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IMS Forum: Plugfest 4 Finished, Plugfest 5 To Come

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IMS MAGAZINE™

IP MULTIMEDIA SUBSYSTEM

VOLUME 3/NUMBER 2 | APRIL 2008

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editor's note

by Richard "Zippy" Grigonis

Unified Communications Upheaval

The principal article in this month's issue concerns the increasingly subtle and complex relationship developing among Unified Communications (News - Alert) (UC), Fixed-Mobile Convergence (FMC) and of course our beloved IMS.

IMS enables new services to be hatched quickly for deployment on both wireless and wireline networks, and it's beginning to look like many of these services will have a strong UC "flavor" to them, if only because of the current mania over anything UC in nature. In case you haven't noticed, TV commercials by Cisco (News - Alert) and Nortel have extolled the wonders of UC, with Nortel relating how their hyperconnected enterprise concept and UC strategy "breaks down the barriers between voice, email, conferencing, video and instant messaging". Nortel is in an alliance with Microsoft (News - Alert) and Nortel's CS 1000 is the world's first IP-PBX tested to work seamlessly with Microsoft Office Communications Server 2007 (OCS 2007 was Microsoft's big UC announcement, made in October 2007).

Aspect (News - Alert) Software is bringing UC to the contact center, since they've discovered that first-call resolution is important to maintain customer satisfaction, and 10 percent of customer calls to contact centers involve locating experts outside of the contact center. Aspect's technology utilizes SIP-powered skills-based presence to determine which workers have the appropriate skills to assist an agent in a customer call, and then figure out via presence which of these people with the proper skills-set are available for a consultation. By mid-2008, Aspect will have integrated its UC solutions with Microsoft OCS and IBM Sametime, enabling enterprises to fully integrate contact centers into existing business processes as part of an overall corporate UC strategy.

Avaya (News - Alert) is also in the act, delivering inexpensive ($99 per user) UC to workers in such vertical markets as branch office/retail and banking branches. Avaya has also developed a system that presents "intelligent presence" to its customers. Avaya's Intelligent Presence Server aggregates information from Microsoft, IBM (News - Alert), and other applications using standard protocols like SIP/SIMPLE and XMPP. It knows that a user's presence information is generally derived from several sources, so instead of displaying each type of presence from each service/application, the user's presence is comprehensively displayed just once. Avaya is working with some mobile operators to enhance the accessible presence status information of users.

Meanwhile, IBM is planning on spending a billion dollars over the next three years, all for UC product development. They're taking an open systems, multi-platform approach, and they'll be upgrading their collaboration software, including Sametime, at the same bolstering and deploying mobile clients and growing a large partner ecosystem.

All of this should signal to service providers working in the IMS realm that opportunities exist in developing UC/FMC services that may of necessity communicate and/or integrate with customer premise-based systems. The strict delineation between hosted services, managed services and customer presence equipment (CPE) solutions will undoubtedly continue to blur, as any "gaps" in information or functionality by CPE solutions will be filled in by outside services, and *vice versa*. For such a flexible solution to materialize, both IMS and vendor solutions will need to be imbued with more "glue" in the form of Web 2.0 and Software Oriented Architectures (SOAs). The final form taken by IMS shall be somewhat different than the nice, neat, top-down schematic formulated years ago.

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publisher's outlook

by Rich Tehrani

IMS: A Massive Opportunity

In the next five years alone, IMS services should provide mobile operators with a $300 billion dollar revenue increase according to ABI Research (News - Alert). As mobile operators begin to engage in price wars with one another, it is essential that they look to IMS as a way to generate much-need profits.

This is great news for companies toiling in the IMS space these past years, waiting for it to take off. It seems the stars are now aligned properly to get service providers to explore every revenue generating opportunity the market has to offer.

And certainly IMS is at the top of the list as it allows partners to come up with novel services that service providers can sell to their customers, with everybody sharing in much-needed revenue streams.

The timing of this report titled *IMS Core Networks: A Dynamic Service-Based Architecture* could not have been better as we have gone through the hype cycle of IMS and are now at the point in the market where some have been questioning how successful IMS will indeed be.

The communications market went through two similar cycles in the mid-to-late 1990s and from 2001-2003. Then, within months, it seemed like the entire world decided IP communications was the only way to go.

I am not sure we will see the same thing happen with IMS but I have begun to hear more and more talk of interesting applications and services coming down the pike.

Sonus Upgrades Its IMS Core Architecture

To make IMS work perfectly, of course, network operators and infrastructure equipment vendors must strive to refine and debug the IMS infrastructure as it gets deployed, ensuring that the theoretical standards-based IMS realm is accurately realized by actual equipment and software based upon those standards. In that way, service providers won't have any difficulty in hatching scores of advanced multimedia communications applications and services that meet the stringent scalability, reliability and security needs of large network operators.

Take Sonus Networks (News - Alert) (www.sonusnet.com), a preeminent supplier of service provider of IP-voice infrastructure solutions (their renowned softswitches can be found deployed throughout North America), and a company that took IMS seriously from Day 1. Indeed, their Sonus IMS SIP core has been deployed worldwide and serves as the foundation for the IMS Forum's (News - Alert) interoperability PlugFest testing events since their inception some years ago.

Sonus recently made available the latest release of their IMS core architecture, including upgrades to its HSX Home Subscriber Server and SRX Call Session Control Function device. (Sonus' SRX 2.0 is built on Linux and Service Availability Forum-based middleware to achieve super reliability, and functions as an authentication engine that tells the network which services belong on any particular session.) Sonus says their goal is to provide network operators with an IMS core network that will support the delivery of enhanced services to any end-user device, based on the user's preference. Their latest release ensures that the IMS core network architecture is compliant with 3GPP Release 7 specifications.

Sonus' latest release ensures that the IMS core network architecture is compliant with 3GPP Release 7 specifications.

The folks at Sonus also recognize that carriers are migrating to IMS at different rates of adoption, so their IMS core can integrate with whatever existing environment it encounters.

Vikram Saksena (News - Alert), Chief Technology Officer at Sonus, sums it up: "With today's release, we've taken Sonus' long history of leadership in SIP-based networks to the next step and added additional scalability and reliability components."

As IMS continues to steadily seep through the world's network infrastructure, users will begin to notice that their provider will be offering them more and more new and interesting services, at reasonable prices. IMS will revitalize how services are deployed for both wireless and wireline communications, and will give the average user capabilities undreamt of just a few years ago.

It just gets better and better.

www.tmcnet.com/1836.1

Verizon (News - Alert), AT&T, EchoStar Biggest FCC 700 MHz Auction Winners

Verizon Wireless and AT&T won most of the spectrum in the FCC's recently concluded 700 MHz auction. As most had expected, Verizon won the C block. Rival AT&T won 227 licenses from among the B block of regional licenses, to fill in and augment what most observers would have said was a healthy bandwidth position with some "coverage holes" to fill. Perhaps the biggest "surprise" was that satellite video provider EchoStar won enough E block spectrum to create a nearly-national terrestrial network. EchoStar now will have an opportunity to create its own facilities-based triple play services, an objective it long has sought.

www.verizon.com
www.att.com
www.echostar.com

www.tmcnet.com/1837.1

Sprint Core: No Surprise

Count Sprint Nextel (News - Alert) among those carriers that say they will follow the current blueprint for next-generation network cores. That is to say, Sprint will build its services around a common optical backbone, IP protocols, and IP Multimedia Subsystem (News - Alert), in large part so that applications will have a more unified experience no matter what sort of device they are using to access services. Sprint also plans to use a "common" cell-site infrastructure.

Sprint further has said it plans to allow third-party software developers and content owners access to that infrastructure. That means applications will have access to presence and location information, for example.

www.sprint.com

www.tmcnet.com/1838.1

IP Multimedia Subsystems' $300 Billion Opportunity

ABI Research released the results of a study titled IMS Core Networks: A Dynamic Service-Based Architecture stating that IP Multimedia Subsystem (IMS) will provide mobile telephone operators with additional revenue of $300 billion over a five-year period. Verizon and BT (News - Alert) are offering an open interface to afford third-party developers access to the network, which will result in introduction of new applications.

Senior Analyst Nadine Manjaro said, "Until recently IMS was mainly the province of fixed-line operators, but now it is essential to the success of mobile and fixed operators who are losing revenue from traditional sources. IMS enables rapid development and deployment of new services."

www.abiresearch.com

www.tmcnet.com/1839.1

IMS Forum Completes Plugfest 4, Gears up for NGN Plugfest 5

The IMS and the NGN Forums announced today the successful completion of interoperability testing at the IMS Forum Plugfest 4 and plans for the NGN Plugfest 5. Plugfest 5, scheduled for June 2008 at the University of New Hampshire InterOperability Lab (UNH-IOL (News - Alert)), will test consumer and enterprise M-play Interoperability.

Plugfest 4 was the latest in a series of events designed to deliver IMS and NGN interoperability and certification. Participating companies tested a number of technologies and services for interoperability, including triple play, VoIP, FMC from multiple vendors, test and measurement equipment, SIP, class-5 features, Diameter IMS stacks, and IM with presence support.

www.imsforum.org

www.tmcnet.com/1840.1

Ericsson (News - Alert) Empowers 2008 Beijing Olympics

Ericsson has announced an agreement with Beijing Netcom, a branch of China Netcom, to provide the company with a Command Supporting System based on Ericsson's IMS solution for the Beijing Olympic Games. Under the agreement, Ericsson will be the sole supplier and systems integrator for an IMS platform to enable personal multimedia communication.

Ericsson's IMS solution enables the convergence of data, speech and

network technology over an IP-based infrastructure. It supports fast and efficient management and coordination of value-added services, including voice, text, pictures and video, providing end users with a personalized, richer communications experience.

www.ericsson.com

www.tmcnet.com/1841.1

Latest Version of IMS Core Infrastructure Released by Sonus

Sonus Networks has announced the release of the latest version of the IMS core architecture and the gradation of the SRX Call Session Control Function and HSX Home Subscriber Server. Increased use of services such as video calling, video conferencing, instant messaging, chat and push-to-talk services have likewise increased the variety of SIP sessions on service providers' networks. SRX serves as an authentication engine that tells the network which services belong on any given session, with the help of a central intelligence component present in the IMS architecture. Sonus' IMS core network architecture is now compliant with 3GPP Release 7 specifications.

www.sonusnet.com

www.tmcnet.com/1842.1

Highdeal Supports MSV's Next-Gen Hybrid Communications Network

Mobile Satellite Ventures (News - Alert) (MSV), a supplier of mobile satellite communications services throughout North America, has picked the Highdeal Transactive advanced billing solution for its next-generation network.

Highdeal (News - Alert) Transactive will serve as the pricing, rating, and billing platform supporting MSV's all-IP 4G wireless satellite-terrestrial communications network. MSV picked the solution for service pricing flexibility and feature-rich capabilities, and especially for its ability to support logical integration to other solutions with a systems approach that excels in a componentized architecture.

www.msvlp.com
www.highdeal.com

www.tmcnet.com/1843.1

Navtel (News - Alert) Communications' SIPFlex Test Solution for IMS

Recently Navtel Communications, a provider of IMS, VoIP and IP-to-IP gateway test solutions, announced the release of SIPFlex, a comprehensive solution targeted at testing IMS networks and services.

The SIPFlex application is fully IMS compliant. The testing application is designed to simplify the creation of any SIP message and message flow sequence representing valid, invalid or proprietary flows. The intuitive graphical user interface offers the flexibility to easily modify virtually every aspect of SIP state machine including timers, default behavior and protocol error scenarios. Also, feature, negative, performance, regression and load tests for IMS devices and services can now be executed using a single test application.

www.navtelcom.com

www.tmcnet.com/1845.1

Redback Announces 68 Carriers in 45 Countries

Redback Networks Inc. (News - Alert) has announced 68 joint carrier wins in 45 countries with Ericsson in 2007. Redback, an Ericsson company since January 2007, manages 63+ million broadband access and triple-play subscribers for 75+ percent of the world's largest telephone companies. Redback's multi-service routing platform delivers next generation services such as broadband access, VoIP, IPTV, video-on-demand, and on-line gaming. Redback Networks has more than 500 carrier customers worldwide and is based in San Jose, CA.

www.redback.com

www.tmcnet.com/1844.1

U.K. Mobile Service Provider Expands Intervoice Deployment

By further expanding their use of Intervoice's Media Exchange unified service platform, a large U.K. mobile service provider is now able to support more than 15 million subscribers. Intervoice Media (News - Alert) Exchange is an open-standards, IP-based, IMS-ready software solution that functions in SIP, TDM or mixed network environments.

The multimedia communications platform is designed to provide a seamless migration from legacy voice mail systems to next generation messaging and includes a fully programmable intelligent switch that allows dynamic routing of customer calls.

www.intervoice.com

www.tmcnet.com/1846.1

NMS' PCI Express Board Gives Developers More Choices

NMS Communications has extended its Open Access application development family to include the popular PCI Express architecture. The architecture supports up to eight T1/E1 universal ports and up to 6,384 MIPS of digital signal processing. NMS's CG 6565e Series is a high density, high power family of PCI Express media processing boards, designed to enable developers to create and deploy a wide variety of both traditional and next-generation applications, including conferencing, messaging, ringback tones, video gateway-video play/record, and more.

Key features include: universal port capability that integrates PSTN interfaces, telephony protocols, comprehensive IVR functionality, full-duplex echo cancellation, speech transcoding, fax processing, conferencing, and 3G, among others.

www.nmss.com

www.tmcnet.com/1847.1

Report Shows $47 Billion Generated by 2010 for Mobile Music, Games, and TV

In a recent report, Juniper Research (News - Alert) maintains increased 3G adoption and a significant increase in rich media, made-for-mobile content would potentially generate mobile entertainment revenues of $47.5 billion by 2010.

The report finds that ringtones and wallpapers currently account for most mobile entertainment services being provided. Usage patterns appear to be changing rapidly due to the easy availability of sophisticated, attractive content including streamed and broadcast video, social networking services, and multiplayer games, all of which have been designed for the mobile environment.

www.juniperresearch.com

www.tmcnet.com/1848.1

Intel (News - Alert) Ships New Processors for Embedded Markets

Intel recently announced new processors for embedded market segments based on the company's 45-nanometer (nm) process. The processors, based on Intel's high-k, metal gate transistor formula, include the Quad-Core Intel Xeon processor 5400 Series and Dual-Core Intel Xeon processor 5200 Series.

These new processors, coupled with the new power-optimized Intel 5100 Memory Controller Hub (MCH) chipset, comprise the first 45nm CPU platforms for thermally constrained bladed applications, applicable for full-performance and memory-intensive applications such as storage, routers, security and medical solutions, as well as communications applications such as IP Multimedia Subsystems (IMS).

www.intel.com

www.tmcnet.com/1849.1

Veraz Intros Network-adaptive Border Controller

Veraz Networks (News - Alert) recently unveiled its Network-adaptive Border Controller, the next generation of Session Border Controllers (SBC). As networks become more complex, carriers require solutions that can cost-effectively scale in step with the network. The Veraz Network-adaptive Border Controller is designed to provide security for multimedia sessions and network interconnection.

The solution reduces OPEX (News - Alert) costs by providing centralized management and control of distributed SBCs so that carriers have one routing interface, one billing record, and one source of FCAPs information. The Network-adaptive Border Controller comes in different scalable hardware configurations, depending on the number of sessions required at each gateway location.

www.veraznetworks.com

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on the testing edge

by Andy Huckridge

Vocabulary of Testing

In the first edition of *On the Testing Edge,* I covered the landscape of why services are so important for Next Generation Networks (News - Alert) and many of the issues testing can overcome to facilitate a trouble-free rollout. This month we're going to dig further, taking a look at the vocabulary of testing, the different categories of testing and follow up with how they relate to the product development life cycle.

Precision: The degree of refinement with which an operation is performed or a measurement stated. This in simple terms means the following: can the same test be run with the same results observed? In a capacity test, how equal are the results each time the test is run?

Accuracy: The degree of conformity of a measurement to a standard or a true value. In simple terms this means how well a value can be determined. In Voice Quality Metric testing, a MOS score of 3.5, versus 3.51.

Reproducibility: The ability to produce the same outcome given a controlled set of variables. In a test situation, this is the ability of a test to produce the same bug time after time often a crucial factor if a bug is to be found and subsequently remedied.

Independent observation, verification and validation: When testing, it is often not enough to have the same person or test setup to find and diagnose a problem. The same goes for a programmer who can't find his or her own bug — they are often too close to the problem. Thus, it's important to separate the observation and verification phases in testing.

Lord Kelvin: Essential commentary for both the understanding of a problem and how to improve a product, or cure a defect / bug.

- "If you can not measure it, you can not improve it."
- "To measure is to know."

Most Common Types of Testing

Black box testing treats the software as a black-box without any understanding as to how the internals of the box behave. This level of testing usually requires thorough test cases to be provided to the tester who then can simply verify that for a given input, the output value (or behavior), is the same as the expected value specified in the test case.

White box testing, however, is when the tester has access to the internal data structures, code, and algorithms. For this reason, unit testing and debugging can be classified as white-box testing and it usually requires writing code, or at a minimum, stepping through it, and thus requires more knowledge of the product than the black-box tester.

In recent years the term *gray box* testing has come into common usage. This involves having access to internal data structures and algorithms for purposes of designing the test cases, but testing at the user, or black-box level.

Functional testing covers how well the system executes the functions it is supposed to execute, which can include placing a call, performing a transfer, if a PBX (News - Alert) for example. Functional testing covers the obvious surface type of functions, as well as their back-end operation.

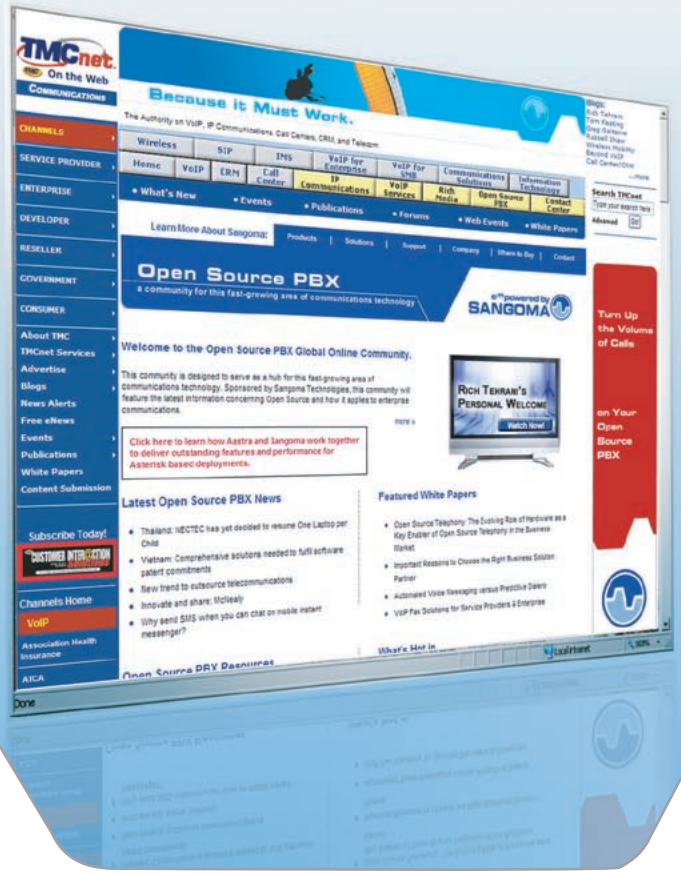
Conformance testing is used to make sure a standard or protocol actually conforms to a specific standard. This type of testing facilitates better system / interoperability testing later on in the testing life-cycle.

Capacity / Stress / Throughput / Load testing is a form of testing that is used to determine the stability of a given system or entity. It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results. Stress testing often refers to tests that put a greater emphasis on robustness, availability, and error handling under a heavy load, rather than on what would be considered correct behavior under normal circumstances.

Interoperability testing generally appears at the system level, especially in complex telecoms systems like IMS. Most often just a single call or two (or service interaction) are used to verify that two systems are interoperable.

Robustness testing is in many ways similar to conformance testing, but with the added flexibility and freedom of going outside of the protocol or standard. To send bad, or malformed packets into a Device Under Test (DUT) for example. This can also be referred to as "Fuzzing the protocol" to see the resultant behavior on a specific network element or device.

Andy Huckridge (News - Alert)*, is Director, NGN Solutions at Spirent Communications, where he leads Spirent's strategy for the Multimedia Application Solutions division. Andy is a VoIP patent holder, an IETF RFC co-author and inaugural member of the "Top 100 Voices of IP Communications" list. You can reach him at andy@huckridge.com*



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by Ronald Gruia

Crossing the IMS Chasm

As suggested in my previous article ("The Outlook for IMS in 2008", in the February 2008 issue of IMS Magazine), it is likely that IMS has already passed through the "peak of inflated expectations" (in Gartner (News - Alert) "hype cycle" nomenclature) and is somewhere in between the "trough of disillusionment" and the "slope of enlightenment", associated with the further refinements and eventually a wider adoption by service providers. In fact, some of my discussions with operators that have already begun to experiment with IMS reveal that they have gained a better understanding of the benefits and practical application of the technology.

But perhaps there is a better analogy to convey the current state of the IMS marketplace. Towards that goal, one book that comes to mind is Geoffrey Moore's *Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers*. In the book, Moore suggests that there is a significant gap between the early adopters of a new product (visionaries and technology enthusiasts) and the "early majority" (the group of pragmatists — please refer to Figure 1).

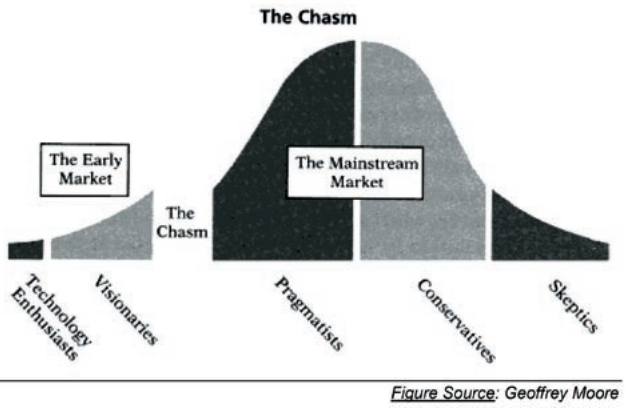

Figure 1 — Crossing the Chasm (as seen by Geoffrey Moore).

He then proposes a variety of strategies to successfully bridge that "chasm" including product concept and positioning, target marketing, developing a marketing plan, selecting the best distribution channel and pricing, among other elements. The book is essentially a worthy guide into how to be successful in establishing that first beachhead in the pragmatist market.

IMS still has not entirely crossed the chasm between the early adopters and more pragmatic operators that have not yet embraced the specification. Simply put, the early adopter IMS services still represent only a small percentage of the overall number of carrier services being offered around the globe. In order to build a solid IMS business, the industry has to cross that chasm. Nonetheless, further investigation into several ongoing efforts in the industry at large shows that we are getting closer to the "tipping point" in which IMS will become a more widely adopted blueprint for the NGN evolution.

The most difficult step in the road to "crossing the chasm" is to conquer the early majority of mainstream market, and that cannot happen without the help of the early adopters, who are instrumental since they can serve as both reference sites and evangelists. Service providers in this group include the likes of BT, Telefonica, Telecom Italia, T-Mobile, Mobilkom Austria, AT&T, Belgacomm, Telia Sonera, TDC, SingTel (News - Alert), NTT DoCoMo and Vodafone, among others. With the advent of the flat-rate service era, many of these operators were faced with a myriad of challenges, including the following:

- Start to embark on an evolution from their current architectures to the NGN, via a flexible platform that can support their evolving service requirements.
- Deliver creative service bundles to increase ARPU in a broadband world where narrowband service is being cannibalized.
- Create an environment that can deliver new intuitive community services.
- Tackle churn more effectively, particularly in the broadband consumer market segment.
- Offer a gradual evolution of services shifting from a fixed to a converged user-centric world.

One theme that emerged from some of these network transformation examples is that the service offering for the broadband community is a moving target, characterized as a rapid evolution that is still ongoing. Whatever solution that can address this requires an operator to meet the current demands, while also providing the full flexibility of reuse.

For instance, simple VoIP services being introduced right now can eventually give way to a new array of personal services. One example is Mobilkom Austria's "A1 over IP" service, which gives subscribers the ability to make VoIP calls with a soft phone application running on their PCs and also receive mobile telephone calls on their soft phone. In contrast to other VoIP services such as Skype (News - Alert), A1 over IP allows users to maintain their usual mobile phone number while enjoy-

ing all the advantages that VoIP offers, including real-time multimedia communications. More importantly, the service does not require the need to change a user's fixed broadband subscription (it is an "over-the-top service") and give the subscriber full access to attractive calling tariffs (as per his mobile subscription). The value for the Austrian operator is that the service enables the recapturing of PC callers via cheaper calls, and many of these users can become high income adults in a few years (and therefore become a likely target segment for new services). In addition, the A1 over IP service can be the precursor to a converged fixed/mobile service launch.

In trying to win over more of the pragmatists, some network equipment vendors started emphasizing the operational cost efficiencies associated with an IMS deployment. They would stress OPEX savings in areas such as deprovisioning (including tasks such as credit verification, and checks for network resource availability) and reprovisioning (including items such as order data collection, credit verification, network resource availability checks, domain name [DN] assignment, test and service activation, among others).

While some of these costs factors will be cheaper in the IMS domain (mainly due to batch processing associated with having a centralized user profile database across applications), the true value of IMS goes above and beyond OPEX savings considerations. Perhaps a better motivating factor for IMS is its ability to deliver blended multimedia services in a converged network and to a plethora of endpoints in a seamless way.

Bearing in mind the NGN migration choices available in the market, service delivery speed can be a major differentiator for IMS. This benefit can be expressed in terms of a TTM (Time-to-Market) advantage which yields incremental revenues and market share. There is a growing consensus among operators that the speed in moving from service concept to service reality will be the key argument for IMS proponents in the future. Convergence (News - Alert) is another key advantage for IMS, since the ability to blend existing offerings in a converged fashion to the subscribers can lower an operator's churn rate on these services. For example, a carrier offering dual mode service (where voice and data services are offered in a blended manner) can experience a substantial improvement in churn reduction on its existing service portfolio.

At the other end of the Geoffrey Moore technology adoption curve are the skeptics and conservatives, and like any other new initiative, IMS has faced some criticism from such players. One issue has been the hunt for the IMS "killer apps", which would justify a carrier's investment in a full migration. Some of these pundits argue that currently there is no set of applications that could validate a full IMS rollout. Indeed, this is a more tactical view associated with some service providers that have thus far remained sidelined in the IMS game. For these operators, the IMS pitch really becomes the individual business cases for the initial set of IMS applications, which typically have a much shorter payback period associated with them (typically a six-to-twelve month horizon as opposed to a longer period that can span years, associated with a strategic core network infrastructure-type of investment).

In reality, thus far, the benchmark or litmus test for "true IMS", as deployed in current live applications might be for instance push-to-talk (PoC) or one of its variants (such as "push-to-see"), but the naysayers believe that these are not yet successful as "true IMS" should create new communication styles or VAS (Value-Added Services) over conventional communications.

However, if IMS is to cross its chasm, network equipment vendors will have to consider some different ways to position the technology. As previously written in this column (please refer to my Dec. 2006 article entitled, "The Quest for the Ultimate 'Killer App'"), the quest for the "killer app" might not lead to that goal in itself, but IMS will provide operators with the ultimate sandbox to experiment with different applications and find the right combination for a certain customer segment. And maybe these more focused services that exclusively target parts of their subscriber base will turn out to be just as appealing as the ultimate killer apps. Maybe a better way to position IMS is that it will allow operators to fail more often and fail more cheaply than a legacy stovepipe implementation or a quick Web 2.0-style mashup.

Of course, in addition to a sharper marketing and product positioning, much work remains to be done in order to get the pragmatists on board. The relatively poor interoperability across equipment from various manufacturers has been one factor restraining a wider IMS adoption. Several ongoing initiatives such as the IMS Forum Plugfests (the group just completed its fourth event which focused on a variety of interoperability aspects including management, charging and billing of services such as triple play, VoIP and FMC), OMA efforts such as its IMS PoC client specification, and more interoperability testing from other groups such as the MSF (Multi-Service Forum) under the GMI (Global MSF Interoperability) banner, will all serve as a foundation to further entrench the IMS concept within the carrier community at large. Moreover some of these efforts will eventually serve to open things up a bit and make vendors develop a few more open Internet style APIs rather than sticking with proprietary ISC variants that are reminiscent of the older proprietary implementations from the AIN days.

In due time, IMS will be able to "cross the chasm", but the journey will probably span some time, as the value of IMS can be better established in a post-PSTN-replacement environment in which multimedia and converged services delivery speed will play a key role in enhancing an operator's strategic and tactical objectives. The subscribers will greatly benefit from this, as there will be exciting new services enabled by next-generation networks relying on IMS. The entire IMS ecosystem will need to ensure that these services will meet the end-user needs including QoS (Quality of Service). At that point, the technology will have won over the pragmatists and even some conservatives.

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By Marc Leclerc

IMS Bridges the Gap, Part 1

Telecom operators, Internet companies, and the media world seem to be locked in mutual suspicion of each other. Many companies in all three camps are limiting their business opportunities by being unable or unwilling to work with the others. However, hope is on the horizon: IMS can provide a framework to bridge the respective businesses models.

It's no secret that industries tend to hold a negative perspective on change. However, in the case of the convergence of telecoms with the Internet and media businesses, the parties engaged have radically different mindsets and value propositions that would appear difficult to reconcile.

Perhaps we could benefit by looking to history to see if we can learn from industrial convergences in the past: in the last hundred years, the story of the consumer retail and mass-media businesses has been, for the most part, one of enthusiastic cooperation in creating more efficient markets, better distribution, more choice, and happier customers.

Let's start with an examination of the current situation, and lay out the challenges from each industry's perspective. Then we'll look at what problems existed in the early years of the convergence of consumer retail and advertising businesses, and the solutions they came up with.

The Great Divide

Traditionally, the telecom business has used retail models (subscription-, content-, or usage-based pricing) to monetize network assets, while most profitable businesses on the Internet have adopted the broadcast/advertising model in order to generate revenues. Companies from each side of this divide tend to view the other with suspicion, in fear of losing their customers, markets, or place in the value chain.

The telecom industry has delivered its "goods" for most of the last century as state monopolies, well-insulated from the concerns of market forces. The result was a bureaucratic mentality: risk-averse, driven by regulation, and more concerned with broad consistency than with innovation. The years since deregulation have led to more competition, but old habits die hard so it is taking some time to change from focusing on protecting technologic ownership and a "killer app" type of thinking, to placing the emphasis on maximizing user value and experience.

The Internet is currently being used mainly as a mass-publishing tool, and has not seen much success in delivering other business models as users expect almost everything delivered on the Internet to be provided free of charge.

The media world is still reeling from declining sales due at least in part to pirating and file sharing. It has been slow to adopt digital distribution channels, fearing disruption of its existing channels, leaving consumers to seek content via other and sometimes illicit means. Countermeasures deployed by the industry have not led to any noticeable decrease in piracy, but rather wasted investments in failed technologies, mounting legal costs, and general unhappiness for both the industry and consumers.

Each of these three parties excels in a part of the value chain that is causing grief to the other two. Telecoms offer mobility and tight identity management; the Internet offers tools to efficiently make available and find content; and the media industry provides professionally produced music and video. Naturally they are gravitating towards each other, but at a cautious pace, trying not to make things worse while progressing toward the networked multimedia world. And it does take time to achieve a working consensus on their places in the new value chains, margin sharing, business and technology linkages, and – not least of all – adjusting their company cultures to the new reality.

The Traveling Salesmen of Babylon

Can we draw useful parallels from the convergence of retail and mass media over the last century?

Let's peer back in time to the era of traveling merchants who went from town to town, trading goods produced from far away in exchange for what was locally produced. Some towns became places where merchants concentrated (market towns). Then came the industrial and transportation revolutions, and the quantity and variety of goods available to the average person expanded exponentially. But this created a few problems: the local general store could not afford to stock so many products, so how could consumers find out about what goods were available for purchase? Conversely, how could manufacturers create awareness and demand for their offerings?

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by Grant F. Lenahan

Enlightened Myopia — Embracing New Revenue Models

Back in the 1950s, Dr. Theodore Levitt wrote a seminal article in the *Harvard Business Review* entitled. "Marketing Myopia". In this article, he argued that mature industries pigeon-holed themselves, and thus, "myopically" missed future opportunities.

Dr. Levitt's classic example was the railroads, run by "railroad men" who defined themselves, over time, as being in the railroad business. At first blush this seems reasonable. But it also was their downfall. They were really in the transportation business (and in the freight logistics business and in the hospitality business). By not thinking of themselves in the broader market of transportation, they allowed newer technologies — such as planes, automobiles, trucks and trains — to pass them by. Had they had a broader perspective from the beginning, these new technologies could have been used to make the railroads faster, cheaper and more effective at moving people and freight. But, they didn't.

The telephone business may be taking a cue from Dr. Levitt, having redefined itself as telecommunications. But have we learnt from the mistakes of the past? Not entirely. We're in the broader communications business, along with the web, radio, TV and newspapers, and need to define our future in this broad opportunity context.

This is not pedantic stuff. For too long, "telecom" companies have focused on transport and switching (or routing) infrastructure. Our addressable market is still largely defined by voice plus data services. Don't believe me? Look at most industry market analysis reports.

Yet the real opportunity is much larger. Outside telecoms, the dominant service has traditionally been content and the dominant revenue source, advertising. Content comes in many varieties — news, music, games, pictures, videos, blog posts, podcasts, etc. This content, whether it's a custom search performed by Google (News - Alert), a TV show on a major network, a news article in *The New York Times* or a weather report on the radio — is paid for by advertising.

Both content and advertising are huge businesses. The U.S. advertising business was $210B in 2007. Movie, TV, and music fees (although this is messier to calculate) exceeded $70B. The U.S. consumer telecom business (combined voice and data) is roughly $184 B. This demonstrates that not only can advertising and content grow our industry's revenues — they actually represent an opportunity that is ~$100B *greater* than our current revenues. Additionally, content and advertising — think TV — have long gone hand-in-hand.

Maybe the most interesting point is that telecom companies have the ability to be a far more effective advertising channel than any other. By virtue of the session (call) based model, given the right intelligence, telecom companies can target ads down to a market of one. Telcos (can I violate my own admonition and call them telcos?) can deliver targeted ads that are of specific interest to a consumer. They can deliver ads that are relevant based on time, location and based on a subscriber's recent activities. And telcos can deliver interactive ads — in which consumers can request information, make a reservation or do other useful things. In the end this is a win-win-win situation where consumers receive more useful (even desirable) advertising, advertisers develop a more effective channel, and telcos have a solid revenue stream based on high intrinsic value add to *both* of their constituencies.

There are a few keys to making all this magic work. Today's advertising delivery models don't achieve my lofty goals. They generally operate within a technology silo, such as directory, video, or messaging — and thus cannot take advantage of the best delivery method for the consumer. Today's implementations are also largely ignorant of a subscriber's context — that of the session (call); history; preferences; etc. Contextual information can and will play a huge part in helping ad engines select better, more relevant ads, and assist in delivering them as the consumer desires. Context can indicate where they are, who they are (or have been) calling, and myriad other useful information. Undoubtedly, many companies are looking into novel ways to leverage content. Telcordia (News - Alert), for instance, is already working with industry groups and advertising partners to define and implement a successful, technology-neutral and highly intelligent ecosystem in which context information, preferences and other factors improve the overall advertising process and the user experience.

Many have argued that "free" or ad-supported services will kill traditional paid-for telecoms services. I don't see that. In fact, "free" ad-supported broadcast TV has given way over time to paid-for cable TV. What appears clear is that there is a place for both fees and for ads, especially if the ads are perceived as relevant, useful and unobtrusive by subscribers. If they are not, technological workarounds will be created like the 30-skip functionality and ad-block browser plug-ins on DVRs.

As operators offer a variety of rate plans today, we envision a world in which consumers might have the choice of a variety of plans — each with a different mix of advertising and fees — suiting the budgets and ad-receptivity of various market segments (I suppose teens and executives will prefer different trade offs).

I'd like to leave you with a few thoughts about advertising and the sense of urgency that is rampant to fill the need before a competitors capitalize and profit from the possibilities that it presents.

1. ads will coexist with fees, in various blends
2. if you make ads useful, everyone wins
3. traditional stove-pipe implementations don't achieve this
4. and if we all do it right, there's more money available — not less!

That's a pretty nice way to start the new year, eh?

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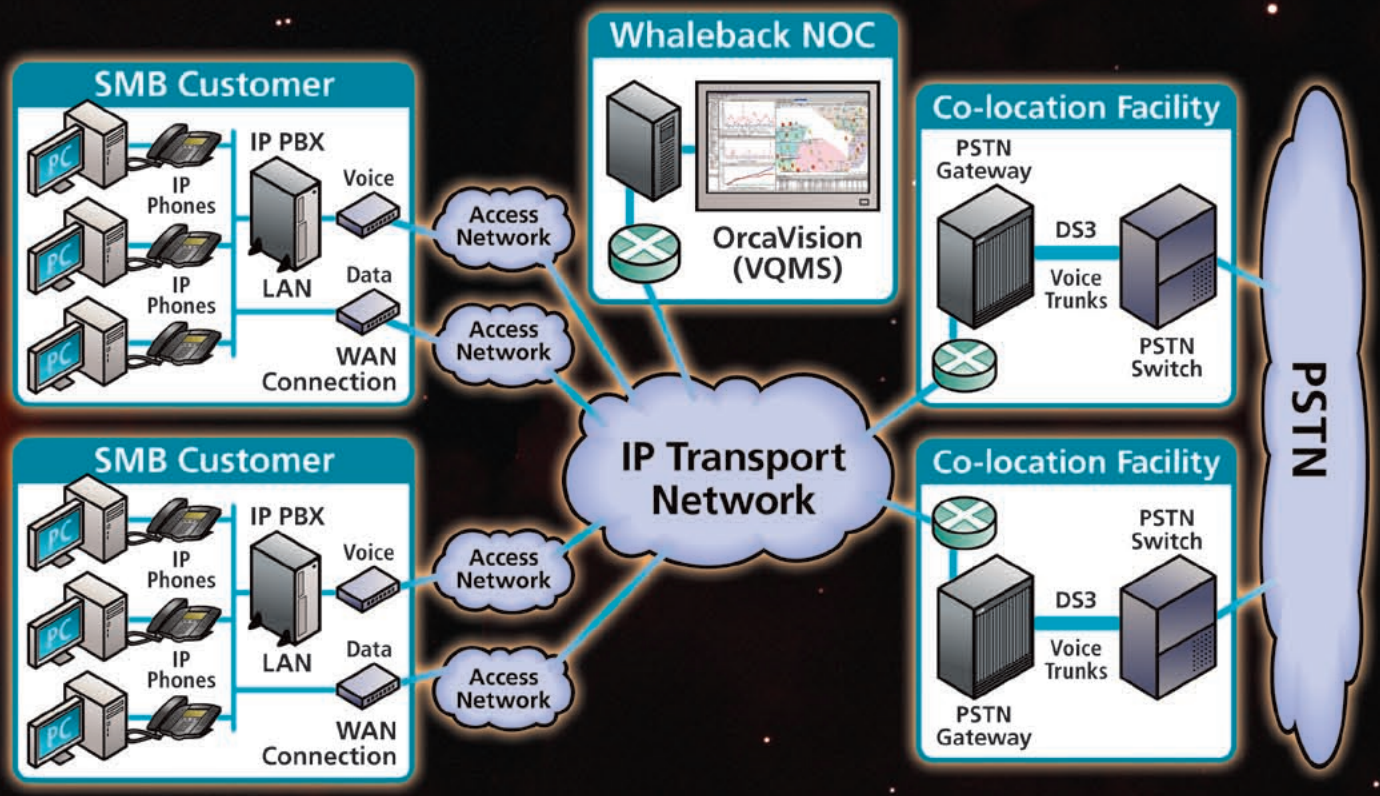

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by Richard "Zippy" Grigonis

IMS, FMC and Unified Communications

The relationship among today's three hottest communications concepts is both complex and subtle. Their symbiotic relationship, however, ultimately creates something that is greater than the sum of its parts.

Unified Communications (UC) is essentially a business solution enabling all of your communications-related productivity tools (voice, voicemail, fax, email, instant messaging, document sharing, etc.) to be accessed via one interface by whatever device you happen to be using (desktop PC, laptop, mobile phone, etc.). Since some of these devices are portable, it's expected that a user on the move can take applications and calls-in-progress along, accompanied by the kind of uniform, sophisticated call control one encounters on a corporate PBX. This takes us into the world of Fixed-Mobile Convergence (FMC). As one crosses the enterprise boundary into the outside world, this transition can be done in four ways: 1) manually push a button to transfer a call to a mobile device, 2) extend PBX and desktop features to the mobile phone, 3) seamlessly transfer communications in progress from one network to another using a dual-mode phone or similar technology relying on VCC (Voice Call Continuity) concepts envisioned and specified by the 3rd Generation Partnership Project (3GPP), and 4) in the case of UMA (Unlicensed Mobile Access) championed by Kineto Wireless, extend mobile features and calls embedded in IP packets through local WiFi (News - Alert) access points to inside the enterprise, so that voice calls can be handed off between Wireless LANs and mobile cellular environments (in particular GSM).

Achieving all of this demands that some considerable cooperation occur among the PSTN (Public Switched Telephone Network), the public Internet and the PLMN (Public Land Mobile Network). Ideally, a single service architecture should exist so that applications can be easily developed that integrate with corporate billing and operations support systems (OSS) and which can be deployed over both wireline and wireless networks. This "umbrella" technology is IMS.

That's why Stratus Technologies (News - Alert) early on got their Stratus Converged Personalized Services (CPS) in gear, which allows you to increase revenue without requiring massive changes, or investments, within your network. CPS gives subscribers the ability to access any data and use any service from any device over any network. Stratus CPS redefines mobile convergence to include voice and data routing, content unification, personalization and integrated messaging. All of these can be implemented in your existing network, providing an evolutionary path to IMS that can be timed to your specific business needs.

Stratus Converged Personalized Services consists of four key areas: 1) Converged Routing: Delivery of voice, data and video to a subscriber utilizing any device connected to any network; 2) Converged Content: Centralized storage of content with replication to any device connected to any network; 3) Converged Messaging: Centralized storage of voice, video and text messages with access from any device connected to any network; and 4) Converged Personalization: Centralized storage of subscriber profile with provisioning for any service using any device connected to any network.

Back in 2006, Stratus did a deal with LongBoard — later called Persona Software — so that they could offer LongBoard's SIP standard-based software for seamless handoff of voice calls between cellular networks and 802.11 (WiFi) networks. The IMS-compatible client/server software enables a dual-mode handset to support ubiquitous voice services across WiFi and cellular networks using one telephone number. Stratus further enhanced the product's capabilities by providing SS7 and IN connectivity, as well as complete systems integration services. The complete solution is fully 3GPP IMS compliant.

Indeed, the combination of IMS, VCC and dual-mode phones yield the slickest transition between networks, and Nokia (News - Alert) has made an major foray into the field with its Nokia N Series and E Series devices that support both GSM and WiFi. The impressive Symbian OS-powered Nokia N95 smart phone, for example, has a 5-megapixel camera, integrated GPS, and WiFi.

Nokia's quad-band GSM/UMTS (News - Alert)/WiFi-equipped E61i and E65 are also interesting in that they are conceived as business devices that will integrate with corporate telephony systems. The E61i, with its 2 megapixel camera, can also integrate with email systems. It an enhanced keyboard which includes new NAVI and "One Touch" keys. Both devices come with Nokia's new Intellisync Mobile Suite 8.0 platform.

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The even more impressive Nokia E90 Communicator is a mobile phone laden with multimedia and PDA functions. VoIP calls are supported over WiFi "g" networks. The device runs the Symbian (News - Alert) 9.2 OS and has a complete QWERTY keyboard, GPS navigation system, MP3 player, and 3.2-megapixel digital camera with flash and autofocus. Its email support includes POP3, IMAP4, and SMTP standards and users can access both personal and corporate email accounts easily, and edit attachment documents and spreadsheets right on the phone.

Indeed, dual-mode smartphones from Nokia (such as the Nokia E61i) were used recently by XO Communications (News - Alert) and Sotto wireless in their trial of an FMC solution for businesses in Seattle. Called Unwired Office, it combines XO's nationwide IP networking capabilities with Sotto's all-in-one wireless and office phone communications service to form an integrated fixed and wireless service on a single platform with one smartphone that can be used in the office or outside of it for voice, email and Internet access as well as optional IP desk phones.

...dual-mode smartphones from Nokia were used recently by XO Communications and Sotto wireless in their trial of an FMC solution for businesses in Seattle.

Dual-mode devices are also part of Nortel's (News - Alert) solution. FMC and dual-mode technology are fascinating for some people who travel because most FMC solutions are based on providing a single number for all communications. However, having multiple numbers is sometimes desirable, if for example, you want your TV or refrigerator to have a number for some reason. Nortel's solution happens to be able to manage "one number" schemes, as well as multiple number offers. Nortel's FMC strategy features the CS 2000 IP Multimedai Softswitch (PacketCable 1.X compliant) and/or IMS/PC2 and AS 5200 (PacketCable 2.0 compliant) at the heart of the solution, allowing the many commercial-grade calling features to be introduced into an FMC setting.

Getting Apps on the Road

A number of vendors have taken a careful, studied approach to exploiting IMS, FMC and UC.

Take Tango Networks (News - Alert), for example, a major provider of seamless enterprise fixed-mobile convergence solutions. Alastaire Westgarth, CEO and President of Tango Networks, says, "We first publicly displayed our Release 2 product in 2007. We have subsequently moved on to Release 4 and through that evolution we picked up our IMS component. The key thing that we think is differentiating or critical about what we do in the FMC space is our architectural approach. We build what we call a 'hybrid' architecture. We have a component that hooks into the carrier network, which can be an IS-41 carrier network, a GSM network, or an IMS network. Or the network can be a combination of these kinds of networks. Someone could have deployed a classic WIN or GSM CAMEL [Customized Application for the Mobile network Enhanced Logic, a standard for Intelligent Networks for mobile communications networks worldwide; GSM equivalent of WIN, the Wireless Intelligent Network] type of architecture and is migrating over to an IMS architecture, and they can have some of the Tango-based subscribers on the legacy network and some of them on the new IMS network, and yet the same equipment can be used to serve both simultaneously."

"In addition to this component in the carrier network," says Westgarth, "we have a component that connects into the enterprise network. It's a standard Intel motherboard-equipped, Linux-powered appliance called the Tango Abrazzo that can, if necessary serve multiple PBXs. We are partners with most of the major PBX vendors, such as the Nortel, Avaya, Cisco, Alcatel, and we're starting to work with other PBX vendors such as Siemens (News - Alert) and some of the Asian manufacturers. When we partner with the PBX vendors, our component that installs in the enterprise deeply integrates into the PBX. This enables us to use the features of the PBX. We don't emulate these features, we don't remake them at all. We actually use them."

"So we have a component that fits into the carrier network that allows us to know what's going on with the user's mobile phone," says Westgarth, "and then the component in the enterprise network works in such a way so that we allow the enterprise-based PBX features to be completely and seamlessly available on the mobile phone, as they are on a desktop phone, regardless of whether the mobile phone is inside or outside the building."

"This technology allows us to use on-net routing for a large enterprise," says Westgarth, "So if an enterprise has locations in say, New York and London, and their desk-to-desk calling is over tie trunks [a communication connection between extensions of a private telephone system, typically two PBXs], now an employee's mobile phone has access to those facilities without any change in behavior by the end user. The end user makes a phone call and if it's appropriate to go over the corporate on-net tie trunks, it will do that. It's an opportunity where they can save significant long dollars right there. One of our partners, TI, pointed out to us that on-net calling is 30 to 100 times cheaper than calling onto the general PSTN. So there's a significant efficiency and cost-savings that's possible."

"Because we know where the mobile phone is situated," says Westgarth, "we don't 'trombone' calls all over the network [Tromboning is when RTP media traffic originating at a certain point follows a path out into the network and back to a destination close to where the RTP traffic originated, taking a path similar to the "shape" of a trombone.] Instead, we deliver the call to the mobile phone, if appropriate, via the closest local center. Thus, the call can tail-end hop-on and tail-end hop-off the mobility network over the most appropriate and direct geographical route."

Getting Everybody Involved

"Because our architecture enables us to have a presence in both the carrier and the enterprise," says Westgarth, "and makes the experience seamless for the end user, all of the stakeholders are now part of the solution. If you look at a pure VCC dual-mode solution, you must use a specific device and it's carrier-centric. A proprietary dual-mode solution, in an enterprise, cuts out the carrier. So at the end of the day, someone in that ecosystem is pulled out of the puzzle. We believe that to have FMC as a seamless, value-add experience, you've got to have all of the stakeholders involved. You've got to involve the carrier. After all, they've spent billions of dollars building RF networks. You've got to have the enterprise represented too, since it's their local network and it's their users. The user must have an easy and seamless experience. If you ask the user to do unusual things, such as overdial or run multiple applications on smartphones, or change their phone when they don't want to, or they can't use their Blackberry, or Razr, or iPhone (News - Alert), you're going to get some very odd user behavior. You may have great services deployed, but no one will want to use them. So our premise is that you must have all three stakeholders involved: the carrier, enterprise, and user."

"When we first introduced our product, it only connected to GSM and IS-41 WIN and AIN-type networks," says Westgarth, "Then we brought in the IMS software component that fits seamlessly beside the existing legacy system. We then discovered that very little real IMS has been deployed. But we also found that most of the major carriers and many smaller ones have some deployment, or are only formulating services that have a path or evolution to IMS. So we go into a carrier and have in some cases hooked up to their IMS network and in other cases we've told them that when that network is available and ready they can use the same equipment without any additional cost."

Westgarth continues, "We even have a customer that runs an IMS network by using legacy triggering, which is even more interesting. They literally have WIN triggers sitting on top of an IMS core — a very unusual architecture. But we don't care about that, since it's irrelevant to what we do. We go to the carriers and say, 'To you what we do looks like standard GSM, IS-41 or IMS.' To the enterprise we say, 'Our technology works with your standard PBX interfaces, but it's customized to the way you do business'. Again, we're trying to make it as seamless and easy as possible to all the stakeholders."

"Our hybrid architecture also allows for the fact that, if you go to a carrier," says Westgarth, "and you ask them if they want to be able to be involved in all of the policy and the routing that sits on these various PBXs, they get scared. They don't want to deal with dial plans and policy down at every single enterprise, because each enterprise has unique demands, and things can get very complex. However, with our architecture, all of that is removed from the carrier's concern, because it's already sitting inside of the PBX. It's just being used by the hybrid architecture put in place by Tango."

"Because of the richness of the IMS architecture, you can offer greater efficiencies, thanks to such things as mobile-to-mobile calling," says Westgarth, "These are enhanced with IMS. IMS is not necessary but it's available and it does make the experience more efficient. We offer FMC services to the enterprise from the carrier for any mobile phone, even a dual-mode phone."

Openness is a Good Thing

NextPoint (News - Alert) Networks resulted from the merger of NexTone Communications, Inc., a software-centric session border controller and session management provider, and Reef Point (News - Alert) Systems, Inc., a mobile access universal convergence gateway provider. NextPoint Networks provides secure and intelligent IP-based connectivity solutions that connect devices to networks, and networks to networks, enabling voice, data, and video sessions to flow, efficiently, securely and reliably. Service providers and enterprises worldwide use NextPoint's IntelliConnect system to manage technical complexities, optimize business economics, and remove partnership hurdles. NextPoint serves wireless, wireline and converged operators and works with the systems integrators and network equipment providers to ensure interoperability and integration with traditional and next-generation platforms.

Aaron Sipper (News - Alert), Director of Field Marketing, says, "We don't play in the UC server or applications environment at all. We play more on the access edge of the network — the user-to-network access side, as well as network-to-network access components on the interconnect side. We normalize how users get onto the network, in particular the following functions: sometimes you look at the applications that operators are going to deploy, and certain things are pre-IMS and certain things are already IMS-capable. So not everything is IMS-capable. Some operators want the flexibility to choose certain apps that may be delivered through a non-IMS mechanism and some are pushed to an IMS system. So having a normalization function in the network is critical, which involves things such as normalizing how you get on the network. Let's say you're coming onto the network off a femtocell or macro network or

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perhaps you're coming off of a WiFi or WiMAX (News - Alert) network. It shouldn't matter what the network is even though the networks can be protocol-specific, and the security, authorization and authentication is different regarding each model. Fortunately, we can normalize and therefore simplify how users get onto the network."

"We can achieve that today because we're IMS-compliant on our gateways," says Sipper. "We do interworking functionality between the IMS core and the user access component. An example of this is how we work with Alcatel. They OEM our gateway and they basically build a product they all the ABN, or Access Border Node. Alcatel integrates their P-CSCF software directly onto a platform. So suddenly they have control of how users get authorized and authenticated on the network in an IMS fashion, or in a non-IMS fashion. And it provides for applications to be IMS-compliant to the handset or the PC or whatever device they choose."

"The next level of capability set that we're going to introduce involves the integration of the Session Border Controller [SBC] into the whole mix," says Sipper. "It's important to get a hand on how sessions get managed in the network. And again, whether it's a voice or data session, it doesn't matter. Initially, a lot of what moves through the network is voice. But now that the network and systems must do SBC-related functions such as routing, prioritization of session calls, transcoding, and everything that you would associate with our former NexTone (News - Alert) technology, we can integrate everything and suddenly what was complex can be made simple for operators, especially when it comes to UC services in the context of IMS and FMC. Suddenly we bought into the aspect of convergence and we have all of the pieces there to really help the normalization functions for session management and controlling how users get on and off the network."

"As far as IMS is concerned, our view is that its still quite early to talk about IMS," says Sipper. "Even though our product line is ready, we realize that many products still don't interoperate with each other. The year 2008 will be a very significant year for getting IMS components to interoperate. In fact, this year, amongst the various types of interop events that are going on, the MSF [MultiService Forum (News - Alert), a global association of service providers, system suppliers and test equipment vendors committed to developing and promoting open-architecture, multiservice Next Generation Networks] will demonstrate the first intercontinental handset-to-handset call purely through IMS components."

"From a unified communications perspective," says Sipper, "the types of services that are going to be deployed will be specifically geared toward businesses, as opposed to individual users, because operators don't really have all the pieces yet, they can own deployments in a small context, and I think where it will benefit the operator most is in a business sense. But they can't deploy on a wide scale since they're limited in terms of scope and interoperability for the moment.

"As far as FMC is concerned, that's just starting to pick up some steam in terms of its use in the enterprise," says Sipper. "It's interesting. IMS is an overall umbrella framework, but UC is more a business-type solution and FMC is still very much in the lead venture realm. So things aren't quite perfectly aligned yet, in my view. They're all very promising technologies, and when they come together, you'll be able to do some impressive things. However, operators already know that dual-mode phones are going to cause a headache for them, with the biggest headache being something that's the last thing they would ever want to do — giving all of the control over to the enterprise so they can be in charge of how they use their mobile devices. If the mobile operators have a great strategy or solution for capturing traffic on the WiFi leg, however, and maintaining and hosting the services through IMS or UC, then suddenly they're now in control of things and can enhance the technologies as they see fit. That's where the promise comes in: what services and capability sets can be delivered to the enterprise environment, making the services as 'sticky' as possible, thus reducing churn."

"If you look at what's going on in the handset business, the iPhone has demonstrated that handsets are much easier to use, they look and feel more like PCs," says Sipper. "In fact, in December of 2007, 60 percent of all North American web traffic over the mobile networks was generated by iPhones, which only make up 2 percent of the handset market. And now HTC is making the first mobile device to run Google's Android (News - Alert) suite of software, which is pushing a totally open platform that enables anybody, including the enterprise space, to develop custom applications that they can install on their devices. That should be a wakeup call to the network operators. I think the operators should exploit Android to develop and deliver IMS components in the handset that tie back to and are tightly coupled with the network core, and thus provide value back to the end user in the form of unified communications services."

Richard Grigonis is Executive Editor of TMC's (News - Alert) IP Communications Group.

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by Jean-Louis Carrara

Subscriber Authentication in the IP Multimedia Subsystem

The IP Multimedia Subsystem (IMS) represents a new and exciting era for the mobile telecommunications industry — a converged wireless and fixed network world. Subscribers can use the same services across devices (mobile phones, PCs, office or home networks) and through a number of different channels (WiFi, DSL, LAN, 3G, etc).

But might this new telecommunications era also represent a new era of security headaches for operators? Not if they address the critical issue of user authentication and service security from the start.

Everyone is Talking about IMS

In an IMS network, services like instant messaging, Voice over IP (VoIP), video conferencing and presence management will essentially be always on and "roaming" amongst the subscribers' devices. For instance, I will be able to look at my list of contacts on my mobile phone and know that a colleague is connected to both his PDA and his PC, and is available for a voice chat or instant messaging, but not video conferencing. Conversely, he can see that I'm connected to my mobile phone and not my PC, and not accepting any incoming calls or instant messages. Sounds great, yes, but these and other new services will require additional security to protect data and networks, and also people and their information. The marketability of such services is dependent on them having the highest level of security.

These services are possible because at its core, the IMS architecture uses the Session Initiation Protocol (News - Alert) (SIP). SIP is used because it provides an easy and open way to set up and control rich media applications over an IP network. Presently it is the most commonly used signally protocol for VoIP.

Giving users the ability to access any service at any time on any device and on any network is clearly attractive and beneficial to both operators and subscribers. However, exchanging voice, video, data and more across a variety of channels and devices presents unique security considerations. Because an IMS network is built around SIP, it follows that the network will carry the same security vulnerabilities as SIP and IP networks as a whole.

For this reason the way the end user will be identified and authenticated is among the most critical aspects of IMS network security. The use of a simple username and a password is simply not enough. Weak and static passwords are too easy to steal and do not ensure the safety of the relationship between the operator and his customer.

Wireless standards bodies 3rd Generation Partnership Project (3GPP) and 3rd Generation Partnership Project 2 (3GPP2) have defined encryption and authentication techniques for IMS, and operators are also implementing firewalls. However, with stolen passwords, a skilled hacker can still make his way into the network. Once inside, the hacker can attack with spoofing, viruses, traffic flooding and denial of services. Attacks like these can shatter users' confidence with their new services, putting IMS investments in danger.

Interestingly, the authentication security issues operators are facing with IMS networks are easily addressed with existing wireless solutions.

UICC to the Rescue

With the development of digital networks and the GSM family of networks (now the international standard for mobile phones), security and assuring the identity of subscribers has always been a key consideration. It is addressed with a common security framework based on the SIM and now the UICC[1], both smart cards. Smart cards have had years of hardening against attacks in their military, government, payment and wireless applications. Now, without the SIM and the UICC, a handset cannot provide services other than emergency calling.

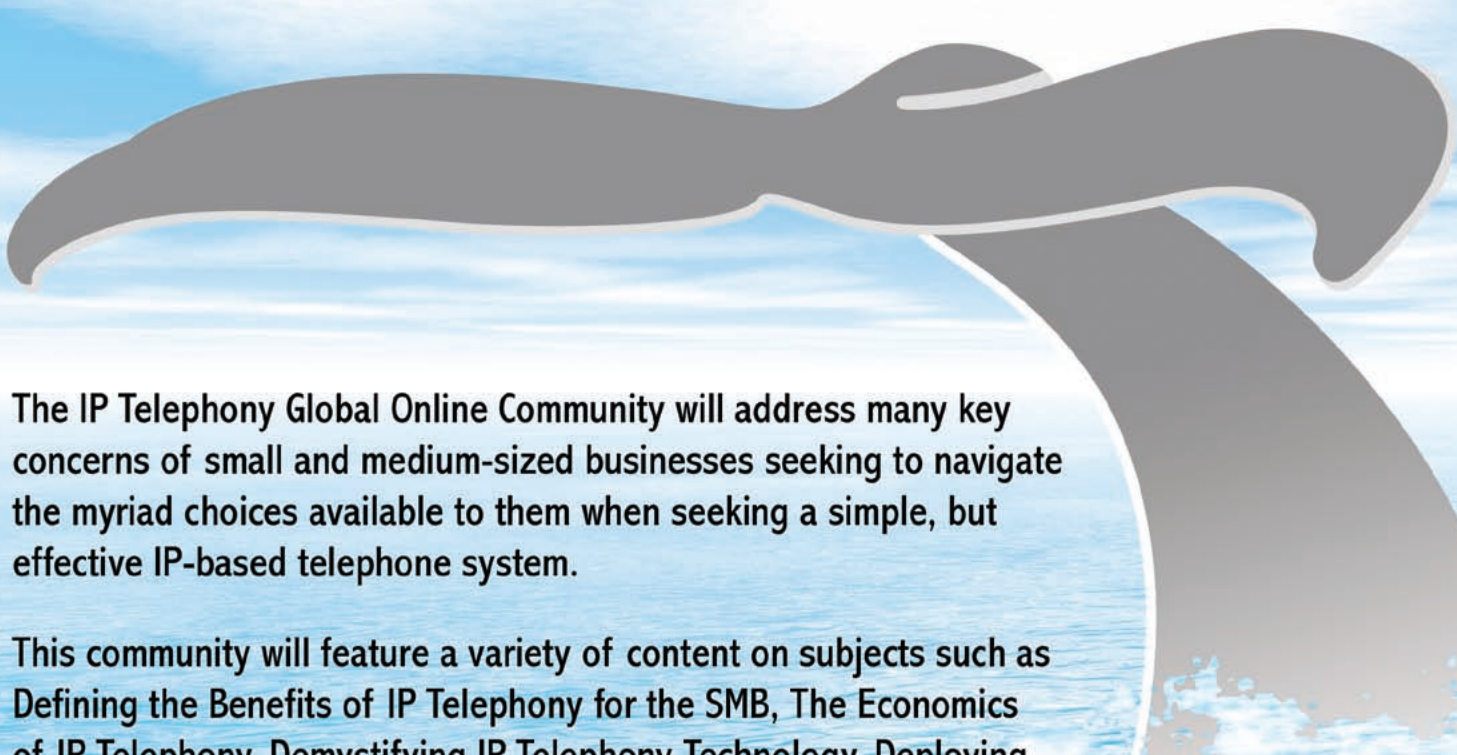
Today, the GSM family of networks accounts for 85 percent of the global mobile market, with more than 2.6 billion users. The SIM and its ability to secure subscribers and their data have played a big part in this continuing success. The proven SIM card technology also secures next-generation mobile networks such as GPRS (General Packet Radio Services) EDGE (Enhanced Data for GSM Evolution), Universal Mobile Telecommunications System (UMTS), High Speed Packet Access (HSPA), and will secure Long Term Evolution (LTE (News - Alert))[2]

Proven Authentication Technology Applied to IMS

Why not apply the same technology that has secured the GSM network successfully for more than seventeen years to new IMS networks? The telecommunications industry is asking the same question, and a new technology has been developed to do just that.

Confused?

Join the IP Telephony Global Online Community to Find the Answers You Seek



The IP Telephony Global Online Community will address many key concerns of small and medium-sized businesses seeking to navigate the myriad choices available to them when seeking a simple, but effective IP-based telephone system.

This community will feature a variety of content on subjects such as Defining the Benefits of IP Telephony for the SMB, The Economics of IP Telephony, Demystifying IP Telephony Technology, Deploying Broadband Phone Solutions Designed for Small and Medium Businesses, Overcoming the Limitations of IP Centrex, What to Expect from a Managed Service Provider, and a thorough analysis of feature-related benefits.

The community will also feature a wealth of information in the form of case studies and articles that are critical to the SMB decision maker seeking to deploy various applications such as multimedia conferencing; IP-based contact centers; electronic faxing; unified messaging; multi-site deployments; road warrior mobility; and much more...

http://ip-telephony.tmcnet.com

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The IP Multimedia Services Identity Module (ISIM) is an application running on a UICC. The ISIM is the collection of all of the IMS security data and functions on the UICC that is used to mutually authenticated users on IMS networks. Each subscriber device (wireless or wired) will have its own UICC representing them in the network and will be authenticated from each with the strongest levels of security. The UICC can authenticate connections to access networks (3G, 3.5G, WIFI, WIMAX) and be used to register to an IMS network using SIP protocols.

The ISIM provides authentication computation for SIP authentication. It contains files dedicated to SIP and algorithm for user authentication on the network. The Generic Bootstrap architecture (GBA) is used to authenticate to applications provided in the IMS network. This can be achieved between an end user device and the Application Service (network application function or NAF), or between the end user and an application proxy. Using GBA, the ISIM establishes an encrypted, mutually authenticated SIP session directly with the NAF or application proxy. The result is a unique and direct connection, a sort of "sealed tunnel" that provides end-to-end digital security for both the user and operator of the IMS network.

This process is of course transparent to the subscriber, but they can be confident that their connection to the IMS network is secured with proven technology, and service providers are looking at new solutions to manage and protect their identities on the Web. An added benefit is that they don't have to remember a number of usernames and passwords for all their devices and services on the IMS network.

Benefits Beyond Authentication

Though authentication is the most critical function of the UICC and ISIM on an IMS network, it's important to note that UICC can also provide a lot of other useful services. This includes storage and synchronization of the contact book, Quality of Service (QoS) information linked to the user subscription level, or call processing rules.

The presence management and call processing services are amongst the most interesting and appealing for end users, and both can be securely stored and enforced by the UICC. Presence management is the way an end user will manage the visibility other connected persons will have on him or her, while call processing is the way by which the user will manage incoming calls on its different connected and registered devices. The SIP protocol allows setup presence and calling processing rules to combine into rich combined services. For example, the end user can specify that he or she does not appear connected to professional contacts after 8pm, or that calls from personal contacts ring through to her mobile device only.

A Smooth Transition to IMS

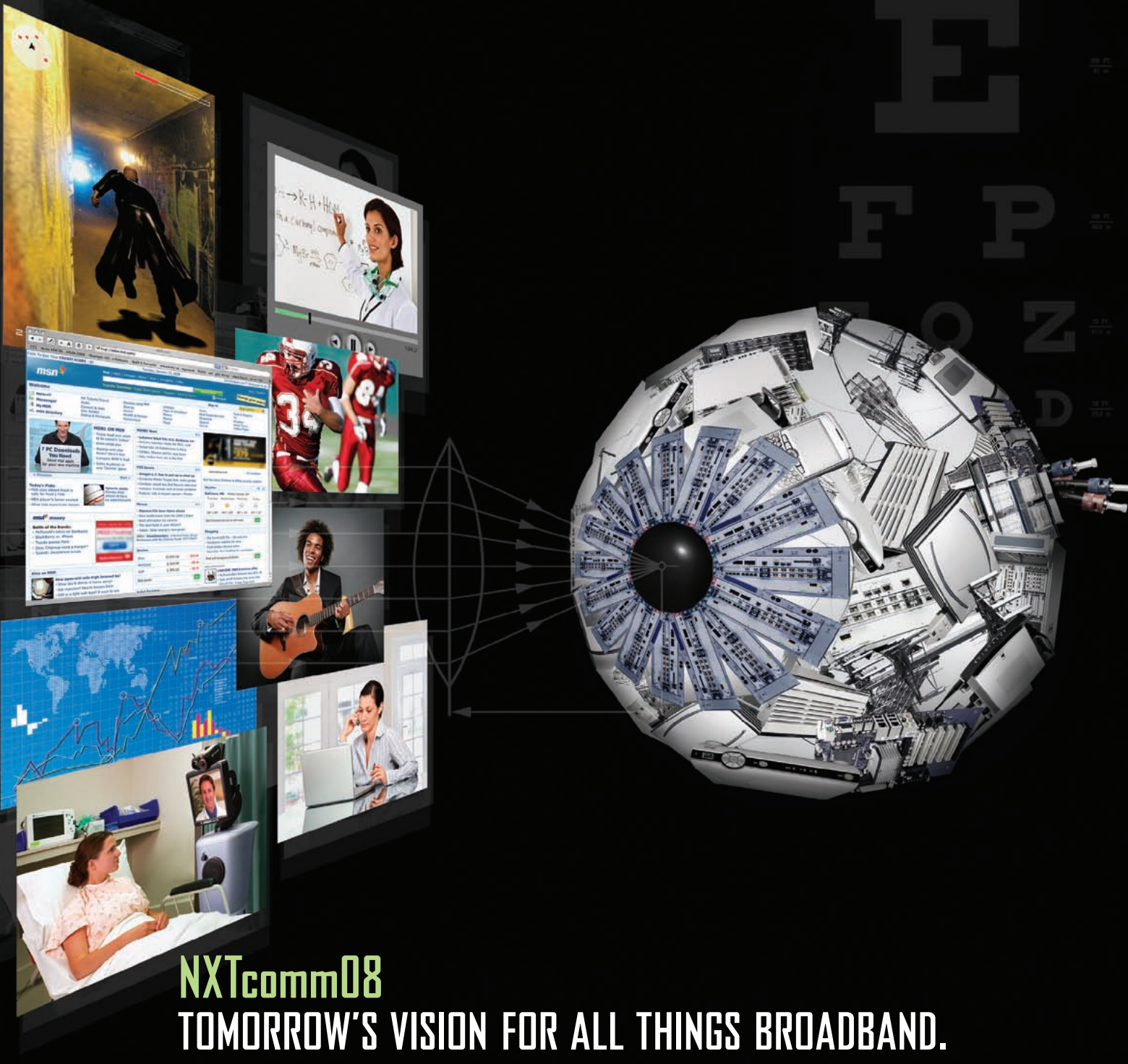
The telecommunications industry is just at the beginning of an exciting move to a truly converged communication world. With new networks come new opportunities for attacks and fraud, but it's not necessary to go through the same pains as the wireless communications industry once did. Looking back at the success of securing wireless networks with the UICC and applying the same proven technology to securing IMS networks allows operators to move past authentication pains. Then they can move into applying the benefits of the network to themselves and their subscribers, including new secure identity services for all of our communications.

Footnotes:

[1] Subscriber identity module and Universal integrated circuit card. The UICC is a multi application hardware platform that can run multiple smart card applications, including telecom applications (SIM, USIM, ISIM, EAP-SIM, etc) and non-telecom applications (contactless payment applications such as MasterCard Paypass, Visa Paywave, but also transit applications, etc.). The SIM in GSM networks ensures that the correct, authorized user is accessing the network. SIM cards securely store the service-subscriber key (IMSI) used to identify a subscriber, and is resistant to tampering. In addition, the SIM contains unique "shared secret" information — an authentication algorithm, the authentication key and other security-related information and functions. These are all used to strongly and mutually authenticate the subscriber and the network to each other.

[2] ATT first launched HSPA in the USA and both ATT and Verizon have announced plans to launch LTE networks. For more information on the GSM family of networks, visit www.3Gamericas.org

Jean-Louis Carrara is Vice President, Telecommunications at Gemalto (News - Alert) (www.gemalto.com). He joined Gemalto, the leader in digital security, in 1995 and has been involved in marketing and engineering wireless solutions, SIM and OTA. He is now responsible for enhanced wireless security products and managed services in North America. Carrara is actively involved in the wireless industry, sits on the board 3G Americas (News - Alert) and represents Gemalto with telecom media and analysts. Carrara has spoken at events such as Mobile Americas, CTIA Wireless and CTIA Wireless IT. He holds a master's degree in engineering from l'Ecole Centrale de Lyon, France and an MBA from the Ellis College of NYIT.



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From the Desk of Michael Khalilian

The IMS Forum Completes Plugfest 4 and Prepares for NGN M-Play Plugfest 5

The IMS (IP Multimedia Subsystem) and the NGN (Next Generation Networks) Forums, dedicated to interoperability and certification of M-Play, multimedia services and applications for wireless, wireline and cable broadband over IP networks, has concluded a successful testing at the IMS Forum Plugfest 4 UNH-IOL at the University of New Hampshire.

More than 15 companies participated in IMS Plugfest 4, including Intel, HP, Amdocs (News - Alert), Acision, Alpha Networks, Aricent, Data Connection Ltd., Empirix, Mavenir Systems, Mu Security, NextPoint Networks, Radvision, Shenick Network Systems, Sonus Networks, Starent Networks, Tekelec (News - Alert) and UNH-IOL. *IMS Magazine* was also the media sponsor.

The IMS Forum's Plugfest 4 was the fourth in a series of events designed to deliver IMS and NGN interoperability and certification. Tests included the following:

- IMS-AKA signaling was successfully performed for mutual authentication of UEs and the network. After authentication, end-to-end calls were successfully completed using IMS-SIP. This was performed with combinations of UE1-UE2, UE1-UE3, and UE2-UE3. There are two industry significant achievements here: The wide support and interoperability for IMS-AKA and the ability to complete calls between different brand UEs through a best-of-breed multi-vendor network.
- For the first time, the IMS Forum PlugFest topology included an IMS-compliant Charging/Billing System (OSS/BSS). A P-CSCF and S-CSCF that supported the Rx interface to the Charging Function (CDF) was included in the topology. Bills were produced for calls completed through this topology. This is a major milestone since the charging/billing systems are a major component for network operators to deploy IMS.
- Two P-CSCF vendors and one UE vendor demonstrated interoperability for SIGCOMP for the first time. This is a feature that is not required by IMS but is highly-desirable to network operators.

IMS is becoming the industry standard for cost-effective delivery of new and existing multimedia IP services. Many telecom service providers are finding it difficult, if not impossible, to deliver the multimedia services their customers want in an environment without open, standards-compliant, interoperable solutions. This is what SPs are demanding from their vendors, and they are no longer willing to wait.

"While a number operators continue to assess the network cost saving and efficiencies IMS delivers and the services it enables, poor interoperability across equipment from different vendors has been slowing down wide adoption of IMS services. This plugfest was yet another step forward in the development of truly interoperable IMS networks and was particularly significant because of its focus on consumers' value and the systems necessary for managing, charging and billing for services delivered in an IMS network. The completion of this plugfest could be seen as a significant development and is likely to lead to more open IMS ecosystems," said Malik Kamal-Saadi, Principal Analyst at Informa (News - Alert) Telecoms & Media, and author of the *IMS Services Report.*

The IMS/NGN Plugfest 5 is scheduled for June 2 through 6, with testing to include M-Play (Multimedia Play), Policy Control (service quality assurance / quality), User Profiles and Configuration (HSS, Sh, Cx), Scalability, and additional areas of OSS/BSS Billing/Charging.

The IMS/NGN Forum is a global telecommunications industry association devoted to interoperable IP Multimedia Subsystem (IMS) and Next Generation Networks (NGN) services delivery architecture and solutions. IMS Forum's mission is to accelerate the interoperability of IMS and NGN services and to enable enterprise and residential consumers to benefit fully from the delivery of multimedia mobile and fixed services over broadband cable, wireless, wireline and fiber networks. The IMS Forum is the creator and organizer of the IMS Plugfest™ and NGN Plugfest™, the industry's only event focused on verification and certification of IMS and NGN services interoperability through the IMS Certified™ and NGN Certified™ program. Through its organized plugfests, technical working group interactions and other activities, forum members are able to develop cost-effective technical frameworks for converged IP services over wireline, cable, 3G, 4G, WiFi, WiMAX and femtocell broadband networks. For additional information or to join the IMS Forum, NGN Forum and the IMS Plugfest, NGN Plugfest, please visit www.IMSForum.org.

Michael Khalilian (News - Alert) *is the President and Chairman of the IMS Forum and CTO, Pervasip Corp.*

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The NGN and the IMS Forums

Announcing Plugfest 5 Consumer and Enterprise M-Play Interoperability – June 2008

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