Lessons Learned at Global MSF Interoperability 2006

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IMS MAGAZINE™

IP MULTIMEDIA SUBSYSTEM

VOLUME 2/NUMBER 1 FEBRUARY 2007

New Column! "IMS Reality Check"

Migrating Toward Convergence

Gaps in IMS?

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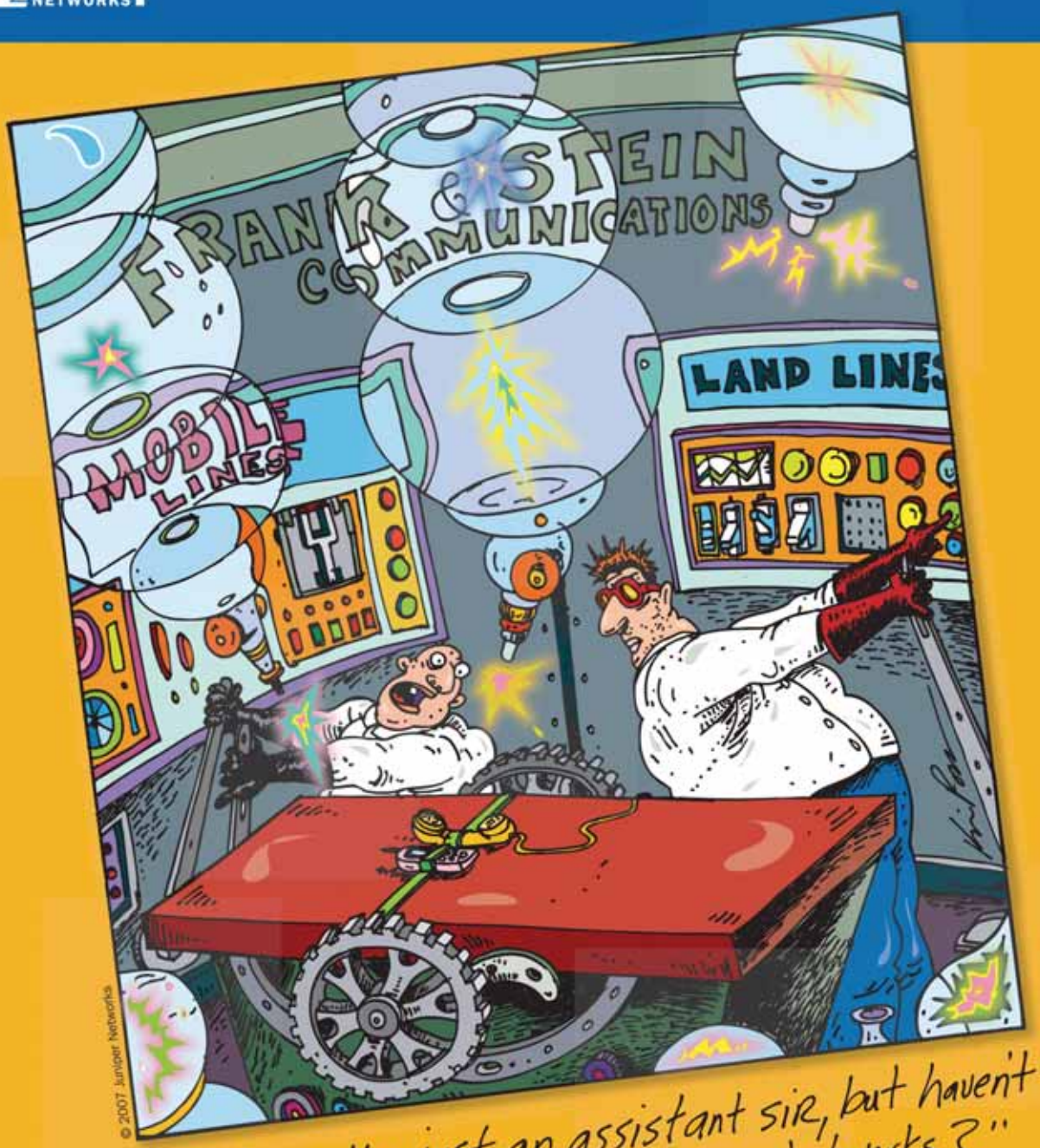

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editor's note

Reality Check

by Richard "Zippy" Grigonis

Yours Truly is still mulling over the Yankee Group's (news - alert) November 2006 report, "IMS Architecture: Time for Introspection and Reality Check".

The good news is that carriers and vendors practically take for granted that IMS will be the single, unifying service architecture for the world's wireless and wireline networks. Everyone likes the idea partly because it leads to fixed-mobile convergence (FMC), which means you can roam about with all of your services. Moreover, IMS is modularized in such as way that one can create lots of new services quickly, yet a network operator can both leverage a legacy infrastructure and maintain a consistent user experience.

The bad news is that constructing the whole humongous IMS/next-gen edifice is not without some peril. The carriers' trepidations are based on a number of reasons, as specified by the Yankee Group's report:

- Standard compliance for vendors: vendors' solutions are still not fully standard-compliant.
- Vendor solution interoperability: there are immature standards and a lack of vendor solution interoperability.
- Support for Service Initiation Protocol (SIP)- and non-SIP-based services: adoption of SIP is a new requirement.
- Service orchestration: orchestration functionality is critical, but lacks a proper standards definition.

"The promises of IMS architecture for carriers and service providers can be truly mind-boggling. Beneath all the academics and hype, the road to IMS and next-generation architecture is rocky and treacherous," said Arindam Banerjee, Yankee Group senior analyst. "An aggressive approach to IMS has a greater chance of failing. A slower and more cautious path to IMS will help reduce uncertainty and provide greater architectural stability, which will subsequently result in increased APRU and improved customer stickiness."

For IMS to be successful, the report says that "gaping holes and inadequacies in the architecture that have surfaced must be addressed by vendors and carriers."

Over here at *IMS Magazine*, of course, we're inclined to yell, "Yankee Go Home!". Admittedly, we're of the opinion that IMS may just be getting out of the lab and is still a bit wet around the ears, but whenever somebody thinks that there's a buck to be made in a new technology such as IMS, then you'll soon be surprised at how quickly any problems get ironed out. Unlike social issues, technology is one of those few areas where you can indeed throw money at problems and get results, provided that you haven't outsourced your R&D to Outer Mongolia.

The science writer Willy Ley once wrote that if an eccentric billionaire had wanted to go into orbit in 1910, he could have done it. All of the technological components were there (liquefaction of hydrogen and oxygen, trajectory mathematics, air-tight suits, etc.). It just would have taken an additional research program (and a heap of money) to pull all of it together into a manned spaceflight. Historically, however, it didn't happen until 1961, mostly because just about everyone (at least everyone who controlled the purse strings) lacked the will to do so. Contrast that with the development of the more improbable atomic bomb, which went from an obscure scientific paper on fission to an actual bomb after just six years, thanks to a $2 billion expenditure and a group of scientists working like crazy.

Moral of the story: Everyone recognizes that IMS is the future of world communications. As time goes on, some reality checks will occur and the difficulties will be ironed out. It may not be cheap to do so, but "inevitability" rarely is.

Postscript: A new column starts in this issue, written by David Hayward of Reef Point Systems. (news - alert) It's name: IMS Reality Check.

Now there's a coincidence for you.

TMC

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contents

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feature articles

THERE ARE MANY FLAVORS OF FMC NETWORKS TO CHOOSE FROM.

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publisher's outlook

IMS: Are We There Yet?

by Rich Tehrani

I start this column thinking about the most recent TMC IMS Expo last week in Ft. Lauderdale, Florida. The takeaway for me from this event is that the market is somewhat confused about IMS.

Still, I can't help but wonder if history is repeating itself. After all, when I launched *Internet Telephony* Magazine — the sister publication to *IMS* Magazine, many service providers did not take the technology seriously.

Service providers first universally dismissed VoIP and then started to experiment with it when carrying their backhaul traffic. One would imagine the cable companies would have jumped all over VoIP (define - news - alert) quickly but they just didn't.

There was early euphoria for IP telephony in 1998-2000 but from 2001-2003 virtually all service providers dismissed VoIP as something just not viable or worth discussing. Vonage scared the industry and virtually all service providers came up with a VoIP strategy after the New Jersey-based upstart became successful.

Of course the jury is out on how successful Vonage (quote - news - alert) will be but at 2 million subscribers they have made a major dent in ILEC revenue. In addition, the cable companies have also been stealing major share. The ILECs are late to the game with their VoIP-based solutions such as FiOS. The argument may be that, in the end, the ILECs will win the race but in the technology market (and isn't telecom merging with tech and consumer electronics?) the first-mover advantage should not be underestimated.

How much money is being spent to take down Google (quote - news - alert) and Apple (quote - news - alert) for example? Is the billions of R&D dollars spent by Microsoft (quote - news - alert) and Google alone to dethrone these companies having any effect? No.

So the question worth asking is when will IMS be ready for full implementation? It seems from the Expo held last week that it could take a number of years for full deployment. Some estimates say two years and others say more. Ironically while we thought VoIP would take hold in 2-3 years it turned out to be closer to seven years or so for the technology to become accepted as mandatory in service provider and enterprise networks.

As I peruse some of the IMS happenings in this issue I see there is serious IMS progress being made in the market. For example AT&T — formerly Cingular Wireless — is using an IMS platform developed by Alcatel-Lucent to allow video calls via their video capture-capable mobile devices.

In addition in this issue there is an article about T-Mobile Germany upgrading their network using a stepping stone provided by Tekelec to allow them to take advantage of IMS. They are using Tekelec's EAGLE 5 Integrated Signaling System (ISS) to support Sigtran and especially SS7oIP.

Additionally, this issue discusses a partnership between Siemens (news - alert) and Crossbeam (news - alert) focused on providing unified threat management or UTM for IMS networks. Moreover, Dialogic (news - alert) is in the IMS space offering a multimedia developer solution based on ATCA and AdvancedMC which combines the benefits of HMP and DSP technology. Dialogic's Jim Machi who was a keynote at TMC's recent ITEXPO/IMS Expo says the company's carrier customers are looking for a path to higher density media solutions that will allow them to deliver their unique application services into a demanding carrier environment.

In addition, heavyweight Huawei (news - alert) announces in this issue that they will be introducing an IMS 3.0 solution which complies with both the 3GPP and TISPAN. The goal of this initiative is to provide carriers with the ability to migrate to FMC and IMS more quickly and of course deliver cutting edge services.

So I am seeing lots of activity in the IMS space and from some major companies and carriers.

But I wanted more, and I had room for a few vendor opinions so I asked Eric Bezille, Nortel's (quote - news - alert) IMS product marketing manager for Europe and Asia, for his opinions on the state of the IMS market. This is what he had to say.

"There are many different forecasts on the IMS market revenues from a few billion USD over the next 5 years to tens of billions. The pace of the evolution to IMS is quite different from one carrier to another. Many customers have in fact strong investment plans in NGN, softswitches and SIP multimedia services. These customers are asking for IMS ready systems, enabling them to establish an IMS environment , so they will be ready when business will demand it."

"On another front , we see IMS and IMS-ready commercial services delivered this year by operators being driven by Fixed Mobile Convergence service offering opportunities for business and/or residential segments."

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"This being said, IMS is still buzz word in the telecoms industry and many vendors as well as service providers are anxious to demonstrate leadership in this area. As a result, many announcements both in the wireline and wireless markets have been positioned as IMS wins, even though there were no IMS-compliant products in the deals. For example, many vendors positioned wireless POC (Push-to-talk over Cellular) contracts and soft switch contracts as IMS wins."

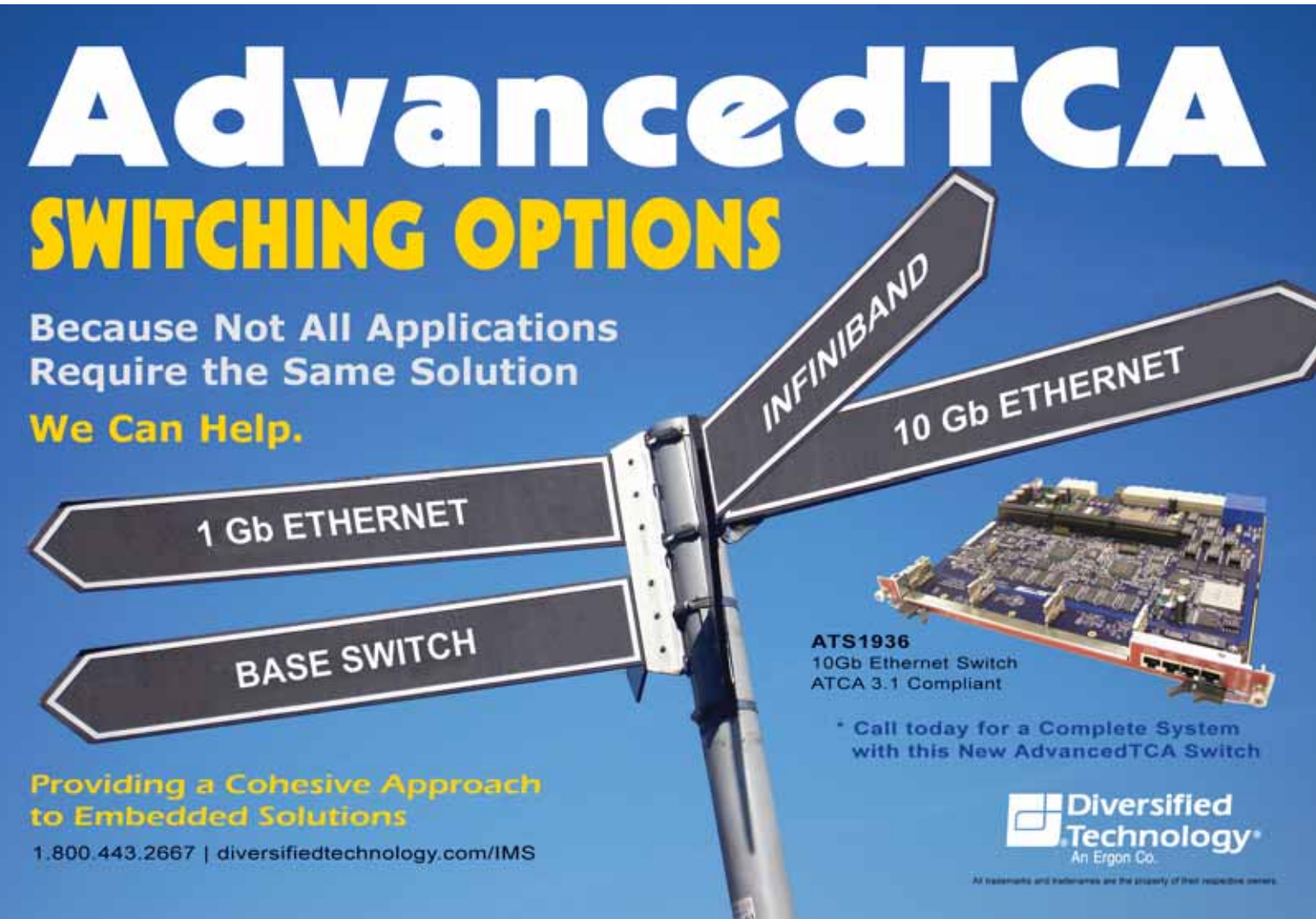
"At this time, Nortel has deployed IM- ready solutions and SIP commercial applications with 100 plus customers worldwide, including Orange, Verizon, Telefonica, BT, Neuf Cegetel, UPC, Cox, Liberty Global, Bell Canada, Embarq, R Cable, Chunghwa Telecom. With Nortel, these customers will be ready to move to IMS!"

So this is Nortel's take. There is certainly some truth to the statements about companies reaching to position themselves as IMS players.

This is what Michael Cooper, VP, Marketing and Strategy, Convergence Business Group at Alcatel-Lucent had to say:

"IMS is real. Over the past year, service providers and network operators worldwide have announced initiatives to deploy IMS. For Alcatel-Lucent this is reflected in the number of lab trials that have migrated to live deployments. These deployments, as well as the ongoing trials, are providing carriers and equipment providers with critical insights that are helping to provide a clearer indication of the types of services that operators see as most important. Many of the services being deployed or tested involve consumer and enterprise VOIP or fixed-mobile convergence. Looking ahead, as IPTV, Internet, and Data services are added to the converged network, IMS will play a key role in blending and delivering Quality of Experience [QoE] and providing the policy and procedures for providers to differentiate their services from those offered by competitors."

So in the end it seems like the IMS or at least pre-IMS market is thriving. There are obviously different vantage points as to what constitutes a 100% IMS-based solution and what does not. But this market is still in its infancy and to be honest our goal at *IMS* magazine is to be the place service providers turn to when deciding where to purchase equipment. We will continue to be your personal guide to the IMS market. Now sit back and enjoy the ride.



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Siemens Partners with Crossbeam Systems on Carrier-Class UTM

Crossbeam Systems, (news - alert) provider of unified threat management (UTM) solutions, announced a partnership with Siemens Networks, (quote - news - alert) which supplies telecom equipment and service to customers in 190 countries. Under the terms of the agreement, Siemens will deploy and support Crossbeam's complete line of industry-leading UTM platforms across its global carrier and mobile operator customer base.

With this partnership, Siemens combines world-class integration and management services with Crossbeam's UTM equipment to offer an unparalleled and complete security solution. As an established global security integrator, Siemens has deep operational experience that lets carriers protect their infrastructure and deliver new content services like parental controls with a uniform and consistently managed infrastructure.

The traditional approach to carrier and mobile network security has focused on securing the edge of the network. With the convergence of voice, video, data and wireless services and the emergence of the IP Multimedia Subsystem (IMS), new security risks will increase dramatically, requiring an integrated approach that spans edge, infrastructure and managed services. Partnering with Crossbeam enables Siemens' carrier and mobile customers to deliver on-demand security services and solutions from the network cloud to address these new vulnerabilities.

"The convergence of voice, video, data and wireless services, require carriers and mobile operators to deploy a more flexible security solution that dynamically adapts to new and increasingly complex security threats," said Peter George, CEO, Crossbeam Systems. "This partnership is a win-win. Siemens is now delivering industry-leading UTM security to its global customer base and Crossbeam is leveraging Siemens extensive integration and management services."

Crossbeam Systems X-Series and C-Series equipment delivers flexible, scalable network security in perimeter, core, and data center architectures. Carriers and mobile operators use the X-Series to deliver a new generation of virtualized services such as firewall, VPN and intrusion prevention. Crossbeam UTM technology provides a highly-consolidated, security services solution that allows service providers to deploy the most appropriate security measures from inside the services cloud, out to where they are needed most.

"By partnering with Crossbeam Systems, Siemens can now offer high-end UTM solutions to fixed and mobile networks that are increasingly threatened by complex Internet-borne attacks. These multi-application security switches increase security while lowering operational costs for our customers," said Daniel-Rui Felicio, President of the Carrier Services division at Siemens.

http://www.siemens.com/networks
http://www.crossbeamsystems.com

Mobile Video Calling Made Possible by IMS

By Erik Linask

One of the main factors in enabling many of the new features available to mobile users is the advances in and adoption of IMS (IP Multimedia Subsystem) architectures by carriers worldwide. AT&T (formerly Cingular), in fact, recently deployed its IMS platform by Alcatel-Lucent, (quote - news - alert) and is already taking advantage by adding yet another communications feature available to home and business users and adding it to its wireless service. Beginning later this year, AT&T (quote - news - alert) customers will be able to make wireless video calls using their video capture-capable mobile devices.

Soon, moms and dads nationwide will no longer have to miss their children's first steps, first baseball game, or other milestone events. With this new service from AT&T - the first mobile service of its kind in the United States - callers will be able to send a live video stream to a recipient during a standard voice call. While on a standard voice call, users can, by pushing a single button, add a live video stream to the call, so the call recipient is able to see what the camera on the first phone sees while continuing the conversation. All the called party is required to do is accept an invitation to initiate the video stream on his handset.

AT&T demonstrated its newest service in Las Vegas at the Consumer Electronics Show in Las Vegas, where visitors got a first hand glimpse into the true capabilities of a 3G network working with an IMS platform - a true outlook into the future of wireless services.

http://www.alcatel-lucent.com
http://www.att.com
http://www.thenewatt.com

MetaSwitch Tops Market

By Cindy Waxer

By unveiling its multimedia-enhanced telephony architecture for migration of carrier networks from legacy circuit-switching to IP Multimedia Subsystem (IMS)-based services, as well as COMPETE!, a new IMS-based telephony solution aimed at the cable market, MetaSwitch has managed to move into a top spot in North America's Class 5 softswitch market, according to industry analyst firm Infonetics Research.

According to a recent Infonetics report, MetaSwitch has emerged as the leading vendor in the Class 5 softswitch category for North America, based on the number of subscriber licenses sold - and is positioned for significant expansion into new markets during 2007.

According to data, MetaSwitch owns a 46 percent share of the North American market by license shipments, having moved into the number one position in the previous quarter. In total, across the two most recently reported quarters, MetaSwitch shipped over 2.5 million licenses, compared with less than 1.7 million for its nearest competitor.

"MetaSwitch (news - alert) is making a compelling case for itself as the leading provider of Class 5 softswitches in the North American market, and potentially further afield," said Stephane Teral, principal analyst, Service Provider VoIP, IMS, and FMC practice at Infonetics Research.

MetaSwitch announced several key technology enhancements during 2006 that enabled it to dramatically expand its customer base including the release of its multimedia-enhanced telephony architecture and COMPETE. This new platform enables cable operators to offer voice services to both business and residential customers, including services such as hosted PBX, unified communications and converged T1 services over IP.

Carriers have deployed MetaSwitch-based services in all 50 states, Canada, and the Caribbean. They range from incumbent operators of all sizes to rapidly-expanding competitive providers and cable companies. Analysts suggest that a key trend driving MetaSwitch's success is that carriers are migrating to VoIP faster than ever, with the focus shifting from long distance (Class 4) applications to local exchange (Class 5) services.

http://www.metaswitch.com

Avaya Will Buy Ubiquity for $141M

By Greg Galitzine

Avaya (quote - news - alert) announced it will buy Ubiquity Software Corp. for 74.3 million pounds or about $144 million. Ubiquity's core software product is one of the leading software platforms for the development and delivery of SIP end-user applications

Mickey Tsui vice president of global communications solutions at Avaya, said, "We believe that the addition of Ubiquity's next-generation software platform to Avaya's portfolio will help customers and developers enhance the integration of communications technologies and business processes"

Ian McLaren, chief executive of Ubiquity, said, "The offer by Avaya marks an important milestone in the development of Ubiquity. We believe that there are strong synergies between Ubiquity's core software platform, service creation framework and applications and Avaya's portfolio of enterprise products. As part of the Avaya group, we believe that Ubiquity will be well positioned to gain access to Avaya's customer base and the resources to exploit the opportunities we see in the emerging telecommunications marketplace."

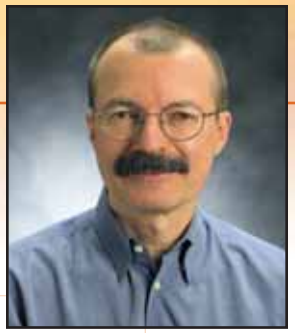
The tender offer has been unanimously recommended by the board of directors of Ubiquity. The purchase is expected to be funded with Avaya's existing cash resources.

Ubiquity (news - alert) provides deployment platforms, applications, development tools and integration technology for converged voice, video and data services. Their flagship SIP Application Server (SIP A/S) is deployed with several of the world's largest telecommunications carriers.

According to Yankee Group, the market for SIP-based Application Servers will reach $4.7 billion by 2009. Yankee Group also believes the advent of IP Multimedia Subsystems (IMS) within carrier IP core networks will further drive the adoption of such products.

http://www.avaya.com
http://www.ubiquitysoftware.com

Look Before You Launch: How IMS Planners Are Watching Consumer Trends to Create Their Killer Apps



by David Hayward

So when will we see these types of IMS applications deployed? If the number of operators who presented their IMS vision at 2006 versus 2005 conferences, such as TMC's IMS Expo last year, is any indication, then IMS applications will begin to appear this year and mushroom in the next.

To understand IMS network dimensions, their applications' challenges and how to overcome them, we first need to look at what's driving operators toward IMS and IMS-over-FMC and how they are shaping their vision of IMS services. As one major operator proclaimed, "We need IMS to survive, and it will be cheaper in the long run to deploy services."

In 2006, various independent polls, analyst surveys and press articles confirmed industry-wide views about why operators will implement IMS:

- It provides a faster environment for launching new services
  - The IMS architecture is fully IP-based and easily accommodates third-party servers
- It enables converged voice, video and data services
  - Being all-IP, it supports all media
- It can deliver the same service over fixed and mobile networks
  - Its layered architecture is agnostic to the access network
- It provides more control over an increasingly "democratic" service environment
  - It can provide a walled garden

Or, as an operator might say:

- My voice services are a commodity.
- I can charge more for "added value" (i.e., high-bandwidth IP multimedia) services.
- I better offer cool — and personalized — services to be competitive.
- The world is going mobile, so should my new high-bandwidth mobile services.
- Customers expect "services" everywhere, so my services need to be wired and wireless.
- If consumers are using my network, I want to charge for it.

Now in 2007, many mobile operators are bent on an evolutionary path toward IMS – with several flavors of FMC that will either immediately or evolve to feed the IMS core—and they are looking at the Internet to shape their plans for new services. Multivendor proofs-of-concept, such as the IMS Forum's PlugFest, demonstrate 3GPP/TIPSAN IMS compliance, further accelerating operators' IMS testing and deployment.

Ahead of the Hockey Puck: Internet and Mobile Trends

At nearly every IMS conference last year, moderators couldn't help but put a new twist on the age-old question: "What will be the killer app…for IMS?" It's an age-old question, and one that often spurs useless prognostication. But at more than one industry panel, operators gave a sound answer: "voice is the killer app now, and rich voice (i.e., VoIP combined with multimedia) will be the killer app tomorrow." So perhaps it's not just one service, but combined services that will comprise the killer (i.e., revenue-generating) app.

For the past few years we've heard the promise of IMS apps such as push-to-talk for mobile devices, prepaid card apps that apply to wireless laptops and mobile phones alike and lifestyle services, like presence. While these are relevant examples (and easier to deploy with IMS versus legacy softswitching), operators settling on IMS are taking their queue from the Internet's hottest trends: rich-media, personalized and community-based, and mobile. Or as hockey great Wayne Gretsky quipped: to win, you have to anticipate where the puck will be, not where it is.

The smart (IMS R&D) money is following the population segment that's driving the Internet and mobile communication trends, that has buying power today, that will have more buying power tomorrow and that has a group of younger siblings

The dimensions of IMS networks, their concurrent users, user devices, registrations/deregistrations, active sessions and multimedia services, will dwarf current fixed-line VoIP and data network dimensions. With new technologies — such as WiFi- and WiMAX-enabled mobile phones; presence services ringing multiple always-on devices per user; and applications that combine VoIP with real-time video conferencing, video-on-demand and videosharing – telecom operators will be challenged more than ever before to secure their infrastructure, protect revenue, ensure QoS and enforce business policies.

ready to follow in there footsteps (see Figure 1). For example, 18 to 24 year olds, show the greater interest in Mobile IM that any other peer group, according to a Yankee Group survey. They're closely followed by the 25 to 34 year olds. And there's huge interest in IM all around (29 percent of American's born in 1935 or earlier are IMing, as surveyed by the Pew Internet & American Life Project.) *Call this the "always-in-touch-with-my-friends" trend.*

Figure 1: The smart money is following Internet and mobility trends to shape personalized IMS services

Mobile phones, which several years ago surpassed new fixed-line phone subscriptions, are another trend to follow. IDC recently reported that the top 5 phone manufacturers are dramatically increasing converged phone shipments: anywhere from 29 percent to a whopping 200-plus percent 2006 over 2005. And it's not only consumers who will buy the nearly 100 million converged mobile devices this year: it will be businesses, too. *Call this the "I-want-multimedia-service-on-my-mobile-phone" trend.*

Mash-ups are a concept the Microsoft speakers at IMS conference apparently love to talk about — in part because they see that many new applications can be deployed on Microsoft technology without the aid of IMS. (There's some truth to that.) For example, mash-up services that combine Google maps with just about any special interest topic popping up all over the Web. Operators are looking for service-delivery platforms to deploy at the top of the IMS architecture that can easily combine web- and app-server functions. *Call this the "click-me-a-cool-service" trend.*

Shrewd IMS planners are also closely watching the Internet social networking trend setters, whose fast-growing subscriber bases thrive on self-publishing, self-promoting, self-policing, group consensus and dialogue:

- ebay.com, where more than 25 million people transact business.
- myspace.com, where more than 120 million users post their personality.
- linkedin.com, where more than 7 million professionals meet.
- youtube.com, where more than 100 million videos are viewed per day and 65,000 new videos are posted per day.
- wikipedia.com, where visitors "crowdsource," or build encyclopedia entries "by committee."
- iStockphoto, where hoards of amateur photographers can post their photos and sell them at cut-rate prices.

The list goes on. *Call this the "have-it-your-way" trend.*

A concept called 100 percent bandwidth is being passed around. It means that technology continuously evolves to deliver a virtual experience that more and more approximate reality. Taking photos and filming video on mobile devices, and sending them to your buddy list, is one example. At year-end 2006, iTunes was the leader (67 percent market share) among paid video downloads. And you can bet a lot of those are going onto iPods for portability. *Call this the "being-there" trend.*

With the spread of WiFi hot spots beyond the airport and the business hotel to coffee houses, bars and restaurants, consumers, not just business travelers, have proven that they want high bandwidth services on a mobile device. Mobile phone and other handheld web-browsing is already a good revenue source for providers. IMS planners are taking note and looking at a broad range of fixed-mobile convergence options to reach consumers wherever they are. *Call this the "I-want-it-now" trend.*

The openness and flexibility of the IMS architecture allows quick application prototyping, market testing and broadscale market roll-outs. This translates to the following (also see Figure 2, which illustrates ideas in the remainder of this article):

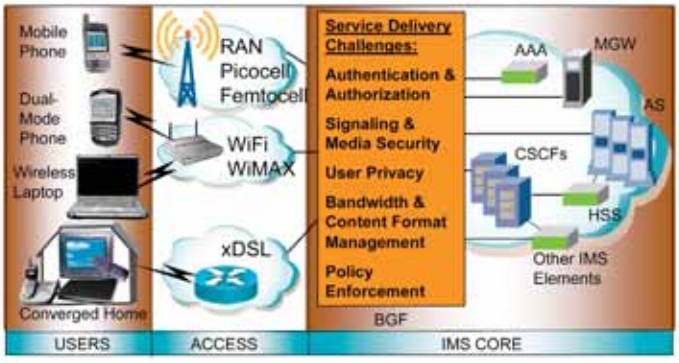


Figure 2: IMS' personalized services, FMC access, network dimensions will create security, QoS and policy challenges.

- With third party apps or home-grown apps, deployed at the top layer of the IMS, I can lower my cost of service deployment
- With faster, lower-cost market test deployments, I can lower my risk if the service "bombs"

- I can get faster time to market and ride the wave of consumer trends quickly deploy
- And with IMS over FMC, I can deliver more services to more consumers in more places.

Operator Confidence: Delivering the Killer App

We began this discussion with a view of the IMS network and its immense dimensions compared to today's VoIP and data networks. Just the sheer number of active sessions will be immense: a single user may have 3, 4 or 5 concurrent active sessions to handle always-on presence and location-based services. Moving between WiFi and CDMA/GSM will cause continuous on-off-on-again registrations.

Operators will be challenged to ensure security of the IMS services:

Is the user who he says he is?

Is he authorized for the services he's asking for?

Am I ensuring him the privacy he wants?

I am protecting my network assets from unauthorized intrusion or attacks carried in the user's SIP or media flow?

Operators will also be challenged to deliver QoS:

How can I implement full security and not bog down the network?

Am I sure that the network is using the right CODECs for each user?

How do deliver the right bandwidth for each user's device or particular access network?

Operators will be challenged to enforce policy:

How can I ensure that a user's personal preference, such as time-of-day and location, are met?

Can I set up and enforce different billing rules depending on dynamics such as time-of-day or access network?

To understand how these problems can be solved within the IMS and IMS-over-FMC environment, we need to further explore the nature of IMS services, and how the daily rise and fall network dimensions (i.e., concurrent activity) will stress the network and make it more vulnerable to Internet security risks and service management. We'll explore these issues in future columns.

David Hayward is the Director of Marketing for Reef Point Systems. (news-alert) For more information, visiting the company online at http://www.reefpoint.com.

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Becoming More Agile with IMS

by Ronald Gruia

One of the key promises of IMS that it enables telcos to achieve a better *service velocity*, or the ability to quickly and cost effectively introduce new multimedia applications within their networks. These new services are much simpler to implement and more efficient in terms of performance. The key factors that drive this service velocity are the re-utilization of key elements in the control layer (such as the CSCF and HSS) and the ability to fit ready-made applications onto the IMS network.

Therefore, IMS can enable service providers to quickly deliver new blended applications such as voice and video or voice and gaming. Since SCEs (Service Creation Environments) are inherent in most IMS implementations, carriers can rely on these rapid service creation environments and SIP to add and drop service features, application components, and session data. This significantly raises the potential for launching new "combinational" services.

The Role of the SDP

Closely tied with the development of the IMS is the SDP (Service Delivery Platform) opportunity. An SDP can be thought of as an overlay system for the rapid and cost-effective delivery of advanced services. The SDP concept incorporates multiple components for execution, management, provisioning and billing of end-user services that address market-specific segments. The SDP model is intrinsic to IMS, since the notion of rapid service creation if fundamental to the IMS market. Conversely, SDPs also enable the rapid decommissioning of an offering in the event that it is not widely adopted by the market, which is another IMS requirement.

Despite the close relationship between SDPs and IMS, there are many service providers opting to initially roll out an SDP, even prior to deploying IMS. IMS enables the disaggregation of transport, control and application. An SDP allows the rapid deployment of subscriber services in a controlled manner. Therefore, since the SDP resides entirely on the application layer, it can be initially deployed to quickly roll out new "IMS-ready" services without necessarily requiring the existence of control elements of the IMS architecture. Hence, the SDP can serve as a catalyst to IMS, since it will enable operators to implement new services quicker, and use the revenues generated by these new applications to later finance IMS equipment purchases. In turn, the IMS equipment can later enable carriers to achieve operational savings.

Service providers are increasingly concerned with the fact that commoditized voice and basic data services are simply not enough to stem the tide of declining average revenue per user (ARPU) and rising subscriber churn. Wireline carriers are worrying about the advent of new competitors, including MSOs and other "over the top" new market entrants such as Google, MSN/Microsoft, Skype/e-Bay, Vonage and Yahoo. Meanwhile, mobile operators are facing challenges such as lower margins for voice service, limited uptake of data services, high subscriber penetration rates, and many of them have yet to experience a better return on their third generation network investment. Furthermore, all service providers are increasingly under pressure from these "over-the-top" players to rapidly introduce new custom apps to react to new opportunities, given the pricing erosion that has become prevalent in the industry.

These OPEX savings can be impressive, as evidenced by an example from the U.K. division of Cable & Wireless, which estimates that IMS can lower OPEX by at least 25% when compared to a legacy stovepipe implementation. Another example comes from Lucent Bell Labs, which estimates that IMS can improve a service provider's operating costs by at least 20% to 25% after the first year of deployment.

Wider Developer Base

Besides the advent of SDPs, another IMS factor driving service velocity is the openness of the underlying protocols. SIP and the web-based model are widely known, thereby shortening the required investment of a programmer to develop new applications. The web-based programming models (XML/VXML, etc.) are well known to most developers, and in case they are not, it would not take them more than 3-6 months to become

savvy programmers. By contrast, the proprietary languages of IN would take a lot longer time commitment (at least 12 to 18 months until a developer would become fully proficient).

By relying on open protocols such as SIP and XML, instead of being faced with legacy systems where each service had a specific protocol and interface to the network, third party developers can write applications much more efficiently. Another benefit is reduced CAPEX, since applications can potentially become cheaper to implement, given a wider availability of developers. Furthermore, since IMS enables the re-utilization of common functions such as billing, QoS and presence across all applications, the incremental cost per service goes down over time. The previously mentioned UK division of Cable & Wireless estimates that IMS can reduce CAPEX by roughly 35% to 40% for each service deployed.

The IMS design also cuts down programming complexity. Most developers typically deliver ten lines of code per day (on average), or 50 lines in the best-case scenario (independent of the language used: C++, Java or assembly). A low-level code obviously entails more branches, which increases complexity and test cases while decreasing the overall quality level of the software. (see footnote 1)

An SDP can be thought of as an overlay system for the rapid and cost-effective delivery of advanced services.

In addition, the new IMS programming model achieves the application logic separation from the user interface, and "stateless servers", so scalability is also much more realistic. The end result is quite compelling, as the average time to deploy a new service can be substantially reduced, by as much as 12 times (from 18 months to less than a month and a half) when compared to the old stovepipe approach.

Key Takeaways

The fragmentation of the value chain is a natural consequence of the separation of the transport, control and application planes that is being unleashed by IMS. The development of the application will no longer lie exclusively with the vendor selling the core infrastructure. Therefore, service providers will have a choice and can opt for a best-of-breed approach, picking different developers for distinct applications. Given the standard IMS interfaces, it will be much easier to replace a non-performing or non-cooperating vendor. Another byproduct of this fragmentation is that carriers can now play vendors off each other and obtain better pricing for their applications. All of these factors lead to a faster time-to-market for a given application.

One Final Cautionary Note

Despite the rapid service creation and CAPEX and OPEX savings the IMS will deliver, there is a cost factor that is often overlooked, namely systems integration. The complexity associated with a multi-vendor deployment will require a top-notch systems integration. For instance, an application such as push-to-talk can belong to one vendor, with another one supplying the CSCF, and an independent systems integrator providing the professional services. This will require careful coordination and expertise to deliver an IMS implementation.

The level of systems integration required to implement IMS due to its distributed nature, number of components and functions will be time-consuming and quite an obstacle to overcome. More importantly, the systems integrators will need to refine their skillsets in order to be able to troubleshoot any issues that arise during or after the installation of an IMS service involving equipment from several vendors. Hence, it is not surprising that over half the cost of the implementation is frequently incurred by professional services support. For service providers, the implication is that they will have to carefully weigh the pros and cons of keeping that work in-house versus relying on an external systems integrator.

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1 This was one of the key conclusions from a presentation ("Current Research in Applications and Services Infrastructure Protocols") given by Dr. Eric Burger (from Cantata), at the SIP Summit in June 2005.

From VoIP to Real-Time Multimedia and IMS

by Ken Kuenzel

The days of Voice over IP (VoIP) telephony as a lower-cost version of what is available over the public switched telephone network (PSTN) are over. With the wide-scale adoption of the Session Initiation Protocol (SIP), we are moving rapidly beyond Voice over IP (VoIP) to the delivery of real-time services over IP. These services can integrate voice, video and enhanced services within a single session. For example, from a desktop application, a user can escalate an instant messaging (IM) conversation to a voice call and then share a video file and collaborate on a PowerPoint presentation, all within the same session.

The result is that just as email revolutionized mail by delivering text information anywhere in the world within seconds, real-time services will transform communications by delivering voice, video, IM, presence and many other advanced services within milliseconds. Interactive, instantaneous communications have become a reality, and users can now collaborate in ways far more rich and expressive than ever before.

Service providers are looking to the IP Multimedia Subsystem (IMS) to define the architecture and standards that support the delivery of these new applications. IMS is an industry-wide architectural effort intended to enable carriers and other service providers to offer a broad variety of IP-based services to fixed and mobile customers. While its origins were for 3G mobile networks, IMS has expanded to include the needs of next-generation wireline networks.

Increasingly, competitive forces are driving service providers to go beyond VoIP to deliver real-time services now, while they simultaneously plan and execute the evolution of their infrastructures towards full IMS compliance.

As a result, many service providers cannot jump directly to IMS; they must proceed in phases.

- VoIP Transport: The first step to IMS adoption has already been reached as carriers worldwide have replaced, or at least augmented, their traditional TDM networks with IP transport and softswitches. (See Figure 1.)
- Connecting Users to Services: The next step—the "pre-IMS" phase—has already begun for many service providers. In this phase, service portfolios expand beyond voice telephony to include video, IM and other presence-enabled applications—often in use all at once—over "toll-quality" connections.
- IMS Compliance: The last step is a transition to an IMS-compliant infrastructure to provide more control structure and application layering to further reduce complexity and costs and provide the delivery of new advanced capabilities.

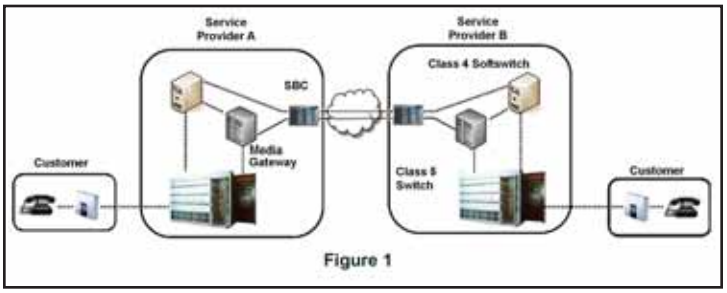

Figure 1

Phase 1: VoIP Transport

The telecom industry has already reached the first stop on the road to IMS adoption. Carriers worldwide have replaced, or at least augmented, their traditional TDM (define - news - alert) transport networks and Class 4 switches with more economical IP transport and softswitches. A large percentage of long distance voice transport now relies on IP. For end users, however, little has changed; their telephony experience is the same as with TDM transport.

Most users are not aware that phone calls must often traverse multiple carrier networks. At first, VoIP calls required traversing as well—the sessions were converted from IP to TDM and back again to create the

necessary peering connections. Direct IP-to-IP interconnect would have been more efficient, but the addressing constraints of IPv4 and various security and performance concerns got in the way.

Session Border Controllers (SBCs) were invented to overcome these limitations and allow direct interconnect between VoIP backbones. With features like NAT traversal, topology hiding, QoS enforcement and denial of service (DoS) protection, interconnect SBCs make IP-to-IP carrier interconnect safe and practical.

Phase 2: Connecting Users to Multimedia Services

In the next phase of the journey from VoIP to IMS—a phase that many service providers have already begun—IP-based real-time services extend all the way to end users, creating a variety of new user experiences. At the same time, service portfolios expand beyond voice telephony to include video, messaging and other

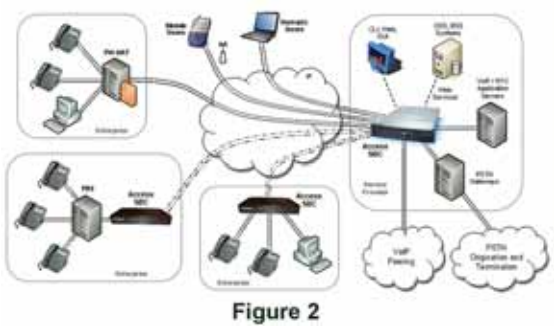

Figure 2

presence-enabled applications—often in use all at once—over "toll-quality" connections. (See Figure 2.)

In a multimedia service deployment intended for IMS migration, the deployment model would closely follow the IMS model:

Application Layer — VoIP, video, IM, presence, servers

Control Layer — The SBC as the Control Function

Transport Layer — Switches, routers, gateways

SIP becomes the dominant signaling protocol in this phase, and certain IMS elements like the Home Subscriber Server (HSS) may also be deployed. But Phase 2 is still "pre-IMS," delivering the sort of real-time multimedia experience that IMS is intended to support, but without the benefit of the full IMS control structure or its strict application layering.

Phase 3: Standard Application and Session Control

Phase 3 completes the integration of SIP and IMS into the carrier infrastructure. Universal use of SIP puts an end to vendor-specific protocols and promotes application and endpoint interoperability. It also breaks down barriers between disparate networks, facilitating fixed-mobile convergence and other advanced capabilities. The layered IMS framework accelerates service creation and delivery by eliminating the smokestack architectures that tie applications to specific network equipment. And by enabling consistent behavior across diverse access networks, IMS increases the reach and productive lifespan of new multimedia services.

Navigating from "Pre-IMS" to IMS

There are many fixed-line and mobile carriers that are piloting these services today and the best practices that have arisen from these trials are presented below. Since none of these organizations have migrated completely to IMS, the reader should view these recommendations as the "best practices" or "lessons learned" from companies that are deploying and managing large-scale SIP-based services with the intent of moving to IMS compliance in the near future.

The Access Edge is Not the Peering Edge. IMS defines two types of Session Border Controllers. The access-edge SBC connects users to VoIP and other real-time services, and the peering-edge SBC interconnects provider IP networks. In real-world deployments, this distinction is necessary because the requirements at the access edge are significantly different from the requirements found at a network-to-network peering boundary. For instance, the access edge has to process registration traffic, manage registration floods, secure user connections, protect the service from intrusions and attacks, enforce user-defined policies, terminate increasing numbers of resource intensive stateful connections (TCP, TLS) and, in certain instances, process media sessions (encrypt, decrypt, record, etc.) with negligible latency, jitter and loss. Experience has shown that an SBC not designed to meet theses challenges will fail at the access edge.

It's About Multimedia Services, Not Just VOIP. VoIP is the baseline, but the mission is to deliver interactive, multimedia services that generate higher revenues and more productive business models, as well as make it easier for the provider to attract and retain customers. Completing this mission requires that the control layer (the SBC) be application-aware and able to provide a single point of policy-based security, control and management across any and all real-time services. An SBC that can provide content security for VoIP (encryption) but does not do the same for IM (virus scanning, content filtering, URL filtering, etc.) is essentially useless at the access edge of a multimedia services deployment.

Automated Provisioning and Management is Critical. Another unique challenge of the access edge is controlling, managing and provisioning service to tens-of-thousands or millions of users on many different types of active endpoints and across multiple networks. This problem is best addressed through a Web Services interface between the SBC and the Operational and Support systems.

Tier 1 and tier 2 service providers shouldn't even think about deploying multimedia services to their subscribers unless they can assert dynamic control over the provisioning and management of real-time services. They also must be able to enforce dynamic control policies that determine which service options and levels a particular user is entitled to at a particular moment in time.

SIP Makes Migration to IMS Possible. The industry has decided that SIP is the signaling standard for all IP-based real-time communication and collaboration. Most softswitches, IP PBXs, application servers and enterprise collaboration platforms already support SIP, and the few that do not soon will. It is critical to make SIP the standard on the access side now and ensure that your SBC provides a robust SIP interoperability capability so it can overcome the inevitable interoperability issues that will threaten the next-generation access edge. An SBC that does not provide SIP interoperability is essentially useless at the access edge as the industry migrates to next-generation IP communication.

An SBC that does not provide SIP interoperability is essentially useless at the access edge.

Deliver "Business-Grade" Services. Business users and the mass consumer market expect the same levels of security, reliability and quality of service (QoS) as they enjoyed with traditional phone service. Therefore, your service must meet the security, performance, quality and reliability thresholds for these customers.

Be certain your SBC provides the comprehensive application-level security to protect your users and to defend the network from attacks and intrusions designed to degrade or disable service delivery. Also you'll need to make sure that your SBC can scale performance and capacity predictably, without increasing management complexity. You'll need to guarantee service continuity through equipment failures—remember that the goal here is to attract and retain new customers.

Think Web (Services). In a fully IMS compliant architecture, it is the IMS Service Control Interface (ISC) that defines how the application server communicates with the Call Session Control Function (CSCF) in the IMS control plane. All of the major application server providers have made their solutions IMS-ready by implementing the required ICS interfaces.

However, any discussion of interaction between the control and application layer in the "pre-IMS" phase should cover the collection of standards and technologies broadly defined as Web Services. Although Web Services are not directly related to IMS, they have been shown to be an extremely valuable approach that service providers planning on providing "pre-IMS" services should consider.

This consideration is necessary because the Web Services model isolates application logic from the mechanics of external protocol interfaces and network elements to create an interoperable network of reusable services. It also creates a services layer that facilitates the rapid creation, deployment and customization of real-time and data services. Web Services provide a critical abstraction layer between the control layer (SBC) and services layer (the in-place business systems) that will make full migration to IMS easier as the underlying architecture and components evolve.

In general, the web and Web Services (componentization with well-defined interfaces) provide excellent models for making architectural decisions that account for future developments. When in doubt, you should look to the models in use today for the deployment of mission-critical applications over IP. We have found that the specific implementations may differ, but the models in use today for HTTP applications transfer to the real-time environment.

Summary

The need for new revenue-generating applications and services is one of the main drivers for IP Multimedia Subsystem (IMS). However, service providers cannot wait for IMS to arrive before they begin offering new multimedia services, and as a result, many providers will proceed to IMS in phases. Although not without challenges, forward-thinking providers are managing the migration from "pre-IMS" to full IMS by following many or all of the guidelines presented here.

Ken Kuenzel is the founder, VP of engineering and CTO of Covergence. (news - alert) *For more information, visit the company online at http://www.covergence.com.*

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GMI 2006: Lessons Learned

by James McEachern

Global MSF Interoperability 2006 (GMI 2006) represented the first international, multivendor validation of IMS (IP Multimedia Subsystem), the underlying framework that will enable true service convergence. GMI 2006 validated the separation of services from access technology, which allows subscribers and devices to access the network from anywhere, eliminating the boundaries that separate fixed, mobile, and IP networks. This is the essence of Fixed-Mobile Convergence.

Introduction

GMI 2006 also validated the MultiService Forum (MSF) Architecture Release 3 as a full peer network to a "pure" IMS implementation. MSF R3 architecture includes third-party applications, service brokering, enforceable QoS, and interworking between the PSTN and IMS. The MSF architecture also includes support for advanced services, such as priority calling as specified for Emergency Telecommunications Service (ETS). GMI 2006 demonstrated a practical, real-world deployment scenario encompassing the PSTN, deployed first generation VoIP networks, and emerging IMS networks.

GMI 2006: Why Now, Why the MSF?

Did the world really need another interop event? The answer, of course, depends on exactly what type of interop event we are talking about. An event focused on a single interface might have been useful, but it would not have significantly enhanced the industry's understanding of the maturity of IMS. On the other hand, an event that assembled the key pieces of a real world carrier network would be a different matter. If this event combined IMS with deployed VoIP systems and third party application servers, on a globally networked test bed, it would begin to resemble what carriers will actually see in their networks as they deploy IMS. An interop event like this would bring real value to carriers who are in the process of making decisions about the deployability of IMS. That is why this is exactly what GMI set out to do. When the plans were being drawn up for GMI 2006, marketing preferred to see all the tests succeed. The engineers wanted to see how many tests they could make fail. The engineers won, and were given free rein to identify as many problems as possible.

Why was this important interop event hosted by the MSF? Because the MSF is one of the very few organizations with the technical expertise, the end-to-end architecture, and the practical experience, to successfully execute an interop event of this scale.

GMI 2006 was conducted over a 12-day period from October 16 through October 27, at major carrier and independent labs on three continents, networked together for this event. Five of the world's top carriers—BT, KT, NTT, Verizon and Vodafone—along with world-class testing and research facilities at the University of New Hampshire Interoperability Lab (IOL) and ETRI, provided the host sites for this interop event, sponsored by Nortel. A total of 26 vendors brought 200 pieces of equipment to GMI for testing. The testing was conducted by some 200 engineers at the GMI host sites. For every engineer at one of the five host sites, additional engineers supported them from their company labs. In total, well over 500 engineers were involved in GMI 2006, working 14 or more hours a day, testing MSF Release 3 Implementation Agreements covering a wide range of topics including roaming, QoS, and network interconnect.

The breadth of GMI, particularly the end-to-end global validation, was a critical aspect of this event. By evaluating the end-to-end operation of IMS networks and services, GMI 2006 demonstrated that IMS is ready for real-world networks now. "Interoperability is the key to the transition to IMS," explains Roger Ward, Office of the CTO, BT Group, and President of the MSF. "In practice, carriers have networks at various stages of IMS and NGN implementation. We see networks with a mix of legacy infrastructure and pure IMS gear, and a broad array of multivendor equipment. The MSF and its GMI validations are concerned with practical, real-world considerations and explicitly address the heterogeneous environment that exists in carrier networks today."

GMI 2006 was an unqualified success, validating IMS and the overall MSF Release 3 Architecture. Specific issues were uncovered, and will be used to help improve standards. The insight from GMI 2006 highlighted what works well and revealed where more still needs to be done. Key conclusions from GMI 2006 will be forwarded to

the Standards Development Organizations (SDOs) responsible for the standards at the core of IMS, allowing these standards to be refined where appropriate.

What did GMI test?

GMI 2006 was conducted in a series of eight scenarios that began with a basic configuration, and then progressively added functionality. Building up the complexity in this fashion ensured that GMI would provide the maximum possible insight into what worked, what didn't work, and why. The initial scenarios established the underlying connectivity across the network, and verified that this network could be automatically established, tested, and reconfigured as required. The next scenarios tested basic services within a single IMS domain, and then added additional functionality until the final scenario, which included roaming across multiple IMS domains, providing basic and value added services, with guaranteed QoS. The final scenario is illustrated in Figure 1.

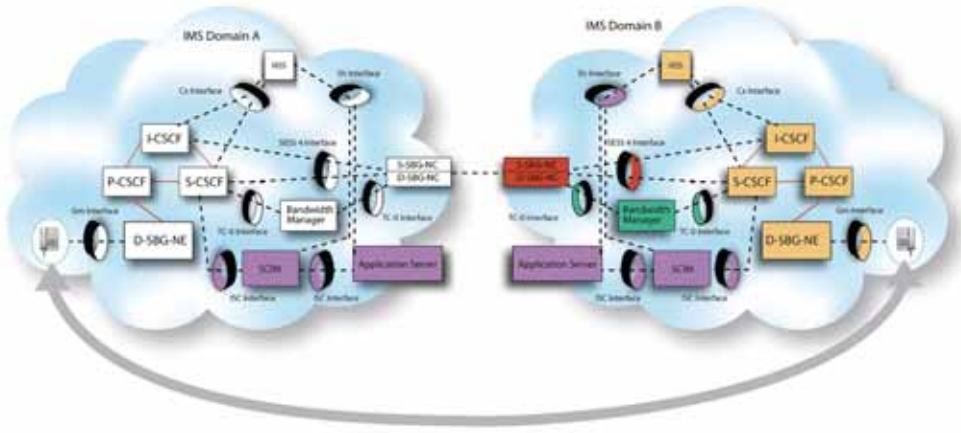


Figure 1: Final GMI Scenario: Roaming with Value-Added Services

GMI 2006 Test Results

As GMI testing progressed, signalling flows were collected for each test, allowing full diagnosis to be performed both during and after GMI. The full results have been published in a GMI white paper, which can be accessed on the MSF website at http://www.msforum.org/interoperability/wp2006.shtml. The key results and conclusions are summarized here, but those interested in more detail are encouraged to download the GMI White Paper from the MSF.

The test results from GMI 2006 showed a level of maturity in IMS standards that many had not expected. Core IMS products worked virtually out of the box, in various multi-vendor configurations. Most of the problems encountered were in the components around the core IMS. For example, in some cases, Application Server's SIP stacks were not in full compliance with the SIP standards. These issues were identified quickly, and the problems fixed. In most cases, these tests were re-run and completed successfully.

There were also issues that could not be resolved during GMI, or that pointed to underlying problems that needed to be addressed in standards bodies. These issues fell into three broad categories.

Functional to Physical Architecture Mapping: IMS defines a functional architecture, with vendors having some freedom in how these functions are combined into actual implementations. The MSF aims to produce a more physical architecture, with recommendations for preferred mappings from functional to physical, supported by the appropriate Implementation Agreements. In one case the recommended physical implementation combining the policy function with the P-CSCF was not implemented by any vendors, and the MSF architecture will be updated to reflect this. GMI also highlighted the need for decomposed Session Border Gateways (SBGs — sometimes also referred to as Session Border Controllers) with separate control and data functions connected through standard interfaces. This was supported by some, but not all, SBG vendors.

Standards: GMI provided valuable insight into a number of potential standards issues. The data is being analyzed, and contributions to the appropriate standards bodies are being prepared. In some cases, the data suggests possible weakness in the standards. For example, in some tests the SBGs were modifying SIP route headers at the NNI in ways that worked for network-to-network traffic, but that led to call failure during roaming scenarios. Further investigation is required to determine whether this was caused by a simple implementation error, or a problem with the standards. Another example was RFC 3312 (Preconditions), which is an important standard for end-to-end QoS. GMI found that all the implementations that were tested appeared to deviate from the standard, leading to inconsistent behavior. This may indicate a fundamental problem with the standard, and the data from GMI will be used to provide feedback to standards. Finally, there were cases where standards were simply not being implemented. The MSF defined a mechanism to allow optimal routing of traffic

during roaming to support improved QoS, but no implementations were available during GMI. Further investigation is required.

Gaps / Overlaps: GMI also identified areas where the problem was not a lack of standards, but rather too many standards, and too many options within those standards. One such area was authentication of users in IMS. Once the various configuration options were sorted, authentication worked as intended, but the necessary configuration was complex and time-consuming. Clearly it is not realistic to expect the average user to deal with this level of complexity. This seems to be a problem ideally suited to an Implementation Agreement that would narrow the range of options to improve interoperability. The MSF is evaluating the possibility of developing a new IA addressing authentication/authorization profiles.

Over the coming months liaisons will be sent to IETF, 3GPP and TISPAN detailing the problems identified during GMI 2006, and providing data to support our conclusions. We expect that the ensuing dialog will identify solutions which the industry can collectively pursue. The result will be a further strengthening of the IMS standards, and the products based on these standards.

Finally, GMI highlighted some areas where it may be appropriate to consider going beyond basic interoperability tests, and moving into the domain of formal certification testing. Two initial candidates being considered for certification testing are the NNI interface between networks, and the UNI interface between User Equipment and the IMS network. The MSF is currently gauging the level of interest and investigating the technical feasibility of certification in these areas. This represents an exciting new direction that may complement the work being done in GMI.

Conclusions

The single most important lesson learned from GMI 2006 was that IMS is more mature and demonstrating greater multi-vendor interoperability, than many in the industry expected. Some naysayers have suggested that IMS is too large and too complex to ever achieve wide-scale commercial deployment. GMI 2006 has clearly shown this is not the case, and that the reality of deployable, carrier-grade IMS is much closer than the skeptics claim. With little more than straightforward configuration, much of the equipment was up and running, in multivendor deployment scenarios, within a matter of hours. This was especially true of the core IMS, where multivendor interoperability was the norm. Even complex advanced services functionality, such as interworking of priority calling for Emergency Telecommunications Service (ETS) between PSTN and IMS domains, was successfully demonstrated. IMS isn't quite at the "plug and play" stage yet, but it is certainly on a par with much of the existing telecom and internet infrastructure.

Of course, this does not mean that everything worked exactly as specified in all configurations. There were test cases that failed. In these instances, detailed call traces were collected and analyzed. Many of the problems were eventually diagnosed as simple implementation errors — in other words, software bugs. GMI provided these vendors with valuable product testing. Other cases pointed to areas in the standards that may need to be revisited. But even in these cases, the issues were generally not problems with the core IMS specifications. Rather they pointed to the infrastructure around IMS, such as value added application servers, and the mapping of the IMS functional architecture to the MSF physical architecture. The problems encountered were consistent with ongoing optimization of a stable standard, and were inherently addressable. The feedback from GMI is exactly the input needed to address these issues, and concrete action plans have been drawn up in the MSF technical committees to do this. Feedback is being provided to the Standards Development Organizations (SDO) responsible for the relevant standards, and will contribute to further improvements in IMS interoperability.

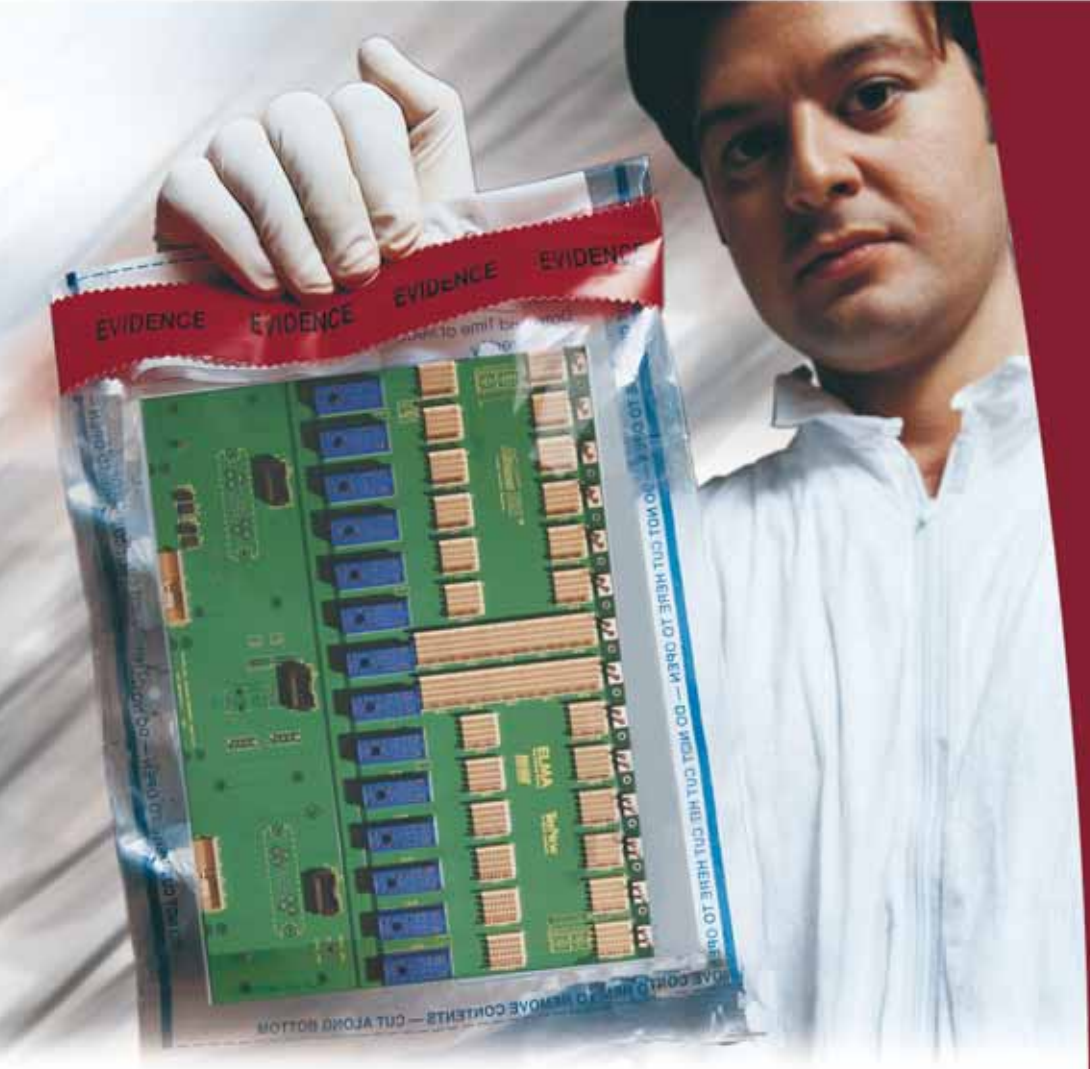
GMI 2006 has shown that IMS is mature enough for practical multivendor deployment to begin. Interoperability events like GMI will continue to improve IMS to achieve the full potential of converged services.

About the MSF

The MSF is a global association of service providers, system suppliers and test equipment vendors committed to developing and promoting open-architecture, multiservice Next Generation Networks. Founded in 1998, the MSF is an open-membership organization whose members are drawn from the world's leading telecommunications companies. The MSF's activities include developing Implementation Agreements, promoting worldwide compatibility and interoperability of network elements, and encouraging input to appropriate national and international standards bodies.

MSF is a well-established forum with a balanced mix of carriers and vendors that integrates specific work from multiple standards into a holistic network and services architecture. The MSF architecture and solution framework combine legacy and next-generation services in a single unified network. Further, since all MSF participants implement the same baseline features and functions, members can eliminate the guesswork that technology development typically involves.

James McEachern is Vice President MSF & Nortel, Carrier VoIP Standards Strategy. Visit Nortel Networks (quote - news - alert) online at http://www.nortel.com.



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Migrating Towards Convergence

by Nathan Franzmeier

Session Border Control, Next-Gen Networks, Service Providers:

The service provider industry is facing unparalleled change which is breaking down the traditional barriers between carriers. Fixed-line voice is being "squeezed" by broadband VOIP, mobile and IP, while mobile's popularity continues to grow at the expense of fixed-line telecom services. Many users have switched at least some of their fixed-line use to mobile. Even cable companies are invading traditional telecom territory with VoIP. Industry analysts Frost & Sullivan expect that, by 2009, there will be nearly 20 million VoIP subscribers in the United States alone.

Meanwhile, increasing operating expenses are eroding margins and overall growth. Network and network development costs are also chipping away at margins and service providers are under pressure to reduce their network related expenses while simultaneously maintaining margins.

While some markets still have opportunities to grow in the mobile space, voice usage, the double-digit revenue growth and healthy profit margins once enjoyed have been lost to market saturation and intensifying competition. Mobile operators are also being challenged by VoIP. Fixed-line service providers increasingly offer VoIP, (define - news - alert) enabling them to compete more effectively on price while simultaneously offering new features such as seamless roaming, and WiFi and WiMax access. These "fixed services" potentially threaten mobile voice revenues including high margin revenues such as international roaming.

This increased competition, price pressure, slowed growth and increased churn is forcing service providers to look beyond commodity-priced voice and data services to boost usage and maintain subscriber interest These trends are driving service providers towards a goal of service delivery anytime, anywhere, over any network. The IP Multimedia Subsystem, (IMS) architecture and convergence has received a lot of attention as the primary vehicle for achieving these ideals.

However, the technology behind the trend towards convergence is very complex. To make it all work, one vendors equipment must connect to another vendors equipment, protocols from one network must be translated to another using a different protocol, services that already exist must be duplicated in a new network, services that didn't exist in an old network need to be added. Services are being accessed from networks for which they were not designed.

It all started very simply with the connection of two phones through some copper wires. Later came electromechanical switches, digital switches, common channel signaling, the IN network, softswitches, session controllers, media gateways and then IP. Then the networks started their move towards convergence. . . With every advance in technology, new vendors and new protocols have been introduced and with those whole new industries have been created to address the continuing need to make the resulting networks work while simultaneously making it easy and cost effective to operate and deliver the desired services. With each new advance there has been a corresponding need to manage the migration between the old and the new.

In order to maximize their existing investments, service providers who are migrating towards NGN and IMS architectures need to continue to be able to access their existing services and to use them in new and different ways. In a typical NGN network today, access to the service network is provided either directly via SS7 or over SIGTRAN. The conversion of the various high level protocols, WIN, CAP, etc., is left up to various stack vendors who are then incorporated into different proprietary implementations for service access from the pool of softswitch vendors. This is the predominant method for providing services such as LNP and CNAM in current NGN networks. In the IMS architecture, the same services need to be accessible via SIP. In addition to SS7 based protocols, there may be other services that must be accessed using other industry methodologies; which may also require conversion to SIP. Fulfilling the role of the IMS SCIM and SSF, solutions such as the Stratus CSB (Converged Service Broker) have been developed to address the need to not only provide an IMS compliant access method to legacy IN services and other new services via SIP, but to also allow these services to be recombined in different ways to increase margins, decrease churn or drive profits. Some vendors such as Stratus, have solutions that operate under a unified environment — ours is called ENTICE (Emerging Network Telecommunication Infrastructure Environment). This enables solutions to be created that combine the functions of SBC (Session Border Controller) for example and the CSB to allow access and control over the control, media and service plane streams and therefore provide a wide variety of new and interesting services. This enables services that are provided

by one network to be utilized in another. Similarly services provided by one vendor can be combined with services provided by another vendor. Finally, completely new services can be created using the SLEE associated with these products.

One example of service combination is as follows: A mobile service provider, providing prepaid service using an SCP to provide the authentication and billing services, decides to add color ringback service. The color ringback service is provided by one vendor and the prepaid service is provided by another. The issue in the past has been that the two could not easily be combined. Each service required a CAP-oriented call flow which could not be mixed. With the advent of devices such as ours, it is now possible to combine the services so that color ringback can be utilized for both those subscribers making calls directly and those making calls indirectly using prepaid service. The combined service creates a new feature for the prepaid subscriber independent of the original service vendor.

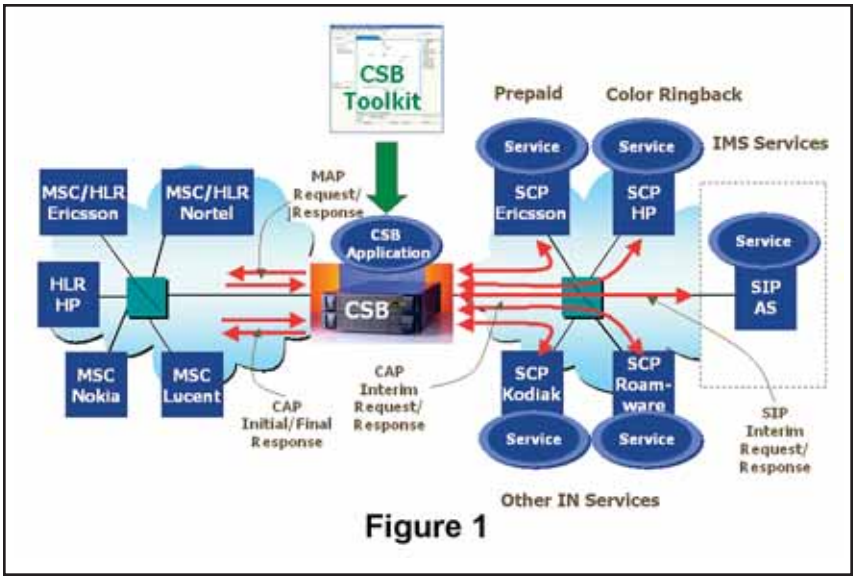


Figure 1

This new feature is could be considered a "sticky" service designed to decrease churn by providing a competitive feature not available elsewhere. Other times there may be a desire to utilize a service in a network for which it was not originally designed. An example of this would be if the same carrier wished to for example deploy VoIP over WiFi or WiMax to supplement his mobile network and wished for the same services to be available in those networks. Again, the solutions coming into the market can be used to access the IN services (color ringback and prepaid) and convert the CAP messaging to SIP while also providing brokering between the two applications. Stratus' CSB solution is shown in Figure 1.

These solutions allow telecom providers and their subscribers to maximize their investments in legacy, VoIP, and 3GPP/3GPP2 networks. In these environments, the solution enables legacy, next-generation MGC, and 3G CSCF network elements to invoke multiple services for the same call and allows services on different platforms and networks to be applied to the same call. This opens the door to simplified subscriber experiences, improved retention rates, and new revenue-generating, IMS-capable services. It extends the life of the existing network infrastructure and provides an important step in the migration towards the vision of network and service convergence.

The industry has been changing rapidly since the inception of the Internet, but solution providers are keeping pace and responding to needs within the network.

Nathan Franzmeier is Vice President, Emergent Network Solutions, Stratus Technologies. (news - alert) *For more information, visit the company online at http://www.stratus.com.*

advertising index

A Single Killer App? Not in Today's Personalized World

by Hunt Norment

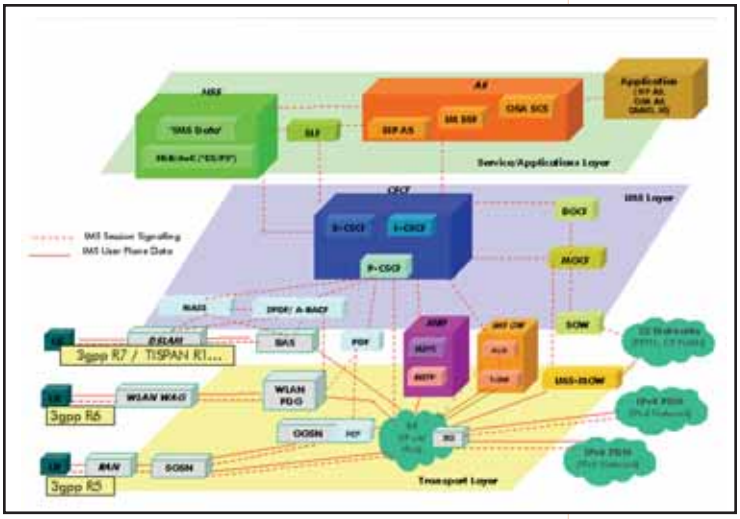
So service providers take heed: rather than scour the sands for buried treasure (in the form of a single, targeted killer app), you should plan to launch 40-50 applications that appeal to smaller demographics. By acknowledging that one platform can't please everyone and by targeting smaller groups, service providers can garner a wide range of monetary and vocal support. The individual applications no doubt will be of high value to the consumers they serve, since the apps are personalized just to them, and consequently should boost up-sells and lower customer attrition.

The proliferation of voice, video, data and wireless products on the market today speaks to an equally wide range of consumer desires. What is "killer" to Dick and Jane might best be described as deadly boring to John and Susie. Thus, the entire premise of the killer app is rooted in the personal. With that being said, we might accept that the term "killer app" should be used in an all-encompassing manner, describing a platform that spawns personalized, killer apps for each individual.

Acknowledging and Overcoming Technical Challenges

The technically-minded will immediately see the downsides, though, in this ostensibly perfect scenario. In fact, launching 40-50 *stove-piped* applications would be incalculably expensive and would pose insurmountable obstacles. That is, with a multitude of stove-piped applications — each existing in its own vacuum — interoperability, flexibility and productivity would be severely limited. What's more, each application would require a stamp of approval from the IT and network operations staff, stating that said program would not crash the network or otherwise interfere with existing operations. Such a process is both time-consuming and costly, and when it comes to service success or failure, it can unfavorably tip the scales.

Enter the IP Multimedia Subsystem (IMS) specification and the traditional Service Delivery Platform (SDP), both of which effectively rid the service infrastructure of stove pipes. IMS, once a concept reserved for the 3G mobile network domain, now is an integral enabler of fixed-mobile convergence and of growing importance to wireline networks. By decoupling applications from the underlying network structure, IMS makes it much more cost-effective to develop applications that can traverse many types of networks and devices. Additionally, IMS allows service providers and operators to use different underlying architectures, facilitates the deployment of IP-based services and is access independent — all qualities that point to its linkage with a killer platform. (See figure at right)



Similarly, adoption of an SDP infrastructure in the architecture aids in the creation and deployment of converged multimedia services. By providing an IT integration layer between IMS and non-IMS environments, SDPs allow service providers to roll out advanced services in today's hybrid (TDM and IP) networks and seamlessly transition them as they evolve to IMS. Combining the SDP with IMS provides a secure, high-level system that integrates with IMS without compromising back-office systems. Furthermore, SDPs decouple applications from the business support system (BSS) and operation support system (OSS), making it infinitely more cost-effective to bind applications with existing billing, provisioning and trouble ticketing systems.

Although IMS and SDPs may be key components in popular, experience-oriented platforms, the somewhat disheartening reality is that the cost of deploying them is high, and the time-frame is long. These systems typically are deployed as piece parts, interworking with legacy equipment, over a period that spans at least several years. In fact, it is likely that the mass deployment of IMS will take years, or possibly decades, to accomplish, and that a satisfactory ROI will not be realized until project completion. However, a *converged* service delivery platform — one that supports all telephony environments, works with legacy equipment and is IMS-compatible — more than adequately resolves these

issues. Most importantly, such a platform would enable the successful and seamless deployment of technology's newest treasure: blended applications.

Personalized Killer Apps: Focus on Blending Services

Until now, triple- and quad-play providers have been engaged in a price war that's headed toward extinction — vying for customers via lowered (and lowest) prices. In technology's version of survival of the fittest, however, telcos and cable providers will thrive in the future by offering cross-platform and blended applications, tailored to the desires of consumers. But launching services tied to a specific device is tantamount to flushing time and money down the toilet. What's worse, it puts service providers back at square one in their quest for technology's "Holy Grail." Instead, service providers should focus on developing and marketing applications that tie together the myriad of basic services / devices they have already sold to their subscribers: video (TV), voice (telephone), wireless (mobile phone) and broadband (PC).

Gone are the days when these were disparate services. And gone are the days when services shared only one commonality: appearance on the same monthly bill. Thanks to converged service platforms, like the Integra5 C-SDP, these services now can interact and interoperate with one another. Nowadays, we see two prominent classes of popular blended services: blended communications services and blended multimedia services.

Blended communications services unite the communications experience across each part of the quad play. Consumers can enjoy freedom and personalization — choosing which in-home device they would like calls and messages routed to. With an architecture that can support delivery to millions of subscribers and also can support the coordination and delivery of real-time signals within and across voice, video and data networks, all of the following are possible:

- Caller ID sent to telephones, televisions and computers: These services, already available to consumers, have gotten rave reviews. Subscribers can even personalize their address book to include Picture Caller ID.
- Real-time call disposition: This encompasses the ability to route incoming calls from a mobile phone to a landline phone in real time.
- Message waiting indication sent to phones, TVs or computers: Voicemail and email alerts can be sent to a variety of in-home devices, and subscribers can listen to or respond to their messages from those same devices.
- Click-to-call from televisions and PCs: After listening to a voice mail, subscribers can use their television remotes or their PCs to initiate a call from each respective device. This feature has even more potential in the advertising realm — for example, after viewing a pizza commercial, consumers could click the remote control, which would immediately call to order a mouthwatering pepperoni supreme.
- SMS from mobile phones to televisions and PCs: Users can view and respond to Short Messaging Service (SMS) text messages to discuss, for example, their favorite program (especially appealing to teenagers!).

  And blended communications services across devices quite naturally open up the possibility for the creation of blended multimedia services. Exciting applications on the horizon include:
- Photo sharing to all devices: Baby's first steps can be viewed and immortalized on consumers' phones, PCs and/or big screen LCDs.
- MMS to televisions and PCs: With Multimedia Messaging Service (MMS), consumers can play and display the sound, images and/or video messages they receive.
- Channel telescoping: In the event of threatening weather, customers could click on a weather alert and be re-directed to their local weather channel. Instantaneously, they'd know whether they need to take immediate cover.
- VoD telescoping: Consumers can receive priority score alerts for their favorite football team. . . no matter what game they are watching. If they want to see a video clip of the score, they can click the remote and watch the highlight stream from the provider's Video on Demand (VoD) server.

In Conclusion. . .

The benefits — both to users and to service providers — of blending services and applications are overwhelming and compelling. In fact, offering converged applications is a great catalyst for the "stickiness factor," motivating consumers to stay and pay. . . and even to subscribe to additional services. Because blended services drive up-selling across individual quad play offerings, a key metric to evaluating success will become revenue generating units (RGUs) per subscriber. The lifetime value of individual subscribers increases exponentially, and customer churn — seen so often in today's triple- and quad-play price war — becomes a far less concerning issue. Thus, with a potentially "killer" converged service delivery platform also comes a business model that is poised to make a killing.

In short, the safest approach to new service development is to target a wide variety of consumers with a wide array of personalized options — starting with the distribution of existing services such as caller ID and picture sharing across devices. By giving consumers the power to personalize and select their content and to divert it to the device of their choice, they in turn will respond with loyalty. With a converged service delivery platform that works with legacy equipment and is IMS compatible, service providers can begin seamlessly rolling out varied, personal and killer apps *today*. So the hunt for the one killer app — technology's buried treasure — stops here, and X marks the spot over blended, cross-platform applications.

Hunt Norment is Vice President, Marketing & Business Development, Integra5, Inc. (news - alert) *For more information, visit the company online at http://www.integra5.com.*

From the Desk of Michael Khalilian

IMS Services Challenges and Solutions

The IMS Forum's mission is to make sure that applications and services residing in the network can be deployed, so your mobile devices work in your home, office, and while you are on the go. Consumers don't have to worry about GSM or WiFi+VoIP, they don't want to know about how bit streams arrive to their Phone, how the Internet works, or how VoIP is packetized. . . they just want the cool phone which doubles as a digital music player and triples as a PDA!

The nascent IMS industry is facing many challenges resulting from the complexity of networks which, historically, were not developed to carry high speed, real time IP applications and services. Services and networks were inseparable in what the industry calls the smoke stack model. Each new service required a new network. To keep pace with accelerated consumer demand for new services, there is a need to reuse the same IP network over and over again. That is how IMS came about. While IMS standards are still separating the wireless, cable and wireline networks, the IMS applications and services are quickly converging under market pressure. Hence the need to make sure that services residing in the IMS network can be deployed over all types of IMS transport.

Have you seen the iPhone? Well, if you have seen it, you should know by now that IP Multimedia Subsystem or IMS is the network technology frame work that will bring applications delivery to devices such as the iPhone. Apple's Steve Jobs made an eloquent case on how consumers' devices combine phone service with internet access, entertainment, and business applications in one slick device.

In mid January, the IMS Forum™ will launch the first of a series of IMS interoperability events focusing on services and applications. IMS Plugfests target interoperability of services delivered over ANY type of broadband network, that is GSM, WiFi, WiMax, Cable, DSL and optical. The IMSF Plugfest, which will be hosted at the University of New Hampshire InterOperatbility Lab, allows testing how a multi-vendor IMS network consisting of multiple IP cores and Applications Servers delivering services for consumer and enterprise customers. For more information on IMS Plugfest™, visit http://www.IMSForum.org.

Apple's iPhone

The IMS Forum will apply the knowledge gained in the first IMS Plugfest to the development of a comprehensive test plan which will be used to certify applications and services over an IP network.

In parallel with the IMS Plugfest, the IMS Forum Technical Working Group is developing a comprehensive compliance and certification program using input from service providers.

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Face it, you have to change the way you do business. An IMS architecture provides a future-ready framework approach to solving the challenges around launching next-generation services and driving down the costs of doing business.

Intec is working with its clients and prospects to ensure their IMS programs yield results. Our portfolio of IMS-aligned solutions allow you to reap the benefits of converged services. Cutting your operations over to an IMS architecture won't happen overnight. Intec solutions support both IMS and non-IMS service environments. We're here to help you make the transition.

Find out more at **www.intecbilling.com/ims/**, or email us at **usinfo@intecbilling.com**

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