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The Analysts' Couch





by Paula Bernier



appy January! Since the last issue of NGN came out, we've celebrated the opening of another year.

So, as part of this marking of time, I thought it might be fun to talk to some of our analyst friends about where we've been and where we're going. As part of this exercise, I provided a word and asked each of them to say the first word or phrase that popped into each of their heads. Here are some of the responses:

AT&T

"Integrated." (Vince Vittore of Yankee Group)

"Strong." (Jon Arnold of J Arnold & Associates)

"Wireless growth too Apple-centric." (Steve Vonder Haar of Interactive Media Strategies)

Broadband stimulus

"Finally." (Jon Arnold)

"Not likely to achieve the objective." (*Vince Vittore*)

"Would be a good idea." (Steve Vonder Haar)

Cloud computing "Disruptive." (Jon Arnold)

"Overused." (Vince Vittore)

DPI "Under attack." *(Vince Vittore)*

Femtocell

"Challenged." (Vince Vittore)

"Expensive." (Jon Arnold)

Google "Clever." (Jon Arnold) "Fingers in every pie." (Steve Vonder Haar) "Very smart." (Vince Vittore)

IMS

"Architecture of future." (Joe McGarvey of Current Analysis)

"Still here?" (Vince Vittore)

"Why." (Jon Arnold)

LTE "Great." (Jon Arnold) "Still waiting." *(Vince Vittore)*

National Broadband Plan "About time." (Vince Vittore)

"Progress." (Jon Arnold)

Net neutrality "Fairness." (Jon Arnold) "Good policy progress." (Steve Vonder Haar) "Red herring." (Vince Vittore)

Qwest "Quiet." (Jon Arnold) "Grasping." (Vince Vittore)

Verizon "FiOS." (Jon Arnold)

"Disjointed, but moving in the right direction." (*Vince Vittore*)

WiMAX "Backhaul." (Jon Arnold) "Finding its footing." (Vince Vittore) Rich Tehrani, Group Publisher and Editor-In-Chief (rtehrani@tmcnet.com)

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A Technology Marketing Publication, River Park, 800 Connecticut Ave., 1st Fl. Norwalk, CT 06854-1628 U.S.A. Phone: (203) 852-6800 Fax: (203) 853-2845, (203) 838-4070 **Publisher's** Outlook

Why Apple iTablet May Ruin Tech





ome of the most exciting news for all of technology has to be the official introduction of a new product category at Apple – the tablet. After all, the iPod and iPhone were responsible for billions of dollars in new spending from global consumers.

Remember, MP3 players and mobile phones were both mature markets when Apple entered. But look at them now; everyone seems to crave products from Apple, and they want to spend more money for them because, frankly, they are worth it.

But there is danger in this new product launch that scares me more than almost anything else in the land of tech. You see, Apple popularized the mobile application. Sure, I downloaded apps on my other Windows Mobile devices before the App Store existed. But Cupertino's electronic marketplace brought a thriving ecosystem of apps, which totals more than 100,000 at most recent count. And every one of these applications is controlled by Apple.

Will jailbreaking of devices become the next frontier for battling consumers - replacing the battle over music piracy by record labels? Is this what we have to look forward to this decade?

They tell you what apps are allowed to be distributed openly, and they further tell developers what they can and can't do.

I would venture to say no other company can get away with what Apple has done with its App Store. Yet Apple thrives because the products the company makes are just that good!

Every day I think about how I wish there was a way to download any app I wanted to an iPhone without jailbreaking it, I am thankful that this world of locked-in apps hasn't come to PCs and laptops.

But guess what? Apple is definitely coming out with a tablet now and one has to wonder if the App Store will come with it. If it does, will laptops and desktops be next?

Are we witnessing the end of freedom when it comes to applications on all devices?

Sure, I can likely go to the competition today and download any app I want on a Windows Mobile or Android-based device, but what if the trend catches on? Apple is raking in cash from the App Store. How long before Microsoft investors begin to complain?

Will jailbreaking of devices become the next frontier for battling consumers - replacing the battle over music piracy by record labels? Is this what we have to look forward to this decade?

I for one hope this doesn't happen. But if Apple's device is really incredible, I will likely go out and get one and perhaps another for my family. Sure, it is early to say I will drop \$1,000 per device for something I haven't seen, but that is the trust I have in Apple's ability to create new devices that people crave. And therein lays the problem for the open application market. NGN



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Cover Story

ITEXPO East Keynoters Talk About What's Now & What's Next

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http://tmcnet.com/20213.1

NEC Taps GENBAND for SFR's Femtocell Deployment

GENBAND Inc.'s G9 Converged Gateway will power a femtocell solution that NEC is going to supply to French telecom company SFR. The femtocell solution includes a compact, indoor femtocell access point as well as the supporting femtocell gateway, which aggregates and connects potentially millions of the access points to the operator's core network.



www.genband.com

http://tmcnet.com/20170.1

Comcast Brings 4G to Seattle

A 4G broadband wireless service is now available from Comcast in Seattle and the surrounding area. The service, called High-Speed 2go, is being bundled with one or more of Comcast's Internet, phone and television products. A wireline and wireless "Internet Fast Pack" offer is available for \$49.99 per month for one year; the bundle includes 12mbps home Internet service, a Wi-Fi router for mobility and extended coverage in the home, and mobile 4G service with download speeds up to 4mbps. Users can also choose the Fast Pack Nationwide service, which provides 4G service as well as 16mbps PowerBoost wireline capabilities, for \$69.99 a month.

www.comcast.com

http://tmcnet.com/22173.1

Hillary Clinton Has Harsh Words for Those Who Censor, Attack the Internet

Following the hubbub around Google's threats that it may pull the plug on its Chinese search engine in the wake a cyber attack, U.S. Secretary of State Hillary Clinton recently emphasized the importance of an uncensored Internet for all, around the globe. Clinton was quoted in reports as saying: "A new information curtain is descending across much of the world. We stand for a single Internet where all of humanity has equal access to knowledge and ideas." She called on the carpet such countries as China, Egypt, Iran and Saudi Arabia, each of which has a history of censoring the Internet and/or harassing bloggers. She said those involved in cyber attacks should be punished and condemned by the international community.

http://tmcnet.com/20126.1

Dell'Oro: Mobile Infrastructure Revenue Dropped 10% in 3Q09

A recently published report from Dell'Oro Group reveals mobile infrastructure revenues declined 10 percent in the third quarter of 2009, to \$9 billion. The steep decline is attributed to fewer 3G deployments in China during that period. And although 3G spending in China was expected to be low for the rest of 2009, the report indicates that heavy spending by China Unicom and China Telecom is expected to resume this year for both WCDMA and CDMA.

www.delloro.com

http://tmcnet.com/20204.1

CTIA: Spectrum Use Should Indeed be Examined

Wireless industry association CTIA is behind the FCC's move to issue a public notice on uses of spectrum to gather the facts in an effort to ensure "the U.S. wireless industry remains the world's most competitive and innovative." The group says the notice is a logical outgrowth of CTIA's recent filings suggesting that the commission should consider reallocation of spectrum. According to the CTIA, at least another 800 MHz is required within six years to meet the increasing consumer demand for mobile Internet, mHealth, smart grids, and a number of other wireless uses.

www.ctia.org www.fcc.gov

http://tmcnet.com/20229.1

ALU Addresses Holistic Application Creation, Management Alcatel-Lucent has come out with a trio of new offers aimed at helpingnetwork operators and developers more easily enable and create new applications that are manageable, reliable, scalable and secure. The Application Exposure Suite allows service providers and enterprises to accelerate application innovation by outfitting them with a simple way to expose various APIs to the developer community. The Open API Service, meanwhile, is being sold primarily to application developers, which can use the service's Web-based portal at http://developer. openapiservice.com to access network enablers such as SMS, location and more. Transformation services are a collection of professional services around integration of multivendor networks and applications; migration to IP-based networks; and the automation of processes.

www.alcatel-lucent.com

http://tmcnet.com/20234.1

Bing Goes Temporarily Silent

An internal configuration change to Bing caused Microsoft's main search Web site to go down for about 45 minutes last month, in what some say could adversely affect the service's reputation. Those visiting the site on one Thursday evening got a browser error message, according to reports. Microsoft commented on the outage both on Twitter and via a blog by Satya Nadella, senior vice president of the online services division, who wrote, in part: "As soon as the issue was detected, the change was rolled back, which caused the site to return to normal behavior. Unfortunately the detection and rollback took about half an hour, and during that time users were unable to use bing.com."

www.bing.com

http://tmcnet.com/20255.1 Hearst Launches Skiff E-Reader



A Hearst Corp. company called Skiff LLC plans to launch a complete e-reading solution that includes the Skiff Service platform, Skiff Store and Skiff-enabled devices. Sprint and semiconductor company Marvell are key partners in this project. Skiff, formerly known as FirstPaper, specializes in the delivery and presentation of newspaper and magazine content.

www.hearst.com www.marvell.com www.sprint.com

http://tmcnet.com/22174.1

Deloitte: Mobile VoIP Positioned for Strong Growth

Businesses continue to find appeal in mobile VoIP, which is expected to reach tens of millions of users by the conclusion of 2010. That's the sentiment expressed by Deloitte in its predictions for 2010. The research firm expects the mobile VoIP sector to be worth £18 billion (\$29.2 billion) by 2013. Deloitte attributes the appeal of mobile VoIP to the range of services and features it offers, including as examples its one-to-many call capabilities, broadcast voicemail, and voice-to-text features. The firm says all of the above will be commonplace in mobile VoIP going forward.

www.deloitte.com

http://tmcnet.com/20247.1

Road Runner Mobile Comes to Dallas

Time Warner Cable has brought 4G mobile to Dallas. Road Runner Mobile customers in North Texas will be able to access the Internet at speeds of up to 6mbps. Road Runner Mobile will launch in Austin and San Antonio early this year, and TWC expects to expand the service to Charlotte, Raleigh, and Greensboro, N.C., as well as Honolulu and Maui, Hawaii, in the future.

www.timewarnercable.com

http://tmcnet.com/20257.1

Berg Insight: Mobile Entertainment is Ready for Takeoff Analyst firm Berg Insight predicts brighter prospects for the mobile entertainment industry in the future. People are ready to make most of the entertainment services offered on handheld devices, but the challenge before service providers is to properly adapt their products to the mobile medium, according to the research firm, which operates from the Swedish city of Gothenburg. The first challenge facing content producers is to ensure that their products are easy to find and sold through channels consumers feel confident using.

www.berginsight.com

http://tmcnet.com/20258.1

Electricity 16% of Energy in 2009, says TechNavio

Advancing technologies and proliferation of wide ranging electrical and electronic gadgets are driving up the consumption of electricity at a high rate, TechNavio Insights says. According to the market research firm, electricity in North America made up 16 percent of the total energy consumption in 2009 as compared to 9 percent about 20 years ago. "The efficiency of a traditional electric grid is only around 33 percent," according to a report from the company. "However, with the implementation of some advanced technologies, the efficiency can be improved to around 60 percent."

www.technavio.com

http://tmcnet.com/22336.1

Verizon Business Offers Toll-Free Capabilities via Local Numbers

The magic of IP has enabled Verizon Business to offer a more costeffective solution to customers that want local phone numbers that offer toll free-type functionality and can tie into their offices anywhere. Verizon VoIP Inbound with Local Originations, in addition to providing a local number, can deliver customer calls to either traditional or IP-based contact centers; reroute traffic in the event of unforeseen service interruptions; and enable businesses to respond to spikes in customer service demand by allowing them to balance traffic across the network. The company has been offering contact center services for many years, but they have always been tied to more costly toll-free service.

www.verizonbusiness.com

Eye on the Money

by Grant Lenahan

SDPs, SDFs and Innovation

Everybody needs an SDP. It's in the air, all over the press, on everybody's VGs. SDPs will let us usher in the new age of revenues, compete effectively and transform our businesses. In fact, it's not too much of a stretch to say they will empower individual companies' product managers to innovate in Internet time, intreprenerially.

Did I miss any buzzwords? If so please let me know, I checked.

For the record, I agree: The idea of an SDP, and the idea of efficient service development, is very important for our industry. The problem, you see, is that SDPs are ill-defined. And consequently, they have become whatever any one vendor wants them to be.

I feel as qualified as anyone to talk about the vagaries of SDPs. Back in 2000 I floated a layered chart at several wireless-oriented VC and technology events. They were deemed odd – three-layer depictions of a world in which the network and services were decoupled, and only linked by things with even stranger names, like Parlay and OSA. Back then we were emphasizing that the business model was maybe more important than the technology.

More recently I co-founded the TM Forum's SDF (service delivery framework) effort, which began, logically enough, with an effort to define this SDP thing we wished to manage. This effort eventually resulted in some consensus – but illustrated how widely different the stakeholders' views were. Traditional mobile content vendors *knew* it was a box that enabled downloads and ringtones and targeted SMS. IT vendors *knew* it was Web services exposure of network functions. Others *thought* it should really be about modular, re-usable, service functions – and yes, like No. 2, exposed for third-party use as well. Telcordia, for the record, fell, and remains, in the third camp. But there's more to the story.

Just recently, Rob Rich, lead analyst at the TM Forum, published an insightful paper on the SDP market, and commented that "the service delivery platform remains primarily an architecture rather than a platform or a packaged instance of a platform. At the implementation level, everyone is going to [use an SDP] to build their own unique service delivery environment."

This is a practical view. It recognizes that a tier 1 multi-network operator in Europe has different needs, market powers and customer market than a tier 2 mobile operator in a developing region. They have the resources to design a system to their needs, and the scale to amortize it. They also have the market muscle to realize deals others can't. So this makes sense. I also think that operators in search of an SDP strategy and SDP vendor need to follow the money. (Remember my column from an earlier issue?) Betting on the outcome is actually useful, and innovation must accelerate. But it really helps to focus our efforts on areas of proven worth.

What are these areas? Advertising; TV/video (whether in-house like IPTV or over the top); e/m commerce; and music come to mind. I'll also note that all of the above fall on Gartner's recently published list of "Top 10 Consumer Mobile Apps for 2012."

A second risk-limiting play can be to recognize that we can never anticipate the next killer app, but we can predict that when they are invented, someone will want to charge for them – and ensure good quality, and implement security so that people aren't constantly facing the prospect of fraud or identity theft. This means that basic functions like charging on behalf of others, policy/bandwidth management, mobile and electronic-based payments, and proxy identity and preferences are all solid candidates for that third-party API we discussed above.

So this begins to flesh out the really important elements of an SDP – content management; IPTV or similar delivery boxes; flexible charging and account balance systems; policy and bandwidth management systems; advertising control systems; and profile/identity systems. And all of this needs multi-protocol session/call/event control for these rich events. Put this all into a framework that exposes as much capability to the application developer as possible and you get an SDP that participates in the growing value of services and applications.

My objective was to recap nearly a year's worth of column material, and make it relevant to the apparently open-ended topic of SDPs. In reality, we can use economic reality to guide the real guts of an SDP – so long as they support innovation, create modular service building blocks, and expose these for efficient internal use and to attract third-party use in a value chain business model.

In my next column I'll attack the second part – the SDF, by asking "What does it take to make a service operationally viable in the new world of proliferating services, third parties, and complex two-sided business models?" Yep, operations as efficient as the shiny new SDP.

Until then, as they say in racing, keep the shiny side up! NGN

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

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Feature Story

By Paula Bernier

Agencies Unveil Rules for Second-Round Broadband Stimulus Program

he rules for the second round of the broadband stimulus effort have been released, and they include a lot of good changes.

That's because they take steps to expedite a broadband stimulus effort that has been plagued with delays, and they alter or drop language that many in the industry believed would be a barrier to more widespread and affordable broadband availability and adoption.

At the onset of the first round of the broadband stimulus effort, the National Telecommunications and Information Administration and the Rural Utilities Service together issued just one notice for funds available, or NOFA, document. But this time each of the two agencies issued its own rules.

One thing they have in common is the NTIA and RUS this time have made pretty clear what they expect to allocate for each type of project, and for each winner within each of those categories. That's a nice improvement over the last round and will give applicants a better idea of what to ask for and what to expect, rather than "flying blind," as Kevin Morgan of ADTRAN recently put it during a Webinar on the broadband stimulus, referring to the state of affairs during the first round.

The NTIA and RUS this time have made pretty clear what they expect to allocate for each type of project, and for each winner within each of those categories. That's a nice improvement over the last round and will give applicants a better idea of what to ask for and what to expect, rather than "flying blind."



CCI application to be in or near the \$5 million to \$150 million range, and each winning PCC and SBA application to be in the \$500,000 to \$15 million range.

RUS this round has \$2.2 billion to share. That, RUS explains, will include \$1.7 billion for last mile projects, \$300 million for middle mile projects, \$100 million for satellite projects, \$5 million for rural library and technical assistance and \$95 million in reserve. The satellite category is a new one for RUS this round, and it is expected that the agency may use the technology to

bring broadband to areas for which it doesn't receive any broadband stimulus proposals.

The agencies ask that those seeking broadband stimulus funds send their applications to one or the other of them, but not both. That should lessen the review burden on the NTIA and RUS, and thus potentially allow them to move more quickly this time around.

The review process also has been streamlined. RUS says it will go from a two-step to a one-step process, and the

NTIA aims to gather all information from applicants up front and will only ask for additional information after that on an as-needed basis.

While grants in the first round had required a 50 percent match from applicants, the government this time around will fund up to

The NTIA in round two expects to disperse \$2.6 billion overall, which includes \$2.35 billion for comprehensive community infrastructure projects, \$100 million for sustainable broadband adoption and \$150 million for public computer center initiatives. The NTIA has disclosed that it expects each winning

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75 percent of a given project, so the applicants need only bring the other 25 percent to the table. That said, those willing to put more skin in the game will be looked upon favorably. A 20 percent match is required for all NTIA applications this round, and those applications with a 30 percent or greater match will be most favored, according to the agency.

The cost per premises passed also has been laid out in this round of rules. Any project costing \$10,000 or more per premises passed will not be considered. While that would seem to emphasize the importance of cost-effective infrastructures, some indicate it also could be viewed as a move more favorable to the wireless industry, whose infrastructure can be less expensive to build but which also tends to offer far less bandwidth. Also, NTIA project proceeds can be applied not only to capital expenditures, but also to operational expenditures, which could help some projects be more sustainable.

This round the NTIA has made clear its focus on middle-mile projects and those involving community anchor institutions (and this time the applications involving community anchors don't necessarily have to be in unserved or underserved areas – a big change). Meanwhile, RUS has indicated it will handle most of the last-mile projects, especially those in which the last-mile component exceeds 20 percent of the total project cost.

The RUS BIP will target areas where not more than 50 percent of locations have more than 5mbps combined upstream/downstream bandwidth. While projects in areas that are at least 75 percent rural are not required to apply first to BIP, those applicants that are current RUS borrowers, are proposing projects involving last mile service areas that are 75 percent or more rural, or have a last mile component that exceeds 20 percent of the total eligible project cost, are strongly encouraged to apply to RUS under BIP.

Another significant change to the rules this time around is the removal of the remote rural language, which many in the industry had lobbied strongly against.

The first-round NOFA defined remote rural areas as those at least 50 miles away from a city or town of at least 20,000, or 50 miles away from an urban area next to a city of at least 50,000 inhabitants. And the first-round NOFA required those seeking funds to build broadband infrastructure in areas defined as remote rural to forward their applications to RUS to be considered for the Broadband Initiatives Program. And if a service provider applicant operates in an area that is defined by the U.S. Census as at least 75 percent rural, the first round NOFA said that company had to go through RUS for broadband funds.

The problem with that was unless the service area was classified as remote rural, the RUS BIP program in its first round

Important Dates

- Jan. 15: NOFA was announced
- Jan. 25 Feb. 12: One-day workshops will held by NTIA and RUS to further define application rules
- Feb. 16 March 15: Agencies will accept applications
- June: NTIA BTOP round two awards will begin to be announced, on a rolling basis
- Sept. 30: All NTIA grants are expected to have been awarded

* RUS has not disclosed its timeline for announcing awards, but it's expected to be similar to what NTIA has announced

limited the grant funds for projects up to 50 percent. And the BIP program in its first round was weighted more heavily toward loans than grants. Meanwhile, the NTIA's Broadband Technology Opportunities Program (BTOP) in its first round provided grant funds for up to 80 percent of project costs for non-rural areas. That meant suburban and urban populations and providers were better positioned to benefit from the broadband stimulus than were those in rural areas – the very locations that most believed the broadband stimulus program was created to serve.

Those interested in watching or commenting on the round two action may also be interested to know that the NTIA expects to post announcements identifying each application received along with a list of the census block groups or tracts that each application proposes to serve through its project, in addition to the information it is required to publicly disclose pursuant to the Recovery Act. That means there will be a greater level of transparency this time as compared to the first round, in which the NTIA only gave the name of the applicants and some other basic information.

NTIA has established a 15-day window during which incumbent service providers are allowed to comment on applications by prospective broadband stimulus fund winners who want to build broadband networks in their existing service areas. RUS will allow 30 days for comment. **NGN**



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Traffic Management for Emerging Networks



ew applications and services are being deployed and accessed over communications networks at an unprecedented pace.

Today, tens of millions of wireline broadband subscribers regularly use telephony, IPTV services and the Internet. These applications and services are used for data exchange applications, such as email and file-sharing, video on demand, video collaboration applications, social networking and online gaming. Subscribers are increasingly demanding any-to-any communication – any service, on any device, at any time, anywhere. Long-term evolution standards are redefining wireless networks to meet these needs.

Significant differences in bandwidth, jitter and latency characterize various applications and services. While telephony applications consume relatively low sustained bandwidth (a typical voice

connection is under 100kbps), they have stringent jitter and latency requirements. Video requires a high level of sustained bandwidth per channel (a few hundred kbps to several mbps), however some latency is tolerable. Online gaming and financial applications typically require relatively small amounts of extremely time-sensitive data. Applications accessed over the Internet have widely varying bandwidth requirements. Social networking applications, such as Facebook, can generate low to highbandwidth sustained data flows that vary in duration from short bursts to longer sustained streaming. An added dimension to network bandwidth usage comes with file sharing applications. These types of applications consume significant upstream bandwidth due to the uploading of large files (e.g., videos).

Additionally, quality expectations for different applications and services vary and may even be specific to subscriber preferences. For ubiquitous, legacy applications, such as telephony, customers expect de facto good quality of service. Customers also expect uninterrupted, cable TV-quality for IPTV channels. Besteffort is typically acceptable for Internet-based downloads and file-sharing applications (e.g., YouTube). For some services, such as online gaming and financial applications, some customers are prepared to pay additional fees for guaranteed service.

The challenge for service providers is to maximize revenues and profits in this context of diverse requirements of applications, services and customer expectations. Consistently meeting the jitter and latency requirements of the various services is critical for customer retention. QoS for the various applications and services must match customer expectations, which as described above, could be variable.

By offering tiered service models, service providers can extract additional revenues from those customers willing to pay a premium for better QoS for specific applications and services. To cost-effectively support tiered service models, networks must be powered by sophisticated, fine-grained traffic management and statistics gathering capabilities.



Feature Story

Flow Isolation

Flow isolation is a key ingredient in networks supporting tiered service models. Flow isolation means separating different types of traffic destined for different customers used for different purposes into distinct flows for proper service level agreement enforcement. Network elements, especially in the access portion of the network, must be able to isolate flows at the service level (IPTV channel vs. VoIP channel). They must also be able to isolate flows at a customer level (file being uploaded vs. TV channel change command issued by the customer), and at an application level (file being uploaded or downloaded on YouTube vs. for data traffic access). One or more flows may be assigned to a single queue. Different traffic management schemes and priorities may then be applied to traffic in different queues based on service-specific requirements and/or customer-specific SLAs. Flow isolation also is essential for tracking statistics used for billing and accounting purposes and is especially important to implement tiered service models.

Telepresence P2P BitTorrent Entres 1st level Strict Priority or WRR Strict Priority or WRR Strict Priority or WRF of scheduling RW BW BW PTV Highest 2nd level of scheduling Subscriber Line Bandwidth **Quality** of Experience Figure 2: Two-Level Hierarchical Scheduling

Traffic Management

Traffic management performs three important functions in a network designed to meet service-specific requirements modulated with subscriber-specific SLAs including:

- checking conformance (i.e., policing);
- making discard decisions (i.e., buffer management);
- and regulating traffic flow in various queues (i.e., traffic scheduling).

Policing

Policing algorithms check whether a given subscriber is consuming bandwidth beyond that allowed by the associated SLA. The Two Rate Three Color Marker scheme described in IETF RFC 2698 is an example. It consists of metering of incoming subscriber traffic packets and marking them as red, yellow or green. The packets are marked based on parameter values for the two rates, namely peak information rate and committed information rate and their associated burst sizes. By assigning different values to the parameters for different subscribers, traffic from any given subscriber can be effectively policed for a specific SLA.

Buffer Management

A buffer management algorithm, such as random early discard or weighted random early discard, can be used to support a tiered service model. In WRED, the ability to define depths, drop thresholds and weights per queue enables the definition of multiple service classes. For example, gold, silver and bronze can be associated with different subscriber SLAs. Drop policies for red, yellow and green packets as a result of policing can be specified. The algorithm drops packets randomly with a probability related to class of service and depth of the queue.

Traffic Shaping

Traffic shaping enables controlling traffic flow in different queues according to associated criteria. For example, higher priority packets are scheduled before lower priority packets. Often, configurable hardware schedulers are used to implement traffic shaping. For instance, a constant bit rate scheduler is characterized by very low jitter and is typically used for voice traffic. While configurable hardware schedulers are deterministic, they are inflexible and cannot adapt to evolving traffic conditions. Purely software-based traffic schedulers enable implementation of sophisticated traffic shaping algorithms that can be evolved over time, but lack the determinism of hardware schedulers.

Some network processors include dedicated programmable hardware accelerators to implement traffic schedulers. They combine the advantages of the determinism of hardware schedulers with the flexibility of software-based schedulers. With these devices it is possible to program a menu of traffic shaping algorithms that allow each service provider the ability to select and configure the desired algorithms tailored to specific services and SLA offerings. Equally important, these trafficshaping algorithms can be evolved over time to adapt to changing network conditions and traffic profiles, without expensive hardware replacements.

Traffic shaping algorithms continue to evolve to meet changing requirements. Earlier DSL-based triple play (Internet, VoIP and IPTV) service deployments used weighted round robin for traffic scheduling. WRR, shown in Figure 1, enables prioritizing and assigning different weights to traffic in different queues. WRR was effective as long as Internet traffic mostly consisted of low-bandwidth, text-based Web access. With increasing adoption of P2P applications, high-bandwidth Internet traffic began impacting IPTV QoS. If the usage of different services for a given subscriber is pre-determined, it is technically possible to tune and pre-configure the algorithm parameters to guarantee QoS for voice and video channels. However, this is a complex task, and when usage patterns change and QoS suffers, re-tuning is required. The net effect is dissatisfied customers combined with high opex for special training and continual re-tuning.

A multi-level hierarchical scheduling algorithm depicted in Figure 2 enables service providers to isolate services and assign priorities across them. It also allows service providers to group like services and allocate guaranteed bandwidth to the high priority groups carrying jitter and/or latency sensitive traffic (e.g., voice, video). This ensures that such traffic is not disrupted by intermittent bandwidth-intensive Internet traffic such as that resulting from video-sharing applications (the left group in Figure 2). In addition, traffic parameters for all services can be pre-configured based on known bandwidth and service categories. For instance, the maximum bandwidth of each digital TV channel is 19mbps. If the maximum number of simultaneous channels being offered is eight, the total maximum bandwidth for IPTV is 152mbps. The video traffic group is allocated guaranteed bandwidth of 152mbps. Services and subscribers can be added without having the operator tune traffic management for each new subscriber. At the same time, service providers can create additional configurations with associated traffic management parameters. For example, a different configuration may be used to configure those subscribers using voice and data only (no IPTV). In this case, the remaining line bandwidth is allocated to the data traffic group, thus enabling higher fees for the higher-bandwidth data service. This dynamic configurability also presents the opportunity of creating flexible, on-the-fly SLAs.

When used in conjunction with fine-grain flow isolation, traffic management can be leveraged to implement advanced security measures. Increasingly, security threats need to be detected and thwarted deeper in the network. Such threats include denial of service and distributed DoS attacks. With security-enabled traffic management, packets belonging to various control protocols, such as TCP Syn-ACK, may be isolated into sepa-



rate flows and each flow policed. The subsequent buffer management and traffic shaping algorithms can be configured for that flow in such a way that all packets marked red or yellow are dropped. Additionally, the rate is configured low enough to prevent the flood of control packets (constituting the attack) from reaching the subscriber. All of these actions combined prevent the DoS attack from bringing down the services and computers. However, to implement this capability, the underlying flow isolation, policing, buffer management, and traffic shaping engines must be programmable.

Emerging wireline and wireless networks must be built to service a rapidly growing number of applications and services, some of which haven't even been envisioned yet. Effective traffic management is an important factor for cost-effective delivery of multi-play services with guaranteed QoS. Network processors with programmable flow isolation and traffic management engines are critical for enabling strategies that combine QoS and cost-effective bandwidth management. Such processors also enable service providers to adapt to changing traffic patterns without incurring the cost of expensive hardware upgrades. **NGN**

Sindhu Xirasagar is the product line manager for software and system solutions for LSI Corp. (www.lsi.com).



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Center Stage at ITEXPO

Keynote Speakers Talk About What's Now and What's Next

he economy may have hit the brakes in 2009, but prominent communications service providers certainly didn't. Big names like Polycom, Skype and Verizon Wireless last year shifted into high gear their efforts to deliver new products, services and business models. And they have the pedal to the metal as we move into 2010.

NGN recently checked in with executives at these three solutions providers - all of whom were represented by keynote speakers at ITEXPO East from Jan. 20 to 22 in Miami – to get the details on some of the new and exciting things happening on the application development, cloud-based services, mobile and VoIP fronts.



As Christopher Dean, chief strategy officer of Skype, who spoke at ITEXPO on Jan. 21, notes, "2009 was the year of the iPhone and the App Store and how the incumbent handset manufacturers and operators responded to it."

This year, Dean adds, we will get to see which response, or responses, worked best.

Brian Higgins, executive director for ecosystem development within Verizon Wireless and an ITEXPO keynote speaker Jan. 21, is one of the key people in the communications space who is focused on responding to the changes in product creation and introduction that most people attribute to the popularity of the iPhone and the App Store.

He is a driving force at the Verizon Wireless LTE Innovation Center, an organization established to help "unlock" new categories of LTEenabled devices. "So that really comes down to the full gamut of product development, product design, and then full nurturing within a lab environment up in our facility in Waltham, Mass.," he says.

"Within the Innovation Center the types of things you're going to be seeing – and obviously the focus for us – is trying to embed LTE technology into really any device we think can benefit from having connectivity and intelligence put into that device," Higgins says. "A lot of them are going to be video-based. A lot of them are going to be gaming-based. There's certainly a focus on things like health care; given some of the native security you have with LTE that certainly makes sense and the ubiquity of the network that we're going to

deploy. Telematics is going to be another big area for us.... If I can offer a manufacturer of an appliance the ability to know where their devices are, how they're being used, whether or not they're incurring any problems, there's a significant amount of value in doing something like that."

Of course, the concept of embedding smarts and connectivity into household appliances and other devices has been around for years. Higgins says LTE, a standards-based, high-speed wireless technology that is expected to be ubiquitous worldwide, will enable this to move from concept to reality.

"You have everyone coming together on a single technology, recognizing that that's going to be the likely candidate for anything that needs to be connected into the future," he says.

Higgins also is responsible for technical support for the developer community within Verizon's application ecosystem. "Back in July we had a conference where we announced our intent to open up our own application storefront," he says, adding that Verizon Wireless is today working with thousands of registered developers. "In order to do that properly you need an organization that understands the developer community and can assist in their efforts to bring great applications to the marketplace."



Verizon Wireless' Brian Higgins

While there are some parallels between what Apple has done on these fronts and what Verizon Wireless is doing, the wireless service provider has a very different business model, says Higgins. Both companies, he explains, are providing tools and resources to developers to help them build applications on their devices. However, Verizon Wireless offers a greater

diversity of devices and operating systems. And because the company has significant network resources at its disposal, he says, it will expose some of those resources - such as location, messaging, presence, and capabilities linked to quality of service - through APIs so developers can better differentiate their applications in the marketplace.

The diversity of endpoints and operating systems supported by Verizon Wireless will mean the company's developer partners will

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have "many large ponds" for their applications, Higgins continues, and will give the carrier more flexibility. On the other hand, he concedes: "It will be trickier for us to get the scale."

Higgins also offers a reminder that it will take time to develop business models around new devices, applications and partnerships, and to roll out the new LTE network.

"A lot of the things we're working on now are more about developing concepts, building the products and communicating out the type of things we're thinking about, and less about the 20 things we know we're going to bring to market tomorrow," he says. "So we're still in the fairly early stages. Bear in mind that we're currently targeting to have the initial launch of the [4G LTE] network in the late 2010 timeframe, and that's just the starting phase."

Mobile services also were a key theme during the Jan. 21 ITEXPO keynote by Skype's Dean. During his speech, he aimed to dispel the notion that Skype, and more generally mobile VoIP, are a threat to mobile carriers.

"The opposite is true," Dean tells *NGN*. "From a 4G perspective, Skype can offer 'IMS in a box.' It is a rich, real-time communications experience that embodies the design goals of the IP multimedia subsystem, integrating all forms of communications – voice, video, e-mail, Web, messaging, etc. – based on IP."

He adds that Skype also is helping drive carrier economics to the next level.

"We've already got hard data from our partnership with Hutchison 3 in the U.K. [that] shows that Skype can be an important differentiator and a valuable new subscriber acquisition tool, while also contributing to higher revenue and margins, greater customer engagement and lower churn," he says. "I'll use my keynote to discuss carrier economics in a 4G environment, looking at how to monetize the technology using models such as tiered data packages with specific QoS and throughput service agreements."

Dean says that last year will likely be remembered in communications circles as the year "when we started putting the desktop experience into our pocket.

"Skype, Spotify, Facebook – even Ikea – all went mobile," Dean continues. "The idea that you can have a 'desktop-only' strategy finally left us for good in 2009."

That said, Skype expects to continue its push to bring its experience to leading smartphones and mobile devices.

"There are three ways we'll do this," says Dean. "First, we'll continue making marquee applications available directly to consumers in an over-the-top post-load model. For example, Skype for Symbian just launched in beta, and we expect that to be fully launched in 2010.

"Alongside that, we will build on our partnerships with OEM device manufacturers, such as Nokia and Sony Ericsson and others. These relationships will allow us to create a deeply embedded Skype experience within their mobile devices," he says.

"And finally," he concludes, "we'll continue to target partnerships with those wireless carriers who see that Skype is an important application that can help them appeal to both existing and, more importantly, new customers and improve their overall economics."

In addition to Skype and Verizon Wireless, Polycom co-founder and CTO Jeff Rodman took a birds' eye view of the telecom space and how today's networks, devices and applications are leading us to the holy grail of business productivity where, "You work where you are... wherever that is."



Polycom's Jeff Rodman

The guiding forces, he says,

that will allow users to focus on their conversations rather than the tools they are using are: telepresence, scalability, interoperability, and global reach. In order to achieve a shared, unified communications experience that will enable truly location-agnostic communications, technology must move past the challenges of richness, accuracy, reliability, breadth, and access, to allow users to simply "be" – not be somewhere – just be.

We have gotten a taste of these characteristics in small doses, with rich media and global access, but the key to true global convergence is the development, acceptance, and adoption of unified, accessible standards, without which Rodman says the benefits of technology will be muted.

Meaningful growth, he says, will come from reliability – where packet loss, missed and dropped calls, and connectivity lapses will be non-existent – as well as from global convergence – where carrier networks and infrastructure vendors all embrace global interconnectivity to enable inter-enterprise connectivity without imposed limits.

As communications networks become increasingly globalized, he predicts the next few years will be extremely exciting, noting five trends that will shape the next generation of communications and make these years "a very cool time to be."

- 1. IP transformation will make the network transparent.
- 2. IP communications will target richness of life and embrace the idea of being.
- 3. HD voice and video will become ubiquitous.
- 4. Reliability and ease of use become more important than ever.
- 5. The ITEXPO audience members will be the key players in transforming communicating into being.

To make it all happen, we must all avoid thinking about the impossible. Rather, he says, we must consider, "If it were possible, what can I do with it?" **NGN**



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Feature Storv

By Doug Johnson

How to Practice **Bandwidth Management Under Net Neutrality**

ith the Federal Communications Commission now drafting ambitious new rules aimed at "preserving a free and open Internet," smaller cable operators, carriers, ISPs and other service providers may be worrying about how they can manage their broadband traffic effectively and avoid having their networks overwhelmed by extreme bandwidth use.

And for good reason. The FCC has already slapped Comcast, the nation's largest MSO, with a stiff fine for violating the commission's existing Internet rules by throttling some peer-to-peer applications. Although Comcast is still appealing that order, the MSO has shifted to a "protocol-agnostic" traffic management approach.

In addition, Time Warner Cable, another giant MSO, has backed away from plans to try out a controversial consumption-based broadband billing system in four more markets around the country. Succumbing to intense pressure from lawmakers, consumer groups, and bloggers, Time Warner Cable, which is still testing metered Internet billing in one small Texas market, announced that it would shelve the expansion plans for an indefinite period.

But, fear not, bandwidth management is far from dead. In fact, despite the alarm bells set off by the FCC's recent policy-setting moves, and the separate stumbles of Comcast and Time Warner Cable, the bandwidth management concept is very much alive and well. Even though these two initial, high-profile efforts by cable operators to control broadband traffic may have faltered, there are plenty of "fair management" tools at network operators' disposal to discourage abusive network use by bandwidth hogs and reduce overall traffic congestion.

So, in light of the FCC's more aggressive Internet policing, just what can network operators do? Based in part on the experiences of Comcast and Time Warner Cable, we have seven specific measures to suggest.

For starters, network operators should establish clear, easy-to-understand policies about monthly subscriber bandwidth use and consumption caps. These policies should plainly spell out what is considered normal usage and what is considered abusive usage. They should also set the bar for abusive use high enough that no more than 5 to 10 percent of existing broadband subscribers in any market would exceed that cap, as Comcast, Charter Communications, Rogers Communications, and several other large MSOs have all begun to do in their respective service regions.

Second, network operators should take pains to explain their traffic management policies clearly to customers and educate them about normal and excessive bandwidth use. Most subscribers don't really know what monthly consumption limits of 100 gigabytes or 250 gigabytes actually mean for their broadband lives. So, to eliminate any confusion, it's incumbent upon operators to tell them in straight-forward language.



This point cannot be overemphasized. Indeed, when they shelved their additional Internet meter billing trials last spring, Time Warner Cable executives conceded that they had to do so because they didn't do a good job of explaining those billing plans to customers, prompting a huge backlash.

At the same time, network operators should let customers know how much bandwidth they're actually using so that they're not caught by surprise when they go over the limit or a big bill arrives in the mail. Among other things, operators can accomplish this by spelling out bandwidth usage on each bill and setting up a special Web portal interface where subscribers can track their usage at any given time during the month. The key, once again, is transparency.

In the greater Toronto area, for instance, Rogers Communications has been taking these kinds of steps for more than a year. As part of its rollout of Internet metered billing, Rogers posts monthly bandwidth usage on each broadband bill, offers a Web-based tool that allows subscribers to track usage at any point, and sends out electronic bulletins to users when they reach 75 percent and 100 percent of their monthly bandwidth allotment. Canada's largest MSO also has used a micro-site to show subscribers how much content they could expect to download before hitting their monthly consumption caps.

Fourth, network operators should view the time when a subscriber exceeds consumption caps more as a "teachable moment" than anything else. Don't move automatically to penalize or "fire" your bandwidth-hogging customer. Instead, use this occasion as an opportunity to re-educate the possibly unsuspecting user about your bandwidth management policies and broadband packages. See what's prompting the heavy use. Try to upsell or right-size the customer first. Spell out all the options that are available, as well as the consequences for the customer if no change is made.

If the user balks at these different options, or they don't work out for other reasons, you can always take more aggressive actions then. Why choose to throttle back, punish, or fire your customer before it's absolutely necessary to do so?

Fifth, network operators should make sure that even the most abusive subscribers don't suddenly get hit with big bills when they go over their bandwidth limits. Avoid sticker shock, and potentially very nasty press, by clearly setting modest ceilings on overage fees, establishing, say, a \$25 or \$50 monthly cap.

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That's what Rogers has been doing successfully in Ontario for the past year and a half. The large Canadian MSO caps overage fees at \$25 a month for all five of its broadband tiers, no matter how much users may exceed their allotted bandwidth limits. Largely as a result, it hasn't run into huge public outcries when it has had to charge subscribers for going over their limits.

Bad press is a particular concern in smaller metro markets, where local newspapers, radio stations, and TV outlets often have wide play and heavy influence. So avoid unnecessary public relations trouble by steering away from those unexpected \$500 or \$1,000 bills.

Sixth, network operators should set their bandwidth management policies on a local, market-by-market basis. A consumption cap that works in one region with relatively light bandwidth use might not work in another region with much heavier broadband use. It's important to tailor your policies so that you never capture more than 5 percent or so of your customers as abusive users.

Seventh, don't set your bandwidth management policies and consumption caps in stone. Rather, let both traffic policies and usage caps evolve over time to meet customers' changing needs.

PUBLIC AUCTION

What was considered heavy broadband traffic five years ago would be considered a mere pittance today, thanks in no small part to the explosion in music and video downloads. With similar forces at work today, the same will likely be true five years from now. So be prepared to keep shifting your bandwidth limits higher to reflect the market.

In other words, there's simply no substitute for detailed knowledge of your broadband customers and markets. There's also no substitute for clear, timely communication to your subscribers. And there's no substitute for constantly educating users about their bandwidth usage, your traffic management policies, and their options.

Finally, there's no substitute for careful consideration and patience. Don't assume your excessive broadband users genuinely mean to be bandwidth abusers or can't be turned into profitable customers with a little coaxing. Before you move to fire them, make sure they truly should be fired. **NGN**

Doug Johnson is vice president of product management for operational support system company Integrated Broadband Services (www.ibbs.com).

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VoIP Test and Monitoring Moves to the Next Level

oing forward, VoIP will no longer be a singular service. Rather, it will be just another component of various communications solutions that might be running over a converged network, which could be based on the IMS architecture. At least that's where many folks believe all this is heading.

That said, how will network operators – be they enterprises or service providers – ensure the quality of finicky old voice on these new converged, IP-based, FMC-enabled, possibly IMS-architected networks? And how could service providers take VoIP testing and monitoring a step further to not only ensure high-quality voice, but actually to create new revenues?

Some of the leading VoIP test and monitoring companies recently spoke with NGN to explain.

A Holistic View

"Some of the things that we are seeing currently is that the carriers are looking not only at monitoring for SLAs, but are inherently concerned about helping to diagnose troublesome network anomalies," says Mark Stacy, CEO and CTO of Touchstone Technologies Inc. "These problems can be difficult to find at best, and are extremely costly and time-consuming to cure as well. It is because of this 'next-generation' of monitoring and diagnostics capabilities that Touchstone was recently awarded a contract for monitoring the world's largest tier 1 carrier's business VoIP network initiative."

Whether you're talking about service provider networks or private networks, the objective is to ensure the end user has a good experience, says Gordon Eddy, director of product management and marketing for the network assurance business unit at Empirix, which provides testing and performance management solutions.

That creates a requirement for end-to-end testing and monitoring, adds Tim Moynihan, vice president of marketing for the contact center business unit at Empirix. In the enterprise space, says Moynihan, Empirix offers tools that allow customers to do pre-deployment testing as well as ongoing monitoring and analysis. Empirix also offers an outsourced testing service in which Empirix comes in and does the job for you.

In any case, Empirix has various solutions that can evaluate calls whether they come in as TDM or IP traffic, measure latency and other parameters of a call, do load testing before or during deployment, and identify where congestion and other potentially serviceaffecting issues are occurring in the network, he says.

Just this summer Empirix came out with the first product that takes it beyond voice testing, says Bob Hockman, director of product marketing for the network assurance business unit at Empirix. The Hammer Edge allows enterprise network operators to test other services in conjunction with their voice services, he says.

Eddy adds that Empirix also offers the Hammer SIP Trunk Tester, a portable field tool to verify SIP trunks are configured to deliver high VoIP quality prior to turnup.

In the same product family is the Hammer XMS, a carrier-class solution designed to monitor complex IP network and services environments. Hammer XMS helps service providers like Verscom Managed Services ensure the reliability and quality of next-generation services, and optimize troubleshooting efficiency.

Verscom's Managed Wholesale Voice Interconnect platform hosts a large number of operators' outsourced wholesale applications, handling more than 1.5 billion minutes per year over 300 different networks worldwide. Versacom says it was challenged



The Psytechnics Experience Manager dashboard report

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to capture and troubleshoot call flows for its retail managed services offerings, which includes "hosted or partitioned" retail solutions such as calling cards, broadband telephony and MVNO, but the XMS helps it do the job.

"Hammer XMS diagnostics and service-desk's work-flow oriented design paradigm gave us and our customers all the appropriate information at our fingertips, which resulted in a significant and sustainable competitive advantage," says Gurkan Ozturk, vice president of global sales and marketing at Verscom Managed Services. "With Hammer XMS, we have reduced the service desk and engineering time required for trouble resolution by 25 percent. In addition, we are now able to pinpoint our customers' hosted network/application problems in a reasonably short time frame, which were sometimes left undiscovered due to the system's inability to recreate problem scenarios caused by the very nature of shared/multi-tenant infrastructure.

"To pioneer the world's first true fixed/mobile convergence managed services eco-system, we're now heavily investing in R&D for MVNO enabler applications on our platform," adds Ozturk. "Essential to our success in the enhanced MVNO markets, is the interconnection to 3G+ mobile networks, which will eventually be standardized around IMS. Thus, Empirix's leadership in IMS was also a critical factor in choosing the company as we plan to transition our service infrastructure to IMS over the course of the next one to two years."

> With the advent of next-generation wireless networks, the rise of the femtocell and the launch of locationbased services, carriers will need to "statefully understand what's happening during the customer session," says Agilent's Will Brouwer.

For example, say a subscriber is using his iPhone to look up a restaurant application, says Brouwer. The restaurant site might have a phone number and the application might include an autodial capability. So, whatever the application, the service provider could capture who's calling, where they're dialing to and possibly other relevant information, he says. The service provider could in turn use that data to generate reports and provide that information to a third party such as a pizza parlor to gauge the success of an online coupon campaign, for example, Brouwer explains.

As femtocells move into the mainstream, he continues, that adds a whole new twist to this opportunity. Say a subscriber is out in the world using her phone on a GSM network. The GSM operator could enable a pizza parlor to send via the wireless network a coupon for a slice. But once that user returns home, the femtocell could alert the GSM operator of her new location, and the pizza parlor could instead offer her a coupon involving the purchase of multiple pizzas, which she could now potentially share with her family at home.

This is a great example, of course. But does it have real potential, or is it simply pie in the sky?

Brouwer says a service provider in Canada is already asking its suppliers to help it support this kind of application.

"AT&T as well has these kinds of application aspirations," he adds.

To help support that, Agilent offers solutions including a QoS manager that leverages the company's KPI engine to enable service providers to troubleshoot and monitor the entire sessions of subscriber calls. It can track what IP address or phone number a call is coming from, over what network it's being carried, and the location of the subscriber. It also can report on the call state and quality at multiple intervals during that call.

New Marketing Opportunities

With the advent of next-generation wireless networks, the rise of the femtocell and the launch of location-based services, carriers will need to "statefully understand what's happening during the customer session," says Will Brouwer, senior product manager for the assurance product line within Agilent Technologies' network solutions division.

When you look at the IMS architecture, which allows for the convergence of wireline and wireless networks, service providers can move up the value chain into data mining applications, he continues.

The End

VoIP is a mature market for carriers, so when carriers move to IMS they want to make sure QoS is really available on IMS, says Tony Vo, product manager for Spirent's Abacus product group, which focuses primarily on voice test related to PSTN-IP interoperability. So they want to simulate as closely as possible SIP and other traffic on the IP network, he says.

But there are a wide variety of different implementations of SIP by endpoint providers, he says, so service providers need test gear that can simulate all those different iterations.

Feature Story

The Spirent Abacus 5000



Mihai Puchiu, VoIP product manager at VoIP test system sup-

plier Ixia, adds that after getting a ton of press initially, some

were talking about the potential death of IMS two years ago. Now that IMS has come back into favor, he says, there's a need to test the IMS core, which involves emulating endpoints such as SIP phones as well as other elements within or attached to the network. Additionally, notes Puchiu, there's now a need to test not just basic calls, but applications that contain voice.

"VoIP protocols and technology may be well understood, but there are a host of potential problems when a high number of calls are mixed with large volumes of data and video traffic," adds Anupam Sahai, vice president of marketing at Ixia. "We developed our Acceleron-XP, VQM modules and IxLoad test application to emulate city-scale communities of real-world users – allowing our customers to discover and solve their device and network problems before their customers do."

Ixia's IxLoad Voice, which the company says matches the capacity of modern media gateways with 1 million SIP- and RTP-based endpoints per chassis, tests such VoIP components as IP-based PBXs, softswitches, call managers, session border controllers, and media gateways, using scenarios involving multiple voice protocols, complex calling sequences, and triple-play mixes of voice, video and data traffic. The product's subscriber modeling emulates user communities that vary in service usage and timing, which Ixia says yields performance results that accurately predict live-network capacity – allowing service providers to provision their networks more accurately.

Specifically, the IxLoad Voice emulates and tests security and network infrastructure protocols, including IPSec, PPP, DHCP and multiple forms of authentication. Voice call security is supported by SIP/TLS and SRTP. And the company's VQM support module evaluates in real time the end user's quality of experience, such as PESQ scores, for 300 simultaneous calls.

Deep Dive

Psytechnics, which began life as a BT Labs research project on how to interpret IP voice and video signals to manage service levels, was initially focused on licensing algorithms to test equipment vendors for PESQ, says Joe Frost, vice president of marketing. But in the past few years, he says, Psytechnics has been selling a voice and video performance management solution, called the Experience Manager, to large enterprises (mostly in the financial vertical) and service providers including AT&T, BT, IBM Global Services and KPN.

Frost says existing network management tools don't have a view of call quality because all they look at is network statistics, service statistics, device statistics and such quality of service parameters as packet loss, packet latency and packet jitter. They use mathematical models to generate an IP MOS score, and they indicate that's a measurement of voice quality, he continues. But the MOS score doesn't take into consideration such factors as whether there may be distortion on the line, he adds.

That's why Psytechnics instead looks at the voice stream – and inside the packet at the waveform – as opposed to the circuit, backbone connection or trunk, Frost explains. With that approach the Psytechnics solution can help identify a wide variety of problems ranging from the cause of a hum on a call to the volume level being set too high on a user phone, he says. As a result, it can help service providers save money by avoiding truck rolls, and otherwise preempt service-affecting issues.

Frost says that although Psytechnics has been selling its solution for about four years, it has added a million business end users just in the past 12 to 18 months.

He adds that in the last six months enterprises have become more serious about outsourcing their networks to service providers and, as result, more service providers are looking for predeployment test solutions to ensure adequate bandwidth is available for VoIP.

However, he continues, while those predeployment tools are important, once VoIP solutions are up and running there are frequently reports of problems such as excessive echo. The reason that happens is because VoIP is a real-time application, not a bursty application like CRM that can tolerate a bit of delay, he says. That means services providers need to ensure that whatever the enterprise outsourced solution – be it a VoIP call center or whatever, it is monitored and analyzed on an ongoing basis to ensure the highest quality of end user experience. **NGN**

From the Desk of Michael Khalilian

by Michael Khalilian



NGN Forum/IMS Forum Launches Plugfest 9 and New Technical Working Groups in 2010

The NGN and IMS Forums' Plugfests are the industry's only interoperability events covering NGN services over wireless 3G, 4G, LTE, WiMAX, wireline xDSL, cable, fiber optics broadband and IMS architectures.

We are pleased to announce that the diameter and control plane technical working group and interoperability group successfully completed their initial guideline documents and testing/IOT activities at Plugfest 8 in October 2009. The forum technical and business group is now progressing to the next stage of releasing all the test documentation and planning for the next Plugfest event. Our next IMS Plugfest and NGN Plugfest interoperability test event, Plugfest 9, will take place on first week of June 2010 at the InterOperability Lab (UNH IOL) in Durham, N.H.

- voice over LTE/4G;
- IP video (IPTV);
- wireless and smart grids;
- messaging, IP traffic, presence, IM and termination, integration;
- implementation of convergence: integrating legacy to NGN;
- transition from 3G to 4G LTE and WiMAX;
- metrics for standard sets of SIP call flows in IMS and NGN;
- IPv6;
- and others.

The NGN Forum and IMS Forum are the only industry associations dedicated to interoperability and certification of IP multimedia subsystem and next-generation network applications and services for fixed, mobile and cable networks. Participation in NGN IMS Plugfests and Technical working Groups is open to all companies. We will define network topologies based on the participants' requirements for these tests. We are also excited about the IP BSS/OSS and security architecture guidelines to be released this month.

Planning is well under way at the NGN Forum technical working groups, which have been holding regular joint sessions for the planning of Plugfest 9. The latest additions under review to add to the technical working groups plan for 2010 are going to be service delivery platform, IP video, IMS BSS, NGN se-

The NGN Forum and IMS Forum themes for this Plugfest are NGN network and IMS rich applications deployment. Topics under consideration include:

- IMS core, CSCF, AS, HSS, policy;
- Inter- and intra-network testing areas of key interest including billing services interdomain scenarios, roaming users, visited networks scenarios, applications presence, voice, video, user agents;
- SDP/rich communications services/voice features and IMS applications;
- VoIP/SIP/QoS;
- security and reliability;
- billing offline charging and online charging;
- control plane and diameter;

curity and 4G. These new groups will be announced in early 2010. Any company that is interested in participating in research or interoperability testing is welcome to contact the Admin@NGNForum.org.

Starting this year, working groups will meet every other week to define their objectives and do Plugfest planning.

The NGN Forum and IMS Forum are the only industry associations dedicated to interoperability and certification of IP multimedia subsystem and next-generation network applications and services for fixed, mobile and cable networks. Participation in NGN IMS Plugfests and technical working groups is open to all companies. We look forward to your participation in our 2010 working groups and in Plugfests. For more information please contact Info@NGN-Forum.org or visit our Web sites, listed below. **NGN**

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

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