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INTERNET TELEPHONY®

The IP Communications Authority Since 1998™

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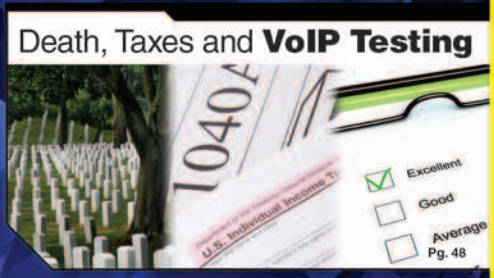

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ABOUT *INTERNET* TELEPHONY®
Internet telephony is revolutionizing telecommunications through the convergence of voice, video, fax, and data, creating unprecedented opportunities for resellers, developers, and service providers alike. *INTERNET* TELEPHONY® focuses on providing readers with the information necessary to learn about and purchase the equipment, software, and services necessary to take advantage of this technology. *INTERNET* TELEPHONY® readers include resellers, developers, MIS/networking departments, telecom departments, datacom departments, telcos/LECs, wireless/PCS providers, ISPs, and cable companies.

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By Richard "Zippy" Grigonis

Hyper Communications

For the past couple of months, Yours Truly has noticed more and more the receipt of both replies to my emails and queries from various corporate folks, regardless of the time of day or day of the week - including weekends. Business-related text messages and even phone calls have penetrated the formerly sacrosanct social sanctuaries of "After Hours" and "The Weekend." Those feature-packed and oh-so-convenient-to-use companion devices such as the RIM Blackberry and Palm Treo have helped to bring about this enviable situation (or unenviable one, depending on how you look at it), but the real cause of all of this goes back to what the telecom industry has been trying to achieve since the early 1990s — the ability for anyone to reach anybody, anywhere at any time.

There had been inklings that such a thing was possible — call forwarding, find me/follow me, simultaneous ring, "the whole company as a call center," and other minor intimations of what was to come. It finally has taken such efforts as the ongoing massive infrastructure swap of IMS (IP Multimedia-based Subsystem) and the highly advanced developments of FMC (Fixed-Mobile Convergence) to seal the deal, but be rest assured that every corporate manager's dream is about to come true — the 40-hour a week "barrier" is about to give way to the glorious new world of 24/7 employment and boundless productivity!

To both acknowledge and celebrate the dawning of this new epoch, TMC, with its usual canny timing, is even starting up a magazine devoted to this new way of doing business (not to mention lifestyle) called *Unified Communications*, edited by Yours Truly. Yes, gentle readers, I am a member of that elite clique of dastardly fiends who have ceaselessly toiled for years in helping to bring about this amazing transformation in your otherwise bleak desert of "off-hours" time!

I, of course, cannot take full credit for this change in what you do during your waking hours. Other names came before me — Marc Ostrofsky, the immortal Harry Newton (who inducted me into the brotherhood in 1994), Jeff Pulver and now Nadji and Rich Tehrani, who are taking us forward into the glorious future of total, hyper-communications, built upon the same inexpensive broadband/IP technology that has enabled civilization to "eliminate the middleman" (travel agents, book distributors, realtors and, if I'm not careful, magazine editors) and has made it possible for the more free trade-oriented among us to outsource information-based jobs to India — and for Indians to outsource their jobs to China — and for the Chinese to outsource their jobs to Mongolia, *ad infinitum* or better yet, *ad absurdum*. Hyper communications has made possible hyper business and, for that matter, hyper everything else.

Funny thing is, as I stood there in a Wal-Mart on the Saturday before Mother's Day — having just walked away from some emails from various companies and public relations firms entreating me to do some perfunctory activity, only to be cornered by a friendly unscheduled cell phone call from a customer service representative — I felt that the inevitable had finally happened: I am no longer in my ivory tower. I am an end user. The theoretical has become practical, and I am something of a victim of my own success.

Over the next five years, Western civilization will judge whether it will continue to embrace hyper communications, or whether some sort of neo-Luddite uprising will bring back the 'scourge' of idle moments and leisure time. IT

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

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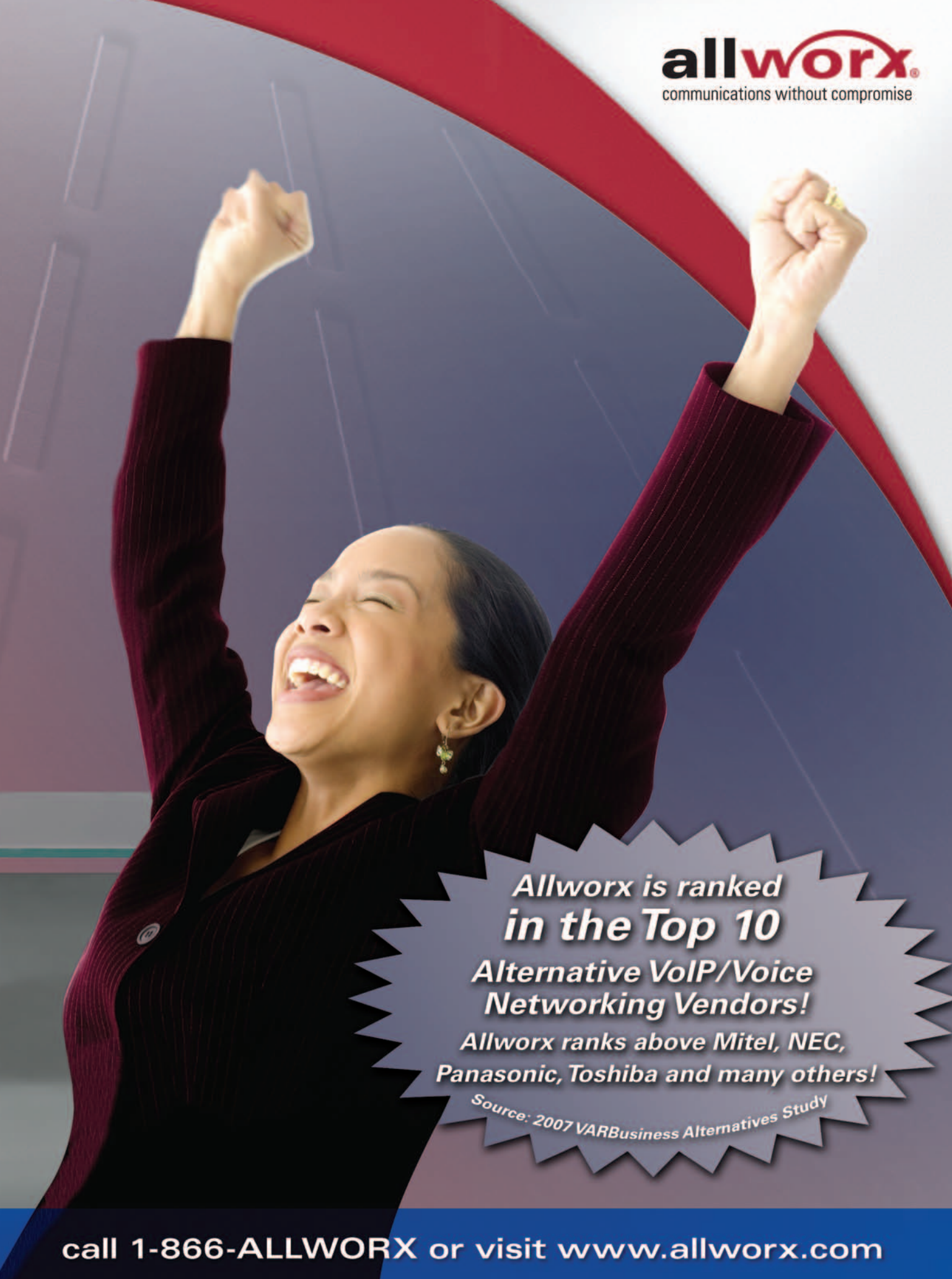
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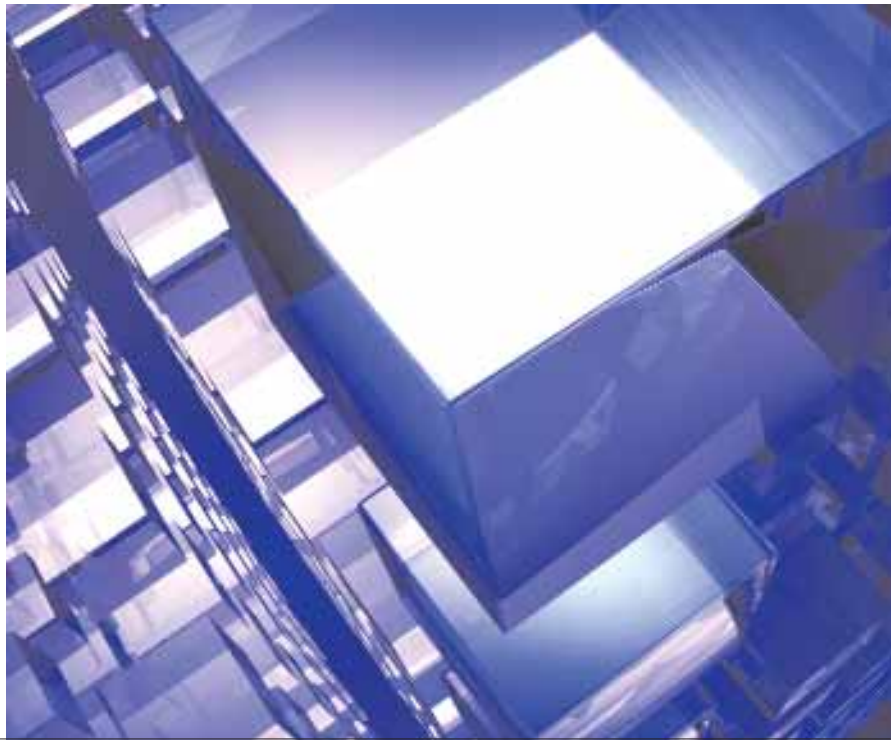
Cover Story



8 **Open Source** Wakes Up the Market

imagine your small business looking like a big business

Imagine being able to get the sophisticated communications system you really want. Introducing the Samsung OfficeServ™ 7100, the affordable system with big business functionality – support for approximately 25 stations, in-building wireless, softphone, VoIP and an advanced voicemail system with auto-attendant. It's even designed to network with other Samsung systems. And it all comes pre-packaged, pre-programmed and pre-labeled for quick and cost-effective installation – which is big. With the Samsung OfficeServ 7100, it's not that hard to imagine. www.samsungBCS.com/OS7100

OfficeServ 7100

SAMSUNG

What's On TMCNET.com Right Now

To stay current and to keep up-to-date with all that's happening in the fast-paced world of IP telephony, just point your browser to http://www.tmcnet.com for all the latest news and analysis. With more than 16 million page views per month, translating into more than 1,000,000 visitors, TMCnet.com is where you need to be if you want to know what's happening in the world of VoIP.

Here's a list of several articles currently on our site.

Trends in IP Communications and the Evolution of the SBC
With VoIP finally free from the confines of the local area network, service providers of all shapes and sizes are offering a variety of services, ranging from SIP Trunking to Hosted PBXs and conferencing.
http://www.tmcnet.com/729.1

What's Under the Network Covers? Digging Deep into Network Traffic
Until recently, most networks have been chugging along largely oblivious to the exact makeup and effect of their payloads. The original mission of connecting employees and branch offices to corporate data centers and central IT resources only required deploying routers, switches, cabling, servers and applications, and a service contract for WAN and Internet connectivity.
http://www.tmcnet.com/730.1

The Impact of Migration from IPv4 to IPv6
Migration from IPv4 to IPv6 is not progressing as was expected. In 1995, the Internet Engineering Task Force (IETF) started considering IPv61. In 1999, at a SIGCOMM99 conference, Sandy Fraser seriously questioned the IETF as to why IPv4 to IPv6 had not occurred.
http://www.tmcnet.com/731.1

FMC Networks' Foundation Critical To Make Investments Pay Off
When was the last time you thought about the foundation required to support something as common as your office building? Probably never, but a strong foundation - whether for an office building, an automobile, even a good golf swing - is critical to long-term success.
http://www.tmcnet.com/732.1

P2P A boon for VoIP Service Providers
VoIP service provider networks today are built using a client/server approach. Calls involve looking up a centralized server, user authentication and final termination to another node in the same network or different network.
http://www.tmcnet.com/733.1

TMC's Whitepapers of the Month
Visit TMCnet's Whitepaper Library (http://www.tmcnet.com/tmc/whitepapers), which provides a selection of in-depth information on relevant topics affecting the IP Communications industry. The library offers white papers, case studies, and other documents that are free to registered users.

Open Source Telephony: The Evolving Role of Hardware as a Key Enabler of Open Source Telephony in the Business Market
The business telephony market is undergoing radical transformation due to the advent of disruptive technologies such as Internet Protocol and open source software. Traditional PBX systems have dominated the enterprise market, while Key systems have been the primary solution for small and medium sized businesses
http://www.tmcnet.com/734.1

VoIP without Hype - What Businesses Need to Know
VoIP is an exciting technology that can help reduce your telecommunication expenses. VoIP is also a flexible technology that can keep your distributed workforce tightly and economically connected - whether they work from the office, home or the road.
http://www.tmcnet.com/735.1

TMCnet's Channels and Global Online Communities provide the latest, most comprehensive news, analysis, and case studies for all your IP Communications needs.

TMCnet's Open Source PBX Channel
IP-based communications alternatives are growing in popularity, and open source-based solutions are opening up new markets for functionality that previously required an expensive PBX system. Visit the Open Source PBX channel on TMCnet for the latest news, interviews, and feature stories about the growing open source PBX space. Sponsored by Sangoma.
http://www.tmcnet.com/channels/open-source-pbx

TMCnet's VoIP Developer Channel
TMC's recent Communications Developer Conference provided the VoIP development community to come together to discuss the latest innovations in VoIP technology. Visit TMCnet's VoIP Developer channel regularly to keep abreast of the latest news, trends, and commentary influencing the developer community. Sponsored by Aculab.
http://www.tmcnet.com/channels/voip-developer

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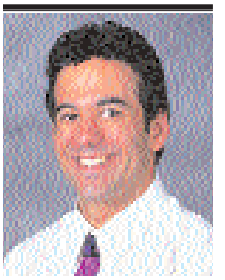
9. Integrated TDM/VoIP for guaranteed QoS
10. Modular Solution "As much as you want and as little as you need"

Open Source Wakes Up the Market

By Rich Tehrani



In the last few years the communications industry has been taken by storm through the invention of an open-source communications platform named Asterisk invented by Digium (http://www.digium.com) founder Mark Spencer. An article (http://www.tmcnet.com/it/0104/0104PO.htm) written for the January 2004 issue of *Internet Telephony* magazine by Yours Truly was titled, "Open Source Telephony. . . The Next Big Thing," predicted open-source communications would become a huge phenomenon and it has perhaps exceeded everyone's expectations of growth.

Digium (news - alert) is headquartered in what seems at first to be an unlikely place. . . Huntsville, Alabama. In fact, if you drive far enough away from the company's headquarters you might imagine there is no technology in the area but instead an entire economy dedicated to farming.

Another telecom company makes its home in Huntsville. Adtran (news - alert) (http://www.adtran.com) is located nearby and has been an integral part of the networking industry for a few decades. Mark was working at Adtran before he decided to launch Digium and Adtran is in large part to thank for funding Mark's idea.

Recently, the company brought in Danny Windham to become the CEO of Digium leaving Mark to focus on the technology as CTO. What better opportunity I thought than to make a trip down to Huntsville and interview the pair. Asterisk is being used throughout the world in service provider and enterprise environments and the global vision of Mark and Danny could have impact across a number of sectors and technologies.

Our lengthy discussion started with Mark and Danny telling me that the fact that Danny is working at the company signals that open-source has gone mainstream and the goal now is to have the organization cross the chasm to the mass market where customers will not care if their solution is open-source or not.

When asked about the people working at Digium, Danny answered quickly that they were intelligent and striving for technical excellence. He continued, "They are interested motivated, passionate and driven about developing code."

I naturally asked Danny to describe this vision and he explained that his best friend is a pastor who happened to be having lunch at a local restaurant and was discussing Danny's proposed career change to Digium. At this point a person at the next table became intrigued with the conversation and a cross-table discussion ensued wherein the person at the other table mentioned that Asterisk has the potential to change the world.

Digium's Mark Spencer with "the Bucket," his pride and joy.

Danny said that Digium wants to be the *de facto* company for Asterisk support and they want to offer all things Asterisk such as documentation, cards and turnkey solutions. The goal is to allow the mass market to benefit from the open-source model.

I asked what the biggest threat was to Danny's goals and he responded, "The open-source product itself." He pointed out the open-source version of what they produce is available free of charge and this fact forces the company to always add value and to be good at what they do. Areas where they add value are currently service and support."

Windham continued by saying customers can see what individual components cost and as such this takes the "proprietary" business model apart. By this he was referring to the ability to lock customers into purchasing high-priced components from your company once they have purchased a core system from you.

Danny added that his company can be viewed as having a church and state relationship where Asterisk is the church and the state is Digium.

At this point Mark Spencer added to the conversation by saying, "Customers are not trapped." He continued, "We must execute correctly to retain and recruit their business." Mark went on to explain his company works hard to get changes into the software while other companies in the space pick a narrow piece of the market to play in and don't necessarily contribute back to the community."

To this, Danny added that his company can be viewed as having a church and state relationship where Asterisk is the church and the state is Digium. The church needs to be pro-

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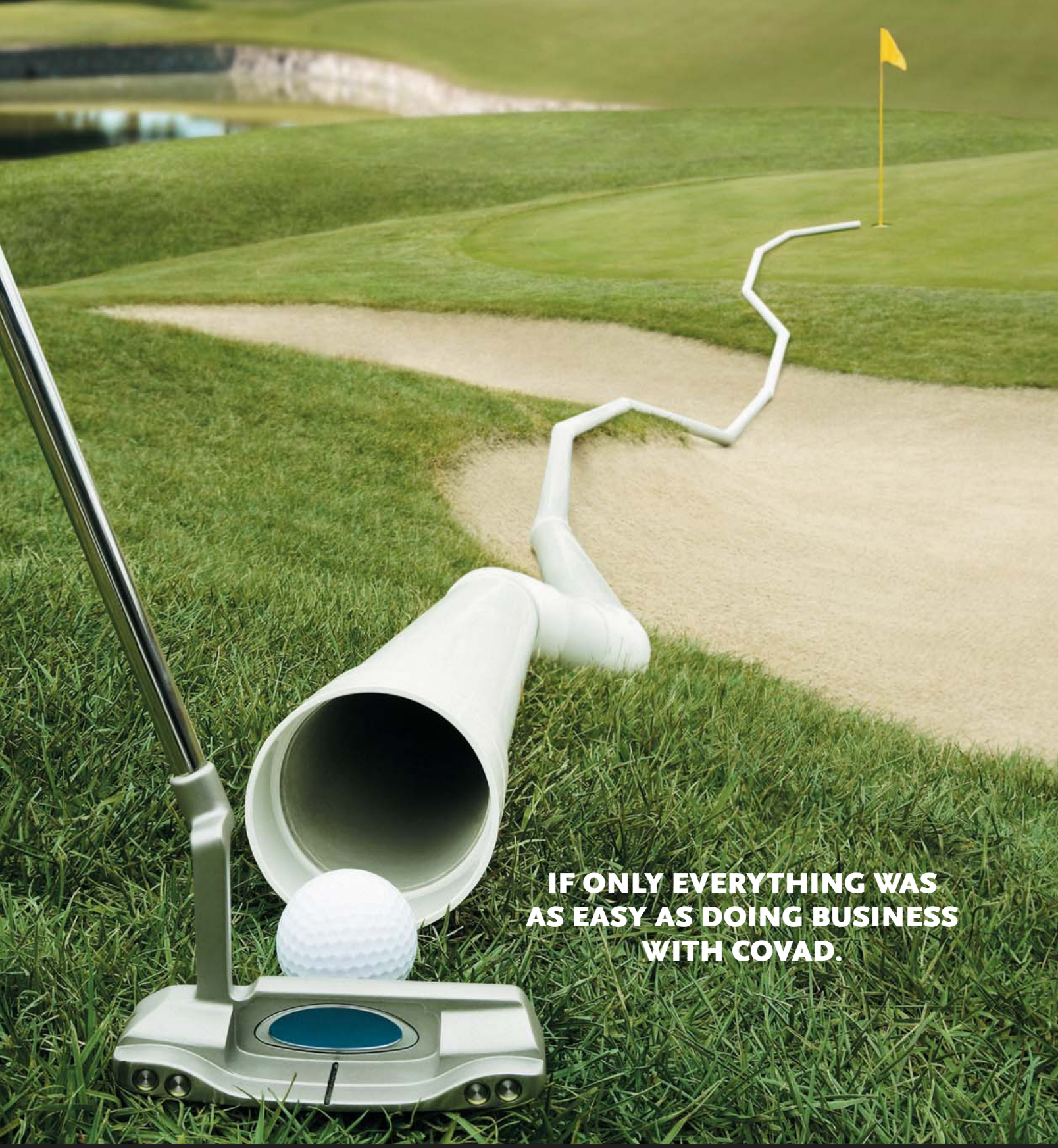

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tected and when making business decisions the company has to be cognizant not to alienate them.

I asked for an example where there was alienation and was told the community does not have a big monolithic personality and it is not possible to live and breathe without alienating someone. The goal is to not alienate the core.

Danny mentioned some in the community weren't happy with the release of Asterisk Business Edition. Mark explained that some complained but the reality is that contributors to Asterisk cannot place restrictions on where the code is used and this protects the sanctity of the code.

He continued that Digium has the freedom and flexibility to integrate these improvements into other code. If this were not the case there would be limitations in what Digium could do like integrating certain stacks for H.323 support or adding speech codecs. Why? Because not all software is compatible with GPL or the General Purpose License.

I asked Mark for his thoughts on the GPL3 debate as the open-source community has been concerned that this latest version of the General Purpose License would force companies using open-source software to make their services available as open-source. In other words, if Google (quote - news - alert) were to use GPL3 code as the basis for its services, they would have to provide their search services as open-source back to the community.

Mark says his company hasn't made any decisions on whether to release the code under GPL3 or not. He went on to say licenses are not retroactive. . . Other people can fork the code and go in another direction.

I then asked about Asterisk Now and Danny explained it consists of Asterisk, the Asterisk GUI and everything needed to run Asterisk and develop on it. Danny said, "It is Asterisk for Danny. Mark can install Asterisk as it exists. Danny can install Asterisk Now as it exists." Danny went on to say it is the software appliance of Asterisk and gives the best of both worlds as changes in the GUI find themselves in the appropriate configuration files, allowing Mark and Danny to manage the same server with no limitation as to how changes will be made.

Both Mark and Danny both see this product as bringing Asterisk to the mass market as it reduces the need for Linux expertise.

As it appears that the company is walking a customer tightrope of sorts, focusing on launching profitable products and services on the one hand and keeping the core of the volunteer force happy on the other. . . I asked them what they want the Asterisk community to know about the company's future direction.

To this, Mark responded, "We are working hard to build more infrastructure to support the developer community," adding, "More developers make the process smoother for contributors."

Danny added the company is making a plan to allow companies to sponsor programmers at Digium. In other words, your company sends a programmer to Huntsville and Digium will in turn manage them.

Danny exclaimed, "These programmers are the lifeblood of the product."

From there, I thought about the future and asked where the company sees Asterisk in the next five years in the broad communications market.

Danny's goal is to allow Asterisk to penetrate the mass market, become easier to use and become a leading choice in the deployment of communications infrastructure. Mark mentioned that Asterisk today is a technology with a broad feature set that can address a number of different telecom markets, from home users to carriers. Mark wants to see Digium and its partners support all the markets he feels Asterisk is capable of serving.

Digium's VP of Marketing Bill Miller told me of a marketing report they were working on, revealing that Asterisk enjoys the largest deployment in the "other" category of corporate communications solutions. This category is typically 12%, meaning that the company makes up the majority of this 12% of deployments.

At the end of the interview we proceeded to a tour of the new building the company is constructing. So far, concrete has been poured and you are able to see the framing for the offices and rooms. I was able to see where the software and hardware developers will work as well as where the management team will reside. The company has ambitious growth plans as they have purchased enough land to build two more buildings and can house the better part of a thousand people at this location.

Moreover, Mark has a car which is affectionately called "The bucket", a term for a specific kind of hot rod. It is a mix of American components and looks like a retro 50s or older hot rod built from pieces of various vehicles. (See the photo accompanying this article.)

The acceleration Mark and I experienced as we roared off at triple-digit speed is analogous to what Digium and Asterisk have done to telecom. They have taken a 100 year-old industry and rebuilt it with components from around the world and in the process have made a company which is accelerating as fast as "the bucket". The only difference is that while the bucket will remain true to its roots as an open-air roadster, Danny has been brought into Digium to add a roof, ABS, traction control and other niceties and necessities.

In other words, a company may need an infusion of traditional corporate essentials to race to the next level. Just as it is not easy to add new technology to a car not designed for it, it will be a challenge to keep all of Digium's strengths as it expands ever further.

Danny certainly has his work cut out for him. His integration into the corporate environment seems to be going smoothly and as long as the company can continue to come up with new revenue generating ideas without alienating the core of Asterisk developers, they are in the pole position to keep this growth engine roaring for years to come. IT

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Don’t be afraid

There’s a Secure Cost Effective Alternative to an SBC

SBC’s were built to solve a variety of problems yet security was an afterthought.

STOP trying to re-purpose your existing products leaving you exposed to threats that SBCs were not designed to address.

STOP paying for features and functionality that you don’t need, while not getting the protection you require.

STOP using “black box” or proprietary systems that don’t allow you to take advantage of commercially available servers and the increased processing power of multi-core chips.

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www.tmcnet.com/707.1

LG-Nortel — (news - alert) a joint venture of LG Electronics and Nortel — is launching three new unified communications devices compatible with Microsoft Office Communications Server 2007 and Microsoft Office Communicator 2007.
http://www.lg-nortel.com
http://www.microsoft.com

http://www.tmcnet.com/708.1

Palm (news - alert) has introduced a new Palm OS Treo for Sprint — the Treo 755p CDMA smart device. The device is the first to offer built-in Microsoft Direct Push Technology email support and Google Maps for mobiles. The Treo 755p smart device also features the latest Treo design including an integrated antenna, slimmer form factor and mini-SD slot.

http://www.palm.com

http://www.tmcnet.com/706.1

Zultys Technologies (news - alert) introduced a Telephony Application Programming Interface (TAPI) for its SIP-based MX30 and MX250 Enterprise Media Exchanges — devices which combine the functions of an IP PBX, Internet gateway, network server, and application server in a single, compact housing.

http://www.zultys.com

http://www.tmcnet.com/709.1

3CX (news - alert) is making its Windows-based IP PBX available to the general commercial market. With 3CX, businesses can replace their existing PBX systems and enjoy the benefits of a truly open system that runs on any Windows server and brings SIP-based calling to businesses.

http://www.3cx.com

http://www.tmcnet.com/710.1

In response to the need for enhanced video communications solutions, (news - alert) Toshiba America Information Systems Telecommunications Systems Division has enhanced its Video Communication Solution, VCS, and announced version 2.0 for its Strata CIX family of business communication systems. With VCS, users are able to collaborate and share their desktop or applications, transfer files, and communicate via a message board as well as share in point-to-point video conferences.

http://www.toshiba.com

http://www.tmcnet.com/711.1

Business phone system provider Nuvio Corporation (news - alert) announced the addition of a new feature to its Internet-based phone system - The phone system now includes inbound fax capabilities. Jason Talley, president and CEO of Nuvio, explained that the application, Personal Fax, was added in response to growth of SMBs using Internet-based business phone systems.
http://www.nuvio.com

http://www.tmcnet.com/712.1

Blue Ridge Networks, (news - alert) provider of high assurance security solutions to business and government, has joined forces with PingTone Communications, (news - alert) one of the largest providers of hosted Cisco IP phone services to corporate and government customers, to introduce a carrier-agnostic subscription service. Enterprises can now meet high standards of security and compliance, while being freed from the high costs of carrier-specific WAN solutions.

http://www.blueridgenetworks.com
http://www.pingtone.com

http://www.tmcnet.com/713.1

CommPartners Certifies IVT's PBX

Intuitive Voice Technology (IVT) (news - alert) has announced that its Evolution PBX has been certified on the CommPartners network (news - alert) for use with the IP solutions company's IP Trunking and Broadsoft applications for SMBs. Certification by CommPartners confirms interoperability and feature functionality of the device as designed when deployed on the company's network.
http://www.intuitivevoice.com
http://www.commpartners.us

http://www.tmcnet.com/714.1

Packeteer (news - alert) will rollout its new iShaper appliance, which is set to deliver a new class of unified branch office capabilities. iShaper combines application visibility, intelligent acceleration, secure application QoS, and native compatibility with Microsoft application services into a single device that reduces cost and complexity of a branch office.

http://www.packeteer.com

http://www.tmcnet.com/715.1

Nortel (quote - news - alert) has been selected as the Official Converged Network Equipment Supplier for the 2010 Winter Games. Nortel will supply the network communications equipment required for this first all-IP converged Games network. Under the sponsorship agreement, Nortel will provide the converged LAN equipment at 15 Games venues in both Vancouver and Whistler, as well as at the Vancouver 2010 headquarters and numerous supporting venues. Nortel Global Services will also be provided to support the design and deployment of the network.

http://www.nortel.com

http://www.tmcnet.com/716.1

LignUp Unveils Communications App Server

LignUp Corp. (news - alert) has introduced version 4.0 of the LignUp Communications Application Server, delivering a comprehensive suite of telephony Web Services deployed within enterprise service-oriented architectures (SOA) and existing telecom infrastructures. LignUp 4.0 features 125 call control and media control functions exposed through LignUp Communications Web Services.
http://www.lignup.com

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http://www.tmcnet.com/696.1

(news - alert) In addition to enhancing its existing enterprise communications system, Siemens Communications is now offering its OpenScape platform on a SaaS (Software as a Service) offering (i.e., hosted service). So, instead of competing solely on one level, Siemens is adapting its successful OpenScape platform for the service provider space.

http://www.siemens.com

http://www.tmcnet.com/697.1

Deltathree (news - alert) announced that its Hosted Consumer VoIP Solution will integrate CALEA compliance services offered by NeuStar, (news - alert) a provider for clearinghouse and directory services to the global communications and Internet industry. Service providers looking to launch their own VoIP offering with minimal investment and speedy deployment can utilize the new Hosted Consumer VoIP Solution, a comprehensive, customizable turnkey solution.

http://www.deltathree.com
http://www.neustar.com

http://www.tmcnet.com/698.1

Global Crossing (news - alert) is using Ditech Networks' (news - alert) Voice Quality Assurance (VQA) technology to enhance voice quality for calls received from international destinations on the Global Crossing Ready-Access on-demand audio collaboration services network.

www.globalcrossing.com
www.ditechnetworks.com

http://www.tmcnet.com/699.1

Sonus Networks, (news - alert) a provider of VoIP infrastructure solutions for wireline and wireless service providers, has been selected as a supplier for France Telecom International Wholesale's voice over IP network, in the carrier's bid to expand its international voice wholesale services.

http://www.sonusnet.com

http://www.tmcnet.com/700.1

Comcast Corporation (news - alert) has unveiled its plan to introduce the industry's first fully integrated, web-based communications center, called the SmartZone communications center. This implies that Comcast customers will now be able to receive free access to the most innovative and popular communications tools through this center.

http://www.comcast.com

http://www.tmcnet.com/701.1

The last few years have seen a tremendous growth in the field of Cable VoIP, with the business services market being the biggest customer and beneficiary in this field. Realizing the tremendous potential for revenue in this field, MetaSwitch (news - alert) and Big River Telephone Company (news - alert) have come together to explore the possible avenues in this sector.

http://www.metaswitch.com
http://www.bigrivertelephone.com

http://www.tmcnet.com/702.1

Optimum Lightpath's (news - alert) launch of its Voice over Metro Ethernet service is being hailed as the first-ever carrier-class voice service delivered over Metro Ethernet by a cable MSO. Optimum Lightpath's Voice over Metro Ethernet is offered as a managed voice service and is the result of a collaborative effort among Optimum Lightpath, NEC Unified Solutions, (news - alert) and Cisco. (quote - news - alert)

http://www.optimumlightpath.com
http://www.necunified.com
http://www.cisco.com

http://www.tmcnet.com/703.1

The El Dorado Golf and Beach Club of San Jose del Cabo, Mexico has selected ERF Wireless to provide a complete Fiber-to-the-Home (FTTH) voice, video, and data system for the entire development including the operations of the private club, as well as all of the multi-million dollar homes in this exclusive gated community. ERF Wireless (news - alert) is also in the process of finalizing additional contracts for follow-on maintenance and operational support phases.

http://www.erfwireless.com

http://www.tmcnet.com/704.1

GrandCentral (news - alert) has launched GrandCentral Mobile, the mobile version of the company's One Number for Life service. Available at m.grandcentral.com, the application enables users to access their GrandCentral account and all the service's core features from any mobile device that has a web browser. Within the GC Mobile interface, users can play and manage all voicemails, view contacts, change main, set temporary settings and place calls displaying your GrandCentral number.

http://www.grandcentral.com

http://www.tmcnet.com/705.1

Internet service providers are thinking in terms of messaging abuse, as their subscribers are dealing with it daily and many have lost patience with filtering it out themselves. Earthlink (news - alert) has responded to the complaints of its customers by selecting Cloudmark Authority to help fight messaging abuse.

http://www.earthlink.net
http://www.cloudmark.com

http://www.tmcnet.com/725.1

VoIP business solutions provider XO (news - alert) has announced that XOptions Flex, its VoIP services bundle, now supports more than 10,000 business customers in more than 55 major metropolitan markets across the United States. Launched two years ago, XOptions Flex is an integrated IP services solution offering all the benefits of IP with enhanced features, functionality and value for voice, Internet access, and Web hosting services in a single package.

http://www.xo.com

http://www.tmcnet.com/726.1

NextAlarm (news - alert) has announced it is adding video monitoring services to its VoIP-based alarm monitoring services for homes and small businesses, a service is has labeled NEXTVIEW. NEXTVIEW works with existing alarm systems and is easy to set up, view, and manage through the customer portal interface at NextAlarm.com. Each camera can be associated with one or more zones (i.e., front door, back door view, kitchen window, etc.).

http://www.nextalarm.com

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- POES5 PoE Dongle
- MB100 Wall Mount Bracket

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http://www.tmcnet.com/674.1

Motorola, (quote - news - alert) the world's second largest mobile phone supplier, and largest in the U.S., faces stiff competition as Apple launches its long-awaited iPhone. In a statement, Motorola chairman and CEO Ed Zander said the company is slated to launch some new 3G enabled mobile devices, including a high-end mobile phone Zander believes can compete effectively a against the iPhone. "This [device] has unbelievable video capability. It's a media monster," Zander said.

http://www.motorola.com

http://www.tmcnet.com/675.1

In a bid to become the leading Internet video network for users to view, upload, and share Internet video, Tubearoo (news - alert) is set to launch Mobile Video for cell phones. The company will make its Mobile Video service available to customers of several major cellular carriers, which will allow subscribers to receive Tubearoo.com video clips to cell phones and other cellular devices via text messaging service.

http://www.tubearoo.com

http://www.tmcnet.com/676.1

WiFi company Xirrus (news - alert) has announced that its line of wireless arrays has been WiFi certified for interoperability and WiFi Protected Access 2 (WPA2) with extended Extensible Authentication Protocol (EAP) types. The authentication addresses interoperability across the IEEE 802.11a/b/g standards and wireless security for WPA and WPA2.

http://www.xirrus.com

http://www.tmcnet.com/677.1

HP (quote - news - alert) has launched HP OpenCall Mobile Video Solutions, a new mobile software solutions set developed to make interactions with family, friends, and social communities livelier by using personalized video messages. OpenCall allows users to send and receive video messages similar to ordinary voice messages, empowers video blogging, makes animated call response messages, and provides numerous video services.

http://www.hp.com

http://www.tmcnet.com/678.1

Interactive Intelligence (news - alert) has announced plans to extend its IP telephony functionality to mobile workers through the development of its new Interaction Client, Mobile Edition. A graphical interface that supports the Windows Mobile 5.0 and Smart Phone operating systems, Interaction Client, Mobile Edition will make Interactive Intelligence IP telephony functionality accessible via mobile devices such as the Microsoft Windows-Powered Pocket PC and the Windows Mobile Smartphone.

http://www.ininn.com

http://www.tmcnet.com/679.1

Aruba Networks (news - alert) has introduced Secure Enterprise Mesh technology - an enhancement to its secure wireless LAN infrastructure platform that addresses PCI-compliance without replacing legacy networking infrastructure or expanding the wiring plant. Aruba's solution, which can be overlaid on any legacy network, safeguards network breaches and provides retailers with client-to-core secure networking of point-of-sale devices, bar code readers, mobile computers, printers, telephones, PCs, and related devices in retail stores, warehouses, storage depots, and office buildings.

http://www.arubanetworks.com

http://www.tmcnet.com/

With the advent of BlackBerry Mobile Voice System, Research In Motion, maker of BlackBerry devices, has started to integrate its devices with corporate PBXs. With the new integration capabilities, users of corporate BlackBerrys can transfer calls within the company, dial extensions directly, and gain other PBX functions as if they are using their desktop telephones.

http://www.rim.com

http://www.tmcnet.com/681.1

Technology Marketing Corporation (TMC) announced TMCnet Mobile, adding another dimension to providing industry information to professionals on the go. TMCnet Mobile has been created to display on a majority of mobile devices and additionally can be seen on any Web browser.

http://www.tmcnet.com

www.tmcnet.com/682.1

Headset manufacturer Plantronics (news - alert) introduced its CS70N Professional Wireless Headset System, which represents a third-generation product for the company. This headset is designed to bring together audio performance, style, and comfort for office professionals seeking hands-free mobility to be more efficient at work.

http://www.plantronics.com

http://www.tmcnet.com/683.1

Cedar Point Communications, provider of integrated VoIP switching technologies for service provider and enterprise telecommunications, has joined the WiMAX Forum in an effort to speed the pace of wireless extensions for its SAFARI C3 Multimedia Switching System. With demonstrated WiMAX interoperability, Cedar Point's existing customers will be able to readily and cost effectively offer voice services to new markets or geographies that were previously unreachable.

http://www.cedarpointcom.com

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CHANNEL NEWS

http://www.tmcnet.com/691.1

VoSKY Technologies, (news - alert) developer of the VoSKY Exchange PBX-to-Skype gateway, is clearly looking to leverage its recent blessing from Skype as quickly as possible. In fact, having announced a co-branding effort with Skype (news - alert) in the UK only a week ago, Actiontec Electronics , VoSKY's parent company, has secured an agreement with North American distributor Jenne Distributors.

http://www.vosky.com
http://www.jenne.com

http://www.tmcnet.com/692.1

Under a new agreement, Nortel (quote - news - alert) will resell Polycom's immersive telepresence solution as part of Nortel's Multimedia Services portfolio. From Nortel's perspective, its video conferencing services, featuring Polycom's (news - alert) solution, will drive a new level of efficiency and productivity in its enterprise customers. For Polycom, this is a new channel for bringing its immersive telepresence experience to market.

http://www.nortel.com
http://www.polycom.com

http://www.tmcnet.com/693.1

Fonality (news - alert) has partnered with PC Mall (news - alert) for distribution of Folnality's business phone system, PBXtra. Small and medium-sized business (SMB) customers can now have one-stop-shopping for desktops, notebooks, servers, data switches, security, storage, and phone system products.
http://www.fonality.com
http://www.pcmall.com

http://www.tmcnet.com/695.1

Mitel (news - alert) announced the upcoming, global rollout of its new Mitel PARTNERprogram, which represents a global channel model transformation. The new channel program is designed to help Mitel partners build mutually successful business opportunities in the fast-growing IP communications market.

http://www.mitel.com

DEVELOPER NEWS

http://www.tmcnet.com/686.1

To enhance opportunities between Asia and North America, Alcatel-Lucent (quote - news - alert) and NEC Corporation (news - alert) have been contracted to jointly deploy the new Asia America Gateway (AAG), which will be the first Terabit (one trillion bits) submarine cable network between Southeast Asia and the United States. The contract for a network that will span a distance nearly half the circumference of the earth is valued at approximately $500 million.
http://www.alcatel-lucent.com
http://www.nec.com

http://www.tmcnet.com/687.1

To provide an even greater resource for its customers — and, ultimately, its end users — AudioCodes (news - alert) has now announced the latest release, version 5.0, of its software. The new software release is being shipped in AudioCodes' MediaPack, TrunkPack, Mediant gateways, and IPmedia media resource boards and server platforms.

http://www.audiocodes.com

http://www.tmcnet.com/727.1

Octasic (news - alert) has released SoftEcho for Mobile Phones, which can significantly enhance call quality for mobile manufacturers and soft phones running the Windows Mobile operating system, particularly in hands-free mode. Octasic claims its algorithm results in seamless transition from handset to speaker mode with no tweaking required.
http://www.octasic.com

IP CONTACT CENTER NEWS

http://www.tmcnet.com/688.1

Virtual call center solutions provider Sentillion (news - alert) vBusiness announced that its vThere packaged desktop virtualization solution was awarded RSA Secured certification with RSA SecurID, and that the company has joined the RSA Secured Partner Program. The certification indicates that vThere is interoperable with top industry two-factor authentication technology from RSA.
http://www.sentillion.com

http://www.tmcnet.com/689.1

Five9 (news - alert) has announced that its Five9 Virtual Call Center solutions are now fully compatible with Microsoft's Windows Vista operating system. The new Five9 capabilities will easily turn a Vista-based computer into a cost-effective call center communication platform that does not require installing additional phone equipment. Five9 customers need only to possess a Windows-based PC, Internet connection and a headset to take advantage of the feature-rich on-demand call center solution.

http://www.five9.com

http://www.tmcnet.com/690.1

Innovations in contact center solutions are a necessity in the industry to keep abreast of the latest technologies so centers can maintain a competitive advantage. Contact centers consistently rely on vendors to produce applications that promote their business processes, enabling them to focus on the business of serving customers. To meet the growing demand for innovative contact center solutions, ResponseTek Networks (news - alert) has enhanced its contact center solution.
www.responsetek.com

SIP NEWS

http://www.tmcnet.com/684.1

IVR Technologies, (news - alert) a company that specializes in RADIUS Billing replacement and SIP server solutions, announced a partnership with next-generation network equipment manufacturer NexTone. (news - alert) The two companies teamed up to offer service provider Infocom Technologies an enhanced networking solution. The combination of IVR Technologies' Talking SIP application (a fully integrated application, media and real-time billing SIP server) and NexTone's SBCs will help Infocom offer its subscriber base a wide range of enhanced services.
http://www.ivr.com
http://www.nextone.com

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The Laws of Networking

By Tony Rybczynski

Gilder's Law, Moore's Law, Metcalfe's Law and Edholm's Law, all provide a view of significant technology relationships. Taken together, they provide us valuable insights into how networking is changing. Could we be at the beginning of a major transformation in networking, paralleling an equally profound change in telecom, whereby telephony becomes a software application within a Unified Communications application environment?

Law School

Moore's Law, from the founders of Intel, states that the number of transistors that can be put on a chip doubles every 18 months. This law just celebrated its 40th anniversary, and is still remarkably resilient. The results are visible everywhere.

George Gilder, the author of *Telecosm*, observed that bandwidth grows at least three times faster than computer power. Whereas computer power doubles every 18 months, communications power doubles every six months, and opens the door for using bandwidth to gain bandwidth.

Metcalfe's Law says the usefulness or utility of a network equals the square of the number of users. Bob Metcalfe, as the inventor of Ethernet, recognized that the value of getting people and devices interconnected by Ethernet increased as the number of users increased. When Ethernet segments started to be interconnected by routers, Metcalfe's Law was extended to apply to routed networks and to the Internet at large.

Edholm's Law was first referenced in an IEEE publication based on an interview with Phil Edholm, enterprise CTO in Nortel, in which he described three kinds of bandwidth: fixed wired bandwidth, nomadic bandwidth as you move from home office to hot spot to hotel, and wireless bandwidth over the public network. Edholm's Law states that, over time, these three types of bandwidths grow at about the same exponential rate, though the absolute bandwidth is lower for nomadic and wireless connections respectively.

Following the Law

One implication of Moore's Law is that abundant processing has created an environment in which applications are re-invented through Service-Oriented Architecture (SOA) frameworks to enable greater business effectiveness and agility. It also creates on-going opportunities to add intelligence to networks to improve network and application performance, protect critical resources and simplify operation.

One implication of Gilder's Law is that using Ethernet and optical networking can accelerate the centralization of storage and servers to simplify IT environments.

With virtually every knowledge and information worker having network connectivity, have we reached a peak in value delivered as dictated by Metcalfe's Law? Resoundingly no! The network's value continues to grow with connectivity being provided to a range of sensors and actuators across the enterprise, making networks orders of magnitude larger than enterprises in terms of employees!

Given that there is a limited bandwidth (approximately 60Mbps) that can be absorbed by the human brain, one key implication of Edholm's Law is that, as wireless access approaches the capacity of humans to absorb information, wireless will become increasingly equivalent to wired access. Another is that this broadband wireless in the form of WiFi, WiMAX and 4G, will be widely available across both the enterprise and the country.

Is Networking Going Non-Linear?

The early 1990s were characterized by a drive for increased connectivity over a variety of network technologies and a variety of application and protocol stacks. As we headed towards the new millennium, we entered a network build-out phase enabled through standardization on IP and Ethernet - the focus was on bigger, faster and denser. Since 2000 we've seen significant linear innovation focusing on increased network intelligence, mobility, and layered defense.

Today, the Laws of Networking, the convergence of the IT and telecom industries and business needs are coming together to change how we view networks. Could we be entering a new era in networking, creating a discontinuity in how we architect, build and operate networks? Looking into our crystal ball, we can see four major implications:

1. Pervasive broadband: Ethernet to the desktop and to the MAN/WAN, and broadband wireless almost everywhere.

2. Borderless application-aware networks: federated networking with optimally placed intelligence, delivering consistent user quality of experience across enterprise and carrier domains.

3. Hyperconnectivity: networked everything, delivering new value to business applications for increased business effectiveness.

4. Always-on low latency autonomic networking: dynamically adjusting to changing network topologies, security threats, application needs and traffic levels, to maximize utilization of the IT infrastructure and optimize application performance in line with corporate policies.

These will provide an IT infrastructure delivering ubiquitous Unified Communications anytime, anywhere over any device; communications-enabled business processes and SOA-enabled applications, and business continuity across applications and storage.

Opportunity Knocks

Just as the laws of physics help us understand Nature, the Laws of Networking can provide us with insights into how networking will change, and can challenge us in terms of our IT investment strategies. Could we be entering a new era in networking, creating a discontinuity in how we architect, build and operate networks? Maybe. In either case, the CIO's challenge remains: how to best align IT investments with the business?

Tony Rybczynski is Director of Strategic Enterprise Technologies at Nortel. (quote - news - alert) He has over 20 years experience in the application of packet network technology. For more information, please visit http://www.nortel.com.

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Broadband — A Long View

By Brough Turner

A great deal's been written about broadband Internet connectivity and broadband penetration rates. In mid-2006, China pulled ahead of the U.S. in absolute numbers of broadband subscribers (see 48 million to 41 million in 1Q06 per *Point Topic*). Comparing penetration rates, (i.e., number of broadband connections per capita), South Korea leads the world (see *Point Topic*, 4Q06) with 89% as of the end of 2006, while the U.S. has fallen to 25th behind South Korea, Japan, Taiwan, Canada and more than a dozen Europeans countries.

When speed of connection is considered, Sweden leads (see *Comparison of OECD Broadband Markets*, by Wairua Consulting for InternetNZ, May 2006) with 100 Mbps fiber-to-the-home (FTTH) services available in many locations and higher than average DSL speeds elsewhere.

Statistics like these lead to extensive gnashing of teeth and vigorous calls for public policy change, both in the U.S. and elsewhere. But while there is a lot of noise, there is relatively little systematic examination of what works where and no discussion of longer-term issues. So let me point out two long-term issues that should be part of the discussion in any country.

First, it takes decades to make fundamental changes in laws or regulatory regimes. In the U.S., major changes have included the FCC's Computer I inquiry (1960s) and Computer II Final Decision (1980), and the Telecom Act of 1996 — all more than 15 years apart. For the idea of auctioning wireless spectrum, it took 35 years from Ronald Coase's original proposal (1959) to the first wireless auction (1994).

Over the next 15-35 years, one would hope we'll see a proliferation of FTTH. But consider the useful life of the various elements involved in a FTTH connection.

The right-of-way in front of my home or business is a fundamental access bottleneck. It's of limited size and is shared with neighbors under town or city laws or via deed restrictions (easements, condominium covenants, etc.). The conduits and poles in that right-of-way have useful lives of 30-60 years or more. Dark fiber has a useful life of 20-50 years or more. These useful lives align with legal and regulatory timeframes.

On the other hand, anything electronic is functionally obsolete within 2-3 years.

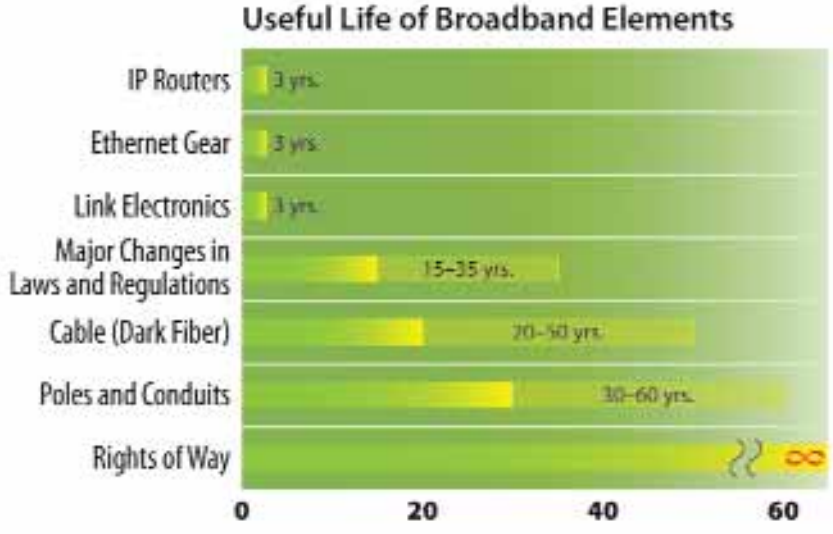
To me, this suggests the focus for government regulation should be on the provision of point-to-point (home run) dark fiber from each business and residence to aggregation points where enough other fibers come together that multiple competitive ISPs (and other service providers) are attracted. Then individuals could pick which ISP they wanted to light their fiber.

However, this is a personal view — what I'd like in my community. As my second long-term issue makes clear, it would be a terrible idea to impose any particular solution, however good it seems, on a national basis.

The second point of long term import was best expressed by U.S. Supreme Court Justice Louis Brandeis more than 70 years ago in *New State Ice Co. v. Liebmann*, 285 U.S. 262 (1932): "It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."

The United States has 50 states and more than 22,000 local municipalities. The richest laboratory for broadband policy would be to give 22,000 municipalities permission to do whatever they want, and then see what emerges. Federal policy might be required to give them permission; (i.e., to undo decades of communications regulation and restrain local lobbying by existing national monopolies), but competitive public policy choices would be preferable to risking all on a single national policy, especially in an area that's evolving as rapidly as broadband connectivity.

Brough Turner is Senior VP of Technology, CTO and Co-Founder of NMS Communications. (news - alert) For more information, please visit the company online at http://www.nmscommunications.com.



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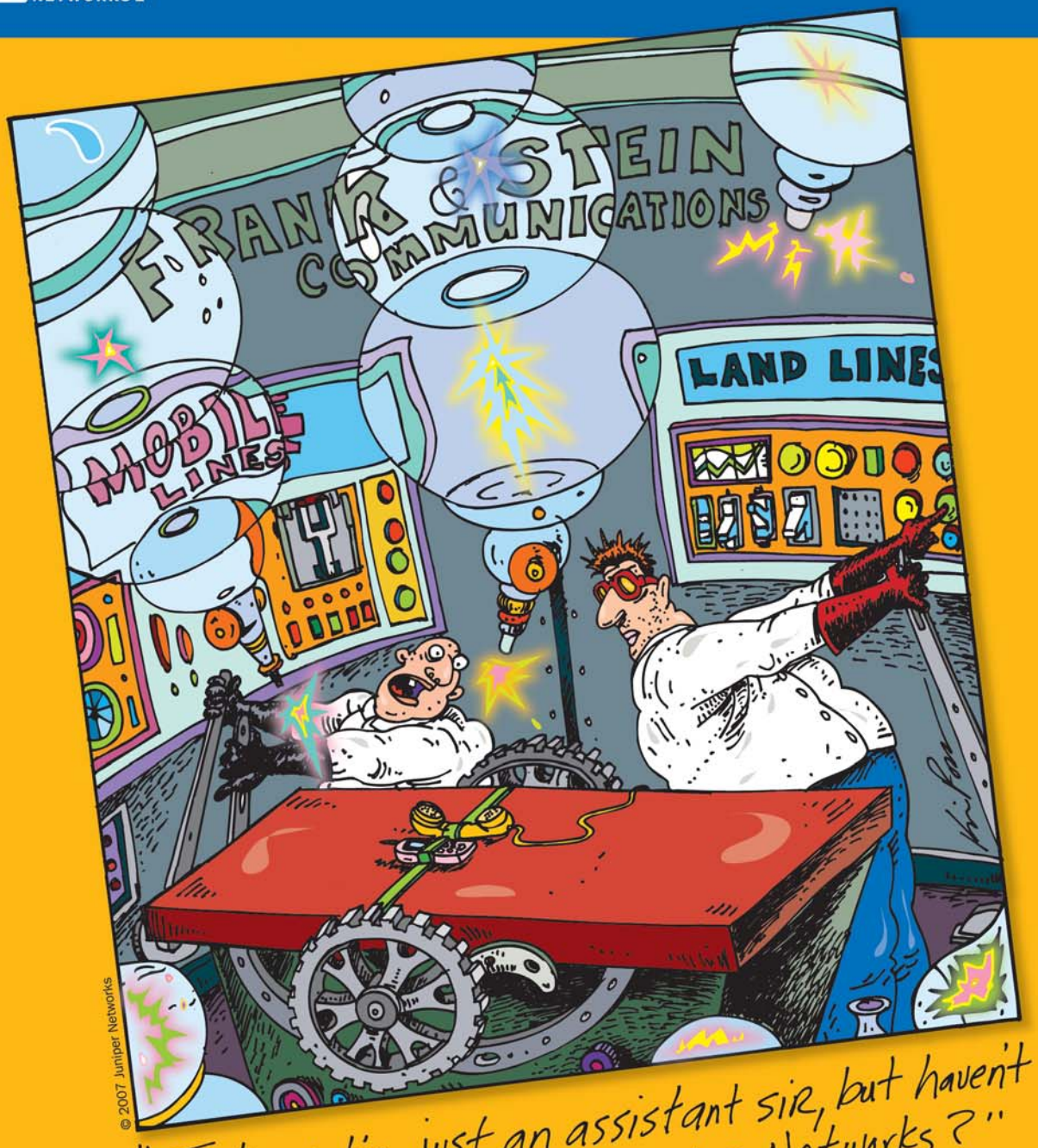

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By Hunter Newby

Can a Torrent Fit Through a Straw?

As we all know by now, VoIP can be delivered in two main flavors, over private IP networks and/or over the public Internet. It took a while for most people to understand that VoIP does not mean Voice over the Public Internet, but hopefully the majority is all past that now. Contributing to the notion of VoIP traveling exclusively over the Internet is the fact that voice as an application does not consume so much capacity such that it would not be able to work properly over the Internet. Although different protocols and features still need to be mediated between gateways in order for VoIP (define - news - alert) to work, VoIP over the Internet has performed well — at least from a transport perspective. That may change, however.

"The broadcast television industry was born out of the military and telecoms and now it's all coming back together again," said Bryan Carpenter of Bittree, a high-performance patching systems provider at the recent National Association of Broadcasters (NAB) convention in Las Vegas. The NAB is impressive in its size, depth and wide range of sub-serving businesses in the vast video industry. Attending is a must for players in the space if for nothing else but to show your face. What's particularly fascinating is the near complete absence of traditional network operators from the fiber-based carrier world — other than Level 3 not many familiar faces to speak of in the transport business.

The big players represented in the "transport" business are the satellite network operators. They have good, solid business models that generate lots of cash and they're very proficient at what they do. With the advent of IPTV (which is not TV over the Internet — that's Web TV) the satellite providers have begun to focus on how to bring their video content out to the end users over their networks - HD video content to be exact. This is no easy task.

Many of these providers have long reviewed and analyzed the potential benefits to them of Carrier Hotel Meet Me Rooms for the purposes of building terrestrial fiber networks to support and compliment their existing infrastructure — a lengthy process for some due to their expertise in satellite and lack thereof in fiber, if not also a bit of competitive tension between the two types. The community may also suspect that going with fiber is an all-or-nothing decision that if chosen could ultimately begin the demise of the core sat business. Most people don't like change and it's difficult to go from the top of your game to being the last one in the pool and not a very good swimmer.

Two major issues face the sat folks concerning a fiber strategy. The first is access to competitive fiber from the teleports to major, physical layer interconnection points. This is why most downlinks land on the distribution networks dishes which are directly connected to their physical plant — such as a cable company. The utility of the teleport as a transport option is seriously limited when the high costs of "no competition" transport are factored in. The other big issue is the ever-increasing size of files. Don't forget, there's a big difference between live and canned video. Moving live HD is just about the most challenging thing any network operator could ever want to do from a capacity and zero-latency perspective.

It is actually the HD capacity requirement that is an advantage and disadvantage for the sat networks. The advantage is that HD needs private network connections and satellite is just that - private, dedicated transport. HD just doesn't work over the public Internet. The Internet and all of its collective network pieces combined have a difficult enough time supporting the web and Web TV.

The real threat to voice and any other application using the public Internet is that the sat providers may not be able to build a fiber plant in time and may just end up going to their Plan B - using the Internet. If this sounds like an oxymoron, well that's because it is. Believe it or not, that's the very plan many of them have. It's unbelievable that true broadcast video could effectively run over the public Internet, but due to a long-standing ignorance of fiber, meet points and their inherent benefits, the satellite industry may end up trying to put 1000 gigs of traffic on 10 gig networks. The end result: a dramatic negative impact on existing web and Internet apps that to date have operated relatively smoothly. Web TV itself may cause this ultimate congestion and collapse, but any attempt to move the satellite video business onto the Internet would no doubt induce instant network cardiac arrest. Let's hope that it doesn't happen, but if it does, make sure you have a presence in a Meet Me Room and a private Internet standing by.

Hunter Newby is chief strategy officer for telx. (news - alert) For more information, please visit the company online at http://www.telx.com.

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The Perfect Fusion of Performance and Flexibility

The beauty of gymnastics is realized when strength and agility are combined with style and grace. Alliance Systems engineers adopted this approach when designing the new AX-1000 high-performance 1U appliance. It leverages a modular design in a small footprint that offers flexibility of components and the ability to customize the enclosure to differentiate your brand in this competitive marketplace.

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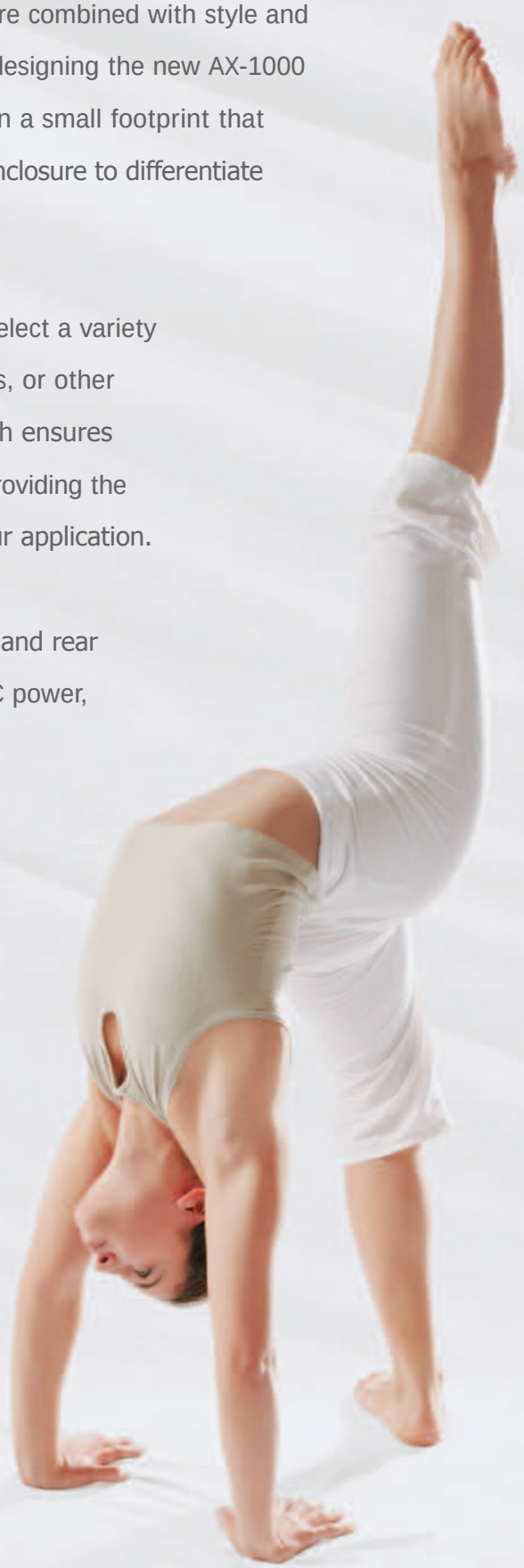

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Sniffers, "Vishers" and Hackers Beware: The Overlooked Aspect of Securing Unified Messaging

By Yaniv Livneh

A significant amount of attention is currently spent on the concern around securing VoIP infrastructure. As organizations embark upon the migration from traditional PBX systems and face potential sniffers of VoIP traffic, attackers who abuse VoIP system implementation flaws, and attacks against call manager servers, they implement firewalls, token access and encryption protocols. These are without question, critical concerns and precautions, but can tend to overshadow another basic and potentially serious security issue, and one that actually has a fairly simple solution.

Consider the following voice services scenarios:

- Organization X begins its implementation of a unified communications solution that includes unified messaging. The organization has always paid considerable attention to its email security policies, but fails to consider the risks of accessing email messages through the voicemail system.

- Consumer Y receives an email, seemingly from his bank, asking him to call a number to verify his account information. He does, and the automated answering service captures his information, another successful 'vishing' (voice fishing) attack.

- Business Traveler Z is catching up on some work in an airport lounge before her flight takes off. She makes calls on her laptop softphone, accessing the office PBX. Someone is sniffing on the IP, sees her credentials and begins to make malicious calls accessing her employer's SIP PBX through his own SIP phone.

All three of these scenarios are based on situations that can utilize additional security. The first two, specifically, use the ubiquitous method of DTMF (touchtone entries) to enter in a numeric pin code to access voicemail, bank/medical information or to make a SIP-based call. This method of entry is ultimately easy to steal and hack.

Voice biometrics, or voice verification, a technology based on identifying and recognizing the uniqueness of an individual's voice pattern, can provide an additional layer of security for voice services vulnerable to an attack. Voice biometrics verifies an identity by matching a live voice with a digitally stored 'voice print' or voice pattern. It functions as a password replacement tool or supplement that includes two steps: registration and authentication. In the registration phase, the system is trained to recognize the unique vocal pattern of an individual. In this stage, the individual is asked to repeat a series of words multiple times. Once the system is trained, the individual is authenticated to access the voice service by using this same series of words. For an additional layer of security, an individual can be asked to repeat back a random set of numbers. This method removes the concern around recording and playback of an individual's voice to gain access.

Now, consider these alternate voice biometric secured scenarios:

- Organization X, which happens to be a medical institution, is regulated by law with respect to email compliance. While there are currently no government regulations when it comes to voicemail, it doesn't mean it is not susceptible to hacking. Apart from unified communications, voicemail is still a very important communication tool in any business, not to mention medical, government and financial institutions. Organization A implements voice biometrics in its voicemail system, ensuring that emails accessed through voicemail have the same level of security as when accessed through an email client.

- Consumer Y has previously set up his voice biometrics secured account through his bank. He knows that unless he is prompted to authenticate himself when accessing bank services he should never give out any personal account information.

- Business Traveler Z activates her laptop softphone, accessing the office PBX which recognizes her and sends her a challenge question. She successfully authenticates, and she begins making secured calls. While the sniffer still sees her credentials, he has no way of mimicking her voice and cannot gain access to the PBX.

When implementing a voice biometric solution, an organization should examine the rates of False Rejection (FRR) where an individual is not recognized and is therefore unable to gain access to the service, and the extremely critical False Acceptance (FAR) where the wrong person is authenticated and gains access. Other items to examine include scheduling capabilities that enable administrators to set time/date parameters for usage of the system, the capacity for real time security breech alerts and usage reports, as well as the ease of integration with the current voicemail solution, including integrating with speech recognition for completely hands-free access.

Voice biometrics does not have to replace other security mechanisms such as caller ID and pin codes for accessing voice services. It does, however, add an additional layer that helps to patch this security hole.

Yaniv Livneh is the CEO of T3 Telecom Software. (news - alert) For more information, visit the company online at http://www.myt3.com.

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By William B. Wilhelm, Jr.

Eighth Circuit Preempts State Utility Regulation —

Outlook Remains Unclear for Fixed VoIP Regulation and State Universal Service Contributions

In late March 2007, the Eighth Circuit Court of Appeals issued an opinion denying the petitions for review of the FCC's Order that preempted certain state regulations regarding Vonage's VoIP services in Minnesota PUC v. FCC. The Court upheld the order in its entirety. The outcome of this case has serious impacts on the future of state regulation for both "nomadic" and fixed VoIP providers.

The five primary issues raised in the consolidated petitions were whether the Vonage Order was arbitrary and capricious because it: (1) failed to make a threshold determination about whether VoIP services were "information services" or "telecommunications services;" (2) determined it is impractical or impossible to separate the intrastate components of VoIP service from its interstate components; (3) determined state regulation of VoIP service conflicts with federal regulatory policies; (4) preempted emergency 911 telephone service requirements; and (5) whether the Vonage Order arbitrarily preempted "fixed" VoIP services offered by cable television companies, even though the intrastate components of such service can more easily be separated from the interstate components of such services.

In upholding the FCC's preemption decision, the Court first found that it was "sensible" for the FCC to defer its consideration of whether VoIP services are "information" or "telecommunications" services under the Act

Next, the Court considered whether the FCC properly applied the "impossibility exception," which allows the FCC to preempt state regulation of a service if it is not possible to separate interstate from intrastate components, and if federal regulation is necessary to further valid federal regulatory objectives. In upholding the FCC's decision, the Court found it proper that the agency considered the economic burden of identifying the geographic endpoints of VoIP communications in determining whether providers could separate the service into its interstate and intrastate components. Significantly the Court noted that "Service providers are not required to develop a mechanism for distinguishing between interstate and intrastate communications merely to provide state commissions with an intrastate communication they can then regulate." The Court further held that the FCC's VoIP E911 Order does not provide a basis for concluding the Vonage Order is arbitrary and capricious, because the VoIP E911 Order similarly recognizes the practical difficulties of accurately determining the geographic location of VoIP customers when they place a call. The Court , however, took solace in the fact that the FCC recognized the limits of the Order's preemptive effect in the Universal Service Order where the FCC noted that VoIP providers that could track the jurisdictional confines of calls "would no longer qualify for the preemptive effects" of the Vonage Order.

The Court also determined that the FCC's conclusions regarding the conflicts between state regulation and federal policy deserve "weight." Specifically, the Court found that competition and deregulation are valid federal interests the FCC may protect through preemption of state regulation, and the FCC's determination that state regulation of VoIP service would interfere with these federal rules and policies was reasonable.

The Court next rejected Minnesota's argument that the FCC arbitrarily or capriciously preempted Minnesota's 911 requirements, where Minnesota argued that the FCC's subsequent VoIP E911 Order indicates Vonage could have complied with the sate's 911 entry requirement. The Court first rejected this argument because Minnesota did not raise the issue before the FCC and thus was barred from raising it first with the Court. Further, the Court noted that there is no guarantee Minnesota would accept as sufficient for its purposes the different requirements imposed upon VoIP providers under the FCC's VoIP E911 Order, based on the differences in state laws and regulations governing 911 services, agreed with the FCC that national rules for VoIP 911 were needed given the nomadic nature of such services.

Finally, noting that the FCC's Vonage (quote - news - alert) Order states "to the extent other entities, such as cable companies, provide VoIP services, we would preempt state regulation to an extent comparable to what we have done in this Order," the Court determined that the Vonage Order only addresses services having basic characteristics similar to Vonage's, and does not specifically address fixed VoIP service providers. As such, the Court found that the language in the Vonage Order is, at most, a prediction of what the FCC might do if faced with the issue of fixed VoIP service providers, particularly cable based services. Again, the Court took comfort in the language from the FCC's Universal Service Order stating that the Vonage Order's preemptive effects would not be available to providers that can track the geographic endpoints of their customers' calls. The Court concluded that the New York PSC's challenge was therefore not ripe for review until the FCC actually addresses that precise issue.

In sum, the Court found that the FCC reasonably considered the technical and legal aspects concerning the regulation of Vonage's VoIP service, that the Vonage Order was therefore not arbitrary or capricious, and reasonably preempted state VoIP regulation. The Court also found unripe the New York PSC's argument that the Vonage Order is overbroad as applied to "fixed" VoIP services.

Unless appealed, the decision upholds the FCC's clear ruling that Vonage's nomadic VoIP service is not subject to state PUC regulation. Fixed VoIP services, however, are not subject to the FCC's Vonage order and, accordingly, they may become the subject of attempts by State PUCs to regulate such services notwithstanding the alternative preemption arguments that these companies may have.

William B. Wilhelm is a Partner in the law firm of Bingham McCutchen. The preceding represents the views of the author only and does not necessarily represent the views of Bingham McCutchen or its clients.

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Fixed/Mobile Convergence Technology and Markets

By Michael Stanford

Most VoWLAN phones sold today are WiFi only rather than cell phones with WiFi radios. But analysts are unanimous in expecting over 100 million cell phones sold in 2010 to have WiFi built in, outselling WiFi-only phones by about an order of magnitude. There is also a consensus among analysts that WiFi's primary use in cell phones will be for VoIP. These phones will fall into two categories: low end phones and smart phones.

Whereas the technical challenges of VoWLAN have been substantially solved, VoWLAN cell phones still present usability challenges to customers and business challenges to Mobile Network Operators (MNOs) and cell phone manufacturers (OEMs). I will look at the usability challenges in a later column.

In the USA, wired Internet access is all-you-can eat; once you have Internet service, all peer-to-peer applications, including voice, are effectively free. This sounds great to you and me, but it is a nightmare to service providers who derive most of their revenues from voice service. Of course you do pay extra for some types of Voice over IP, like Vonage, and some types of WiFi are billed as a service, like hot-spots. These don't fall into the category of nightmare to the MNO. And MNOs wouldn't see VoWiFi as a nightmare if they could bill for it. In that case it would be attractive, because the WiFi would offload the cellular network, enabling more capacity without expensive build-out, and it would improve coverage in residential areas, which currently is often poor. MNOs have two candidate technologies for charging for VoWiFi: UMA (Unlicensed Mobile Access) and IMS-SIP (IP Multimedia Subsystem - Session Initiation Protocol). UMA is the short-term solution, because it tunnels regular GSM signaling and voice through the Internet. IMS is the long term solution because it adds to the Internet a mechanism for each packet to be tracked and potentially billed.

...low-end phones will do WiFi voice with UMA or IMS, and users will be billed for it.

But what about applications like Skype? And what about corporations that decide to peer or federate their IP PBXs so that calls between them don't pass through a voice service provider; what about enterprise mobility controller solutions that tunnel voice over VPN connections to employees worldwide? None of these are billable by UMA or IMS. These applications are a natural result of seeing the phone as a tiny PC, a platform on which you can load any application, and which you can connect to the Internet with whatever NIC happens to be convenient (USB, WiFi, HSPA, WiMAX or whatever).

This is where the distinction between low-end phones and smart phones comes in. The low-end phones will do WiFi voice with UMA or IMS, and users will be billed for it. This will also happen with smart phones, but smart phones can potentially also have the option for WiFi voice that is not billed by the MNO.

MNOs tend not to like this kind of open platform phone - why would they, when it has the potential to erode their revenues? But phone manufacturers don't have the same aversion. For example, Nokia is eager to promote the idea of the phone as a substitute for the computer, with two product lines: the Nseries, positioned as a consumer-grade multimedia computer and the Eseries, positioned as a business-grade device.

So users and OEMs like open-platform smart phones with WiFi connectivity, and MNOs are suspicious of them. In a world where handsets are subsidized by MNOs, and increasingly branded by them, the MNOs have the whip hand over the OEMs. As a result, it's conceivable that open-platform smart phones will continue to be a niche. For example, look at Apple, who one might expect to champion the open platform model. Although it runs a version of OSX, the iPhone is not an open platform.

Steve Jobs' excuse for this, "Cingular doesn't want to see their West Coast network go down because some application messed up," echoes a disingenuous rationale advanced by some service providers. Bugs in client protocol stacks have caused cellular network outages in the past, but those bugs were in network-layer software in closed phones so this argument is irrelevant to an application ban. Modern networks are designed to withstand attacks far more sinister than an application messing up. If Cingular's didn't fall into that category it would be going down no matter what restrictions they put on their phones, especially since they are eager to connect increasing numbers of wide-open PCs with HSDPA cards.

MNOs are not the only service providers in this game. VoIP (define - news - alert) has already brought MSOs (Multi-Service Operators, aka cable companies) into the voice service game, and they will most likely make some kind of MVNO (Mobile Virtual Network Operator) move to turn their "triple play" into a "quadruple play." And there are other MVNOs focused exclusively on FMC, notably Sotto, which sees Enterprise FMC as a more attractive opportunity than consumer FMC.

Michael Stanford has been an entrepreneur and strategist in Voice-over-IP for over a decade. In his current consulting practice, Michael specializes in VoIP wireless networks, both WiFi and WiMAX. You can reach him at michael@stanford.cc

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Continuity Planning 101: A Continuing Educational Series

Have You Done Everything Possible to Protect Your Organization?

By Rich Tehrani & Max Schroeder

The recent heartbreaking events at Virginia Tech emphasize that disaster and tragedy can happen at any time with surprising suddenness. In the aftermath, many journalists and politicians were questioning the judgment of university officials and law enforcement officers. For those of you who have been following this column and the activities of the Disaster Preparedness Communications Forum, you already understand that we have never advocated this approach. Candidly, it serves little purpose other than to detract from people and institutions that were only trying to do their best under very difficult circumstances. To quote an old Native American proverb: "Don't judge any man until you have walked two moons in his moccasins."

A key area of discussion was the communications infrastructure in place at Virginia Tech. Many alternative suggestions were offered by the TV commentators such as sirens, text messaging, automated phone calls (cell and landline), email, fax and other messaging formats. Every type of messaging has distinct advantages and disadvantages depending on the circumstances. Emails are great if you have your PC or a Blackberry type device with active communications available. Even brief messages can be more descriptive than siren signaling, for example. Cell phones and text messages are also good choices unless you have a major event that overloads the circuits (i.e., September 11, 2001 in NYC). So what are the best choices? The most obvious suggestion is the catch-all answer displayed on most multiple-choice school exams — All of the above.

One method of implementing a multiple choice solution is to employ a hosted or managed service solution. Software as a Service (SaaS) was part of the DPCF Continuity and Disaster Workshop conducted this past January at the IT Conference an Expo in Ft. Lauderdale. These types of services have the dual benefit of proven performance combined with quick deployment.

As covered in the Raleigh-area *News and Observer* on March 20th 2007 (http://www.newsobserver.com/104/story/555490.html), Saf-T-Net (STN) saw customer inquiries double after it was mentioned in The *Wall Street Journal*. Although the focus of the article was about parents irritated by the automatic calling systems that schools use to announce everything from grades to cancellations, Saf-T-Net got a boost due to the mention that its system "has built-in safeguards. . . to cut down on message mistakes." This is certainly a valuable feature in disaster situations. STN has its headquarters in Raleigh, NC and regional offices in Massachusetts, Missouri, Texas, Ohio and California. STN began operations in 1996 offering small business recovery planning and received a lot of local attention in 2002 when it handled numerous simultaneous outages caused by a major ice storm hitting North Carolina. In 2003, it became one of the first ASP operations to address rapid communications services for schools.

Although STN was one of the earlier companies to address the school communications market and has proven their reliability, they are definitely not alone. U.S. (news - alert) Netcom Corporation (http://www.usnetcomcorp.com) located in Joplin, MO, offers several choices for school systems including customer premise solutions, ASP services and a hybrid of both. The hybrid offers the economy of an in-house system combined with the high volume capabilities that may be required in a true emergency situation.

Additional resources available:

http://www.omnilert.com — (news - alert) Offers delivery of messages to mobile phones (SMS), email, web pages, RSS, and other communications services for schools, governments, corporations plus sports and special events. http://www.e2campus.com/ is the Omnilert, LLC service designed for colleges, universities, private and vocational schools. With one click you can instantly notify your entire campus community via Mobile Phone (SMS Text Message), Email, Web Site and Personal Portal, Wireless PDA, RSS and Digital Signage. http://www.amerilert.com/notification_services.htm is the specialized service for large organizations charged with managing alerts for their employees, partners, and customers.

http://www.messageone.com — (news - alert) With a customer base of 1,000, MessageOne stakes their claim as the leading provider of managed services for disaster recovery, business continuity, and email management. Their AlertFind service provides two-way emergency communication via phone, fax, pager, email, and text messaging.

http://www.healthinschools.org/sh/emerg.asp — The Center for Health and Health Care in Schools (CHHCS) is a nonpartisan policy and program resource center located at The George Washington University School of Public Health and Health Services. Their site includes a lot of valuable information including a guide for emergency preparedness.

http://www.schoolsecurity.org/training/school-security.html — National School Safety and Security services is a Cleveland (Ohio)-based, private, independent consulting corporation which is not product-affiliated. They specialize in school security and related school safety consulting for K-12 schools plus law enforcement, and other youth safety providers.

Max Schroeder is a board member of the ECA, media relations committee chairman, and liaison to TMC. He is also the Sr. Vice President of FaxCore, Inc. (news - alert)

Rich Tehrani is the President and Group Editor-in-Chief at TMC and is Conference Chairman of Internet Telephony Conference & EXPO.

If your organization has an interest in participating in the TMC/ECA Disaster Preparedness Communications Forum, please contact maxschroeder@tmcnet.com or rtehrani@tmcnet.com.

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Adopting MicroTCA into the Wireless Space

By Jeff Hudgins

On July 6, 2006, the MicroTCATM PICMG® Specification MTCA.0 R1.0 was adopted. Over the last year many of the architecture building blocks have been released and the entire MicroTCA ecosystem is taking shape. The purpose of the MicroTCA specification is to allow solution providers a lower cost alternative to ATCA platforms for non-core applications.

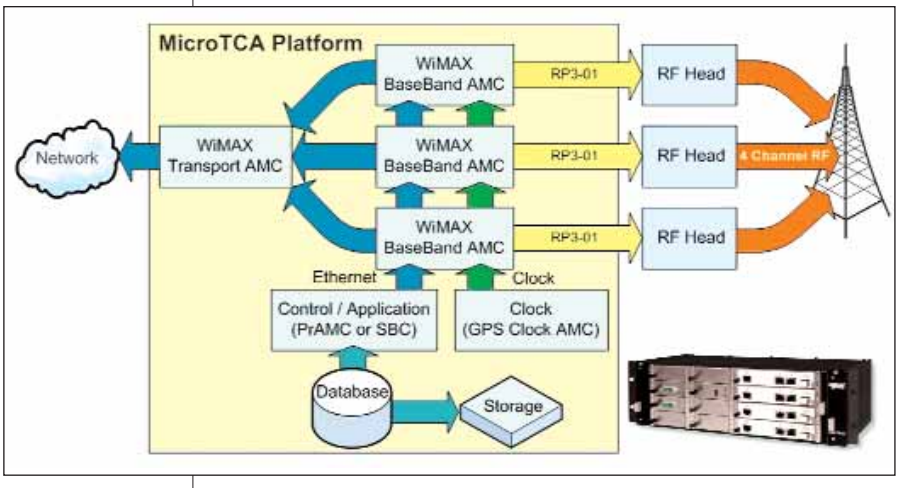
The wireless space is in perfect position to reap the benefits of the MicroTCA architecture; while conversely, MicroTCA needs the type of production velocity that this vertical offers.

Wireless technologies that can leverage MicroTCA

Considering the four distinct wireless technologies of CDMA, GSM/UMTS, WiMAX, and UMA, it seems that the IEEE 802.16-2005 Mobile WiMAX (Worldwide Interoperability for Microwave Access) is positioned the best to leverage the MicroTCA architecture. The WiMAX network promises meaningful increases in bandwidth at a lower total cost than what is currently expected in other networks and will open the door for new application markets to wireless service providers. For example, Sprint (S) plans to use Mobile WiMAX to enable device-dependent applications that connect to phones, Personal Digital Assistants (PDAs), and laptops. Both Nokia (NOK) and Motorola (MOT) expect to start selling mobile devices using WiMAX Internet technology in early 2008.

Figure 1 represents a 3-sector WiMAX base station configured in a single 3U MicroTCA platform. In this example, we have three baseband and one transport double wide AMC modules configured into a ten slot enclosure. The system also contains two Micro Controller Hubs (MCH) for switch and clocking, redundant power supplies, one processor AMC, and a storage AMC.

With respect to the WiMAX network, the two important advantages that MicroTCA offers are lower system cost and AMC flexibility. Each of the AMC slots will typically require less than 80 Watts which puts less power and cooling design burdens on the platform, thus resulting in lower production costs. Additionally, the AMC base specification allows board designers a consistent design guide to work from ensuring interoperability.



Challenges

The introduction of MicroTCA into the wireless network will not come without challenges. We can categorize these challenges into three main areas:

- Payload slots per system
- Clocking synchronization
- Backplane topology definition

First let's look at the amount of payload slots required. According to Laurie Burger, Product Management Director Pentair/Schroff … "The biggest issue so far is the battle over the number of payload slots in the smaller form factor MicroTCA systems. By the time you add in MCHs, power supplies, and then processor boards - there is a major issue over having enough space for the payload AMCs. Right now the MCHs and the power supplies are consuming more space than anticipated."

Another challenge has come in the ambiguous clocking definitions in the MicroTCA specification itself. The WiMAX blades require two clock sources, usually derived from GPS signals to synchronize. The current specification does not allow for two different clock sources to work with redundancy. This gap requires designers to add cost to the MCH and back plane to ensure proper clocking for the modules.

Lastly, the AMC port/lane mappings are well defined in the PICMG® specifications; however, the back plane topology must be designed in such a way that they will accommodate the AMC mappings. The inherent small form factor coupled with these customized back planes will drive up the cost on the entire solution.

Final Score

In the end, MicroTCA will be a winner in the wireless network, if the production take rate is sufficient to overcome some of the architectural challenges.

Jeff Hudgins is VP of Engineering at Alliance Systems. (news - alert) For more information, visit the company online at http://www.alliancesystems.com.

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APPRO: From Slimline to HyperXtreme

By Richard "Zippy" Grigonis

Although it was founded in Milpitas California by Daniel Kim "way back" in 1991, Yours Truly first noticed Appro International (http://www.Appro.com) and the fine computing hardware they produced in the late 1990s, back in my days as Chief Technical Editor for the now-defunct *Computer Telephony* magazine. Specifically, I was walking around CT Expo 1999 in Los Angeles when I came across the best-designed 2U (3.5-inch) high, 19-inch wide rackmount "pizza box" I had ever seen. It was Appro's then-new Slimline series of computing platforms.

Appro's (news - alert) VP of Marketing of that era, Andrew Oh, then showed me the newest 2U model that was his favorite: The Model #APRE-2002HX-6, a 2U rackmount with a depth of 26 inches, so it could hold a full-size ATX motherboard. It came standard with Appro's 400 Watt redundant hot-swap power supplies. It even had room for four drive bays, two of which held SCA LVD SCSI hard drive housings, complete with a hot-swap backplane and metal carriers. Two riser cards provided expansion capability for two full-length PCI cards. The unit had two rather secure-looking "barn doors" that could lock the unit up. It was quite impressive machine, even by today's standards.

Appro's little 1U HyperServers have maintained the "quality pizza box" tradition that I first saw back in the 1990s.

Indeed, I bestowed upon Appro a 1999 Product of the Year award for their Slimlines, for of all the 2U boxes on the market, Appro's appeared to have the finest craftsmanship and they had devoted considerable thought to positioning components within the "pizza box" form factor. The Slimlines were in sharp contrast to Appro's 7000HT Monolith which, as its name implies, was a hefty fault resilient rackmount that could hold 8, 14, 19 and 20 slot PCI/ISA passive backplanes, as well as 6 accessible 5.25-inch and 2 internal 3.5-inch drives. You could use split backplanes (thus dividing the box into up to 4 systems) or even AT or ATX motherboards. Appro was also noted at the time for its Intelligent Temperature Monitoring System (ITMS) that provided system status on system temperature, cooling fan, and power supplies via the RS-232 cable connected to a HyperText Terminal.

Today, Appro offers four categories of high performance equipment:

- AMD and Intel-based blade clusters ("HyperBlades") yielding supercomputer performance for any immense database or application server.
- Server products, from density-optimized multi-purpose servers to Blades for high-density clustering solutions (such as the 2U and 4U XtremeServers, and the 1U HyperServers)
- High performance workstations for compute-intensive applications.
- High reliability storage products (such as the 3U, 15-bay Appro AR 3015). Appro has partnered with Terrascale Technologies to offer turnkey server and clustered storage solutions.

Appro's little 1U HyperServers have maintained the "quality pizza box" tradition that I first saw back in the 1990s. Now, however, the pepperoni is spinning at warp speed, thanks to support for the Dual-Core Intel Xeon® processor 3000 and 5100 series and the new Quad-Core Intel Xeon processor 5300 series, thus bringing the immense power (3 times the memory bandwidth and 4 times the capacity) of multi-core processing to enterprise applications. Appro's 1U Dual Socket HyperServer cluster nodes may appear diminutive, but a 2-processor, Quad-Core machine yields 8 cores, processing so much data that it can keep busy a 10 Gbps dual-port Mellanox PCIe (PCI Express) InfiniBand Adapter running Platform Computing's Open Cluster Stack. (Note: The Platform Open Cluster Stack, or OCS, is an open source, standards-based cluster software stack designed to help administrators efficiently deploy and manage high-performance Linux-based computing clusters. It's related to the San Diego Supercomputer Center Cluster Toolkit for building stable, manageable, and scalable clusters.)

Appro HyperBlade servers also support the Intel Xeon processor 3000 series. These servers, targeted for HPC (High Performance Computing) environments, also offer two boards per chassis, which nearly cuts the chassis and rack infrastructure cost by 50%. The two socket HyperBlade server solution features one PCIe x8 slot enabling added I/O such as GbE (Gigabit Ethernet), InfiniBand, and SAS RAID cards with 4 DIMM slots (maximum 8 GB) of DDR2 533/667 MHz memory.

I guess the old adage is true that the more things change, the more they stay the same.

Richard Grigonis is the Executive Editor of TMC's IP Communications Group. He has written about embedded computing, fault tolerant and "fault resilient" computing (a term he coined) for telecom since 1994.

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Featuring:

Stratus Technologies' Ali Kafel

Rich Tehrani's Executive Suite is a monthly feature in which leading executives in the VoIP and IP Communications industry discuss their company's latest developments with TMC president Rich Tehrani, as well as providing analysis on industry news and trends.

Ali Kafel
vice president
Stratus

While the services businesses provider customers evolve over time, and as the underlying technologies they use to deliver those services also evolve, one thing that does not change is the need for reliable, robust network equipment. After all, should a company's critical network-based applications go down - whether by design or mishap - the effects can have a resounding negative impact on the business. Therefore, it is imperative they ensure the reliability and continuous availability of their servers.

Stratus Technologies (news - alert) helps businesses address this need for uptime and reliability with its fault-tolerant server line - including eight of the world's top ten banks and 14 of the top 20 telecom service providers. Having been in the business for more than a quarter century, and having recently increased its market reach with the acquisition of Emergent Network Solutions, Stratus has seen the communications space evolve and mature over that span and has a good vantage point for surveying market needs now and going forward.

Rich recently had the pleasure to speak with Ali Kafel, Stratus' vice president of telecommunications about how Stratus has changed over the years with the communications industry, and how it is approaching the market today.

RT: You were with Stratus through most of the 1990s, then rejoined them in 2003. How has the company changed?

AK: In some ways, it has changed; in other ways, it hasn't. What hasn't changed is Stratus' singular focus on providing products and services that require continuous availability. In telecom, we still have among the industry's best and most reliable fault-tolerant servers, only now they are Xeon processor-based and support Red Hat Linux and Windows. Also, our customer orientation has always been to provide solutions. The types of solutions Stratus now provides represent the biggest change. Today's solutions are targeted at protocol conversion, service mediation, NGN, and VoIP, while being IMS compatible. They have much greater software content and less hardware. We also have solutions for Tier 2 and Tier 3 service providers, in addition to our traditional Tier 1 Telecom Equipment Manufacturers (TEMs) and carriers. Today, emerging carriers and IP service providers are very willing to evaluate and buy from non-TEMs, and they tend to act quickly.

RT: Stratus is more than a telco company. Do the other units of Stratus provide your business with any advantages?

AK: Telecommunications is one of three strategic business units. The others are continuously available server technology, and Solution Services for end-to-end IT infrastructure. As I mentioned, technology for continuous availability is at the heart of what we do. Telecom and our enterprise business share the same common hardware architecture, which we then tailor for the performance demands of either market - NEBS compliance, DC power, etc. So, engineering and R&D investments are spread across a larger base. Customers increasingly want professional services, too, to improve the resiliency and continuity of operations. So, yes, combining our telecom business with our platform and solution services units allows us to offer one-stop shopping for customers who want to deal with a single vendor.

RT: You acquired Emergent Network Solutions in August 2006. Describe Emergent and the rationale for purchasing it?

AK: In just five years, Emergent built an impressive portfolio of carrier-grade IP-based telephony solutions for VoIP, multimedia and session control, a multi-national distribution network, and a worldwide installed base of about 130 customers. Emergent's CEO Nathan Franzmeier (now Stratus' vice president of emerging network solutions) had an outstanding engineering team - real problem solvers. As you know, Stratus' strengths centered more on traditional SS7 and Intelligent Network (IN) solutions for Tier 1 service providers. Emergent's focus on VoIP/IMS and Tiers 2 and 3 was completely complementary to Stratus and gave us access to a very hot and growing market. Stratus provided Emergent with a well-developed infrastructure, a global reputation and resources to help it grow more quickly and broadly. With regards to your previous question, our large enterprise computing customers will also be fertile ground for bundled VoIP solutions.

RT: Describe Stratus' telecom market strategy today, as it relates to FMC, VoIP, and IMS.

AK: At a high level, our strategy is to provide innovative and highly reliable convergence solutions that leverage existing services, where possible, and reduce time to market and complexity. Coupling our SS7/IN experience with our newly acquired IP communications experience is key to delivering next generation integrated voice, video, and data applications.

Three years ago, we thought the FMC market was ready to pop. We were readying SIP-based products, like our mobile call

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convergence offering. In hindsight, we see that FMC is joined at the hip with advancements in handsets, which, for FMC, have been excruciatingly slow in coming. So instead of fixed/mobile convergence, some vendors today offer fixed/mobile "substitution" with UMA, which is a poor substitute for the promise of FMC for both carriers and subscribers.

For IMS, Stratus is focused on some elements of the service and control planes rather than development of the complete suite. Consequently, we have developed products for IM-SSF, SCIM, AS, and CSCF elements. These are the evolution of our IP telephony products deployed by 100 customers. These include Softswitches (Class 4 and 5), Session Border Controllers, and various other IP telephony elements. Working with the right partners allows each of us to focus on what we can be the best at.

RT: What is the role of partners in that strategy?

AK: Partners are fundamental to our business strategy, both as technology providers and channels. As I mentioned before, we do not intend to develop the complete suite of IMS products. We focus on what we are best at, leveraging partners to supply us with complementary products or become resellers for our products. We do sell direct to carriers like Verizon and AT&T, but a majority of Tier 1 sales go through resellers, system integrators like ATOS Origin, and TEM partners like Nortel or Alcatel-Lucent. The Emergent acquisition added some 30 more Tier 2 and 3 sales partners. At times, we will find ourselves as the prime contractor on a project, subbing out to partners for particular skill sets; at other times we'll be the subcontractor on a project. Essentially, when a solution is needed, Stratus either has the resources or will pull together partner resources to do the job with excellence.

RT: So, why does a service provider or TEM come to Stratus today?

AK: Compelling technology and ability to deliver. Stratus was a pioneer in softswitch development, even before the term was defined. A good example today is our Inter-Network Services Signaling Gateway (ISSG), a network component that links together combinations of legacy and next generation networks into a cost effective pool of shared services. ISSG will, for example, allow a CDMA service to run in a GSM network, or an IN service to work in a SIP environment saving expense and time in deploying revenue generating services.

Our size, global reach, and agility also appeal to the large switch vendors. They can look to Stratus to develop products or services that would take them too long to create, or that they'd prefer not to divert internal resources to. We are not a one-product company like many others; we have a robust portfolio for IMS-based technology and VoIP that lets us fill development gaps the big companies often have.

RT: You have a lot of market touch points… Tier 1, Tier 2, and Tier 3 providers, enterprise telephony, VoIP, legacy, software stacks, hardware. Who is your ideal customer?

AK: We are completing a project now for a cable operator in Latin America that has all the makings of an ideal customer - not because it's a cable operator, but because of what Stratus is uniquely qualified to do for them. Deregulation is allowing this operator to become an ISP and VoIP services provider. We won the business because of the combination products, technologies and services we could bring to the party… field-proven fault-tolerant servers, professional services for solution design and implementation, VoIP, and an excellent track record. So, the ideal customer is a service provider who needs to offer new telephony services over an IP network, but also needs to interconnect to existing networks and do it fast and with high reliability. Or an equipment vendor, like an Ericsson, Nortel, or Alcatel-Lucent, who is the prime contractor for a customer solution and needs the best of breed product for a Session Border Controller (SBC), Protocol Conversion (IM-SSF) or Service Mediation (SCIM).

RT: Who are your competitors? What advantages do you have over them?

AK: I'm hard pressed to name firms who compete in our space as a solutions provider. As a telco product provider, however, there is any number of point product companies with a piece of a solution. Many tend to be smaller, relatively new companies. Others, such as Acme Packet and NexTone, are a bit more mature. Stratus, on the other hand, is truly a global company, with network products used by 14 out of 20 of the world's largest telcos. The switch vendors view Stratus as a true partner; when they are fighting for business, they know we're fighting right alongside to help them win.

RT: What are the biggest hurdles in the industry's drive to full IMS deployment?

AK: Two things come to mind. First, the standards are not fully developed, and many are in draft form. That means there is ambiguity and uncertainty, which is not a healthy environment to drive investment. Second, the industry lacks compelling services to deploy. FMC could be compelling enough for a carrier to actually deploy IMS because of the applications. But, as we discussed, FMC is lagging, too. The industry was in much the same pickle ten years ago, feeling the pressure to deploy softswitches, regardless of a dearth of killer apps. The industry is subjecting itself to the same pressures today.

RT: How does Stratus help customers clear those hurdles?

AK: We really help our customers to contend with the realities of today without mortgaging the future. Our mission is to provide carriers with revenue-generating IMS-ready applications today. These include multi-device FMC, virtual office, video-enabled communications, user-defined call routing and many more. These applications help our customer protect their existing subscriber base and attract new ones, while also increasing ARPU. And we help the Tier 2 and 3 customers crack new markets with new services. There is a great deal of energy and creativity is this part of the industry, and it's an exciting place to be.

RT: Anything more you want to add?

AK: Large companies and organizations will increasingly be deploying and managing their own telecom networks. As that happens, Stratus has a leg up on just about anyone else, given our long history serving both the enterprise and telecommunications markets. We are strongly positioned to go after this market opportunity, especially now that we have such a well-rounded product portfolio in the IP space backed by a broad spectrum of professional services. We may be going after that market with network services developed here and validated by using our own company as the test bed.

In-house IP PBX Selection Guide

The heavy adoption of VoIP among businesses of all sizes has created a surge in the development of IP Communications technology. New standards, new technologies, new applications, new features are all driving this trend, which extends from end user hardware to communications infrastructure, and everything in between.

This is particularly true in the case of IP PBX systems, as IP PBX vendors are enriching their platforms to provide the latest technologies and features, often making them difficult to differentiate. That said, they each have their benefits, and depending on the size of your business, its budget, and its requirements, there is an in-house solution that is likely to meet your needs.

The argument has been made that hosted solutions offer benefits not available with on-site solutions, and while that may be true to a degree, the same argument can be made for on-premises IP PBXs. Furthermore, the theory that you had to be a large enterprise in order to benefit from and be able to afford your own IP PBX no longer carries much weight, as solutions have been scaled down to meet the needs of the SMB market as well as the largest multinational corporations. Also, many IP PBX developers have simplified the installation and maintenance of their products to allow businesses without telephony and programming experts on-site to be able to deploy them. Some, in fact, are software-based solutions that require little investment in hardware other than a server.

So, while there are alternatives out there, businesses would be wise not to dismiss owning their own communications system simply because of past myths. Still, choosing the appropriate IP PBX is a crucial business decision, and one that will shape the face of your communications for years to come. We provide the following list of IP PBX vendors as a starting point for your decision making process, but urge you to do the appropriate research, starting with each company's website, as you seek to deploy the latest IP Communications solutions.

3Com http://www.3com.com	**Cisco** http://www.cisco.com	**Mitel** http://www.mitel.com	**SIP Foundry** http://www.sipfoundry.com
3CX http://www.3cx.com	**Citel** http://www.citel.com	**NEC** http://www.necunified.com	**Sphere** http://www.spherecom.com
AdTran http://www.adtran.com	**Dialexia** http://www.dialexia.com	**Nortel** http://www.nortel.com	**Switchvox** http://www.switchvox.com
Alcatel-Lucent http://www.alcatel.com	**D-Link** http://www.dlink.com	**Oracle** http://www.oracle.com	**Tadiran America** http://www.tadiranamerica.com
Allworx http://www.allworx.com	**Ericsson** http://www.ericsson.com	**Panasonic** http://www.panasonic.com	**TalkSwitch** http://www.talkswitch.com
AltiGen http://www.altigen.com	**FacetCorp** http://www.facetcorp.com	**Pandora Networks** http://www.pandoranetworks.com	**Taridium** http://www.taridium.com
Anta Systems http://www.antasystems.com	**Fonality** http://www.fonality.com	**Patton** http://www.patton.com	**Toshiba** http://www.toshiba.com
Asterisk http://www.asterisk.org	**Inter-Tel** http://www.inter-tel.com	**pbxnsip** http://www.pbxnsip.com	**Vertical** http://www.vertical.com
Avaya http://www.avaya.com	**Interactive Intelligence/Vonexus** http://www.inin.com	**PBXpress** http://www.pbxpress.com	**Whaleback Systems** http://www.whalebacksystems.com
AYC Telecom http://www.ayc-telecom.com	**IPBX Systems** http://www.ipbxs.com	**PingTel** http://www.pingtel.com	**Zultys** http://www.zultys.com
Aztech Systems http://www.aztech.com	**Iwatsu** http://www.iwatsu.com	**Samsung** http://www.samsung.com	
BlueNote http://www.bluenotenetworks.com	**Linksys** http://www.linksys.com	**ShoreTel** www.shoretel.com	
Brekeke http://www.brekeke.com	**MERA Systems** http://www.mera-systems.com	**Siemens** www.siemens.com	

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Whether you are a start up or an established company, a one-person business or an organization of 100 employees, a VoIP-hosted phone solution with a lower TCO, reduced complexity and more advanced communication features is the obvious and smart choice.

But, one size does NOT fit all! As such, TMCnet has joined together with one of the industry's leading IP communications service providers, 8x8, Inc., originator of Packet8 Internet Phone Service, to educate the business and residential communities on the advantages and efficiencies of VoIP-hosted phone service.

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Price: $999

pbxnsip's CS 410 IP PBX

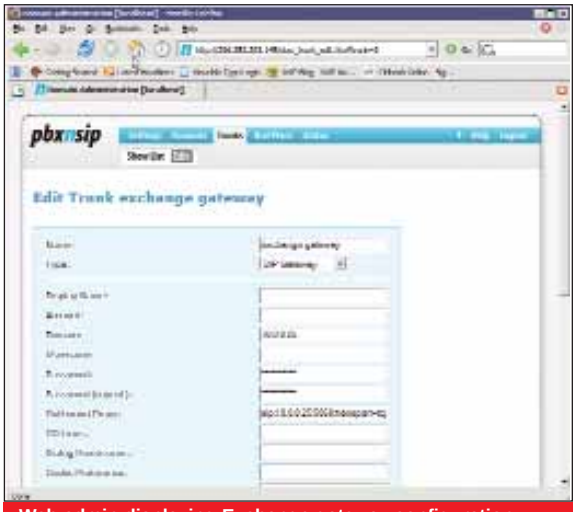
TMC Labs got an exclusive peek at pbxnsip's CS 410 IP PBX "all-in-one" appliance, which features a "mini" Session Border Controller (SBC), four built-in analog (FXO) PSTN ports, voicemail, and auto attendant, as well as support for up to ten SIP-based IP stations (hard phones, softphones) and supports up to ten simultaneous calls. The CS 410 actually includes all available features from the other pbxnsip PBX editions that run on Windows or Linux boxes. This includes standard features like voicemail, auto attendant or conferencing, but also advanced features like call barge in and call forking to cell phones. Like other pbxnsip versions, the CS 410 also supports advanced routing functions, such as paging groups, hunt groups, and agent groups.

The pbxnsip (news - alert) appliance reminds us of two other popular Linux-based IP PBX appliances in the VoIP industry, namely Digium's Asterisk Appliance and Fonality's trixbox appliance. Just comparing these two to the pbxnsip applicance on price alone, the trixbox appliance (4 FXO ports) is $1499, and the Asterisk Appliance (4 FXS, 2 FXO) is $2195, while the CS 410 comes in at just $999. Of course, each of the appliances has features the other two don't, so it really depends on what features you need. Even with the lowest cost, the CS 410 doesn't skimp on features and unlike the other two, it features integration with Microsoft Exchange Server 2007 UM.

Targeting small to mid-sized businesses (SMBs), the CS 410 is a solid-state appliance device with no moving parts, no fans, which results in very minimal heat to ensure long-term reliability of this phone system. In fact, we noticed very minimal heat when we touched the unit's plastic casing. TMC Labs took the CS 410 for a spin and were very impressed with its easy plug-and-play installation and easy-to-use web admin.

In lieu of a hard drive, the CS 410 appliance sports 256MB of Flash and 128MB of RAM running Debian Linux. This only gives you about one hour of voice mail storage, but you can easily get around this storage limit by leveraging Microsoft's Unified Messaging capabilities in Exchange 2007. The CS 410 can send all the voice mail to the Exchange 2007 Server. The CS 410 is unique in the industry in that it is the first IP PBX appliance to directly integrate with Microsoft Exchange Server 2007 leveraging SIP. The latest version of Microsoft's Exchange Server features built-in unified messaging capabilities, including voice mail storage/playback, text-to-speech reading of email/calendar, and more. Used in conjunction with each other, you can achieve a rich user experience. For example, we were able to dial into the CS 410 and then enter our extension, followed by * and then our PIN to log on to our personal mailbox. From that point, we could play back voicemail, but also email using text-to-speech (TTS). Similarly, we also had remote access to our calendar, which also leverages TTS.

We setup some Exchange 2007 extensions and configured the CS 410 (See Figure below) to transfer these extensions to the Exchange Server. We simply had to configure a new trunk on the CS 410, set the trunk to "SIP Gateway," and point the IP address to connect to the Exchange Server. On the CS 410, we also had to define a new dial plan for routing incoming calls to the Exchange Server's built-in SIP gateway, which would then accept the call and play the extension's outgoing message. On the Exchange Server side, we



Web admin displaying Exchange gateway configuration

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also had to create a new dial plan and configure the new Unified Messaging IP gateway (the CS 410's IP address or FQDN). Finally, we had to activate Unified Messaging for each Exchange mailbox and assign an extension number and a PIN. Voila! We now had fully integrated unified messaging for each of the CS 410 extensions we created.

Some other nice features of the CS 410 include paging and music on hold audio connectors. In fact, the system can also send RTP multicast traffic and use multicast-enabled devices for office audio paging. (This is actually in the new snom 370 IP phone.) Another security-related feature is full support for TLS and SRTP to secure the voice. pbxnsip mentioned to TMC Labs that it is thinking about adding a built-in firewall/router to support TOS tagging to ensure QoS for time-sensitive voice packets. Since the unit runs on Linux, pbxnsip says it shouldn't be difficult to add that functionality. The CS 410 also supports a built-in conference bridge, which is great for SMBs looking to save money by avoiding paid hosted conferencing services.

Another feature worth noting is the agent waiting queues. You can record up to ten announcements and have the music on hold mix in these announcements. The queues also feature agent recovery time, call pickup from queue, call escalation, day/night mode, holidays, and Web-based queue status display.

Other features:

- Plug and Play of popular IP phones including Polycom, snom, Aastra, and Cisco/Linksys
- Web admin as well as SSH access
- SNMP support
- Voicemail triggers call to cell phone
- ENUM
- DID
- Dial by name
- Message Waiting Indication (MWI) support
- Call park, call pickup, call retrieve
- Last call return, redial
- Caller ID blocking
- CDR export through SOAP interface
- Call Supervision: Call barge in, Training mode, Listen in

Conclusion

We really liked the Exchange 2007 voice mail integration. Even without Exchange Server 2007 integration, you can still have the system send you voice mail notification via email. We liked how this appliance integrates the analog telephone lines within the appliance without the need for a separate PC with telephony cards or a separate PSTN gateway. The dial plans are especially powerful and easy to configure. The dial plans allow SMBs to take advantage of VoIP's low per-minute costs, while also giving SMBs the option to utilize their existing phone lines. For instance, local calls can be terminated through the FXO lines while international calls can be sent to an ITSP using VoIP. It's important to note that it has built-in session border controller functionality for connecting with remote offices. The CS 410 which supports ten IP endpoints can also be easily upgraded to a CS 425 (simply by changing the license key), which supports 25 registrations and 15 concurrent calls. Overall, TMC Labs was quite impressed with pbxnsip's CS 410, which was easy to configure, a breeze to administer, and sports more features than IP PBXs that cost four times as much.

RATINGS (0-5)
Installation: 5
Documentation: 4.5
Features: 4.75
GUI: 4.75
Overall: A

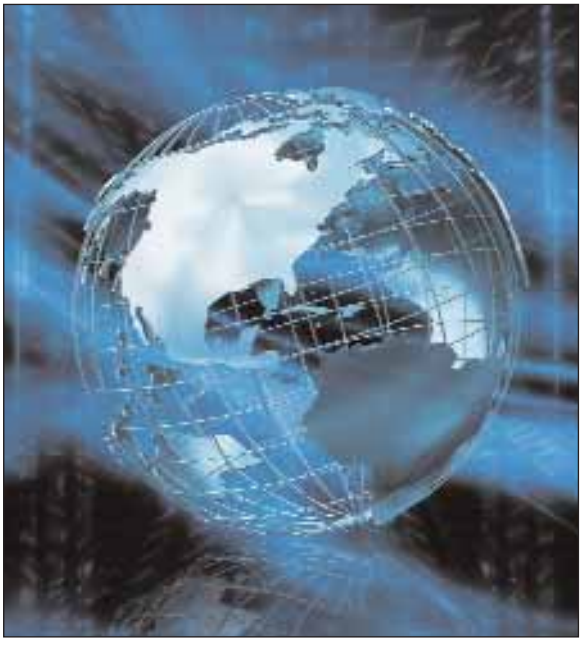
Hosted Services — A Logical Choice for Business

By Richard "Zippy" Grigonis

Arizona-based Inter-Tel (news - alert) (http://www.inter-tel.com), which recently announced its intention to merge with Mitel Networks Corp., (news - alert) has long been known worldwide for its advanced, innovative communications hardware and software for business. It started over two decades ago with its IMX PBX line and progressed to its Axxess open computer telephony integration platform; in recent years the enterprise-scale, SIP-based Inter-Tel® 7000 that, along with its embedded presence management features, has impressed major corporations worldwide.

Now, Inter-Tel transforms the small-and-medium business (SMB) world with its remarkable new Inter-Tel® 5000 Network Communications Solution, a state-of-the-art system capable of serving both new and existing Inter-Tel customers.

Inter-Tel's Director of Product Marketing, Aron Aicard, says, "We consider the Inter-Tel 5000 a mid-range system, but we target environments as low as 25 users and up to 500 users per site. The Inter-Tel 5000 has a distributed architecture so the customer's size could be as large as a retail chain operation, where you encounter dozens of facilities with thousands of users that need to be tied together. However, our target is the SMB market - a few hundred users and less, usually per company and per site."



Backward Compatibility

According to Aicard, the Inter-Tel 5000 Series is compatible with earlier Axxess systems. He lists several reasons why this is important: First, it helps Inter-Tel migrate its existing customer base forward into newer architectures and platforms and, more importantly, new applications. Second, it's also valuable for new customers who have a need for what Aicard calls large legacy-type architecture systems. Many companies out there still need to support a high number of digital or even analog phone sets. For example, universities don't want to install high-end digital phones into a dorm room, so there are still a lot of analog deployments going on. Inter-Tel can go into a site with a mixed environment, because it can achieve seamless connectivity between Axxess and Inter-Tel 5000 systems. Multiple Inter-Tel 5000 platforms can be stacked next to each other in a seamless manner thanks to the distributed architecture. The same can be done with Axxess, because both the 5000 and Axxess platforms share a common networking protocol. Once again, this is completely seamless to users, who can blend both new and legacy technology. This is a powerful concept that has opened many doors for Inter-Tel.

Inter-Tel's basic platform consists of three building blocks: a core system, endpoints and applications.

"The Inter-Tel 5000 series is a platform designed to serve a wide range of needs in the SMB," says Aicard. "The platform itself is a compact, 1U (1.75-inch) high server, along with the endpoints, as is the case with a typical phone system. But what really makes the platform unique is how we go to market and how we deliver advanced applications to literally change the way that businesses do business on a day-to-day basis."

It's All About Applications

"We like to refer to our platform as the Great Enabler," says Aicard, "These days, people are investing in infrastructure - they're upgrading their routers and switches. They're buying better WANs. They invest in management tools. All of this behavior is tied to a concept that I call 'preparation' - people are investing in the opportunity to do great things with their new converged infrastructure, to run advanced, productivity-boosting applications. The applications make the final connection between the technology investment and the business process. The most valuable thing that can happen in communications is the creation of that link; it happens in the applications layer, and that's an area on which we at Inter-Tel focus. It extends from product development all the way out to how we sell and customize our solutions, customer by customer."

"At the end of the day these are all simply tools," says Aicard. "We do a really good job of marrying-up the toolset with the problems and opportunities faced by a typical individual business. We custom-tailor our solutions to meet its needs so that we can help them get their goals accomplished and help them overcome obstacles that they perhaps didn't realize were communications-related - we draw the connections for them. We show these businesses how modern communications can help solve a variety of problems and help them go after opportunities."

Architecture and Form Factors

The Inter-Tel 5000 Series all-in-one solution is an amazingly compact, 1U high, 19-inch wide rackmount device, a "pizza box".

Inter-Tel's idea here is to provide an all-in-one solution for the smaller business environment that doesn't want to deal with managing multiple boxes.

As Aicard explains it, these 1U modules go into the rack, and as a result customers can manage the phone system and trunk interfaces - no external gateways are needed, which is particularly beneficial to SMBs who do not want lots of components taking up space around the office. The call processing system and the gateways are built into the system, as are voicemail and music-on-hold. Moreover, there are no spinning disks - every-

thing is stored on Flash memory. It's a very reliable, simple, appliance-like solution that's particularly easy for SMBs to manage.

As Aicard beams, "So, that's the core system - concise, straightforward and to-the-point. Applications are sold 'a la carte, so a particular buyer can customize his suite. For example, certain buyers might want to leverage contact center solutions heavily and they don't need desk-to-desk collaboration tools. The application suite is very modular and it allows a business to pick and choose what it wants."

A Family of Three

The Inter-Tel 5000 Series is actually a family of three server-based systems.

The first is the CS-5200 Network Communications Solution, which is the smallest system in terms of port capacity but still offers a comprehensive communications system. It runs on Linux and supports either four or eight-ports of voicemail. Its capacity ranges from 25 to 75 users. The system also supports two optional 48-port Digital Expansion Units [DEIs] to give the system 96 digital ports that support both digital and analog endpoints. The DEIs can also be fitted for the larger CS-5400 and CS-5600 systems."

The Inter-Tel® CS-5400, Communication Server has the same base as the CS-5200, but it scales up to 175 IP endpoints, and can support three T-1s. Finally, the high performance Inter-Tel® CS-5600 has the same base as the CS-5200, but it serves up to 250 IP users per location. Each of these platforms, of course, can support Inter-Tel's full breadth of applications.

All-in-One Technology

Looking over its list of features and capabilities, one can safely say that the Inter-Tel 5000 Series is the epitome of what a converged "next-generation" business communications system should be: a modular, scalable, IP-centric system architecture, remote office and WAN failover capability, backward compatibility with the feature set of Inter-Tel's Axxess platform, and aggressively priced.

So, what's not to love about the Inter-Tel 5000?

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

Why the Inter-Tel®5000 is a Hit Among Resellers

By Jeff Ford, Division President and CTO, Inter-Tel

Since the company was founded in 1969, Inter-Tel's hallmark has always been its uncanny ability to accurately identify the challenges small- and medium-sized businesses face, and then utilize the best available technology at that particular time to deliver solutions that enable customers to tangibly improve businesses processes. It is a philosophy that helped Inter-Tel® evolve from a small Phoenix-based start up into a global provider of next generation voice and converged platforms and software.

The most recent example of Inter-Tel's prowess in serving the small- and mid-size sector is the success of the Inter-Tel® 5000 family of solutions. First released in mid-2005, these IP-centric platforms serve businesses ranging from 25 to 250 users per site, and offer customers Inter-Tel's powerful array of IP-powered applications, like presence management, conferencing and collaboration, contact center, and mobility tools. Businesses appreciate the Inter-Tel 5000 for a number of reasons, including its support of legacy digital and analog endpoints that enable financially-conscious customers to preserve as much as their technology investment as possible.

And while the Inter-Tel 5000 has certainly impressed customers with its numerous productivity and efficiency advantages, it may very well be that the Inter-Tel® 5000's most ardent admirers are the company's network of 350 reseller partners throughout North America. It is the sales channel that competes-and increasingly wins deals-with the Inter-Tel 5000.

"Our Inter-Tel 5000 sales continue to be brisk," shares Steve Klenner of BSB Communications Inc. of St. Clair Shores, Michigan, an Inter-Tel exclusive reseller. "We regularly run into competitors that are bidding systems that are not addressing the needs of a smaller company. They may not have the right mix of features and applications, or do not support a full range of IP, digital and analog devices. When they do address the customer's needs, more often than not, they are priced out of range for most small businesses. The Inter-Tel® 5000 gives us the ability to offer the right solutions at the right price, which our customers certainly appreciate, as much as we do."

Scott Diamond of US Voice & Data, an Inter-Tel® reseller located in Louisville, Kentucky concurs.

"Many technology vendors wrongly perceive small businesses to be too unsophisticated or too cash-strapped to really leverage Voice over IP," he explains. "In fact, the exact opposite is true. Smaller companies usually have very sophisticated needs. They typically rely on remote workers and mobile sales professionals, and often times compete against larger companies with a lot more resources. As a result, they are looking for a communications system that can help level the playing field-without breaking the bank. We have sold a number of Inter-Tel 5000s into environments like these, and the feedback we've received is that these systems deliver exactly what customers are looking for in terms of more productivity, better efficiency and lower costs. In our business, this speaks volumes."

In addition to winning more deals, resellers also like the Inter-Tel 5000 for its ease of installation, configuration and management.

"Every time we have to roll a truck to a customer site and solve a technical issue, it not only causes stress for both the user and ourselves, it quickly eats away at our profits," explains Todd Wittman of Protel Communications, an Inter-Tel partner located in San Diego, California.

"The Inter-Tel 5000 is probably one of the most intuitive and user-friendly platforms available to businesses. We find it extremely easy to install, and the majority of our customers are so comfortable in administering the system themselves, they may not call us for months," he laughs.

"From our perspective, the Inter-Tel 5000 hits on all cylinders in serving small business needs." IT

Death, Taxes and VoIP Testing

Testing is the most important activity that ensures the acceptable quality of voice over IP conversations. Testing has evolved from load testing and feature 'proof of concept' tests imported from the circuit-switched world, to simulating more subtle real-world network scenarios involving SIP registrations and malicious server attacks. "Testing" relating to VoIP can also involve scrutinizing infrastructure devices at the vendor level and even testing the testing hardware and software itself.

Over at Empirix, (news - alert) (http://www.empirix.com) which made a name for itself in computer telephony and PSTN-related testing long before the rise of VoIP, Vice President of Marketing and Management Duane Sword says, "We're happily selling lots of load generators and feature testers, and we're now getting a lot more inquiries as to how to take real test or operational scenarios that are happening in a live network and how to troubleshoot and diagnose them faster back in the lab for regression testing. That's one area that's driving a lot of business for us."

"People just want 'more' — more registrations per second," says Sword, "or more simulated malicious attacks. Instead of standard call generation or voice quality testing, people are interested in the more stateful nature of scenarios on the feature side or on the load, registration and threat side of things."

"People are examining operational network problems on the service or network diagnostic side," says Sword, "and taking those traces of what happened, if you will, and pasting them into a call generator or a network emulator to recreate those scenarios back in the lab. That's something that we stumbled upon, given that we span both the test and monitoring sides. It plays up a differentiator that we have. The only other company that could possibly do this in terms of their portfolio is Tektronix. Most of our other competitors focus on testing in the lab or else they're monitoring companies that have probes and they'll do CDR dialogs or they'll just look at signaling or a little bit of media. What we've done is to take real live operational scenarios and recreate them and troubleshoot them a lot quicker by harnessing the lab tools and monitoring tools together. People are not finding sophisticated performance problems; instead it's very much the 'teething' problems of ramping up, new subscribers and new applications. Thankfully, there are a lot of problems, so we're selling a lot of test gear."

Tektronix (news - alert) (http://www.tek.com), that great rival of Empirix, also looks at all the dimensions of communications equipment and networks with the technological equivalent a fine-toothed comb.

Keith Cobler, Marketing Manager at Tektronix, says, "As communications equipment moves through its life cycle all the way to full deployment, it's subjected by the manufacturer to functional and load tests, then it's brought into the carrier's labs, where they do interoperability testing. After that, there's an initial pilot phase of the deployment, which is followed by a full network-wide deployment. For Tektronix, we work in all stages of this product flow, working with the OEMs, through the carriers and their labs and all the way through full deployment. The importance of doing this is maintaining consistency in the way we do our tests and approach our monitoring of the networks, because you want to have consistency in the protocols and the technologies all the way through this process. That one concept is fundamental to our strategy."

"A triple play network is built up of a pyramid of different items," says Cobler. "At the bottom you're working the network elements. Again, you're doing the functional and load tests, then working with subsystems and the elements that make them up. Eventually we get to the networks where we start to look at different techniques for monitoring the networks, and eventually all the way up to the services and applications. So, you really need to build upon this foundation to ensure network quality of service [QoS] or quality of experience [QoE] to the end user. So, that's another way of looking at it."

"Network operators and equipment manufacturers need to adopt a well-grounded test-and-monitoring strategy throughout this process," says Cobler. "We have our point solutions which do the functional and load tests. They both have a breadth and depth capability. The second part of that is the network moni-

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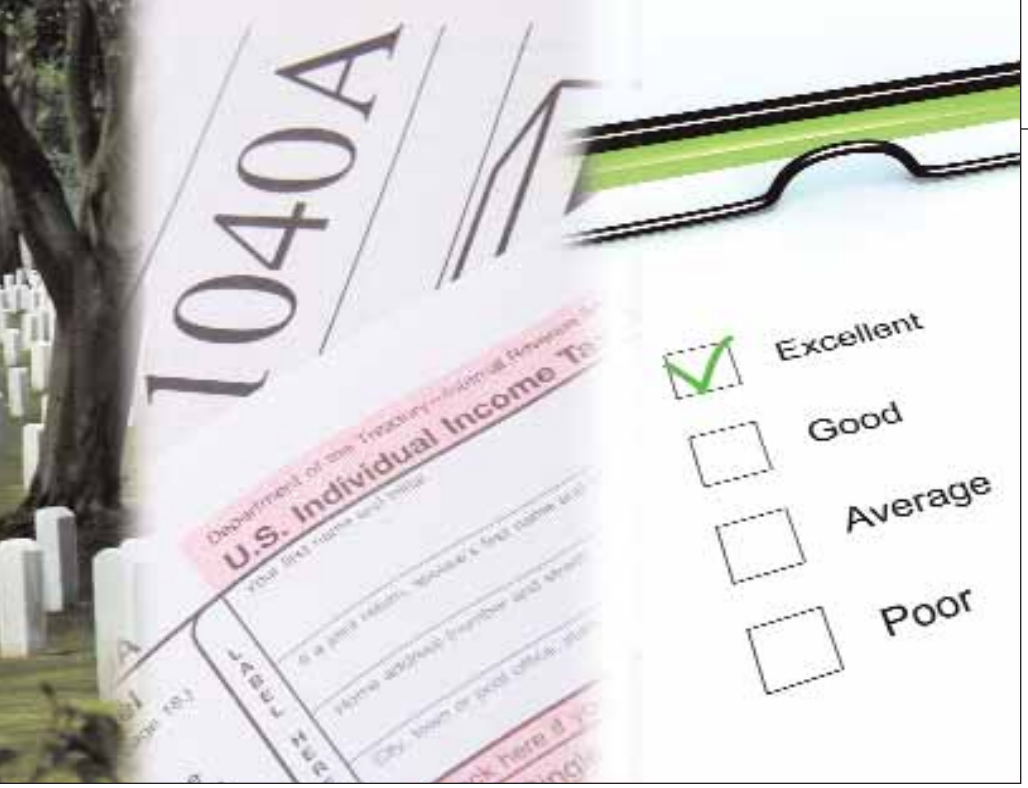

toring solutions. This is where we start to talk now more about the complimentary nature of active and passive testing. In the case of passive testing, you have built-in monitoring, end-to-end across your network, where you're monitoring real-time traffic. Active testing, on the other hand, is a much more flexible solution that is perhaps a bit more cost-efficient and easier to scale for enterprise networks and other portions of the network. The one common theme in all of this is that the end users want to have the same good level of QoE, whether or not they're accessing their data or their applications over a fixed network, a mobile, an enterprise network, what you. They want to have the same QoE no matter how they access the network."

Scott Sumner, Tektronix' Senior Manager of Active Test Products, says, "We see quite an interesting synergy between active and passive testing. There are various angles to this. The main differentiation between the two is that, in our case, is that an active test is really designed to replicate the end user's perception of the experience itself. That means that we're listening to both the analog part of the conversation from our active test calls as well as looking at the packet statistics describing the underlying delivery mechanism in some networks. The active solution listens to the calls, which allows you to measure things that you can't normally measure with a passive test system. So you can measure things such as echo, noise, voice path delay, distortion, clipping events, and you can validate DTMF tones — things that you wouldn't be able to detect just by looking at how many packets got through the network and determining what their structure is. We also correlate these metrics together with the packet statistics of the packets as they arrive, so that we can formulate MOS scores based on both analog and IP measurements. There are a lot of interesting use-cases where the active test system can identify the problem and the passive test system can isolate it in the core — let's say a core router or a gateway that's causing the problem. There are also other instances where a passive test system sees a problem and you can isolate how many customers and which access networks are being affected by using the active test system to effectively localize the problem. So there's quite a complementary relationship between active and passive testing."

"If you look at a lot of network operators, they have both passive and active test systems in place and they're using both for exactly those two reasons," says Sumner. "But Tektronix is the only company that offers both of these to the extent that we can cover everything from the network core straight into the customer premise."

Testing Voice over WiFi

Azimuth Systems (news - alert) (http://www.azimuthsystems.com) is actively involved with the development of new 802.11 standards enabling voice over WiFi (VoWiFi), and company representatives often publish and present on the topics of wireless VoIP and cellular-to-WiFi convergence.

By Richard "Zippy" Grigonis

Recently Azimuth announced a VoWiFi test suite of over 20 benchmark tests enabling service providers, handset providers and semiconductor vendors to streamline the testing of VoWiFi phones and converged wireless devices. This VoWiFi Handset Test Suite adds power consumption testing to the automated scripts, and allows vendors to analyze voice quality, roaming performance and battery life of wireless VoIP handsets under various motion and traffic conditions.

Azimuth's Vice President of Marketing, Jeff Abramowitz, says, "We focus on wireless IP test equipment aimed at engineering applications. Historically, that has meant the WiFi industry, but increasingly we're finding ourselves addressing WiMAX and cellular through fixed mobile convergence [FMC] applications. We've built a portfolio of products and we sell to more than 120 different vendors in the WiFi and WiMAX space. We're the official test engineering supplier to the WiFi Alliance. If you look at our customer list you can see that they represent about 90 percent of the WiFi market. So we're pretty well entrenched in the WiFi space."

"One area we see growing the fastest is the testing of voice over wireless, particularly Voice over WiFi," says Abramowitz. "This is occurring both on the handset side and the infrastructure side, although frankly most of what we've been seeing lately concerns figuring out how to do handset testing. The WiFi industry has a history of mostly using retail routers, and folks using laptop computers to get data connectivity in their homes, which is a larger part of the market than, for example, people accessing the Internet wirelessly in the enterprise. In both cases, these are data applications, and you don't necessarily need high performance to service them. As people move to voice, however, whether it's in the enterprise or in the home, there is a high level of performance

One area we see growing the fastest is the testing of voice over wireless, particularly Voice over WiFi

requirements. We call that 'carrier-grade WiFi'. We're starting to see carriers or operators drive the performance requirements for the WiFi industry."

Azimuth Systems has spent an increasing amount of attention on helping to test what's traveling over voice over WiFi networks and how to make devices better serve than environment.

Graham Celine, Azimuth's Senior Director of Marketing, says, "We're working with a number of the vendors out there, starting with the chipset manufacturers, who ask us, 'How do we make our chipsets more efficient to work in handsets?' and then the handset makers and service providers," says Celine.

"Having gone out and done some testing," says Celine, "they all come back and want to discuss the same three key topics that concern them: First, is straightforward voice quality. That's related to WiFi coverage. How far can you move from the access point? How much background noise or RF interference before your call becomes unacceptable in quality? Second, is handoff. The concept of handoff is itself three-fold. If you're in an enterprise network, you're going from access point to access point. If you're in a public network you could be going from hotspot to hotspot. And if you're in public network where there is no additional hotspot, then you're handing off from WiFi back to the cellular network. In all of those cases, when you're switching there's a potential to lose calls."

"The key third concern is battery life," says Celine. "With dual-mode phones, you're putting a WiFi radio into a handset that already has, say, a GSM radio. Doing that adds to battery drain. The service providers need to ensure that they can provide a level of service acceptable to their customers. They can't add functionality and tell customers that they have to charge their phone every two hours. That would be unacceptable."

Testing the Testers

Netronome Systems (news - alert) (http://www.netronome.com) provides the Open Appliance platform, a Linux and IA/x86-based solution that helps next-gen products come to market faster and without expensive redesign.

Jarrod Siket, Vice President of Marketing for Netronome Systems, says, "We don't sell test and measurement equipment to enterprises or service providers. What we sell is our appliances and hardware and software components to test and measurement companies so that the products that they build meet the requirements for next-gen networks focused on VoIP and IPTV applications."

"You don't hear as much about VoIP as you used to, which means that the technology is maturing..."

Siket continues: "Network operators want to continue to increase the performance, have bigger pipes, more bandwidth, and more packets per second, yet at the same time, both in the enterprise and the service providers space, they're being asked to take a much closer look at all of the traffic in the network. In the test-and-measurement space that means looking at individual voice packet flows, measuring specific user's VoIP quality during a trouble ticket. It might mean some type of on-demand or scheduled testing to look at batch samples of VoIP or IPTV flows for the purpose of measuring quality."

"For a test-and-measurement device the last thing you want is for the device itself to be the source of either injecting or incorrectly measuring delay, loss and jitter, when in fact its purpose for being there in the first place is to measure the application quality to see if those things exist," says Siket.

Explains Siket, "We've found that, with the vast majority of these test-and-measurement companies, their intellectual property and value resides in their VoIP or IP testing stacks and, one layer up, their OSS [Operations Support System] that manages the many probes peppered around the network. They've also found that the actual appliance or probe sitting in the network is no longer a service-specific box that was optimized on POTS [Plain Old Telephone Service] or DSL testing. It's more of a universal or general appliance that just connects to an Ethernet network, and is a place to house their IP applications and test modules. When you think about it in that regard, the three primary components of a next-gen testing device are its OSS that controls all the boxes, the many application test modules that reside on the probe itself, and then the third piece is the actual hardware probe. That's what we at Netronome Systems offer. We call ourselves an 'open appliance', a platform that any test-and-measurement company can add to the network and create a reliable platform for not only VoIP, IPTV and other application testing, but also the active and passive monitoring of the network itself."

From Analog to IMS

"VoIP is becoming more critical," says Bahaa Moukadam, Vice President of Marketing at Spirent Communications (news - alert) (http://www.spirent.com), a global provider of integrated performance analysis and service assurance systems enabling the development and deployment of next-gen networking technology such as Internet telephony, broadband services, 3G wireless, global navigation satellite systems, and network security equipment. "You don't hear as much about VoIP as you used to, which means that the technology is maturing and many carriers are deploying more and more VoIP. Another trend involves migrating from VoIP to an IMS [IP Multimedia Subsystem] and fixed-mobile convergence [FMC] environment and architecture, not necessarily at the carrier level yet, but certainly there's a lot of activity with some key equipment vendors we work with. That creates another layer of challenges, or amplifies existing ones. Some of them are technical challenges, while others deal with organization structure and how carriers will approach the network as a whole network over time rather than as separate wireless and wireline networks. We look at it from an end user behavior point of view, which

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involves eliminating the 'graying out' some boundaries between the wireless and wired infrastructure."

"Another interesting trend seems almost counterintuitive," says Moukadam. "Much of the move to fiber involves consolidating the network and going to higher speeds in order to offer triple play services. Ironically, this move to drive fiber also drives the need for analog POTS testing. As people start bringing fiber to the home, they still have two-to-four POTS lines coming into the house. Much of this testing does involve driving regular POTS calls through the lines and back into the infrastructure, so carriers must ensure this works properly. With IP you can assimilate many endpoints out of one port. But with POTS, there's a one-to-one ratio. So that's driving a lot of POTS test ports, and that part of our business is growing rapidly instead of declining."

"Carriers are starting to think more about creating high-end IMS-related labs," says Moukadam. "Some of them have actually done it, but other big carriers are still a few months away from starting to form IMS-oriented labs. With IMS changing so fast, some of the big equipment vendors in this space are saying, 'We're not so sure that our continuing to build and house test tools to stay up with the technology curve is really the right way to do things.' We're making a lot of progress with them in terms of shifting some of that investment in in-house tools to partnering with external, third-party test vendors such as ourselves, under the right circumstances with the right solution, which we believe we at Spirent have. We've made a lot of progress on that front over the last eight months or so. Things are becoming a lot more open."

Quality Assurance

Brix Networks' (www.brixnetworks.com) integrated hardware and software products — "the Brix System" — are strategic service assurance solutions that proactively monitor IP service and application quality. The Brix System is used by network operators to guarantee the successful launch and ongoing operation of their portfolio of IP services, including VoIP, IPTV, and VPNs.

Kaynam Hedayat CTO and Vice President of Engineering at Brix Networks says, "We are very busy not only with VoIP but also IPTV and mobile systems. Looking at VoIP for a moment, as the industry matures more and more, we see a lot of demand for testing and monitoring all the way to the handset. Originally in the case of VoIP, everyone concentrated on getting the core of the system up and running, and then the service itself. They tended to ignore the customer experience, for two reasons: First, there were no testing tools available at the time. Second, scaling the technology is a difficult task."

"We at Brix are pushing a couple of standards within the IETF and we're working with several vendors and providers to make this challenge achievable," says Hedayat. "We recently announced a relationship with SunRocket and Linksys, based on one of those standards. We are working with CPE and handset vendors to turn these devices into intelligent 'cooperators' or 'reflectors' of VoIP calls with media loopback capabilities, to test the quality and also the availability of the service, all the way to the customer's home or handset. This applies both to residential and enterprise applications. This sounds like a relatively simple capability, which it is, since it's based on standards, so a typical handset or CPE vendor can implement our concept in their device within a couple of weeks — but the capabilities it offers to providers is immense. It enables them to effectively sweep the whole customer and user base and have full visibility into the quality and availability of the service all the way to the user."

"Then there's analysis and reports," says Hedayat. "We're working very hard on next-gen business intelligence tools. We find that our customers originally used this data to turn off their network and start to operate it in a repair mentality. The tools were used for troubleshooting and effectively fixing problems very rapidly. I always tell my customers should be capable to tell a customer calling about a problem that they know what it is and that they've already fixed it. That's our focus on what we want our tools to be able to do."

Hedayat concludes: "For the past two years, we've discovered that customers want to use the data produced by our tools for things other than testing; mainly concerning executive reporting — they want to show the executives that the service is working correctly — and we're seeing a lot of demand for service marketing. They want to use this data to market the service against the competition, which requires a whole set of business intelligence expertise in the system. That's a capability that we're introducing in our products very soon."

Ensuring the quality and reliability of large-scale VoIP deployments is a huge issue today over at Covergence (news - alert) (http://www.covergence.com) too.

Founder, CTO and VP of Engineering Ken Kuenzel says: "It's a huge issue for our customers. There's the regular latency, delay and jitter aspects of the real-time protocol with which we have to deal, but those aren't really the primary issues. What's really important is this whole host of barriers that exist in deployment of these networks that are causing service providers not to be able to consistently maintain the quality and reliability of their services. Problems range all over the map from variations in the protocol implementations to interoperability issues, to misconfigured devices that can go into registration storms or otherwise behave inappropriately. There's buggy hardware and software out there, and many other issues."

"We at Covergence have built a session border controller specifically for the access edge," says Kuenzel. "We're in a world where hundreds of thousands and millions of devices are communicating from the access edge of the network. There are devices from a variety of different vendors with a variety of use-case models. They could be running VoIP, instant messaging, presence, some variant of all these things. Or they could be running software from BroadSoft, or accessing software from Microsoft."

Adds Rod Hodgman, Covergence's Vice President of Marketing, "So, we're in a position where our product has to be really able to allow our customers to quickly diagnose-test, diag-

nose-debug and continuously monitor and repair network outages and disable and mediate devices that are working inappropriately. We put a lot of management and quality and reliability capability into our product, so that our customers can easily and quickly diagnose a variety of problems in the network."

"When we talk to our service provider partners and our live enterprise partners," says Hodgman, "it's less about spot-checking and testing. They're really concerned about ongoing reliability, so we've put a lot of effort in our tools to build out that reliability as they deploy their networks. So it's not about testing it for the first time, it's about continual monitoring and being able to tell when something is going wrong and isolating it. That's why we've built a lot of trace capability in there. You can go back and look at historical calls. You can see what the quality was of a certain VoIP call or trunk group. The tools out there today are shunted off to the side. You've got to know when to check for problems. Ours is very much the network probe approach that's becoming popular at Cisco, Juniper and enterprises where devices that are deployed in the network have to have some ability to monitor and control the overall quality of that network."

Testing Becomes Management

We've said it before — the lines between testing, monitoring and management itself become blurred.

As Richard Whitehead, CTO of Clarus Systems (news - alert) (http://www.clarussystems.com), says, "Clarus made its name specifically in testing, but we now see our role considerably broadened into the management sphere, since testing has become part of the management process anyway. IT management has had 20 or 30 years to figure this out, but the IP telephony and unified communications communities are going to have to 'get with it' very quickly, considering how fast things are changing, and they'll probably have a steep learning curve."

"Clarus has an enterprise product in the marketplace that has been consumed by various types of users," says Whitehead. "The first were system integrators. These are the folks actually charged with deploying IP telephony and communications solutions. Our value proposition there is really simple - use software to automate the testing and acceptance of an IP telephony deployment, rather than have people do it manually. If it's done automatically, then you're not wasting manpower; therefore the ROI is really easy to identify. Not only is it cheaper to do but you can do it faster, more efficiently and more objectively. We've dealt with integrators who are the top five of the Cisco IP telephony specialists within any region. These are people who are actually involved the deployment and acceptance testing of IP telephony. They're using our services and software to streamline that process."

"Essentially, we have a fairly distributed application," says Whitehead. "It comprises two fundamental components: The first component extracts configuration information from a very high level to a very deep level from the PBX. So we extract data and look at the dial plan and the very detailed configuration of the PBX. Using this process we've identified a lot of issues up front. We generate what we call 'the fat finger' report, a quick 'second opinion' of configuration changes - just by scanning down a list you can often spot things that aren't right. For example if a device pool is supposed to be 30 phones and you see two groups, one of 29 and one with a single phone, you know something's gone wrong."

"Once we extract the configuration information we use that detailed understanding of the configuration to expedite the process of testing," says Whitehead. "There are obviously some basic tests that you always want to do. You want to check that every phone is plugged in and attached to the network. We can check things remotely using a logical configuration of a physical branch office, for example, observing phones as they're added to a distant system."

Testing and More Testing

Whether you own a IP network, use one or make network equipment, it's clear that it's impossible to ignore VoIP testing in one form or other.

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

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Establishing Mobile Security

With the increasing ability of smartphones and data-enabled cell phones to store sensitive data and documents, conduct financial transactions, and access corporate networks, both consumers and corporations should be increasingly concerned with the security of their mobile devices. Identity, authentication, and platform integrity have become critical capabilities for mobile devices. Today's cell phones implement these capabilities at vendors' discretion, without a clear industry-wide consensus on the fundamental requirements and best practices. However, a recently announced open-industry specification by the Trusted Computing Group (TCG), an industry organization providing specifications across a variety of platforms and devices, promises to change the security environment on mobile devices for protection of personal information, ticketing, mobile commerce, content protection, and more.

Threats and Opportunities

Perhaps the biggest security threat that mobile users face today is the loss or theft of their phone. As well as its obvious value as a physical device, the phone may contain personal and financial data: stored in the handset or in the removable Subscriber Identity Module (SIM card). While a stolen SIM can be barred by a mobile network once the theft has been reported, it is much harder to effectively bar the handset from being used with a different SIM. Also, unless the user has protected his personal and financial data by a PIN (and many users do not), these data could be accessed by an unauthorized party. Emerging threats to mobile devices arise from these products becoming increasingly more open and more sophisticated, using additional sensitive information stored on the phone itself (e.g. personal photos, emails, contacts, and calendar items). In addition, mobile products are increasingly similar to PCs, or interface to PCs, or communicate with computer networks. This provides the potential for the types of attack that are currently restricted to PCs, so phones will need defenses against those attacks.

With more and more handheld devices capable of receiving email, security, especially in corporate email with sensitive internal and external data, is a major concern. Receiving or sending email requires connectivity to a network. This means that a mobile device can access data that previously would have been only available by a PC. More and more devices have this capability today and it certainly will become an expected feature on a variety of high-end mobile products. Certainly, smartphones will include this capability.

Without standards, any security implementation winds up being a proprietary, point solution. Here is where the pitfalls and opportunities lie. Security should be implemented in a way that allows users to interact with computers and avoids creating artificial barriers. If mobile phone security is implemented in an inappropriate manner, it is almost guaranteed to become a barrier to interoperability between future generation mobile phones and future generation PCs and servers. In any case, a standard can usually be upgraded more easily and meaningfully than a proprietary solution.

TCG and Trusted Mobile Devices

The Trusted Computing Group (TCG) is an industry organization providing specifications across platforms and devices and is the focal point of security standardization for computing devices. To provide integrity, authentication and identity and have security functions which are cost-effective, transparent to users, reasonably implemented, and interoperable, the organization released use-cases, or anticipated applications for mobile security, as a first step to an open-industry specification (http://www.tmcnet.com/724.1). In September 2006, TCG announced the industry's first open-standard specification to enable mobile security to be embedded in a device's basic architecture and interoperable with the existing trusted computing framework, the TCG Mobile Trusted Module (MTM) Specification (http://www.tmcnet.com/718.1).

While TCG's effort is new for mobile phones, it is well-established for computers. TCG approved its Trusted

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By Janne Uusilehto

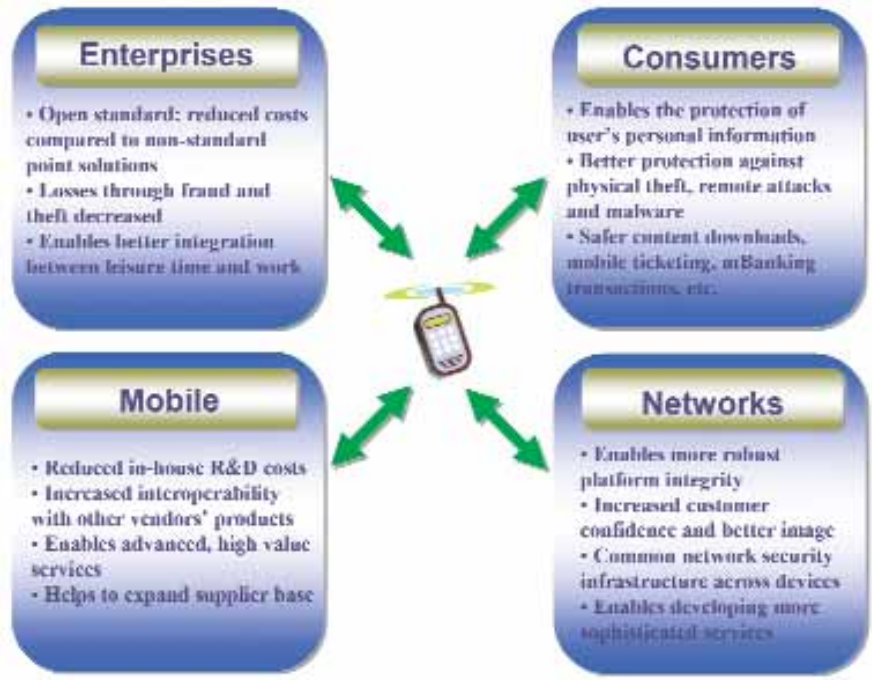

Figure 1. The Mobile Trusted Module supports multiple stakeholders and addresses specific concerns.

Platform Module (TPM) specification in 2000 and since that time, some 50 million PCs have shipped with integrated circuits that conform to this specification. In 2007, the TPM took a giant step forward with Microsoft Vista, which uses functions provided only by a TPM. The BitLocker™ (http://www.tmcnet.com/719.1) in high-end versions of Vista, targets enhanced data protection from computer thieves and hackers. Using TPMv1.2, it protects user data to ensure that the PC was not tampered with when the system was offline. Vista will likely make TPM usage much broader and more commonplace. Note, however, that just as the TPM in a PC was used before Microsoft's Vista, the MTM in a mobile phone can be used without Microsoft software.

Even the Federal Deposit Insurance Corporation (FDIC) Division of Supervision and Consumer Protection Technology Supervision Branch, in its report "Putting an End to Account-Hijacking Identity Theft - Study Supplement" (http://www.tmcnet.com/720.1), recommended multifactor authentication including a TPM to protect identity and data.

The Mobile Trusted Module is as similar to the TPM as possible but the Mobile Reference Architecture (http://www.tmcnet.com/721.1) comprehends the regulations and restrictions that affect cellular products. For example, the development of a Mobile Trusted Module and the Mobile Reference Architecture took into account the interest of various stakeholders that include the user/owner, the device manufacturer, the network service provider and others such as enterprises and third parties. Figure 1 shows these key stakeholders and the different issues solved by the MTM.

Establishing Trust

Building trust in a piece of hardware, software or network is not unlike the process that an individual uses to establish trust in a bank or garage mechanic. In this case, the trust builds on a trusted platform or trusted module. Common mobile phone building blocks are each able to show that they are trustworthy. Device, cellular, applications and user service engines all have Trusted Services. The MRTM is a Mobile Remote-Owner Trusted Module and the MLTM is a Mobile Local-Owner Trusted Module. The term Mobile Trusted Module (MTM) is a generic term for both MRTMs and MLTMs.

Secure Mobile Device Apps

As part of developing the MTM specification, 11 use-case scenarios were considered that included mobile ticketing, mobile payment, and SIMLock/Device Personalization.

Using a mobile device to download and present tickets adds significant convenience when used properly but can be a serious threat because of illegal duplication, modification, or deletion. The ability to avoid problems with mobile ticketing starts with the mobile device having the built-in capability to provide secure service for downloaded applications. The ticketing application is one that could be downloaded and the platform would verify and authenticate the integrity of the application. Purchased or redeemed tickets have data objects that represent the rights and these rights are securely downloaded to the device. To use the ticket a data reader verifies the permission granted by the ticket and then treats the ticket as consumed. Once consumed, the security data linked to the application or to the ticket are deleted, ending the process.

A similar process occurs for mobile commerce. Recent announcements by Citibank and AT&T address greater implementation of mobile commerce (http://www.tmcnet.com/722.1). Mobile commerce is among the poten-

tial applications that were considered in the establishment of the MTM spec. The trend towards higher value services means that security will be an absolute requirement. Other financial services outside the voice realm provide an enabler to move forward and perform tasks/functions not possible in earlier generations of phones and hardware.

Another interesting application is the corporate network access control. With remote access capability and broadband wireless capability in a PC, and the same capabilities in a portable communication device, corporate networks could use a TPM (in a PC) or MTM (in a mobile phone) as part of their network access control strategy. The Trusted Network Connect Work Group of TCG addresses these aspects across multiple platforms, peripherals, and devices (http://www.tmcnet.com/723.1).

A Trusted Infrastructure

Part of the objectives of the TCG's mobile group was to avoid unnecessary redefinition of cellular network infrastructure and to avoid creating a different infrastructure to that expected to be deployed for trusted access to PCs. The result is minimal change to existing cellular networks and use of the same specifications as trusted PCs whenever possible. This means that companies can use similar backend infrastructure for both PCs and mobile devices.

Note that the SIM is unlikely to disappear and will continue to provide the flexibility of having a removable element that carries the user's identity from device to device. The MTM is designed for platform security and the SIM is primarily for user security. They perform quite different functions. The MTM can provide device protection to deter device theft and use of a subsidized product on another service provider's network, which does not replace the SIM, for example.

Confidence Via Public Specs

With technology that uses full-strength encryption algorithms, and specifications open to inspection, the TCG specifications have been analyzed to identify potential shortcomings and flaws, and improved and enhanced by numerous knowledgeable experts. Through the participation of the key companies involved in the development of the specification, a considerable amount of time and effort has been expended to ensure the trustworthy aspect of the MTM specification. The thoroughness builds on the TCG's TPM and efforts that started over seven years ago to create a trusted environment for mobile products.

Janne Uusilehto is the Head of the Product Security Technologies Team, Nokia (quote - news - alert) (http://www.nokia.com). For more information visit the Trusted Computing Group at http://www.trustedcomputinggroup.org.

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Making the Right Move with WAN Optimization —

"Performance ROI" Offers a Useful Metric for Critical Buying Decisions

Many companies implement WAN optimization technology in conjunction with their VoIP deployments. That's because many WANs cannot deliver acceptable voice quality without some sort of enhancement. And even if they can, WAN optimization technology can help to safeguard voice quality as new applications, new users, and new locations are added to the network over time.

Of course, WAN optimization can do more than just protect voice quality. It can ensure that other critical applications perform at desired levels even as VoIP and other services contend for limited bandwidth. It can boost service levels to distant locations that connect to the data center via low-bandwidth/high-latency network links. It can also help companies defer network upgrade costs.

In fact, just about any company that depends on networked applications to run its day-to-day business can probably benefit from some form of WAN optimization.

However, not all WAN optimization solutions are created equal. There are data reduction solutions such as data compression, caching, and terminal services that reduce the amount of traffic that actually traverses the WAN. There are latency mitigation solutions that use algorithms to overcome the adverse impact of network delay. And there are bandwidth management and QoS solutions that prioritize and/or reserve bandwidth for specified applications, such as VoIP or CRM.

Each of these types of solutions has its own strong points and weak points. Data reduction solutions, for example, are typically more effective for applications with static data and/or where the same data is accessed multiple times. Latency mitigation solutions typically deliver greater benefits in environments where WAN links stretch over large distances and the architecture of one or more business-critical applications make their performance particularly sensitive to latency — as may be the case with transaction processing. Bandwidth management and QoS, on the other hand, are most useful for maintaining the performance of a small number of high-priority applications. when WAN links are over-subscribed.

In situations where a VoIP deployment is the precipitating factor in the acquisition of WAN optimization technology, there is a natural tendency to simply opt for a bandwidth management/QoS solution - since such solutions are particularly good for ensuring voice quality under changing network conditions.

But there are two reasons why IT decision makers have to exercise greater diligence before committing to a specific vendor's WAN optimization solution:

1) While VoIP may be the main reason that a company eventually makes the decision to actually acquire a WAN optimization solution, it is not the only application or service to which that solution will ultimately be applied. Changing network utilization patterns will most likely make it necessary to apply WAN optimization to other business-critical applications.

2) Commercial WAN optimization solutions typically combine multiple techniques. So decision-makers aren't just faced with a choice of one technique versus another. They have to determine which vendor's solution offers the best combination of techniques for the price.

The real question for WAN optimization buyers is therefore not simply "Which solution gives the biggest boost to VoIP performance?" It's "Which solution delivers the greatest performance for VoIP and our other critical applications in relationship to its costs?" In other words, WAN optimization buyers must somehow determine in advance which solution will deliver the greatest overall performance improvement per dollar invested - i.e. its "performance ROI".

Measuring Performance ROI

The performance ROI of multiple competing vendors' solution can be measured by creating a test environment that accurately simulates the current enterprise production environment - and that can also be modified to reflect a range of "what-if" scenarios that may be encountered down the road as users, locations and application are added to the network. This test environment will typically consist of:

- An emulation appliance that mimics the flow of packets on the WAN based on real-world impairments such as distance, latency, congestion and jitter.
- Desktop phones and PCs set up to interact with applications so that the end-user experience can be measured.
- Servers running the applications being tested.

Multiple WAN optimization solutions can then be introduced into this test environment so that their impact on the end-user experience can be appropriately compared.

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By Amichai Lesser

Most companies will want to test solution performance for the full range of applications that may benefit from WAN optimization, including:

- Performance-sensitive applications such as VoIP and videoconferencing.
- Core business applications such as ERP, CRM and transaction processing.
- High-visibility applications such as Business Intelligence and intranet dashboards.

It may also be prudent to test applications that are not currently running in the environment, but are planned for roll-out in the near future.

Once the test bed is in place, the testing team can configure it to reflect both current conditions on the network and a variety of "what-if" scenarios. Network conditions constantly change as users, locations and applications are added. So WAN optimization solutions should be benchmarked under various types of projected utilization and routing conditions — including worst-case scenarios. These scenarios may include:

- Increased packet loss, which can have a particularly adverse impact on latency mitigation algorithms.
- Intermittent loss of network connectivity, which can have a particularly adverse impact on solutions that rely on synchronization between devices in remote offices and those in the data center.
- Increased network saturation, which can highlight the advantages of QoS solutions.

Table 1 provides an example of a set of network test bed parameters for a company with a global WAN.

Once preparation is complete, tests can be run under all network scenarios. Business processes should be run multiple times in each scenario to replicate the real-world effect of users repeatedly accessing the same data.

It's important to note that these tests should be designed to measure performance to the end-user's desktop. The point of implementing WAN optimization isn't to get packets from one router to another faster. It's to improve response times for end users as they perform real-world business tasks. Benchmarks should therefore be based on to-the-desktop improvements for remote users across the organization.

With VoIP, it's usually wise to have end-users participate in the evaluation to see if they subjectively perceive any differences in voice quality with one solution vs. another. This participation helps ensure that end-users buy into the solution before it's actually bought and implemented on the production network.

Region	Office Size	Bandwidth	One-way WAN Latency	Number of Users
North America	Large	10 Mbps	25 msec	40
	Medium	1.5 Mbps		15
	Small	256 Kbps		5
EMEA	Large	2 Mbps	50 msec	10
	Medium	768 Kbps		5
	Small	128 Kbps		3
APAC	Large	2 Mbps	70 msec	10
	Medium	768 Kbps		5
	Small	128 Kbps		3

Table 1. Sample parameters for a network test bed.

Doing the Math

Based on the results of these tests, the testing team can produce accurate performance ROI figures.

First, the total performance gain for each solution should be calculated by multiplying the total average performance gain by the total number of sites where the WAN optimization devices will be deployed. Then the total cost of ownership for each solution - including hardware costs, setup costs, management costs, and professional services - should be calculated based on the number of devices that will be deployed.

Performance ROI can then be calculated by dividing the performance gain by TCO, as shown in Table 2.

Of course, performance ROI may not be the sole factor in the acquisition of a WAN optimization solution. If a solution does not fulfill some baseline performance requirement for VoIP or some other enterprise application, it will obviously be disqualified from consideration. The financial stability of the vendor, the quality of support and service, and other contract terms may also come into play. But performance ROI is clearly a powerful metric for sorting through the competing claims of WAN optimization vendors — and for making the purchasing decision that best suits the requirements of the business.

There are many other benefits to be gained from using a realistic testing environment to assess the impact of WAN optimization solutions on VoIP performance before making an actual purchase decision. VoIP vendors, for example, may employ compression and optimization techniques that don't interact well with a particular WAN optimization vendor's solution. By thoroughly putting these solutions through their paces in a safe, controlled test environment, IT organizations can roll out VoIP with the utmost confidence — while cost-effectively improving service levels for other critical applications and services.

Amichai Lesser is the Director of Product Marketing at Shunra Software. (news - alert) Amichai is responsible for product marketing, market analysis, and field marketing programs for Shunra. He has extensive experience in real-time engineering, performance management and security. He regularly presents at industry conferences, seminars and events and is a frequent contributor to industry publications. Amichai can be contacted at amichai.lesser@shunra.com. For more on Shunra and its family of VE network simulation solutions, see http://www.shunra.com.

	Vendor A	Vendor B	Vendor C	Vendor D
TCO	$120,000	$110,000	**$90,000**	$120,000
Performance Gain	281.2	269	**257.6**	314.6
Performance ROI (sec/$1000)	281.1/120 = 2.34	269/110 = 2.45	**257.6/90 = 2.86**	314.6/120 = 2.62

Table 2. A sample "performance ROI" report.

QoS in Enterprise Networks

Quality has always been an obsession with IP Communications equipment vendors and network operators. It's a veritable industry unto itself. With the PSTN, you either have a single, crystal clear, exclusive connection to your called party, or you don't have a connection at all (as explained by the network recording, "All circuits are busy, please try again later.") With IP, you can cram ever more calls into the same pipe, but the tradeoff is that the quality of each conversation suffers — unless you're using a technique for prioritizing important real-time voice and video traffic, such as Cisco's MPLS — and even then quality will collapse if you continue to increase the call volume way beyond the pipe's bandwidth capacity. Packet latency (packets arriving late), packet loss, and jitter (variation in packet arrival times) are the three principal variables that can be used to measure how well a particular call flow or even an entire IP Communications system is doing. But this isn't the whole story of what makes for a quality call.

Because of quality concerns, in the early days of VoIP, not much voice traffic was going over the (then) wild and wooly Internet. Instead, most "one wire wonders" of the 1990s took PSTN calls, converted them to IP, and sent them over the (hopefully) more stable and controlled environment of the corporate IP data LAN. The so-called "network PBXs" of the time didn't follow any particular standard architecture, but there was generally an IP PBX router with an Ethernet backplane that allowed calls (in the form of IP packets) to enter and leave the system from the PSTN (and in later years, the Internet) and travel right onto the LAN, hanging off of which at intervals were (and still are) Ethernet-compatible IP phones.

Such early systems demonstrated how even a modicum of IP technology could simplify the enterprise wiring-plant and all the things associated with it such as maintenance, MACs [Moves, Adds, Changes] and other management issues, thus placing many early adopters in a position to be among the first to reap the benefits of IP telephony.

However, even restricting IP traffic to the enterprise network doesn't necessarily guarantee crystal-clear voice and/or video quality. Today's corporate networks are more complicated than ever before, with VPN connections to branch offices and teleworkers, IP peering with enterprise partners and customers, and WiFi access points dotting the LAN landscape, all of which can cause packet traffic congestion and affect call quality on the LAN.

Benjamin Ellis, Vice President of Global Marketing at Psytechnics (news - alert) (http://www.psytechnics.com) says, "Psytechnics' history was really with testing IP communications Quality of Experience [QoE] with service providers and carriers and test measurement sites, but in the last year we've done a great deal of work with enterprises, owing to the fact that lots of businesses have finished experimenting with VoIP and are now starting to switch over in a wholesale manner to VoIP, and they want to ensure QoS across the network, but they're running into problems, so they call us. Our testing work is now balanced between service providers and enterprises."

"These days there are multiple dimensions to QoS and where it gets implemented," says Ellis. "For an enterprise, there are many questions. What's the QoS arrangement of the carrier? What's the IP QoS in the network? What's happening in the Ethernet LAN? And so forth. Much of this was fairly theoretical until about a year ago. People were still playing with the technology, but they weren't really depending on it. Now, however, there are major VoIP systems sold by vendors such as Cisco, Avaya, and unified communications is on the rise, which adds video into the communications mix. People are also in a videoconferencing equipment upgrade cycle, under the banner of 'telepresence'. So, suddenly, the network managers find that their theory has been tested, as it were, and in a lot of cases it has been found wanting, but for lots of different reasons."

"Many companies use traditional network tools and when most people talk about QoS, they're referring to what we would call network-based or link-based QoS," says Ellis. "If you've got a service provider supplying a T-3 [45 Mbps] between two different offices, you might have an SLA [Service Level Agreement] that says that there's less than five percent packet loss. But what the SLA doesn't specify is which five percent of

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By Richard "Zippy" Grigonis

the packets get lost. That sounds funny, but oftentimes people will mark voice packets as high priority traffic and everything else as low priority, so one would expect the voice to get a high QoS, since there's only a five percent packet loss. But a five percent packet loss can mean lots of different things. It could mean that you lose 10 packets in a row and then the next 180 packets arrive in perfect order; that would cause a glitch or drop-out that the user will hear in the phone call and will find quite disruptive. On the other hand, you could lose one in 20 packets, which is also a five percent loss but wouldn't be noticed by the user."

Ellis continues: "Moreover, if there are multiple calls traveling across that link, particularly now with switches that work with flows, a five percent loss might translate into a loss of five percent of the flows, which means that five percent of all phone calls — entire phone calls — can be lost."

"So, traditional ways of even defining QoS for IP networks don't really map into things such as telephony or videoconferencing, because what you're interested in there is the quality of an individual stream of packets comprising a conversation," says Ellis. "When you're looking at bulk file transfers, resending packets is not such a big deal. But in the case of telephony and videoconferencing, that directly touches users, so when something goes wrong, they see it and complain. One of the CIOs we work with describes users as his most expensive network management tool when it comes to VoIP, because they are the ones who alert him to a problem with a barrage of five or more angry phone calls from, say, the New York office, complaining about calls 'breaking up', and yet the network management system is indicating that everything is fine. Like other organizations, they monitor VoIP and video, and because they are streams from user-to-user you need management tools that monitor and manage streams on network links."

"From what we've seen," says Ellis, "there are two camps of customers. One camp managed to get some QoS in place and they're moving from the theory of QoS to the practical implementation. They've discovered that, if you're doing session-based protocols for voice and video, you need to monitor on a slave or 'streams' basis. The second camp involves people revising their idea of QoS, which is the traditional definition of QoS, a definition that's very network centric, and it involves the IP layer. That's fine for applications where you're only really concerned about what happened on your network, because the IP networks do a great job of moving data from one place to another and generally they don't 'mess up' what's inside of the packets. However, IP voice networks are fundamentally different because your voice network is of restricted value unless it connects to another network."

"So, you have to connect to either the PSTN, the traditional telephone network," says Ellis, "or you have to do what's increasingly happening now, something that's certainly common in Europe and is starting a bit in the U.S. What I'm referring to is a company having a connection that goes from the VoIP network out to the PSTN, to a telephony provider, and they might connect to a different provider for international calls to get a better tariff, and they might connect with another provider to get a better rate for cellular phones, and directly connect to business partners in an effort to hold onto them."

"This is all very exciting," says Ellis, "because it results in much more cost-effective telephony, which was one of the reasons for adopting VoIP in the first place. However, the big challenge for the corporate IT department is that communications is a whole new ballgame because now their users get affected by what's happening in other networks. The PSTN's problems were ironed out decades ago. But now you're introducing a whole set of different places and ways from which voice quality problems can emerge. In once case we know of in the U.K., a company was suffering from call problems and it turned out that there was one particular location where they paired their voice network in such a way that a small percentage of their calls were getting disrupted. For a business that depends on transactions with customers done over the phone, even a small percentage can impact on the viability of the company. If five percent of users hang up because they can't hear what the customer service representatives say, then that costs the company real money over time."

"...a traditional QoS toolset is oriented toward IP phenomena that govern data more than voice quality."

"The challenge is that VoIP networks are turning out to be a lot more complicated than a traditional telephony network, because you've got all of these various points where other network technologies are connecting. Aside from LAN

QoS and WAN QoS, you've also got a whole set of application quality issues that don't really come under the traditional banner of QoS. Even stream or session-based QoS monitoring schemes still sometimes run into problems, because to effectively manage VoIP and telepresence you need to manage beyond your network. This relates to a real situation concering one of our government customers. Their really good IP QoS tools were all showing 'green lights'. Everything appeared to be perfect. But users were still complaining about call quality. As it turned out, they had several hidden issues. One was that they had some poor quality handsets sitting in one part of the network. Another issue was the software running on their media gateway was incorrectly configured. On another gateway, the echo cancellers had been turned off. So you had these problems, and yet the IP QoS tools determined that everything was okay, and from an IP point of view it was. But, of course, that's not the whole picture. You still have to manage voice."

Ellis elaborates: "Managing voice itself is a new thing for enterprises because telephony has been so stable for so long, so when you talk about QoS for voice, most people tend to look at you in a confused manner or else they start talking about IP QoS factors, such as packet loss and jitter parameters. These certainly affect telephony quality but even if they're perfect, you can still encounter quality problems inside of the whole system, such as echo, delay, incorrect speech levels and distortion, background noise, and so forth. All of these things can ruin a phone call, and yet a traditional QoS toolset is oriented toward IP phenomena that govern data more than voice quality."

So it appears that even in the secure, controlled world of the corporate LAN, companies such as Psytechnics can still do a booming business helping enterprises find the multitude of otherwise obscure problems that affect voice and video quality.

And how are your IP phone calls sounding today?

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

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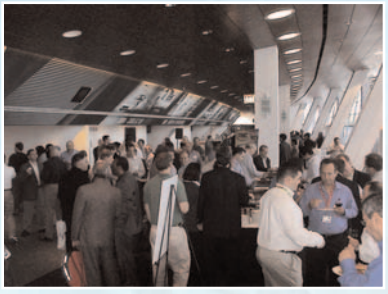

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IP-PBXs: What to Look for in a Best-of-Breed Solution

Legacy PBXs Foil Enterprise Attempts to Reduce OpEx

Until recently, legacy PBX vendors based their legacy product on proprietary extensions, locking enterprises in for peripherals and added features/ capabilities, and charging excessively in the bargain.

Many legacy PBXs were available in a fragmented market. Enterprise integration and maintenance was difficult and costly. Each legacy product had its own quirks and eccentricities that required attention. This situation was troublesome to enterprises trying to reduce their operational expenses (OpEx).

Vendors commit to interoperability, freeing enterprises to choose from options

With SIP becoming the de-facto standard protocol for interoperable IP telephony equipment, no longer must the enterprise fall hostage to a single PBX vendor. In contrast to yesteryear, vendors are now committed to interoperability. Enterprises are therefore now free to choose a standards-based, best-of-breed solution. Enterprises can mix and match IP PBX software, media gateways, PC hardware platforms, applications (voicemail, unified messaging [Microsoft entering the Unified Messaging and Unified Communications world marks a turning point], IVR, recording, billing, etc.) and IP phones from different leading vendors. Enterprises can now choose - from multiple options - the best of each component's breed in the solution. An IP phone can be taken from one shelf, IP software from another, a messaging platform can be selected from a third vendor and a media gateway chosen from a fourth. The enterprise can deploy the four best-of-breed products together and they'll all interoperate successfully. Interoperability is probably the most significant factor to look for in best-of-breed solutions.

Unbundling IP PBXs, IP phones, media gateways and application servers like this has increased competition between vendors which has significantly reduced costs, support charges and upgrade fees.

Enterprises can, moreover, update their solution at will. If they're unhappy with their IP phones, for example, they can change them with IP phones from another vendor.

By hybridizing architectures, PBX vendors can offer their installed enterprise bases a non-disruptive migration from TDM to IP.

To enjoy the benefits, flexibility and cost reductions of IP telephony, an enterprise must keep the IP telephony network as standard as possible (based on SIP).

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By Nimrod Borovsky

Legacy PBXs out, IP PBXs in

From 2003, sales of IP-enabled hybridized systems reportedly exceeded TDM exchanges. In 2005, sales of IP-PBXs reportedly surpassed traditional PBXs in terms of 'lines' deployed in the U.S. and Canada. According to a recent report published by the Gartner Group, PBX sales will foreseeably be completely IP by 2010, providing the basis for enterprise Unified Communications (UC) and for flexible and diverse networks which bare lower Operational Costs to manage.

Applications Galore

Software applications such as presence services, UC, business continuity and mobility are becoming increasingly important to enterprises.

The IP telephony industry is therefore fast becoming driven by software applications, which are helping business increase their productivity, customer service, and operating successfully across geographically distributed locations, nationwide or internationally.

The IP PBX is essentially a server with software installed on it, so the savings in hardware is a factor. Open-source versions of IP PBX solutions are driving the price down further. Enterprises gain both in savings and flexibility from applications delivered on open source. Enterprise CIOs get guaranteed interoperability and testing of these applications, rapid development of features and a complete, fully supported core solution. Enterprises save on OpEx because it is easy for CIOs to install a fully functional office at any location that can be reached via a broadband connection. Applications such as UM can dramatically improve an enterprise's efficiency.

Management and collaboration applications significantly benefit distributed enterprises whose employees are mobile. Incoming calls can be prioritized and routed to specified locations. Employees can share their status with others. Collaboration utilities benefit mobile workers who can initiate and participate in conference calls, share documents, and conduct presentations from any location so long as there's an Internet connection.

Nimrod Borovsky is Director, Media Gateways Business Line, for AudioCodes. (news - alert) For more information visit the company online at http://www.audiocodes.com.

Content and the Long Tail

The concept of The Long Tail first caught the public's attention when Chris Anderson wrote an article about it that appeared in the October 2004 issue of *Wired* magazine. The terms refers to the many not-so-best-selling special interest items ("offbeat" videos, books, music CDs, etc.), that appeal to a small number of people, but cumulatively represent an immense market that can now be served, thanks to the low costs of inventory storage and distribution made possible by the Internet.

The Long Tail first wagged in the book, music and video markets. In particular, Video on Demand (VoD) has been a part of digital cable systems for about six years now, and should explode in popularity when the inherently interactive IPTV gains market share.

For those of us wanting to see reruns of Science Fiction Theatre (1955-57) and Way Out (March to July 1961) that little-known, creepy and amusing competitor to The Twilight Zone hosted by Roald Dahl, the whole idea of serving the Long Tail sounds terrific. Still, there are concerns over whether any provider can maintain increasingly huge databases and whether conventional user interfaces are up to the task of navigating zillions of pieces of content in a reasonable time.

Bang Chang is Director of Product Marketing for Servers and Storage at SeaChange International (news - alert) (http://www.schange.com) a major player in open software and server solutions for Video on Demand (VoD) and IPTV. They have agreements and relationships with Comcast, Verizon, Cablevision, Cox, Time Warner, NTL, Virgin Media, NTT, and most of the cable operators in China.

"Our emphasis is on On Demand services," says Chang. "We deal with telcos, but mostly MSOs [Multi-Service Operators]. Much of what we provide is middleware, but the company started providing VoD servers. That business expanded into providing back-office software on top of the servers. That in turn expanded into middleware, which is essentially the client/server applications running on the subscriber's set-top box and on the network operator's server-side. We also have a product line that handles static and dynamic advertisement insertion to content."

"Demand services are now actually very mature," says Chang. "The technology has been around for five or six years. Personally, I have On Demand from Comcast. Indeed, I believe that most their digital subscribers use the VoD service. It's very popular. There's also a big VoD initiative with Time Warner, Cablevision and almost all of the rest of the operators. Verizon is also getting into this space, and it's competing very intensely with the cablecos in this area. Japan's NTT is also pushing VoD services. We see it in Europe too, and all over the world. At the moment, most of our current business is from North America, but that will change."

"Right now the amount of content these systems handle is manageable," says Chang. "The best-of-class service offering offers about 6000 hours of content, which consists of two-hour movies and 30 minute TV shows. So the average system currently holds about 6000 titles. The current user interface is adequate to handle all of this in terms of search and navigating among the titles. Interestingly the access part is a lot more 'concentrated' than you might at first think. There are formulas and graphs for revealing access and usage patterns. If you think of this classically, you see a curve. Along the X-axis are titles ranked by their popularity in decreasing order. On the Y-dimension is the number of concurrent viewings of those titles. When you plot that you get a very steep curve."

"As I said, the viewing pattern is very concentrated," says Chang. "It used to be quite distributed. About

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By Richard "Zippy" Grigonis

80 percent of the viewings would concentrate on 50 percent of the content. But as the amount of content increases, the 'viewing window' or subset of content in which people are very actively interested does not increase as rapidly as does the amount of content. So right now the rule of thumb is as follows: 20 percent of the content accounts for 80 percent of the viewings. Yes, it's the classic 80/20 rule. The workload on the systems remain manageable."

Interfacing with the Long Tail

"Our SeaChange Interactive group was just awarded a patent for a product called Channel Overlay," says Chang, "which is basically an accessible search function, where you can jump to 'hot' channels that are relevant to what you're watching or what you're doing. So say you're looking for an ESPN program. Channel Overlay will detect channels that are relevant to ESPN, such as Fox Sports. The same principle can be used to make it easier to navigate to such long tail programs."

For Long Tail players to succeed, tremendous analytics and ease of participation will be key. Some of these challenges have been met by FeedBurner (news - alert) (http://www.feedburner.com) a fascinating company that promises to turn the media world on its head.

Rick Klau, Vice President, Publisher Services at FeedBurner says, "At a high level, we manage content for publishers of all sizes," says Klau. "We currently work with between 300,000 and 400,000 publishers around the world; the vast majority of them are independent publishers that would fall into the 'Long Tail' category. So in addition to managing content for USA Today, Dow Jones, Reuters and a number of the largest publishers in the world, in terms of sheer numbers the vast majority of our user customers are bloggers and podcasters, which we would also traditionally think of as the Long Tail."

It's All in the Details

"What we do for these people is to help them understand what the size of their audience is," explains Klau, "how many people are reading their content, and how and where are they reading their content — on a website? In an aggregator? Are they subscribed to the delivery of that content? Are they clicking through to visit the website? How are they interacting with that content? And then, for many of them who want to monetize that content, we help them by providing access to our ad network, which groups publishers into channels and we have a sales team who are out there meeting with agencies who want to reach targeted audiences in those channels."

"Publishers who decide to use FeedBurner direct the requests for their content through FeedBurner itself," says Klau. "That's done by their RSS feed. RSS is now a complement to email and other online advertising. When they do that we're able to monitor all requests for that feed and our analytics and algorithms evaluate all of those requests to better understand how many subscribers there are. Last summer we acquired a web analytics company and we released the integration at the end of Q4 2006, so that in addition to measuring feed consumption we also now have a mechanism where we can monitor traffic to websites."

"Our core service is free," says Klau. "A publisher who simply wants to know how many leaders and subscribers they have, and which content they're reading and what items they're clicking on, would pay FeedBurner nothing. It's those who want to monetize their content and participate in the ad network who share revenue generated with us."

The economics of next-gen, dot-com businesses are always interesting to say the least, but this time around it looks like the world will really be transformed by an apparently simple idea magnified by broadband network-based technology and scads of eager users.

Now, where's that old episode of My Mother the Car. . . ?

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

CommuniGate's Pronto! Client Opens Up the Communication Senses!

by Jon Doyle

When communicating with others, we all rely greatly on our visual sense. During a phone conversation, for example, have you ever wanted to see the other person's expressions when they said something or heard some news? We've found that the visually energetic delivery of messages in business, such as from a CEO, is very desirable. Such capability is also welcomed among consumers for intimate communications between family members. Multimedia Messaging, or MMS, is very popular to send a quick video, often laden with emotion, like a birthday greeting, or where you have caught a "moment" with your mobile's cam, and you want to share that with people.

Modern communications is increasingly a hybrid, capable of multi-channel connections between people such as phone + IM, or video + audio, involving multiple senses. You see it on the Web, with Flash technologies, or in support centers where you can chat with the technicians live. Rich Media Communications delivery is highly visual and uses multimedia to stimulate more than one of our senses. According to the Wikipedia, Rich Media is interactive multimedia, but we like to think of Rich Media here at CommuniGate Systems as taking a media type to a higher level.

However, if multimedia is too difficult to use or not really beneficial, such as a disruption in the work place, what good is it, other than a nice distraction? Rich Media can appear in simple things such as talking on the phone while IM'ing others, often times to get info on how to answer things we might not know at that moment. But by taking Rich Media and making it fit a business process or a consumer lifestyle, things really get interesting.

If you look at how people work in most offices, you will find a dashboard for their email and scheduling, maybe Outlook, but you will also see IM clients, and music clients such as iTunes or Windows Media Player. We have become very dependent upon our email and scheduling over time. In fact, the calendar application itself produces a lot of traffic these days involving invites, acceptance notices, attachments, updates to meetings, and notes containing PIN codes for conferences. In fact, most of the business communications have become all wrapped up in that client, Outlook.

When we at CommuniGate Systems began development of our new concept of a client framework, it was not to just make another Outlook, but bring Rich Media into users' hands. We set out to not just dump a lot of new features on the desktop, but design a framework that becomes a client-side application server. You probably have heard of applications servers, but a client, which can run applications designed to fit organizational or individual requirements, is quite unique. We called this new framework Pronto!, and we built this in Adobe's Flex2 technology for Flash players.

We of course needed our new client application server to have excellent integration of the fundamentals such as email and calendaring, but the basic concept was to create a client that brings together all of the new forms of communications elegantly, whereby all forms of IP communications can be accessed via one address (name@domain.com) any place and any time. I like to think of Pronto! as what comes next or in the post-Outlook era, rather than being just "old wine in new bottles". Pronto! needed to be able to serve up interesting applications like IM and Presence, but hook into the existing calendar functions, so you can see a person's presence, and perhaps IM them quickly before you make an appointment. Or, have the calendar decide when calls can ring my devices; am I in an appointment? Is the caller an important person that can barge in or be redirected to a colleague?

Think about how we work today. Many of us like to play music while we work - this is not really anything new, but think about that music being available in the client, no matter where you are logged on. Another interesting application we see a lot of these days is blogs. What if that info were also in the same client, and I could drag music up to the blog and make it available anyplace? It starts to become really useful if I am sitting and listening to a seminar speech, and that blog is available through my

mobile, with the same Flash client, and I can update it in real time. Or, as I walk out of a seminar, I see a friend, and decide to Bluetooth him over a few of those songs, from the same client.

I don't know about you, but I tend to be connected a lot, either by the computer or the mobile I carry. But many of us also manage to have some time available in the day to watch TV. What if that same communications client were available in the set-top box? What if I could see phone calls as they come in to me, and decide whether or not to answer them? Would that not be pretty nice to hear in my surround sound system? Well, perhaps my wife would not like that so much, so instead I could decide to retrieve that call on my mobile and step out of the room. These examples demonstrate that our means of communications need to be more fluid, and not constrained to one particular network or the other. The buzz word for this is FMC, or fixed-mobile convergence. My lifestyle is such that I roam between fixed lines, such as DSL and my LAN at work, to wireless, and then sometimes to cable networks.

We built Pronto! using Adobe's Flash for a variety of reasons, among them security and portability, as I have shown, but most importantly because of its multimedia capabilities. The ability to see a person in a static video, or a videoconference, or even in IPTV, is all about different usage types of Rich Media. Having the right client architecture unlocks the real capabilities of communications for different lifestyles and business needs.

Have a look at Pronto yourself, or download a free 5-user copy and run it today - www.communigate.com/pronto/

Jon Doyle is Vice President, Business Development, at CommuniGate Systems (http://www.communigate.com). (news - alert)

Choosing the Best Technology for Rich Internet Applications

By Jeff Whatcott, Vice President, Product Marketing, Enterprise & Developer Business Unit, Adobe Systems

While Internet-based applications have brought benefits to businesses and consumers alike, the actual experience of interacting with many Web-based applications leaves much to be desired, especially when compared with the richness and usability of the best desktop applications.

For consumer-oriented applications, the Web's page-based model and lack of client-side intelligence can make even simple transactions confusing and error prone. As a result, online businesses are losing millions of dollars to abandoned shopping carts or costly customer service calls.

For business applications, the problem is particularly acute. The Web deployment model has allowed IT organizations to reduce the cost of software deployment, but it has created a community of underserved business users wanting to return to the usability and responsiveness of desktop and client/server applications. As a result, businesses are losing millions of dollars per year due to low productivity or poor decisions.

Why is this happening? Ultimately, the demand to build applications of increasing complexity has outpaced capabilities in traditional Web browsers. IT professionals are realizing that traditional Web browsers are the Achilles heel of today's SOA strategies. Browsers cannot connect natively to Web services or interact with message-based data. They are also OS dependent, making software development and testing extremely arduous and time-consuming.

Forward-looking IT professionals are turning their attention to design patterns and technologies that can improve the client side of the equation. And now, we are seeing widespread deployment of rich Internet applications (RIAs) that combine the responsiveness and interactivity of desktop applications with the broad reach and ease of distribution of the Web.

IT professionals and developers have a wealth of resources with which to design RIAs, including Flex, Ajax, Silverlight, XUL, JavaFX, etc. Any of these technologies demo well and will work for 'good enough' RIAs that incrementally improve the user experience for a limited audience. More and more developers, however, are embracing Adobe Flex once they reach the limitations of the other options but require more richness and broader reach.

Flex is already being used by thousands of organizations for delivering RIAs across the enterprise and over the Web to deliver interactive data dashboards, customer and employee self-service applications, online product selectors and configurators, and business-to-business applications.

Applications delivered with Flex offer a better experience because they take advantage of the browser and Flash Player runtime. Installed on over 97 percent of Internet-connected PCs, Flash Player provides a consistent, cross-platform runtime that combines a high-performance virtual machine with integrated support for multilingual text display, printing, data manipulation, motion, and multimedia. On top of these capabilities, the Flex framework layers a rich set of user interface components and design principles that encapsulate best practices in interaction design and usability.

Flex provides a highly productive development model that easily integrates with existing processes and is based on standards and best practices that have emerged over the last decade of Internet development. The Flex development model uses XML for user interface design and layout and an implementation of ECMAScript (JavaScript) for client logic. The Flex Builder integrated development environment (IDE) provides a robust set of coding, debugging, and visual user interface layout tools that shorten the learning curve for new developers and easily integrate with existing source code management systems. In addition, Flex provides integrated support for unit testing and automated functional testing tools.

And because Flash technology leverages SSL and authentication technologies and requires no changes to access control or other security settings, organizations do not need to deploy additional security solutions when embracing Flex-based applications.

The end result is a streamlined, intuitive way to design and deploy applications that dramatically improve how businesses engage with people, processes, and information.

The LCD Monitor:

A Thin Multimedia Collaboration Client and a New Paradigm for Collaborative Visual Communications

The LCD market is extremely competitive and commoditization has driven prices down. In an effort to increase profitability, manufacturers are seeking ways to differentiate offerings and add value to the device. One of the most commercially viable and profitable options is the thin client paradigm, which has a PC embedded within the LCD display.

Thin Clients in the Enterprise

By definition, a thin client is a networked computer that does not have a hard disk drive. By intent, it is small and used for client/server applications where the bulk of the data processing occurs on servers. A thin client LCD display is a display that has a networked computer actually embedded within the LCD display.

Recent rapid advances in processing power, driven by the widespread adoption of Moore's law (Note: Moore's law is commonly formulated as the doubling of the number of transistors on integrated circuits every 18 months, effectively increasing computational power at the same rate), has made it possible to "hide" a full-fledged desktop computer within an LCD screen. In terms of processing power, today's thin client is comparable to power of desktop PCs from two or three years ago – offering more than enough processing power for most enterprise, or networked users.

In essence, an LCD monitor can serve as the basis for a thin client, adding significant value to this commonly-used device. To make thin clients attractive to enterprises, firmware included with the thin client enables centralized management and control over the operating system and applications running on them.

Enterprises and businesses that require employee access to centralized data, or that require minimal computational power for daily work, will find the thin client to be very suitable option that offers real added value:

- Reduces IT administration costs
- Lowers hardware costs
- Consumes less energy
- Easy to secure
- Reduces the threat of theft
- Improves mobility

Thin Clients Can See!

With the migration toward thin client technology in the LCD monitor industry in full swing, manufacturers still need to further differentiate their offerings to gain market share in the enterprise computing market. This can be achieved by turning the LCD display itself into the enterprise communications epicenter by enabling real-time audio and video communication and essentially transforming it into a personal video conferencing system.

This is happening today from two sides of the industry: from LCD manufacturers and room video conferencing equipment vendors. In March, 2007, industry leader Samsung unveiled an LCD display that delivers these capabilities at the CeBIT 2007 exhibition in Hannover, Germany. Other manufacturers will surely follow suit. Video conferencing systems manufacturers have recently begun to provide office-based video conferencing units that serve as LCD displays for desktop PCs, and in all likelihood, will eventually include thin clients as well. Although current systems are targeted for high-end, executive markets, future systems will certainly be targeted more widely to include distributed employee bases in an effort to increase market size.

These types of thin clients, thin multimedia collaboration clients, meet the needs of enterprises migrating toward IP networks. Equipped with easy integration with video network infrastructure, these "new and improved" thin clients are an excellent option for large-scale enterprise deployments, such as banks, travel agencies, insurance companies, hospitals, contact centers and more.

From these trends, it appears that the LCD monitor and the video conferencing system markets are on a common path. The result: even stronger competition for unique LCD display technologies and products. The complexity of video conferencing will force LCD manufacturers to gain new core competencies in developing and embedding these technologies in order to survive.

The Architecture that Makes it Possible

A thin client requires an application chip to be embedded in the LCD monitor itself. Developing a thin multimedia collaboration client requires more horsepower, which requires more effort and additional chips to be an integral part of the solution.

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By Tsahi Levent-Levi

To support video conferencing, the thin multimedia collaboration client must support VoIP signaling, as well as deliver additional media processing functionality.

Media processing is an important element in any thin multimedia collaboration client because higher resolutions and frame rates and improved audio quality are imperative for a satisfactory solution. To achieve this, the basic architecture of a thin client will not suffice. A single chip solution cannot deliver the both excellent audio and video quality and high system responsiveness.

The diagram in figure 1 offers a high level overview of the system architecture required to support video collaboration and communications on a thin client. It is by no means complete, but it outlines the important system components.

The separation between the application and DSP chips is imperative. To increase video resolution and quality, more processing power is needed. If this extra processing power was taken from a general purpose CPU, the overall responsiveness of the system would suffer, as would the quality of the media itself. For this reason, it is strongly recommended to designate a DSP designed for media processing to handle these tasks. The application chip handles all application level tasks, such as the selected operating system, the user interface and the actual signaling used for communications.

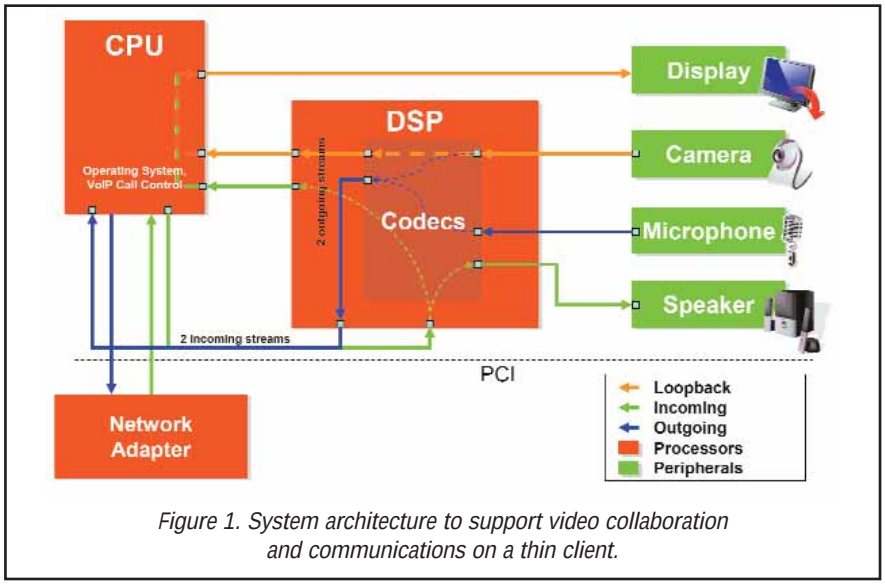


Figure 1. System architecture to support video collaboration and communications on a thin client.

It's all about the video

Video is what differentiates a thin multimedia collaboration client from other thin clients.

The thin multimedia collaboration client must deliver a superior user experience compared to simple video conferencing. Because the primary target market is large enterprises, ease of use and collaboration are essential.

The most critical video elements that should be implemented in a thin multimedia collaboration client are as follows:

- 2- and 3-way video conferencing
- Interoperability
- Presence and instant messaging
- Document sharing
- Privacy

A 5-step Approach to Develop a Thin Multimedia Collaboration Client

1. Carefully select the target market. Some industries require very strong collaboration capabilities while others may be more focused on privacy. Selecting the target market is the most fundamental step.

2. Next, build the right solution specs by asking the right questions. Issues like the required or desired video quality, support for special features, and available ecosystems are just a few examples. Many other issues will most likely come up at this stage. Address each one carefully; the effort required and the choices available in the next phases depend on how they are dealt with.

3. Choose a hardware platform. The choice of CPU and DSP affects system resources, which in turn affects the features you can enable. Check that the relevant video quality and audio quality can be achieved with the DSP selected, and make sure that the CPU fits the operating system you need and can work along with the DSP. In addition, the DSP must have a large enough ecosystem of codec vendors to provide all the solutions needed.

4. The fourth step is integrating the V2oIP solution. This is where it gets more complex. The V2oIP solution must be capable of providing the specific features needed for the thin multimedia collaboration client, be flexible enough to fit the environment and have enough features to provide the large array of services.

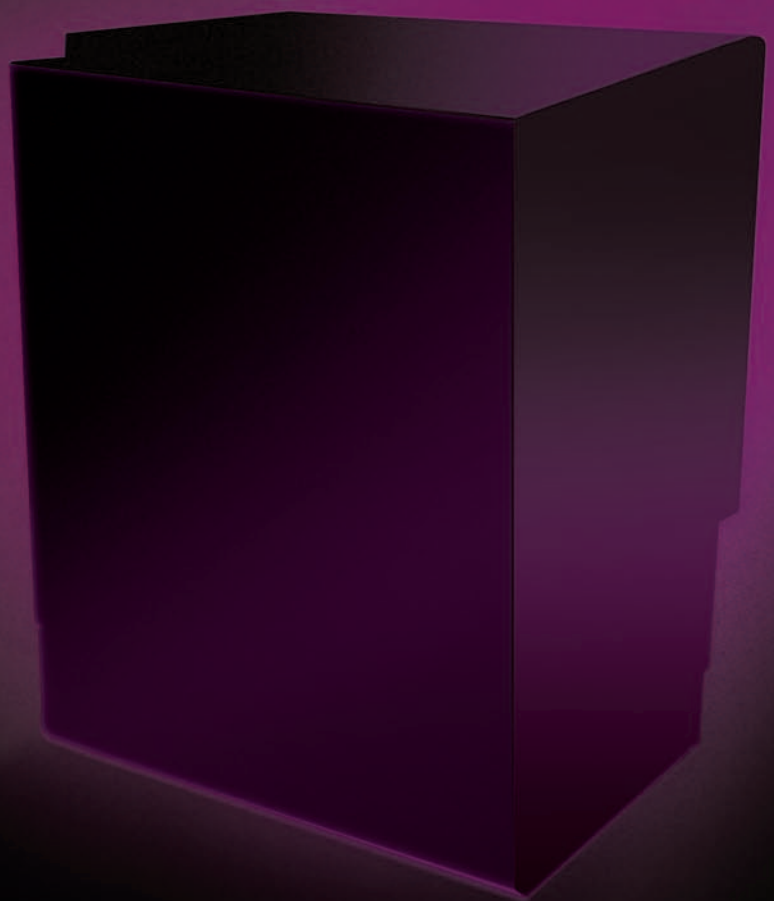
5. Last, but certainly not least, is the interoperability testing and deployment stage. Remember, thin multimedia collaboration clients don't live alone on islands; they are collaboration tools. In order to faciliate collaboration, they must be interoperable with other equipment, on other networks and with other VoIP clients. Many issues may arise at this stage that will require system tweaking – from signaling and call control, to the bits within the media itself. This is by far the most challenging step.

The technology to produce a thin multimedia collaboration client exists today and involves complex combination of signaling and media integration. But it is well worth the effort. This compelling new paradigm meets the needs of enterprises migrating to IP networks, and delivers significant benefits to enterprises while leveraging investments in network infrastructure.

Following a logical, well thought out methodology, LCD manufacturers can adopt this new paradigm to differentiate their products from take advantage of profitable business opportunities.

Tsahi Levent-Levi is the Products Manager & System Architect at RADVISION. (news - alert) For more information, download RADVISION's thin multimedia client whitepaper at http://www.radvision.com.

Seeing Is Believing



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Pannaway Evolves With Their Most Powerful Platform Yet

By Richard "Zippy" Grigonis

Pannaway Technologies (news - alert) (http://www.pannaway.com) has forged a reputation for delivering platforms that enable various kinds of telcos (IOCs, CLECs, and the emerging MDUs and MUNIs) to cost-effectively offer top-notch, carrier-grade services. For example, Pannaway's award-winning Service Convergence Network (SCN™) is an end-to-end IP Ethernet access solution that provides telcos with the ability to cost-effectively deliver IP-based, broadband voice, video and data services. Such Pannaway offerings as their SIP-based Primary Line Voice over IPSM and BAM™ (Broadband Access Manager), combined with an easy migration path to their robust IP video delivery platform, have quickly and inexpensively revitalized many telcos.

Even rural independent operating carriers have found they can remain competitive by adopting Pannaway's smaller form-factor, mid line-count devices, such as their BAS™ (Broadband Access Switch), an ADSL2+ aggregator and digital loop carrier, as well as their BAR (Broadband Aggregator), which aggregates all the BAS devices using layer 2 or layer 3 technology.

Even with a string of awards and positive product reviews under its relatively young belt, Pannaway wasn't content to churn out the same product yet again. About a year ago and after extensive research with existing customers, Pannaway recognized that the telco market lacked a converged, IP chassis that could scale to support larger deployments and integrate a myriad of existing and emerging technologies. They began to formulate a plan which TMC has now learned consists of enhanced customer service, training and support programs as well as a super-high bandwidth platform capable of satisfying even the largest telcos for years to come. The result, to debut in June at the NXTcomm show - and at an accompanying special event nearby - is MAGNM-20 (Multi Media Aggregation Node)-a cost-effective, 23-inch rack mount packed with a pure IP chassis, designed to trump competitive offerings from Calix, Occam and Adtran.

Pannaway's Vice President of Marketing, Kevin Brown, spearheaded the development and launch of the new chassis. "For the past 6 months or so, we've worked closely with existing customers to enhance our support and training organization and to develop MAGNM-20, our new high-performance IP chassis," says Brown. "We've been building the business, with continued revenue growth from quarter to quarter, preparing for this company re-launch. As an enabler, late in 2006, we raised a significant round of capital from our established group of 30 visionary investors, including Allen Bildner, the past chairman of King Supermarkets, who sits on the board of the Yankee Entertainment and Sports (YES) Network, and Bob Levine, founder of the former Cabletron Systems. The combined net worth of our investment group exceeds one billion dollars of liquidity, which simplifies the fund raising process vis-à-vis our competition."

The ability to evolve and quickly fund the new platform based on that process is of tremendous value to Pannaway's customer base, because it ensures the company's financial stability and enables it to bypass the traditional red tape associated with the development of cutting-edge products and services. Essentially, Pannaway's operational structure allows them to always maintain a competitive advantage in the converged IP services market.

"As an investor, I view Pannaway as a market leader in converged IP technologies," says Allen Bildner. "My continued investment support in Pannaway is for the long-term, and I believe in what they're doing. I'm familiar with their business plan, and I recognize the market opportunity for their new IP chassis. I expect great things from this company in 2007 and beyond."

"As a company, we still have zero debt," says Brown, "and we're fast approaching the 100 customer mark which includes some very large telcos including Etex Telephone Cooperative, which is using our SCN to deliver one of the largest Triple Play service networks in Texas, and NTELOS, a 90,000 line ILEC in Virginia, which is deploying our SCN so they can easily transition to an all-IP, converged services network with Session Initiation Protocol [SIP]-enabled, carrier-grade digitized voice."

Pannaway has also worked diligently to develop its partner network and has arrangements with such industry leaders as Cisco, MetaSwitch and Nortel. According to Brown, Pannaway works closely with each of its partners on multiple fronts including joint training, sales and support, and is recognizing a steady revenue stream from their joint efforts. "We're part of Nortel's development program and we spend a significant amount of time with their engineers," says Brown. "We're looked upon as the gold standard as far as SIP interoperability and the features that we sup-

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port. So we feel from a business standpoint that we've made major strides."

Pannaway is gearing up to unveil MAGNM-20, which incorporates all of its existing IP technologies in one high-density, high-performance platform. MAGNM-20 is a compilation of the company's broad spectrum of IP products, making it ideal for existing customers while creating new opportunities with larger tier-two Telcos. "As far as big ticket numbers go, the system capacity of this product is nearly a terabit per second," Brown says. "The capacity of this chassis will protect our customer's investment for the next decade."

Pannaway's new chassis exceeds the highest density of any pure IP access solution capable of delivering Triple Play. Moreover, it supports a remarkably wide range of IP-based technologies including T1, FTTH, GPON and VDSL2. With its passive design, no active components are permanently attached to the backplane, and all modules have redundant power and backplane connections. The company's goal with MAGNM-20 is to ensure that there is no single point of failure in the system, thanks to a complete range of redundant common equipment components.

So, what does this new chassis do for Pannaway's customers? With its compatibility and unmatched scalability, MAGNM-20 essentially gives customers the ability to combine IP POTS, ADSL2+, VDSL2, or Gig to the home or 100 megabits per second [Mbps]. These legacy and next-gen technologies take up a chunk of the backplane bandwidth, but won't come anywhere near exceeding the capacity of MAGNM-20. This tremendous capacity prolongs the life of the system in a Telco's network. And, because the system is both forward and backward compatible, Pannaway's engineers can continue to develop and deploy new blades, which will interact with both legacy and emerging technologies.

Further, MAGNM-20 is truly IP to the core, not ATM-based like competitive products. It has a point-to-multipoint meshed backplane with Ethernet framing in a non-blocking architecture, which, adding up all of the high-speed serial links, yields a backplane capacity that has already been tested to 922 Gbps. Brown says, "Pannaway can do 864 single-ended ADSL2+ ports out of this device and if you bond the pairs to increase the bandwidth per user, then you divide that by 2 to get 432 users per chassis. We also have boards that support 100 Mbps or even a gigabit per second per line, so we can support each user at 100 Mbps or 1 Gbps speeds."

Pannaway's startlingly powerful new platform, combined with its well-known, superlative customer service and support, should boost the company to the very pinnacle of next-gen converged IP broadband system vendors.

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

Next-Gen Chassis, Next-Gen Service and Support

With the introduction of its new super chassis, MAGNM-20, Pannaway is strengthening its mission of creating pure-IP convergence solutions for telcos seeking to retain a competitive edge in the Triple Play marketplace. But the investment in MAGNM-20 is only part of the bigger picture.

"We've spent the last six months taking stock of where we, as a company, want to be in the IP convergence space," says Mark Carpenter, President of Pannaway. "Once our board and executives had a chance to come up for air, and take a look at what we'd accomplished over the last two years, what we found was that in addition to the award-winning products, one of our major differentiators as a company was our dedication to service and support. The level of training and post-sale support our customers receive is something that we're very proud of and we decided to expand on it. We listened to our customers to find out where their pain points were, as well as what they thought the best-practices approach to those problems should be."

In addition to focusing on its future product roadmap, Pannaway has also made significant enhancements to its customer care organization. The company now provides its customers with a knowledge-base allowing them to view in real-time, open trouble tickets, case status and call history; advanced trouble shooting and monitoring capabilities which enable Pannaway technicians to see issues in customer networks as they occur, and automated Web-based Element Management capabilities which deliver dynamic upgrades to Pannaway products.

"In addition to building a new chassis, we've also taken a look at how we deliver support and how we can improve our customer's experience," says Carpenter. "In doing so, we've raised our customer care to a new level and added new programs which include a new customer-driven user's group and enhanced post-sale product training."

The result, as reflected in a recent independent survey, has been worth the investment. Pannaway currently enjoys an all-time high rating in customer satisfaction, at about 99 percent. And Pannaway's loyalty to existing customers has reaped other benefits as well: Carpenter says that several of the company's existing telco customers have already placed orders for MAGNM-20. "They're as excited about the product launch as we are," he says.

As for the future of Pannaway, senior management at the company plans on the long term. "We want to be recognized as the leader in VoIP interoperability," Carpenter says. "Pannaway also sees itself taking a leadership role in the delivery of next generation IP platforms, and in the delivery of world-class customer care." IT

Network Monitoring Gets Pervasive

Network Monitoring is a term that can encompass both active and passive monitoring systems that handle anything from intrusion detection to Internet and protocol analysis, network troubleshooting, application performance ratings, access control, Sarbanes-Oxley, deep packet inspection, VoIP analysis, IPTV service assurance, and on and on. In terms of IP Communications, a great deal of 'network monitoring' has to do with maintaining a high Quality of Service (QoS) — checking for packet traffic congestion on the network along with any accompanying physical infrastructure problems.

Just as the line between testing and monitoring has blurred, so too has the boundary between monitoring and general network management. Monitoring is now a vital part of various well-known management systems, such as the Alcatel 5620 Network Manager and Service Aware Manager. The Alcatel 5620 SAM Assurance (SAM-A) and Alcatel 5620 SAM Provisioning (SAM-P) modules ease fault detection and proactive diagnosis, and simplify the introduction of Ethernet or IP services by a service provider by furnishing enhanced service provisioning and assurance capabilities.

The august HP OpenView (being re-branded as HP Software) is another extensive portfolio of network and systems management products, of which keeping tabs on the network itself is important. IBM's Tivoli NetView is a monitor program that provides real-time monitoring of network health, displays network topologies, and gathers performance data. For example, you can run an active test over any server on the network supported by SNMP. Tivoli NetView measures availability and provides fault isolation for problem control and management in mission critical environments.

At Computer Associates (quote - news - alert) (http://www.ca.com), Brian Gollaher, Product Manager for CA's Network Product Line, says, "One of our goals here at CA is the move from what's called today 'Insight' or manually looking at network systems, servers, applications and reporting on what they're doing, to 'automation'. In other words, taking actual corrective action and rebalancing system resources appropriately. We have a product that we just introduced that's a virtual environment manager, called Virtual Platform Management, which allows us to monitor virtual servers and reallocate resources appropriately, based on the load generated by the applications. We view this as CA's first step into actual automation, or doing more than Insight. All of our products will be capable of doing this, but it will take a year or so for us to bring that about."

"As for network monitoring and management," says Gollaher, "we have an overriding vision at CA called EITM [Enterprise IT Management]. It consists of unifying, simplifying and securing the network across the enterprise. What we've done is to enable all of our products suites to work together: storage, security the networks and such, to exchange information so that one can manage the network resources, look at the applications and services that are running on the network and pull it all together at the business process level."

Gollaher elaborates: "The whole vision is to combine networks, systems, applications and storage, rolling it all up into the services that run on the network, and then look at them from a business process point of view. That's the CA overriding vision. We hear more and more from our customers — especially large enterprises, service providers and such — who say, 'I don't want a bunch of point products in my organization that manage a switch and a router over here, and a server over there. I don't offer servers anymore, and I don't offer networks *per se*; I offer services to my users and I run my business based on processes. I want alignment of all my expenses — whether they concern system services, networking, or whatever — to match my business processes'. That's what our customers have been telling us, and that's the dominant CA EITM vision."

"More specifically, in talking about network monitoring and management, obviously we want to be able to report the health of the network, as it aligns to a business process," explains Gollaher.

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By Richard "Zippy" Grigonis

"That's done through service availability management. So let's take voice as a service. You have a set of resources — it might be a Cisco Call Manager, a Unity server, the switches and routers on the network. There might be DNS, DHCP or even DFTP servers for configuration. All of these components are required to offer a voice service. We can certainly do both fault and performance management on all of these devices from a CA perspective, through products such as eHealth, a performance management system that is SNMP-based and that polls switches, routers, systems, servers and puts the statistics in a database and follows long-term trends. In terms of voice, eHealth can actually look at QoS queues on router interfaces, and it can look at the different classes of traffic and spot deviations from the norm. If you have Class 5 voice traffic, you can see what percentage of the resources on that interface are going to real-time traffic, and see whether there are any packet discards on the queues because of too much traffic. eHealth even does some application management."

"Basically, our products can go in, examine the performance of the devices, collect metrics and such," says Gollaher. "But where we take things a step further is through our Spectrum Service Manager. We have service models that take into account all of the components I mentioned. For example, Cisco Call Manager, DNS servers, switches and routers in network are all critical to run voice as a service."

"A number of our larger customers are looking at voice service from an SLA perspective," says Gollaher. "The IT departments are guaranteeing the users a certain service level, whether they be internal customers or, in the case NSPs, from an external customer perspective. Our Spectrum Service Manager can look at various metrics, from MOS scores, acceptable phone registrations, acceptable caller availability stats, and so forth. All of these metrics are fed into the service model. In the case of the components themselves, any legacy trunks, PRIs, T1s and such on gateways or any IP trunks are queried to see if they are available. If there's an outage, is it one that can affect service? For example, if you lose a Call Manager but there's a redundant one in the cluster and the phones re-register, that's not a service-affecting outage, though it's certainly a fault that needs to be corrected in the network, but it doesn't go against the SLA if there's sufficient redundancy built into the network."

"Same thing with switches and routers," says Gollaher. "If you lose a router, you lose an interface on the router. Does that affect the service or not? All of this information is rolled up into the service model, so that we can look at voice on the network as a service. It's a bit like Web Services. We're starting to look at SLAs for Web Services and Service-Oriented Architectures. When we were at the latest VoiceCon we got into discussions about voice services built on that same architecture. And certainly from CA's view, managing the network, the servers, the systems, the applications — including voice — from an SLA perspective makes a lot of sense, because that's ultimately how it's viewed by customers. Certainly from our Spectrum Console, for example, we can detect that a Call Manager server is down or that a network switch or router is down, and of course that needs to be repaired, but it's becoming more and more critical to identify whether that fault is affecting the voice service or not. After all, there are types of router failures that will take down a branch office, and there are router failures that won't actually take down anything. The technology needs to identify the most critical events, hence our focus on service availability for voice."

"CA is pretty well positioned in that we have voice management products

that can manage the Avaya, Cisco and Nortel voice switching and messaging systems," says Gollaher. "We can manage large numbers of servers, and we have application management and network management products."

"Also, MPLS services are becoming more and more prevalent," says Gollaher. "We have MPLS management capability in Spectrum, again from the fault management perspective, and for performance management in our eHealth product. We can monitor MPLS networks and look at service quality there as well. So monitoring is a major component of what we do."

Taking the Burden off of SOHOs

Advanced monitoring techniques can now also come into play in the provisioning process, where it can have a major impact on those home and SOHO users who want to acquire and maintain broadband and IP Communications services, but ironically find themselves needing more technical expertise than their enterprise brethren.

David Sayag, Founder and VP of Marketing of Enure Networks (news - alert) (http://www.enure.com) says, "When you look over the history of access networks by service providers, be they MSOs or telcos, you see that around 1999 or 2000, when DOCSIS devices really got going, and then over the next three to five years, there was a lot of investment around building billing and operations support systems (BSS and OSS) in an attempt to automate the life cycle of services in the access and core network. In the past everything was done manually, but today most of the work of provisioning, fault management and quality assurance is being done quite automatically. The access part of the network now has quite good uptime, too."

"The problem is that the home, which is a very important segment of the network, is being handled completely differently," says Sayag. "It's still a highly manual process, with users reading manuals and calling up a contact center. We expect the home user to do something and the possibly non-technical call center representative to do something. It's all quite different from the automated BSS and OSS systems for access and core networks."

"Our new mission is to fully automate the service and experience for both the end user and the home user," says Sayag. "By 'home user' I mean small businesses, SOHOs and so on. The user

should simply pay for and enjoy the services. We shouldn't force them to become technicians and understand how the whole network operates."

Founded in 2003, Ensure Networks is now out to fully automate the operation and provisioning of home/SOHO broadband services, including high speed Internet, triple and quadruple play and IPTV. Their technology enables service providers to improve the availability and reliability of home broadband services, so they can focus on selling and delivering products and services rather than just waste time maintaining and supporting their networks.

> "We shouldn't force them [users] to become technicians and understand how the whole network operates."

"We have a deep knowledge of networks," says Sayag, "as well as BSS, OSS and the way networks can and should be managed. We've patented a technology that, instead of reacting to problems and symptoms after they appear and anger the user, it monitors and keeps the home environment in optimal working order, eliminating user frustration."

The Enure True Information & Control (TIC) System concentrator server collects non-private network-related data on the home network environment and on the root causes of problems and their solutions, allowing tight service provider control. The TIC System assembles a comprehensive, aggregated picture of everything that's occurring on all customers' home/SOHO networks.

"We believe strongly that users should not be involved in most home network operations and maintenance," says Sayag. "Our idea is to remove all of the technical barriers that are related to setting up and operating a home network. By 'home network' I mean any IP service and associated device that runs in the home, including home gateways, PCs, modems, set-top boxes, and so on. When you look at the home, if you can provide a solution that understands the entire network in the home, then you can bring value to the table, because many aspects of the network are things that depend on each other. For example, both VoIP and IPTV services depend on the home gateway and broadband connection. So the idea is to come up with a solution that handles the home network end-to-end, and enables services to be installed and automatically detects and fixes problems."

Freebies

Open source/free software enthusiasts out there (or those of you with a thin wallet) should take a look at Pandora FMS (Free Monitoring System). Pandora can watch just about any system and application, and it can reveal to you the status of any system element. Pandora can detect a kaput network interface, a website defacement, a memory leak in a server app, or the latest change in your favorite stock on Wall Street. It can monitor any TCP/IP service, along with routers, switches, load balancers, operating systems, applications or printers. Pandora can even send you an SMS message when your systems fails.

Pandora runs on nearly any operating system, with specific agents for each platform gathering data and sending it to a server. Specific agents have been built for GNU/Linux, AIX, Solaris, HP-UX, BSD/IPSO, and Windows 2000, XP and 2003. SNMP is used for collecting data and for receiving traps.

Mainstream Monitoring

In an age when networks are so dynamic that they change on a minute-by-minute basis, monitoring will be the key to successful network management and keeping users happy. Although we're still pretty far away from achieving self-healing networks, we can eliminate the primitive and unacceptably lengthy 'react-to-a-user-complaint' cycle of monitoring and repair.

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

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Skype Continues to Innovate

By Greg Galitzine

Paul Amery, Skype's director of the Skype Developer Program, delivered a keynote at the Communications Developer conference last month, during which he officially announced Skype's new Game Developer Program and the introduction of a brand-new Skype Game Channel, which is accessible through the Skype Extras Manager and which provides a quick and easy way for developers to promote their software to users.

The Skype Game Developer Program is designed to give third-party game developers access to the nearly 200 million registered Skype users through the just-announced Skype Channel.

In a recent interview I conducted with Amery, he spoke at length about the Skype development community and the most popular applications for Skype.

"I was recently asked to describe the Skype Developer Program (SDP)," Amery told me. "I like to compare Skype to an amazing mansion, with the Skype Developer Program being the beautiful orchards and gardens around the house. We tend to the trees and plants for Skype so that they flower and bear fruit. Some might refer to this as our 'ecosystem.'"

I asked Amery what were the most downloaded applications for Skype? He said that the most popular application overall is CrazyTalk for Skype from Reallusion. CrazyTalk for Skype is a piece of software designed to allow users to use live avatars and emotions while on Skype video calls. According to Amery, "…it lip synchs a video avatar to your speech. It's a lot of fun and has been downloaded more than four million times to date."

For professional users, the most popular Skype for Business Extra is the Pamela Call Recorder, which makes it easy to record Skype calls.

Explained Amery, "Skype (news - alert) users are doing more than just placing voice calls, and we are constantly looking for new ways to enhance their overall Internet communications experience."

Amery, who previously headed up developer and partner programs at Symbian and Orange, believes that the Skype Developer Program is a win-win situation for developers as well as for Skype's nearly 200 million registered users worldwide.

Says Amery, "We want to encourage the development of compelling applications and content for users, which will make users want to communicate and do even more with Skype. We want to create a rapid route to market for third-party applications, so that the developers can generate revenue streams. And we want to support innovation among the developers who are building complementary services that enhance the core Skype software."

In other recent Skype news, Skype took the wraps off a deal with Wal-Mart, whereby Skype will market its products through Wal-Mart. The company is offering a discount calling card offering three months of unlimited calling in the U.S. and Canada for just $8.85.

According to TMCnet's Tom Keating, Skype calling cards are indeed going to be placed in the "prime" checkout aisle location, which "could prompt some spur-of-the-moment purchases from consumers looking to try Skype's service, which will further cement Skype's dominant position."

And in a busy May, which saw Skype announce Skype 3.2 for Windows, including a series of new features that give users more options to personalize their application, the company also released a new version for Macintosh users.

Skype for Mac 2.6 offers a call-transfer feature that's not yet available to Windows users. In addition to the Mac-only transfer feature, other additions to Skype for Mac 2.6 include:

- The ability to join public chats
- A chat typing indicator
- Skype Prime: call a premium-service provider and pay for their advice and knowledge with Skype credit
- Automatic updates; and
- DTMF tones for automatic answering services available during Skype-to-Skype calls.

Other improvements include tweaks in the way Skype handles birthday reminders and other notifications.

As they approach the 200 million user threshold, Skype continues to innovate. I'm excited to see what new applications — currently on the drawing board of one of the 4,000 developers who are part of the Skype Developer Program - will be made available to the public in the days to come. IT

Greg Galitzine is Group Editorial Director for TMC's IP Communications Media Group.

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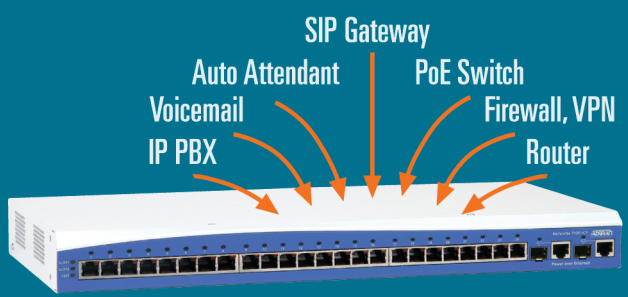

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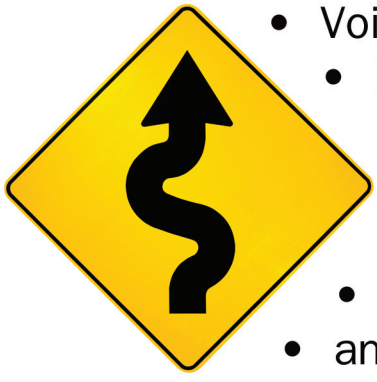

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