Dark Might:

Allied Fiber to Launch Fiber Network

Allied Fiber CEO Hunter Newby

Optical, Ethernet and Beyond: What's Driving Consolidation at Telecom Manufacturers?

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End-to-end Solution for Converged Mobile Backhaul Simplifies Operations

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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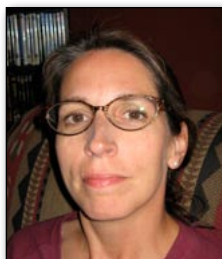Visit *www.adtran.com/mobilebackhaul* *for a FREE Mobile Backhaul Solutions Pocket Guide.*

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Despite Court Ruling, The Great Net Neutrality Debate Rages On

by Paula Bernier

The Federal Communications Commission in mid-March delivered to Congress a comprehensive document outlining how it and other regulatory bodies and industry players might work together to make broadband services more accessible, affordable and useful to the nation. Ironically, just a few weeks later the U.S. Court of Appeals for the District of Columbia Circuit ruled in Comcast's favor in a lawsuit the cable company filed against the FCC saying the agency lacks the authority to stop it from bandwidth throttling select applications (in this case, BitTorrent P2P traffic).

Indeed, this lawsuit was the 800-pound gorilla in the room as the FCC went about its business of drawing up and presenting Congress with The National Broadband Plan.

Then, in mid-April, the news came. Comcast had prevailed.

As reported by TMCnet's Patrick Barnard, Judge David Tatel of the U.S. Court of Appeals for the D.C. Circuit in his ruling said the FCC in ordering Comcast to stop "has failed to tie its assertion" of regulatory authority to any actual law enacted by Congress. As a result, Tatel reportedly opined, the agency does not have the authority to regulate an Internet provider's network management practices.

So, the court has made its ruling. What now?

We'll have to wait to see. But it's clear that the FCC, which has repeatedly emphasized its interest in net neutrality and open networks, whatever all that may mean, is not ready to give up the fight.

In the wake of the court's decision, FCC spokeswoman Jen Howard issued this statement: "The FCC is firmly committed to promoting an open Internet and to policies that will bring the enormous benefits of broadband to all Americans. It will rest these policies – all of which will be designed to foster innovation and investment while protecting and empowering consumers – on a solid legal foundation.

"Today's court decision invalidated the prior commission's approach to preserving an open Internet. But the court in no way disagreed with the importance of preserving a free and open Internet; nor did it close the door to other methods for achieving this important end."

Meanwhile, Austin Schlick, general counsel of the FCC, blogged that the Comcast/BitTorrent opinion "may affect a significant number of important [National Broadband] Plan recommendations."

Schlick indicates that might include "recommendations aimed at accelerating broadband access and adoption in rural America; connecting low-income Americans, Native American communities, and Americans with disabilities; supporting robust use of broadband by small businesses to drive productivity, growth and ongoing innovation; lowering barriers that hinder broadband deployment; strengthening public safety communications; cybersecurity; consumer protection, including transparency and disclosure; and consumer privacy."

That said, Schlick writes, the FCC needs to do some further investigation as to exactly what will be impacted how and what to do about it.

However, as TMCnet blogger Gary Kim writes, the FCC likely either will ask Congress to give it the authority to regulate broadband services or try to regulate broadband under common carrier rules.

Markham Erickson, executive director of the Open Internet Coalition, a group that counts Google among its members, meanwhile, was quoted in a TMCnet story as saying that the "legal challenge to Title I authority by Comcast has created an outcome where the FCC has no option but to immediately open a proceeding to clarify its authority over broadband network providers under Title II." **NGN**

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Publisher's Outlook

Allied Fiber Addresses Wireless Backhaul Requirements

by Rich Tehrani

As the economy bottomed out more than a year ago, the thought of investing millions of dollars and digging up the ground and laying down dark fiber in the name of new networks seemed frivolous, even premature.

Call it a case of bad timing. The demand was certainly there, but the funds to build simply were not. Fast forward to the fall of 2009: As companies began to pull themselves out of the doldrums, we eventually began hearing of capital outlays being made, particularly investments in fiber to the tower to support fiber-based Ethernet backhaul transport service for the exploding wireless data usage. We also heard about their LTE rollouts in 2010 and the so-called wireless tsunami to come.

I recently spoke with Hunter Newby in our TMC Newsroom. Newby is the CEO of Allied Fiber, a company that is putting a very large amount of dark fiber in the ground, and that is the subject of this issue's cover story.

Newby first had the idea to launch Allied Fiber in May 2004, but actual implementation started in early 2008. Newby managed to get investments based on a proven track record of success in knowing where the market was heading and essentially building the future the right way for the customers.

Over the last couple of years, Newby and I have had numerous discussions at shows such as Interop, CTIA, and of course our own ITEXPO. It's phenomenal to see that in just two years major network operators have announced massive amounts of investment in LTE technology. And those operators are going to need a tremendous amount of fiber.

When we sat down most recently, Newby explained that wireless carriers are in "desperate need" of fiber not only in metro markets but also the places in between. The underpinnings of mobile broadband – LTE and WiMAX – present a situation on the backhaul side, where you need fiber, and a copper infrastructure will no longer suffice. Allied Fiber is building a new long-haul route that will ultimately lease fiber to service providers that want to bring Ethernet right to the tower.

As Newby explained, we have arrived at a place where those that have a need or something to gain from Allied Fiber's existence are beginning to educate the others. There is still a lot of educating to do, Newby said, but it is getting easier as more understand it and fiber to the tower becomes the buzz phrase of 2010.

As more 4G announcements begin to unfold, it is becoming clear that wireless carriers are not going to build all of the fiber themselves. As such, they look to transport providers to do a lot of that for them. The announcements that AT&T, Verizon and others have made regarding the amount of capital they will spend on fiber infrastructure to towers is a strong message in support of new fiber builds that necessarily have to happen for their transport needs to be met.

Fiber to the tower is a big dimension of what Allied Fiber is doing, as it is incremental to the core long-haul business needed in the United States as an upgrade as a result of the 10-year-old-plus legacy systems that are being replaced.

Most of the carriers out there today operating networks on leased fiber are finding it challenging to renew current leases, and are looking for new fiber to lease that they can match with the new equipment coming out, particularly the 100gbps wavelengths. That level of transport capacity is required to support things like wireless backhaul. Allied Fiber is currently leasing dark fiber to customers – offering neutral, open, active and vibrant meet points.

As Newby explained, we simply can't get 4G across the country without significantly upgrading the backbone transport systems, and that's going to require new fiber in many places for efficiency and economies of scale.

You can't support new wireless devices like the iPad without the backhaul network. And that bandwidth that they need is a big challenge indeed – from a physical standpoint alone considering the size of the United States.

That said, this is an area that has plenty of room for players such as Allied Fiber. **NGN**

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http://tmcnet.com/26991.1
Telstra CEO Adjusts Executive Organization

Telstra's international telecommunications and technology executive Gordon Ballantyne has been named the new group managing director of Telstra consumer and channels, effective in June. Kate McKenzie, formerly GMD of strategic marketing, will occupy the newly created position of chief marketing officer. And Robert Nason, GMD of customer experience, simplicity and productivity, has expanded responsibilities, which now include corporate strategy, mergers and acquisitions, and the Program Office.

http://telstra.com.au

http://tmcnet.com/26992.1
Ciena Lays Out Portfolio Following Nortel MEN Close
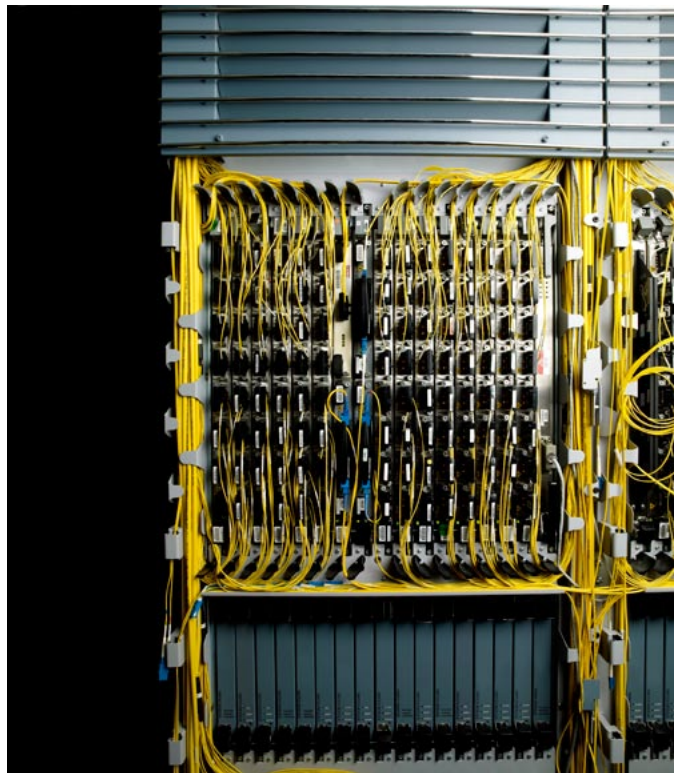
Following its close of the Nortel MEN assets, the new, larger, Ciena offers carrier Ethernet service delivery products, packet optical switches, packet optical transport solutions, and related management and services. On the carrier Ethernet service delivery front, Ciena offer its existing products as well as some technology pulled from Nortel's previously discontinued 8600. Ciena also continues to sell its CoreDirector and 5400. And for packet optical transport, the 6500 addresses core and high-capacity metro transport requirements while the 4200 and 5200 are being sold into managed services and enterprise opportunities.

www.ciena.com

http://tmcnet.com/26993.1
Industry Giants Call for Online Privacy Reform

AT&T, Google, Microsoft and others have joined forces under the banner of The Digital Due Process coalition. The group, which also includes privacy organizations, think tanks, other technology companies and academics, coalesced to issue principles for updating the key federal law that defines the rules for government access to e-mail and private files stored in the Internet cloud.

www.att.com
http://digitaldueprocess.org
www.google.com
www.microsoft.com

http://tmcnet.com/26994.1
AT&T Taps Cisco for Femtocell-like Offer

Last month AT&T began a roll out of its 3G MicroCell solution, which it developed with Cisco Systems. The product is available for a one-time cost of $149.99. As discussed in the March issue of NGN magazine, AT&T toward the middle of 2009 last year began using femtocell-like technology from Cisco in pilot tests in areas of North Carolina, South Carolina, Georgia and San Diego.

www.att.com
www.cisco.com

http://tmcnet.com/26996.1
iTeleport Turns iPad into PC Control Device

An application called iTeleport, which is available for $24.99 at Apple's App Store, enables iPad users to employ their new tablet devices to control their computers. Not only does iTeleport let the iPad control computers in the room, it also allows users to employ their tablets to access and manipulate their computers remotely via the Internet. This capability helps address functionality gaps in the iPad, according to some pundits, including the inability to play Flash, its lack of support for multi-threaded apps and an accessible file system.

www.apple.com
www.iteleportmobile.com

http://tmcnet.com/26997.1
Tigerpaw Names James Foxall as President

Tigerpaw Software Inc. has announced as its president James Foxall, previously senior vice president at the business software company. James is the son of Dave Foxall, founder and CEO of Tigerpaw, who remains at the company in an advisory role. Tigerpaw sells a software suite that helps VARs and other companies that sell telecom and IT solutions and services to manage their businesses on a variety of fronts – from managing prospects, to generating quotes, managing their employees and materials, and keeping tabs on what's happening with their customers' services.

www.tigerpawsoftware.com

http://tmcnet.com/27657.1

Actelis Innovation Enables Ubiquitous EoC

New advancements from Actelis Networks around Ethernet over copper will enable EoC to be as ubiquitous as previous, widely-used, network technologies like frame relay. That's the word from Joe Manuele, senior vice president of worldwide sales and customer service at the supplier. The latest release of the software for the Actelis EoS solution

includes new dynamic rate boost and enhanced dynamic spectral shaping technologies that will extend the reach and bandwidth of Ethernet over copper and address potential interference issues.

www.actelis.com

http://tmcnet.com/26998.1

Lower House of Parliament Passes Digital Economy Bill

Legislation called the Digital Economy bill is working its way through Parliament in England. The lower house of Parliament passed the bill in early April. While it opted to drop language in the bill about instituting a tax on fixed line calls in an effort to support broadband builds, the body retained a key part of the proposed legislation that talks about disconnecting or throttling bandwidth for those broadband users who repeatedly infringe copyright law.

http://tmcnet.com/26999.1

ALU Unveils Wireless Products Addressing 3G as well as LTE

Alcatel-Lucent has unveiled a variety of solutions aimed at addressing the mobile data explosion on both 3G and LTE networks. New are 2G and 3G Gateway GPRS Support Node functionality on Alcatel-Lucent's 7750 Service Router-based mobile packet core gateways; Wireless Mobility Manager, which enables service provider packet cores to support HSPA and HSPA+ as well as LTE;

the Alcatel-Lucent 5780 Dynamic Services Controller, which allows for policy management on both 3G and LTE networks; and packet core gateway and policy manager support on ALU's existing 5620 Service Aware Manager.

www.alcatel-lucent.com

http://tmcnet.com/27659.1

Satellite TV Provider Dishes Up 200 HD Channels

DISH Network now offers 200 national high-definition channels. New additions to the full-time HD line-up include EPIX HD, G4 HD, Headline News HD, History International HD, Nat Geo Wild HD, ShortsHD, Style HD and Turner Classic Movies HD.

www.dishnetwork.com

http://tmcnet.com/27660.1

NCTC Renews Broadband Access Deal with Arris

Arris will continue to supply National Cable Television Cooperative MSO members with end-to-end broadband access solution components. The company will be the exclusive supplier, through the NCTC, of select customer premises E-MTA equipment. NCTC is comprised of 1,000 member companies, serving more than 26.7 million households in the United States.

www.arrisi.com
www.cabletvcoop.org

http://tmcnet.com/27658.1

Telefonica Taps Movius

Movius Interactive Corp., a major player in messaging, collaboration and mobile media solutions, has signed a multi-year, multi-national agreement with Telefonica International.

Thanks to the pact, Telefonica will be the first carrier to deploy Side-Line Service in Latin America.

www.moviuscorp.com
www.telefonica.com

http://tmcnet.com/27661.1

MSO Trio Partners on Wi-Fi

Cablevision Systems Corp., Comcast Corp. and Time Warner Cable have agreed to allow their high-speed Internet customers to roam freely across the companies' respective Wi-Fi networks without any additional charges. This expands the reach and value of cable Wi-Fi in the New York metropolitan area, according to the threesome.

www.cablevision.com
www.comcast.com
www.timewarnercable.com

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Reach The Most Influential IP Communications Decision Makers 24-7

by Grant Lenahan

Eye on NGN

Mobile broadband is upon us.

Driven by technology, need and the surprisingly strong growth of true smartphones, we are seeing the maturing of 3G networks (HSPA, EVDOrevA) and even the advent of 4G (WiMAX, LTE). Many forecasts show more than four times more mobile broadband subscribers (globally) than fixed and more than five times the spend on associated SDPs. Clearly, this technological shift will have an overwhelmingly important impact on consumers, economies and the telecom industry.

Given all that, my goal in this bimonthly column for this year is simple: To investigate how to make mobile broadband profitable.

Each column this year will discuss a different aspect of mobile broadband success, including efficient operations, controlling backhaul costs, capacity optimization, creation and pricing of long-term profitable plans, and extending business models to address more than transport (aka "dumb pipe") revenues.

> My goal in this bimonthly column for this year is simple: To investigate how to make mobile broadband profitable.

Here's the basic challenge we face: Mobile broadband will offer very different economics as compared to traditional 2G, 2.5G and even traditional 3G networks. There are three inevitable and inter-related shifts contributing to this margin squeeze:

- open, IP devices;

- data usage that will rise faster than (and possibly exceed) flat-rate revenues; and

- the steady progress of over-the-top content and applications.

Quite simply the economics of IP will change the rules.

Possibly the most dramatic change is that devices are far more open. With IP connectivity users can download thousands – maybe millions – of apps that consume bandwidth, without necessarily generating incremental revenues for communication service providers. Worse, these apps, like Skype or IM, may in fact substitute zero revenue (cost) or low revenue services for dependable profit centers like voice and SMS.

The second challenge is data usage, which is forecast to – and already is – rising faster than revenues. Smartphones contribute to this, as noted above. But so do air cards for PCs, and even specialty devices such as instant hotspots. (I like to think of them as Wi-Fi routers run in reverse.) In this environment of rising usage, traditional all-you-can-eat data plans are a recipe for disaster and a spiral into the world of declining margins.

The third challenge is the third-party apps themselves. Some apps are of the familiar downloadable variety. Others are more complex, involving content servers, VoIP servers and other infrastructure. The problem is, CSPs don't own this infrastructure, nor do they have the option to charge for it.

So we as an industry need to think about what we do offer and how we do charge for services, including the basics of bandwidth, cumulative data usage, and latency. It's not all bad news. It's just a different paradigm – but that's for a different column, one that will look at the true value that CSPs can add, and how this can be priced so that it is profitable, attractive to consumers, and fair and acceptable in expected regulatory environments.

The other half of sustained competitiveness and profitability is, of course, cost. Cost means both opex and capex – and will be significantly impacted by a wide range of processes from how efficiently backhaul can be planned and acquired, to how efficiently radio capacity can be deployed and matched to demand.

We see a lot of opportunity to balance the challenges. But success will demand new pricing paradigms, new business arrangements, two-sided business models, an integrated view of radio/transport networks and a dynamic view of network resources.

Aside from that, nothing will change! **NGN**

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

by Marc Leclerc

A New Spirit of Co-opetition

In late 2009, our industry passed a critical threshold: Mobile data traffic surpassed mobile voice traffic for the first time. This is tangible proof that people want to do more with their mobile devices than just talk.

We are beginning to see massive increases in chat, music and video streaming, navigation, Web browsing, gaming and social interaction. Individuals and enterprises are now incorporating these activities as a part of everyday life, untethered to either location or specific screens or devices.

Social networking has been a key driving factor for both the massive uptake of electronically mediated communications and the new forms of expression that these communications have enabled. The arrival of high-definition television and 3D movies in mainstream media is also raising the bar for consumer expectations in terms of immersive experience sharing. People want HD voice and HD video images from all of their media devices, not just their televisions. This includes mobile phones.

Not coincidentally, the advent of HSPA and LTE is massively increasing the available bandwidth for communications services, and will continue to do so over the next few years. But how are we going to deliver on the consumer's expectations of significantly enriched communications experiences? How are we going to turn these experiences into actual revenue streams that justify the ongoing investments? But most importantly, can we do this in a way that leverages the innovation of the Internet while enabling telecoms to evolve new commercial models and avoid becoming just bit pipe purveyors?

Here is where several key initiatives by members of the telecoms community are significantly moving forward the evolution of the commercial side of our industry as well. Specifically, these are Rich Communications Suite, OneAPI and the Wholesale Applications Community.

RCS defines a common user experience based on enriched voice and video, enhanced address book, chat, presence and inter-working across device, operator and network boundaries. Throughout 2010, RCS is actively being trialed, or scheduled for trial, with multiple operators in France, Italy, Japan, Spain and elsewhere.

OneAPI defines a standard way for third-party applications, such as Web services, to access telecoms network capabilities as enablers. This makes it possible to integrate these functions with Internet-based services and deliver added value to telecoms subscribers. OneAPI also defines mechanisms to provide for the inter-working of applications across operators. The first such trial is already in place with three operators in Canada.

The most recent addition to these efforts is WAC, announced at Mobile World Congress in this February. WAC brings together 24 leading telecommunications operators into a common applications delivery platform for all mobile phone users. For developers, this establishes a simple route to market and provides them with access to a potential customer base of more than 3 billion consumers. Again, inter-working on a global scale is a key element of WAC's value proposition.

Taken together, these three initiatives provide all the elements of a healthy value chain.

1) a constant pipeline of varied and innovative applications and services that deliver value to consumers and opportunities for differentiation among operators;

2) a global marketplace of more than 3 billion consumers where developers can sell their wares; and

3) an effective, efficient channel that can deliver value to consumers no matter where they are and where they travel.

It is also significant that all three of these initiatives are being actively supported by the GSM Association. For the first time, there exists a truly horizontal solution in the telecoms space – one that avoids repeating mistakes of the past, such as reliance on specific devices or network platforms leading to delivery silos, overly complex interfaces that multiply development costs and risks, and fragmented markets with a multiplicity of competing standards.

This "co-opetition" approach among the members our industry gives us a tool to successfully compete with over-the-top services by centering the user experience on key strengths of telecoms. This includes untethered access even while mobile, cross-platform interoperability, global coverage and inter-working and direct access to over one half of humanity.

In conclusion, I would like to emphasize that the mechanisms outlined above can be utilized by operators to implement a wide variety of business models. These could include the retail model being so successfully exploited by Apple, or the advertising model that has driven Google into becoming one of the most valued corporations in the world, or it could be something else entirely or even a multiplicity of these models at the same time.

Key factors are lining up to make 2010 a golden opportunity for our industry to evolve our offering beyond voice and text and continue to play a leading role in the economy and the lives of humanity. It's up to us to seize the moment and deliver the future of communications! **NGN**

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

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What's Next?

by Ken Osowski

Many technologies are converging to change the landscape of mobile services that are offered including video communication and content access, pinpointing a subscriber's location, integration with the Web, and new mobile handset capabilities.

Let's just imagine for a minute the following scenario. A business traveler gets prepared to meet several clients the next day spread out across a large metropolitan area. The night before he logs into his personal navigation portal on the Web, allowing him to map out the next day's activities. He specifies multiple destinations with target arrival times and names this as an itinerary. After arriving at the destination airport the next day, he logs into his navigation portal on his handset and selects this itinerary. He gets into a rental car and the handset synchronizes, using Bluetooth, with the car's built-in video screen, enabling display of both navigation maps and live video. A split screen enables the traveler to see the moving map to his destination as well as live traffic video routed to the mobile handset and seen on the car's video screen. Traffic cameras are manually or automatically selected

ahead in the route allowing him to re-route if necessary to meet his clients on time.

Clearly this service is looking into the future, but we are headed toward scenarios like these that give us a highly useful blend of mobility, real-time information based on our location, interactivity, and integration across networks. These types of services may not be available today but this one example demonstrates how smart handsets on mobile networks can be leveraged to provide mobile subscribers high-value, integrated services that can result in incremental service plan revenues for mobile operators.

Recent research suggests that high-value video mobile services will be a vital tool in offsetting declining ARPU and will also generate additional revenues from emerging sectors such as mobile advertising. Moreover, mobile video services can prevent subscriber churn by enabling applications that enhance the customer's mobile experience.

Many of the popular mobile applications available today focus on mobile productivity,

entertainment, and gaming. These types of applications are usually available through an application store or through a simple download, and result in an increase in the amount of traffic on a service provider's network, but not much of an increase in the operator's revenue stream.

Network integrated mobile applications can generate service revenues for mobile operators. And deploying high-quality mobile video services is a key strategy for mobile operators to increase revenues now.

My column this year will focus on the technology required to enable successful network-based mobile applications that integrate video and other technologies, including those that address the complexities of synchronizing voice with video, and what is required to retrieve Internet video content and seamlessly move it through the network to a mobile phone with the best quality of experience possible. **NGN**

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

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By Paula Bernier

Dark Might

Allied Fiber to Launch Nationwide Fiber Network to Fill Market Void

Hunter Newby, co-founder of Telx, is building a nationwide dark fiber network that promises to bring more affordable and efficient transport to a wide variety of customers. The new venture, called Allied Fiber, and Telx (which Newby and the team sold in October 2006), are two very different businesses. But Newby indicates that both have moved to address important needs in the market.

Prior to "meet me" rooms, which Newby established while at Telx, it took months to interconnect, and carrier hotel tenants frequently had to pull ceiling tiles and break through brick walls to interface with one another. Creating a single process and location within a carrier hotel through which tenants could easily interconnect was an innovation that has saved many carriers a lot of time, money and hassle.

"We brought order to the chaos," he explains.

That's exactly what CEO Newby – along with Allied Fiber's President and COO Jason Cohen and Vice President of Engineering and Construction Patrick Opelt – plan to do again with Allied Fiber.

The New York-based company will sell dark fiber – as well as space in collocation buildings and on towers along the route – starting in late summer or early fall. That's welcome news to many network operators that have come up dry when searching for dark fiber within the U.S., says Newby.

The Void

The wholesale operations of incumbent LECs, as well as competitive providers like Level 3 Communications, offer lit fiber, he explains, but these carriers aren't interested in selling dark fiber either because it is in limited supply within their networks, they don't want to cannibalize their lit fiber business, or both.

"Level 3 went off to acquire Progress and Broadwing and Wil-Tel, who were all competitive transport networks, and they are what kept balance in the country in terms of access and transport. Well, guess what? They're gone. And now what do we have?" asks Newby.

"I know of dozens of carriers that ... are in desperate need of their own fiber so they can control the underlying economics, and they can be viable," he adds.

As a result, Allied Fiber has set out to blow fiber through ducts along various railroad rights-of-way across the country.

The Network

The first phase of the build will involve the installation of parallel short- and long-haul fiber networks from New York to Chicago and then down to Ashburn, Va., through Harrisburg, Pa.

This initial 1,300-mile network will follow the railroad tracks owned by Norfolk Southern Corp., with which Allied Fiber has dirt rights-of-way leases for 25 years, with two five-year renewal options. However, Norfolk Southern already has duct installed along about 80 percent of the route involved in Allied Fiber's first-phase build; in those cases, Newby's company has

Allied Fiber - Phase I - New Jersey & New York City

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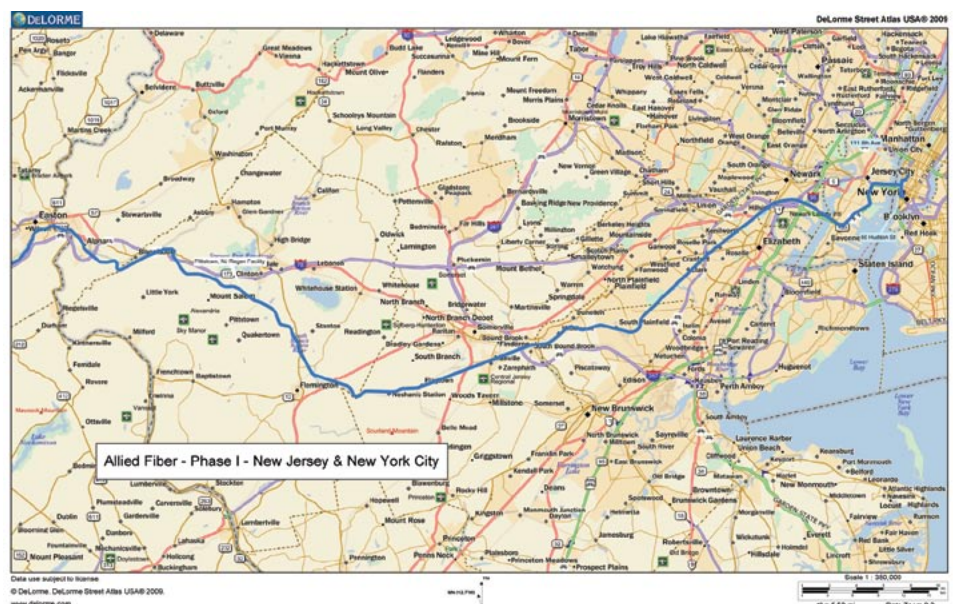
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duct lease agreements, under the same terms, with T-Cubed, Thoroughbred Technology and Telecommunications, a Norfolk Southern subsidiary.

Between what was already in place and the new duct Allied Fiber installed along this route, the duct part of the first phase was 97 percent complete as of April 5, when Newby last spoke with INTERNET TELEPHONY for this article. Allied Fiber had yet to jet any fiber as of that date, but the dark fiber will be installed in these ducts and ready for use starting in late summer or early fall of this year. Exactly when that happens will depend upon when Allied Fiber is able to close on its senior debt, Newby explains.

The second phase of the network, also along Norfolk Southern rights-of-way, will run from Ashburn to Roanoke, Va.; to Knoxville and Chattanooga, Tenn.; to Atlanta; and then from Jacksonville to Miami, Fla. Newby in early April said more than half of that build was ducted, but that Allied Fiber still had to build new duct in Southwest Virginia and throughout Tennessee, and to fill the duct with fiber.

"We have a ton of interest for that," he says. "I have three different groups that want to participate in a co-build in Tennessee, which is fantastic."

Beyond that, Allied Fiber has forged relationships with a couple of railroads in expectation of a Western build. Newby has a Chicago-to-Seattle route selected and he says there's some major demand for fiber along that path. The company also aims to put fiber on a route running from Seattle to Los Angeles and coming through Phoenix and Dallas to intercept its phase-two route.

"Most of my contacts come from the international world – undersea cable systems and international carriers," says Newby. "Those folks just look at the U.S. as something that they need to get through; they don't have any business here per se. They're just looking for the shortest path, the newest glass, and the best rates and terms."

The Spark

In fact, Newby says he decided to establish Allied Fiber after a major international carrier (likely Telefonica) told him about the company's need for a more affordable way to transport its traffic across the U.S. to interconnect its operations in Spain and South America.

"Because the way that networks work, Asia to Europe and Latin America largely connect to each other through the United States," notes Newby. "That's the way it's been for several decades, particularly with the growth of the Internet in the '90s and the launch of new subsea systems in the late '90s and early 2000s, which all landed in the U.S. somewhere. They landed in

Long Island or New Jersey or up in Washington state – the Seattle area, or California. And then those systems connected into the major carrier hotels – 60 Hudson, the NAP down in Florida and 1 Wilshire. And then, through the U.S., you have major long-haul routes that connect those buildings."

Anyway, this major carrier, which Newby declined to name, in November of 2007 told him it needed to double its backbone capacity in one year. But to do so using lit fiber leased from a carrier in the U.S. would've been cost prohibitive, so the company was trying to get its hands on some dark fiber and was hoping Newby could assist it in doing so.

The Demand

"I knew this first request was what I considered to be the tip of the iceberg – if this particular carrier was having this issue in '07 that by the same time in late '08, or even 2009, there would be dozens of networks that were having this issue with Internet capacity issues, backbone growth and what not," says Newby. "And I was right."

The Rate Sheet

Allied Fiber is offering 20-year IRUs on its planned Chicago-to-New York fiber route for a low, low up-front cost of just $1.2 million.

"$1.2 million is dirt cheap," says Allied Fiber CEO Hunter Newby, who adds that he hopes this introductory rate will incent customers to sign up for dark fiber before the system goes live and pricing on the New York-to-Chicago route increases.

In addition to this up-front fee, Allied Fiber will charge customers on the New York-to-Chicago route $55,000 a year for operations and maintenance, and $1,500 a month per rack, plus power.

That's pretty attractive, says Newby, considering it's not easy to find new fiber connecting these cities, and that even if you could it would probably cost twice as much.

The pricing will be the same on the Ashburn, Va.-to-Chicago route, he says.

Meanwhile, the up-front cost for a 20-year IRU on the New York-to-Ashburn route will be $475,000, with $25,000 for operations and maintenance.

Allied Fiber expects to charge $45 per pair per mile per month for short-haul dark fiber.

It has yet to decide on pricing for tower leasing. **NGN**

Indeed, as of April 5, Newby says Allied Fiber had 20 customers signed on for the first phase of its build, more than 30 additional deals in process, and a handful of contracts for the phase-two effort.

Felipe J. Alvarez, president of RCN Metro Optical Networks, in March told NGN magazine that his company is interested in what Allied Fiber is doing.

"He's likely to have the lowest latency route for financial services," says Alvarez of Newby, adding that the price of low-latency lit bandwidth has tripled in the last 10 months.

The Allied Fiber network will consist of a primary long-haul 432-count fiber network. A second duct on the route will contain 214-count fiber for short-haul applications. And a third duct will be

Allied Fiber - Phase II - Southern Florida

More About Hunter

Hunter Newby, the CEO of Allied Fiber LLC, is a member of Standard & Poor's Society of Industry Leaders and was vice chairman of the Pacific Telecommunications Council's Advisory Council 2004-2008.

Prior to his current work, Newby served as chief strategy officer of The Telx Group since 2000, and its predecessor, telx Communications Corp., since 1998. While at Telx, he was responsible for identifying the trends in the industry and formulating the strategies that shaped the company's direction, vision and leadership position in the marketplace.

During his tenure at Telx, Newby participated in management meetings with investors continually assisting in the capital raising process to fund the business as it grew. Through his role at Telx as chief strategy officer and ultimately a member of the board, Newby was directly involved in more than $500 million in transactions between 2003 and 2007. He built and trained an outstanding sales team that produced consistent positive monthly, quarterly and annual revenue growth even through the telecom industry's downturn in the early 2000s.

Prior to joining telx, Newby was with WorldCom, the United States Treasury Department, the Southeastern Pennsylvania Transportation Authority and the Philadelphia Electric Company. **NGN**

dedicated to maintenance and additional space should Allied Fiber need to deploy more or different kinds of fiber in the future.

Newby says these kinds of fiber counts were unheard of when the last big fiber systems were put in place a decade ago. He adds that although people in the industry talk about advancements such as 40 and 100G waves as though they're simply a matter of adding new network elements, the installed fiber is often 15 to 20 years old and has degraded due to weather or glass impurities, so makes performance of these new technologies less than optimal.

The Rest

Allied Fiber also will have collocation structures about every 60 miles along its fiber routes. These huts and other buildings, at which it will lease space and offer power to its customers, will range in size from around 650 square feet to several thousand square feet, says Newby, and can be expanded as needed. These sites also will act as "meet me" rooms at which various service providers –as well as hospitals, schools, universities and anybody else with a need for interconnection – can tie in to the fiber network.

> # Allied Fiber's strategy around wireless is completely different from how fiber-to-the-tower typically works today. In the Allied Fiber architecture the fiber is never more than a few feet away from the tower.

The third tenet of Allied Fiber's plan is to offer wireless network operators and their wholesale backhaul suppliers (including Ethernet service providers and microwave outfits) space on radio towers along its fiber routes. Newby says Norfolk Southern has 4,400 towers along its rights-of-way. For phase one of its build, Allied Fiber will work to make space on 300 of those towers, which it has leased from the railroad, available to its customers.

"I'm optimistic I will be his customer," a CEO of an Ethernet-based wireless backhaul services provider recently told NGN magazine.

Newby says Allied Fiber's strategy around wireless is completely different from how fiber-to-the-tower typically works today. Usually, he says, companies have to build laterals from fiber rings to towers – and those laterals can be several miles away. In the Allied Fiber architecture, he continues, the fiber is never more than a few feet away from the tower.

"We can intercept the short-haul duct at that tower so we can bring fiber to the tower, but it is at an incremental cost to us," he says, adding: "This is the 'meet me' room model, but stretched out and incorporating cell towers."

Allied Fiber put this overall network plan together after consulting with customers, he adds, noting that for the past several months it has been working on getting interested parties to sign letters of intent, so it has a good idea of what types of fiber they want, how much of it they want where, and what their collocation and tower requirements are.

Newby sees Allied Fiber as being analogous to the interstate highway system championed by President Dwight D. Eisenhower. This network, he says, will offer a standard way for carriers and other network operators to get their traffic from one end of the country to another, or anywhere along the way, and to be able to get traffic on and off that network easily as needed.

The Money

Allied Fiber initially had hoped to get some broadband stimulus funds from the federal government to assist it with this effort. But Newby says the company's request for federal funds was rejected via a curt letter during the first round of the national government's program. Participating in the program, he adds, was so frustrating and time consuming that he opted not to try again in the second and final round.

Instead, Allied Fiber is relying on a variety of other sources for funding.

Newby says the company has received $2.5 million from the principals of private equity firm Corinthian Capital, at which Rory Cutaia is executive director. Cutaia co-founded Telx with Newby, and is executive chairman at Allied Fiber. Corinthian also is supporting Allied Fiber by providing legal and other assistance.

Allied Fiber also has funding from additional sources. Newby says that he hopes to accelerate things following the first two phases of the Allied Fiber build, when he expects new funding sources to open up to the company.

"It's very difficult to cost-justify this kind of construction, which is exactly why no one else has done it," says Newby. "People who only need a pair of fibers are never going to build a whole duct system; it wouldn't make any sense. [That's] why we're doing it.

"We're building this duct system for everyone," he adds. "We're putting this fiber in the ground for everyone. We put in a high enough count cable so everybody can get a pair or two pair of fiber and they can run their business.

"But none of those people independently would be able to pull that off. Imagine them getting together and trying to form a consortium to do that," he concludes. "Forget it. It would be like herding cats." **NGN**

By Paula Bernier

Optical, Ethernet and Beyond
What's Driving Consolidation at the Telecom Equipment Manufacturers?

The network infrastructure sector saw another big combination this spring as Ciena closed on the assets of Nortel's MEN business. The deal brings to Ciena some very nice Ethernet and optical solutions as well as the customers that use them. But what was the key driver of the deal?

If you ask Tom Mock, senior vice president of strategic planning at Ciena, he talks about how the Nortel MEN purchase accelerates Ciena's strategy by two to three years. Not only does it expand Ciena's product portfolio, he says, it also gives Ciena a larger customer base, of larger carriers, and a broader geographic reach, particularly in Asia and Latin America.

"When we're finished with this, from an optical networking perspective we'll be No. 1 in North America, and a pretty strong No. 3 worldwide," Mock says, adding that post-merger Ciena has a little more than 800 customers worldwide and about 75 percent of the world's largest service providers.

But if you ask ADVA Optical CEO Brian Protiva for his thoughts about the combination of Nortel MEN with Ciena (which probably has been ADVA's most direct competitor over the years), he'll tell you the key driver of the deal was Huawei.

The Chinese Juggernauts

"There are a lot of companies that are being forced into having dual names – Alcatel-Lucent and Nokia Siemens and now Ciena-Nortel – in order to try to compete with the Chinese juggernauts that are taking massive market share," says Protiva of ADVA. "If you look at Huawei and ZTE there's probably at least 30 percent in the NGN technologies already owned by them. And therefore that's forcing consolidation."

In a study released a year ago this month, Infonetics Research announced that Huawei had taken the worldwide optical network hardware market throne, moving Alcatel-Lucent into the No. 2 position. Infonetics reported that Huawei owned 23 percent of the market, in terms of revenue, as of the first quarter of 2009.

"Since 2002, the optical network market has grown at an 8 percent compound annual growth rate, but for most vendors it looked more like 6 percent because Huawei absorbed a significant portion of the annualized gains. I don't see this trend ending anytime soon, and if it doesn't, Huawei could be the overall market leader for 2009," Infonetics analyst Andrew Schmitt suggested last year.

And that's precisely what happened.

"Huawei was the top-selling optical network hardware vendor in 2009, with the highest revenue in three out of four quarters," Schmitt wrote in February. "Alcatel-Lucent edged past Huawei in the fourth quarter, but not enough to take back its optical crown for the year."

Wowie Huawai

Of course, optical isn't the only area in which Huawei has made a strong play. The company has carved out a strong position (if not the No. 1 position) in virtually every key area of next-generation networking – including access, IMS, IP router, LTE and MPLS backbone technologies.

M&A Refuels
By Paula Bernier

M&A activity is starting to pick up again.

2010 has already seen $500 billion in deals around the world, which is more than 20 percent ahead of last year's pace. Despite the economy in the past couple of years, many companies are cash-strong, and now have the opportunity to spend some of that cash to strengthen their positions. And, according to Paul Parker, head of global M&A with Barclays Capital, too much cash can make a company a target for others that want to deleverage.

That may help explain why we're seeing more mergers and acquisitions in our industry, in addition to the broader economy.

On the last day of March, Covad and MegaPath announced their intention to merge. The combination will create one of the largest managed service local exchange carriers in the nation, according to the partners, which will offer Ethernet, DSL, T1, security, VPN, and voice and Internet services.

Earlier in March 19 Ciena closed its purchase of Nortel's MEN assets – that is, the Ethernet and optical solutions of the former networking giant.

That same month PAETEC revealed its purchase of U.S. Energy Partners LLC in a $3 million deal. The privately-held company sells electricity to more than 3,500 customers in western New York State.

Around the same time ABRY Partners signed a definitive agreement for an investment fund it manages to acquire RCN in a deal valued around $1.2 billion.

Who knows what pairings we might see next. **NGN**

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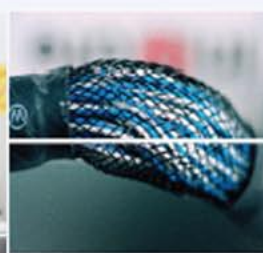
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> "There are a lot of companies that are being forced into having dual names – Alcatel-Lucent and Nokia Siemens and now Ciena-Nortel – in order to try to compete with the Chinese juggernauts that are taking massive market share."
> – ADVA's Brian Protiva

For example, in March, Infonetics Research, reported that Huawei ranks No. 3 in both the IP core router and IP edge router, with market shares of 10.60 percent and 15.61 percent respectively.

"Infonetics' report for 2009 reflects Huawei' s strong momentum in the IP field," says Zha Jun, president of network at Huawei. "As part of Huawei' s All-IP convergence strategy, our router portfolio is well suited to support the continued and rapid growth in Internet and business traffic. We will continue to strengthen our efforts in the IP field and focus on addressing challenges of carriers evolving toward ultra-broadband."

Huawei has said its focus on addressing customer needs has enabled it to rocket past such industry giants at Alcatel-Lucent. But when you ask competitors about Huawei they frequently focus on the low cost of the company's solutions.

Bigger Fish to Fry

Given Protiva believes these Chinese suppliers such as Huawei are driving M&A on a variety of fronts, it's logical to wonder whether ADVA is poised to buy another supplier or could itself be the target of an acquisition.

In fact, says Protiva, there's been interest both in and from ADVA, which did its last acquisitions back in 2006 when it purchased Covaro Networks and Movaz Networks. Would ADVA buy a company today, Protiva tells NGN magazine, it would probably be in the enterprise or Ethernet access space.

While carrier infrastructure is the largest segment of ADVA's available market, growing by 13 percent and representing about 45 percent of its market, Protiva says his company is strongest in enterprise and Ethernet access.

Although enterprise spending fell off in 2009, it's coming back quickly, he says.

"I see some strength in the enterprise space," he adds, noting there's a $500 million opportunity in the area of enterprise optics alone.

But Ethernet access looks even better to ADVA, which is the global leader in this space, he says.

"Ethernet access is the fastest growing opportunity for us – at 25 percent," he says, adding this is an $800 million market opportunity.

That's not to say ADVA has taken its focus off the carrier infrastructure space, however. In fact, says Protiva, the company aims to win a third large carrier this year and a fourth one within the next two years. Although ADVA is a small fish in a big pond on the carrier infrastructure front, Protiva says it's able to compete due to its ability to innovate.

"If you look at us over the last 10 years, ADVA has done quite nicely, grown probably five times our revenue run rate in a quarter from 10 years ago," he says. "I don't think there are too many companies that can make that statement."

The only other company that can say that, he adds, is Huawei, which has captured enormous share in recent years.

According to data released this February by Infonetics Research, worldwide the optical network hardware market, despite 5 percent sequential growth in the fourth quarter, dropped 14 percent in 2009 from 2008. Other than Huawei, the only vendors that increased optical market share in 2009 were the vendors that focused on the optical edge, including Fujitsu, ADTRAN and ADVA. **NGN**

By Paula Bernier

MPLS Service Providers Address Hosted VoIP

Best-effort service for hosted VoIP service just doesn't cut it for some customers. That's why this service is increasingly moving onto MPLS-based connections.

Indeed, at least two leading MPLS providers recently announced new moves in the hosted VoIP space.

MegaPath Inc. this spring launched a hosted VoIP offer called Duet Hosted. Meanwhile, New Edge Networks separately unveiled relationships with hosted VoIP providers 8x8 and XCast, both of which will bring quality of service to their offers by delivering them over New Edge's MPLS connections.

Cardi Prinzi, president of New Edge Networks, says in the past year or so there's been a bigger focus on delivering managed services to larger customers. However, while larger customers expect a certain level of service and security, buying T1, T3 or Ethernet connections for their branch offices or other sites might be overkill. New Edge can provide multi-location MPLS – with class of service for hosted VoIP – to those customers. And, when smaller sites require it, that MPLS can run over ADSL. (IPsec is an alternative to MPLS, he adds, but that doesn't work great with hosted voice given IPsec requires a lot of firewalls, so is expensive.)

New Edge and 8x8 already have done a joint RFP for a customer in Atlanta, he says, and the MPLS provider has two customers it's signed on in cooperation with XCast.

"So it becomes kind of a distribution channel for us to sell more network," says Prinzi, who adds that New Edge next plans to seek partnerships with other application service providers, such as SaaS, physical security and hosted Microsoft Exchange outfits.

That said, he adds, VoIP companies are the biggest short-term opportunity for New Edge. So many of these kinds of companies approached New Edge about MPLS, he says, that the company decided "the market's telling us something; let's do something about it."

MegaPath, which has a strong agent channel, believes hosted services is what's happening, and the channel needs to get on the bandwagon. Mega Path can help them do that through this MPLS-enabled hosted VoIP offer.

"The big messaging here was trying to put the quality back in voice," says Dan Foster, MegaPath chief sales and marketing officer. **NGN**

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By Paula Bernier

Taking It to The Bank
Mobile Advertising Could Be Killer App for Service Providers

We've already heard loads about how app stores, APIs, SDKs, SDPs, SOA and Web services are enabling service providers to open their networks to third-party developers so both the carriers and the app creators can drive new revenues. But when we think about this model, most of us usually picture a scenario in which end users purchase an app , and developers and service providers share in the resulting margin. (At least that's what I think of.) However, another important opportunity relating to the above-mentioned acronyms, and service providers, is mobile advertising.

Ken Lee, director of product marketing for the Oracle Communications Service Delivery product family, says CMOs at service providers are interested not only in monetizing applications, but also in delivering advertising over mobile connections.

"Mobile marketing and advertising is expected to grow significantly in the next several years, and network operators need to stake their claim in this lucrative opportunity area," says Shira Levine, directing analyst of next-gen OSS and policy at Infonetics Research.

To move on the mobile advertising opportunity, Lee says, service providers need advertising platforms that both map to their existing operational and billing support systems, and that enable them to expose various mobile advertising campaigns to potential advertisers. For example, to the latter point, Lee says, wireless network operators could

> ### Oracle's Communications Marketing and Advertising Features Include:
>
> - pre-built interfaces and pre-defined templates tailored for a variety of users including advertisers, ad agencies and publishers;
> - self-service tools that empower advertisers to create campaigns and monitor their effectiveness, while providing network operators secure control over the use of network resources;
> - the ability to both "push" bulk messages to a large number of subscribers and to integrate advertising into "pull" messages – responses to subscriber interactions, such as text message voting for a reality TV show; and
> - support for advertising delivery via short message service, multimedia messaging service and wireless application protocol push.

build an inventory of contextual advertising campaigns – like a campaign related to a sports event and involving the delivery of coupons via SMS; or a program tied into a movie opening with specific mobile deliverables – and easily serve up this menu of options via a Web interface to potential advertisers like BMW and Starbucks.

While it will take some time for wireless operators to put these platforms in place, populate them with various mobile advertising campaigns and create the ecosystems that will enable them to expose these menus to potential advertisers, Lee indicates that the big service providers are in a pretty good position to put all this together given they themselves are important brands that know what big advertisers might be looking for. **NGN**

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by Steve Smith

Least Cost Routing and SaaS: The LNP Linchpin

In 2003, the FCC mandated that wireless and wireline carriers provide local number portability, thereby allowing subscribers to retain their existing mobile or landline number when changing service providers. The result is that carrier networking professionals are challenged to route highly complex voice and data VoIP/TDM traffic over next-generation networks.

About 8.5 million more U.S. households will start using VoIP for their home phone service over the next two years, according to a forecast from Pike & Fischer's Broadband Advisory Services. The number of VoIP-connected households in the United States will approach 30 million by the end of the decade, generating more than $11 billion in revenue for cable operators, telephone companies and network-independent providers such as Skype, P&F predicts.

A carrier's bottom line is directly and significantly affected by how quickly and accurately carriers are able to analyze, select and route this voice traffic. That's where least cost routing comes in, particularly in a SaaS business model. LCR is the process of determining where a call originates and then selecting the path of outbound communications traffic based on the least cost. The quality of a call is another factor that must be taken into account.

Routing is resource (both human and hardware) intensive; when factoring in the additional step of local number portability, the complexity rises exponentially. Price and dial code changes must be identified, verified and acted upon quickly and accurately to obtain the most favorable rates when configuring complex routing structures. With the number of dial codes that are porting at any one time skyrocketing, how do you know your billing is accurate?

All of the major carriers rate off of local routing numbers, and the smaller carriers are in the process of moving to LRN rating as economical solutions are provided to them. This means that larger carriers already have built in the protection on the front end to avoid hidden charges. Smaller carriers don't know what happened until after it's already happened.

Without solid LNP processes or systems in place, carriers may be forced to watch their profit margins shrink.

For a carrier's LCR team, automating the LCR is the way to go. Manual processes cost time and money and leave the carrier open to data integrity errors, which can be costly. Today's LCR software is designed to find the most profitable route for every call, at every junction in the routing map; handle nearly unlimited codes, routes and bindings; upload and change routing on the fly; as well as blend TDM and IP network with centralized routing.

In addition to increased accuracy and time savings, by deploying an automated solution, a carrier typically can reduce by one or two the full time equivalent staff, rate managers, analysts, support staff, necessary for manual route monitoring. These staffers can be redeployed to work on things that make the carrier more competitive.

If carriers are already heavily invested in legacy equipment or face capex or opex obstacles to purchasing new equipment, they may face internal opposition to purchasing yet another box.

For some time, the benefits of the software as a service business model have been well recognized by enterprises, and more and more telecom companies are taking advantage of a SaaS business model for technologies. The concept of LCR via SaaS delivery opens a door that allows carriers to leverage the economics of powerful and extensible LCR tools on a pay-as-you-grow basis. As the routing demands change or the NGN requirements change, so do the carrier's SaaS tools, allowing instant-on scalability of features and capabilities without cumbersome and expensive upgrades.

> About 8.5 million more U.S. households will start using VoIP for their home phone service over the next two years, according to a forecast from Pike & Fischer's Broadband Advisory Services.

By allowing carriers to try and buy technology and easily layer it into existing infrastructure and processes, the time to market to introduce new service offerings speeds up dramatically as well. Not only does no up-front investment mean a lower risk, but ease of deployment and affordability are among the key drivers of SaaS LCR offerings.

With today's increasingly complex traffic across converged networks, a carrier can see profit margins erode. For example, by not routing with LNP, a carrier can realize a 30 percent or greater cost, which they won't see until the end of the month, when it is too late to act on. For a carrier, it literally means profit running out the back door. LCR via SaaS is the linchpin that gives a carrier the opportunity to deploy technology that will allow the carrier's network to migrate TDM to VoIP traffic across existing network devices, at lower opex, and at healthy profit margins. **NGN**

Steve Smith is vice president of sales and marketing at General Telecom (www.gentel.net).
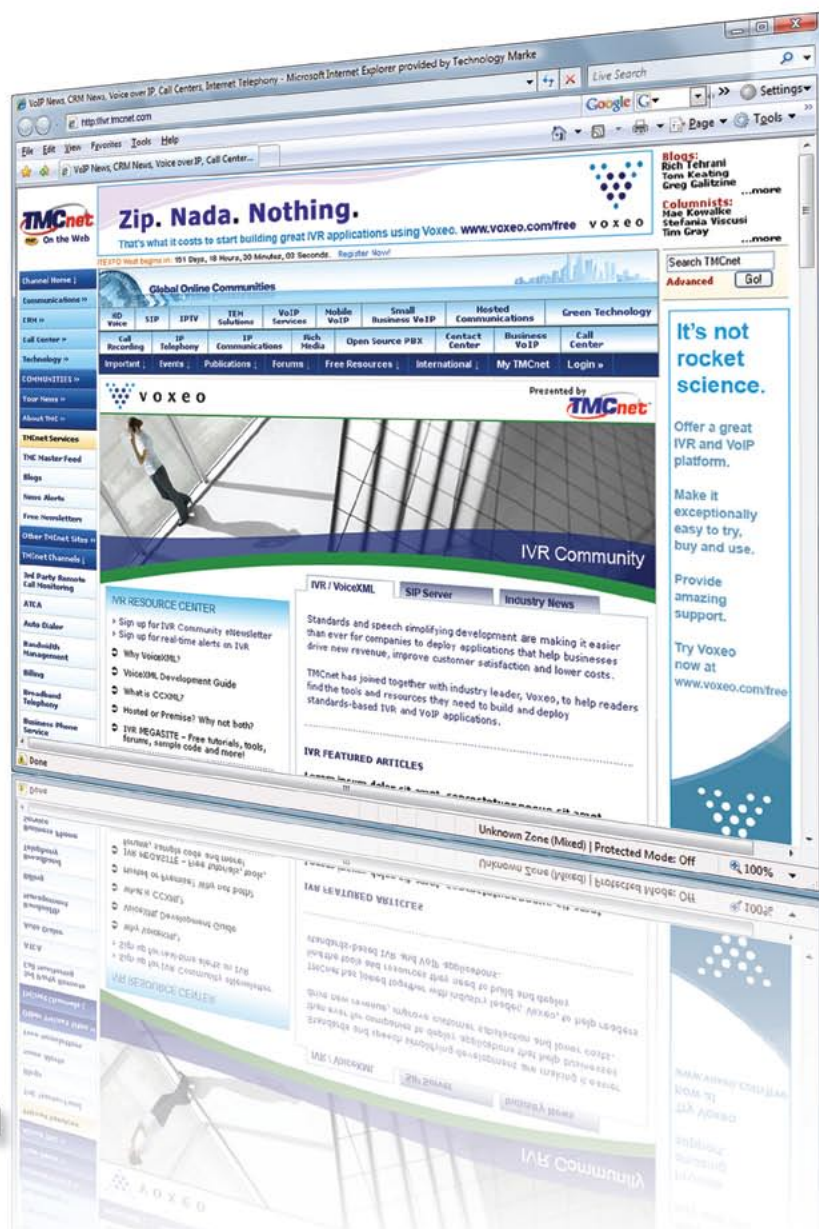
by Jose Deras

Service Brokering on the LTE Network

The 4G networks are coming. Many communications service providers have now officially announced their LTE plans, and some have even begun LTE rollouts. But we are still at the infancy, and there's a larger wave of network upgrades and new handsets that will certainly transform mobile broadband as we know it.

As with all transformations, there are some critical decisions to be made. A considerable amount of these efforts to date has been concentrated on spectrum, with options ranging from the 700MHz to 2GHz, depending on region and service provider.

CSPs considering the transition to LTE data are faced with the choice of whether also to offer LTE voice services to better utilize the new network infrastructure, or deploy LTE data-only networks. For the most part, it seems that the desire is there to transition to LTE voice sooner rather than later. This strategy makes sense as LTE requires entirely new radio access technology, from handsets to antennas to base station controller upgrades, and keeping two radio access networks greatly increases opex, which might be best spread across a wider segment of offerings.

It is the how to deliver LTE voice services that has created confusion. When LTE was originally envisioned, the conventional thinking was that the CSPs' networks would have transitioned to IMS architectures by then, and therefore voice on LTE would naturally be based on VoIP. The reality is that as of this writing, there are very few true IMS production networks in place, and therefore CSPs must reconcile how to deploy LTE quickly with the realities of network transformation timelines and budgets.

Of course there are options on how to move forward with voice delivery architectures. The backdrop of which is the general agreement that current 2G and 3G networks will be in place for some time to come, and therefore CSPs must take into account not only how their networks will evolve, but how to support roaming and handovers across multiple CSPs. In addition, the expectation is that current 2G/3G subscribers will be the first to migrate to 4G as CSPs provide upgrade incentives. That creates that additional burden of providing feature and service parity as part the upgrade as subscribers will expect their current call feature sets to behave the same once they upgrade.

Among the most studied options for voice delivery are:

3GPP IMS (One Voice)

The obvious long-term solution for voice and SMS delivery is based on a migration to IMS, leveraging industry know-how gained as part of the development of UMTS. Deployment of IMS-based LTE voice has been documented since IMS Release 8, and it's viewed as the preferred long-term solution for voice evolution. At the 2010 Mobile World Congress, several manufacturers and service providers stated support for an initiative called One Voice, which specifies an IMS voice and SMS profile, as well as the minimum mandatory feature set. Moving to IMS has the obvious advantage of commoditizing a large portion of the network, bringing with it all the benefits discussed for several years now.

3GPP Circuit Switched FallBack

In addition to IMS, 3GPP also has proposed using a technique called Circuit Switched FallBack or CSFB (standardized under 3GPP specification 23.272), whereby the handset normally operates in 4G (LTE) mode when accessing data services and idle, but switches to a 2G or 3G radio when it is informed of an incoming call, or an outgoing call is placed, or for circuit-switched applications such as SMS. The handsets therefore are dual-mode, supporting 2/3G for voice and 4G for data services. A mechanism to inform the handset via 4G (IP data path) that a call is inbound is utilized, but there is some concern regarding longer call set-up times instigated by the necessity of switching radios.

Voice over LTE Generic Access

Another option that has been put forth is Voice over LTE Generic Access (VoLGA),

Application Layer: IN/SCP, SIP/IMS, Advanced Apps, SDP

Service Broker

Network: IP/IMS, 2G/3G/4G, PSTN

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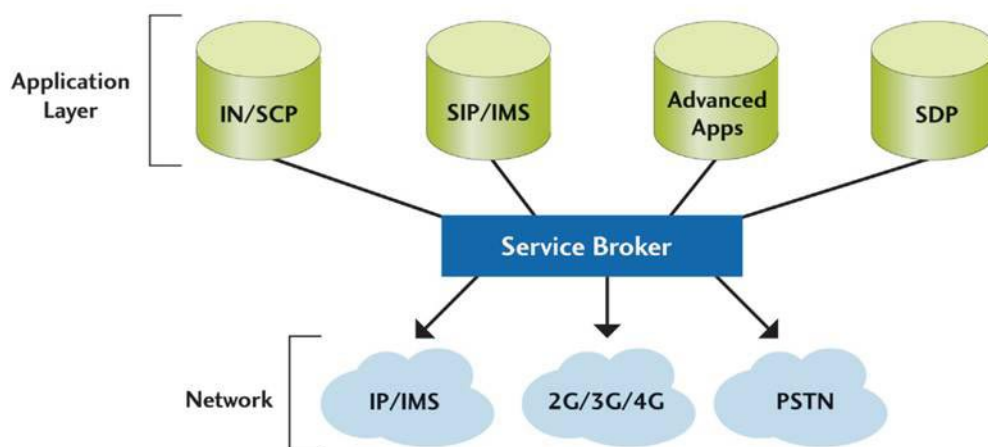
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supported by an industry consortium known as the VoLGA Forum. VoLGA proposes utilizing the IMS-based LTE radio access network, but maintains the circuit-switched network (either GSM or CDMA based) by introducing a network element known as the VANC (VoLGA Access Network Controller). This solution is positioned as an interim approach prior to a full IMS deployment, specifically for voice and SMS delivery.

Proprietary Solutions

Other options do exist, such as upgradable IP-enabled MSCs, but those tend to be tied to a specific vendor architecture and may be best approached by current customers.

To be clear, these architecture options address how to marry the packet-switched LTE radio network with the service operator core network for the purpose of delivering voice. What is not immediately apparent is how the CSP delivers voice applications, such as find me/follow me, voice VPN, CRBT and all the critical revenue generating add-ons that subscribers use and would expect to migrate to LTE.

Regardless of the architecture chosen, CSPs will be faced with application delivery challenges created by the transition in LTE to packet based voice. Today's voice services are predominantly delivered via service control points or intelligent network application servers that rely on IN protocols (such as INAP and CAMEL) for complex call control. Those services tend to be highly stable and profitable and also highly customized, and are therefore not easily moved to SIP-based application servers. Recreating the functionality of deployed IN-based applications requires an exhaustive survey, documentation, and duplication of used features and capabilities, a task that may not be easily achieved.
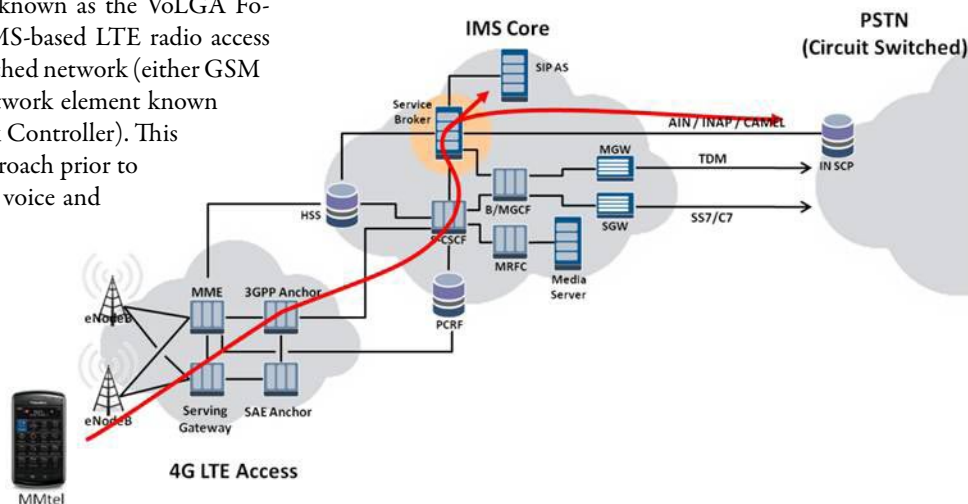
CSPs will need to deliver these same services (down to feature sets and even quirky behavior) on LTE subscribers to ensure migrated users have the same level of service and experience.

As CSPs evolve their networks for LTE, the resulting networks present tremendous challenges in voice services and application delivery. It's the same challenge faced in migrations to NGN and IMS. Realizing this opportunity, the telecom software industry has come forward with a purpose-built network element: the service broker, a solution specifically designed to overcome network architecture challenges and ensure voice service delivery from any network domain to any other network domain.

Service brokers are placed between the application layer and the control layer, with the purpose of delivering and extending the reach of applications to all network domains of the CSP. They do this by performing the signaling, media and call control interworking between the applications and different network domains. Implicit in the successful deployment of service brokers is the capability of delivering the required interworking without necessitating changes to either the applications or the networks. The risk of "breaking something" in the migration of the applications is removed by not touching or modifying existing code.

Let's take a look at how a service broker might fit within two of the most popular network proposals, IMS and VoLGA.

LTE Voice over IMS

Service brokers provide the capability of extending current voice services by providing seamless call/session interworking between the packet switched LTE access network, and circuit-switched 3G applications without requiring changes to either. For those CSPs that have fixed line networks as well, they are also able to reutilize voice services that may have been only offered in that network domain to new wireless LTE subscribers.
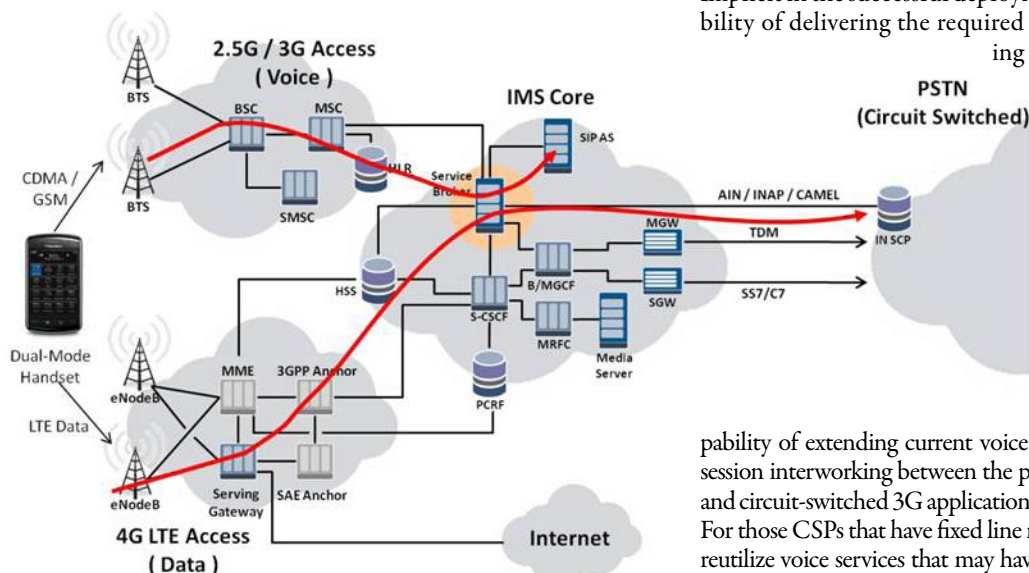
LTE clients are able to access all applications they previously used, such as prepaid, CRBT, voice VPN, find me/follow me, etc., and therefore are not required to change their subscribed services. From a network perspective, the service broker enables the IMS network to see the existing applications as new SIP-based applications, by providing the interworking required. As far as the IMS network is concerned, the service broker is the SIP server, while to the existing SCPs the service broker is an existing 3G MSC.

LTE via Circuit Switched FallBack

For those service providers deploying CSFB, the 2G/3G network remains unchanged so existing applications will work unchanged on LTE. Service brokers are therefore not required for those applications but may instead be useful to prepare the core network for the eventual migration toward IMS. New IMS-based application servers can be utilized on the 2G/3G circuit switched networks, ensuring all new application deployments are based on the IMS architecture.

When ready, the service provider may then migrate to LTE over IMS using its IMS-based application servers. Service brokers remain in place to provide connectivity for older applications, and to perform service orchestration and sequencing, thereby extending their useful life.

LTE Voice over VoLGA

For those CSPs that choose to follow an architecture based on the VoLGA forum proposals, the service broker provides as similar benefit as with CSFB, allowing next-gen SIP-based applications to be utilized by the existing 3G network.

Service Broker Functions

Service brokers provide other functionality that, once deployed, can be of added benefit to the CSP. Among the most often delivered features are:

- IMS SCIM (now renamed the IMS service broker)

- IN-IN trigger management

- Real-time charging

- Protocol/call flow management

- Subscriber data management interaction

- Media resource brokering

- Service orchestration

The service broker's ability of performing orchestration and combination of discrete voice applications and services into new com-

bined offerings (voice mash-ups) is particularly exciting. With this capability CSPs are able of create new revenue producing offers to subscribers where they previously were not available: CRBT and prepaid, find me/follow me combined with voice VPNs, etc.

Service brokers also provide the capability of generating real-time charging events, either programmatically (via an API) or automatically as part of service delivery. The challenge facing CPSs is delivering new, innovative services that seamlessly integrate into existing billing platforms. Doing so often means normalizing charging events or even transforming charging events from one technology to another, as is the case in IN-to-IMS migration. Because the service broker is responsible for orchestrating and delivering combinational services, it is often then the responsibility of the service broker to generate a charging event upon successful start/completion of those enhanced services.

CSPs are currently spending a lot of time and energy qualifying LTE radio access network technology, which will ensure live deployments maintain or exceed current mobile reliability.

The next several quarters will prove interesting as CSPs choose LTE voice delivery architectures, much of it influenced by time and their own network designs requirements.
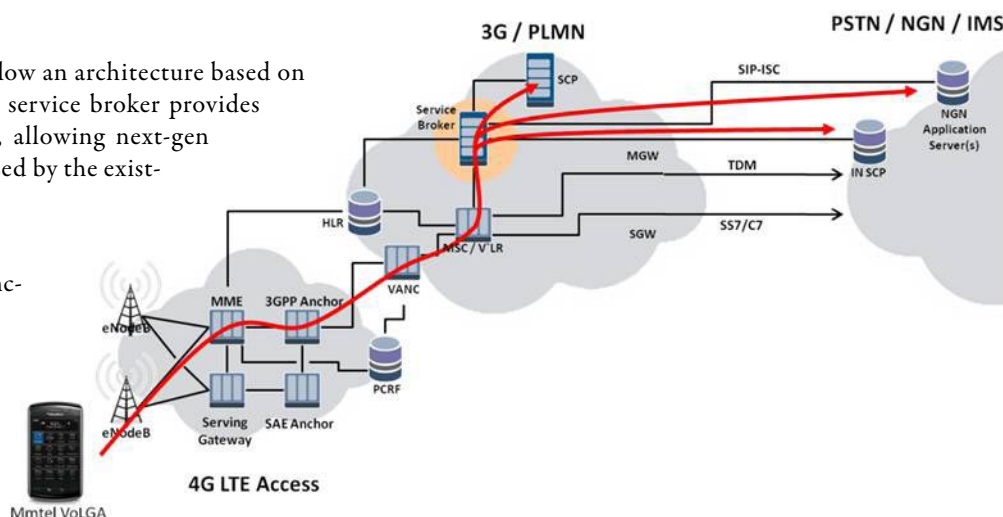
Careful consideration of voice services and applications will ensure high-value customers (early LTE adopters) are able to enjoy the same voice features and services they are currently used to, ensuring they are permanent converts. Service brokers will play a critical role in ensuring CSPs are able to immediately migrate current voice revenue platforms for those early LTE subscribers. **NGN**

Jose Deras is vice president of systems engineering for the service broker division at Metaswitch Networks (www.metaswitch.com).

by William Kight & Michael Watts

GPON-based OLS Helps Verizon Business Address Government Vertical

Verizon Business now offers an optical LAN solution, which involves next-gen green technology. This solution helps the carrier service the needs of the government market space since that vertical has mandatory power reduction requirements.

Optical LAN Solutions, or OLS, is a custom-engineered, secure, scalable solution that utilizes gigabit passive optical network technology to reduce LAN infrastructure lifecycle costs. More specifically, it is a converged fiber-to-the-desktop solution, which provides secure, Layer 2 transport capabilities via single-mode fiber and delivers converged voice, data and video at gigabit speeds to the desktop.

The solution is ideal for campus environments and also buildings – including new facilities or facilities undergoing major renovations – and has the ability to support a distance of 20 kilometers between the data center and the end user.

It also eliminates the need for expensive copper, Ethernet and multimode fiber cabling, in addition to workgroup switches. Based on an analysis, compared to a workgroup switch-based, Ethernet solution serving 1,000 users, for example, the OLS serving the same number of users significantly reduces:

- power consumption by up to 65 percent;

- space requirements by up to 90 percent; and

- capital cost related to network elements by up to 74 percent, while improving availability and manageability.

The OLS incorporates what Verizon Business calls the 3 Cs, which are convergence, simpler connectivity, and energy conservation.

First, the solution enables the convergence of voice, data and video onto a single strand of single-mode fiber, which reduces the network infrastructure hardware to a fraction of what is required in terms of cabling and electronics in the conventional Ethernet approach.

Next, the solution simplifies connectivity by utilizing drop cables that are pre-connectorized at the factory to enable faster deployment. The solution not only enables easier maintenance, but also improves efficiency with regard to end user-related adds, moves and changes.

And, finally, it supports energy conservation, since the optical LAN infrastructure utilizes passive components like optical distribution hubs and fiber plant that require no power or cooling, resulting in significant energy savings. Also, since there are no active electronic components between the data center and the end user, particularly in the riser closets, there are significant power savings as cooling is not required in the riser closets. The solution also requires no signal regeneration for up to 20 kilometers between the data center and the end user. Some of these features and capabilities enable a faster return on investment and significantly reduce maintenance, management and operations-related costs during the life of the infrastructure.

The solution is also future-resistant and has the ability to capitalize on advances in PON technology for many years to come. And it can be designed and implemented as a highly reliable and available solution with fully-redundant passive components. **NGN**

William Kight is group manager of network engineer project/program management at Verizon Business. Michael Watts is principal engineer/implementation manager at Verizon Business.

Key Features

- No power, cooling, or management required for components in the riser closets
- No mid-span active electronics required
- 20 kilometers from data center to end user
- Common infrastructure for voice, data, and video distribution
- Central management of ONTs via the OLT's element management system
- 25 THz useable bandwidth

Security Features

- User equipment plugged into ONT
- 802.1x authentication
- Port security
- Enhanced security and encryption
- From the OLT to the ONT – data stream encrypted with AES 128 block cipher
- From the OLT to the router – VLAN separation, as well as, different packet filters

Customer Benefits

In addition to reducing the clutter in the riser closet – by utilizing valuable real estate in riser closets effectively – key benefits of OLS include eliminating a number of active electronic components like workgroup switches and simplifying operations. Since OLS is based on fiber optics technology, which utilizes less energy than traditional Ethernet solution, it is a green IT solution that also supports up to 25 THz of useable bandwidth expansion.

Key Customer Benefits

- Significant reduction in equipment costs
- Significant reduction in cabling costs enabled by single mode fiber
- Single strand of single-mode fiber has a 20 kilometers reach and a capacity of 25 THz
- Significant reduction in space requirements in data room, riser closets, and conduits

by Paula Bernier

Coherent Technology, Automatic Power Balancing Expand Optical Network Capabilities

Optical networking continues to move forward as the supplier community comes out with new advancements in the areas of coherent optics, automatic power balancing for DWDM networks and other innovations that enable higher bit rates over increasingly longer distances.

For example, Fujitsu Network Communications recently unveiled the third generation 40gbps optical interfaces for its FLASHWAVE 7500 ROADM. These interfaces, which incorporate advanced coherent detection technology and DP-QPSK modulation, will allow for larger geographic networks with longer optical spans and eliminate the need for dispersion compensation modules.

The FLASHWAVE 7500 is an optical hubbing and transport solution deployed in telecom and cable networks to support core network consolidation, metro/regional capacity relief, and triple-play service delivery. It supports spans from simple two-degree ROADM ring networks to advanced 12-degree optical hubbing/mesh applications. And it allows for network sizes of up to 1200 km, up to 24 add/drop nodes per network, and a capacity of up to 1.6tbps.

"Fujitsu has been the leader in optical communications patents for four consecutive years thanks to our sizeable investment in core optical R&D," says Bill Erickson, senior vice president of planning and development at Fujitsu Network Communications. "We first introduced 40gbps interfaces in 2007 and with the introduction of these third-generation units, Fujitsu continues to back up our R&D investment with commercially available product innovations that significantly advance high-speed optical networking options."

Ron Kline, principal analyst of network infrastructure at Ovum, says the market for 40gbps transport gear surpassed $500 million in 2009, and expects the market to double in 2010 and exceed $3 billion by 2014.

"The latest Fujitsu 40G products respond to evolving and growing market needs for systems with higher tolerance to dispersion while at the same time shortening the 100gbps developmental cycle," he says.

In other recent 40gbps news, XO Communications has announced plans to deploy Nokia Siemens Networks' 40gbps dense wavelength division multiplexing solution. That involves the NSN hiT 7300 platform, which will enable XO Communications to respond in a timely fashion to changes in traffic demand.
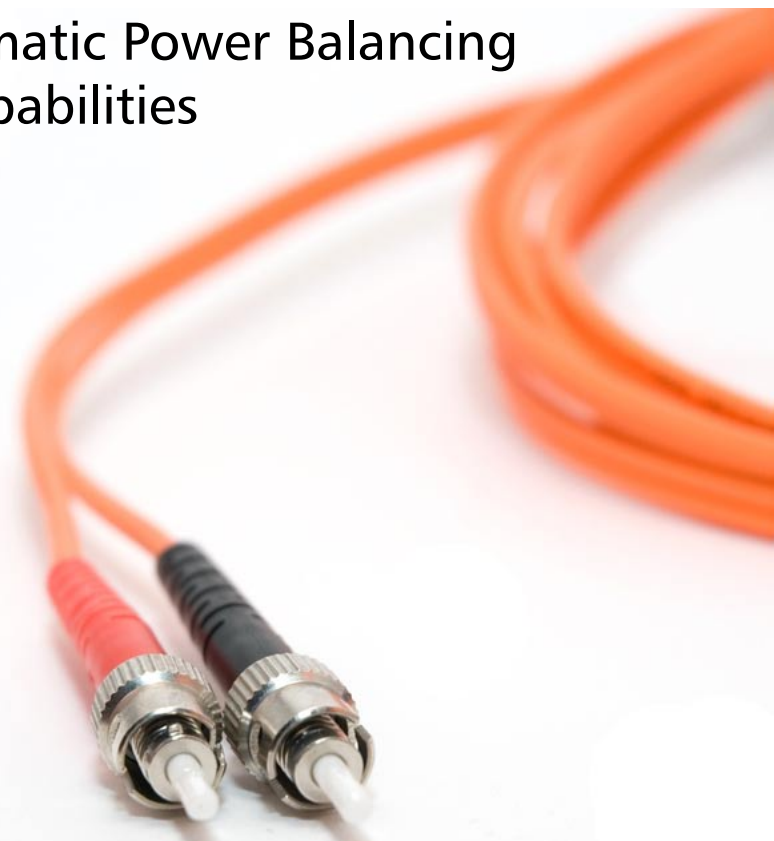
The hiT 7300 is based on a common hardware platform, which saves staff training time and opex, and reduces the number of spare parts needed to be stocked. To accommodate the continued growth in data traffic on the XO network, the hiT 7300 platform provides network flexibility and capacity that can be extended to 80x40G to meet future requirements.

"Nokia Siemens Networks' 40G DWDM solution is optimized for the increased bandwidth and faster connectivity needs of today's networks," says Randy Nicklas, chief technology officer at XO Communications. "The hiT 7300platform provides a smooth evolution path to 100G, the next step in optical transport technology and the next step for the XO network."

Also on the DWDM front, Optelian has announced the availability of automatic power balancing. This enables automatic power measurement and adjustment on DWDM networks, eliminating the need for a technician to travel to every node in a network with optical spectrum analyzers, which creates significant cost savings. Whenever new channels are added to a DWDM system, the optical power levels of all other channels are affected, so this automatic power adjustment capability is an important innovation.

"The great advantage of Optelian's power balancing capability is its cost effectiveness and ease of implementation," said Dave Mills, vice president of sales at Optelian. "It pays for itself very quickly when there is growth or change on any multi-node DWDM network, especially when the network spans a large geographic area."

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The automatic power balancing is a feature of Optelian's RDM-2x1 wavelength selective switch together with the OCM-40 optical channel monitor. It can be used with any vendor's DWDM system, including Optelian's own LightGAIN system.

Also this spring, NeoPhotonics made available its Integrated Coherent Receiver for 100gbps and 40gbps transmission systems. This solution provides advanced demodulation to analyze the state-of-polarization and optical phase of a phase-modulated signal relative to an externally supplied optical reference. That enables recovery of the phase-polarization constellation of 100gbps DP-DQPSK format signals.

"We are pleased to add the ICR to our existing line of PIC products for high-speed transmission systems. We utilize our hybrid PIC technology to combine an integrated dual 90 Hybrid Coherent Mixer with four balanced photodiodes and the requisite linear amplifiers in a single compact package," says Tim Jenks, chairman and CEO of NeoPhotonics.

Elsewhere on the optics scene, Alcatel-Lucent's Bell Labs demonstrated at the recent Optical Fiber Conference in San Diego, Calif., innovations involving the application of higher-order modulation techniques, use of multi-stage algorithms and increased spectral efficiencies that enable the transmission of significantly higher bit rates over increasingly longer distances.

Also on the optical front, Metaswitch says it offers the industry's first portable protocol solution for signaling and routing in G.709 Optical Transport Networks.
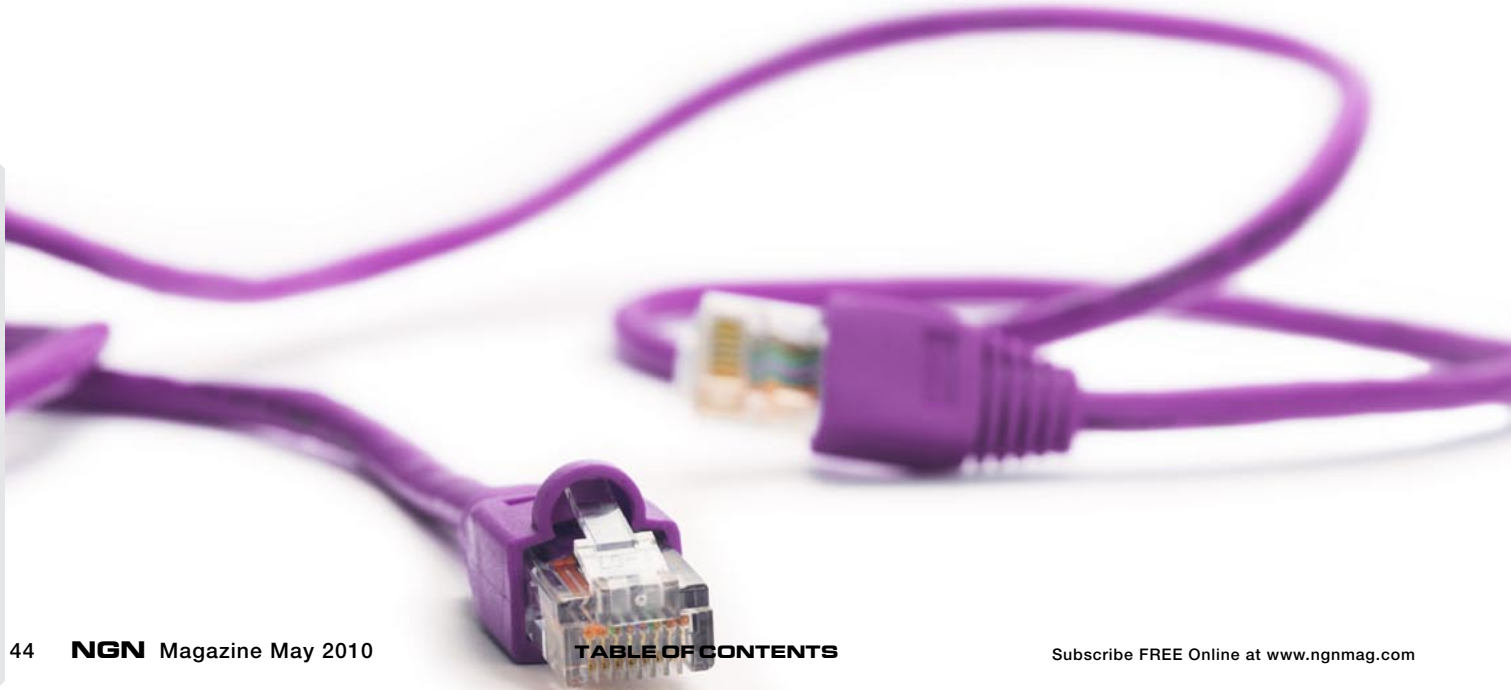
"Metaswitch's OTN control plane technology is available today to our MPLS and IP routing customers as a straightforward, in-service software upgrade," says Jonathan Hardwick, director of product management for Metaswitch's Network Protocols Division. "This enables our customers to introduce an industry standard OTN control plane solution in the fastest time possible." **NGN**

> Ron Kline, principal analyst of network infrastructure at Ovum, says the market for 40gbps transport gear surpassed $500 million in 2009, and expects the market to double in 2010 and exceed $3 billion by 2014.

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Going Mobile with Service Providers

By Erin Harrison

media5 corporation

Like millions of other people grinding out a daily commute, I have come to rely upon my cell phone as more than just a convenient way to check the movie listings – it has become my constant companion, a tool that I rely upon from my first waking hour until I go to sleep at night.

Given this growing reliance, I am lucky that my service provider was an early adopter of mobility and the access and functionality that mobility brings. Look on any train, bus, plane, or in restaurants and you will see the same thing: People clutching their mobile handsets, typing away with their thumbs.

All of this makes me wonder what else is cooking in the mobile marketplace. I recently sat down with Pascal Doré, mobility product line manager at Media5, to discuss what new tools are in the pipeline for mobile road warriors.

I assume that you are, like a lot of us, a mobile road warrior?

Doré: Yes, very much so. In fact, even in the office I rely on my smartphone as much or even more than my laptop – and more and more people are becoming like us. In fact I just read a study indicating that the applications market will actually triple in the next two years reaching between $9 billion and $12 billion in revenue. Significantly, that it is expected to increase to over $25 billion by 2014.

By 2013 it is expected that there will be well over 400 million dual-mode handsets (Wi-Fi and cellular) worldwide, which will allow users to access these applications.

Studies also suggest that more than 50 percent of consumers will use mobile VoIP via their mobile VoIP providers.

With these predictions, the service provider market too is seeing a great opportunity in mobility.

What's the upside of this for service providers?

Doré: This is a very fast growing market full of opportunities for service providers. Carriers in the U.S., like AT&T and Verizon Wireless, are already allowing VoIP over 3G over their HSPA/3G networks. There is a clear opportunity for service providers to offer mobile communications as part of their business and enterprise communications solutions within their SIP trunk and IP Centrex product portfolios.

Service providers can increase their ARPU when selling mobility as an add-on to their business solutions. They can also increase customer retention and reduce their churn rate by offering mobile VoIP services and solutions such as mVoIP over Wi-Fi, over 3G, presence, IM, etc.

What does Mobile Solutions Media5 have for the service provider?

Doré: At Media5 we are continuously looking for new innovative opportunities. Mobility was fully in line with our strategic assets and core skills.

We have recently introduced the Media5-*fone*, which is part of an overall mobility solution portfolio for service providers targeting businesses and enterprises with hosted communication services like IP Centrex, and with SIP trunks. Media5-*fone* is a mobile soft client that allows end users to work efficiently as if they were sitting at their office desks.

It is easy to install and deploy, and runs on the Apple iPhone, iPod Touch, iPad as well as Nokia handsets. It is also interoperable with other solutions from a wide range of manufacturers like Cisco, Avaya, Nortel, Asterisk, OpenSIPS and Kamaillio. Media5-*fone* relies upon field-proven VoIP technology (M5T SIP Client Engine SDK + GIPS audio & video mobile engine), and is the only solution on the market today that offers HD voice for crystal-clear communications.

What do you think the future holds for mobility and for Media5?

Doré: Mobility is here to stay, and as we have seen, it will more than triple over the next few years.

Apple has just released the iPad, and sales have far exceeded even its predictions.

We are strong believers in this technology, and we plan to remain at the forefront. In fact, in the short run, we are looking at adding to the usability and functionality of the Media5-*fone*, including:

- support for mobile videoconferencing and communications;
- covering other platforms such as Android and BlackBerry;
- attaining PacketCable 2.0 and IMS Realtime Communication Suite (RCS) GSMA compliant certification for the application; and
- introducing a PC Edition targeting service providers that are now selling netbooks as mobile devices with 3G subscriptions.

With service providers jumping on board the "mobility express," it makes it a lot easier for all of us mobile road warriors to stay in touch. The only thing we need to work on now is the traffic in the morning. **NGN**

To learn more about Media5 Corp. and its line of leading VoIP solutions and services, visit www.media5corp.com or info@media5corp.com.

by Erik Linask

TMC Announces Winners of NGN Leadership Awards

When TMC launched NGN Magazine in January 2009 – or rather rebranded its predecessor, IMS Magazine – it was with the understanding that, while IMS would continue to play a major role, other evolutionary technologies were also being developed that would shape a new world of communications networking.

Today, that evolution has already brought us live 4G wireless networks that promise to further eradicate the distinction between fixed and mobile applications and services – not to mention the flood of new end user devices, including the iPad and Sprint's soon-to-be-released 4G phone, the HTC Evo 4G.

New network technologies have also driven the growth of the SaaS and CaaS markets, as well as the next phase of the migration to cloud services, PaaS (Platform-as-a-Service) and IaaS (Infrastructure-as-a-Service) offerings, all evolutions of

the hosted voice services that, not long ago, were shunned by large and even mid-sized businesses.

Of course, none of these would be possible without the networks across which they are delivered, including the physical core and access infrastructures, service delivery platforms, bridging technologies, test and monitoring suites, and more.

The second annual NGN Leadership Awards seeks to recognize that growth and evolution, as well as the distinction between the infrastructure and application/services markets, by segmenting winners into two distinct categories.

The Network Technology category recognizes vendors whose products have helped redefine the networks themselves. The Services and Applications category recognizes those whose ingenuity and innovation has resulted in those next generation of revenue-generating services and products that will allow service providers and network operators to realize the value from their network investments.

To all of this year's winners, we say, "Congratulations!" and wish you continued success as we, as an industry, continue to evolve and innovate.

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Motorola Inc.
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Mu Test Suite – Studio Fx & Zx

Narus
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Openet
Partner Service Controls Solution

Patton Electronics
RocketLink Model 3200 EFM G.SHDSL Modem

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RAD Data Communications
ETX-204A Carrier Ethernet SLA Assurance Demarcation Device

RadiSys
ATCA 4.0
Integrated Mobile Media Server (IMMS)

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Voiceserve-Voipswitch Inc.
Vippie - Mobile SIP client

XO Communications
XO Enterprise SIP

Zultys Inc.
Zultys Unified Communications Platform

by Michael Khalilian

The Role of Broadband Applications in Network Evolution and IP Transformation

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. The NGN IMS Forum recently started a new applications working group and is preparing a few new working group papers on BSS/OSS and security guidelines and Diameter architecture and implementations.

At the CTIA show in March the NGN/IMS Forum announced at CTIA its new Technical Working Group for Applications running on fixed and mobile broadband networks (e.g. 3G/4G/LTE, wireline and cable networks). This TWG 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.

This working group will address the following questions:

How can carriers increase revenues by adding value to applications ecosystems such as Google and Facebook?

How can carriers leverage their networks to help some of the most innovative mom-and-pop applications developers successfully launch through network interoperability and testing support?

How, through real-time communications, can operators video enable enterprise applications such as Salesforce.com and provide video add-ons to voice calls?

How can operators use DPI, border gateways, IMS architectures and other techniques to provide better QoS?

How should we integrate operations support systems and business support systems, including billing/charging and security components, into these services?

How can payment systems in a carrier network enhance applications?

How can policy management be used for subscriber data management?

I wanted to share with you some of the comments of our board members on this working group.

"The IMS investment enables network operators to fully exploit applications running both inside their networks or by third-party application developers and content providers," says Michael Cooper, Alcatel-Lucent vice president of wireline marketing and business strategy. "It allows their unique network assets, such as location, presence and preferences, to be leveraged in applications to provide a personalized and differentiating service experience for consumers and business users."

"One of the key tenets of IMS is to evolve a vendor-agnostic, open interface based architecture. Through this working group we'll be able to guide the industry to exploit the IMS network capabilities via service delivery platforms and device frameworks, to realize combinatorial applications, in an interoperable and a standards based manner," says Jinu Koshy, general manager and global head of applications and devices practice at Wipro Technologies. "We are glad to be part of this working group and to use our experience as a systems integrator for global SDP, value-added services deployments and device development, to realize deployment guidelines and best common practices for the working group"

"Given the incredible pace of change vis-à-vis new devices, applications and services, as well as the challenges of IMS deployments, which are highly customized and unique, service providers and their vendors are struggling to ensure their implementations work as advertised using current approaches to testing," says Simon Berman, Mu Dynamics' vice president of products. "We look forward to participating in the working group and upcoming Plugfest 9, in order to share new and innovative tools and strategies for dramatically accelerating the testing process while also increasing the quality of IMS deployments."

Because of the explosion of applications, this working group and our upcoming Plugfest 9 will concentrate on application developers to help them better internetwork Web 2.0 applications with IMS networks and BSS/OSSs (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 will be held in the fourth quarter of 2010 at the InterOperability Lab in Durham, N.H. Registration is now open for any service providers, integrators and vendors who 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).