



Volume 2/Number 6

November 2010

www.ngnmag.com

NGNTM

Next Generation Networks

2011 Buyer's Guide

Next-Generation Networks Year in Review

Rural Telcos in the IP World

How to Build a Backhaul Network

10 GIGABIT ETHERNET **A Global On-line Community**

Sponsored by:

Chelsio
Communications



Accelerate

**THE UNIFIED WIRE,
ENABLING NETWORK CONVERGENCE**

Chelsio's 10Gb Ethernet Community on TMCnet:
This is the meeting place for vendors, integrators
and users of High Performance Ethernet for Data
Centers, HPC Clusters, and Storage Networks.

Find the resources here to help you converge
your data network over 10Gb Ethernet:

<http://10-gigabit-ethernet.tmcnet.com>

Powered by:



The Call for Optimization



by Paula Bernier

As discussed in this issue's Year in Review story, one of the continuing trends in 2010 was the mobile data boom, driven by such devices as the iPhone, Android-based smartphones, and the iPad and other tablet devices that followed in its wake.

To address the vast growth we're seeing from mobile devices and applications, service providers like AT&T, Clearwire and Verizon are building better and faster wireless networks, which use LTE and/or WiMAX technologies that fall under the 4G umbrella.

But while the move to 4G would at first glance seem to indicate wireless service providers should have adequate capacity to meet mobile bandwidth demands for years to come, NGN magazine sources say that those networks will be flooded quickly by mounting usage and bandwidth-hungry applications like video.

That's the reason we're hearing so much lately about optimization.

For example, a company called Opanga at the CTIA show last month was demonstrating its video delivery optimization solution, which prepositions content on end devices. That way, service providers will be able to offer customers the content of their choice for something like \$1 a month, and preposition that content on devices so networks don't get overloaded, Dave Gibbons, Opanga CEO, told me.

"We just think that has to happen," he said, adding that it is now in trials with service providers in the Americas.

Another company, Eden Rock Communications, sells a real-time coordinated multimode resource optimization solution called EdenNETT. It's a controller that talks to thousands of base stations to get information about what's happening on each channel, Chaz Immendorf, president and CEO, told me. He said that allows the company's solution to deliver to wireless service providers a map of how best to allocate radiofrequency at any time. This solution can provide capacity improvements on the order of 40 percent for LTE networks, he added.

The need for solutions that help network operators eek as much bandwidth as possible

out of their current and future networks, and otherwise control potential network capacity issues, is not just an agenda being pushed by vendors. Service providers of both wireline and wireless, new and legacy networks are increasing taking steps to manage the bandwidth demand barrage.

For example, Clearwire reportedly recently upgraded its network management system so it can throttle bandwidth to certain customers during high usage times on its 4G WiMAX network. The company in a blog writes that the effort will effect only "the heaviest users, who make up a small fraction of our customer base, during limited times of high demand for shared resources."

Of course, bandwidth throttling is a controversial practice and relates to the thorny topic of net neutrality. And the recent moves by some wireless service providers to move away from all-you-can-eat service and toward by-the-bucket or -byte services is still pretty low level stuff.

For that reason – and to allow service providers to move beyond dumb pipes and deliver higher margin services – wireless operators are likely to adopt other methods for controlling traffic on their networks while pushing new services in an effort to appeal to customer needs and drive up margins.

In 2011, says Tekelec CMO Susie Kim Riley, the operator focus will turn to revenue creation around data services, moving beyond cost control from managing traffic.

"I expect to see more experimentation with flexible and more creative data service bundles and offerings," she says. "For example, operators may introduce tiers for video, music or gaming services instead of pricing plans by the byte. These appeal to a wider range of customer segments, increasing retention and service plan personalization." **NGN**



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

EDITORIAL

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

TMC LABS

Tom Keating, Executive Technology Editor/CTO/VP

ART

Alan Urkawich, Senior Director, Creative and Operations
Lisa A. Mellers, Graphic Designer
Stephanie Thompson, Production Manager

EXECUTIVE OFFICERS

Nadji Tehrani, Chairman and Founder
Rich Tehrani, Chief Executive Officer
Dave Rodriguez, President
Michael Genaro, Executive Vice President, Operations
Tom Keating, CTO, VP

ADVERTISING SALES

Sales Office Phone: 203-852-6800

Anthony Graffeo, VP Business Development, 203-295-0234
(agraffeo@tmcnet.com)
Jaime Hernaez, Executive Director of Strategic Accounts, ext. 217
(jhernaez@tmcnet.com)
Laura Casal, Account Executive, ext. 299 (lcasal@tmcnet.com)
Jim Spangenberg, Director of TMCnet Live Web Events, ext. 211
(jspangenberg@tmcnet.com)

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

SUBSCRIPTIONS

Circulation Director, Shirley Russo, ext. 157 (srusso@tmcnet.com)
NGN Magazine is published bi-monthly by Technology Marketing Corp.
Annual digital subscriptions: Free to qualifying U.S., Canada and foreign subscribers. Annual print subscriptions: Free to qualifying U.S. subscribers; \$24 U.S. nonqualifying, \$34 Canada, \$48 foreign qualifying and nonqualifying. All orders are payable in advance U.S. dollars drawn against a U.S. bank. Connecticut residents add applicable sales tax.

Postmaster: Send address changes to NGN magazine, Technology Marketing Corporation, River Park, 800 Connecticut Ave., 1st Fl., Norwalk, CT 06854-1628 USA

Canada Post: Publications Mail Agreement #40612608

Canada Returns to be sent to: Pitney Bowes International, P.O. Box 25542, London, ON N6C 6B2, CANADA

EDITORIAL ADVISORY BOARD

Michael Khalilian, IMS Forum
Erik Lagerway, Independent Consultant
Kenneth Osowski, Dialogic
Jonathan Rosenberg, Skype
Henning Schulzrinne, Columbia University/SIPquest
Richard M. Williams, Connect2Communications

READER INPUT

NGN Magazine encourages readers to contact us with their questions, comments, and suggestions. Send e-mail (addresses above), or send ordinary mail. We reserve the right to edit letters for clarity and brevity. All submissions will be considered eligible for publication unless otherwise specified by the author.

NGN Magazine is a registered trademark of Technology Marketing Corporation. Copyright © 2010 Technology Marketing Corporation. All rights reserved. Reproduction in whole or part without permission of the publisher is prohibited.

REPRINTS AND LIST RENTALS

For authorized reprints of articles appearing in NGN Magazine, please contact The YGS Group Reprint Division at 3650 West Market Street, York, PA 17404, 717-505-9701 or 800-501-9571 x105 • tmcnet@theYGSgroup.com.

For List Rentals, please contact Glenn Freedman at GlennF@i-s-t.com or call 914-765-0700, ext. 104.



Endorsed by:



A Technology Marketing Publication,
River Park, 800 Connecticut Ave., 1st Fl.
Norwalk, CT 06854-1628 U.S.A.
Phone: (203) 852-6800
Fax: (203) 295-0170, (203) 295-3717

Tips for the Acquisitive



by Rich Tehrani

TMC blogger Peter Radizeski may have set two records in breaking news of two acquisitions in one day. If that isn't a record, certainly the fact that both acquiring companies start with the same five letters has to make it into the Guinness book.

First there was **BroadSoft** acquiring Casabi. Next there was Broadvox acquiring Cypress Communications, which Peter broke on TMCnet and followed up on after the companies made the announcement official. Paula Bernier, executive editor at **TMC** and the editorial manager of NGN Magazine, added her opinions to the mix in a TMCnet posting the day the **Broadvox**-Cypress news broke, and discussed the deal in a carrier consolidation cover story in November's issue of INTERNET TELEPHONY, a sister publication to NGN Magazine.

BroadSoft is buying **Casabi** for approximately \$1.95 million. Casabi outfits cable, land-line and mobile telecommunications service providers with hosted SMS, customized information services, and unified communications. The Casabi acquisition will build upon BroadSoft's software-as-a-service offerings, which began with the acquisition of PacketSmart in late 2009, according to BroadSoft.

"Broad adoption of individual applications, such as SMS, demonstrates that consumers value features that improve a family's ability to communicate with one another across multiple devices," says BroadSoft CEO Michael Tessler. "We believe that, by incorporating Casabi's services into our Consumer Experience solution, we will help operators improve customer retention by delivering new innovative services to the home. We also expect to leverage the Casabi technology to further serve the communication needs of the small business market."

Meanwhile, Broadvox is known as a SIP trunking services specialist, catering both to carriers and small and medium enterprises in the U.S. and Canada. But recently the company, which has an eye on expanding its penetration in enterprise accounts, began broadening its portfo-

lio to include cloud-based services liked hosted IP PBX, which it sees as complementary to SIP trunking. Cypress does UC as a service.

My thoughts on such mergers and acquisitions are fairly simple and straightforward. These mergers generally don't work out the way they are intended. That's because running a company is different than integrating a new one. To be successful, companies need to do both well.

Many **Nortel** insiders, in fact, attribute the company's eventual demise in part to making acquisitions that the company didn't integrate well.

However, the rewards for a company that has learned how to acquire are absolutely tremendous. Where would **Cisco** or Oracle be without M&A?

TMC is often made aware of such mergers weeks or months in advance under embargo, and I can tell you we will see many more over the next few months. Of course every acquiring company wants to be the next Cisco – and, indeed, some will make it there, or at least get closer.

In the meantime, to acquiring companies, I would like to offer the following suggestions:

- Integrate fast. Do not leave your new workers hanging in any way in the first few weeks.
- Try not to rock the boat with your acquired customers.
- Do not lose site of the potential importance of the brand you buy and what it means. Don't rush to kill it too quickly as to many customers and the media it may be stronger than yours.
- M&A is not a substitute for branding, marketing and sales support. You need to amp up all of these after you do an acquisition.
- Be sure you spend more time with the media after the merger to make sure they understand your direction. If you don't, they will guess at your intentions in writing and potentially be wrong.
- Do not assume the workers in the acquired company are inferior in any way to the new parent company – quite often they can be better in my experience.

With that said - happy acquiring! **NGN**



TMCnet (www.tmcnet.com)

TMCnet EDITORIAL

Group Editorial Director, **Erik Linask**
Executive Editor, Strategic Initiatives, **Erin Harrison**
Group Managing Editor, **Patrick Barnard**
Assignment Editor, **Stefania Viscusi**
Contributing Editorial: **Paula Bernier, Susan Campbell, Juliana Kenny, Erin Monda, Ed Silverstein, David Sims, Alice Straight, Beecher Tuttle**

TMCnet PRODUCTION

Webmaster, **Robert Hashemian**
Senior Director, Creative and Operations, **Alan Urkawich**
Senior Designer & Director of TMCnet Communities and Channels, **Maxine Sandler**
Senior Designer &
Web Director, **Scott Bouchard**
Senior Designer & Director of Web Video, **Jean Louis**
Senior Web Designer, Director of Strategic Web Initiatives, **Chhityz Thapa**
Web Designer, **Lou Brevetti**
Operations Manager, **Tim Goins** (tgoins@tmcnet.com)

MARKETING

EVP of Operations, **Michael Genaro**
Creative Director, **Alan Urkawich**
Marketing Manager, **Jan Pierret**

FINANCE

Controller, **Allen Frydrych**
Senior Accountant, **Betsy Estes**
Accounts Coordinator, **Mary Hodges**

EXHIBIT SALES

Sales Office Phone: 203-852-6800
VP of Events, **Joe Fabiano** (jfabiano@tmcnet.com)
Global Events Account Directors Companies whose names begin with A-L or #s:
Maureen Gambino (mgambino@tmcnet.com)
Global Events & Webinars Account Manager, **Kevin Lake** (klake@tmcnet.com)
Conference Sales Director,
Frank Coppola (fcoppola@tmcnet.com)

READER INPUT

NGN encourages readers to contact us with their questions, comments, and suggestions. Send e-mail (addresses above), or send ordinary mail. We reserve the right to edit letters for clarity and brevity. All submissions will be considered eligible for publication unless otherwise specified by the author.

NGN is a registered trademark of Technology Marketing Corporation. Copyright © 2010 Technology Marketing Corporation. All rights reserved. Reproduction in whole or part without permission of the publisher is prohibited.

REPRINTS AND LIST RENTALS

For authorized reprints of articles appearing in **NGN**, please contact: The YGS Group, 717-505-9701 or 800-501-9571 x105, tmcnet@theYGSgroup.com



FOR LIST RENTALS

please contact Glenn Freedman at glennf@i-s-t.com or call 914-765-0700 x 104

A Technology Marketing Publication, River Park, 800 Connecticut Ave., 1st Floor, Norwalk, CT 06854-1628 U.S.A.
Phone: 203-852-6800 Fax: 203-295-0170, 203-295-3717





Introducing the **IP-PBX Global Online Community**

If you are in the market looking to purchase a new phone system, chances are you'll be looking at an IP PBX. The IP PBX market has been growing steadily, which means there are a plethora of choices and options. And, with all the choices you face, it can get quite confusing.

The **IP PBX Global Online Community** is an excellent resource for companies and individuals who are facing the difficult decision of purchasing a new phone system. This community features breaking news, in-depth feature articles, case studies, links to white papers and webinars... all the information you need if you are charged with learning about the current state of the market and making a purchasing decision.

Featured on IP-PBX Community:

-  Real-World Case Studies
-  Breaking News
-  In-Depth Feature Articles
-  Expert Insight
-  Free Demos and Whitepapers

[HTTP://IP-PBX.TMCNET.COM](http://ip-pbx.tmcnet.com)
Visit the IP PBX Global online community today.

Powered by:



Special Feature

2011 Buyer's Guide 38



In Every Issue

Editor's Note 3

The Call for Optimization
By: Paula Bernier

Publisher's Outlook 4

Tips for the Acquisitive
By: Rich Tehrani

Industry News 8

Cableco News 8
Satellite News 10
Other Industry News 12

Columns

Hot Button (with Susie Kim Riley of Tekelec) 14

Eye on the Money 16

Guest Room (with Scott Hilton of Sycamore) 18

Converged Views 20

Mobile Services - Beyond Voice 24

From the Desk of Michael Khalilian 50



26

Feature Articles

The Year in Review 26

By: Paula Bernier

The Opportunity for a Rural Telco in the IP World 30

By: Brian Worthen of Mammoth Networks

Building a Next-Generation Backhaul Network 34

By: Joseph V. Mocerino of Fujitsu Network Communications Inc.



30

Experience the Power of Video & Web Conferencing



Ideal for Organizations of ALL sizes

Multifaceted Online Collaboration Tools and Features:

> **100% Browser-based**

With MegaMeeting, there is nothing to download and nothing to install in order to attend a meeting. All guests need is an Internet connection and a browser. Get MORE people into your meetings!

> **Live High Quality Video Feeds**

MegaMeeting accounts allow live video streams with adjustable video qualities.

> **Screen/Application Sharing**

Show off PowerPoint Presentations, share images and documents, as well as browse the internet with guests.

> **Multiple Log-ins**

Assign an UNLIMITED # of log-ins to your account for other employees or departments. Each log-in includes a unique User Name and Password.

> **Custom Meeting Rooms**

MegaMeeting accounts include the registration, set-up and hosting of a custom URL for your meetings – YourCompany.MegaMeeting.com, as well as meeting rooms that display a Company Name, Logo and Colors of your choice.



MEET

Without Restrictions



SHARE

Tools of Knowledge



UNITE

Participants Worldwide



• U.S. & Canada - 877.634.6342 • International - 818.783.4311 • info@megameeting.com

Experience MegaMeeting.com. Try a FREE Demo Now!

<http://tmcnet.com/46233.1>

Cablecos Embrace Internet Caching



sandvine®

Intelligent Broadband Networks

Within the past six months the **Sandvine**-PeerApp pre-integrated content caching solution has doubled its deployments and is now being used in 11 service provider networks serving over two million cable and DSL subscribers worldwide, the company announced in October. "Increasingly, people are seeking on-demand entertainment through their Internet connection," says Tom Donnelly, executive vice president of sales and marketing at Sandvine. "YouTube states that users watch more than two billion videos a day. With that kind of appetite for streaming video and rich media, operators are deploying caching solutions to maintain the best quality of experience for users across their networks." Transparent Internet caching is a sophisticated traffic optimization tool that targets popular file transfers such as Internet video (**YouTube**, Metacafe, etc.) by temporarily storing the content locally, on a service provider network. When that content is requested again by any other subscriber, the cache satisfies the request from its temporary storage, eliminating data transfer through expensive transit links and reducing network congestion.

www.sandvine.com

<http://tmcnet.com/46235.1>

Cable Tuners Offer Lower Costs, New Functionality

Microtune Inc. has announced three new universal digital QAM cable tuners that are engineered to deliver very high radio frequency performance to simplify designs and to slash bill-of-materials cost for the worldwide cable set-top box market. Based on a highly integrated, sawless, tuner-plus-splitter architecture, the new MicroTuner MT208X tuner family is optimized to deliver superior digital video quality and reliability across global multi-tuner set-tops, including next-generation HD/DVR boxes, video hubs, digital cable gateways and home media servers. When built into cable premises equipment, the tuners enable cable operators to offer interactive, personalized video services like HD, on-demand, time-shifted and downloaded video that's expected to drive cable revenue and subscriber growth during the next several years.

www.microtune.com

<http://tmcnet.com/46236.1>

Telco Rails Against Cablevision

Verizon last month was reaching out to elected officials and others on Long Island and elsewhere in New York to seek their support for the company's efforts to broadcast the first gubernatorial debate leading up to the 2010 election. The Cablevision-sponsored debate was scheduled to take place at Hofstra University on Oct. 18. But "FiOS TV customers and millions of other viewers served by other providers across the state have essentially been blacked out of the debate, denying them their rights as

citizens and voters, since Cablevision is the sole broadcaster of the event," said Michelle Webb, general manager and chief programming officer of FiOS1, Verizon's news channel for Long Island and northern New Jersey. "And while the broadcast will be available on certain websites and some radio, those may not be practical solutions for many people."

www.cablevision.com

www.verizon.com

<http://tmcnet.com/46237.1>

Fox, Cablevision Battle It Out

As of mid October, News Corp., owner of Fox Networks, was involved in yet another contract dispute with Cablevision, which has 3.1 million subscribers in the New York and Philadelphia areas. The fight led Cablevision subscribers to lose Fox5 and My9 in New York and Fox29 in Philadelphia. News Corp also blacked out Fox Business Network, NatGeo Wild and Fox Deportes. This is not the first time that the company has squared off with a network over a contract dispute; earlier this year, subscribers briefly lost access to ABC, the Food Network and HGTV before separate disputes were settled.

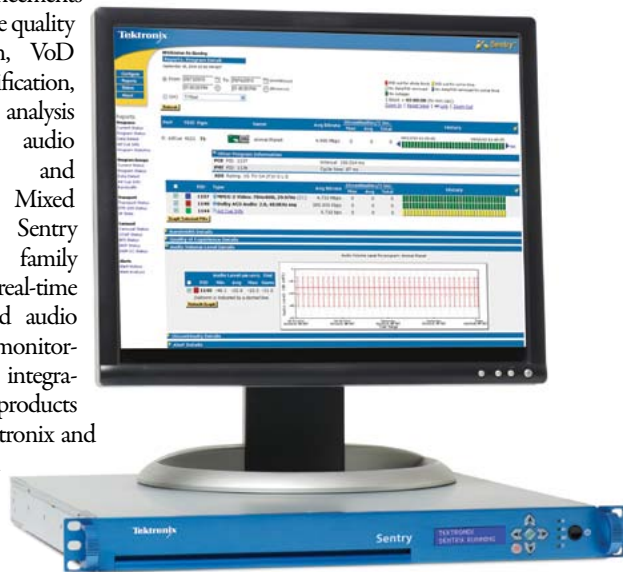
www.cablevision.com

<http://tmcnet.com/46234.1>

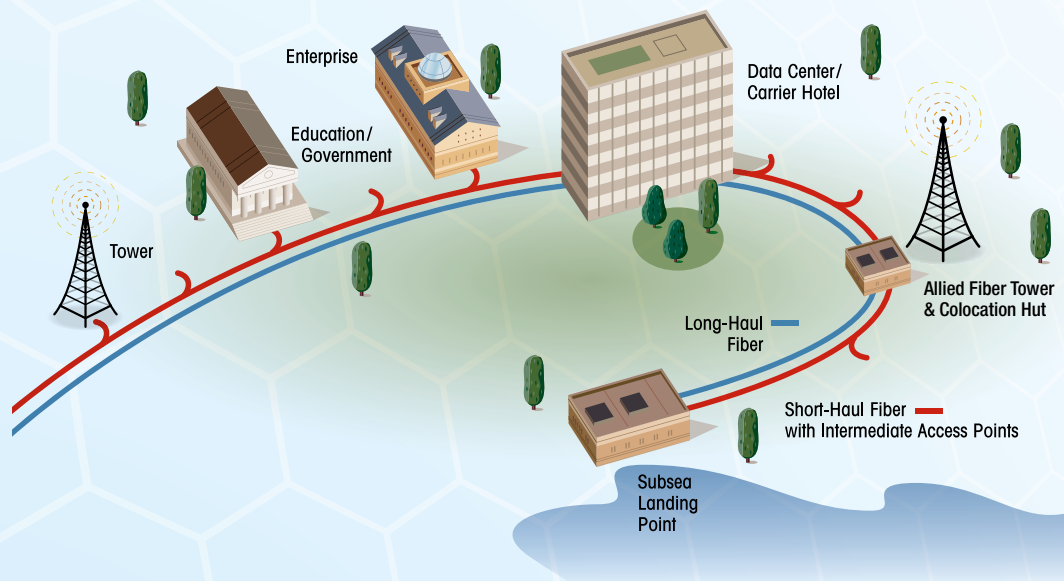
Tektronix Delivers Mixed Signals

At the recent SCTE Cable Tech Expo, **Tektronix** focused on new products and enhancements for picture quality evaluation, VoD asset verification, QoE analysis including audio loudness, and the new Mixed Signals Sentry product family featuring real-time video and audio quality monitoring. The integration of products from Tektronix and Mixed Signals give cable operators an unprecedented choice of video network monitoring solutions from a single vendor, according to company officials. The new solution comprises network management systems, a wide range of RF interfaces (including QAM, DVB-S2 and 8VSB), comprehensive QoE and QoS monitoring of hundreds of services simultaneously in real time, and detailed troubleshooting of QoE problems traced back to the root cause for repair.

www.tek.com



Introducing the **Dark Fiber Community**



The Online Resource for Network Operators to Build and Support Efficient Broadband Networks

Visit the **Dark Fiber Community** and connect to communications equipment providers, data center and tower builders, financing sources and more.

The online directory offers contact details and information on industry-leading vendors and the opportunity to plan one-on-one meetings with these suppliers anywhere in the world, through the Dark Fiber Community DealCenter®.

Allied Fiber created this free educational platform to drive awareness of network-neutral, physical layer models that provide physical access to dark fiber and major carrier transport services.

If you are a network vendor and would like to be part of the community, with increased PR coverage, SEO rankings and business opportunities, email pr@alliedfiber.com.

- > Equipment
- > Support
- > Infrastructure Builders
- > Materials
- > 3rd Party Colocation
- > Financing
- > Industry Associations
- > Carrier Services



It's free - visit dark-fiber.tmcnet.com now

DARK FIBER COMMUNITY MEMBERS





Satellite News

<http://tmcnet.com/46241.1>

Digi Unveils Embedded Module for OEMs

Device manufacturers now have a faster way to integrate cellular, global positioning system and satellite connectivity into fleet management and asset tracking applications in one design with the help of Digi International's new embedded module, the Digi m130. The solution allows OEMs to enable their products with GSM/GPRS, GPS and ORBCOMM satellite connectivity in a single solution. Available for \$169 in 10,000 quantities, the new Digi m130 modules are based on the acquisition of Q52 Omni Technology from Sierra Wireless.

www.digi.com

<http://tmcnet.com/46242.1>

Space Systems/Loral Tapped for ABS-2

Asia Broadcast Satellite has selected Space Systems/Loral to manufacture the ABS-2 spacecraft, which is scheduled for launch in 2013. ABS-2 will be one of the most powerful commercial satellites launched for service in the Eastern Hemisphere, according to the companies. The spacecraft offers more than 12 kW of payload power and up to a total of 87 active C-band, Ku-band and Ka-band transponders across 10 different beams bringing increased capacity and transmission power to the Middle East, Africa, Asia Pacific and CIS/Russia. The solution is based on Space Systems/Loral's 1300 satellite bus, with a separated mass in excess of 6,000 Kg at launch and is designed for 15 years of operational life.

www.absatellite.net
www.ssloral.com

<http://tmcnet.com/46243.1>

U.S. Military Places Comtech Order

Comtech Telecommunications' Tempe, Ariz.-based subsidiary, Comtech EF Data Corp., has landed a \$3.2 million order for satellite communications equipment for the United States government. The company will supply both the MBT-5003 up/down converter system and the SLM-5650A satellite modem for this order. Comtech's equipment will help with the upgrade of fielded satellite terminals that support tactical military communications. Packaged in a 3RU platform, the MBT-5003 provides frequency conversion between L-Band IF and C-/X-/Ku-Band RF frequencies and the SLM-5650A is compliant with the requirements defined in MIL-STD-188-165A, modem types I, II, IV, V and VI for applications on DSCS, WGS and commercial satellites.

www.comtechtel.com

<http://tmcnet.com/46244.1>

ABI Research Releases Data on Navigation Devices

In its newly published Location Systems and Platforms Forecasts survey, ABI Research predicts that the global number of navigation shipments across all form factors is expected to grow

from more than 100 million in 2010 to 283 million in 2015. ABI Research Practice Director Dominique Bonte says: "The launches of free turn-by-turn off-board navigation by Google on Android handsets in the United States in 2009 and in some European countries in 2010, and on-board navigation globally by Nokia in January 2010, are driving the popularity of handset-based navigation and putting additional pressure on the price of on-board and off-board navigation solutions offered by other vendors." The report provides forecasts for in-dash, portable and handset-based navigation systems and solutions for each region. It includes navigation hardware and software shipments and revenue and market penetration levels. Ford is among those pushing navigation features in vehicles. Its SYNC feature offers access to voice-guided directions and more.

www.abiresearch.com

<http://tmcnet.com/46240.1>

Taoglas Introduces Multimode External Antenna

Field personnel need to stay in touch with co-workers, and companies want to track where their vehicles and workers are located. That said, the vehicles used by technicians and other employees that spend the bulk of their time on the road or otherwise in the field are becoming more plugged in. To help enable that, antenna company Taoglas has unveiled a new solution that offers GSM, GPS and Wi-Fi connectivity capability in a single housing. The Spartan MA.600, which sells for less than \$100 in volume, is a mushroom-cap shaped external antenna for applications that require a heavy-duty, waterproof solution.

www.taoglas.com

<http://tmcnet.com/46245.1>

EchoStar Puts on Broadcom SoC

The Broadcom BCM7400 satellite set-top box system-on-a-chip solution has been chosen by digital media equipment company EchoStar Technologies, a subsidiary of EchoStar Corp., for its SlingLoaded 922 high-definition digital video recorder. This is the first HD DVR to incorporate place-shifting technology, enabling users to watch their home television on other consumer electronics devices such as laptop computers and smartphones, according to a company release.

www.broadcom.com
www.echostar.com



THE DNS ZONE

Everything current. Everything relevant. Everything DNS.

When your DNS is down...

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

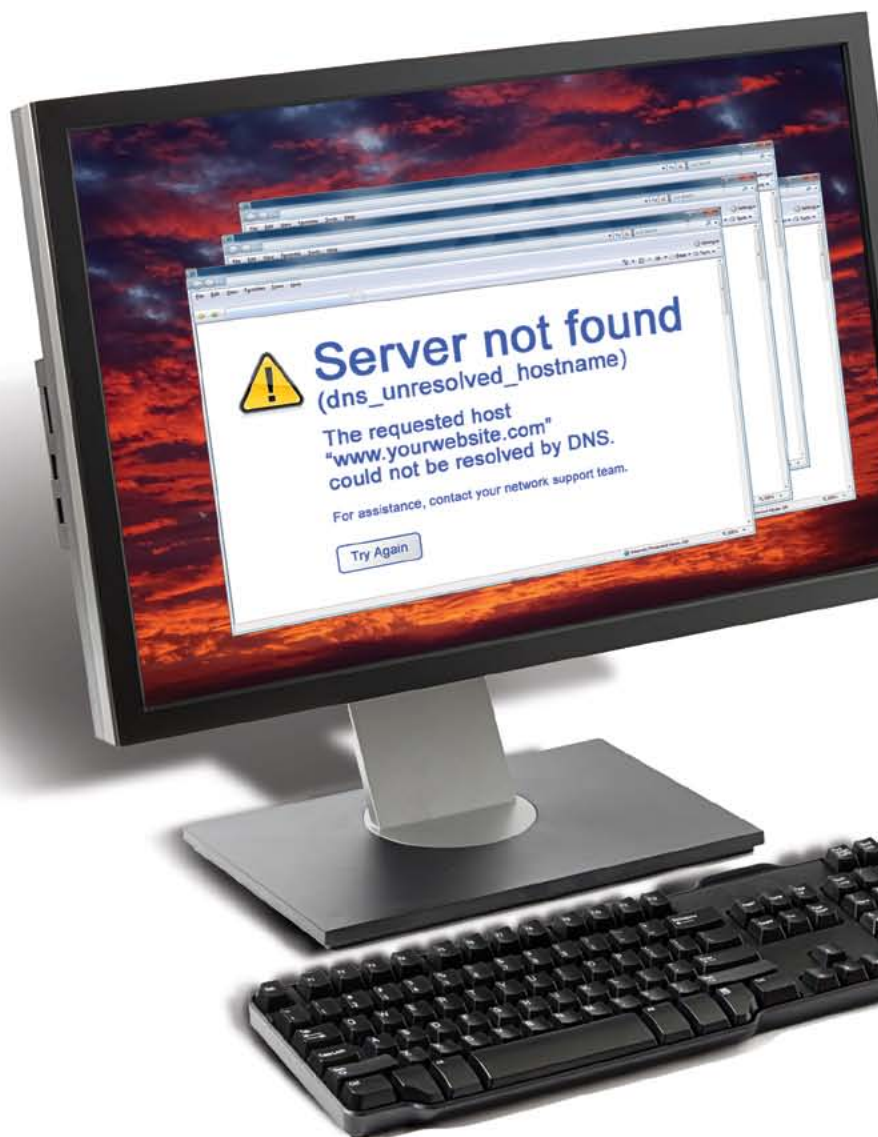
your Web site is not available!

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

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

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

Sponsored By:
Neustar® UltraDNS® Services



HTTP://DNS.TMCNET.COM

<http://tmcnet.com/46248.1>

Broadvox, Cypress to Merge

In an effort that appears to help Broadvox meet its cloud-based aspirations, the company has announced plans to merge with Cypress Communications. In a recent interview with INTERNET TELEPHONY, a sister publication to NGN Magazine, Broadvox's Temnorod said: "We're focusing our product development ... on everything in the cloud." Both Broadvox and Cypress play in the VoIP and unified communication services space. The companies say the merger will create a market leader serving carriers, SMB and SME VoIP segments with one of the largest VoIP networks, and 24x7 support and service. Financial terms and leadership arrangements of the deal were not disclosed.

www.broadvox.com

<http://tmcnet.com/46249.1>

WAN Optimization Addresses Growing Data Requirements

Nemertes Research reports that, based on data it collected recently from more than 200 organizations, 28 percent of users expect their bandwidth requirements to increase this year. What's more, the average increase among that group is 220 percent. And 28 percent of those same organizations expect to see triple-digit bandwidth growth next year. Key drivers of bandwidth increases are the growing concentration of employees at select branch offices and adoption of unified communications, according to the study.

www.nemertes.com

<http://tmcnet.com/46250.1>

BridgeWave Introduces 4G Backhaul Solution

A company called **BridgeWave**, which got its start with LMDS and today sells 60GHz and 80GHz solutions to enterprise and municipal network customers, has introduced a 4G wireless backhaul solution that delivers full-speed gigabit without compression in one box. Amir Makleff, BridgeWave's president and CEO, last month at ITEXPO in Los Angeles told TMCnet that everybody is using gigE interfaces, but wireless backhaul solutions from competing vendors deliver more on the order of 300-, 400- or 800-megabit capacity, so networks using those products need to use quality of service mechanisms, making those networks more complex. A full gigabit radio

like the one BridgeWave offers, he continues, behaves just like fiber, so there's no need to plan for congestion. Joseph Schraml, vice president of marketing at BridgeWave, adds that the company's 4G backhaul solution is also unique in that it's a single-box solution that is software-upgradable, so network technicians don't have to climb the tower to do updates.

www.bridgewave.com



<http://tmcnet.com/46251.1>

eTegrity Introduces New Solutions



Online data backup and restoration outfit eTegrity has introduced Virtual Office, a new client computing in the cloud solution. The product allows eTegrity's managed service provider customers to deliver services that enable their customers to store and access data securely, but without having to make the capital investment in on-site storage infrastructure and the related management that goes with it. Instead, Virtual Office allows MSPs' customers to pay for storage based on their specific needs. Also new from eTegrity is a solution that enables enterprise customers to back up laptops in the field whenever they're connected to the Internet.

www.etegrity.com

<http://tmcnet.com/46252.1>

Calix to Buy Occam

As part of the communications industry's ongoing consolidation effort, two multiservice broadband access gear suppliers announced their plans to become one. **Calix** plans to buy Occam Networks for \$171 million in stock and cash. Carl Russo, president and CEO of Calix, says: "By combining Occam Networks' expertise in IP and Ethernet, Calix's strength in fiber access, and both companies' experience in copper access, we believe there is a clear opportunity to further enhance the Calix Unified Access portfolio, accelerate its future innovation, and enable greater broadband deployment by communications service providers globally." Calix has shipped more than one million fiber access ports in North America, the Caribbean and to service providers in Latin America. Occam says it has more than three million BLC 6000 ports deployed at over 380 service providers worldwide.

www.calix.com

<http://tmcnet.com/46253.1>

Big Blue Meets Service Providers' Cloud Needs

IBM announced a new cloud services platform intended to support communications service providers of cloud computing services and applications. The IBM Cloud Service Provider Platform is touted as providing "a comprehensive set of hardware, software, and services" that will let CSPs deliver new cloud-based services to their customers. Among the key advantages is time to market, as IBM argues the platform could accelerate delivery of new applications in weeks rather than months. In large part, the difference comes from faster ways to prototype and test new apps without the traditional high labor and capital costs.

www.ibm.com

**MAKING
SIP TRUNKING
POSSIBLE**

inGate

The Ingate E-SBC

[ENTERPRISE SESSION BORDER CONTROLLER]

SECURE SIP TRUNKING SOLUTIONS

WHY SIP TRUNKING?

- Enhanced productivity
- Proven ROI in less than a year
- Opens the door to Unified Communications

WHY INGATE?

- Simplified installations
- Interoperability
- NAT traversal
- Security
- Scalability
- Reliability
- Affordability

CHANGING THE WAY BUSINESS GETS DONE





by Susie Kim Riley

Net Neutrality Negates Innovation

The net neutrality debate needs to return to its virtuous origins: delivering the best Internet experience for consumers. Instead, today's discussion often centers around an academic exercise about the hypothetical scenarios communications service providers could impose on subscribers. The latter approach ignores the economics of good business and Internet innovation, which ultimately are in consumers' best interests.

The Evil Operator Myth

As we said in comments to the Federal Communications Commission, our experiences with service providers do not support the notion that they "are intent on nefarious practices based on the exercise of market power over the market for broadband Internet access or the editorial control of content."

Although technologies can be used for such purposes theoretically, the majority of the focus in the operators' networks has centered around improving the user experience and service delivery for the overall set of subscribers by actively managing the network resources.

Service providers strive to attract and retain subscribers, while of course making a profit, so they can further innovate, create new services, and improve their networks. Assumptions to the contrary are unfounded in our experience and make no sense to growing operators' businesses.

Neutrality Stifles Innovation & Quality

The premise of net neutrality is noble and has good intentions: that all bits should be treated the same, that all should have access to anything on the Internet, and operators should not have any control or say into what consumers can or cannot do. The consequence of restrictive laws, however, could have some severe unintended consequences. The fact is that non-discrimination of traffic would thwart Internet progress, degrade service, and leave operators incapable of meeting future broadband needs. The quality of subscribers' broadband experiences would be at the mercy of the state of network congestion, and a small minority of subscribers who use the majority of network resources could make service unacceptable for the remaining majority.

Looking ahead, beneficial services and business models may never be pursued because net neutrality could make them illegal. For example, net neutrality could negatively impact the ability for the following types of services to be ever realized:

- offering a tier that enables subscribers to view their video content in high definition;
- offering a tier that enables a parent to block adult content from their child's online surfing or mobile phone;

- an ability to momentarily accelerate a download of an important file or movie before a long plane or car ride;
- an airline offering business and first class passengers free roaming minutes or megabytes for select destinations;
- an online backup paying for a high-bandwidth upstream data channel for its subscribers to differentiate its service from that of its competitors; or
- a shipping carrier sharing temperature and other sensor data into wireless-enabled shipping containers with varying levels of latency.

The long-term consequence is that we could be stuck with the status quo – or worse – without giving subscribers new choices or better services. Do we really think that today's service offerings, and today's 3G and FiOS networks, are the best the Internet can ever offer?

Re-Focus on the Consumer

By getting to the essence of the original net neutrality goal – what's best for consumers – both sides can find middle ground.

We believe that the complexities of managing Internet traffic require operators to have a foundation of differentiating traffic on the basis of quality of service, bandwidth allocation, application types, and other criteria. This also enables consumers to benefit from the inevitable evolution of Internet services and content, understanding that what's new today will be commonplace in the near future and require traffic adjustments.

At the same time, we agree that transparency is important. Consumers need to know what they're buying and what the terms and conditions of their agreements mean for broadband speed, cost and availability. Just as service providers have a duty to maximize their networks, they also have a duty to inform consumers about how their approach will affect subscriber experiences.

We believe that regulatory changes should be tailored narrowly to non-discrimination regulations that preclude particularly harmful practices, such as censorship (unless requested by subscribers, such as parental controls) or the provision of anti-competitive favoritism by operators with third parties.

Broad traffic discrimination or service categorization will make consumers suffer and will push the U.S. behind other nations for technological changes and innovation. The result would be inefficient use of scarce resources and a delayed pace of development for the next generation of wireless services for consumers. **NGN**

Susie Kim Riley is chief marketing officer of Tekelec (www.tekelec.com). She joined the company from Tekelec's May 2010 acquisition of Camiant, where she was founder and CTO.



INTERNET TELEPHONY Conference & Expo

ITEXP



February 2-4, 2011

Miami Beach Convention Center

The industry's best-attended event attracting thousands of communications professionals seeking new partners and the latest information

**The World's
Communications
Conference**

The One Event For:

- **Enterprise/SMB**
- **Government Agencies**
- **Service Providers**
- **Resellers**
- **Developers**

Diamond Sponsors:



www.itexpo.com



by Grant Lenahan

Warning: Mobile Broadband Watershed Ahead, Instructions Not Included

Mobile broadband will undoubtedly be the dominant communications technology of the future. It is both the evolution of mobile narrowband, and the evolution of the Internet.

Practically speaking, and with the exception of a relatively few advanced Western economies, far more people will have access to mobile broadband than to fixed broadband. Even in places like Korea, Europe, and North America where fixed broadband is prevalent, mobile broadband will offer a significantly different experience – one of real-time interactivity, convenience, mobility (duh) and location relevance.

In my last column, I looked at the economics of mobile broadband, including the concerns over congestion and cost per megabyte delivered, but also the larger issue of creating plans that appeal to people with very different budgets, needs and usage patterns. In that I argued that one size fits none and encouraged the industry to create a range of plans that were at once attractive, affordable, and profitable.

This month I want to look at what it takes to operate these networks. They will be very different from fixed networks and traditional 2G/2.5G mobile networks that are dominated by channelized voice and by messaging – with some data services included. And, instructions are not included for those at the forefront of the mobile interactivity revolution.

Mobile broadband networks can be characterized by four important qualities: They are IP. They are contested (shared bandwidth). They support a multitude of VoIP, data, video, and application services. And, finally, in being mobile, they have a demand function that varies according to time and place. Collectively, these have profound implications on performance, management, capacity, cost and pricing.

We need to rethink our notions of service assurance, failures, outages and the like. IP is simultaneously more robust (via automatic re-routing) and more easily degraded (via latency that begins to build quickly even when a network is far below full capacity). Tomorrow's assurance systems need to look both at network performance threshold, many of which are in place, but also at end-to-end services individually.

Next, IP wireless cells are shared bandwidth, contested among many users and potentially even more services. The nature of IP conspires with bandwidth contention to make things messy and more difficult to predict. Taken together, it means that as the cell fills, existing users' and existing services' performance may be degraded. Consequently, broadband mobile networks demand controls to limit incremental users beyond a certain point, as well as methods to arbitrate between various classes of users, SLAs, and services, which have widely varying latency and bandwidth requirements. These are – of necessity – real-time functions that must balance network status, business rules, service requirements, and other factors to maximize profitability, customer satisfaction and fairness.

The third characteristic, the multitude of services supported on a common IP routing infrastructure, is both a blessing and a curse. It's a blessing in the opportunity it offers consumers and commu-

nication service providers and a curse because the performance of each service must be measured individually – either explicitly (an instrumentation-intensive operation) or via sophisticated modeling of each service's constituent parts. This is the approach endorsed by the TMF service management guidelines and the one which, in this author's opinion, scales best.

The bottom line is that we need to shift our paradigm from measuring the performance of facilities to the performance of individual services. The kicker is that a service's performance, as the user experiences it, is the sum of many constituent parts from the broadband RAN to the backhaul, from the core to the servers that define experiences as diverse as reading e-mail or talking via VoIP.

Service proliferation has other implications as well. Beyond its impact on the network itself, it means that the number of fulfillment and catalog items will be far larger. And the sheer number of services on mobile broadband networks means there will be vastly more parameters and more third-party services with which to synch parameters. Further, the sheer volume of changes, as consumers modify their configurations, subscriptions, etc., will be very, very large. The industry has recognized that content- and application-driven services – as well as the participation of third parties in many of these – changes operations. One effort to characterize these needs and a solution under way in the TMF is the Service Delivery Framework, or SDF, project.

Finally there is the simple fact that mobile networks support, well, mobility. Mobility is a feature to the user, but to the network it means something very different. It means that demand for capacity moves around, from cell to cell – higher in some places and at some times than at others. This raises significant questions about average vs. peak congestion, and how to both shape demand and even capacity (yes, it can be done) so that demand for bandwidth and the supply of bandwidth are better aligned.

Operators actually have a variety of tools at their disposal to modify demand. The most obvious is pricing – offering discounts for certain times and places vs. premiums for others. Another tool is modification of policies for bandwidth allocation and admission – based on capacity. Finally, and this is far too complex for this column, there are RAN parameters that can be periodically modified so that capacity shifts slightly at various times of the day or week, in effect moving capacity from areas of excess to areas of need.

Summarizing operations for a technology as encompassing as mobile broadband in 800 words – or even 8,000 words – is a daunting proposition, maybe even foolish. But I hope this foolish attempt gave a flavor for some of the areas where we not only need to change, but where we need to approach operations with a fundamentally different mindset. **NGN**

Grant F. Lenahan is vice president and strategist for service delivery solutions at [Telcordia Technologies \(www.telcordia.com\)](http://www.telcordia.com).

Mobile Backhaul: End-to-end Solution



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.

The NetVanta® 8044M, combined with the ADTRAN® Total Access® 5000 Multi-Service Access and Aggregation Platform, provides a complete end-to-end Ethernet access migration solution including a single operational model regardless of access technology. This solution enables service providers to compete effectively in any market while planning and implementing their transition to 3G and 4G mobile networks.



Total Access 5000
Multi-service Access Platform



NetVanta 8044M

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





by Scott Hilton

The Real Economics of Upgrading the Network for Mobile Broadband

Despite investment from mobile operators to shore up their broadband networks against the increasing tide of data, the experience of their subscribers suggests that the effort has only been partly successful.

Popular devices such as the **Android** smartphones, the BlackBerry, iPhone and iPad have driven a dramatic increase in the number of data sessions in mobile networks, with greater than 10 times the normal number of session attempts relative to voice-only handsets.

Some operators have reported an annual doubling of data traffic, leading to usage caps and other schemes designed to protect their networks, but which reduce the subscriber experience during activity peaks.

This is most apparent at the radio access network, where the cost of upgrading the mobile backhaul network is often the most expensive. The RAN and the attendant backhaul access require significant opex and capex to accommodate the rising bandwidth needs to the base stations over leased lines (E1/T1), microwave, metro Ethernet or fiber connections. In many operators the backhaul represents more than 20 percent of opex and a significant portion of the annual capex.

Operators have many other demands placed on their network upgrade budgets with the advent of femtocells, LTE and other technologies, further amplifying the challenge. But our research shows that as mobile video traffic grows, we are reaching a tipping point at which the network fails to handle effectively traffic peaks in the RAN, and subscribers receive pixilated or jerky video, at best.

This is because peaks are difficult to predict and can be generated by any number of different network events, including mobile videos that go viral and receive a huge surge in interest and corresponding requests for the network to serve up thousands of video streams in parallel. Or, subscribers could be using the network to upgrade to the latest device software version, thereby causing a bottleneck as they all seek to do so simultaneously. Such flash events can be four or five times the regular baseline of traffic, which makes it a very difficult job of dimensioning the network to perform optimally. In economic terms, dimensioning the network to a capacity level where all peaks can be handled is prohibitive, but unfortunately, it only takes a few poor experiences to persuade subscribers to try a new network provider.

This dilemma has had operators scratching their heads. On the one hand, the influx in data traffic - if properly monetized - is welcome and also deserving of network upgrades so that subscribers can continue to get more from their service; on the other, it's an expensive and sophisticated task to upgrade the RAN at a time when so many other areas of the network are suffering too.

Currently, they have three options, none of which are ideal:

Add capacity to the existing backhaul network through additional leased lines or TDM microwave capacity to the cell site

This is often the quickest and easiest to accomplish operationally, but it can also be the most expensive, as it does not fundamentally change the economics.

Upgrade to packet-based backhaul

This approach needs significant planning, time, and capital investment in the areas of major network equipment, rights-of-way agreements, spectrum leasing, and operational upgrades that can also incur significant time.

Offload and divert certain backhaul traffic

This approach can be effective but has economic, operational, spectrum planning, policy and service level agreement implications.

We believe the most cost-effective and rapid method for dealing with the data explosion in the backhaul network will not come from conventional solutions; it will come from innovation and a fresh approach to the problem.

Based on our deep experience with mobile data networks, a new method for optimizing the content that traverses the RAN has been developed. Unlike other content optimization techniques such as encoding or compression, the new solution delivers a lossless experience to subscribers, which helps operators deliver superb quality video and application performance while reducing traffic by up to 90 percent during peak congestion periods.

Adaptive content optimization provides operators with three ways to optimize their investments while easing the transition to the next generation of infrastructure that comes with LTE. First, it reduces congestion and improves user experience across a full range of mobile broadband content and applications including IP video and Internet content. Secondly, it is architected for HSPA radio networks - the largest deployed technology for mobile broadband. Finally, the technology is scalable to support LTE, so existing HSPA sites can be combined efficiently with LTE radio deployments as they are rolled out.

ACO acts as a shock absorber in the network that cushions existing assets against the influx of data traffic while allowing the network to scale to continue to meet future demands. It applies patent-pending, advanced data optimization techniques and adaptive learning algorithms in real-time, providing operators with a way to re-balance their service delivery economics in line with revenue growth - not traffic growth. **NGN**

Scott Hilton is vice president and general manager of broadband optimization solutions at Sycamore Networks (www.sycamorenet.com).

Transforming your communications begins with keeping up to date with the latest communications trends and breaking industry news.



Visit the Next Generation Communications Global Online Community and engage with industry leaders on how to extend applications and services to drive higher levels of functionality, usage, interaction and end user stickiness.

Engage with industry leaders to explore:

- How to leverage a high value network and web 2.0 capabilities
- Optimum ways to provide differentiated end user experience
- Best practices for developing new business models and strategies
- Opportunities to generate revenue while reducing OPEX

Learn more at

<http://next-generation-communications.tmcnet.com>

and follow us at <http://twitter.com/NextGenCom>





by Marc Leclerc

Smartphones – Good or Bad for Network Operators?

Smartphone dominance continues to accelerate. As a result, application stores are fast becoming integral elements of the mobile phone user experience. Of course, many in our industry point out the fact that the vast majority of applications installed on smartphones are actually not for the purpose of communication. That most are games, utilities, personal productivity aides, document readers, media players and such. That other than for the initial download, they do not generate revenues for network operators. But is this really the case?

Mobile device applications today are not static. They are dynamic entities, constantly evolving to stay ahead of the competition and to keep users involved long term. They often engage their users in online communities – a strategy meant to build both user loyalty and their publisher's brand image. This is true not just for social networking clients. Games, productivity applications and media players are also offering users a chance to communicate both with the app publisher and each other to share high scores, offer user tips, get support, and buy upgrades or another one of the publisher's apps. Even if most network providers have not played a direct role in these app stores, the volume of communications usage by the apps themselves once installed is clearly not zero. It is in fact increasing with the number of apps downloaded by the user and the sophistication of application developers and publishers.

Many of the applications themselves track usage habits, location and other user status information and forward this information to the application publisher. This information is used for a variety of purposes, including CRM, tracking demographics and of course for up-sale efforts and targeted advertising. Some applications are offered for free and generate revenues through advertising or product referrals. Many such apps also offer a paid upgrade to turn off the advertising – an interesting twist on the freemium model.

Recent months have seen controversy when some applications were not explicitly informing users that this was going on, nor were they seeking the user's permission for transmitting this information back to the publisher. User consent is required for this to be effective and is even a legal requirement in some jurisdictions. Even so, it is undeniable that these developments are changing user behavior and creating new options for operators to monetize network assets, should they wish to become more directly involved in this value chain.

Both of these trends point to increased usage of communications networks and to the emergence of an evolved digital marketplace with a richer set of commercial interactions. Opera-

tors have the opportunity to leverage these trends by exposing network capabilities via APIs to both Web-based services and to the client applications themselves. But then why would application developers choose this path over simply using device-based APIs? Several other key trends may be working in the telecom industry's favor.

First, people want all their services and content available at all times, no matter where they go and which device they are using. The number and type of devices from which they want to access their services is also increasing all the time: mobile phone, house phone, personal computer, TV, netbook, tablet, car, etc. The challenges of reliably delivering services across network and device boundaries are familiar to the telecoms industry. These include interoperability, international interworking agreements, supporting a multitude of devices, content adaptation and the global standardization needed to make all of this happen. For application developers, supporting all these networks and devices will be a cost multiplier and/or significantly reduce the addressable markets for their services. A global marketplace based on standards (IMS, OMA, RCS, OneAPI, etc.) working across fixed, mobile, broadband, cable networks and the Internet will significantly reduce costs and provide access to a potential marketplace of more than 5 billion subscribers.

Second, people have an intimate relationship with their mobile phones. It is the one device people always keep close at hand. This places the network operator in a privileged position being the most accessible point of sale in the digital economy. In combination with the trends already discussed, network operators have first crack at satisfying user needs and the multitude of direct and indirect commercial opportunities that come from customer attention as well.

Third, LTE is being increasingly deployed around the world. This will offer huge bandwidth and significantly reduced latency. LTE is making mobile communications an effective delivery vehicle for more demanding applications in high-value vertical markets such as health care, personal and commercial security, enterprise systems, industrial controls, transportation, utilities and, of course, immersive multimedia.

If our industry wishes to avoid becoming purely a bit pipe, we will have to make it not only easy, but worthwhile for the service providers and application developers of the world to choose telecoms as the channel for delivering value to consumers. The competition is stiff, but we have made great strides in the last year. The rise of the smartphone may yet play in our favor. **NGN**

Marc Leclerc is manager of the Global IMS Expert Centre at [Ericsson](http://www.ericsson.com) (www.ericsson.com).

BIG UNIFIED COMMUNICATIONS

DELIVERED AS A SERVICE THAT
ANY **SMALL BUSINESS** CAN AFFORD

UNIFIED EMAIL, IM, VOIP TELEPHONE AND PBX SOFTWARE AS A SERVICE



FROM



All you need is a computer and an internet connection for fully unified communications



LEARN MORE AT WWW.INTERMEDIA.NET/BIGUC OR CALL 800-379-7729



by Ken Osowski

OTT Video: Service Provider Friend or Foe?

In my first article in this series I talked about how the mobile broadband revolution – relying on high-speed mobile data access using smartphones that can process all kinds of media – has been tremendously successful for mobile application developers and application stores. But I also raised the question: How do operators capitalize on this and grow their revenues?

Is it enough for them just to continue to increase mobile data access speeds? The simple answer is no. Mobile operators cannot just stand on the sidelines while new entrant companies develop over-the-top business models while the operators make the network investments.

Over-the-top, or OTT, services as they are commonly referred to, characterize subscriber-based streaming audio or video services that utilize mobile subscriber data plans. This model has created some innovative video services at the expense of putting a strain on mobile operator networks. In fact, the success

mobile networks evolve to an end-to-end IP architecture in a 4G environment that supports quality of service for all services regardless of media type, underlying IP network elements will emerge that can be accessed by OTT services to help guarantee delivery and QoS. Functions to throttle network bandwidth efficiently, to make decisions on what are the best video formats to use on the fly, enable media processing, initiate and control voice/video sessions, and convert video formats for different end point usage will be made available to OTT service developers within their applications.

This will not happen easily or overnight since mobile operators, like fixed line carriers, have been accused of creating walled gardens around their networks with little or no control over network resources. This in part has been due to the fact that the TDM-based networks used were inherently inflexible.

Mobile operators cannot just stand on the sidelines while new entrant companies develop over-the-top business models while the operators make the network investments.

of OTT video services has forced mobile operators to move from unlimited data plans to tiered usage plans. But while unlimited data plans were still widely available, OTT video caught on in a big way.

So what's next? Well the OTT video genie is out of the bottle. And while there have been issues regarding quality of service since these are best-effort services, there is a strong demand. What's next is higher speed mobile networks and greater HD video usage. HD video makes any video experience much better as we all know, whether it's P2P HD videoconferencing or viewing paid for content. Current OTT video services and products have taken great strides to provide optimal video resolution for consumers by compression and optimization of the bit streams that contain the video content. New video optimization technologies such as scalable video coding promise standardization and bit streamlining to reduce HD video network bandwidth requirements.

The interaction between OTT video services and the mobile network is the ultimate answer to how both constituents share more equitably in the revenue stream for these services. As mo-

After all, bandwidth was limited and QoS was paramount so it was not like vendors providing TDM-based products were about to open up their service architectures to third parties. But enabling OTT services in an IP services architecture is a totally different animal. OTT vendors need the knobs and controls to derive the best QoE for their services, no matter what the network conditions are.

So the walled gardens will come down as IP service architectures prevail. And mobile operators will need to embrace the OTT world and provide value to them that the operators can in turn monetize. Offering class of service guarantees to OTT services can help them to achieve the level of service their subscribers are looking for. So today, industry watchers have labeled OTT video services as a service provider foe. The flip from foe to friend has to happen for innovative OTT services and service providers to peacefully co-exist. Over-the-top services will ultimately evolve to be through-the-top, opening up a new world of mobile video services. **NGN**

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



Pan/Tilt Zoom Camera*

65° Field of Vision
3.8X Optical Zoom
720p HD

Vu Microphone

Full Duplex Audio
Noise Reduction
7 Foot Range

Media Control Unit

Multi-Core Processors
Recording Features
Screen Sharing

Vu Speaker Bar

Echo Cancellation
Digital Amplifier
HD Audio

*Upgrade to 1080p, 10X Zoom Available

What is Vu? Simple - Vu is the **ULTIMATE** source of competitive advantages. At just \$49 a month, you can move away from impersonal conference calls and exhausting travel. Vu TelePresence™ is a better way to do business with HD quality video between you and the person you are Vu'ing, **AND** it even works on low bandwidth!

Introducing Vu TelePoints!

Experience the whole world at your fingertips! We are setting up our systems in meeting rooms across the world, so you can just pay-by-the-hour and get Vu'ed anywhere, anytime!

VUTM
TELEPRESENCE

1.888.99.VUMENOW

WWW.VUTELEPRESENCE.COM



by Brough Turner

NGN: ITU Misses the Boat

As I move my monthly column from INTERNET TELEPHONY magazine to NGN, I can't resist reflecting on this magazine's title. The English words "next generation network" are exciting. I'm in favor of progress.

But NGN has a specific meaning for telecom operators, their vendors and their uber-standards organizations, the ITU and the 3GPP. Here NGN refers to an IP-based network with extra features, notably mobility management, sophisticated many-level per-session quality of service and, with it, voice-data integration. Mobility management is a key differentiation for mobile operators even though experience shows the vast majority of mobile connections are made from only a few fixed locations (work, home and, occasionally, a third location). But while mobility may not be as important as widespread coverage, it is a saleable feature. Per-session QoS is another story.

Existing operators love the idea of per-session QoS since controlling each IP session would also allow per-session billing and thus allow different prices for bits depending on which application uses them. Per-session billing could extend today's differential prices per-bit for voice, SMS and web browsing.

Unfortunately for operators, the world has already bypassed per-session QoS. Even before the iPhone, the advent of 3G data services in Europe (in 2005-2006) showed what users really want. With 3G the use of IP data soared; however, 95-97 percent of all bytes transferred went to/from the undifferentiated Internet, not to operator-provided applications.

In 2008, just months after the launch of the iPhone, U.S. commentators noticed a similar shift – all the excitement was about access to the Internet. If the point of IP data services is to allow users to connect to the Internet, do you really want to run all that traffic through an NGN core network, especially when that network costs more to purchase and to operate?

Of course without QoS, how can you offer voice services? Here it's worth looking at corporate networks that have deployed VoIP PBXs. Millions of independent purchasers have each been seeking maximum return on their investments. The first thing we notice is these networks don't do per-session accounting. They are over-provisioned and have either no QoS at all, or very simple two-level differentiation. What about their first mile access links? These are typically quite expensive and therefore of limited capacity.

Surely this is the place for sophisticated QoS? No, at most IT departments purchase two separate circuits, using one for best effort IP traffic and the other for voice traffic, for example via a SIP trunk.

What if operators took an IT-centric approach to delivering services? Could they dramatically cut costs while increasing profits and customer satisfaction? Next issue I'll show you a major EU operator that is doing just that. **NGN**

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



WEBINARS

www.tmcnet.com

Fill Your Sales Pipeline with Targeted Leads!

Market Your Company with Turn-Key Webinars!

Partner with TMC and make your next Webinar a lead generation machine. Use the power of TMC's media outlets to drive attendance. Webinar benefits:

- Completely interactive – moderators ask and answer questions and fully engage the attendees
- Take advantage of TMC & TMCnet's marketing power
- TMC Webinars are complete turnkey events
- Up to one-hour long and you can determine the topic



Let TMC help you execute your next Webinar. Contact Joe Fabiano for details about how you can use the power of TMC publications and TMCnet to draw a large number of qualified attendees. 203-852-6800 ext. 132 or jfabiano@tmcnet.com



Introducing the Global IVR Community

Evolving standards and speech technologies are driving the business case for companies to deploy new speech applications to create additional revenue streams, increase customer satisfaction, and trim costs. Voxeo's IVR Global Online Community on TMCnet is the industry destination for tools, information, and resources for building and deploying enhanced IVR and VoIP applications.

- Hosted and on-premise IVR
- VoIP Platforms
- Free developer tools
- VoiceXML, CCXML and SIP Standards

<http://ivr.tmcnet.com>



Powered By:



Sponsored By:



The Year in Review

Broadband Efforts, Cloud Computing, Mobile Boom Led the Way

What a difference a year makes. 2010 has seen some big moves by the federal government to address broadband accessibility; the introduction of at least one new iconic connected product; a continued shift to mobile communications; acceptance for on-demand services and pricing models; an expansion of video and social networking applications and uptake; and continued discussion about what all of the above means for service providers, particularly those that operate and own the underlying networks. At the same time, the worldwide economic problems remained top of mind for those in the communications industry and their customers this year, as they all continued to look for more cost-efficient ways of doing business.

Let's take a walk down memory lane.

The Broadband Stimulus

The federal government's broadband stimulus effort – through which the Rural Utilities Service and the National Telecommunications Information Administration are to dole out something like \$7.2 billion in an effort to make broadband connectivity more accessible and affordable to those that would otherwise find it out of reach – has been among the major focal points for the communications industry in 2010.

At first, many current or would-be network operators, community stakeholders and broadband gear suppliers were pretty excited about the prospect of the federal government handing out billions – and plenty of them still are.

The bad news was that the Federal Communications Commission, which helped orchestrate the broadband stimulus, introduced a fair amount of uncertainty around the program by tweaking deadlines and broadband definitions along the way. Worse yet was the fact that some operators may have delayed network investments while they waited to get word on their applications. Jason Smith, solutions marketing manager at packet optical networking supplier BTI Systems, is among those that refer to the broadband stimulus as a “de-stimulus.”

The good news is that RUS and NTIA hit the Sept. 30 deadline for announcing the final stimulus award winners (although Daniel Locklear, senior director of LTE solutions market at Alcatel-Lucent tells NGN Magazine that as of early October some companies were still submitting applications for funding). That means these network builds will soon commence, which is expected to create new jobs and other positive economic impacts. In fact, several of the award winners in the past few

months have named suppliers like [ADTRAN](#), Calix, Cyan and others, creating a stimulating effect on the broadband equipment front. It also means those that didn't receive awards are now free to move forward with network investments as well, says Smith, adding that BTI Systems recently has seen an increase in purchase orders among this group.

The Wireless Wave

During discussions about the broadband stimulus and The National Broadband Plan, FCC Chairman Julius Genachowski repeatedly referred to the importance of wireless networks and mobility. This probably shouldn't have come as a surprise, given the mobile data boom.

Joe Staples, chief marketing officer at Interactive Intelligence Inc., in a speech at the recent SocialCRM EXPO event at ITEXPO West, noted that the mobile web has seen 110 percent growth in the U.S.



A lucky consumer wins a contest and receives a Droid phone, based on Google's Android operating system.

in the past year. In the first half of 2010, global mobile data bandwidth usage increased 68 percent, according to [Allot Communications](#), which reports that video streaming continues to be the fastest growing application type, with a 92 percent increase in the period.

The bandwidth demands on mobile networks are triggering several movements, including a move by regulators to make more spectrum available; a change in how wireless service providers charge for their services (at least in some cases); efforts to allow for optimization of wireless networks; and the creation of new, higher capacity, all-IP wireless networks.

White Space

To provide more spectrum to support the mobile data boom, the FCC this year issued an order to free up the unused TV spectrum known as white space. FCC Chairman Julius Genachowski said the initiative was “the first significant release of unlicensed spectrum in 25 years.”

The National Broadband Plan noted the importance of unlicensed spectrum in creating opportunities for new technologies to blossom and recommended that the commission complete the TV white spaces proceeding as expeditiously as possible.

Because white space signals travel at least three times further than transmissions via other unlicensed spectrum, coverage in this spectrum is strong. That apparently excites many big names in communications, including Hewlett-Packard, [Intel](#), Microsoft and Motorola, which reportedly are all testing white space-related products. FCC Commissioner Robert McDowell also commented that by making available white space spectrum, the commission would open the door to new competition to existing broadband providers, which might help the commission avoid a big showdown on the net neutrality issue.

While that’s all well and good, not everybody is cheering about the white space decision. Broadcasters lobbied heavily against the FCC’s move to free the spectrum. And country singer Dolly Parton, who uses wireless microphones during her act, also famously came out against the effort early in the discussion.

Traffic Jam

While growth in mobile data is getting the FCC, wireless equipment and backhaul providers, and some content outfits all excited, it’s not necessarily good news for wireless network operators. That’s because it’s eating up network bandwidth at an unprecedented rate, which is not so great if you’re a network operator that sells all-you-can-eat connectivity.

That’s why, more and more, service providers are starting to reconsider how they package and price for mobile broadband services. For example, AT&T Wireless this year instituted usage-sensitive pricing on iPhones and iPads. Orange and Vodafone have done the same in Europe. And Verizon Wireless indicated that it will sell data by the bucket on its new LTE networks.

The idea of moving customers from unlimited bandwidth to connectivity more targeted to their usage and particular application needs has been a long time coming, both on wireless and wireline networks. This year that started to happen.

The Move to 4G

Speaking of LTE, the technology has made some significant gains in 2010.

Apple’s iconic iPad prompts a tablet frenzy



Verizon Wireless, the LTE poster child, expects to go live with LTE in as many as 30 major metropolitan areas by the end of this year. That’s up from its initial target.

While the Verizon Wireless effort is the most high-profile build, MetroPCS Communications grabbed headlines this fall when it was first to market with an LTE network launch. The company is now live in at least two markets – Dallas/Ft. Worth and Las Vegas – and expects to bring up additional LTE networks in its other markets in the coming months.

AT&T, meanwhile, has been involved in trials of LTE this year, and recently disclosed plans to launch LTE commercially. The company’s goal is to have 70 million LTE-enabled points of presence by the end of 2011, according to Locklear of Alcatel-Lucent, which is one of its suppliers.

Locklear adds that by the end of this year the world will have seen 20 LTE networks go commercial. However, initially only data services will be supported via LTE networks, says Locklear, while phones with 4G data and 3G voice and data are expected to hit the market next year.

Meanwhile, [Clearwire](#) is offering WiMAX-based wireless broadband services in a number of markets. It was first to market with 4G in the U.S., but recently the company indicated it will face some delays in completing its original 4G build.

Of course, LTE is expected to be a game changer not only because of the higher bandwidth it delivers, but also because it’s entirely



FCC Chairman
Julius Genachowski

based on IP technology and is expected to avail service provider networks to the web developer community on a whole new scale.

Network Management, Net Neutrality & Fair Use

Because both wireless and wireline networks are being hit hard by growing bandwidth requirements, network owners like the telcos and cablecos are pushing to retain control of their networks.

While net neutrality advocates want to make sure consumers and businesses are able to access the applications of their choice over the broadband connections for which they have already paid, network owners argue that if over-the-top application providers and end users who are bandwidth hogs can eat up mass quantities of network capacity, service quality will degrade for the rest of us and there will be little incentive for facilities-based providers to continue to invest in infrastructure.

Of course, this back and forth is old news. What's new this year was what appeared to be a stronger push by the FCC to set rules around net neutrality, followed by some surprising new developments.

As the FCC went about its business of drawing up and presenting Congress with The National Broadband Plan – which addressed everything from how to define broadband, to cybersecurity, open networks and much more – a lawsuit was brewing.

Shortly after the presentation of the plan in March, 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). That threw into question the FCC's role in the whole net neutrality debate.

Then, something else interesting happened. [Google](#) and Verizon, which one would think would be on opposite sides of the net neutrality debate, joined forces this summer and presented what they called a policy framework on net neutrality.

In it, the communications giants talked a lot about ensuring consumers have access to all legal content on the Internet and the ability to use whatever applications and devices they want. It went on to disavow discriminatory networking practices, but talked about allowing for the creation and delivery of differentiated online services.

But, as we have seen so many times before with net neutrality, that only set off more heated debate from all sides about net neutrality and fair use. The debate continues.

Cloud, SaaS, On-Demand Services

Of course another key trend of 2010 was the rise of on-demand services and resources.

The appeal of these services is obvious in an economic environment in which everyone is trying to control their costs by paying only for what they use and eliminating new capital investments whenever possible.

A recent study by [CompTIA](#) indicates that 72 percent of organizations plan to expand the number and types of cloud computing services they use over the next 12 months. Eight-five percent of the survey respondents indicated their interest in these services due to a desire to reduce capital expenditures. About the same number indicated interest in driving down costs. And 81 percent said the new services would allow them to add capabilities not available in current IT models.

“Clearly there is growing momentum behind cloud computing, evidenced by climbing adoption rates and greater awareness,” says Carolyn April, director of industry analysis at CompTIA. “But cloud computing adoption is still nascent. The year ahead will be one of evaluation, trial and error and, most importantly, opportunity as the market sorts through the role IT channel companies will play, best business models, sales and marketing strategies and most relevant technologies.”

Nigel Williams, Level 3's senior vice president of sales, in his 4GWE/[ITEXPO](#) keynote speech last month said the carrier is hearing IT managers at enterprises ask for flexible pricing models, resource pooling, on-demand services, improved SLAs, elastic capacity, and lower costs, he said.

“It's basically coming back down to the cloud,” he added, referring to what all of the above have in common.

Wireless Backhaul & Fiber Optic Investment

Circling back to the wireless discussion, another key area of focus in communications this year has been the frenzy of activity among service providers and equipment suppliers that want to outfit 4G network builders with backhaul solutions. Indeed, wireless backhaul is among the key applications that is driving new investment by existing and new fiber optic companies, as well as companies using other technologies such as microwave.

For example, Allied Fiber, the new venture of Hunter Newby (who founded and later sold Telx), is creating a dark fiber network in the U.S. Part of Allied Fiber's plan is to offer wireless network operators and their wholesale backhaul suppliers both dark fiber, and space on radio towers along its fiber routes, which run along Norfolk Southern rights of way. Those rights of way already are dotted with towers, which Allied Fiber will help the railroad lease to interested parties.

Benjamin Edmond, executive vice president of sales and marketing at [FiberLight](#), which offers lit services and dark fiber over a network that spans from Baltimore to Miami to Texas, says there's been a lot of investment in fiber over the last 18 months or so due to wireless backhaul requirements, the government moving from TDM to Ethernet, the video boom, growing storage requirements, and the rise of cloud computing and software as a service.

Of course, all these deals pale in comparison to CenturyLink's plans to buy [Qwest](#) in a \$10.6 billion stock swap, which will place the once little-known telco in the No. 3 U.S. telco position, behind AT&T and Verizon. CenturyLink (previously CenturyTel) announced this acquisition in April of this year.

"Within the fiber space the bulk of the M&A, or a large portion of it, has happened," Gillis S. Cashman, general partner at M/C Venture Partners, which has created and invested in a wide variety of network operators including Lexcent, LightTower, Verosity and Zayo Group. "Over 40 to 50 companies have been acquired over the last four years."

What we're seeing more of now, and can expect more of in the future, is network operators expanding their business through "horizontal acquisitions" that take them into new, complementary businesses, says Cashman. For example, he says, Cincinnati Bell recently bought data center outfit [CyrusOne](#).

What we're seeing more of now, and can expect more of in the future, is network operators expanding their business through "horizontal acquisitions," says Gillis S. Cashman of M/C Venture Partners.

The M&A Revival

Speaking of fiber networks, this is one of the hot areas for merger and acquisition activity in recent months.

September alone saw a lot of action on this front. At the [COMP-TEL](#) show in September, PAETEC announced plans to buy Cavalier. That same month Massachusetts-based metro fiber and bandwidth provider Lighttower Fiber Networks announced it would buy New York-based dark fiber network builder [Lexent](#) Metro Connect. Around the same time Lighttower completed its previously announced acquisition of Verosity Technology Partners, a provider of fiber-based data and Internet connectivity. September also marked the close of a three-way merger of [MegaPath](#), Covad and Speakeasy.

A month earlier broadband wireless service providers Airband and Sparkplug announced their plans to merge. Meanwhile, [Windstream](#) revealed plans to snap up Q-Comm subsidiaries Kentucky Data Link and Norlight. The summer also saw Windstream close its acquisition of Iowa Telecom; that followed Windstream's close of its NuVox purchase in February and of its Lexcom buy in December.

"The biggest development in 2010 is the telecommunications industry itself – it's recession-proof armor," says Larry Fishelson, co-founder & COO of DynaLink Communications, who provided his comments to NGN Magazine in early fall. "As the whole economy continues to crash, telecom thrives. Carlos Slim of Telmex is named again as the world's richest man. CenturyLink acquired Qwest, PAETEC acquired Cavalier – all good business consolidations of the networks, which will drive better technology and flow into more business, which in turn will flow the whole cycle."

He's right, of course. The telecom sector has been amazingly resilient during the recession and the prolonged economic slump that continues to follow it. However, in the third quarter of this year telecom services was the worst hit sector. Nightly Business Report says telecom services third quarter earnings fell 9 percent in the quarter vs. a year ago; the financial services sector, by comparison, saw a 95 percent increase in third quarter earnings.

But whatever setbacks we might have along the way, Fishelson notes: "Telecom is trickle-down economics at its best, and since it's unavoidable like death and taxes, it will just continue to reinvent itself. And in a year like 2010, it proved that." **NGN**

The Opportunity for a Rural Telco in the IP World

Rural phone companies have their work cut out for them over the next five years. While the traditional switched phone system isn't going away overnight, it will be threatened in the future as the Federal Communications Commission starts to shift Universal Service Fund money toward broadband solutions and pushes to eliminate long-distance per-minute charges.

Encouraged by the publication of The National Broadband Plan and fueled by an influx of federal stimulus money, new broadband service providers have an incentive to edge their way into unserved and underserved areas that rural carriers have thanklessly serviced with dial tone for generations.

The rural telcos are the same group that has purchased the undesirable exchanges from the RBOCs and invested in them hoping for a return on investment. The Rural Utilities Service, the same group

helping to hand out broadband stimulus funds, has trained the rural telco to plan long term by funding projects with a large upfront investment and a long road to profit. The question then begs to be answered: How does a rural telco adapt to the IP world and shorten its investment cycle? The answer is undoubtedly expanding beyond their borders.

If history provides any guidance, one of the real opportunities for rural broadband will be down the road when new entrants realize how hard it is to make a living in a stand-alone rural market and they decide to divest. Who will be around to pick up the pieces? The established rural carrier that has embraced the move to an all-IP world – that same ILEC that has made a business where others had not dared.

Currently, the U.S. Department of Commerce's NTIA and the U.S. Department of Agriculture's RUS program are on track to hand out \$7.2 billion in one-time broadband stimulus funding, with the vast majority of that funding going into infrastructure builds. Entities





Stay Connected

Join the Broadvox IP Communications Community at TMCnet
The World's Premier IP Communications Resource for Business VoIP/SIP Trunking

White Papers
Industry Innovations

Press Releases
Industry News

SIP and Serve Blog
IP Communication Resources

SIP Trunking Solutions
eNewsletters

Enterprise VoIP
Webinars



Visit the Community at: <http://ipcommunications.tmcnet.com/>

picking up this windfall include rural phone companies, local and state governments, and even larger telecommunications interests.

However and wherever the \$7.2 billion goes in either building up rural phone companies or establishing competitors to them, those projects are only the tip of the iceberg of changes on the way. Buried in the FCC's National Broadband Plan is a decade-long roadmap to revise both the USF and intercarrier compensation. On the FCC roadmap, USF money will be shifted into Connect America and Mobility funds by 2012, with those funds supporting the expansion of broadband infrastructure and high-speed wireless infrastructure, respectively. Over the next decade, the FCC wants to shift up to \$15.5 billion from the High-Cost program into building and supporting universal broadband.

Perhaps the ugliest battle awaiting the FCC is its proposal to set up a framework for phased reform of intercarrier compensation to eliminate per-minute charges and "rebalance" local rates to offset lost revenues from ditching the current ICC model. Rural carriers heavily dependent upon ICC will face a drastic change in their operating models and will need other sources of revenue, such as delivering high-speed broadband to more customers and looking at opportunities in underserved RBOC territories.

change is coming, rural telcos should have time to adjust to changes rather than simply waking up on a Tuesday and having to turn on the new business model.

At the same time, rural telcos cannot afford to keep thinking business as usual. Standing still is only an option for failure with the number of changes in the pipeline. Betting against all of them is just crazy talk.

Rural telcos will have numerous opportunities for growth if they can pick their battles carefully. A wireless broadband provider moving into ILEC territory to offer access may seem like competition, but the provider is going to need to purchase landline circuits (preferably fiber) to towers, facilities to install gear, and broadband access to the rest of the Internet. Working with the new entrants can bring in steady customer revenue, while forcing them to build their own organic infrastructure means an ILEC receives nothing.

And if a rural telco can deliver bundled services in its own backyard, it has a suitable knowledge base and resources to deliver broadband services to underserved RBOC territories next door. If anything, the rural telco has the advantage since RBOCs have no desire to work with federal grant money due to the potential for various open

How does a rural telco adapt to the IP world and shorten its investment cycle? The answer is undoubtedly expanding beyond their borders.

Needless to say, there will be a lot of haggling and lobbying along the way to move The National Broadband Plan from a vision document into actual goals most people will agree upon. The NBP is just a plan offering recommendations at this point in time, but the FCC has made it clear that it will do everything within its scope of responsibility to bring it to life. There is a trifecta of NRPMs (notice of proposed rulemaking) on USF transformation, USF contributions, and intercarrier compensation restructuring scheduled to come out this quarter.

It is important to keep in mind that USF monies will be shifting to broadband projects, and legislators in both parties recognize the need to shore up the universal service funding base due to declines in revenue as residential customers have shifted from landline to broadband and cellular services.

So what should a rural telco do? Start investing in an all-broadband future with a five-year timeline. A rural telco has a distinct advantage over its non-facilities brethren – voice experience. What better group to pursue double- or triple-play services in the fringe RBOC markets than those that are in the sister communities to a neighboring ILEC market?

Further, the FCC clearly acknowledges the need for "no flash cuts" with new rules phased in over a "reasonable time period." While

access strings to be attached and little urgency to invest because they can't get a good enough return on investment for the capital expenditures and overhead they would incur. Secondly, fringe RBOC communities are typically smaller and rural, meaning they are last on the list of upgrades by the RBOCs for any type of deployment.

Even more enabling is the fact that a rural telco can be much more nimble than the RBOC once they embrace IP-based services. Moving to an IP infrastructure opens up vast possibilities with numerous third-party (i.e., not RBOC) telecommunications services available, delivering more flexible, innovative, and typically more aggressively priced products. IP easily enables a rural telco to tap into advanced E911 services, SIP origin and termination services with aggressive domestic and international rates, nationwide DID availability, and access to one-stop shopping for DSL and WAN circuits regardless of LATA.

The National Broadband Plan is a great start. If rural telcos position themselves aggressively, they will be around to pick up where the initiative leaves off. This same group also has the cash and the know-how to operate companies that were quick to sell the government an Internet-based business plan. **NGN**

Brian Worthen is CEO of wholesale service provider Mammoth Networks (www.mammothnetworks.com).



IMS

PLUGFEST™

www.imsforum.org

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

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

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

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

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

**RSVP to info@IMSForum.org
Register online at www.imsforum.org
For More Information Contact: info@imsforum.org
NGN IMS Plugfest™**



NGN™

F O R U M

WWW.NGNFORUM.ORG

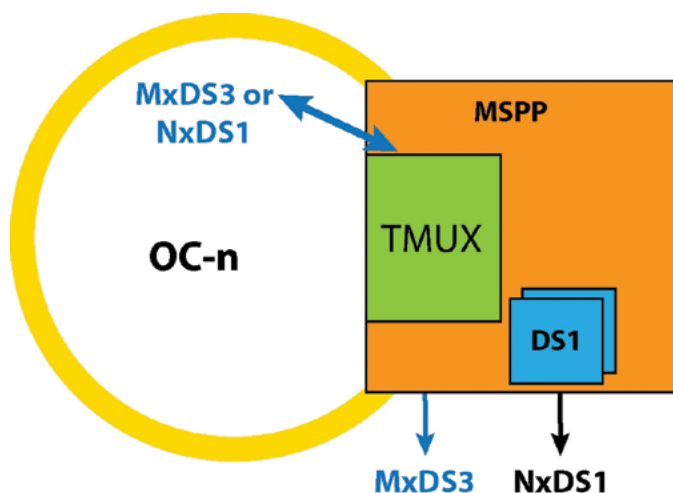
Achieving a Smooth Migration Building a Next-Generation Backhaul Network

Current 2G and 3G fiber-fed mobile backhaul networks use highly reliable SONET network elements to transport DS1 services from cell towers to MSCs effectively. Service providers are using OC-3 and OC-12 circuits to interconnect multiple cell towers in a UPSR, providing non-service-affecting site scalability and survivability.

Network element hardware and power sources are fully redundant. Network element power supplies are distributed on individual cards and fed over redundant power buses to eliminate any single point of failure, yielding 99.999 percent availability.

Scaling the cell tower access capacity adds DS1s until an economical breakpoint is reached relative to DS3 tariff pricing. Based on DS3 tariffs, a crossover point of five to seven DS1s justifies a DS3 lease. To facilitate DS3 service access, service providers will add M13 multiplexer functionality to the optical multiplexer using an external M13 network element or, if using an advanced MSPP, will install a transmux card emulating the M13.

Figure 1: Transmux DS1 Grooming to DS3 Over OC-n

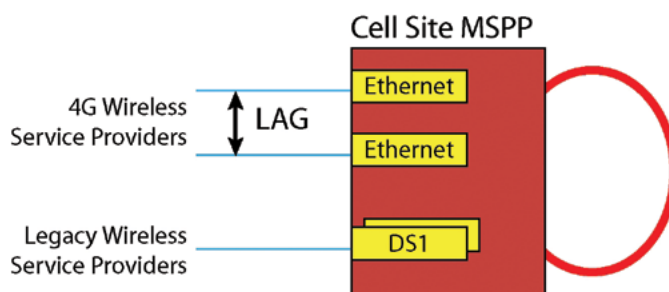


The transmux card grooms the DS1s into a DS3 at the access point, satisfying the DS3 tariff while providing an economic advantage of 28 DS1 capacity for the price of five to seven. Once groomed, an advanced MSPP will transport the DS3 directly over the system bus to the OC-n optics, further saving capital expense and additional equipment to break out and remultiplex the DS3.

As 4G technology becomes available, wireless service providers will upgrade their networks for WiMAX and LTE. Use of 4G radios at cell

tower sites requires a transition from DS1 to Ethernet interfaces for backhaul. OC-n rates at cell sites typically scale to OC-48 once Ethernet traffic is added. Wireless service providers will transition their equipment over the course of the next several years. Therefore, the wireline service providers must offer both DS1 service for legacy providers and service-aware Ethernet for WiMAX/LTE upgraded providers.

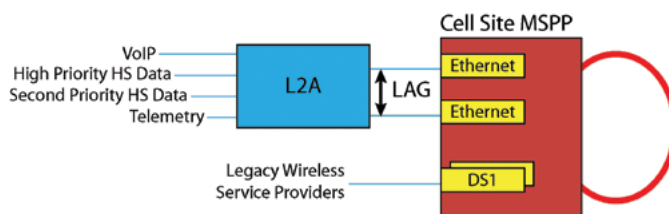
Figure 2: MSPP at Cell Site with LAG and DS1



Over time, DS1 demand will convert to Ethernet, but that transition period is unclear. To reduce risk, provide flexibility and maintain installed base investment, wireline service providers will implement a platform capable of supporting both traditional TDM and service-aware Ethernet through scaling, using GFP-F plug-in cards as needed. Otherwise, wireline service providers must install new Ethernet-centric equipment at cell towers where footprint is at a premium, increasing both capital and operational expenses.

The 4G cell site contains a mix of CIR and EIR services and signals to be transported to the MSC. These services may include VoIP, streaming video, Internet data and telemetry signals. Wireless service providers may use an L2A to efficiently consolidate these signals at the cell site using various classes of service and statistical multiplexing. The consolidated L2A is the service port to be backhauled. Since Ethernet traffic at the cell site is policed using the L2A, the MSPP service port will be all CIR service and transported over an EVC. The EVC may be duplicated by the wireless service provider at the L2A. The duplicated EVCs are diversely mapped across the WAN facility by the wireline service provider and service multiplexed at the MSC.

Figure 3: Cell Site MSPP with L2A Interconnect



Visit the Voice Quality Community

On TMCnet

While the cost-saving benefits of VoIP are well documented, voice quality has emerged as one barrier to adoption, for businesses and consumers alike. Now, consumers have access to a device from Ooma that provides free U.S.-based telephone calls and advanced telephony features for superb voice quality.

Ooma's appliance offers exceptional voice quality and the reliability of a traditional phone service, but at a fraction of the cost. You don't need a headset. You simply connect the device to your high-speed Internet and your existing phone, and that's it. You're ready to start calling and experience Ooma's great voice quality.

Community Features:

- Listen to recorded samples and compare voice quality with Ooma vs. a leading VoIP provider.
- Track breaking news about voice quality in VoIP appliances and services.
- Read white papers relating to IP telephony.
- Get access to case studies detailing successful deployments of Ooma's products.



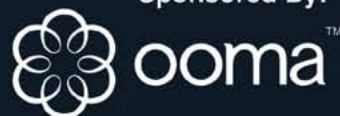
Ooma Telo



Powered By:



Sponsored By:



Visit Today:

<http://voice-quality.tmcnet.com/>

The MSPP service port interface should offer rate-limiting CIR to backhaul the L2A traffic efficiently. Maintaining 99.999 percent reliability for Ethernet service at the cell site requires a similar level of redundancy to the DS1 hardware method. Use of 802.3ad [3] LAG between the L2A and two service cards within the micro packet-OTN ensures Ethernet resiliency, effectively providing a 1:1 hardware redundancy, as illustrated in Figure 3. To ensure maximum end-to-end performance over the WAN, connection-oriented Ethernet techniques are used within the MSPP or micro packet ONP. COE offers deterministic operation, consistently delivering Ethernet services with the lowest latency, jitter and frame loss. Ethernet service delivered using COE provides the same performance whether the network has few or many network elements and regardless of WAN facility fault protection switching.

Maintaining SONET performance at brownfield sites provides carrier-class service capabilities in the access network. Legacy TDM services are undisturbed, whereas circuit emulation using current techniques over Layer 2/Layer 3 facilities oversubscribes network bandwidth and has unpredictably high latency and jitter. Ethernet CIR traffic over SONET provides COE operation using GFP-F, and realizes one-way latency in the order of 1.3 milliseconds (worst case) using jumbo frames, as shown in Figure 4. Jitter and frame loss are less than 125 microseconds and are therefore nonexistent, due to the predictable time-based nature of SONET.

Interface	Frame Size	Average Latency (ms)
10/100Base-T	64	0.04
10/100Base-T	192	0.06
10/100Base-T	320	0.08
10/100Base-T	1600	0.25
10/100Base-T	9600	1.32
100Base-X	64	0.04
100Base-X	192	0.06
100Base-X	320	0.07
100Base-X	1600	0.24
100Base-X	9600	1.31
GigE	64	0.04
GigE	192	0.04
GigE	320	0.04
GigE	1600	0.06
GigE	9600	0.19

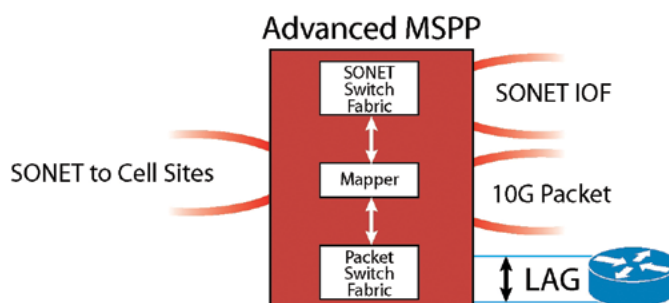
Figure 4: Table of Latency Rates for Ethernet CIR Traffic over SONET using GFP-F

Greenfield networks used for 4G service use micro packet ONPs at the cell site to transport data services using COE over OC-48, point-to-point LAG or G.8031 VLAN protected ring topologies up to 10 GbE WAN facilities. COE over OC-48 offers almost a 2.5 bandwidth increase over GbE access multiplexers.

At the MSC, the MSPP TDM traffic is aggregated to a DCS using DS3 or OC-n interconnects. Ethernet traffic is service-multiplexed providing EVPL connectivity as per MEF-9 from the cell towers. Maintaining multi-customer service separation and preventing multi-tag duplication in mixed in- and out-of-franchise networks is solved using 802.1Q VLAN tagging offering pushed, popped or swapped tag treatment.

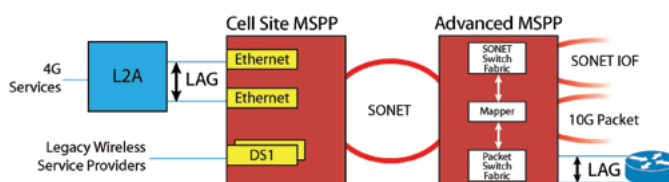
Odd and even EVCs are service multiplexed on separate ports in dual EVC architectures. These separate service multiplexed EVC ports presented from the wireline service provides packet ONP to the wireless service provider using 802.3ad LAG between two cards of the packet ONP maintaining high service reliability just as is used at cell sites.

Figure 5: Advanced MSPP Dual Fabric and Mapper



Packet ONPs at the hub and MSC sites have both TDM and packet switch fabric to optimize traffic treatment with mapping processors to translate between the two. The mapping processor provides a smooth transition for brownfield sites using SONET to and from packet facilities. This smooth transition allows packet ONPs to operate in a SONET network and terminate packet traffic, as well as forwarding to higher-order networks using 10 Gbps facilities. The higher-order network provision enables gateway operation for future packet-based network applications. **NGN**

Figure 6: Next-Generation Mobile Backhaul Network



Joseph V. Mocerino is principal product marketing manager at Fujitsu Network Communications Inc. (www.fujitsu.com/us/services/telecom/).

You are here.

You're at the trade show in LA, but you need to set up that conference call back at your desk in NY. Well, things just got easier. Because as far as everyone else is concerned,

Be free with BlackBerry Mobile Voice System 5.0

As workplaces become increasingly mobile, the need for a cost-effective integrated communications platform is more pressing than ever.

BlackBerry® Mobile Voice System 5.0 is designed to unify desk phone features with BlackBerry® smartphones, saving money while giving employees the freedom to work with one business number, caller ID, voicemail and more, virtually anywhere.



Visit blackberry.com/mvs

BUYER'S GUIDE 2011

ALPHABETICAL LISTING

360networks
877-360-7360
www.360networks.com
Products/Services: 41,48

8x8 Inc.
408-727-1885
www.8x8.com
Products/Services: 48

Actiontec Electronics
408-752-7700
www.actiontec.com
Products/Services: 9,19

Adaptive Digital Technologies
610-825-0182 x120
www.adaptivedigital.com
Products/Services: 48
Other: VoIP Engine Software

Adax Inc.
510-548-7047
www.adax.com
Products/Services: 9,12,18,39,41

ADTRAN
256-963-6739
www.adtran.com
Products/Services: 9,17,45,48,51

Agilent Technologies
970-679-5397
www.agilent.com
Products/Services: 9,10,35,44,48

AireSpring
818-786-8990
www.airespring.com
Products/Services: 41,48,49
Other: Voice over MPLS, SIP Trunking, Ethernet

Allied Fiber
516-455-1869
www.alliedfiber.com

Alteva
877-258-3722
www.altevatel.com
Products/Services: 9,17,35,48
Other: Hosted Unified Communications Solutions

Altitude Software
905-479-2655
www.altitude.com
Products/Services: 16,19,25,26,48

ANDA Networks Inc.
408-519-4840
www.andanetworks.com
Products/Services: 18,21,35,44
Other: Wireless Backhaul Multiservice Switches, QOS and Prioritization

Angel
888-MyAngel
www.angel.com
Products/Services: 4,16,41

APEX Voice Communications
818-379-8400
www.apexvoice.com
Products/Services: 2,16,21,45,47
Other: Service Delivery Platform

Appia Communications
877-277-4297
www.appiaservices.com
Products/Services: 35,47,48,49

AppRiver
850-932-5338
www.appriver.com
Products/Services: 38

AppTrigger
214-572-7801
www.apptrigger.com
Products/Services: 7,15,37,36,39

Aptilo Networks
+46 8 5089 8900
www.aptilo.com
Other: Service Management and Access Control for WiMAX, Wi-Fi Networks

Arbinet
917-320-2000
www.arbinet.com
Products/Services: 18,35,48

Bat Blue Corp.
212-461-3322 x3010
www.batblue.com
Products/Services: 38,42,49,51

BillSoft Services Inc.
800-525-8175 x125
www.billsoftservices.com
Other: Telecommunication Tax Solutions

BLADE Network Technologies
408-850-8999
www.bladenetwork.net
Other: Data Center Switching and Network Virtualization

Bluenowhere Ltd.
+44 20 7193 0916
www.bluenowhere.net
Products/Services: 9,51
Other: 4G Wireless

BRAVO COMMUNICATIONS INC.
408-297-8700 x112
www.bravobravo.com
Other: Lightning and Surge Protection/All Types

Brekeke Software Inc.
650-401-6636
www.brekeke.com
Products/Services: 40,48

BridgeWave Communications
408-567-6908
www.bridgewave.com
Products/Services: 51

Broadview Networks
914-922-7900
www.broadviewnet.com
Products/Services: 17,35,41,48,49

Broadvox
214-646-8000
www.broadvox.com
Products/Services: 48

BULLSEYE TELECOM
877-773-3277
www.bullseyetelecom.com
Products/Services: 4,16,35,48,49

Business Mobility Systems
866-854-7487
www.businessmobilitysystems.com
Products/Services: 2,9,19,48

Calient Networks
408-232-6400
www.calient.net
Other: Fiber Cross-Connect

Celergy Networks Inc.
760-268-1913
www.celergy.com
Products/Services: 17,48,51
Other: Telecommunications Network Infrastructure Design and Installations

Codenomicon
650-575-7523
Products/Services: 35,38,44

Commlogik Corp.
305-677-7888
www.commlogik.com
Products/Services: 17,18,19,40,48

Comsys Mobile
+972-9-9717 888
www.comsysmobile.com
Other: Multimode Communication Processors

Copia International Ltd.
630-388-6900 xSales
www.copia.com
Products/Services: 16,41,48
Other: FoIP

CosmoCom
631-940-4200
www.cosmocom.com
Products/Services: 12,16,17,48
Other: Multimedia IP Virtual Call Center

Coyote Point Systems Inc.
408-291-5240
www.coyotepoint.com
Products/Services: 2,12,42
Other: Load Balancing, Application Acceleration, Business Continuity

CRE8 Group Inc.
813-649-8504
www.cre8groupinc.com
Other: Telecom Marketing and Public Relations

CSF Corp.
732-302-0222 x6608
www.csfcorp.com
Products/Services: 2,12,31,39
Other: Toll-Free Provisioning and Routing Software

BUYER'S GUIDE 2011

ALPHABETICAL LISTING

CTC Connections

214-270-1394
www.ctcconnections.com
Products/Services: 4,12,40,41,48
Other: SIP Proxy Cluster System, Hosted PBX VoIP Cluster System, Media Gateway Solutions

Cynergy Software Corp.

405-516-2420
www.cynergysoftware.com
Products/Services: 2,16,17,40,48

Cypress Communications

800-869-2500
www.cypresscom.net
Products/Services: 17,18,35,48,49

D

Dialexia Communications Inc.

514-693-8500 x214
www.dialexia.com
Products/Services: 4,13,16,32,48

Diallogic

800-755-4444
www.diallogic.com
Products/Services: 19,21,39,47,48
Other: IP and IP-Enabled Components, Signaling IP and SS7 Components, TDM Boards, More

E

Eastwind Communications

508-862-8600
www.EastwindCom.com
Products/Services: 2,4,19,39,40

EDX Wireless

541-345-0019
www.edx.com
Other: Wireless Network Design

Elfiq Networks

514-667-0611 x814
www.elfiq.com
Products/Services: 12,35,38
Other: Network Redundancy

Elitecore Technologies

07966065606 x606
www.elitecore.com/telecompractices
Products/Services: 4,7,31,38,48

Elliptical Mobile Solutions

480-924-0547
www.ellipticalmedia.com
Products/Services: 19,21,42,44,48
Other: Data Center

Emerson Network Power

602-438-5720
www.Emerson.com/
EmbeddedComputing
Products/Services: 2,6,12,45,46

Empirix Inc.

781-266-3285
www.empirix.com
Products/Services: 44
Other: Monitoring

Encore Networks

703-318-4366 x4366
www.encorenetworks.com
Products/Services: 6,39,48,49,51

Endeavor Telecom

678-460-2500
www.endeavortelecom.com
Other: CPE Installations, Inside Wiring, Trouble Tickets, Site Surveys

ESRI

909-793-2853
www.esri.com/telecom
Other: GIS Software

Evolving Systems Inc.

303-802-1000
www.evolving.com
Products/Services: 31

eZuce

888-296-1005 x2016
www.ezuce.com
Products/Services: 17,25,40,48

F

Freeway Communications LLC

213-225-2200 x101
www.freeway.com
Products/Services: 16,17,46,47,48

G

Global Convergence Solutions

732-853-0510
www.globalconverge.com
Products/Services: 4,31,41
Other: Least Cost Routing and Rating Solutions

Global Crossing

973-937-0431
www.globalcrossing.com

Global Digitec

972-231-3005
www.globaldigitec.com
Products/Services: 4,9,17,40,48
Other: Softswitching and Integration Services

GLOBALINX

585-321-5693
www.GLOBALINXsolutions.com
Products/Services: 48

GN Netcom Inc.

603-598-1100
www.jabra.com
Other: Wireless Multi-use Headsets

H

HEAD acoustics GmbH

+4924075770
www.head-acoustics.de
Products/Services: 35,44,48,50
Other: Audio and Voice Quality Optimization

Hermon Labs TI

+972-4-6268450
www.hermonlabs.com
Products/Services: 11,17,44,48,50

I.D Rank Security

888-448-7265 x1
mykryptofon.com
Products/Services: 34,38,41,48
Other: Encrypted Communications

IBBS (Integrated Broadband Services)

770-387-2053
www.ibbs.com
Other: Integrated OSS, Network Management, Diagnostics, Provisioning

IceHook Systems

212-222-6263
www.icehook.com
Products/Services: 4,31

Ifbyphone

888-803-5345
www.ifbyphone.com
Products/Services: 16
Other: Call Routing, Virtual Call Center, Cloud Telephony

iGLASS Networks

888-YOUR-NOC
www.iglass.net
Products/Services: 31
Other: NOC Services, Network Monitoring

iKnowWare

512-215-4305
www.iKnowWare.com
Products/Services: 1,2,11,21,50
Other: Software As A Service

Info Directions Inc.

585-924-4110
www.infodirections.com
Products/Services: 4,31

Ingate Systems

603-883-6569
www.ingate.com
Products/Services: 35,38,41,48
Other: SIP Trunking, UC, Remote SIP Connectivity, SIPParator, Enterprise SBC

inphonite

520-797-1844
www.inphonite.com
Products/Services: 16,25,40,48

Intec Telecom Systems

404-705-2800
www.intecbilling.com
Products/Services: 4,5,7,31

Intelliden Inc.

719-785-0660 x7003
www.intelliden.com
Products/Services: 31,35,38

BUYER'S GUIDE 2011

ALPHABETICAL LISTING

M

IntelliNet Technologies

321-726-0686 x303
www.intellinet-tech.com
Products/Services: 9,36,38,39
Other: Diameter

Interact Inc.

402-476-8786
www.iivip.com
Products/Services: 2,4,16,31,41

IPgallery

678-420-7474
www.ipgallery.com
Products/Services: 2,7,9,13,37
Other: Converged Communication Applications, Service Delivery Platform, nIVR, nPBX etc

IPitomy Communications

941-306-2200 x2233
www.ipitomy.com
Products/Services: 17,41,48

IPNETZONE COMMUNICATIONS INC.

646-254-6800
www.ipnetzone.com
Products/Services: 12,35,41,49
Other: ISP and Network Monitoring and Management

IQ Services

612-243-5124
www.iq-services.com
Products/Services: 35,44

IVR Technology Group

800-715-9990
www.ivrtechgroup.com
Products/Services: 14,16,25,37,41

Media5 Corp.

819-829-8749 x5210
www.media5corp.com
Products/Services: 38,40,41,48

MeetingOne

866-523-9194
www.meetingone.com
Products/Services: 47,48

Minuteman/Para Systems

972-446-7363
www.minutemanups.com
Products/Services: 18,31,48,51
Other: Power Protection

Movius

770-283-1000
www.moviuscorp.com
Products/Services: 16,21,25

MRV Communications

818-337-3438
www.mrv.com
Products/Services: 18,35,44,45
Other: Carrier Ethernet

N

NACT Solutions LLC

801-802-3000 x108
www.nact.com
Products/Services: 2,4,16,40
Other: Prepaid and Class 4 Carrier Switches

NetComp Communications Group

561-202-8010 x8007
www.netcompcg.com
Products/Services: 18,34,48,51

NetScout Systems Inc.

800-309-4804
www.netscout.com
Products/Services: 6,11,12,35
Other: Unified Service Delivery Management

Neutral Tandem

866-388-7251
www.neutraltandem.com
Products/Services: 38

Octasic Inc.

514-282-8858
www.octasic.com/index.php
Products/Services: 19,21,47,48

OneCall Manage

845-679-3338
www.onecallmanage.com
Other: Wireless Expense Management

Open Controller

0031 38 7852611
www.opencontroller.com
Other: Embedded Controllers M2M Solutions

OPNET Technologies Inc.

240-497-3000
www.opnet.com
Products/Services: 35,38,46,48,51
Other: Network Planning and Diagramming, Configuration Auditing, Application Performance Management

O

Phybridge Inc.

905-901-3633 x104
www.phybridge.com
Products/Services: 35,48
Other: Risk-Free, Quick and Easy IP Telephony Deployment

Polystar OSIX AB

+46 8 50 600 600
www.polystar.com
Products/Services: 9,10,11,31,35

Psytechnics

603-427-6500
www.psytechnics.com
Products/Services: 9,35,47,48
Other: VoIP and Video Troubleshooting

Q

QuadManage

+972-9-7460241
www.quadmanage.com
Products/Services: 7,12,31,35,45

QualiSystems

877-QUALI-10
www.qualisystems.com
Products/Services: 35,44
Other: Test Automation Software Framework

P

PacketExchange Inc.

213-622-5904
www.packetexchange.net
Products/Services: 47,49

Patton Electronics Co.

301-975-1000 x109
www.patton.com
Products/Services: 19,21,35,38,48

PCTEL Inc.

301-444-2046
www.rfsolutions.pctel.com
Products/Services: 1,6,44,50
Other: Wireless Test and Measurement Equipment

R

RAD Data Communications Inc.

201-529-1100
www.radusa.com
Products/Services: 18

Radicom Research Inc.

408-383-9006 x112
www.radi.com
Products/Services: 51

REDCOM Laboratories Inc

585-924-6500
www.redcom.com
Products/Services: 7,19,39,41,48

L

Lexent Metro Connect

212-981-0700
lexent.net

BUYER'S GUIDE 2011

ALPHABETICAL LISTING

Redline Communications
905-479-8344
www.redlinecommunications.com
Other: WiMAX and Advanced Broadband Wireless

Redwood Technologies Ltd.
+44 1344 304 344
www.redwoodtech.com
Products/Services: 2,4,19,40,48

Resource Software International Ltd.(RSI)
905-576-4575
www.telecost.com
Products/Services: 4,31

Stage 2 Networks
212-497-8078
www.stage2networks.com
Products/Services: 41,48

Sundance Multiprocessor Technology
+44(0)1494-793-167
www.sundance.com
Products/Services: 51

System Engineering International Inc.
301-694-9601 x214
www.seipower.com
Other: Critical Power Systems and Backup/DC UPS DC Plant in a Box

Telenity
203-445-2025
www.telenity.com
Products/Services: 2,25,47
Other: Service Delivery Platform, Value-Added Services, Converged Messaging Services

Telesis A.S.
+903123840540 x060
www.stillink.com
Products/Services: 9,19,39,40,48

Telesoft Technologies
+44 1258 480 880
www.telesoft-technologies.com
Products/Services: 19,22,31,39,43

Toshiba America Information Systems, Telecom Systems Div.
949-583-3700
www.telecom.toshiba.com
Products/Services: 2,16,17,48
Other: IP PBX, Softphones, Unified Messaging, IP Phones, Digital Phones, Wireless

TotalTel
800-676-0500
www.totaltel.com
Products/Services: 48
Other: Stand-alone IP PBX Telephone Set

Trango Systems Inc.
858-391-0010 x250
www.trangosys.com
Other: PTP Wireless Microwave Backhaul Systems

TransNexus
404-526-6060
www.transnexus.com
Products/Services: 4,31,38,40,48
Other: Least Cost Routing, Number Portability

Tripp Lite
773-869-1111
www.tripplite.com
Other: Power Protection/UPS Systems/Surge Suppressors

Trisys Inc.
973-360-2300 x104
www.trisys.com
Products/Services: 41,48
Other: Call Accounting, Telecom Expense Management, Call Recording, VoIP

Tropos Networks
408-331-6800
www.tropos.com
Other: Outdoor Wireless Broadband Network

Untangle Inc.
650-425-3300 x125
www.untangle.com
Products/Services: 2,35,38,49
Other: Internet Management

Sequans Communications
+33.1.70.72.16.00
www.sequans.com
Other: Semiconductors, WiMAX and LTE

serVonic GmbH
+49 8142 4799 x12
www.servonic.com
Products/Services: 16

Simena
571-323-2002
www.simena.net
Products/Services: 35,44
Other: Network Monitoring

Sipera Systems
214-206-3210
www.sipera.com
Products/Services: 17,38,41,48

snom technology AG
978-998-7882 x507
www.snom.com
Products/Services: 17,41,48

SoTel Systems Inc.
314-787-1800 x7735
www.sotelsystems.com
Products/Services: 17,18,40,41,48

Spiritcraft Audio
813-695-6110
spiritcraft.gosolo.com
Products/Services: 16,21,25,47

Talari Networks
408-423-9100
www.talari.com
Products/Services: 12,35,48,49

Tekelec
919-460-5500
www.tekelec.com
Products/Services: 13,35,38,40,41

Telcentris
866-612-8647
www.telcentris.com
Products/Services: 17,48

Telco Systems, a BATM company
781-551-0300
www.telco.com
Products/Services: 12,18
Other: Media Gateway

Telehouse America
718-355-2500
www.telehouse.com
Products/Services: 18,38

Telekenex
415-287-1208
www.telekenex.com
Products/Services: 17,35,48
Other: Hosted VoIP

Telrex
425-827-6156 x2
www.telrex.com
Other: IP Call Recording and Monitoring, Speech Analytics Services

teltronics
941-753-5000 x7725
www.teltronics.com
Products/Services: 16,17,40,41,48

Teseq
732-225-9533 x239
www.teseq.com
Products/Services: 44

TILGIN (former i3 micro technology)
46(0)8 572 386 00
www.tilgin.com
Products/Services: 18,19,41,45,48

Tinet
+39 070 46011
www.tinet.net
Products/Services: 18,35

Tone Software Corp.
714-991-9460
www.reliatelsolutions.com
Products/Services: 12,35
Other: converged voice management

BUYER'S GUIDE 2011

ALPHABETICAL LISTING

VeEX Inc.

408-970-9090

www.veexinc.com

Products/Services: 35,44,48

Other: Communications Test Equipment for Next-Generation Networks

ViaSat Inc.

678-924-2649

www.viasat.com/broadband-networks

Other: Satellite Broadband Networks

VoicePulse

732-339-5100

www.VoicePulse.com

Products/Services: 41,48

Voxeo

407-418-1800

www.voxeo.com

Products/Services: 16,19,22,40,48

Voyss Solutions

877-847-7544

www.voyss.com

Products/Services: 2,7,17,48

WIN Enterprises

978-688-2000 x23

www.win-ent.com

Products/Services: 48

Other: Converged Platforms

World Telecom Labs

322-722-7200

www.wtl.be

Products/Services: 4,16,19,39,48

Xirrus

805-262-1644

xirrus.com

Products/Services: 51

zCONNEX GROUP

800-715-9990

www.zconnex.com

Other: Consulting

XConnect

+442083714800

www.xconnect.net

Products/Services: 9,39,41,48

Other: ENUM Interconnection Services

Zultys Technologies

408-328-0450 x116

www.zultys.com

Products/Services: 2,17,40,41,48

If you would like to contribute an article to NGN Magazine in the year ahead, we welcome your ideas.

Please send a brief but detailed pitch about what you'd like to write about to Paula Bernier, executive editor, at pbernier@tmcnet.com.

Remember, our readers are already familiar with basic trends in communications, so we're looking for pieces that talk about specific service provider issues and challenges, and how they can address them.

Make sure the article is informative for our readers; is specific enough to be useful; has hard data from industry researchers, if possible; and is not a promotion piece for your company or products.

Once your proposal has been accepted, please follow these writer's guidelines:

Opinion pieces should be about 750 words. Features/byline article should

be
~1400-
1500 words.

Provide articles in WORD format and make sure editing/tracking is turned off.

Include the name, title, full company name and company url of the author at the bottom of the story in italics.

Be sure to suggest a headline.

Provide one or more images in jpg format at 300dpi or higher; provide captions if the art is not self explanatory. Please make sure each image is provided as a separate file/attachment.

Thanks for your interest in NGN Magazine and TMC!



WELCOMES YOUR CONTRIBUTIONS

February 2-4, 2010 - Miami Beach Convention Center

4GWE™

4G WIRELESS EVOLUTION

CONFERENCE

4GWE:

Where Industry Visionaries
Connect
with those Leading the Charge
to our **4G Future**

Be Where Professionals Delve Into Key Issues:

- 4G Technology Platforms, Selective Evolution: WIFI, White Spaces, HSPA++, LTE, WiMAX 2.0, Cognitive Radio and Beam Forming
- 4G Devices – Going beyond today's smartphone
- 4G for the enterprise
- 4G Applications – Video, Voice, messaging and more

For sponsor and exhibitor information please contact: Anthony Cassio at 203.852.6800 ext. 105 or acassio@tmcnet.com.

To register please contact Frank Coppola at 203.852.6800 ext. 131 or fcoppola@tmcnet.com.

Please visit www.4gwe.com for more information.

www.4gwe.com



Diamond Sponsor:



BridgeWave
COMMUNICATIONS

BUYER'S GUIDE 2011

PRODUCT LISTING

- | | | |
|---|---|---------------------------------------|
| 1. 3G Air Interfaces | 18. IP/MPLS Backbone Equipment (Routers/Softswitches) | 38. Security & Policy |
| 2. Application Servers | 19. Media Gateways and Servers | 39. Signaling Gateways |
| 4. Billing | 20. MGCF: Media Gateway Control Function | 40. SIP Servers |
| 6. CDMA | 21. Mobile Video | 41. SIP-Related |
| 7. CSCF: Call/Session Control Function | 25. Multimedia Messaging Service | 43. SLF: Subscriber Location Function |
| 9. Fixed Mobile Convergence | 29. OSA: Open Service Architecture | 44. Testing |
| 10. GPRS | 31. OSS/BSS and Back-end Systems | 47. Video Services |
| 11. GSM | 34. Push-to-Talk over Cellular (PoC) | 48. VoIP |
| 12. High Availability | 35. Quality of Service | 49. VPNs |
| 14. I-CSCF: Interrogating Call/Session Control Function | | 51. WLAN: Wireless Local Area Network |
| 16. Interactive Voice Response | | Other |
| 17. IP Phones | | |

1. 3G Air Interfaces

iKnowWare
www.iKnowWare.com

PCTEL Inc.
www.rfsolutions.pctel.com

2. Application Servers

APEX Voice Communications
www.apexvoice.com

Business Mobility Systems
www.businessmobilitysystems.com

Coyote Point Systems Inc.
www.coyotepoint.com

CSF Corp.
www.csfcorp.com

Cynergy Software Corp.
www.cynergysoftware.com

Eastwind Communications
www.EastwindCom.com

Emerson Network Power
www.Emerson.com/EmbeddedComputing

Interact Inc.
www.iivip.com

IPgallery
www.ipgallery.com

NACT Solutions LLC
www.nact.com

Redwood Technologies Ltd.
www.redwoodtech.com

Telenity
www.telenity.com

Toshiba America Information Systems, Telecom Systems Div.
www.telecom.toshiba.com

Untangle Inc.
www.untangle.com

Voyss Solutions
www.voyss.com

Zultys Technologies
www.zultys.com

4. Billing

Angel
www.angel.com

BULLSEYE TELECOM
www.bullseyetelecom.com

CTC Connections
www.ctcconnections.com

Dialexia Communications Inc.
www.dialexia.com

Elitecore Technologies
www.elitecore.com/telecompractices

Global Convergence Solutions
www.globalconverge.com

Global Digitec
www.globaldigitec.com

IceHook Systems
www.icehook.com

Info Directions Inc.
www.infodirections.com

Intec Telecom Systems
www.intecbilling.com

Resource Software International Ltd.(RSI)
www.telecost.com

TransNexus
www.transnexus.com

World Telecom Labs
www.wtl.be

Social CRMTM EXPO

Meet Influential Executives Learning How to Use Social Media Channels to Improve Their Contact Centers

Attendees come to discover how social media can provide a more complete view and understanding of customers... boosting retention, increasing sales and improving profitability.

Who Will Attend?

- Large Enterprise Contact Center Management Across All Vertical Markets
- Outsourced Contact Center Management
- Influential Marketing Executives
- Resellers and VARs

Here is a just sample of the topics that will be covered at the Social Customer Summit:

- How Social Media Is Changing Customer Behavior
- Social Media Monitoring Best Practices
- IP Contact Centers done right!
- Hosted Contact Center Solutions
- Integrating Social Media into Your Contact Center
- Turning Social Media into a CRM Tool
- IVVR and the Video-Enabled Contact Center
- The Work at Home Model for Customer Contacts
- Business Continuity in the Social/Wireless Age
- Getting the Message and Integrating Social Feedback

Sponsorship Benefits:

- Establish your company as a leading provider of Social CRM Solutions
- Participate in panel discussions on Social CRM Expo conference program
- Your company logo included in all promotions
- Your company logo on signage and in the show guide
- Access to complete Social CRM Expo attendee list
- Banner ads on event Web site
- Opportunity to distribute literature to all attendees.

For more information,
please contact Maureen Gambino
at 203-852-6800 Ext. 109 or mgambino@tmcnet.com

Colocated with:



BUYER'S GUIDE 2011

6. CDMA

Encore Networks
www.encorenetworks.com

NetScout Systems Inc.
www.netscout.com

7. CSMF: Call/Session Control Function

AppTrigger
www.apptrigger.com

QuadManage
www.quadmanage.com

REDCOM Laboratories Inc.
www.redcom.com

9. Fixed Mobile Convergence

Actiontec Electronics
www.actiontec.com

Adax Inc.
www.adax.com

ADTRAN
www.adtran.com

Agilent Technologies
www.agilent.com

Alteva
www.altevatel.com

Bluenowhere Ltd.
www.bluenowhere.net

IntelliNet Technologies
www.intellinet-tech.com

Polystar OSIX AB
www.polystar.com

Psytechnics
www.psytechnics.com

Telesis A.S.
www.stillink.com

XConnect
www.xconnect.net

11. GSM

Hermon Labs TI
www.hermonlabs.com

12. High Availability

CosmoCom
www.cosmocom.com

Elfiq Networks
www.elfiq.com

IPNETZONE COMMUNICATIONS INC.
www.ipnetzone.com

Talari Networks
www.talari.com

Telco Systems, a BATM company
www.telco.com

Tone Software Corp.
www.reliatelsolutions.com

13. HSS: Home Subscriber Server

Tekelec
www.tekelec.com

14. I-CSMF: Interrogating Call/Session Control Function

IVR Technology Group
www.ivrtechgroup.com

16. Interactive Voice Response

Altitude Software
www.altitude.com

Copia International Ltd.
www.copia.com

Freeway Communications LLC
www.freeway.com

Ifbyphone
www.ifbyphone.com

inphonite
www.inphonite.com

Movius
www.moviuscorp.com

serVonic GmbH
www.servonic.com

Spiritcraft Audio
www.spiritcraft.gosolo.com

teltronics
www.teltronics.com

Voxeo
www.voxeo.com

17. IP Phones

Broadview Networks
www.broadviewnet.com

Celergy Networks Inc.
www.celergy.com

Commlogik Corp.
www.commlogik.com

Cypress Communications
www.cypresscom.net

eZuce
www.ezuce.com

IPitomy Communications
www.ipitomy.com

Sipera Systems
www.sipera.com

snom technology AG
www.snom.com

SoTel Systems Inc.
www.sotelsystems.com

Telcentris
www.telcentris.com

Telekenex
www.telekenex.com

18. IP/MPLS Backbone Equipment (Routers/Softswitches)

ANDA Networks Inc.
www.andanetworks.com

Arbinet
www.arbinet.com

Minuteman/Para Systems
www.minutemanups.com

MRV Communications
www.mrv.com

NetComp Communications Group
www.netcompcg.com

RAD Data Communications Inc.
www.radusa.com

Telehouse America
www.telehouse.com

TILGIN (former i3 micro technology)
www.tilgin.com

Tinet
www.tinet.net

19. Media Gateways and Servers

Dialogic
www.dialogic.com

Elliptical Mobile Solutions
www.ellipticalmedia.com

Octasic Inc.
www.octasic.com/index.php

Patton Electronics Co.
www.patton.com

Telesoft Technologies
www.telesoft-technologies.com

31. OSS/BSS and BackEnd Systems

Evolving Systems Inc.
www.evolving.com

iGLASS Networks
www.iglass.net

Intelliden Inc.
www.intelliden.com

34. Push-to-Talk over Cellular (PoC)

I.D Rank Security
mykryptofon.com



Upcoming **TMCnet** Webinar Schedule

Wed., December 01, 2010 • 11:00pm ET/ 8:00pm PT

Omhtml - Unlocking the Open Market Potential for Cdma Devices

Sponsored by:



http://www.tmcnet.com/webinar/QUALCOMM_11_01

Wed., December 08, 2010 • 2:00pm ET/ 11:00am PT

Scaling the Backhaul for LTE, Quickly and Wirelessly

Sponsored by:



http://www.tmcnet.com/webinar/ECI_11_01

Archived • View Today!

The Art of Turning Raw Test Data Into Bi

Sponsored by:



http://www.tmcnet.com/webinar/QualiSystems_11_01

Thurs., December 02, 2010 • 4:00am ET/ 1:00pm PT

The Economics of Customer Experience: New Study Reveals the Secrets with Strativity

Sponsored by:



http://www.tmcnet.com/webinar/Market_Tools_12_01

Archived • View Today!

Cybersecurity 101

Sponsored by:



http://www.tmcnet.com/webinar/Level3_11_01

Archived • View Today!

Wireless Backhaul. Doing it Right: Exploring Backhaul Topology Strategies

Sponsored by:



http://www.tmcnet.com/webinar/ceragon_10_01

45792356424024579

54621578542466244

BUYER'S GUIDE 2011

35. Quality of Service

Appia Communications
www.appiaservices.com

Codenomicon

HEAD acoustics GmbH
www.head-acoustics.de

Ingate Systems
www.ingate.com

IQ Services
www.iq-services.com

OPNET Technologies Inc.
www.opnet.com

Phybridge Inc.
www.phybridge.com

QualiSystems
www.qualisystems.com

Simena
www.simena.net

VeEX Inc.
www.veexinc.com

38. Security & Policy

AppRiver
www.appriver.com

Bat Blue Corp.
www.batblue.com

Media5 Corp.
www.media5corp.com

Neutral Tandem
www.neutraltandem.com

40. SIP Servers

Brekeke Software Inc.
www.brekeke.com

41. SIP-Related

360networks
www.360networks.com

AireSpring
www.airespring.com

Stage 2 Networks
www.stage2networks.com

Trisys Inc.
trisys.com

VoicePulse
www.VoicePulse.com

44. Testing

Empirix Inc.
www.empirix.com

Teseq
www.teseq.com

47. Video Services

MeetingOne
www.meetingone.com

PacketExchange Inc.
www.packetexchange.net

48. VoIP

8x8 Inc.
8x8.com

Adaptive Digital Technologies
www.adaptivedigital.com

Broadvox
www.broadvox.com

GLOBALINX
www.GLOBALINXsolutions.com

TotalTel
www.totaltel.com

WIN Enterprises
www.win-ent.com

51. WLAN: Wireless Local Area Network

BridgeWave Communications
www.bridgewave.com

Radicom Research Inc.
www.radi.com

Sundance Multiprocessor Technology
www.sundance.com

Xirrus
www.xirrus.com

OTHER

Adaptive Digital Technologies
www.adaptivedigital.com
VoIP Engine Software

AireSpring
www.airespring.com
Voice over MPLS, SIP Trunking, Ethernet

Alteva
www.altevatel.com
Hosted Unified Communications Solutions

ANDA Networks Inc.
www.andanetworks.com
Wireless Backhaul Multiservice Switches, QOS and Prioritization

APEX Voice Communications
www.apexvoice.com
Service Delivery Platform

Aptilo Networks
www.aptilo.com
Service Management and Access Control for WiMAX, Wi-Fi Networks

BillSoft Services Inc.
billsoftservices.com
Telecommunication Tax Solutions

BLADE Network Technologies
www.bladenetwork.net
Data Center Switching, Network Virtualization

Bluenowhere Ltd.
www.bluenowhere.net
4G Wireless

BRAVO COMMUNICATIONS INC.
bravobravo.com
Lightning and Surge Protection/All Types

Calient Networks
www.calient.net
Fiber Cross-Connect

Celergy Networks Inc.
www.celergy.com
Telecommunications Network Infrastructure Design and Installations

Comsys Mobile
www.comsysmobile.com
Multimode Communication Processors

Copia International Ltd.
www.copia.com
FoIP

CosmoCom
www.cosmocom.com
Multimedia IP Virtual Call Center

Coyote Point Systems Inc.
www.coyotepoint.com
Load Balancing, Application Acceleration, Business Continuity

CRE8 Group Inc.
www.cre8groupinc.com
Telecom Marketing and Public Relations

CSF Corp.
www.csfcorp.com
Toll Free Provisioning and Routing Software

CTC Connections
www.ctcconnections.com
SIP Proxy Cluster System, HostedPBX VoIP Cluster System, Media Gateway Solutions

Dialogic
www.dialogic.com
IP and IP-Enabled Components, Signaling IP and SS7 Components, TDM Boards, More

EDX Wireless
www.edx.com
Wireless Network Design

Elfiq Networks
www.elfiq.com
Network Redundancy

Elliptical Mobile Solutions
www.ellipticalmedia.com
Data Center

Empirix Inc.
www.empirix.com
Monitoring

Endeavor Telecom
www.endeavortelecom.com
CPE Installations, Inside Wiring, Trouble Tickets, Site Surveys

BUYER'S GUIDE 2011

ESRI

www.esri.com/telecom
GIS Software

Global Convergence Solutions
www.globalconverge.com
Least Cost Routing and Rating Solutions

Global Digitec
www.globaldigitec.com
Softswitching and Integration Services

GN Netcom Inc
www.jabra.com
Wireless Multi-Use Headsets

HEAD acoustics GmbH
www.head-acoustics.de
Audio and Voice Quality Optimization

I.D Rank Security
mykryptofon.com
Encrypted Communications

IBBS
(Integrated Broadband Services)
www.ibbs.com
Integrated OSS, Network Management,
Diagnostics, Provisioning

Ifbyphone
www.ifbyphone.com
Call Routing, Virtual Call Center,
Cloud Telephony

iGLASS Networks
www.iglass.net
NOC Services, Network Monitoring

iKnowWare
www.iKnowWare.com
Software as A Service

Ingate Systems
www.ingate.com
SIP Trunking, UC, Remote SIP
Connectivity, SIParator,
Enterprise SBC

IntelliNet Technologies
www.intellinet-tech.com
Diameter

IPgallery
www.ipgallery.com
Converged Communication Applica-
tions, Service Delivery Platform, nIVR,
nPBX, etc.

IPNETZONE COMMUNICATIONS INC.
www.ipnetzone.com
ISP and Network Monitoring
and Management

Minuteman / Para Systems
www.minutemanups.com
Power Protection

MRV Communications
www.mrv.com
Carrier Ethernet

NACT Solutions LLC
www.nact.com
Prepaid and Class 4 Carrier Switches

NetScout Systems Inc.
www.netscout.com
Unified Service Delivery Management

OneCall Manage
onecallmanage.com
Wireless Expense Management

Open Controller
www.opencontroller.com
Embedded controllers M2M Solutions

OPNET Technologies Inc.
www.opnet.com
Network Planning and Diagramming,
Configuration Auditing, App
Performance Management

PCTEL Inc.
www.rfsolutions.pctel.com
Wireless Test and
Measurement Equipment

Phybridge Inc.
www.phybridge.com
Risk-Free, Quick and Easy IP
Telephony Deployment

Psytechnics
www.psytechnics.com
VoIP and Video Troubleshooting

QualiSystems
www.qualisystems.com
Test Automation Software Framework

Redline Communications
www.redlinecommunications.com
WiMAX and Advance
Broadband Wireless

Sequans Communications
www.sequans.com
Semiconductors, WiMAX and LTE

Simena
www.simena.net
Network Monitoring

System Engineering International Inc.
www.seipower.com
Critical Power Systems and Backup/
DC UPS DC Plant in a Box

Telco Systems, a BATM company
www.telco.com
Media Gateway

Telekenex
www.telekenex.com
Hosted VoIP

Telenity
www.telenity.com
Service Delivery Platform, Value-
Added Services, Converged
Messaging Services

Telrex
www.telrex.com
IP Call Recording and Monitoring,
Speech Analytics Services

Tone Software Corp.
www.reliatelsolutions.com
Converged Voice Management

Toshiba America Information Systems, Telecom Systems Div.
www.telecom.toshiba.com
IP PBX, Softphones,
Unified Messaging, IP Phones,
Digital Phones, Wireless

TotalTel
www.totaltel.com
Stand-Alone IP PBX Telephone Set

Trango Systems Inc.
www.trangosys.com
PTP Wireless Microwave
Backhaul Systems

TransNexus
www.transnexus.com
Least Cost Routing, Number Portability

Tripp Lite
www.tripplite.com
Power Protection/UPS Systems/
Surge Suppressors

Trisys, Inc.
trisys.com
Call Accounting, Telecom Expense
Management, Call Recording, VoIP

Tropos Networks
www.tropos.com
Outdoor Wireless Broadband Network

Untangle Inc.
www.untangle.com
Internet Management

VeEX Inc.
www.veexinc.com
Communications Test Equipment for
Next-Generation Networks

ViaSat Inc.
www.viasat.com/broadband-networks
Satellite Broadband Networks

Wavesat
www.wavesat.com
4G chipsets

WIN Enterprises
www.win-ent.com
Converged Platforms

XConnect
www.xconnect.net
ENUM Interconnection Services

zCONNEX GROUP
www.zconnex.com
Consulting



by Michael Khalilian

NGN Forum to Unveil 4G and IMS Applications Guidelines

The NGN Forum will be completing its IMS and 4G Technology and Business Case document 4Q2010. This paper will develop new business models and use cases for applications running over broadband IP networks.

With data still accounting for only a fraction of carriers' revenue, and standard voice minutes all but commoditized, carriers are looking for new sources of revenue (e.g. adding new voice features, and multimedia applications from third-party developers). This paper will look at how to open up networks to support innovative business models (including IMS, 4G LTE, 4G WiMAX, security, service delivery platform, cloud and smart grid technologies) that can be integrated with the all-IP business model.

While many different e-business conceptualizations exist, Alexander Osterwalder's work will be used. Osterwalder proposed a single reference model based on the similarities of a wide range of business model conceptualizations. With his business model design template described below, an enterprise can easily describe its business model.

describes the way a firm differentiates itself from its competitors and is the reason why customers buy from a certain firm and not from another."

Customers

Customer segments: The target audience for a business' products and services.

Channels: The means by which a company delivers products and services to customers. This includes the company's marketing and distribution strategy.

Customer relationship: The links a company establishes between itself and its different customer segments. The process of managing customer relationships is referred to as customer relationship management.

Quantifiable Business Benefits (ROI)

Cost structure: The monetary consequences of the means employed in the business model. A definition of cost.

Revenue streams: The way a company makes money through a variety of revenue flows. A company's income. (Which business models work.)

Osterwalder proposed a single reference model based on the similarities of a wide range of business model conceptualizations. With his business model design template, an enterprise can easily describe its business model.

Network Infrastructure

Key activities: The activities necessary to execute a company's business model.

Key resources: The resources that are necessary to create value for the customer.

Partner network: The business alliances which complement other aspects of the business model.

Applications Offering, Technology and Product Innovation

Value proposition: The products and services a business offers. Quoting Osterwalder, a value proposition "is an overall view of products and services that together represent value for a specific customer segment. It

Other benefits such as time to market/agility

Using the methodology we propose in this paper with the support of use cases for NGN IMS apps delivery and technology, including OSS/BSS security, this model will reduce time to market and allow operators to develop and deploy new revenue-generating service offerings.

We encourage NGN telecom operators and vendors to become more involved in helping us move the bar for new IP applications.

For additional information and to participate contact us at info@ngn-forum.org or visit the IMS website at www.IMSForum.org **NGN**

Michael Khalilian is president of the IMS Forum (www.imsforum.org), NGN Forum (www.ngnforum.org) and the Smart Energy Forum.

Is Your Physical Infrastructure Ready to Meet the Changing Needs of Your Data Center?

As consolidation, virtualization and automation become more widely adopted to increase data center efficiency and agility, the elements of power, cooling, resource utilization, and transmission speed become a very important part of the processes to operate data centers.

This makes physical infrastructure management tools, in conjunction with existing system software management tools, critical to support the changing needs of your data center.

Panduit's Physical Infrastructure Manager™ (PIM™) Software Platform and intelligent PanView iQ™ (PViQ™) System Hardware work together to provide continuous, local and remote visibility of data center connectivity, power usage, and environment thresholds within a data center...in real-time.

This end-to-end, physical to logical view of the network enables complete data center infrastructure management to minimize downtime, improve overall infrastructure agility, and reduce costs.

Ready for

IBM | Tivoli.
software

For more information on our solutions,
visit us at www.panduit.com/pim,
call us at 800-777-3300 or email us at cs@panduit.com.

Unified Physical Infrastructure



PANDUIT®

building a smarter,
unified business foundation
Connect. Manage. Automate.

THE WORKS

with TBI and ADTRAN®

*Make your deal
a complete meal*



You know how it goes: a sandwich does not make a meal. People want it all, and they demand value. It's no different in the communications industry. Your SMB customers are looking for complete solutions, ones that can help their bottom line. But all too often, we try to sell them just one piece.

With *THE WORKS*, TBI is revolutionizing the way agents sell solutions. Offer your customer everything they need: network services from all the best service providers, award-winning unified communications solutions from ADTRAN®, installation services, and financing options.

*TBI makes it easy for you,
and easy for your customer.*

For more information contact
TBI at 847.465.4500 or visit:

tbicom.com/theworks-tmc

Complete Communication
Solutions for your SMB
Customer



ADTRAN NetVanta®
Hardware



ADTRAN ACES
Installation and
Maintenance



TBI Carrier
Services



Convenient
Payment Options

TBI

TELECOM BROKERAGE, INC.

ADTRAN®