.S. broadband users don't have a handle on the speed of their broadband connections.

To help consumers understand the speeds they're getting, the FCC is asking for 10,000 volunteers in the U.S. to be part of a study to measure home broadband speeds. The selected participants of the effort, which the FCC is doing in partnership with SamKnows Ltd., will get special hardware in their homes that will measure the performance of their broadband connections.

But whether or not people know the specifics of their broadband performance is less important, in my opinion, than how they perceive the experience. The customer's experience, of course, hinges on not only the speed of the access connection, but also the latency (which can be impacted by a wide variety of factors from the end user to the network backbone), the application performance and the cost. **NGN**

NGN Next Generation Networks

Rich Tehrani, *Group Publisher and Editor-In-Chief* (rtehrani@tmcnet.com)

EDITORIAL

Erik Linask, *Group Editorial Director* (elinask@tmcnet.com)
Paula Bernier, *Executive Editor, IP Communications Group* (pbernier@tmcnet.com)
Erin E. Harrison, *Senior Editor* (eharrison@tmcnet.com)

TMC LABS
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ART
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Sales Office Phone: 203-852-6800

Anthony Graffeo, *Executive Director of Business Development Central/Eastern U.S., Canada, Europe, Israel, Latin America,* ext. 174 (agraffeo@tmcnet.com)
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Jim Spangenberg, *Director of TMCnet Live Web Events,* ext. 211 (jspangenberg@tmcnet.com)

Editorial Offices: 203-852-6800 Customer Service: For all customer service matters, call 203-852-6800.

SUBSCRIPTIONS
Circulation Director, Shirley Russo, ext. 157 (srusso@tmcnet.com)
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A Technology Marketing Publication,
River Park, 800 Connecticut Ave., 1st Fl.
Norwalk, CT 06854-1628 U.S.A.
Phone: (203) 852-6800
Fax: (203) 853-2845, (203) 838-4070

A Second Look at Google's Apps Marketplace

by Rich Tehrani

Recently I wrote about the Google Apps Marketplace and how it brings a walled garden approach to the desktop, and my thesis revolved around the idea that a few years back you could download any piece of software you wanted without having to go through a gatekeeper. I am not a fan of censorship of any kind; after experiencing a world where I could download any application to any computer I own, I am now seeing that this situation has changed for the worse.

I am fine with the idea that Apple likes to protect its users by screening for malicious software, but many of my readers tell me they are very uncomfortable with the censoring of apps that Apple deems offensive, sexually suggestive and/or competitive. I also have complained endlessly about not being able to use Flash on the iPad, and I remain terribly frustrated whenever I encounter a site I cannot see properly because Steve Jobs made the conscious decision to exclude this software.

So I was obviously concerned about the fact that the Google Apps Marketplace requires approval from the search company, and I wasn't bashful mentioning it. From my perspective, the Apple model of censorship was expanding to other platforms, which for me raised an alarm. But recently I had a chance to catch up with Scott McMullan, who is the Google Apps partner lead at Google Enterprise, to learn more about Google's approach to the software market, and I was pleasantly surprised with the conversation.

McMullan explains the goal of the company's program is to reduce friction for customers – and the low $100 fee for approval helps to keep out phishers, spammers, etc. In addition, he explains the sole reason for an approval process is to ensure new apps do allow a single sign-on.

When I described my concern about how Apple is getting more and more closed with its various programs from apps to ads, McMullan replied, "We are actively not doing what you said." He adds that: "That is an environment we are trying to escape."

It is worth noting the company is not currently checking new applications technically for malicious intent, but it does look at the reputation of the publisher.

Another point he emphasizes is that the approval process is a nonissue. In other words, the company is not looking to be a censor, it is instead looking to help apps interoperate.

One of Google's goals is to use the most open path, allowing the developer to use the same framework in other contexts. This seems to be the opposite of the Apple approach, where the company looks to have developers use unique tools specific to the iPod/iPad/iPhone environments.

In the CRM, OSS, VoIP and UC spaces there have been billions of dollars spent on integration in the past decade or so, and having seamless integration between apps without the need for teams of integrators means that smaller companies will be now able to leverage integrated solutions that bridge disparate software categories – something once available only to the Fortune 1,000. Moore's Law has allowed the same sort of thing to happen in computing, and IP communications has allowed SMBs to now have access to productivity tools that were once the exclusive domain of corporate giants.

I wonder if app interoperability isn't the most important benefit of this transition. What massive increases in productivity can we expect to reap as this move continues? McMullan mentions we are in the early days of app integration and cloud-based delivery models. I agree. Just imagine how much faster and more efficient companies of the future will be as they use a wizard to solve their software needs rapidly by checking boxes on a Web browser. This may be really bad news for high-priced consultants, but for companies of all sizes, it means there will be opportunity to do more with less.

So is this a walled garden approach? Somewhat. But if Google isn't restricting apps based on content then I am not very concerned. NGN

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Group Editorial Director, **Erik Linask**
Senior Editor, **Erin Harrison**
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In Every Issue

Columns

Feature Articles

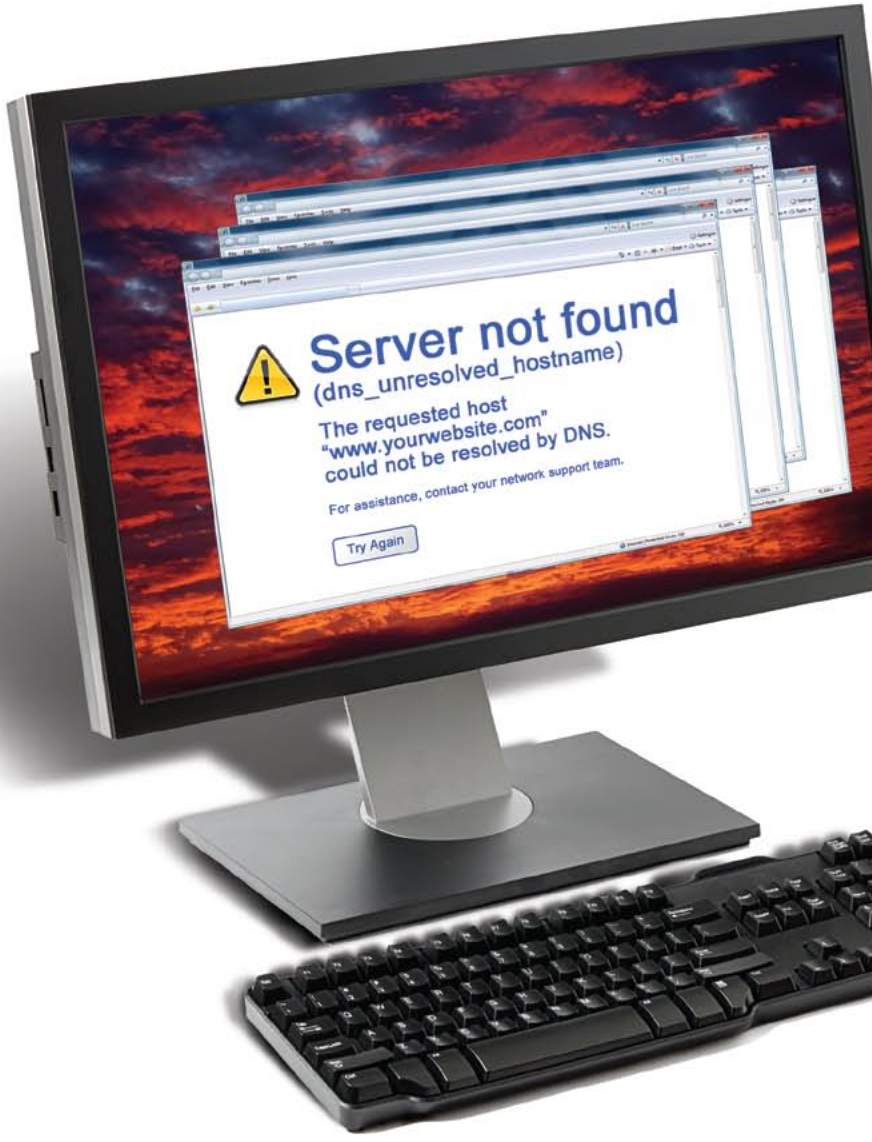
THE DNS ZONE

Everything current. Everything relevant. Everything DNS.

When your DNS is down...

it doesn't matter if your servers, storage, and network are up...

your Web site is not available!



And yet for many IT and business professionals, DNS is a mystery.

Unravel that mystery by visiting The DNS Zone, a global online community where you'll find podcasts, feature articles and breaking industry news describing how DNS impacts:

- **Internet Security**
- **Web Traffic Management**
- **Business Continuity**
- **Web Performance & Testing**

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HTTP://DNS.TMCNET.COM

http://tmcnet.com/30699.1

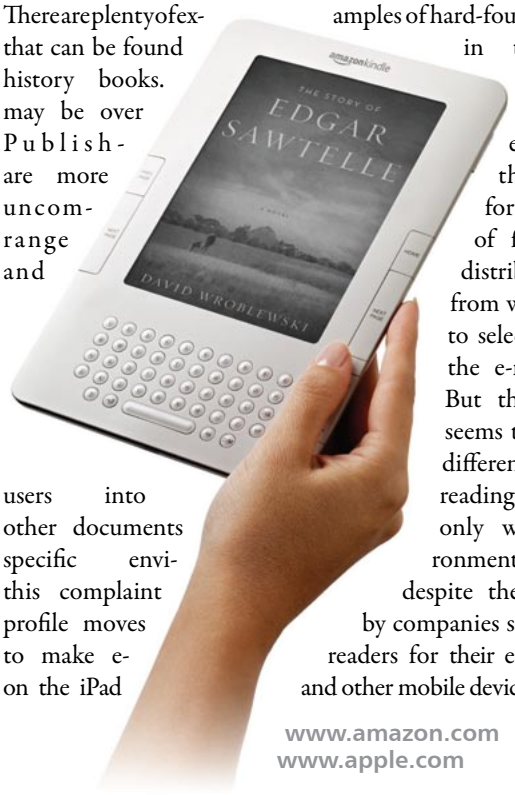
Cincinnati Bell Buys CyrusOne

Cincinnati Bell and ABRY Partners plan to acquire the data center operations of CyrusOne for $525 million. CyrusOne, which sells colocation and data center services to Fortune 500 companies, is the largest privately held data center operator out of Texas. It has seven data centers in Austin, Dallas and Houston, totaling 163,000 square feet of data center capacity. Cincinnati Bell's Technology Solutions segment, with CyrusOne, will have 609,000 square feet of data center capacity in 17 facilities. The growth in cloud computing was a key driver of the deal.

www.abry.com
http://cincinnatibell.com
www.cyrusone.com

http://tmcnet.com/30700.1

Publishers Call for E-book Standard



There are plenty of examples of hard-fought format wars that can be found in the high-tech history books. The next one may be over e-book formats. Publishers reportedly are more than a little uncomfortable with the range of format options and distribution options from which they have to select as the era of the e-reader unfolds. But their main beef with this complaint is that these different formats lock users into reading books and other documents only while within a specific environment. They make profile moves despite the recent, high-to make e- by companies such as Amazon on the iPad readers for their e-books available and other mobile devices.

www.amazon.com
www.apple.com

http://tmcnet.com/30720.1

AT&T Pulls the Trigger on Metered Mobile Data

Last month AT&T went live with metered data packages for new subscribers to its mobile data services. It's a move that AT&T says will save money for the majority of its customers. Current customers can continue to use the company's $29.99-a-month unlimited data plan, but new customers will have to use the metered plan, which starts at $15 a month for downloads of 200 megabytes of data - the equivalent of approximately 400 Web pages, 1,000 e-mails with no attachments, 50 online photos or 20 minutes of video, according to AT&T. If users exceed the 200 megabytes usage they will automatically be charged another $15 for another 200 megabytes.

www.att.com

http://tmcnet.com/30713.1

LTE Will Spur Different Pricing for Verizon Wireless

Verizon Wireless expects to offer tiered monthly data plans on its first LTE networks, which are expected to go live in 30 to 40 metro markets later this year. That's a change from the unlimited access it offers today on its 3G network. The new tiers are likely to offer buckets of data by the megabyte and could potentially allow customers to share those megabytes across their multiple wireless devices, Verizon Wireless CEO Lowell McAdam indicated in a recent report.

www.verizonwireless.com

http://tmcnet.com/30705.1

GSMA: Most LTE Operators Embracing HSPA Iterations

The share of mobile operators worldwide with plans to move from HSPA to HSPA+ and then on to LTE accounts for 85 percent, according to the GSM Association.

www.gsmworld.com

http://tmcnet.com/30703.1

Broadband Operators Grow Value-Added Revenues

A new report from Point Topic reveals that consumer broadband value-added services revenue grew by 30 percent last year. The subscriber numbers of such services, meanwhile, increased 13 percent in 2009. The leading services were IP telephony, security, online gaming, IPTV and online music. The "Consumer Broadband Value Added Services" report indicates the run rate for such revenues ascended from $39.6 billion to $48.9 billion during 2009 – a better improvement than that for consumer broadband lines, which grew 14 percent, from 366 million to 417 million from Q408 to Q409.

www.point-topic.com

http://tmcnet.com/30701.1

Cableco Seeks Wi-Fi Ticket to Ride

Cablevision Systems Corp. is setting the stage to bring Wi-Fi to New York City train riders. The nation's fifth- largest U.S. cable operator has put in a proposal to the Metropolitan Transportation Authority requesting permission to offer the wireless service to Long Island Rail Road and Metro-North commuters. Cablevision expects to offer Wi-Fi on the trains for free to its high-speed Internet subscribers. Those who are not Cablevision broadband customers will be charged a "reasonable" fee.

www.cablevision.com

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But, one size does NOT fit all! As such, TMCnet has joined together with one of the industry's leading IP communication service providers, 8x8, Inc., originator of the 8x8 Virtual Office service, to educate the business communities on the advantages and efficiencies of Hosted VoIP phone service.

VoIP Services for Today's SMB

hosted-voip.tmcnet.com

http://tmcnet.com/30702.1

VoIP Pioneer Unleashes $9.99 Vonage Lite

Vonage has rolled out a brand new calling plan for consumers who don't use a lot of minutes and want to save. The plan, called Vonage Lite, sells for $9.99 and is available online only. It offers customers 200 minutes of residential calling to the U.S., Canada and Puerto Rico. Each additional minute goes for 5 cents.

www.vonage.com

http://tmcnet.com/30704.1

Partners Unveil Google TV

Google TV last month was announced by Google and its partners on the effort, Adobe, Best Buy, DISH Network, Intel, Logitech and Sony. Through the new service, Google will be able to combine content with intelligent search and use Android and Chrome as the underpinning platforms. That content will include repurposed YouTube content. And the Google TV navigational tool will enable users to search DISH Network, Internet and stored DVR content simultaneously. Sony TV sets using Intel technology and running the Google TV software are planned for launch later in the year.

www.google.com

http://tmcnet.com/30708.1

Wireless Operator T-Mobile Undergoes Management Transition

T-Mobile's seven-year CEO, Robert Dotson, is stepping down. Philipp Humm, a veteran of the mobile space and former CEO of T-Mobile Deutschland, will be chief executive designate starting July 1 and CEO beginning in February 2011. The management transition will be complete by next May. The change is widely being viewed as a positive development for the company.

www.t-mobile.com

http://tmcnet.com/30709.1

Space Systems/Loral Tapped to Provide New Telesat Satellite

Telesat, the world's fourth largest fixed satellite services operator, will procure from Space Systems/Loral a multipurpose satellite for launch in the second half of 2012. The new satellite, called Anik G1, will carry 16 transponders operating in the extended Ku-band for Shaw Direct, which sells DBS services in Canada. Anik G1, to be co-located at the 107.3 degrees West Longitude orbital location with the Anik F1R satellite Shaw Direct presently uses, will allow Shaw Direct to expand significantly the video content it offers throughout Canada.

www.ssloral.com
www.shaw.ca
www.telesat.ca

http://tmcnet.com/30711.1

Infonetics: Carrier Capex Dropped 5.9% in 2009

Worldwide, service providers spent $295 billion in 2009 on telecom and non-telecom capital expenditure projects, according to Infonetics Research. That's 5.9 percent less than they spent in 2008, but a smaller drop in carrier capex than many expected in light of the recession. The report also reveals that carriers reduced investment in network infrastructure by 8 percent in 2009, with the cuts in IP voice infrastructure, optical network equipment, video infrastructure, and IP routers. At 19 percent, mobile infrastructure spending made up the largest portion of all network infrastructure investments made by service providers.

www.infonetics.com

http://tmcnet.com/30712.1

Global Wireless Customers at Verizon Dig VoIP

Verizon Global Wireless customers used 200 percent more VoIP time in 2009 than in the previous year. Since the company launched its VoIP portfolio 10 years ago, it's seen steady growth reflecting customer desire for reliable, cost-effective IP voice services, according to the company. As a result of the interest, Verizon has added new applications such as short-duration calling systems for call centers and mass notification systems. The company also has announced plans to add more robust VoIP network interfaces in Europe later this year.

www.verizon.com

http://tmcnet.com/30714.1

GENBAND Closes on Nortel CVAS

It's a done deal. GENBAND has acquired substantially all assets of the Nortel Carrier VoIP and Application Solutions Business. With this acquisition, GENBAND's media, session and security gateways are combined with Nortel's softswitches, media gateways and application platforms. The new, combined company's products are deployed at two-thirds of the world's marquee service providers, which span the fixed, mobile, cable and broadband arenas.

www.genband.com

http://tmcnet.com/30715.1

Cableco Brings Midwest Data-Only 3G Service

Comcast Corp. has announced the release of its High-Speed 2go Nationwide 3G-only service for consumers in Illinois, northwest Indiana and southwest Michigan. The service employs a 3G-on-

ly data card that operates on Sprint's national 3G network. Comcast already offers 4G Metro, wireless service and a Nationwide Preferred 4G/3G wireless service.

www.comcast.com

http://tmcnet.com/30716.1

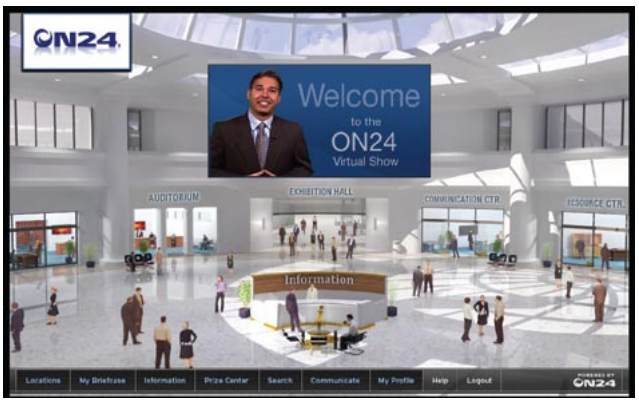
Vodacom, Novell Partner on Cloud Computing

In a move to help businesses across Africa securely provision, manage and monitor multi-tenant applications deployed from Vodacom Business's cloud infrastructure, Novell BrainShare Europe and Vodacom Business have announced a partnership that will integrate much of Novell's Intelligent Workload Management portfolio. That includes SUSE Linux Enterprise Server, Platespin Virtualization and Workload Management, and Identity and Security solutions.

www.novell.com
www.vodacom.com

http://tmcnet.com/30710.1

ON24 Collaborates with Global Crossing



Global Crossing is using ON24's Webcast Center platform and Virtual Show solution for videoconferencing collaboration services to offer customers an interactive tool to reach audiences worldwide. Global Crossing delivers a single online video platform that combines real-time, community-building on the social Web with online content creation, analytics, and control.

www.globalcrossing.com
www.on24.com

http://tmcnet.com/30717.1

Austin to Get New Data Center

Data Foundry, which provides colocation and disaster recovery services, expects to begin building a new master-planned greenfield data center development in Austin starting this month. The plan is to create a $150 million 250,000-square-foot data center by the second quarter of 2011. The new facility will become the only purpose-built, carrier-neutral data center in the central Texas region, according to the company.

www.datafoundry.com

http://tmcnet.com/30718.1

SCOPIA Elite MCU Enables Videoconferencing Interconnection

RADVISION's new telepresence solution, the SCOPIA Elite MCU, can establish connections with telepresence systems from Cisco, Logitech/LifeSize, Polycom and Tandberg. It allows telepresence users to view all meeting participants in a multi-party call, including those on traditional videoconferencing systems or telepresence systems from other vendors.

www.radvision.com

http://tmcnet.com/30719.1

Cisco ASR 1000 Helps M2M Provider Grow

KORE Telematics, a wireless network provider specializing in machine-to-machine communications, has deployed the Cisco ASR 1000 Series Aggregation Services Routers to support its continued growth. Compugen, a Cisco Gold Certified Partner, installed the company's ASR 1000 Series routers to help enable KORE to scale rapidly its business to support more than 11 million wireless devices reliability.

www.cisco.com
www.koretelematics.com

http://tmcnet.com/30707.1

New Service from AT&T Verifies E-Mail Integrity

AT&T Secure E-mail Gateway Service is now available to verify the integrity of a message prior to its entry to an organization's network. It also helps to monitor, examine, and take action on all outbound e-mail that contains content that violates data loss prevention policies.

www.att.com

http://tmcnet.com/30706.1

Ford on HTC EVO: 'This Thing Rocks'

TMCnet columnist and high-tech personality Carl Ford recently said that some folks wonder whether wireless will ever compete with fiber. He responds by saying Sprint is already doing it with its HTC EVO phone. Ford calls the device "amazing," noting it supports up to eight Wi-Fi devices, an 8-megapixel back, a 1.3 megapixel front, HDTV support to stream video including to your home TV, and a 4.3-inch screen.

www.sprint.com

by Grant Lenahan

One Price Fits None

In my last column, I summarized the margin squeeze facing the broadband industry (especially the mobile broadband industry), and laid down the challenge for communication service providers to be able to price their products so that they can be profitable, attractive to consumers, and be seen as executed fairly within each market segmentation. That sounds simple enough, but I think we are seeing some considerable market uncertainties that could stand the way of innovation. What I hear is: What if...

- Data usage volumes grow endlessly. With the proliferation of the iPad (2 million sold in 60 days), networks and smartphones it is very possible that the heavy users of today will become the normal users of tomorrow.
- Under current business models and technologies, margins evaporate as costs growth mirrors usage;
- Network operators don't get their fair share of the value added through their networks and do not have sufficient incentive to invest to meet the future needs of applications, gaming, and the like;
- Net neutrality limits CSPs' ability to protect their business models and the ability to experiment; and
- All of the above collectively alienate customers through exceedingly complex or difficult business practices.

We could dwell on these issues indefinitely. Instead, I think we need to look at this problem differently. While all these concerns are legitimate, the many analyses are a path to nowhere. Given the ability now to price and charge customers on a personalized, individual basis, we can address enough of the challenges to forge ahead with innovative offers.

A wide array of pricing options – tiered, bundled, on-demand, advertising subsidized, all-you-can-eat, flat-rate or pay-as-you-go – can lead to a wide array of benefits for all. We need to provide a range of plans to meet individual communications and financial needs. These plans must be administered consistently and fairly (especially with net neutrality looming in the shadows). If every user is given the same options – if everyone is treated the same – then consumers can select plans that are most attractive to them, that they deem to be the greatest value for their money. We all make that calculation differently and market segmentation becomes market fragmentation. One price fits none.

The set of pricing options may be as boundless as the thinnest slices of a market carved out by video-on-demand, m-commerce, and social networking. The benefit of creating a wide array of pricing options is to satisfy the conflicting criterion of the commercial objectives with government and regulatory constraints. It will be interesting to see prices lowered for some consumers and allowing heavy users to pay for better performance or capacity – if and when they value it and can afford it and will pay for it. AT&T's recent tiered pricing announcement is a move in this direction – one consumers, CSPs and regulators will undoubtedly be watching closely.

Multiplayer (online) video gamers would likely value a turbo button via their gaming consoles that would offer instant access to increased capacity or better service quality (reduced latency). They might not respond to an offer for a higher-tiered service that's on 24/7. Their Twitter and music downloading may run acceptably well via their standard broadband service; but when they pop in Halo3 on the Xbox 360, they don't want to let their best online buddies down when their cybernetically-enhanced human super-soldiers freeze up in the middle of battle due to a bandwidth deficiency. Gamers are very willing to pay real money to upgrade their game features (to personalize their race cars, for example); if they considered QoS as a feature of their game, would they not be willing to open their wallets?

While gaming might be rather obvious, the rest of the Web may also be loaded with hidden nuggets of value, extracted through more interactive pricing schemes. Facebook seems to thrive as much on its interactive games, as it does on its low-bandwidth social networking. While there are too many applications to push pricing schemes out to, CSPs can profit by exposing their pricing flexibility in a way that customers and third parties can opt into easily. Simply put, people are willing to pay for what matters most to them personally.

We need to look beyond basic 3GPP specification compatibility for our infrastructure – OCSs PCRFs and associated components. We need to look to flexibility to implement any business rule and offer concept that you can dream up, and execute it in a very personal and individualized way. Flexibility is going to carry the day. The flexibility can come from traditional competencies: the ability to track usage, track preferences, track locations, track dates, match to a subscriber or group on the network. And the matching part is important. We can build Ferraris on our networks, and no one will turn down a chance to drive a Ferrari. But most people can't afford them. So, if we build and price our products for the network-Ferrari-loving bandwidth hogs (a very small percentage of users who chew up the network), we risk leaving a lot of value-oriented users out of the picture.

Our goal must be to create plans for every purse and purpose, so that each individual sees a plan that meets his or her needs, usage, and schedule. In doing so we can not only tailor plans to subscribers' needs, but provide many of them with more attractively priced options, and, in the end, with better margins for the industry. **NGN**

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

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by Marc Leclerc

The Economics of Getting Smarter

This past holiday season the unit sales of smartphones surpassed those of feature phones for the first time in the United States. The trend only seems to be accelerating as the new decade unfolds, showing no signs of reversing thus far. This event is a milestone not only for mobile devices, but also for the entire telecoms value chain and has brought a new set of challenges to our industry.

In particular, I would like to point out the following. First, the total growth in new subscriptions is slowing down as markets get saturated. Second, falling rates for voice minutes are also causing associated revenues to plateau or even decrease. Third, increasing usage of data services, especially by power users, is severely taxing network capacity in high-density areas.

How does the rise of smart devices impact these challenges? Don't they just exacerbate the problem by encouraging more data usage? Well, they may actually have a quite favorable impact on resolving all these problems!

Smart devices bring to telecoms many of the positive dynamics of the PC industry. Most importantly, they bring the benefits associated with software-based clients, including a much faster time-to-market, lower development costs, easier customization and a simplified, low-cost, over-the-air upgrade mechanism.

As a consequence of using the soft client approach equipment vendors can offer a user experience that adds value to their network enablers and can be developed in concert with them, reducing deployment time. And service providers can further customize these clients to reinforce their own brands and use the well-known Internet tactics of viral marketing and free client offerings to promote faster uptake of new services.

The pioneer and early adopter segments are eagerly leading the migration to smartphones. As they are the main entry point for the adoption of new services by other user segments, service providers now have a lower cost alternative for doing commercial user trials, allowing them to launch more services faster and at a lower cost than previously possible

Service providers also have an alternative to device-based integration of services that essentially leaves operators out of the loop. Software-based clients make it economically possible to offer network-based integration of data and services that leverage and add value to the subscriber/operator relationship.

Already, many consumer electronic devices such as DVD players, gaming consoles and television set-top boxes have IP network connections. Ericsson predicts that by the year 2020 there will be more than 50 billion network connected devices. Software clients (in the form of applets, widgets and plug-ins) will be a major tool in delivering new services that tap the business potential of linking people to all their devices and devices to each other.

Service providers will, of course, need to adapt network infrastructure to take advantage of the potential made possible by the use of smart devices and soft clients. They will also need to evolve their business, marketing and value chain management processes to turn this potential into revenue. This would likely include adopting a consumer service integration strategy and offering packages of services to consumers as a central element of their brand differentiation. To compete with and co-opt over-the-top services, network operators could introduce full service interworking between different operators and networks from both technical and business perspectives, using standards such as IMS and RCS.

To compete with and co-opt over-the-top services, network operators could introduce full service interworking between different operators and networks from both technical and business perspectives, using standards such as IMS and RCS.

A final consideration: To build and fill out the expanded value chain, this model requires a genuine ecosystem approach. This means putting into place elements needed to be a more attractive channel for developers, including development tools, developer support programs and retail channels such as application stores.

The ascendance of the smartphone is both a challenge and a major opportunity. It puts into the hands of the telecoms industry the tools to deliver more value faster to our customers and delivers a significant move forward on the path to network convergence with the Internet and Web. **NGN**

Marc Leclerc is manager of the Global IMS Expert Centre at Ericsson (www.ericsson.com).

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by Ken Osowski

Video Front and Center and Rear

The recent iPhone 4 announcement has put the spotlight on personal video communications once again, along with HTC EVO 4G video services available on the Sprint mobile network. And there is a lot to get excited about, including front and rear video capture cameras that can be enabled to bring high-quality videoconferencing to users of these phones. Currently Sprint allows these services on its mobile network, whereas the new iPhones will only allow video communications when both users are on a Wi-Fi network. Apple is hoping that as demand for this service builds, this will encourage AT&T to move these video capabilities over to its cellular mobile network as well. Time will tell.

So Sprint has been the first to offer video communications over its mobile network and there have recently been reports of service interruptions and quality issues at service launch. That's not surprising since many of the new EVO users became intrigued by the video app QIK and apparently ended up creating an extraordinary demand on the Sprint network to support all of this video traffic.

So what gives? These latest generation smartphones can do almost anything. And commercially-proven mobile network video technology called 3G-324M that enables interactive, two-way video services has been around for some time outside of the United States. This technology has enabled service providers to deliver scalable mobile video services at a predictable quality level. It leverages existing scalable mobile voice networks to provide video services whereas in the United States we are seeing these new smartphone-centric services running on mobile data networks. And the underlying transport technology for these brand new video capabilities is based on IP networking protocols. IP networks, especially wireless ones, are known to introduce unpredictable bandwidth loss and inconsistent latencies resulting in degradation of video quality, and inability to effectively synchronize voice, video and data entry.

But lessons learned and technology applied in 3G-324M networks can be readily applied to IP streaming video services. Right now the smartphone-centric services are very appealing because of improved accessibility and the promise of high-video quality. But today these services require the communicating smartphones to be from the same manufacturer, limiting access to other mobile users on other phones or in other mobile networks. 3G-324M was established as a handset and network standard allowing this and much more to be realized. Video call completion to voice, for example, allows callers on video-capable handsets to make calls to other mobile users without needing to figure out ahead of time whether or not they have a video-capable handset, transparently placing the call as a voice call if the called party has a voice-only handset. Also, expanded video capabilities such as interactive video and voice response enable the user to interact with video portals by entering data to select different video content, live or stored, during the video call.

The HTC EVO currently implements Flash video support but the iPhone 4 does not. So this may require video format conversion in real-time to enable services between these phones.

In the end the challenges already met by implementing 3G-324M mobile video services can be carried over to mobile video services using mobile IP networks. Real-time media processing will still be a requirement in this environment with diverse code support – not only to handle the voice and video transport using a wide range of codecs but to also handle text and image overlays for IVVR, video advertising and other interactive mobile services.

The other opportunity is in real-time video format conversion. Today's smartphone-centric video services are able to specify video resolution and format because the two communicating handsets are the same. But once services extend to heterogeneous device and network support this will not be the case. This will require real-time video format conversion to enable not just user-generated video from the handset but to enable diverse video format communications between different handsets and access to multiple video content formats. For example, the HTC EVO currently implements Flash video support but the iPhone 4 does not. So this may require video format conversion in real-time to enable services between these phones. Obviously other handset manufacturers will introduce other video formats, making solving this problem even more challenging for service providers. And the challenges expand as video interactions occur between smartphones and Internet-based users and content.

It looks like mobile video is here to satisfy all of our communication and entertainment desires. And in the end, successful video service deployments will require investment in mobile network infrastructure by service providers to match the increasing demand for video-capable smartphones. Once again, consumer video usage is center stage. **NGN**

Ken Osowski is director of service provider product marketing at Dialogic (www.dialogic.com).

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by Court Cunningham

ReachLocal's IPO Validates Local Online Advertising Space

At the end of May, local online advertiser ReachLocal became a publicly-traded company. ReachLocal's IPO is exciting for the local online advertising industry because it validates the fact that the category's long-expected potential is now a reality.

With $80 billion being spent on local advertising offline and already $8 billion being spent online, local is one of the fastest growing segments online today. The growth and market opportunity has spawned rampant innovation as evidenced by Google's Local Business Center (now called Google Places), CitySearch's launch of CityGrid, the rise of locally-oriented social networking sites like Foursquare and Yodle's own Yodle Organic.

ReachLocal's IPO is a big indication of how the world is changing. The number of consumers using the Internet to find local products and services, already more than 80 percent, continues to grow, and local businesses will be spending money online to reach those consumers as they search. According to BIA/Kelsey that number is expected to be $36.7 billion by 2014, from the $8 billion spent as recently as 2009. This growth makes sense given that almost half of the nearly 15 million local businesses in the U.S. today still don't have a Web site, let alone a paid search campaign to promote their businesses.

When these local business owners are ready to grow their business through the Web they are usually looking for a complete solution for all their marketing needs. Local business owners don't have time to deal with all the complicated and increasingly fragmented aspects of local marketing while also trying to grow their businesses.

Another major effect of ReachLocal's IPO is that many new online advertising providers will be getting into the game. While there are several major players right now, few have the perfect formula to cost-effectively sign up and serve local businesses. Achieving that balance requires product and process innovation, and the race is on to see who will be the dominant player. Seventy percent of small business owners say they are looking for a single-source marketing partner, according to Yodle research, which means winners will need to offer a breadth and depth of solutions that go beyond pure paid search marketing, including: online reputation management, social media and social networking, local maps listings, and more. Over time local online advertising companies' dependence on paid search and sponsored ads will decrease, and businesses with a broader set of product offerings will become necessary to take a more dominant position in the market.

There has been significant discussion of ReachLocal's lack of profitability and implications that local online advertising may not be a sustainable business model. Local advertising platforms will never be a high margin business, but with such a gargantuan market opportunity, 5 percent to 10 percent margins can create tremendous shareholder value. Amazon.com has 3 percent margins, but generated $1 billion in cash flow last year – pretty valuable in my book. The evaluation of an industry as risky or sustainable should be about proof points like cash flow rather than focusing heavily on percentages of margin.

The number of consumers using the Internet to find local products and services, already more than 80 percent, continues to grow, and local businesses will be spending money online to reach those consumers as they search.

Time will tell how quickly local online advertising will rise over offline alternatives, but this IPO certainly demonstrates that it is a high growth and high potential segment. The economy is going to creep back up slowly, and with that will come a fresh opportunity for local businesses to embrace the opportunity of promoting themselves online. **NGN**

Court Cunningham is CEO of Yodle (www.yodle.com) and co-author of the book Local Online Advertising for Dummies.

Mobile Backhaul: End-to-end Solution

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Mobile broadband services are driving a transformation to IP and Ethernet with the deployment of new technologies — Long-term Evolution (LTE), High Speed Packet Access (HSPA), Evolved Packet Core (EPC) and IP Multimedia Subsystems (IMS). The access network between Ethernet edge and IP core must keep pace or become a quality of service bottleneck, and the main component of a growing operational expenditure.

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By Paula Bernier

GLOBALSTAR GETS ITS MOJO WORKING

Upcoming Satellite Launch, New GPS Devices, Federal Broadband Efforts Fuel Excitement

Satellite is sexy again. That was the subject line of an e-mail I recently received from satellite services company Globalstar Inc., whose public relations person had read a column I wrote. In it I talked about how using satellite to bring broadband to more residential users may be making a comeback. I based that theory on the fact that $100 million in second-round broadband stimulus funds have been set aside for satellite projects – and the satellite category is a new one for the Rural Utilities Service this round.

Tony Navarra, president of global operations at Globalstar, seems excited about the Federal Communications Commission's recent activities relative satellite. But what's really giving the company a lift these days is the fact that it's planning an autumn launch of a second set of satellites.

"We're going back into service with a vibrant, fully capable installation," Navarra told me in an interview in late May.

To be clear, Globalstar never went out of service.

Although the company has had its share of ups and downs – including a bankruptcy restructuring in the 2004-5 time frame under its original Loral/Qualcomm ownership, followed by an acquisition by Thermo Capital Partners, and then a 2006 IPO (it trades on the NASDAQ Global Select Market under the symbol GSAT) – Globalstar has continued to offer a range of services to a wide array of customers.

However, some of the satellites owned and operated by the 11-year-old company have reached the end of their lives, creating some "gaps," as Navarra describes it, in Globalstar's voice and duplex data services.

"You might go 12 to 18 hours a day with no interruptions in service," he explains. "But there might be an hour or two in the middle of the day or during the middle of the night when a satellite was coming overhead that was getting old, so it had low power, and it didn't have all the energy it needed to provide service. So there were these gaps in time of service as satellites were coming over your head."

Addressing the Gaps

Despite these gaps, Globalstar's churn rate never got worse than about 1 to 1.1 percent per month, Navarra says. The company moved to prevent churn by reducing its monthly subscriber fee and offering customers an online tool they could use to prepare for the gaps. The online portal enables users to input their longitude and latitude and receive a four- to seven-day chart of when service will be available to them.

Globalstar's Tony Navarra

"The oil rig guys and the people who were using it industrially loved it" because they knew when to use the service, says Navarra.

But if all goes as planned, there won't be much need for this tool in the future, when Globalstar expects to have its new constellation of 24 satellites in service. The initial launch, planned for the September/October time frame, will supplement the company's existing constellation of satellites, which are orbiting the Earth at an altitude of 850 miles.

"These [new] satellites will have more redundancy on board," says Navarra. "They'll have more power. And they will fill the gaps in service that we've experienced with the current constellation as it began to get old."

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While the initial Globalstar satellites were contracted to last seven and a half years, the new ones should have a lifespan of 15 years.

Customers will benefit "by having a handset that will operate for a full 15 years," says Navarra, adding that all existing Globalstar handsets (from Qualcomm) will be compatible with the satellite upgrade although the company will use Ericsson handsets starting this year. "And we will have the lowest-cost services and the highest quality voice available in the satellite industry."

Additionally, Globalstar expects to increase its data service, which is just 9.6kbps today, to 256kbps starting in 2012 or 2013.

Defining the Applications

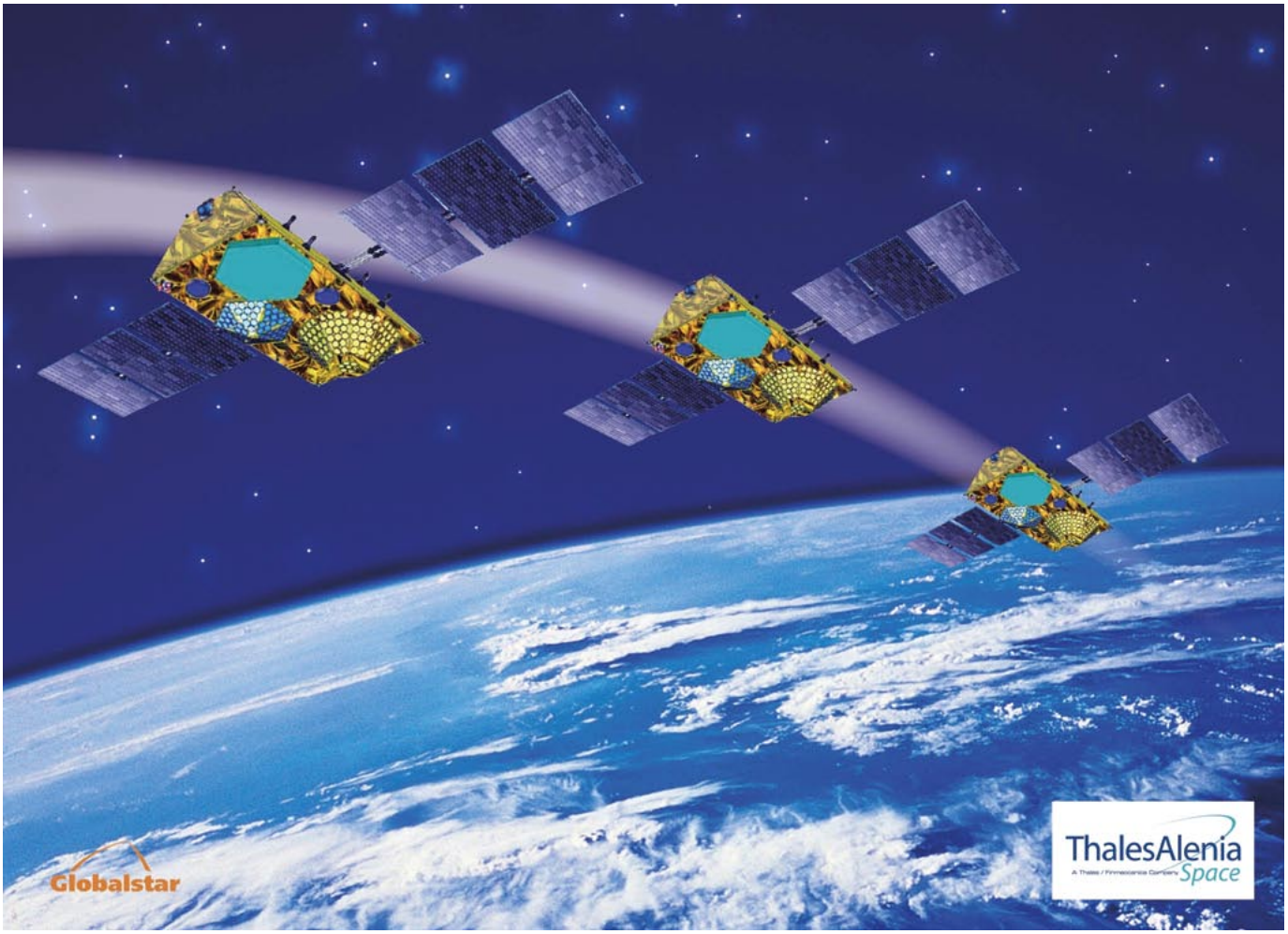
Globalstar's voice and data services target a broad set of users, ranging from organizations in industry verticals such as fishing, oil and transportation, to outdoor enthusiasts. Most of the company's 400,000 worldwide subscribers are reached via Globalstar's network of value-added resellers and dealers. They can deliver targeted applications such as position location and asset tracking to the transportation industry, for example.

Navarra says Australia, Canada and U.S., all of which have ample open space, are Globalstar's top-tier markets in terms of revenue contributors. Russia, which he notes is a huge country with a large oil and exploration business that uses Globalstar's satellite service exclusively, and areas of South America, which has spotty cellular coverage and high roaming charges, fall into Globalstar's second-tier markets. The company's newest market, meanwhile, is Africa, for which Globalstar was approached by the government of Nigeria to provide services for its airline, gas, mining and oil industries, as well as for small business customers.

But Globalstar does not target business customers exclusively. The company also sells Globalstar-branded GPS devices through its Web site; at such retail outlets as Best Buy, Cabela's and REI; and in partnership with mapping and GPS outfit DeLorme.

Globalstar introduced its consumer SPOT device in late 2007. Now the company sells SPOT 2, which is 30 percent smaller and lighter than the first iteration of the product. It sells for $169, and consumers get unlimited messaging on the device for $100 a year. As of Globalstar's last earnings call, in early May, the company had received close to a quarter million units in orders for SPOT, which was selling at about 10,000 retailers as well as at www.findmespot.com, says Navarra.

Unlike popular GPS devices from companies like Garmin, he adds, SPOT 2 is not only able to provide a user with information about



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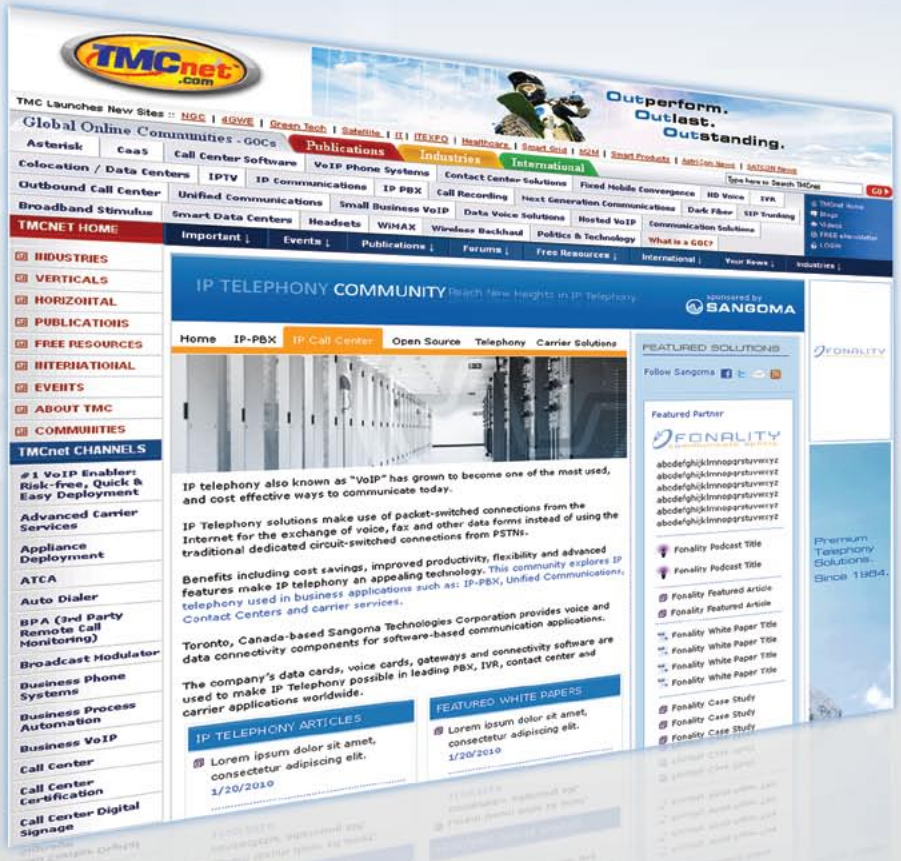

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his or her location, it also can enable that user to send an SMS to a family member or an emergency alert to 911 (via a special button on the device for that purpose) to provide information about his or her condition and whereabouts.

Earlier this year at the Consumer Electronics Show in Las Vegas, DeLorme and Globalstar jointly announced the introduction of The DeLorme Earthmate PN-60w with SPOT Satellite Communicator, which they say is the first handheld GPS navigation device capable of sending customized text messages even when the user is operating far beyond the range of cellular communications.

Navarra says the product it delivers in partnership with DeLorme, which Globalstar in March announced had placed an initial order of more than 15,000 SPOT Satellite Communicators, goes beyond simply targeting outdoor enthusiasts. With the highly accurate maps enabled by the DeLorme applications, and the ability to send messages, this device can support businesses' fleet and other inventory applications, he says. It could even be used for homeland security applications involving container tracking, he adds.

Tracking the Federal Efforts

At the same time that Globalstar is readying for its new constellation launch and expanding its business through the DeLorme partnership, it's been closely following the moves of the U.S. federal government to increase broadband penetration via stimulus funds and The National Broadband Plan.

Navarra declines to offer details on Globalstar's potential involvement in the broadband stimulus effort (for which the second-round application process closed this spring), but he did say the firm is keeping a close eye on the FCC, NTIA and RUS (the latter two of which are dispersing the broadband stimulus funds) activities on this front.

"We're very much aware of this, and we're following it," he says.

Navarra goes on to say that Globalstar already has been working with WiMAX operator Open Range Communications to help enable broadband services.

"We were the first ones to enter into a broadband agreement with the FCC to use our satellite spectrum on the ground to rebroadcast using towers and satellite frequencies," he says. "Here's the cool part: Now with the new FCC chairman coming onboard there's been a new broadband policy .... We fully believe that that plan is going to open up for Globalstar even more uses of our spectrum throughout North America, and increase use of our satellite spectrum for broadband services in the United States."

Navarra here refers to Recommendation 5.8.4 of The National Broadband Plan, which suggests the FCC should accelerate terrestrial deployment in 90 megaHertz of mobile satellite spectrum. As a result of this discussion, Navarra believes the FCC will lift some restrictions on satellite that would enable Globalstar to use up to 25 megaHertz of its spectrum for rural communications throughout the U.S.

"Satellite operators must have spare satellites," he explains. "They must have compatible billing systems. They must be able to have the subscribers that are on the satellite use the same handset or laptop device on the ground terrestrial system as well as on the satellite system.

MORE ABOUT THE LAUNCH

March 2007 - Globalstar signs contract with Alcatel Alenia Space (Thales) to upgrade satellite operations and control center.

September 2007 – Globalstar signs launch services contract with Arianespace for Globalstar's second-generation constellation.

May 2008 – Globalstar signs agreement with Hughes Network Systems to develop proprietary satellite air interface and delivery of next-generation ground network equipment, software upgrades and satellite handset chipset.

August 2008 - Satellite manufacturer Thales Alenia Space begins production assembly, integration, and testing of the first Globalstar second-generation flight model satellites.

October 2008 – Globalstar signs agreement for second-generation network ground core network segment with Ericsson Federal.

July 2009 – Globalstar completes $738 million financing to fully fund manufacture and launch of 24 new Globalstar second-generation satellites. It also begins construction of final telemetry and control unit ground station in Southern Africa.

January 2010 – Globalstar announces launch window for the first launch of six second-generation satellites is scheduled to begin on July 5.

September/October 2010 – The launch of the new satellites is expected, with the actual launch service date to be announced in the upcoming months.

The satellites will be launched from the Baikonur Cosmodrome in Kazakhstan using the Soyuz launch vehicle, which has been used to successfully launch Globalstar satellites on eight previous occasions. Globalstar expects to conduct four launches of six satellites each. The 24 new second-generation satellites will be integrated with the eight first-generation satellites that were launched in 2007.

"We expect that the FCC is going to relieve, or loosen up, some of these requirements, which is going to rapidly allow the use of the spectrum instantaneously, rather than having to build additional products that have what I call dual modality, meaning the modes of operation are for both satellite and ground."

And with such restrictions lifted, says Navarra, Open Range or a third carrier could put a Globalstar antenna on its tower and use the company's satellite spectrum (but not the satellite network itself) to rebroadcast its signal to end users.

Sexy. **NGN**

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By Paula Bernier

What's Up with IMS?

It's Anyone's Guess, But Buckle Your Seat Belts

IMS has been on a rollercoaster ride, alternately reaching riveting highs and thundering lows in popularity. Indeed, investment in such infrastructure frequently spikes and plummets from one quarter to another, according to Infonetics Research. The network architecture now seems to be back on track, however, with strong growth and the expectation that it will get added momentum as cellular network operators move forward with LTE.

Still, while many equipment suppliers remain anxious to talk about the IP Multimedia Subsystem, they are somewhat cautious in their estimates as to just how widespread IMS deployment might be.

"The worldwide IP Multimedia Subsystem equipment market, including IMS core equipment and IMS application servers, continues its pattern of extreme fluctuations quarter to quarter," according to Infonetics. The firm adds that Chinese service providers in the first quarter were center stage on this front, driving VoIP manufacturer revenue in the Asia Pacific up 16 percent from the previous quarter and making that part of the world's contribution to IMS equipment revenue increase by 20 percent.

As a whole, however, there have been very few IMS deployments worldwide, with only about 8 percent of networks today based on the architecture, says Micaela Giuhat, vice president of product marketing with GENBAND, which Infonetics ranks No.1 in the carrier VoIP and IMS equipment space.

"IMS is not here yet. It will be. But it will take a while," says Giuhat, adding that GENBAND (now with the Nortel CVAS acquisition under its belt), is helping carriers migrate to the architecture and other next-generation environments.

She and Mehmet Balos, executive vice president and chief marketing officer with GENBAND, note that while some carriers (like Verizon) will leap from TDM to IMS, most (among them AT&T) will migrate to it more gradually in an effort to better manage capital expenditures.

Infonetics forecasts that between this year and 2014 service providers worldwide will invest $4.4 billion on IMS equipment. And while 64 percent of IMS core equipment today is used in wireline deployments, the research firm indicates mobile is what's really creating new momentum around IMS at this point. It expects continued adoption of VoIP; LTE, for which deployments are expected to start in 2012 and ramp up in 2014; and the introduction of more and additional enhanced mobile services involving IM, video, the Rich Communications Suite and the like to be the key drivers of IMS going forward.

Martin Taylor, who's in charge of product strategy for the carrier systems division of Metaswitch Networks, says the advantage of IMS is most obvious to service providers with both wireline and wireless networks. Such carriers can use the architecture to converge those networks, delivering the same services and applications over both their wireline and wireless infrastructures, he says.

Of course, incumbent telcos traditionally have used the intelligent network architecture to support features and services over their networks, he notes, but that's an expensive and outdated way to do things. So instead, service providers are now taking SIP application server products and in some cases adapting them to work with legacy switches. To make that work, he explains, you need a service broker. Metaswitch recently purchased ser-

vice broker supplier AppTrigger Inc. to enable it to deliver that capability to its carrier customers.

Speaking of wireless as it relates to IMS, Vince Lesch, CTO of Tekelec, notes that AT&T, Verizon and others recently came out with a specification known as One Voice, which addresses how to support voice and other services over LTE networks using the IMS architecture.

A document on One Voice dated November 2009 says the spec was produced by Alcatel-Lucent, AT&T, Ericsson, Nokia, Nokia Siemens Networks, Orange, Samsung, Sony Ericsson, Telefonica, TeliaSonera, Verizon and Vodafone. The main body of the One Voice profile is applicable for a scenario in which IMS telephony is deployed over LTE in a stand-alone fashion without relying on any legacy infrastructure, packet or circuit switched, according to the same paper.

Lesch says that work from this group subsequently was endorsed by other carriers and moved into the GSMA, which he says continues to evolve the spec by addressing additional issues such as roaming. However, while it continues to evolve, he says One Voice is fairly complete, so offers a nice roadmap for vendors. Nonetheless, it will still be a couple of years until we see IMS really being used in such scenarios because initial LTE deployments will be data only services to smartphones and data cards for PCs.

"We're cautiously optimistic that the carriers are moving forward with IMS," says Lesch. "It's going to be gated by the availability of handsets, which is expected in 12 to 18 months. Again, how quickly carriers will move is still a matter of great speculation."

The uncertainty around IMS implementation may have something to do with the level of complexity involved. Pretty much since the inception of this new architecture, folks have been referring to that challenge.

Part of the complexity of the new network paradigm, according to Nakina Systems CEO Jay Borden, is that while most networks traditionally have had the intelligence at one centralized place, new distributed models mean there are hundreds of devices that need to be maintained.

CTO Doug Bellinger of Nakina Systems adds that to address that carriers need secure access and single sign on, so only those who are authorized to touch certain parts of the network are able to do so; inventory discovery and reconciliation solutions, which do data mining and provide a way to compare data on what gear exists and with what capacity and performance; and a network integrity controller, which compares what's actually happening on the network – in terms of security parameters, changes in routing tables, etc. – to what's supposed to be happening.

Of course, the idea that networks need better inventory and performance tracking capabilities has been circulating for years. What's new here, according to Borden, is that networks used to be more hardware-based but are now evolving to more of a software-centric model. That means now, in software, there can be hundreds of thousands of settings per device, and orders of magnitude greater devices to manage, so it's way more complex.

Service Provider VoIP Market Highlights

- After three consecutive quarters of growth, the carrier VoIP market posted traditional declines in the first quarter of 2010, down 12.6% from the previous quarter, to $538 million.
- Year-over-year and quarter-over-quarter declines are improving for all segments in the carrier VoIP equipment market, with the overall 1Q09 to 1Q10 decline at just 0.5%.
- Year-over-year, session border controller revenue is up 24%, driven in large part by Acme Packet.
- Media servers were the bright spot of the market in 1Q10, with worldwide revenue up 9%.
- Coming off a tough year, the service provider next-gen voice market continues to see consolidation, with GENBAND's acquisition of Nortel's CVAS unit, Radisys acquiring Pactolus, and Dialogic merging with Veraz Networks.
- GENBAND/Nortel leads the overall carrier VoIP and IMS equipment market due to it combined strength in trunk media gateways and softswitches.

Source: Infonetics Research

"There's a new operations paradigm that's needed to accompany the new network paradigm," he adds. Yet operations is always an afterthought, he concludes.

That doesn't have to be the case.

Dave Kresse, CEO with testing company Mu Dynamics, says one thing network operators can do to manage the complexity of IMS is test the communications between different network components before putting them into production networks. But rather than doing that using canned test cases as has been the traditional practice, he says, carriers should use solutions that take actual traffic from an environment like the one they're trying to build to get a sense of what the real performance will be. That's important, Kresse says, given every IMS core is and will be slightly different.

If service providers don't do that, he adds, they run the risk of having performance issues, such as dropped calls, and thus the potential to frustrate or lose their customers.

And that, of course, would be extremely counterproductive, given the move to IMS is largely fueled by carriers' desire to more quickly bring new services to market faster in an effort to stem churn and drive up ARPU. NGN

By Paula Bernier

The New Normal

Making the Most of Legacy Assets

The economic downturn, which has constrained spending and given a bump to the good, old-fashioned mindset that you should use what you got, is leading businesses and carriers to figure out how they can make the most of their legacy services and infrastructure.

This closely mirrors the trend we saw during the turn of the century following the dot-com bust and the fall of WorldCom. But back then folks in the industry were just coming off the halcyon days of the Silicon Valley start-up, and many high-tech types had yet to live through a financial storm of any kind. As a result, marketing folks were so dizzied by what some called the "telecom nuclear winter" that they were hard-pressed to come up with positive messaging around the trend not to spend. So the term "sweating your assets" came into vogue.

Today, after having driven through two giant economic potholes within a single decade, things appear to be on the comeback. Still, we're all hyper-aware of the need to manage closely our spending and migrate to new technologies only when it makes sense from a capex and/or opex perspective. And, really, whatever the economic climate, this thinking makes sense.

No one is sweating over it anymore. In fact, it's become the new normal.

As a result, companies that deliver communications solutions to businesses and service providers are emphasizing, and in many cases seeing good success with, products that enable these customers to leverage existing investments while supporting new technologies and services as needed.

"Service providers today are challenged to take advantage of next-generation services revenue but at the same time protect their existing assets," notes Kevin Morgan, director of product marketing at ADTRAN. "Solutions that make sense for these providers must be flexible and able to provide a smooth transition path for legacy TDM and ATM networks as they migrate to Ethernet and offer a variety of next-generation services."

ADTRAN's Total Access 5000

Morgan is making reference here to the ADTRAN Total Access 5000 MSAP, a broadband access and aggregation platform that supports TDM to packet, ATM to Ethernet, copper to fiber, and legacy to next-generation services simultaneously and from a common platform.

More than 150 service provider customers today use the Total Access 5000.

"As a whole, it signals that the TA5000 has come on the scene as a game changer in this market," says Morgan.

Among the most recent customers to sign on to use the solution are Frontier Communications Corp., Millry Telephone, Reliance Connects and TEC.

Frontier will use ADTRAN's Total Access 5000 Multi-Service Access and Aggregation Platform and Total Access 1100 and 1200 Series fiber-to-the-node products to deliver broadband to customers across the expanded geographic footprint it will soon have as a result of its acquisition of Verizon Communications properties. That deal was expected to close July 1. Frontier, which offers broadband, video and phone services in 24 states, will become the largest provider of communications services to rural America following the deal – serving more than 6 million access lines in 27 states.

Millry Telephone, which offers services in southwest Alabama, is using the TA5000 and ADTRAN's Total Access 1124P as part of its fiber-to-the-node effort. The ADTRAN solution enabled the company to address growing bandwidth demands while creating a migration path to an Ethernet-based core network.

Reliance Connects sells residential services in Nevada and Oregon. It's using the TA5000 along with the Total Access 1124P Sealed DSLAMs and Total Access 300 Series ONTs to support its fiber-to-the-home effort.

"ADTRAN's Total Access 5000 will allow us to evolve our legacy DLC deployments to a next-generation Ethernet architecture, allowing us to upgrade services within our footprint and benefit from the significant operational efficiencies that Ethernet brings," says Dennis Anderson, engineering manager at Reliance Connects.

The TEC deal with ADTRAN, meanwhile, is related to the broadband stimulus.

TEC, which is the holding company for a group of service providers in the Southeast, has selected the Total Access 5000 Multi-Service Access and Aggregation Platform and Total Access fiber-to-the-node DSLAMs for its broadband stimulus project at Bay Springs Telephone Co. that involves FTTN and FTTN. The company received a broadband stimulus award from the Rural Utilities Service in the first round of the federal government's program.

Because the Total Access 5000 can allow a company to start out with DSL-based copper access and then push fiber closer to the customer over time, for example, or allow a carrier with ATM-based DSLAMs evolve to Ethernet without a wholesale system change, Morgan says the ADTRAN product can exist in a service provider network for at least 20 years.

"Our customers are very comfortable knowing this product is going to be around for a while," he adds, noting not only is the Total Access 5000 flexible enough to stand up over time, but ADTRAN is a proven, stable company that carriers can be sure will be around for many years to come.

Another example of a product that enables service providers to straddle the legacy and next-generation worlds effectively is the Tellabs 8800 Multiservice Router, says Tim Doiron, director of product management at Tellabs. He says the product does ATM to Ethernet interworking and can terminate to a B-RAS, which defines what customers get what bandwidth, via Ethernet. That means service providers can gain the benefits of evolving to Ethernet (given Ethernet cards, ports and transport are much less expensive than the SONET/SDH alternatives), without upgrading all their DSLAMs to Ethernet.

Stu Benington, director of portfolio marketing at Tellabs, adds that the move to extend legacy networks also extends to cellular networks. Although 4G mobile networks, which will be almost entirely Ethernet-based, are now coming onto the scene, he notes that existing 2G and 3G networks, which employ TDM and ATM interfaces to cell sites, will be around for some time.

Indeed. As discussed in the March issue of INTERNET TELEPHONY magazine, a sister publication to NGN, even as AT&T last year publicly embraced LTE, it made new investments to upgrade 3G cell sites to HSPA 7.2 technology.

Although AT&T has been lambasted for poor coverage and capacity on its 3G network, which has seen heavy traffic in light of the introduction of the iPhone, the company has made clear it aims to continue to leverage its 3G network. That is evident in its new 4G supplier agreements, which stipulate that the 3G equipment delivered by Alcatel-Lucent and Ericsson to AT&T starting this year must be software-convertible to LTE, so the

The Tellabs 8660 edge switch, 8605 access switch and 8840 multiservice router

What's described as legacy might not be what you think. Even some IP-based solutions (namely ones based on H.323) are considered legacy, given SIP networks are now state of the art.

company doesn't have to rip out hardware when it needs to make the long-term evolution.

Erik Ekudden, vice president of technology and industry at Ericsson, says that the 3G and 4G technologies adopted by AT&T, Verizon and others followed a similar development process, and that the focus given to testing and interoperability of the two wireless options will enable these wireless operators to migrate to LTE relatively easily and at their own pace.

Benington continues that Tellabs offers the ability to support both legacy and Ethernet interfaces to cell sites with its 8600 and 8800 products. It can support Ethernet either via interworking or by tunneling it over MPLS infrastructure; the idea here is to reduce the cellular operator's backhaul transport costs.

Aculab, meanwhile, is coming at the hybrid legacy/next-gen discussion from the gateway perspective. The company, which has been pushing its extensibility message for more than a year, sells gateways that enable both businesses and service providers to bridge the divide between new and older networks and technologies.

Ian Colville, project manager at Aculab, says the company's Groomer gateways serve to interconnect disparate networks, with legacy networks on one side, and IP-based or SIP-based networks on the other. And what's described as legacy might not be what you think. Colville says even some IP-based solutions (namely ones based on H.323) are considered legacy, given SIP networks are now state of the art.

Colville adds that a classic example of how Groomer might be used is in the emergency services space, a key market for Aculab.

As noted in the April issue of INTERNET TELEPHONY, the National Emergency Number Association is calling for the migration of E911 networks to what NENA calls NG911, or next-generation 911. The idea is to move E911 systems to standards-based IP platforms and, in the process, enable citizens and those involved in emergency response to interact not only in voice, but also via text, IM and possibly even video communications.

Anyhow, Colville explains that the NENA i3 spec related to this effort clearly defines what's called the legacy service gateway. One component of that is what is known as the protocol interworking function. It's intended that gateways like Aculab's Groomer, for example, can fulfill that function, Colville says. Again, it's SS7 on one side and SIP on the other. In the 911 scenario some of the important things involved are being able to convey the messages and parameters in the SS7 signal and putting them into a SIP message header or invite. That way, the IP-based gear at the other end can extract that information to get the location of the caller, and from that determine the route to the appropriate public safety answering point.

Tim Joint is in involved with Aculab's gateway efforts as they relate to enterprise customers. Joint, the commercial manager of Aculab, says that in the last year or two as the economy has taken a dive and some people have had bad experiences moving to VoIP there's more of a drive to migrate gradually to VoIP. That's opposed to the original vision for VoIP, which had companies trashing their existing PBXs and flipping the switch on new IP-based voice strategies.

These new migratory paths might have a company keeping its legacy PBX and farming off select calls to adjacent IP systems or a SIP trunk, says Joint. In this scenario, a gateway can enable that company to leave the legacy system in place while enjoying some of these IP-based benefits, which can include lower transport costs and new functionality.

But while people like to talk a lot about the new end user features that moving to IP can enable, there's also a need to retain key traditional PBX functions, Joint notes. With its ApplianX IP Gateway, Aculab can allow legacy features like transfer diversion, message waiting indication and call back when available to be available in IP- or SIP-based enterprise environments. **NGN**

Aculab's ApplianX IP Gateway

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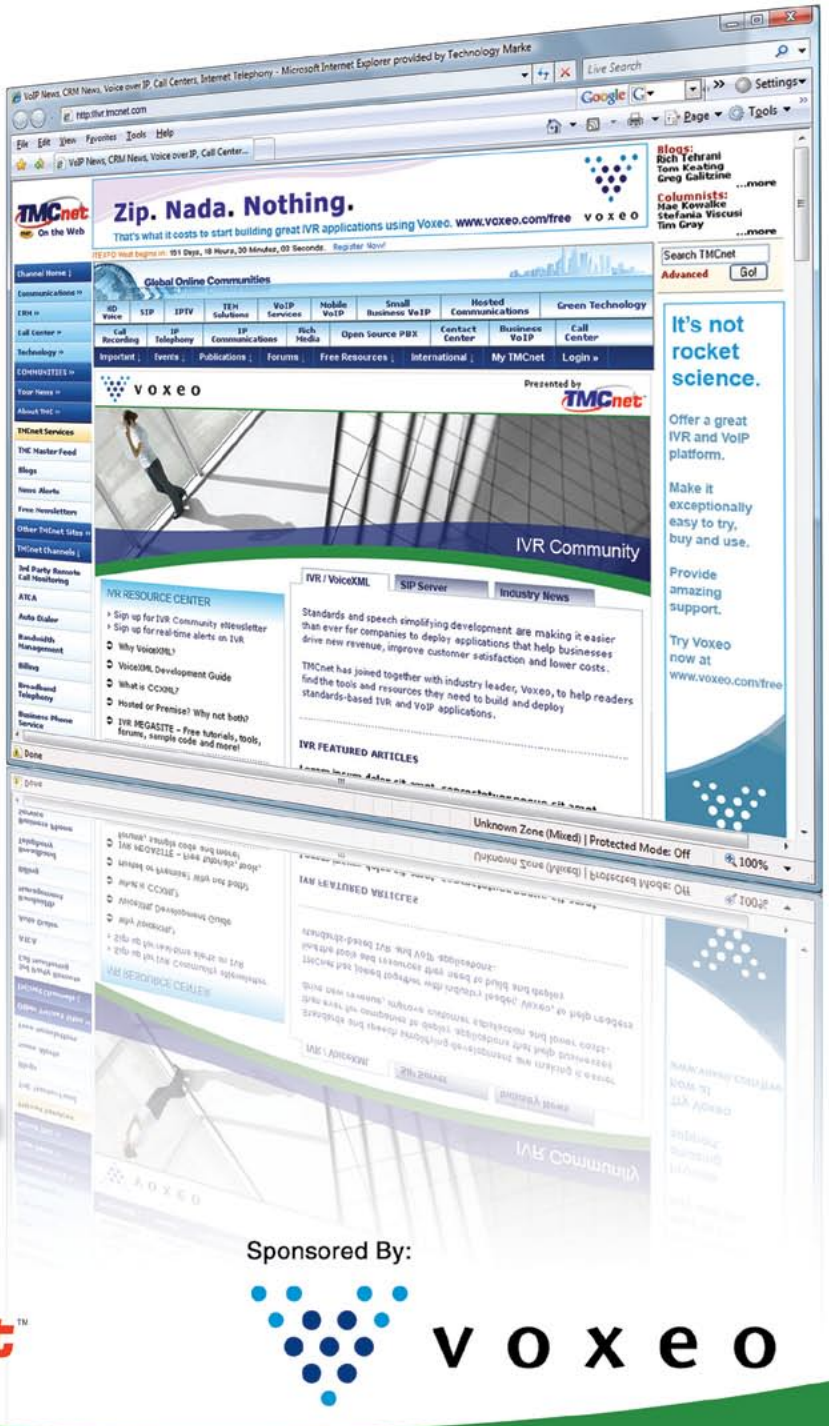

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By Paula Bernier

Service Assurance and Bandwidth Management

Feeding the Real-Time, End-to-End Needs of Next-Gen Wireless Environments

Service assurance and bandwidth management are wonderful concepts that every network operator seems to want to achieve. However, disjointed toolsets make it tough for service providers to get an end-to-end handle on network performance and end user experiences. But as new data traffic floods wireless networks and carriers move to offer higher-value services, there's a stronger drive by service providers to seek out and employ more holistic management solutions.

Virtually every equipment supplier provides a management console for its own products. And, as Jeff Parker, co-founder and president of Monolith Software, a 12-year-old company in the monitoring management space, notes, there was a lot of hubbub in the late 1990s when Micromuse with its Netcool product introduced the manager of managers concept. The idea was to collapse information for those various systems into a single console. By now, all the service providers have built a manager of managers for faults and events, says Parker; but no one proactively monitors the links they're providing, although service providers are being pushed to offer real-time views of traffic.

That means that although many service providers offer SLAs today, if there's a dispute over those SLAs, providers typically give customers some sort of a make-good rather than providing the data that shows the actual performance on the network and on customer applications, says Parker.

As a result, every service provider is trying to build customer intimacy through transparency, which involves giving customers a view of their own portion of the network and its performance, he continues. But that means they need to be able to get to physical and virtual interfaces, which is a significant challenge, explains Parker. There are event-level solutions that can offer data on bandwidth utilization, for example, he says; but bandwidth is a metric, so service providers need solutions that turn those metrics into events to drive SLA trees that can show how the service provider is meeting the customer's SLA objectives.

"Today, service providers and enterprise organizations are focusing more on the services the IT infrastructure provides," says Parker of Monolith, which recently released Version 3.5 of its solution. "Being able to provide a unified technology view of all of the components and how they interact is key to delivering always-on services."

Steve Shalita, vice president of marketing at NetScout, seconds that emotion.

As operators move to IP-based, next-generation environments, he says, they face the challenges of dealing with diverse and premium services and applications. And they need to understand how the network is operating and how to optimize it to offer the requisite user experience, he says.

Of course, that's always been a goal of service providers. However, with the enormous growth of traffic on the network, and introduction of a massive and varied range of new applications, the challenges of managing both infrastructure and user experiences in this next-generation environment are bigger than ever, he says.

NetScout addresses that with its xDR technology, which enables service providers to handle billions and billions of transactions, and to have a view into their networks so they can extract information to help them make the most informed network and business decisions, says Shalita.

While NetScout hasn't made public its service provider customers of this solution, Shalita says that a large North American carrier known for its support of advanced 3G smartphones is using NetScout to understand application and service performance issues relating both to its own network as well as to the center that is providing applications to its users.

He adds that one of the biggest challenges mobile service providers now face has to do with DNS and RADIUS authentication. In a mobile environment, he explains, handsets tap into the mobile towers constantly, and with every transaction there's a need to re-authenticate. So if a DNS server is flooded, he says, that impacts the ability to complete an application transaction. That means it's important to monitor what's happening with DNS, says Shalita, noting that AT&T was recently facing issues with its DNS servers being flooded by attacks.

Greg Gum, vice president of marketing and business development at ANDA Networks, which sells the EtherEdge 4300 for wireless backhaul, says with the influx of video, streaming media and loads of data, managing congestion at heavily-trafficked cell sites is rising in importance.

ANDA's EtherProbe technology allows the company's customers to do real-time performance management with the 4300. That lets wireless networks do traffic shaping and management at the cell site in real time, and without slowing the flow of packets, says Gum. He adds that EtherProbe also now features EtherStream, which looks at flows on a subscriber by subscriber basis to allow for dynamic load balancing, policing and shaping of individual subscriber's traffic in real time. **NGN**

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By Paula Bernier

Economy Creates the Perfect Storm for Cloud Services

What Can the Industry Do to Keep Customers Rolling In?

The faltering economy and advances in technology created a perfect storm that led IT managers to seek new and better ways of doing things, propelling forward the adoption of cloud services.

It's still early days for the cloud, Ellen Daley, vice president and principal analyst at Forrester Research, says; however, even now that the worst of the economic tsunami has passed (or so most economists tell us) adoption of the as-a-service model continues.

Nonetheless, there are some key barriers to widespread adoption of cloud services.

But a variety of communications companies are doing their best to educate the market about cloud computing, and to provide answers and solutions to business customers' concerns about service based on it. In many cases that involves bringing together ecosystems of equipment suppliers, network operators and software specialists.

For example, ADVA Optical Networking, IBM and Level 3 have joined forces to launch a pilot through which they're providing customers in New York with secure wavelength services to deliver high-bandwidth access between their sites and IBM cloud data centers.

"It's directed at three different media companies that obviously are running out of space," says Todd Bundy, director of global alliances at ADVA Optical Networking. "What they are doing is connecting into the IBM cloud data center. And it saves them a ton of money because rather than expanding their existing data center, which can be very expensive, they just get on a wavelength service, which is totally secure and it gives them all the bandwidth they would ever need, to take them from their data center into IBM's cloud data center."

Bundy of ADVA Optical Networking adds that to deliver a successful end-to-end cloud service offering, you need a strong partner like IBM, which has the sales force and expertise it takes to put together and bring to market a reliable and secure solution.

Cisco, Forrester Research and Verizon Business also recently came together on cloud computing. In this case, it was to stage a Webinar about the growth in and benefits of cloud computing.

Forrester's Daley, one of the speakers at the online event, says that in addition to the economy, the faster pace of technological change, the introduction of more complex technologies, and new regulatory requirements are motivating IT staffs to seek more support for their organizations. And, she adds, given enterprises and small and medium businesses are in large part educated about what's available in terms of communications solutions, and the rise of new technologies like virtualization are bringing down costs of such options, the market for managed services and cloud computing are being moved further forward.

"There really is a so-called crisis of complexity," adds Michael Haley, distinguished engineer for IBM CHQ –EI Cloud Infrastructure.

Haley continues that cloud services can help businesses address that while improving their IT utilization by 30 to 50 percent. "So these

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customers are already experiencing significant improvements, and they're doing so beyond experimental elements and actually starting to weave this into part of their business."

According to Forrester, although technology spending by global business and government customers experienced a 9 percent year-over-year downturn in 2009, the tech sector is expected to be a bright spot in the economic recovery going forward. And one of the biggest opportunities on that front is linked to data center services, which Daley says includes software as a service, infrastructure as a service and CDN offerings.

"We're about to enter another era of sustained tech investment and growth," she says, calling the next phase the "smart" wave of growth.

The research firm believes global managed services growth will outpace technology growth in 2010 by more than double. And it is forecasting that the global managed services opportunity will be $217 billion by 2014.

Although cloud services are often associated with Amazon and Google, which were early to market with their offerings on this front, delivering a solution that includes not only the applications, but also a network that can support the necessary security and performance for those applications, is key, according to Cisco, Forrester and Verizon Business.

"Network assets are going to be important in this game," says Daley. "It's not going to be an over-the-top game.... And telcos and service providers have a good story there."

John "JT" Tomljanovic, director of IT solutions global product management for Verizon Business, believes that within two to 10 years everything customers buy is going to be purchased as a service.

"So I don't think people are going to be buying data centers, they're not going to be buying servers, they're going to be coming to companies like Verizon" to deliver it all, he says.

Joe Crawford, executive director of IT solutions product management at Verizon Business, adds that the fact that a service provider can turn a CPU up or down is nothing special and probably never will be. What's important, he says, is what rides on top of that.

He says solutions in the as-a-service space require hardware, software, networks and data centers. Crawford adds while Verizon Business has many of the pieces to put together those solutions, it will also call on its partnerships with software vendors when it makes sense.

Indeed, Verizon Business just last month announced that SAP AG has certified the company's cloud-based on-demand Computing as a Service platform for the delivery of SAP business applications. Verizon Business is the first global provider to receive SAP certification of its cloud services.

Crawford adds that Verizon Business expects to announce a variety of certifications along these lines in the near future. He also notes that Verizon Business can make such cloud services look like just another node on a company's private network. "We're really seeing that take off," he says.

And the buyers are not just IT managers, he adds. Increasingly, those who purchase cloud-based services are non-technical, line-of-business buyers, according to both Crawford and Forrester's Daley. Crawford adds that he recently spoke to a CTO who was so concerned about that trend that he is moving to put some standardization around his company's purchasing practices on that front.

A wide variety of business verticals have adopted as-a-service offerings, adds Daley, but these services tend to be the best match for applications involving bursty workloads. That would include retail applications at holiday times or health care applications involving the transmission of x-rays as just two examples, she says.

A merger or acquisition sometimes also moves an organization to a pay-as-you-go model, says Crawford of Verizon Business, which last month unveiled a cloud storage service. (Forrester reports that storage capacity requirements are growing 20 percent to 40 percent annually.)

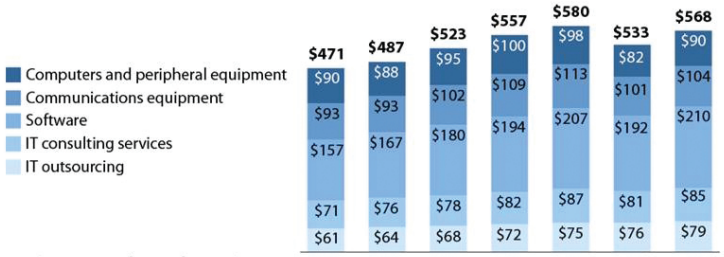
Crawford continues that while the applications moving to the cloud to date have in large part been batch-based, in the future we'll see more transactional product environments being outsourced. An example of that would be a health care application through which a medical organization would access patient records in a secure and timely manner.

When that happens, Crawford says, the requirement for complete, end-to-end cloud services with SLAs will only increase. NGN

FORRESTER® January 2010 "US And Global IT Market Outlook: Q4 2009"

Forecast: US IT Purchases, 2009 To 2010

US business and government purchases of IT goods and services
(US$ billions)



Percentage change from prior year	2004	2005	2006	2007	2008	2009*	2010*
Computers and peripheral equipment	3.0%	-1.9%	7.7%	5.2%	-1.6%	-16.3%	9.2%
Communications equipment	3.8%	-0.5%	9.7%	6.8%	4.3%	-10.4%	2.8%
Software	3.5%	6.8%	7.5%	8.1%	6.7%	-7.4%	9.2%
IT consulting services	9.9%	6.4%	3.5%	4.7%	5.8%	-6.5%	5.0%
IT outsourcing	7.3%	4.8%	7.0%	6.1%	2.8%	2.1%	3.8%
Total IT purchases	**5.0%**	**3.4%**	**7.3%**	**6.5%**	**4.1%**	**-8.2%**	**6.6%**

Source: US Department of Commerce for 2004 to 2008 for computers and peripherals, communications equipment, and software; Forrester Research for these items in 2009 to 2010 and for IT consulting and outsourcing services in 2004 to 2010
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GO TV

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by Torbjorn Ward

The New Provisioning Model in Store

WiMAX Forum Introduces Open Retail Certification Initiative

WiMAX user and device provisioning is a critically important activity for operators, which they have to get right, and get right the first time. Identifying and authenticating users, and then provisioning the correct service, the appropriate level of service and managing service changes is a complex process.

There are several methods available for configuration and provisioning of users and devices in a WiMAX network. In recognition of the importance and potential complexity of this issue, the WiMAX Forum has introduced a set of best practices for an Open Retail Certification model that allows users to buy any device from any store, and then select their preferred service from any local WiMAX service provider.

The WiMAX Forum Open Retail Certification Initiative defines a set of processes, features and test cases to ensure that end user devices can be sold to consumers via any retail store and allows these consumers to activate services without any help from service providers.

Over-the-air support is critical in an open retail model because it allows remote configuration of devices with the necessary operator-specific parameters and enables complete lifecycle management for the device.

Another key element of the Open Retail Initiative is certification version signaling, which permits operators to identify the subscriber device automatically and review its feature-by-feature certification test records during the network entry request. This process empowers operators to enforce automatically policies to prevent uncertified devices from disrupting efficient network operation. It also makes it possible to display only the subset of available services that are supported by the specific device in the user online activation process.

Open Mobile Alliance Device Management

The OMA-DM system has minimal impact on the user and the operator in the daily operation as it provisions the device over the air, allowing devices to be used off the shelf with no need to pre-provision different settings in the device. Software clients and upgrades can be delivered over the air as well. This has significant positive supply chain implications, of course, as WiMAX moves to a mass-market phenomenon.

Since an OMA-DM system traditionally requires a significant financial investment, we expect there will be vendors offering this as a cost-effective managed service for small- to mid-sized operators in the near future. Interoperability and flexibility are key, so OMA-DM solutions should support many different device vendors and a AAA solution that can be seamlessly integrated with the OMA-DM system.

Provisioning with Open Online Activation

A simplified alternative to OMA-DM is something Aptilo is calling open online activation. This method also does not require pre-provisioning of devices. It does require a client certificate for mutual authentication with the AAA server. When the device is switched on for the first time it will log in via transport layer security normally using the device's MAC address as the user ID.

Advanced AAA servers recognize that this is an unprovisioned device and will apply hotline profiles so that the user is hotlined and forwarded by the ASN gateway to a sign-up portal where self-activation and selection of services can be made online.

One disadvantage has been the use of MAC addresses for log in; users are traditionally unable to log in from another connection to top-up or manage the account. Hierarchical accounts, available with some advanced AAA servers, solve this problem. A master account is created with a username password selected by the end user for managing the account from any Internet connection while the user continues to log in to the WiMAX service with a MAC-based sub-account, one account for each device.

Open online activation is an attractive alternative to OMA-DM as it is available today and offers all the benefits of using off-the-shelf devices for a lower investment. However, continuous management of device upgrades cannot be done over-the-air, and the method is currently not included in the WiMAX Forum Open Retail Certification Initiative.

Manual Provisioning

Manual provisioning should be avoided. However, there might be situations where the operator chooses to pre-provision its devices with unique IDs and passwords prior to sale. This method could be used if the operator cannot use either OMA-DM or unique device certificates. One option here is to let the end user do the provisioning manually via device-specific instructions online. This method may drive a high volume of end user support.

Operators clearly have a number of factors to consider when selecting a provisioning method. The WiMAX Forum Open Retail Certification Initiative is a solid effort to help operators make the best choices to support their networks now and in the future. **NGN**

Torbjorn Ward is CEO for Aptilo Networks (www.aptilo.com).

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by Eylon Sorek

TDM Migration and the Path Toward Unified Networks

Tips and best practices for how to migrate to a unified MPLS network

It is common knowledge that telecommunication service providers worldwide have transport networks that originally were designed to deliver TDM services. Yet due to the exponential growth in data services we have experienced over the past few years next-generation transport is facing scalability and cost challenges, and therefore embedding packet capabilities.

For telecom service providers to preserve their TDM services, know-how and investment, it has become increasingly obvious that some kind of a migration plan is needed. One such approach would be to emulate TDM in packet-based switches and routers. In line, another option would be to embed packet technologies such as Ethernet and MPLS into the traditional transport systems.

The Current Status of TDM Traffic

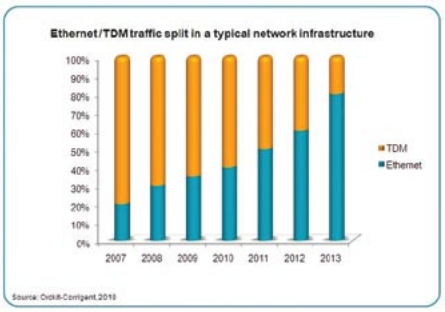
TDM services and SONET/SDH technologies were designed to deliver voice. Voice is a mandatory service with specific requirements, but its capacity in the entire network is very small – less than 10 percent in most cases.

Most of the TDM services today are leased lines that enterprises consume to connect their remote offices. TDM is considered as a reliable and secure connection, and therefore it was widely adopted as a VPN enabler. The 155mbps that is achievable with an STM-1 connection is a popular example.

The introduction of carrier-grade switches and routers brought an alternative with a much higher capacity and lower cost. The result was acceptance of Ethernet services for enterprise VPN and residential triple-play service.

A closer look at the actual business that is deriving from the TDM leased lines reflects this trend – most of the TDM services are actually Ethernet-over-SDH services that are still producing good margins for the telecom service providers.

But a combination of increased competition (a practical alternative for an enterprise to replace its STM-1 service with gigabit Ethernet service) with the exponential growth of packet services is changing the overall picture. A long-term view on the traffic that networks will need to deliver is clear – Ethernet is the growth engine, and Ethernet will capture most of the traffic in the next-generation networks. This is demonstrated in the below figure.



Ethernet/TDM traffic split in a typical network infrastructure

Thinking about TDM

While the long-term vision regarding Ethernet and TDM is clear, implementation is affected by many constraints, including: current architecture and subscriber base, competition from alternative operators, regulation, required scalability, costs, workforce know-how, existing fiber and other factors.

In some cases, TDM traffic and services are still growing. So a key question is how to enable the new TDM. Is it better to invest new TDM capex over the existing TDM network, or to devote new carrier Ethernet capex over the new carrier Ethernet network? This opens not only a capex and opex comparison, but also a strategic decision regarding one network that will handle all services vs. separated networks that will deliver different types of services.

In other cases, TDM traffic and services are decreasing. This is mainly due to enterprises that are giving up their TDM and moving to Ethernet. A key question here is what to do with the existing TDM infrastructure. What is the best way to reuse the exiting subscribers, fibers and network infrastructure?

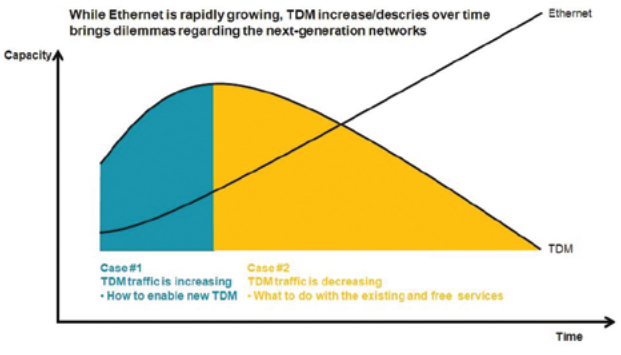
There also are various opex issues regarding the existing TDM network. Once again, the strategic decision here is about the co-existence of both TDM and packet services in the next-generation network. This perspective is demonstrated in the below figure.

TDM + Packet Networks: The Alternatives

Service providers face the following alternatives and tradeoffs when designing their next-generation networks that should deliver both TDM and Ethernet services:

1. The Orthogonal Approach: Two Networks

The orthogonal approach involves the addition of a new and parallel packet-based network to the already existing TDM network. In this concept, the service provider is maintaining two separate networks: one only for the TDM traffic and another one only for Ethernet traffic.



While Ethernet is rapidly growing, TDM increases/decreases over time bring dilemmas regarding the next-generation networks.

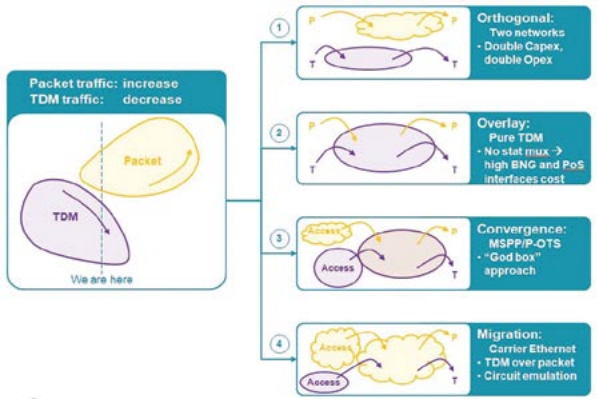
For telecom service providers to preserve their TDM services, know-how and investment, it has become increasingly obvious that some kind of a migration plan is needed.

Although this is the most intuitive and simple approach, it is not capex (network elements, fiber, etc.) or opex (human resources, customer support, etc.) effective. In addition, this approach is not satisfying the transport organization's motivation to embed packet technologies in its existing network.

2. The Overlay Approach: Ethernet over TDM
The overlay approach involves backhauling of the upcoming Ethernet services over the existing TDM network. This is a starting point in networks that are heavily based on TDM infrastructure and are starting to offer Ethernet services. This is a costly alternative that is not reasonable for a large amount of Ethernet services, since it cannot take the advantage of statistical multiplexing. Therefore, a lot of unutilized ports will pass through the entire network to the expensive TDM and router core interfaces.

3. The Convergence Approach: MSPP/P-OTS
The convergence approach is an all-inclusive approach, creating a converged networking layer including native support for TDM services and native support for packet services. This is being deployed by using MSPP/P-OTS products that implement a hybrid, complex and expensive fabric. A typical MSPP/P-OTS product embeds a wide variety of technologies, including DWDM, SONET/SDH and IP/Ethernet/MPLS.

4. The Migration Approach: Carrier Ethernet with Circuit Emulation
The migration approach uses the standard and interoperable carrier Ethernet switches that were originally built for the delivery of large capacity packet services and adds circuit emulation technology to enable TDM services. The packetized TDM services are equivalent in their quality to those being provided by the traditional SDH/SONET networks. This approach provides the opportunity for smooth migration from a TDM network to a packet network, since the TDM line cards can be added and removed at any time.



TDM + packet networks: the alternatives

Migration vs. Convergence

Migration and convergence are the two main alternatives for implementing next-generation networks. The migration concept is to move from "A" (TDM) to "B" (packet), while the convergence concept is to move from "A" (TDM) to "A" + "B" (TDM + packet). Typical migration products are carrier Ethernet switches that enable TDM with circuit emulation technologies, while typical convergence products are MSPP/P-OTS that have native TDM and native packet capabilities.

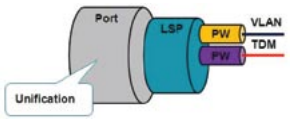
The Migration Approach

The migration approach is based on carrier Ethernet switches and routers. These products are based on a packet fabric and therefore can only perform packet processing. This means that for Ethernet services, the solution is highly scalable and cost optimized, but TDM services need to be packetized and handled specially by traffic management modules.

The TDM traffic is transported on top of synchronization technologies (such as synchronous Ethernet and IEEE 1588v2) and TDM emulation protocols (such as CEP, SAToP and CESoP). This package enables any rate of TDM services – from E1 till STM-1/4/16 services.

Other than scalability, performance and cost, the migration approach embeds TDM in optional line cards. This means that the service provider can add and remove the TDM line cards to cope with its current TDM traffic, without impacting the Ethernet performance. This pay-as-you-grow approach enables carrier Ethernet networks that will evolve to carry mainly packet services.

TDM services being offered using circuit emulation technologies are equivalent in their behavior and quality to those being provided on the traditional SDH/SONET networks.



The migration approach

The Convergence Approach

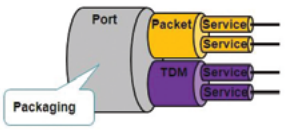
The convergence approach is based on MSPP/P-OTS products. These hybrid products pack the functionality of Ethernet and TDM on a single fabric and transport them in their native form. Therefore the products integrate smoothly into existing transport networks and

provide satisfying solutions for networks that need to start introducing Ethernet services on their large capacity TDM infrastructure.

MSPP/P-OTS product complexity is higher than a switch or a router since two different domains coexist – classic transport with DWDM and SDH, and classic packet with Ethernet/MPLS. Operating these platforms and debugging problems is a challenging task.

In addition, since the long-term plan for the next-generation network is to support a massive amount of Ethernet services, and TDM is not optional on the products, this approach eventually will become non-competitive in its price point and performance to the pure switches and routers alternative.

The convergence approach



	Carrier Ethernet	P-OTS
Product positioning	Switch/Router • Ethernet-packet fabric	Hybrid • Fabric for TDM + packet
Service delivery	Ethernet • Easy to scale up TDM • Emulation	Ethernet • Limited scalability (TDM exist) TDM • Inherent • Ethernet-over-SDH
Transport	An extension	Inherent
Cost	Low Capex (fabric) • Pay as you grow for Ethernet/TDM	High Capex (complex fabric) • TDM enabled at day-one

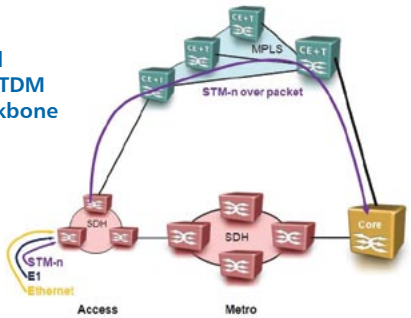
Smooth Operator

While building the next-generation infrastructure, a gradual transition of TDM services enables a smooth network migration toward a unified packet network. The transition involves the following steps:

Step 1: Building MPLS aggregation network and offloading high-capacity TDM traffic from the TDM backbone

A typical starting point is a TDM network, based on PDH/SDH technologies, that enables both TDM services such as E1 and STM-1/4/16, as well as 10mbps/100mbps Ethernet services.

Step 1 - Building MPLS aggregation network and offloading high-capacity TDM traffic from the TDM backbone



The first step is to build in parallel to the TDM metro network, a new carrier Ethernet network that will be used for metro aggregation. This network is based on MPLS plus circuit emulation technologies. At this step, the new network is used to carrying high-capacity TDM traffic that is coming from the access rings, and in doing so, offloading the TDM backbone. During this phase, the service provider also learns how to operate the new network and gains confidence with the new technologies and capabilities.

Subscribers are not affected at this point, or in any other point of the migration.

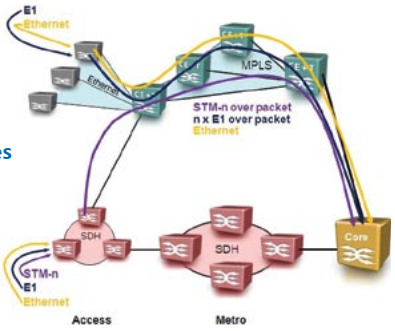
Step 2: Adding a multi-service access network to carry any service from the access network

When the metro network is stable and robust, a new multi-service network is built in the access network. The multi-service network elements combine Ethernet and TDM interfaces and are used for both new and existing subscribers.

This process is completing a new networking layer that is capable of carrying any type of service over packet. This network is scalable and cost optimized for the expected Ethernet traffic as well as capable of upgrading the existing subscribers to a higher capacity network with the same service level agreement.

The new multi-service switches can be added as fast as the service provider needs.

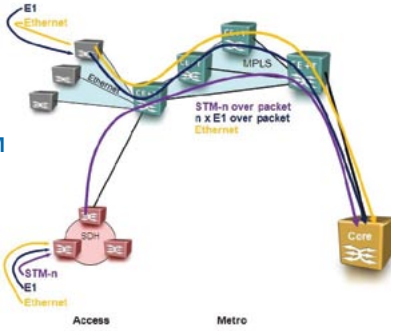
Step 2 - New multi-service access network migrates existing services and enables any new services



Step 3: Phasing out the TDM backbone while preserving the investment, subscribers and services in the TDM access

At a certain point, most of the TDM traffic in the backbone already has migrated to the packet network, and therefore the TDM backbone is consuming opex that is higher than its revenues. In addition, the level of confidence and stability of the carrier Ethernet network is high. At this point, everything is ready to remove the TDM backbone.

Step 3 - Offloading the TDM backbone while preserving the TDM installed based in the access network



Orckit-Corrigent's Eylon Sorek

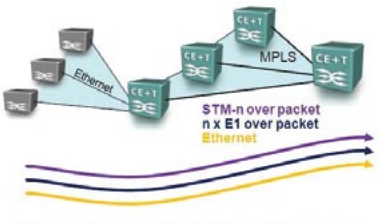
This significant step is to release the fiber that is used by the next-generation network, while preserving the very large number of network elements in the access network. Preserving the TDM installed base in the access is one of the most important achievements of the smooth migration, both economically and technically.

Step 4: Completing the phased migration with a standard and interoperable carrier Ethernet network

The long-term vision for a unified network is achievable in a standard and interoperable way. The new carrier Ethernet network is scalable and has a high performance. The result is a network based on MPLS, and therefore the service provider is leveraging all of the technology's connection-oriented, traffic engineering, QoS, OAM and protection mechanisms. The circuit emulation technologies are also standard and available on today's networking platforms. Since circuit emulation was used, its line cards on the switches can be replaced with Ethernet line cards at any time without impacting the switching capacity. **NGN**

Eylon Sorek is associate vice president of marketing for Orckit-Corrigent (www.orckit.com).

Step 4 - Phasing out TDM infrastructure and achieving a unified MPLS network



The technology is available		
SAToP, CESoP	PDH	RFC 4553, RFC 5086
CEP	SONET/SDH	RFC 4842

by Paula Bernier

NTT America Talks Transport

It's been a busy few months for NTT America, the U.S. subsidiary of NTT Communications Corp., which is comprised of the Enterprise Solutions and the Global IP Network business units. The company last month installed a new leader, Kazuhiro Gomi, as president, CEO and a member of the board. And in recent months NTT America's Global IP Network business unit has deployed Cisco Systems ASR 9000 routers, which are helping scale its network and add further support for IPv6 addressing, while preparing for the next big thing in transport.

NGN Magazine recently spoke with Michael Wheeler, vice president of the GIN business unit, about what's new and what's next for NTT America in the areas of transport and value-added services.

What's new?

Wheeler: Earlier this year we announced a 300-gigabit level; we put that much IP-specific capacity in place that we were running our global network on top of. In a short period of time, from February to now, we've grown that by almost 20 percent, so by the end of the year I think we'll be in the 400-gigabit range.

> "When we get to 400 gigabits of transpacific capacity, we'd much rather have a smaller number of 100gigE circuits transpacific than 40-plus 10gigE circuits essentially spanning that ocean."
>
> - NTT America's Michael Wheeler

Where is NTT America in the great debate over whether we should go from 10gigE to 40gigE, or just right to 100gigE?

Wheeler: One of the things that allows us to do this, and kind of the next level of this, is the ASR 9000 platform from Cisco. Certainly it's capable of handling the 10gig interconnects that we have today as well as transpacific. But the next level of deployment for us is at the 100gigE level.

When does NTT America expect to move to 100gigE?

Wheeler: Later this year and early into next year if the costs of optics come down and we see more real demand, we'll be implementing 100gigE ports not only in our backbone network but ultimately we believe very quickly to customers. A year from now we'll have customers on 100gigE ports on the network in the U.S. and Tokyo.... When we get to 400 gigabits of transpacific capacity, we'd much rather have a smaller number of 100gigE circuits transpacific than 40-plus 10gigE circuits essentially spanning that ocean.

What has been the company's strategy for migrating its network to enable larger payloads over time?

Wheeler: We did a lot of the testing on the ASR 9000 platform last year and went through the lab process that we go through with any new platform we're deploying, and we were pretty happy with the results and have been talking quite a bit about it this year. It's an important thing for our customers. We went to the [Cisco] 6509 platform about four years ago and had a lot of customers going from single gigE to 10gigE ports. It was a pretty progressive thing to do at the time; not a lot of people were doing that. That was just four years ago. And we're really looking at the same thing being the case – going from 10gigE to 100gigE in the next 12 months.

What value-added services does GIN offer and to whom?

Wheeler: It's actually quite a lot. On the Global IP Network side we offer some high-level pieces, like we have a content delivery service called Smart Content Delivery. Instead of deploying 20,000 servers around the world like Akamai does, we leverage off of the network itself and have caching and some of those pieces. Another primary category is a product we call VLink, a long-haul Ethernet service. It doesn't have to be long-haul, but for our network in the U.S. it essentially is.... We have also for our more traditional enterprise-type customers value-added services like intrusion detection, managed router, those types of things as well. NGN

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By Paula Bernier

MindTree Grows in New Directions

Helps TEMs Build Products So They Can Focus on Services

The big communications infrastructure providers like Alcatel-Lucent and Cisco Systems Inc. have been talking so much about their services lately that when engineering outfit MindTree recently told me about its plans to transition from services to products, I mentioned that it was going against the industry trend. But, as it turns out, this MindTree strategy actually makes perfect sense, given the firm is helping provide such companies with the components and white-label products they need to bring new offers to market more quickly and affordably.

"Companies like Alcatel-Lucent today, for example, they are basically saying that 'we don't necessarily have to design all the products which we need to sell in the market,'" says Anup Mehta, vice president and head of MindTree's network and storage systems business. "So they are looking for companies like MindTree to essentially provide complete product engineering solutions."

MindTree offers what it calls "outsourced product realization" to several companies, building products, sub-systems and/or turnkey solutions in the areas of retail and SOHO equipment, enterprise equipment, broadband access and mobile infrastructure products, carrier backbone infrastructure equipment and technology providers, according to the company's Web site.

However, Mehta groups MindTree's activities into the following five businesses: networking storage, which he runs; the consumer business, which focuses on handsets and other gear; infrastructure technologies for business verticals; an effort that serves large ISVs like Google and Microsoft; and a relatively new effort that was initiated with MindTree's recent purchase of the Bangalore, India-based part of Kyocera Wireless.

"Our service offerings start from the chip level to cloud level," says Sandeep Agarwal, general manager of MindTree's communications industry group, which focuses on residential gateways, enterprise Wi-Fi, and wireless infrastructure including WiMAX and LTE base stations.

In addition to Alcatel-Lucent and Cisco, MindTree clients include chip maker Broadcom; RadiSys, which sells blades, boards and cards for a variety of applications, including servers; Sanmina-SCI, which outsources manufacturing for OEMs; and security solutions provider Symantec.

While MindTree declines to disclose the name of the customer, it says it recently took complete ownership of the gateway security product for a U.S.-based company. That allowed the client company to focus its resources on other core and next-generation activities, saving about a third of the costs related to the gateway security product in the process, according to MindTree.

In early May, MindTree unveiled at IFSEC 2010 in Birmingham, U.K., a large portfolio of what it calls "ready-to-brand video surveillance solutions" that will allow OEMs, systems integrators and distributors to enrich their existing portfolios. Those solutions will consist of a surveillance manager, a suite of video analytics solutions, a video encoder, video decoder and digital video recorder.

"MindTree's R&D Services has been helping technology companies globally with product realization for more than 10 years. We have made significant investment in creating intellectual properties that are leveraged by our customers to accelerate the time to market for their products," says MindTree President and CEO - R&D Services Vinod Deshmukh. "Our Video Surveillance suite of ready-to-brand solutions can be quickly taken to market with appropriate customization. This launch by MindTree is the next step in meeting the product needs of our target market, further strengthening our position as a premier provider of product realization solutions and services."

Mehta says about 90 percent of MindTree's revenues currently come from engineering services, but it's transitioning to move a broader share of its income to delivering products.

Cellular handsets appear to be one of the key product categories that will help MindTree make that transition.

In October of last year, the company announced its entry into the business of developing Ready-to-Brand, or R2B, as MindTree calls it, mobile handsets. The autumn announcement also included the launch of MindTree's N!Mo (Next in Mobility) business, which is led by Samartha Raghava Nagabhushanam as president and CEO, and is part of the company's product engineering services group.

As noted above, MindTree formed the foundation of its white-label cellular handset business with its recent acquisition of Kyocera Wireless India. That deal was announced in late September of last year. KWI already has delivered 45 million wireless phones and, according to MindTree, has extensive experience in 4G technologies such as WiMAX and LTE.

Noting plans for Android-based handsets, Mehta says that MindTree is focusing on design and user experience with its white-labeled cellular handset effort, about which it expects to disclose more details later this year. He adds that India is one of the highest-growth markets for cellular, which gives MindTree (a global company, which has headquarters in both Bangalore, India, and Warren, N.J.) an advantage in understanding what users want and need. **NGN**

8x8, Inc.

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Small Business VoIP Online Community

Small business VoIP adoption is growing, largely because of the cost benefits, but the fact is that hosted VoIP services for small business, like 8x8's Virtual Office, provide much more than cost savings. The greater versatility of hosted VoIP system allows businesses to customize their telecommunications packages to meet their unique needs, but without requiring large up-front expenditures for equipment,installation, maintenance, or IT staff. For the latest news and information on VoIP services specifically designed for the small business market, visit the Small Business VoIP community on TMCnet, sponsored by 8x8. 8x8 Virtual Office is an affordable, robust and easy-to-manage phone solution with all the premium PBX features and functionality of a traditional telecom system.

On the Small Business VoIP Community, you'll find:

- Free consultations
- Free trials
- Free quotes
- Feature articles
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Powered by: TMCnet

by Michael Khalilian

Applications & the Next Generation Network

Apps play a huge role in network evolution and IP transformation. A new generation of apps has arrived thanks to the introduction of the iPhone and the increased demand for video applications on mobile networks.

At the CTIA show in March the NGN/IMS Forum announced its new Technical Working Group for Applications running on fixed and mobile broadband networks (e.g. 3G/4G/LTE, wireline and cable networks). This group will help accelerate the availability of IMS-based applications by providing additional tools and resources to foster the ecosystem of application developers, content creators, network operators, and telecommunications vendors (i.e. network equipment, handset, ICT, and original equipment manufacturers). This working group will play an integral role in our next plugfest.

Mobile handsets are becoming the platform on which a wide variety of applications can be run. Today's mobile handsets are not only used for Web browsing and e-mail but, increasingly, are becoming sophisticated computing devices that run a wide variety of data applications such as social networking applications, applications to share user-generated content, multi-user games, and music and video streaming. Traditionally, each of these capabilities has been provided by siloed platforms. As mobile networks migrate to 4G/LTE, additional applications will be possible and end users will be looking for a common experience between their fixed and mobile broadband networks.

As carriers deploy IMS networks, applications can be enhanced to create new end user experiences by simultaneously blending voice, data, video and multimedia. This new generation of applications will be able to take advantage of elements of the IMS network, such as QoS and voice over LTE, to deliver end user experiences (e.g. multi-play: triple play, quadruple play, m-play) that are consistent across both fixed and mobile networks.

Because of the explosion of applications, this working group and our upcoming Plugfest 9 will concentrate efforts on application developers to help them better internetwork Web 2.0 applications with IMS networks and BSS/OSS systems (including billing, charging and security). These efforts will bring the same level of interoperability enabled by our plugfests from the realm of protocols, network architectures, hardware and devices to the software and applications space by including application programmable interfaces that expose network capabilities such as VoIP, group management, presence and instant messaging.

Our next IMS Plugfest and NGN Plugfest interoperability test event, which will focus on many of these topics as well as others, will be held in the fourth quarter of 2010 at the InterOperability Lab in Durham, N.H. Registration for this plugfest and working group is now open to any service providers, integrators and vendors that would like to participate (www.imsforum.org/Plugfest). For additional information please contact admin@ngnforum.org **NGN**

Michael Khalilian is chairman and president of the NGN Forum & IMS Forum (www.NGNForum.org/www.IMSForum.org).

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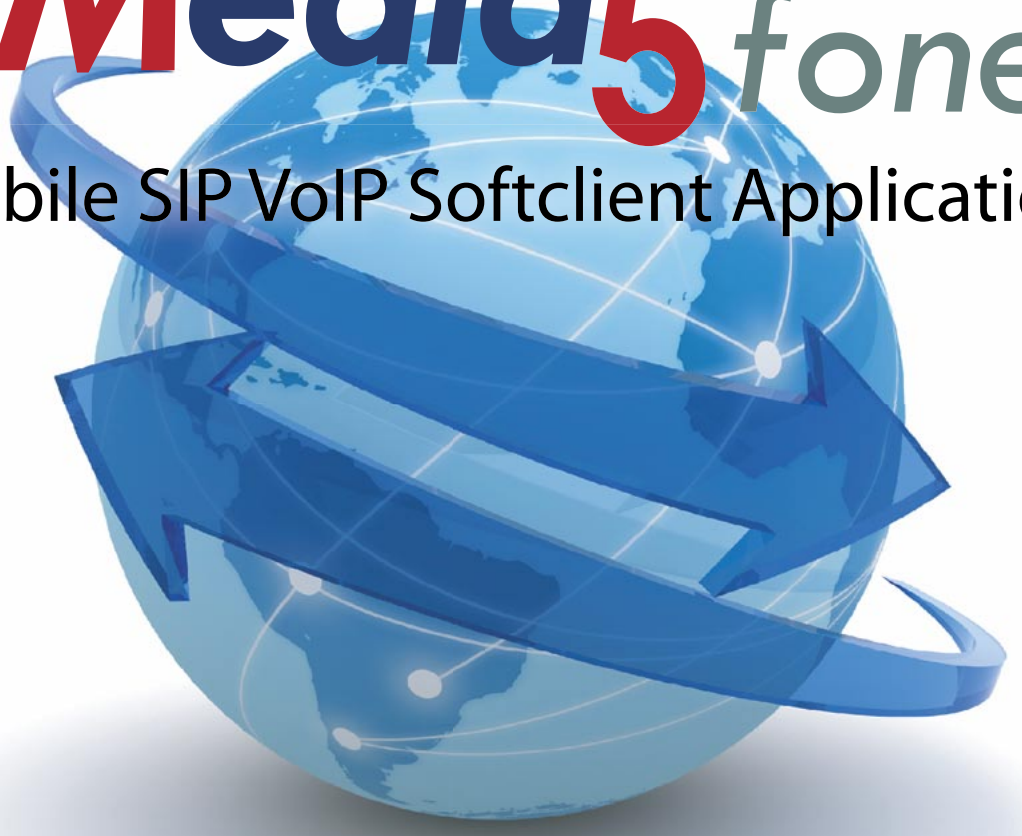

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