



Spirent vs. Stove Pipes

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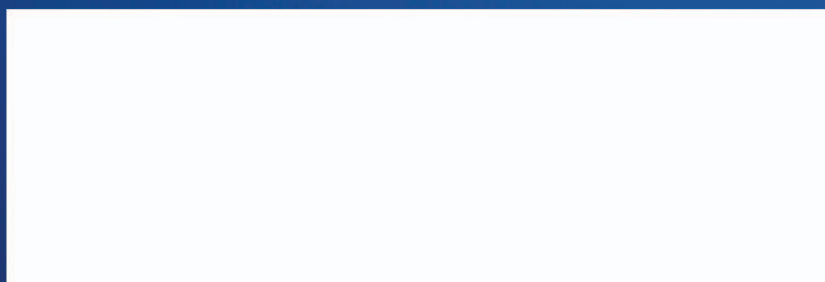
VOLUME 2/NUMBER 3 JUNE 2007

IMS - The State of the Market

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editor's note

IMS is Starting to Sizzle

by Richard "Zippy" Grigonis



Things are certainly heating up in the IMS world. For example, Ericsson and the Beijing branch of China Netcom have been jointly constructing China's first commercial IMS (IP Multimedia Subsystem) network. Ericsson supplies both the IMS hardware and system integration services so that the IMS system interoperates with China's existing, more idiosyncratic networks.

At home, Motorola ([quote](#) - [news](#) - [alert](#)) has announced a new grand alliance (or confederation, conglomeration, mass-accumulation, or whatever you prefer) of 12 companies that will be part of its new IMS ecosystem. The 12 partners are Acme Packet, Apertio, Colibria, Iperia, IP Unity Glenayre, jNetX, NetNumber, OpenCloud, RadiSys, Sonus Networks, Sylantro Systems, and Ubiquity Software.

Realizing that it couldn't "go it alone", Motorola is calling upon these partners to provide the various network elements (application feature servers, home subscriber servers, media gateways, presence servers, session border controllers, and so forth) that will make the Motorola ecosystem "real" and dovetail nicely with Motorola's own IMS control server, thus jumpstarting equally "real" IMS deployments. Having so many separate "minds" in this "brains trust" will undoubtedly help spur further innovation.

The idea for assembling this group occurred in the course of Motorola's WiMAX project in Pakistan for Wateen Telecom, which involved gathering suitable partners with which the company had had some experience and knew that their products were fully tested.

And, in just a few days, Yours Truly will be briefed by the IMS Forum (our industry's only Forum focused on the delivery of IMS service interoperability, verification and certification) on what happened at their second Plugfest, the premier event for testing IMS applications and services interoperability, which was held June 4-8, 2007 at the University of New Hampshire's Interoperability Lab (IOL). Participants for this testing extravaganza included Empirix, Sonus, and ARGELA. Plugfest II results are also being announced at the NXTcomm show, held June 15-21, 2007 in Chicago. [Our magazine is proud to have not one but two IMS Forum columnists, Mike Kalillian, the President and Chairman, as well as their marketing guru, David Hayward.]

You may recall Plugfest I was also a great success, which involved 15 different carrier-grade platforms that indeed demonstrated the maturity of end-to-end IMS multi-vendor interoperability, and validated a methodology for future testing events. Whereas Plugfest I focused more on the network layer, Plugfest II added VoIP ([define](#) - [news](#) - [alert](#)), IP PBXs and Fixed Mobile Convergence (FMC) applications and service layer interoperability to the testing mix.

And speaking of FMC, don't miss the article on it in this issue by Yours Truly. You may find a surprise or two lurking there. . .

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



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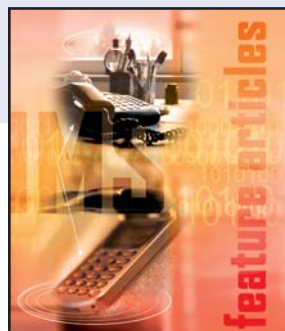
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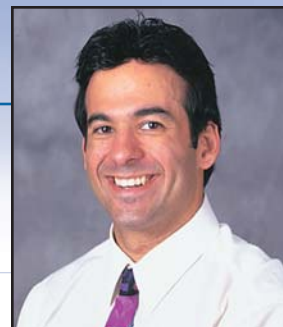
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Spirent vs the Stove Pipes

by Rich Tehrani



At the show I had a meeting with Andy Huckridge of Spirent (<http://www.spirent.com>) ([news](#) - [alert](#)) who drew me a diagram of every service provider's nightmare scenario; it delineates the migration to next-generation networks. As Andy describes it, in the PSTN world you had just two pieces of equipment: a line with access and a switch. There were ten vendors of the equipment you needed – referring to class 4 (“tandem”) and class 5 (“local exchange”) switches. These products generally worked on the same release cycle and subsequently it was a somewhat tame process to upgrade equipment over time.

Andy says these two primary pieces of equipment are being replaced now by ten pieces, referring to the IMS architecture. Worse, some of these products could have been built in someone's garage and generally the knowledge to interconnect such equipment is tough to come by. The final level of complexity comes from the unsynchronized release cycles of the disparate equipment which could come from many more than ten vendors.

For this reason, Spirent is doing its best to allow service providers to roll out new services as quickly as possible while allowing them to be tested sufficiently before the rollout. How you ask? Simply by prepackaging testing suites in areas such as push-to-talk over cellular, presence and XDN.

I mentioned to Andy that at least one of the competitive vendors in the IMS testing space has told me they are taking share away from his company. Andy comments that he has a great relationship with the other testing vendors on the market but none of them have the breadth of testing capability Spirent does.

He supported his case by listing the areas where Spirent covers:

- FMC
- Application and Services
- Monitoring
- PSTN Interworking
- Call Session Control
- Billing
- Security
- Access and Transport Plane

Moreover he listed his product lines: The SPT targets the IMS core network, the Abacus targets the MGW (Multi-Gain Wireless) environment. . . Both IP and PSTN. Finally the Landslide targets the wireless packet core network.

At the recent Communications Developer Conference (<http://www.communicationsdeveloper.com>) in Santa Clara, CA, a consistent theme was “stove pipes” (old stovepipe approaches to providing applications result in confusion and the unnecessary duplication of effort in terms of Billing, OSS and other matters) and how in the world of communications the separate stove pipes are being integrated. As this integration takes place myriad questions arise. What if all this disparate smoke needs to work together, for example? There is nothing worse than “introverted smoke”.

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One competitor who came up was Empirix and Andy mentioned the company can only do testing in a small fraction of the areas Spirent can. He went on to say if a carrier wants a complete solution, Spirent is the best choice for them. Spirent he says has purchased best-of-breed solutions in various areas of the communications while Empirix is molding a VoIP testing solution to fit other areas.

Another area of differentiation Andy focused on was that of testing services. He pointed out the myriad array of services being offered by today's service providers, making it virtually impossible to predict server load in the real world environment.

Andy says that Spirent solutions allow the testing of applications under full load to determine where the failure rate may be in a given system. He mentions that Empirix does not have such a capability.

Asked about the state of IMS, Andy says there are services providers who have deployed some pure IMS services and many more IMS deployments are in the works around the world.

He says some service providers are forcing equipment vendors to solve interoperability testing and subsequently Spirent is working more closely with these companies to ensure they interoperate with one another in an effective manner.

IMS Continues to Ramp Up

Naysayers maintain that IMS is taking too long to appear, and yet news flashes keep popping up revealing new inroads by IMS into the world's networks. For example, the Dominican Republic broadband wireless provider Onemax is going to deploy an advanced IMS over WiMAX solution, one of the first in the Americas. Onemax has

selected Veraz Networks, a well-known media gateway solutions provider, to actually deploy the IMS over WiMAX solution, which will include VoIP, IP-based multimedia services and connections to their brethren operators. It will be the first time in the Caribbean that such services have been delivered over mobile WiMAX.

You could say that major network operators have some "inertia" to overcome, since they were stuck in the "fat dumb and happy" phase for many years, making money off of overpriced (but now increasingly less expensive) voice. Besides, Interoperability testing took up a lot of what was happening in 2006 — indeed, **RADVISION** ([news - alert](#))

(<http://www.radvision.com>)


announced the launch of a new industry group, International Multimedia Telecommunications Consortium, to address IMS technology interoperability issues — but it now appears that 2007 will see increasingly frequent IMS deployments. Softswitch vendors such as Sonus Networks, Inc.

(<http://www.sonusnetworks.com>),

([news - alert](#)) have announced updated IMS-ready network solutions that also include advanced support for the Electronic Number Mapping

System (ENUM). And TeliaSonera has selected Nokia Siemens Networks to deploy a complete IMS solution as part of TeliaSonera's plans to offer such IP-based services such as VoIP, video calling and instant messaging.

It's starting to appear that the world's telcos and cablecos will be mixing up a potent brew of IMS, Web Services and a service-oriented architecture (SOA).

So IMS is still making steady progress. Perhaps not as lightning fast as investors out there would like (is any adoption rate ever fast enough for an investor?), but it's happening nonetheless. As Mark Twain would say, the reports of IMS' demise have been greatly exaggerated. 

As Mark Twain would say, the reports of IMS' demise have been greatly exaggerated.



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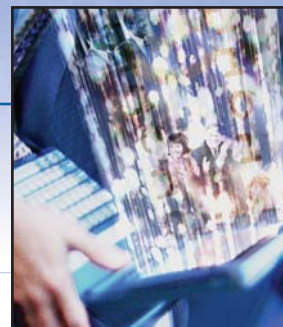
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<http://www.tmcnet.com/739.1>

Motorola's Ecosystem Makes IMS a Reality

Motorola ([quote](#) - [news](#) - [alert](#)) has undercut all estimates of the realization of IMS by announcing a conglomeration of companies it has invited to be part of its robust new IMS ecosystem, signifying that IMS may be ready to step into the limelight today. The 12 partners that make up this convergence ecosystem include: Acme Packet, Apertio, Colibria, Iperia, IP Unity Glenayre, jNetX, NetNumber, OpenCloud, RadiSys, Sonus Networks, Sylanro Systems, and Ubiquity Software.

<http://www.motorola.com>



<http://www.tmcnet.com/740.1>

CommuniGate and Cylogistics Integrate Billing into VoIP Service Delivery Platform

CommuniGate Systems ([news](#) - [alert](#)) and Cylogistics ([news](#) - [alert](#)) have united to bring a unified solution to market. In this venture, the two firms have integrated Cylogistics' billing services into CommuniGate's rich media delivery platform. Indeed, the very point of this combined approach is to address the difficulties new enhanced services can present to billing departments without limiting service providers in their quest to beat the competition to market.

<http://www.communigate.com>

<http://www.cylogistics.com>

<http://www.tmcnet.com/741.1>

Atreus and BEA Streamline Delivery of Next Gen Telecom Services

Atreus Systems ([news](#) - [alert](#)) and BEA Systems ([news](#) - [alert](#)) have entered a strategic alliance to build a Service Oriented Architecture-based integration between the Atreus xAuthority IP Provisioning Solution and the BEA Liquid Services Framework, to help service providers accelerate service rollout on a global basis.

<http://www.bea.com>

<http://www.atreus-systems.com>

<http://www.tmcnet.com/742.1>

NgN Analysis System offered by Agilent Technologies

Agilent ([news](#) - [alert](#)) has announced that its NgN Analysis Systems would now offer troubleshooting in IP Multimedia Networks (IMS) as well as end-to-end monitoring. This arrangement not only renders networks visible, but it also allows the delivery of multimedia services through the converged wireless, cable, and wireline signaling domains.

<http://www.agilent.com>



<http://www.tmcnet.com/748.1>

AudioCodes Enables VoIP for WiMAX Deployments

To help facilitate the growth of WiMAX, AudioCodes ([news](#) - [alert](#)) has released a WiMAX version of VoIPerfect. Specifically, the latest VoIPerfect solution has been tested and can be fully integrated with the Intel WiMAX Connection 2250. The ready-to-use toolkit from AudioCodes is designed to easily enable users to deploy, configure, and manage SIP-based VoIP applications via a primary application - in this case, part of a WiMAX deployment.

<http://www.audiocodes.com>

<http://www.tmcnet.com/749.1>

Estacado Systems Announces the Release of the SIPWright Presence Server

Estacado Systems ([news](#) - [alert](#)) announced the general availability of its SIPWright Presence Server. This product is fully compliant with the IETF SIMPLE specifications assuring interoperability with standards-based SIP and IMS networks. The server has been designed with scalability as an attribute, enabling cost effective solutions for both enterprise and service provider networks.

<http://www.estacado.net>

<http://www.tmcnet.com/743.1>

snom VoIP Phones Interoperable with Cedar Point's SAFARI C3

snom technology ([news](#) - [alert](#)) has taken to heart the benefits customers can achieve by deploying Cedar Point's ([news](#) - [alert](#)) SAFARI C³, and to ensure its phones can provide reliable connectivity, has completed vigorous interoperability testing between the SAFARI C³ and all of snom's VoIP phones - including the 300, 320, 360 and 370. In fact, SAFARI C³ and snom phones are currently being trialed at leading universities, and by virtue of interoperability testing, are now certified for compatibility for general deployment.

<http://www.snom.com>

<http://www.cedarpointcom.com>



<http://www.tmcnet.com/744.1>

PingTone Enhances VoIP Service Delivery with NexTone

PingTone Communications ([news](#) - [alert](#)) has selected NexTone's ([news](#) - [alert](#)) IntelliConnect System to support its growing business. PingTone is experiencing strong uptake of its hosted VoIP service and, as such, needed to further increase the efficiency and scalability of its network to keep up with demand.

<http://www.pingtone.com>

<http://www.nextone.com>



<http://www.tmcnet.com/746.1>

Former Soviet Nation Deploys Nortel Net

The telecommunication sector is all set to enter a new era in Kazakhstan with JSC Kazakhtelecom close to completing deployment of an IMS-ready, next-generation network based on Nortel ([quote](#) - [news](#) - [alert](#)) technology, to provide voice and multimedia services in the Central Asian state.

<http://www.nortel.com>

<http://www.tmcnet.com/750.1>

Continuous Computing Trillium Software Enables NewStep Networks' Converged Services Node for FMC

([news](#) - [alert](#)) Continuous Computing announced that NewStep Networks has chosen Continuous Computing's Trillium protocol software and Trillium Professional Services to power and support NewStep's Converged Services Node (CSN) product family. By offering field-proven and widely deployed Signaling System 7 (SS7) and SIGTRAN stacks, Continuous Computing met NewStep's need for a homologated and interoperable software stack solution.

<http://www.trillium.com>

<http://www.tmcnet.com/752.1>

NMS Communications' Continues to Expand Global Roster of Innovative Application Developers

NMS Communications ([news](#) - [alert](#)) continues to reinforce its position as a leading provider of technologies and platforms for value-added services with a roundup of the innovative applications recently deployed by its customers in enterprises and carrier networks around the world, all built around its Open Access scalable media and signal processing platforms.

<http://www.nmscommunications.com>

<http://www.tmcnet.com/754.1>

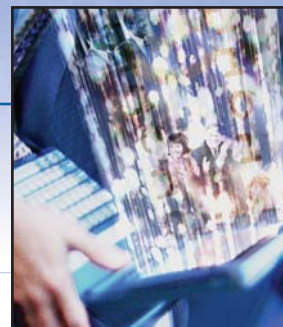
BroadSoft to Launch VoIP and IMS Operations in China

BroadSoft ([news](#) - [alert](#)) announced it is going to launch its BroadWorks VoIP and IMS platform in China and open an office in Beijing. It is a first step toward the company's building operations in the country and meeting the changeable needs of telecommunications carriers in the Chinese market.

<http://www.broadsoft.com>

industry news

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<http://www.tmcnet.com/745.1>

New Features from Aruba Enable Increased Mobile Connectivity

Aruba Networks ([news](#) - [alert](#)) has further enhanced the capabilities of mobile workers needing to access their business applications from the road with new software products. These additions to the Aruba platform enhance mobile access and deliver enterprise phone and network access with the same level of security as they achieve in the office without sacrificing productivity.

<http://www.arubanetworks.com>



<http://www.tmcnet.com/747.1>

VoIP Solutions Provider Sonus Networks Aims to Increase IMS Adoption

Sonus Networks ([news](#) - [alert](#)) is helping to drive the adoption of applications and services in an IMS environment through participation at the IMS Forum's "IMS Plugfest II." Designed to enable network operators to capitalize on the promise of IP convergence, IMS Plugfest II helps the IMS Forum to develop industry-recognized "stamp of approval" for IMS applications and services.

<http://www.sonusnet.com>



<http://www.tmcnet.com/751.1>

Veraz IMS Solution Speeds the Adoption of High-Margin Multimedia Services

Veraz Networks ([news](#) - [alert](#)) announced that the latest release of its IMS solution enables application resources to be shared by multiple operators. Operators can mix and match innovative services from other operators in combination with their own services. These customized service bundles can be delivered to their direct customers or to other operators via white-label partitions. This opens up new opportunities for multi-operator business arrangements and business models.

<http://www.veraznetworks.com>



<http://www.tmcnet.com/755.1>

Wana Selects Comptel's IMS Solutions

([news](#) - [alert](#)) Wana (formerly Maroc Connect), a Moroccan supplier of fixed and mobile telecommunications services has selected Comptel to provide provisioning, mediation and identifier management solutions for its next-generation network. Comptel solutions are being deployed in the context of Wana's strategy of incremental deployment of IMS, which will ultimately facilitate the launch of new converged services in the Moroccan market.

<http://www.comptel.com>

<http://www.tmcnet.com/753.1>

RadiSys Announces General Availability of Convedia CMS-3000 and CMS-9000 Media Servers

RadiSys Corporation ([news](#) - [alert](#)) announced the general availability of its Convedia CMS-3000 and CMS-9000 media servers. These solutions are based on a modular hardware platform which incorporates the latest DSPs and processor chipsets and utilize the company's eXtended Media Processing (eXMP) technology.

<http://www.radisys.com>



<http://www.tmcnet.com/756.1>

KPN Engages Atreus for Business VoIP

Atreus Systems' ([news](#) - [alert](#)) IP Service Provisioning Solution was selected by Netherlands-based multimedia company KPN to install a full range of VoIP business applications for its small business and enterprise customers. Automating the provisioning process will help KPN sign up new customers quickly and cost effectively, while creating significant follow-on revenue with delivery of a wide variety of value-added IP services.

<http://www.atreus-systems.com>

Announcing Third IMSF Plugfest IMS Quadruple Play Interoperability October, 2007

The IMS (IP Multimedia Subsystem) Forum is the industry association dedicated to interoperability and certification of IMS services and applications for wireless, wireline and cable broadband networks.

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Building New Services with Some Old Tools

by David Hayward



In previous “Reality Check” columns, we looked at how IMS provides a control platform for converged voice, video and data services — ultimately at lower capital and operational costs than legacy, “siloeed” approaches. We saw how its framers, the 3GPP, originally designed IMS for delivering IP-based services for cellular mobile networks and expanded its value for delivering services over all major access network types: WiFi, WiMAX, DSL and cable. We also looked at examples of carriers who are carefully examining consumer and business trends in purchasing Internet and mobility applications and devices. Carriers who are carefully observing their customer base are the ones who are building IMS services virtually guaranteed to get a warm reception from the market.

But IMS is attractive not only because of its new applications; it also can leverage some of the old. Its beauty is found in its layered anatomy: session control in the middle, networks at the bottom and application services at the top — with the Session Initiation Protocol (SIP) being the connective tissue. Being a standardized architecture, carriers can choose to deploy services based on any application server from any third party (or in-house developer) as long as the server is SIP compliant or as long as there is a way to hook it into an element at the top layer that will talk SIP for it.

While IMS will deploy attractive new services (push-to-talk over cellular, mobile phone-based video conferencing, video instant messaging, presence and location aware applications, etc.), various standards bodies are working together to ensure that certain existing services (and existing ways of developing services) can be leveraged by the IMS infrastructure.

This includes groups beyond the 3GPP and 3GPP2 to include the IETF, ETSI/TISPNA, OMA, Parlay Group and last but not least, JCP, representing the Java community. Beyond SIP, these groups address JAIN SLEE, CAMEL, Parlay/OSA and a variety of web-based services. These are technologies that IT departments have been using prior to IMS. Carriers can (and must) find a way to leverage all that investment and human intelligence for its next-generation network, IMS.

Many carriers have already invested in so-called Service Delivery Platforms (SDPs), which are as diverse as the companies who tout them, such as Sun Microsystems, BEA, Ubiquity, IBM, etc. (See Figure 1.) Designed for rapid service development, re-use of service elements for recombination with others, SDPs are the perfect corollary to the IMS architecture’s ability to re-use its middle layer (session control) elements (Call Serving Control Functions, Border Gateway Control Functions, Media Gateway Control Functions, etc.) for delivering services to users regardless of the access network technology they may be using.

Merging Web Services with IMS

Smart SDP vendors have been hard at work the last few years to incorporate the key IMS protocols (SIP for session control and Diameter for subscriber data access) into their web services platforms. This makes sense to carriers planning to evolve from legacy networks to the IMS architecture.

Carriers will use IMS to offer subscribers competitive value by offering clever services that merge voice (i.e., VoIP) with rich media content (photos, video, gaming, business graphics and other documents). Converging VoIP ([define](#) - [news](#) - [alert](#)) with Web services will be a big part of the equation.

Like a good framework for government, IMS has a rock-solid core set of rules that govern its internal processes, yet is flexible enough to be applied to changing real-world conditions. At one end, it can be applied to new access networks as they emerge, and on the other, it can be applied to new kinds of applications as users demand them and use a variety of application servers and platforms: old and new.

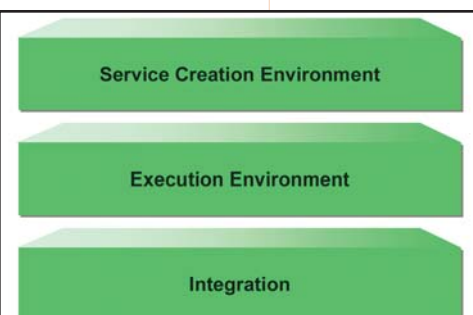


Figure 1. While Service Delivery Platforms enable ISVs and carriers themselves to custom-develop and run unique, competitive services, SIP integration is essential for leveraging these applications within the IMS architecture.

The IMS architecture's top (application services) layer is undefined, giving equipment vendors and carriers the freedom to innovatively craft their SDPs and service applications, respectively. The architecture only specifies standard interfaces (or "control points") for session management, subscriber profiles and charging between the service delivery platforms (i.e., app servers) and the IMS control layer.

The interface, called the IMS Services Control (ISC), describes the rules of engagement between SDPs with the Serving Call Session Control Function (S-CSCF) at the middle layer of the architecture. The S-CSCF (one of several types of CSCFs) is located in the subscriber's home network. The S-CSCF uses the SIP signaling between app server functions and the users' devices for enabling session control, authentication/authorization, context and message routing.

Beyond mere application servers, SDPs have rich programming tools (service creation environments with libraries of routines, programming collaboration elements, scripting languages, etc.). SDPs hide the complexity of the network from programmers so they can focus on coding operational functions and application bells and whistles. Thus, they support industry standards, such as Java, HTTP, IPv4 and 6, XCAP, SOAP, JMS, etc. Additionally, they have runtime engines (execution environments) for deploying the application in operational networks to deliver the services. (See Figure 2.)

Some platforms may be integrated as an all-in-one package; others are offered as separate, but compatible modules. For IMS, they have added SIP and Diameter.

Merging IMS and Legacy Applications

Carriers can further leverage IMS with legacy industry standards and older IT application development platforms, such as non-SIP application servers, like CAMEL and Parlay. These can use the ISC interface to deliver service through the IMS architecture.

Parlay is an industry consortium founded in 1998 that specified application interfaces (APIs) for carrier networks for call control, conferencing, audio and text messaging and charging. Another important legacy standard, CORBA, is used for application code and Parlay gateway interaction, and Java can be used to invoke the APIs.

Like IMS, Parlay was designed to be agnostic to the underlying network technology and therefore applies to fixed or mobile networks. In 2003, the Parlay organization released Parlay X, for Web Services. The organization collaborated with the IMS framers (3GPP) as well as ETSI, to make Parlay standards compliant with the Open Service Architecture: thus the term "Parlay/OSA."

IMS interaction with Customized Applications for Mobile networks Enhanced Logic (CAMEL) is another way that carriers will leverage their legacy investments. CAMEL provides SS7-related mechanisms to support services which are not covered by standardized GSM services even when roaming outside the HPLMN (Home Public Land Mobile Network). Examples are call holding, call forwarding, suppression of announcements, etc. CAMEL applications use the SS7 protocol for network addressing, resource allocation, and various interworking functions.

IMS Will Continue to Evolve

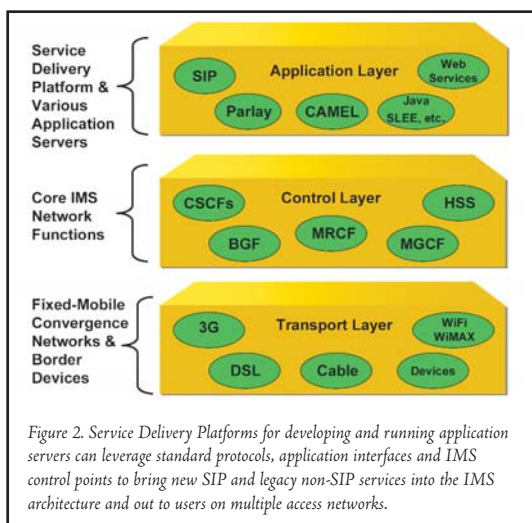
Carriers are always looking for ways to leverage standards, either inside the standards themselves, or with work-arounds. The concept of a Service Capability Interaction Manager (SCIM) is a good example. For at least two years, carriers have been debating the concept of SCIMs at standards meetings and industry conferences.

A SCIM could, for example, add efficiency to the complex IMS architecture by allowing interaction among application servers (SIP and non-SIP) at the architecture's upper layer, without having to dip into the S-CSCF at the IMS middle layer. Outside the original concept of the IMS architecture, this innovation could economize on network resources and speed performance when "mashing up" functions from different servers in order to deliver media-rich combo services.

Good examples are video messaging to a buddy list or using a prepaid card for push-to-video in the middle of a voice call, with each function on different vendors' application servers or SDPs at the top IMS layer.

The fortunate reality about IMS is that it is an open architecture by virtue of its standard protocol, SIP. Leveraging this with application development technologies, practices, and products that our IT community knows, loves and invests in is perhaps the truest expression of IMS' flexibility. This will accelerate the deployment of IMS and its benefits to carriers and their subscribers alike. ■

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Is "IMS in a Box" a Viable Concept?

by Ronald Gruia



The complexity of the IMS architecture arises from decomposing all devices into most granular functions and links. As a result, this complexity inevitably leads towards a proliferation of server boxes and protocols for the state management required for the tracking and controlling of user behavior. That in turn results in a "cognitive overload" but adds little value. In other words, many industry players believe that the intricacy caused by this functional decomposition can potentially become a "show stopper" for IMS.

In addition, historically speaking, PSTN voice services typically followed a "create and manage bottleneck" framework in which random points of control are created to defend business models that are based on resource scarcity. For example, in the legacy voice world, the Class 5 switch capacity was one of the bottlenecks in performance, and measured in BHCs (Busy Hour Calls) or BHCA (Busy Hour Call Attempts). In the next-gen IMS world, the equivalent bottleneck is the CSCF (Call Session Control Function), and its capacity is measured in BHS (Busy Hour Sessions). However, with the advent of IMS, many industry pundits feel that the Internet model, which reached its current status via a natural evolution, should eventually be the prevalent one.

One of the key principles of the Internet is the "end-to-end principle" (E2E) which is premised on three main points:

1. The network is scalable since it is unaware of the running applications.
2. Nothing should be done in the network that can be done in an end-system.
3. QoS (Quality of Service) is a matter of bandwidth availability and not of central control.

Of course most of the folks advocating the E2E principle are on the "SIP purists" camp made famous by SIP gurus such as Henry Sinnreich (regarded by many as the "father of SIP" and previously a Distinguished Member of Engineering at MCI). But leaving the "religious" aspect of the debate aside, there are some valid points that the SIP purists make: supporting the E2E principle does make sense to some degree (as service providers such as KPN would agree).

Another point is that since the IMS concept was born in the telecom world, the original perception was that an IMS purchase represents a traditional "telco buy". However, from a top-down perspective, IMS can be also regarded as an "IT buy", as evidenced by components such as the SDP (Service Delivery Platform), which typically comes from a vendor that is versed in both the telecom and IT arenas. Since SDPs bring together several features and technologies such as SIP, Parlay, SOAP and Java, among others, a common misconception is that the "IMS in a box" approach of the SDPs will resolve all the issues.

That said the simplification of the complex IMS architecture (having at least 12 components and a minimum of 22 interfaces in addition to a host of server boxes that can likely introduce latency, performance bottlenecks and interoperability issues) remains a worthy goal. The notion of collapsing this complex architecture in a single box can certainly bode well in certain situations. Such an "IMS-in-a-box" strategy allows for easier scaling, as it combines in a single server solution all components required to deploy Voice over IP and presence, while enabling convergence between fixed and mobile networks, accounting for traffic usage and provisioning data in a controlled environment.

So how viable is this "IMS-in-a-Box" concept? Given Moore's Law and the progress in microprocessor technology, today we have — at least in theory — enough computing power to run the following elements on a single server:

- SIP Proxy and Registrar
- DNS and ENUM
- ENUM directory
- User profile
- Media relay
- Presence and XCAP
- NAT traversal

Under such a scenario, a single server could hypothetically handle up to 10,000 users and 200 media sessions, thereby collapsing the big array of IMS components into only a box. Furthermore, by relying on peer-to-peer (P2P) technology as an

In a recent service provider survey conducted by Frost & Sullivan, the complexity of IMS was frequently mentioned as one of the factors curtailing growth within the market. Undeniably, the IMS designs (whether from ETSI or 3GPP) intrinsically present a couple of major problems. The first one is that the cost associated with deploying a full-blown IMS offering is seen as a risk, given the uncertainty about the uptake in services that the solution can provide. The other issue is that many operators remain skeptical about the scalability of the IMS platform, given its complexity. The scalability fears are further increased when some vendors offer migration paths to IMS via software upgrades to their installed base of softswitches, adding call control functions, for instance.

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overlay network for all platform functions, the "IMS-in-a-Box" could in principle achieve the scalability of the infrastructure for millions of SIP users without any single point of failure.

After dealing with the feasibility question, our next key issue to consider is the economic viability of the "IMS-in-a-Box" concept. Network equipment vendors as well as the hardware platform vendors (such as Intel, IBM, HP, Sun and others) would of course rather sell more elements than everything on a single server. In addition, there are "engineering games" that one could engage in to make the existing array of elements more appealing. Of course, vendors are at least already testing the feasibility of this concept in labs. One such example is Motorola, which has tested one a couple of its IMS solutions (PoC and UMA

FMC) in a single server environment.

In conclusion, while there are some appealing points associated with the "IMS-in-a-Box" concept, it will take quite sometime before we see such solutions available in the marketplace. When this happens, chances are that the "IMS-in-a-box" will have a lighter version of the IMS functionality available in the array of elements (CSCE, HSS, etc.) available from the same vendors. But "IMS-in-a-box" could eventually become an attractive solution for RLECs, Tier 2 service providers and perhaps even large enterprises. ■

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Key Trends Driving the Evolution of IMS

by Arun Bhikshesvaran



The IMS real-time communications architecture was designed to fit in an overall services architecture that answer these requirements and, thus, provide the effective foundation for meeting and driving consumer demand. The capabilities of IMS have proven to be in step with the trends driving the telecommunications industry forward — such as cost reduction, fixed-mobile integration leveraging multiple access networks and providing integrated service for combined devices; in addition IMS facilitates increasing sophistication of communication services to meet demand for networked and interactive multimedia applications. IMS is positioned to be the important real-time component of the service-architecture of choice as service providers evolve their business models and move from vertical service and access technology to a layered and horizontal structure for combining multiple network assets under a common service.

Early IMS trials of innovative multimedia and communications services show that the ability to evolve dynamically is key in the ever-changing world of telecommunications. Companies are now leveraging the heavy lifting that has gone into IMS over almost a decade, and now take their value-added communications offerings to new levels. The IMS standard, itself of course continuously evolving, is formally stewarded and coordinated by 3GPP, with effective harmonization and cooperation with multiple standardization bodies. 3GPP is growing and is processing enhancements to the current standards. Several key trends that are burning at the forefront of IMS have emerged or evolved for 2007 and beyond.

A-IMS

Advances to IMS (A-IMS), a North American initiative put forward by a consortium led by Verizon Wireless, continues to receive attention. The aim of A-IMS is to suggest enhancements to the existing 3GPP and 3GPP2 industry group specifications in order to make them more open to meet the overall service architecture requirements of carriers. Some of the issues championed by A-IMS have already been considered and addressed in standards group and some of the issues are more related to how to operate and run the network and services, and hence not really candidates for standardization.

3GPP IMS is commercially available today and is continuously being enhanced with new releases based on a roadmap. Suggested additions are incorporated once evaluated and agreed upon by the active standards participants. The harmonization work performed by 3GPP has resulted in the industry being relatively aligned on using the same 3GPP IMS as the basis, with specific additions on top of 3GPP IMS provided by several standardization groups such as 3GPP2, ETSI/TISPAN and more. As with all standards, the IMS-related specifications will continuously evolve and improvements to the initial specification from 3GPP R5 already have been made.

TISPAN Multimedia Telephony

Standardization of a set of globally interoperable multimedia telephony services is currently being finalized in the industry standards bodies ETSI/TISPAN and 3GPP. Multimedia telephony combines the quality, interoperability, reliability, efficiency, regulatory and supplementary services of traditional telephony with rich, flexible media capabilities from Internet community-based services.

As consumers demand greater mobility and richer communications with a flexible choice of device, service providers are searching for a single, guiding architecture that will enable seamless triple- or quad-play; e.g., combinations of TV, PC, Telephony and Mobility. Their requirements for such an architecture: fast and inexpensive market entry, as well as easy and cost-efficient lifecycle management, for services that leverage multiple applications and fit with multiple devices, access mechanisms and value-chain business models. The end goal is to provide differentiated experiences on a basis of global interoperability and commercial service management.



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The objective is to provide the communications industry with the tools to build a multimedia communications network, for fixed and mobile devices, based on converged VoIP and globally interoperable. Beyond this baseline there is plenty of room for individual service provider differentiation, service packaging (bundling), and service management.

Built on IMS, multimedia telephony is access agnostic and can run over a variety of access networks. The interest in “VoIP for cellular” is increasing among operators. It offers a number of opportunities including higher ARPU through richer community communication, lower OPEX by offering all mobile services from one common platform, as well as fixed/mobile converged service platforms, subscriptions and devices. Interoperability tests are beginning this year.

IMS Security

Protecting operators’ valuable assets is the main purpose of security functions. Protection needs to be complemented with functionality for attack detection, response to attacks and recovery after a successful security breach.

The complexity of ensuring reliable network security is viewed as one of the single most critical barriers to the successful implementation of converged IP networks. Companies like Ericsson are continuously evolving their security solutions in order to keep up with new market opportunities, applications, business models and technologies.

The main security threats to consider are many, including denial of service (i.e. intruding flood attacks that prevent authorized access to the system resource), intrusion (unauthorized access), impersonation (both by users and the network), interception and disclosure. The decomposed and standardized nature of IMS have made it possible for specialized and value-added suppliers of security solutions to get involved in the development of IMS security solutions and service management of all mobile and wireline systems, and to secure the IMS based networks from user terminals all the way thru to service layer and network applications servers. This end-to-end approach of IMS best-of-breed security solutions is an effective safeguard of the network, users, and enables networks to offer secure and reliable multimedia communications, e-commerce, content experiences and more.

IMS QoS Control

Regardless of network capabilities and high reliability, the end-user experience is a fundamental factor for mass-market adoption of new IMS-based services. The perceived quality of experience

by the user is extremely important for operators to achieve customer loyalty and maintain the competitive edge.

As services become more numerous, varied and complex, and terminals become more powerful, architectures for applying policies for service discovery, as well as for control of network resources for delivering services with guaranteed quality, are being consolidated in the IMS standards. Most operators are interested in architectures that apply policies to network resource control based on policy decision/enforcement points (defined by various standardization bodies)

IMS Standardization

IMS is defined as an open and standardized architecture for mobile and fixed services. One of the main characteristics of IMS is that it allows faster deployment of new services because it is based on a standardized architecture. Open interfaces and standard protocols provide flexibility for selecting “best-of-breed” components and enable operators to avoid getting locked into proprietary vendor solutions.

Ericsson is one of the main drivers of 3GPP, as well as the GSM Association SIP Trials, a series of initiatives focused on defining and implementing the architecture, enablers and services that are needed to successfully transition from the circuit-switched world to the IP world, with inter-carrier interoperability to foster industry growth. The aim is that open inter-working solutions for IP based services will be developed, establishing a high-quality inter-working environment that coexists with the variety of other solutions developed by the market. Examples here are the SIP and IMS inter-working trials programs with video share trials.

As the industry moves closer to a standardized, global IMS architecture, there is little doubt that new and complex issues will continue to emerge. It is important for players across the IMS ecosystem — vendors, application developers, and carriers alike — to continue their cooperation in solving these issues and enabling the services that meet consumer demand. ■

Arun Bhikshesvaran is Vice President and General Manager of Strategy & Market Development within the North American Market Unit of Ericsson Inc. ([quote](#) - [news](#) - [alert](#)) He has more than 14 years of experience in the wireless communications industry, serving a variety of roles including systems solutions and integration, field engineering, R&D and global product marketing.

Weigh Your Options.



Competition

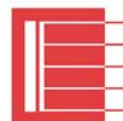


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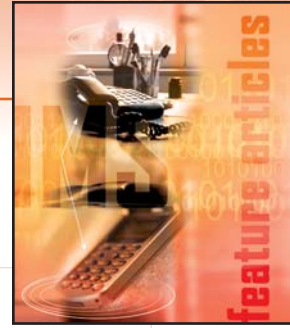
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IMS — The Current State of the Market

by Richard “Zippy” Grigonis



Chris King, the Senior Director, Worldwide

Telecommunications Markets for BEA Systems (<http://www.bea.com>) ([news - alert](#)) says, “Much of the hullabaloo around the ‘demise’ of IMS is in fact very premature and in fact we’ll look back on it as the equivalent of the famous ‘Dewey Defeats Truman!’ headline from the 1948 U.S. presidential election. We’re going to see IMS deployments continue, and we’ll see them accelerate over the latter half of this year and into the first half of 2008. Many things necessary to make serious deployment possible, interoperability being one of the most significant ones, are hurdles being overcome as we speak, which result in a natural ‘lag’ in adoption. You can add to that challenges concerning how you integrate with the OSS/BSS world. In any case, our customers will be doing IMS deployments in the next 6 to 12 months.”

King’s company, BEA Systems, Inc. is a major player in the enterprise infrastructure software market, delivering platforms for building enterprise applications and managing Service-Oriented Architectures [SOAs]. BEA Tuxedo®, WebLogic®, and AquaLogic® product lines are designed to reduce IT complexity, leverage existing resources, and quicken the delivery of new services.

Ken Lee, BEA’s Director, Worldwide Product Marketing for the WebLogic Communications platform, says, “What we are providing in the communications platform is a product family of communications infrastructure products. These are designed to help operators architect and implement the services layer on IMS. That’s the layer where you see service creation innovation and of course orchestration. So the products that we have at the services layer for IMS in our communications platform are the following: First, we have the BEA WebLogic SIP Server which is the core foundation of our platform. It is the IMS application server, based upon a converged J2EE SIP IMS architecture; it’s a converged application container. Complementing that we have the BEA WebLogic Network Gatekeeper. That’s a platform for implementing network policy enforcement again at the services layer of IMS, exposing network capabilities, inclusive of IMS capabilities as telecom Web Services. Again, both in the WebLogic SIP Server and WebLogic Network Gatekeeper, the design principle is to simplify how developers gain access to IMS capabilities, whether it’s presence, conferencing, location, call control capability, whatever; they’re exposed as Web Services or as Java interfaces, which are very familiar for over 3 million developers out there in the Java and Web Services developer ecosystem.”

At Telcordia (<http://www.telcordia.com>), ([news - alert](#)) Grant Lenahan, Executive Director of Service Delivery Solutions, says, “IMS is where we should expect it to be. There’s been a lot of talk that IMS is going to happen in a year and then there were rumblings to the effect, ‘Well, gee why haven’t we heard as much about IMS this year?’ I think it’s right on track. In fact, it’s probably moving faster than other great big technological change-outs, which normally take ages, as was the case when digital switching replaced analog switching, 3G replaced 2G and 2G replaced 1G.”

“We’ve got to stop this infatuation with the technology and get the industry to move ahead with services,” says Lenahan. “Looking at Yahoo, you’ll see that personalized services are starting to appear and they’re starting to slip in targeted ads based on the choices you make in My Yahoo. Now, these are all things that IMS is actually really well suited to do. But operators are waiting around too much for IMS and they’re letting two classes of competitors get a leg up on them: first are the web

IMS has gotten some bad press lately. Equipment vendors and their carrier customers have been dwelling in the interoperability test phase longer than anyone expected — that is, longer than any antsy investor would want. Couple that with some network operators awaiting the release of the new 3GPP Release 7 along with industry pundits who liken IMS to an evil secret weapon to be used by telcos to eliminate net neutrality, and you end up with a vague miasma affecting otherwise expert opinion. One can easily counter this by pointing to anecdotal reports of the decline of UMA (Unlicensed Mobile Access), IMS’ rival — or “stepping stone” to IMS, depending on how you look at it. And of course there are things such as British Telecom’s mammoth BT21CN rollout, which will bring the wonders of IMS and IP to U.K. customers in about five years.

companies that are using Web Services and over-the-top technologies, which aren't always the best, by the way. As for the second class of competitor you're seeing, look at some of the MVNOs — indeed, let's look at some that are working with us at Telcordia. Take Sprint. Even though they can't get full IMS technology in the core Sprint network yet, they're working with Telcordia to put the same kinds of personalized services — content filtering, calendaring control, personal policy applying to what you can and can't do and what you can and can't see — onto the MVNO 2G and 2.5G wireless networks. So the world is moving along, and many of the big operators are actually making good progress on the technology. But what my concern is and what Telcordia has always argued is that this is going to be a converged world with IMS, legacy and Web Services coexisting. That's going to be the 'real' IMS, having the rich services that get to networks by whatever protocols are necessary. I see the big operators falling behind in the race to get services out and grab customer eyeballs."

John Smolucha is Vice President of Marketing at Enea (<http://www.enea.com>) a company that supplies carrier-grade, high availability platform software and professional engineering services to telcos worldwide, enjoying approximately 50% market share of the world's new mobile phones and base stations. Enea's flagship product family, OSE™, one of the world's oldest and most stable real-time operating systems, was introduced way back in 1984. Enea also offers the Polyhedra™ fault-tolerant real-time database and Element™ middleware solution that can accelerate new software development.

"I see that the equipment manufacturers we deal with are building what we may call IP-based and IMS equipment," says Smolucha. "That includes the media gateway functions, the media resource functions, moving things from where they are in the current architectures to more of a unified call control architecture so that in the future everything will be IP. So I think it is all happening. I don't get too derailed by the hype curves or the forecasts anymore. I look at who's building what, who's deploying what and who's purchasing from us to help them get to IMS architectures. I see a number of people starting to talk about how you can get to the promised world of service delivery, and not just one or two services, but a lot of services that scale. You can do that in different ways. That's what IMS is all about. People are starting to say, 'How can we enable this today ahead of full IMS compliance?'. But we see a

great demand out there, which is another indicator that the market is really happening."

Test for Success

As we've seen, interoperability testing has slowed IMS deployments a bit, which is no big deal, when you consider what amazingly bad things would happen if IMS equipment were deployed with no testing at all. Fortunately, experienced telco testing companies have made IMS testing a smooth experience.

Duane Sword, Vice President, Product Management and Marketing at Empirix (<http://www.empirix.com>) ([news - alert](#)) says, "With the appearance of both 3GPP Release 5 about 20 months ago and Verizon's A-IMS [Advances to IMS], there's was a lot of talk, but I think there's now less 'tension' around the standards and the different forms and alliances. There are some gaps but I don't think that's as much an inhibitor as interoperability and

interworking. We've spent a lot of time for the last 12 months doing many of the interop events and plugfests. We also test a lot of them privately with CT Labs, with the big carriers, and at university campuses around the world."

Speeding Time-To-Market

Indu Kodukula, Vice President of Product Management for the Oracle Service Delivery Platform [SDP] at Oracle (<http://www.oracle.com>) says, "The overall state of the IMS market is positive. As a particularly

standards-based industry-leading middleware provider, we're actually pretty excited about the opportunities that IMS is opening up for us in general for service delivery and especially at the service layer."

"Of course, existing services will be moved to IMS," says Kodukula. "A case in point is, as part of the Oracle SDP, which is an extension of our middleware business to the telecom industry, we provide standards-based platforms that allow the development of new applications and they bring these apps to market in a very short time. Underlying that is the realization that IMS itself isn't really a killer app; instead it gives you the ability to build out new kinds of applications really fast and so they can 'fail fast' if you will, if the new idea isn't going to pan out. Having said that, there is also a tremendous amount of interest in taking the Internet ISVs [Independent Software Vendors] or Web 2.0 ISVs, for example,

"We've got to stop this infatuation with the technology and get the industry to move ahead with services..."

and making their services available in a telecom IMS environment and trying to find a way to get those applications to make use of telecom networks through standard interfaces and capabilities. That's where the notion of a 'horizontal' standards-based platform comes into play. Because when you don't know what the killer app is, what you really want to do is find out if a new service idea is effective and is something that your customers like, and do that in a matter of weeks rather than the 18 months or so that it takes today."

Wireline Pulls into the Lead?

"From my perspective, IMS may be taking a foothold in the wireline area faster than in wireless, which is ironic because IMS came out of the wireless 3G specifications," says Jim Machi, Vice President of Marketing at Dialogic (<http://www.dialogic.com>). ([news - alert](#)) "That's probably because there are more IMS-capable endpoints in a wireline network, such as your computer. Imagine a SIP phone that may also be a WiFi phone. Then there's the major presence of cable in the U.S. In any case, I'm seeing more IMS interest in the wireline area than I thought there would be."

"The pure IMS deployments are still not quite there," says Machi. "We have announced some AdvancedTCA form factor products that can be used by companies to create MRFPs [Media Resource Function Processors]. We have design wins, not necessarily for pure IMS deployments, but more of overall NGN [Next-Gen Network] deployments, and these have PSTN connections, so it's not a pure IP situation either. I think there will be a transition to a new infrastructure or architecture. But, as in the case of traditional telecom moving to IP, things will take a long time."

Dialogic's Director of Marketing, Bill Bryant, adds: "If you start architecting the network in a certain way, such as separating applications servers, media servers and signaling servers, well, many of those concepts exist in next-gen networks already. Some service providers may claim to have an IMS deployment, and it may even look like an IMS deployment, but the functionality is actually being delivered by a 'standard' next-gen network. It will really take time to fully migrate to true IMS."

Connecting the Network Element "Dots"

Bridgewater Systems (<http://www.bridgewatersystems.com>) ([news - alert](#)) provides dynamic IP and data service fulfillment and assurance solutions enabling service providers to extract more value from existing operations support systems (OSS), business support systems (BSS) and network assets.

Product Line Manager Mike Morash heads up the product line management for their network access control products, and also the subscriber management part of the portfolio which includes


Bridgewater's Multi-Cast High Speed Fabric (HSF) technology. He says, "We have a significant market share from and access control perspective in the CDMA wireless data market, with about 85 percent of all CDMA customers using our underlying access control core which involves a RADIUS server and some complementary build-ons to that. Several years ago, when IMS was starting to draw some interest, we basically built an HSS component which we believe is a complementary product to our underlying access control line. We've been speaking to wireless service providers over the last two-to-three years, concerning an approach involving evolution as opposed to revolution. Basically, the gist of it is that we've got an HSS product as well as policy products that we're positioning within an IMS environment."

Ray Benson handles Bridgewater's Product Marketing for the Policy Control Products. He says, "Interoperability testing in IMS is still going on; we found that many carriers, particularly those in Asia, are existing GSM carriers that want to also launch WiMAX. The big challenge there is that when you look at the two standard and the differences between them, you've got to figure out the interoperability even when a subscriber has an account on both networks, but you want to handle that subscriber in a single fashion. We've also seen a similar situation with CDMA and WiMAX and other examples of carriers wanting to launch multiple technologies."

Looks like a duck, and quacks like. . .

Tom Phelan Principal Architect at Sonus Networks ([news - alert](#)) (<http://www.sonusnetworks.com>), says, "We're seeing a fair amount of activity here regarding IMS. Often the carriers propose an architecture to us that is IMS-derived but they don't necessarily specifically call it IMS. It's an IMS architecture, but how do you respond to a particular SIP message here, and how about this field over there? There's still a lot of interoperability tweaking going on. The different forms of IMS are reasonably uniform. On the one hand SIP has had a reputation for being able to do anything, but you have to determine which features vary from deployment to deployment and how it all works correctly among several different vendors. It can be fairly complicated."

"Also, there are services that are not yet defined in IMS that many carriers want to implement," says Phelan. "The interoperability aspects of that are also a lot of work."

"Right now there's a sort of split between traditional and emerging voice services," says Phelan. "Everyone likes the promise of the emerging voice services, integrated with data and so on. But what they're trying to do is to first move over the traditional voice services to get things going." 

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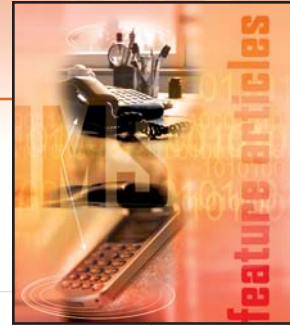
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Is It Just an Illusion, or is the IMS Network "In Need of More Security?"

by Eric Rasmussen



The obvious strength of IMS is that it provides mobile operators with a clear path to advanced revenue-generating services on an all-IP network. However, what may not be so evident to service providers deploying IMS is this architecture also has the potential to introduce new IP-related security vulnerabilities. IMS-based networks enable service providers to link many networks together, both mobile and fixed, creating the potential for more access to devices and networks than ever before. However, as networks and devices increase their interconnections, this creates a potential free-for-all as the bad guys look for new ways to exploit networks that were, until recently, sufficiently secure. While 3GPP, 3GPP2 and other standards bodies have defined many important aspects of IMS and FMC security—such as authorization and authentication—there is still a great deal of work to be done to ensure that the IMS architecture is secure. Perhaps more importantly, this work will continue for the foreseeable future, as attacks will continue to evolve to exploit new weaknesses. As a result, it is critical that mobile operators deploying IMS architectures take steps to protect their networks from the introduction of additional risks.

Where once major threats to networks revolved solely around uptime and reliability of the network and/or services (a la Denial-of-Service attacks), the stakes have become much higher in recent years. Attacks have shifted to targeting vulnerabilities within software and network infrastructure for the purposes of theft and financial gain, with hacking now becoming big business. For example, McAfee recently reported that more than 80 percent of mobile operators have been hit by mobile infections involving some type of malware, and Kaspersky Labs has tracked a 300 percent increase in mobile malware between 2005 and 2006. Without taking necessary precautions to secure all layers of the IMS network, operators are placing the integrity of their networks – as well as their service revenue, corporate reputation, and even their users – at risk.

So what are these additional steps? Simply put, securing the IMS network means implementing security measures to protect all layers (transport, control and services), as well as network users and traffic, from the myriad and constantly changing attacks that are currently the bane of most operators running IP-based networks. Zero-day vulnerabilities, buffer overflows, SQL injections, viruses, worms, Trojans, and other internal and external threats are all part of this landscape, and operators need technologies that protect against each of them.

What this means for service providers is that they must deploy a variety of technologies that work together to minimize threats and decrease the severity of ongoing attacks by providing protection for all layers of the IMS network. For example, threats originating from the Internet—including application and signaling attacks on the server—require deep inspection firewalls, as well as intrusion detection and prevention (IDP). This includes installing stateless firewalls that can determine whether a packet is permitted into the network by analyzing basic information in the packet headers, as well as stateful inspection firewalls that monitor and control the flow of traffic between networks by tracking the state of sessions and dropping packets that are not part of authorized sessions. Firewalls can also help operators control fraudulent activities, mitigate threats from hackers, and provide added visibility into network operations. These firewalls also need to be scalable enough to handle the volume of traffic that flows through

The past 6-18 months, the IP Multimedia Subsystem (IMS) has really enjoyed the limelight, managing top billing as the 'Next Big Thing'—the architecture that will pull back the curtain to reveal Fixed Mobile Convergence (FMC) brought to life, but only after pulling more than a few dazzling new services out of its hat. By now it's hard to deny that IMS is here to stay, but it's also hard to ignore the fact that IMS has started to raise more than a few eyebrows—and many questions—in the security world. While some may be lured in by the flashy promises of IMS, security savvy telecom leaders are starting to wonder whether, after the show is over, IMS won't skip town, leaving us with networks that turn out to be 'In need of More Security.'

them so that the network performance is not negatively impacted.

Intrusion detection and prevention systems (IDP) complement the role of firewalls by monitoring and analyzing network traffic for signs of attacks at the application level and then dropping traffic that is deemed to be from a malicious user. IDP systems are designed to detect the presence of attacks within the traffic that is permitted to flow into the network, performing this function by using stateful signatures that scan for attacks based on known patterns. However, in today's environment of constantly evolving threats, mobile operators require solutions that can protect against unknown patterns and attacks as well. For example, many of the most significant threats involve so-called zero-day exploits, or attacks that leverage vulnerabilities for which there is no signature or software patch. Attackers using such vulnerabilities can easily breeze past security technologies that rely solely on signature-based technology. Defeating these criminals requires use of IDP systems that use protocol and traffic anomaly detection, which can identify attacks for which a signature may not yet be known. Together, these solutions

control the ongoing threat landscape that looms on the horizon for converged, all-IP networks.

IMS is not an illusion, and IMS networks are certainly here to stay. And while we can certainly expect great things of IMS, it is yet to be seen just how good the show will be. However, as we sit back and prepare to be dazzled and amazed, we would do well not to let ourselves become too comfortable in our seats, or when the whole thing is over we may find our pockets have been relieved of more than just loose change. In fact, it is more important than ever that we observe the unfolding of IMS very intently, and without allowing ourselves to become diverted by all of the smoke and mirrors. Most importantly, we must ensure that our IMS networks include security for all layers and that they feature built-in protection for infrastructure, services, and users. Now is the time to make sure that, when the smoke clears, we aren't left with a rabbit, a top hat, and networks that are in need of More Security. ■

Eric Rasmussen is Director, Mobile Operator Marketing, at Juniper Networks. (quote - news - alert) He focuses on developing routing, security, and IMS/FMC solutions for mobile carriers globally. For more information, visit the company online at <http://www.juniper.net>.



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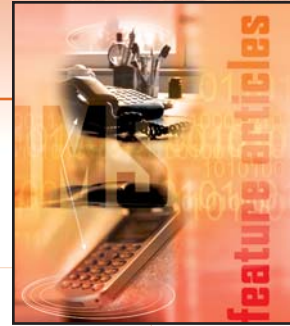
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I Say FMC, You Say VCC

by Richard "Zippy" Grigonis



Of course, the term "FMC" itself has differing personas.

"FMC has several different connotations with different people," says Frank Salm, Vice President of Marketing at *Sylantro* (<http://www.sylantro.com>) ([news - alert](#)). "Some view the feature of seamless mobility and seamless handover between fixed and wireless as being 'FMC'. Others, however, consider FMC the ability to actually service both wireless and fixed properties off of a single platform, of which IMS is all about."

"At Sylantro, we service both of these worlds, having offerings that fit either one," says Salm. "In the IMS world we have customers deploying VCC vendor equipment out there and we have some interop that's taking place and a customer who's deploying a third-party VCC product. So, we've done extensive interoperability testing with that product to ensure that, as an application server, we can seamlessly interoperate with them."

"Then, of course, we have our own internal solutions which are used with some of the handset client vendors out there," says Salm. "Swisscom is a model customer from a fixed-mobile perspective. We started with Swisscom in the fixed space with residential; they had a service that was based on the Sylantro platform. They then took the same platform and hosted IP Centrex off of it. Now, this is all NGN [Next Gen-Network] technology we're talking about. Sylantro is the registrar; we do all of the routing to a peering softswitch, and so on. Swisscom was one of the first operators to really embrace IMS, and it was very natural for them to move into that space."

Salm elaborates: "From a Sylantro perspective, we provide a pure application server and we have Ericsson offering the IMS core, which is indeed servicing fixed and mobile systems simultaneously. Sylantro has always had products service the mobile world from a terminating perspective, so calls come in and we can route them over to mobile. We've had a very successful product in that space for quite some time, because it's not just basic call forwarding to your cell phone; it's the ability to route calls to a cell phone and pull the call back and then drop it into a common voice mailbox."

"But as we move to a company that owns both mobile and fixed properties, things get very interesting," says Salm, "because now they can indeed force traffic from both fixed and mobile into a common application server and offer the subscriber a common phone number and a common service that operates across both properties. Most carriers that own both properties have two separate organizations and separate regulatory issues, so in the case of Swisscom, it is starting off by offering one service in the fixed space and another service in the mobile space; later on they will install a converged service offered to users on both sides. Fortunately, our application server does not differentiate between the two. And of course the power of IMS is the ability to tailor those offerings to one domain or the other, or even both simultaneously."

IMS or UMA?

FMC is often seen as the logical extrapolation of IMS [IP Multimedia Subsystem] which promises a single service architecture for wireless and wireline networks. But a handoff feature resembling VCC can also be delivered by IMS' more diminutive rival, UMA [Unified Mobile Access].

As Graham Ellis, Senior Marketing Manager at *Nokia Siemens Networks* ([news - alert](#)) (<http://www.nokiasiemensnetworks.com>) says, "FMC is moving ahead slowly. There's fair amount of inertia, particularly in the North American markets. Europe is a little ahead of the U.S. — they're getting their feet wet

Fixed Mobile Convergence (FMC) is the logical complement to Unified Communications (UC), allowing you to maintain a phone call (or video call or multimedia event) as you continuously move about the communications landscape, which will ultimately involve roaming from cellular to WiFi to WiMAX to 2.5G to 3G to 4G and so on. The key concept making FMC possible is Voice Call Continuity (VCC), a term which started out years ago referring merely to the ability for a mobile phone conversation to continue ("seamless in-call handoff") when a circuit-switched call reroutes to use a new base station as a mobile phone moves between coverage areas. The VCC focus then became how to move between circuit-switched and IMS (packet-switched) calls and now, in particular, the challenge of handing over a call between cellular and a wireless LAN.

and are trying things out. We have seen an entity such as T-Mobile launch their HotSpot@Home in Washington state, a FMC play based on UMA service that started in Seattle, which is similar to what's happening in Europe. UMA is a rival to IMS and it's a solution that's available today."

Seattle had perhaps the first serious deployment of UMA in the U.S.; Europe has seen BT Fusion, a joint venture of British Telecom and Vodafone, which has been operating in a UMA environment for 18 months or so.

"VCC is a term used by the wireless community," says Ellis. "It refers to the core FMC ability to start a call on a local network using a dual-band phone and then, depending on your location, move across to a wide area network; i.e., licensed mobile spectrum. Those features are out there but the uptake is that they're attached to IMS, which is still a bit of a waiting game for most of the large players right now. Everybody is still justifying the business case around IMS in general. So, in terms of FMC products getting out to the marketplace, it's unfortunately tied to that. Still, the technology barriers have been lowered."

"There are some pockets of activity," says Ellis. "Some of the cable operators, for example, are dabbling with IMS trials and looking at things such as VCC. There are also some business applications for mobile IP Centrex and things like that, but we're largely still playing a waiting game, because operators are still pondering the business case for FMC and IMS. Also, both suppliers and operators in our industry need to help educate consumers as to what FMC is about and what's the benefit to them. So there's two barriers, really, which is why things are moving slowly. But there is a will and an intent in the operator community to move toward FMC since everybody sees benefits there."

"Here at Nokia Siemens, we can provide technology solutions which are 'well-baked' and they're already deployed in various places worldwide," says Ellis. "Just recently we announced our relationship with Georgia Tech in Atlanta and the IMS Applications Competition that we conducted with them. Not only did we invest about \$5 million in a state-of-the-art communications facility that hosts a test bed for IMS products, but we also sponsored the development competition. Some very interesting applications are being developed by the student body, such as around social networking, asset management, and things like automatically changing your ringtone to vibrate when you walk into a meeting."

Push-To-Everything

Mobile Tornado (<http://www.mobiletornado.com>) ([news - alert](#)) has concentrated its efforts on mobile convergence with instant communication solutions based on their patented Push-To-Talk (PTT) IPRS™ (IP Radio Service) technology that includes handset-agnostic client software integration and interoperability

between and among PCs, mobile phones, PDAs, ruggedized handsets, fixed lines and multiple operating systems.

Mobile Tornado's David Parry, Vice President of Global Sales, says, "We're a software technology business focusing on IP multimedia instant communications. Our first application in this area was PTT. We've developed a portfolio along the path of IMS, which runs on a single server. We can layer applications on that, starting with PTT, and going up to email and any form of content you like, up into the world of instant messaging, and culminating in Push-To-Video [PTV]. We've partnered with Nortel on the PTV, which occurs essentially in real-time, with latency times of sub-milliseconds, which makes it faster than Sprint Nextel."

"So we have a layering of applications running on top of a single server proposition that's pre-IMS in nature, which our customers like because if they decide to go adopt an IMS architecture, then by buying our applications they'll already be integrated with IMS — or not, as they desire," says Parry. "For the higher-end products, they'll obviously need faster networks."

"We also offer data applications can be deployed on any network," says Parry, "so it doesn't matter whether they're working with CDMA or GSM networks. Our technology is handset-agnostic because our applications are server-based and not handset-based. We can port our client onto any handset as long as it is PTT-enabled, whether it's Symbian or whatever platform. We also have a PC client and we're fully interoperable between mobile-to-mobile, mobile-to-PC, PC-to-mobile, one-to-one, one-to-many, or many-to-many, since there's no real limit to how many people can be on at any one time. Our latest development is to run our technology on fixed-line VoIP telephones."

"We now have two routes to market: One is directly to the operators — in partnership with infrastructure vendors — for the consumer space, and the other is into the enterprise space, together with operators and systems integrators," says Parry. "In both cases we're talking about FMC, because our app allows the operator to run services across any handset and across the PC."

Making the (Infrastructure) World Safe for FMC

Roy Sun, Director of Product Marketing and Product Management for Core Network Solutions at Huawei Technologies ([news - alert](#)) (<http://www.huawei.com>), says, "Huawei believes that FMC will be very important for the telco industry in the near future. Huawei has been strong in VoIP technologies. We have been ranked Number 1 in softswitch and media gateway deployments worldwide. Right now we offer a whole IP-based IMS solution. In December 2006, Huawei launched its IMS 3.0 solution which targets both wireline and wireless carriers globally. The major service capability provided by our IMS 3.0 solution is indeed for FMC. Based on communication with our customers worldwide, we believe that

FMC will be very important to them, be they wireline or wireless carriers."

"We believe that it's important for a carrier to have an open-mind when considering the huge transformation of the network both in terms of technology and business models when moving to IMS and FMC," says Sun. "The success for IMS and FMC will depend on several key criteria: First, a 'loose evolution' capability will be important for both carriers and vendors to transform current networks to become IMS/FMC-ready at a comfortable pace. Second, it's equally important for the carrier and the vendor to think about how to rebuild their business model. IMS or FMC is challenged by carriers and vendors because the transformation of the technology they bring about is so significant and profound that the old business models used by carriers can no longer work. Both wireless and wireline carriers must think about what is their strategy and position; on the other hand, there's a similar challenge for the telco equipment vendor, such as Huawei. That is why we have focused on the openness of the value chain and partnerships with the industrial players for the IMS and FMC solution. We have over 50 partners working closely with us to provide a total solution for our customers."

Recently, Synchronoss Technologies ([news - alert](http://www.synchronoss.com)) (<http://www.synchronoss.com>) held the world's first FMC Industry Retreat in Napa, California, a two-day event with leading communication service providers and industry thought leaders in attendance, representing Accel Partners, Advanced Newhouse, CBS- Market Watch, Covad, Cox Communications, Earthlink, IDC, Level3, Pac-West, Qwest, Sprint, Telephia, Time Warner Cable, and Vonage. They all were there to discuss the state of FMC and to identify the key factors enabling providers to succeed. Their findings are as follows:

- While communications service providers are rapidly transitioning from offering individual siloed services such as basic voice, video, and data to marketing and delivering bundled offerings (e.g. triple and quad play offerings), they must fully integrate the delivery, activation, fulfillment and invoicing for such offerings to realize their full business potential.
- Service providers will need to embrace symbiotic relationships with OEMs, and digital content providers including Web 2.0 applications, in order to deliver market-driven solutions and a superb customer experience.
- The emergence of a "universal activation orchestration and customer care" operation will be needed to address issues and inquiries related to the different components of FMC solutions.

Synchronoss itself has figured how to speed up procedures normally followed by FMC providers. Synchronoss recently announced ConvergenceNow™, its next-gen platform for communications service providers that accelerates "order-to-cash

processes" for complex service bundles including voice, video, wireless, high speed Internet access, applications and content. This new development joins Synchronoss' existing ActivationNow® platform to automate and simplify electronic service creation and management of advanced wireline, wireless and IP services across existing networks.

Omar Tellez, Executive Vice President of Marketing for Synchronoss, says, "It's pretty well established that communications service providers have clearly seen that there's a significant revenue benefit in bundling services. From a BSS and OSS standpoint, what has to happen in order to activate, provision and manage the orders for double, triple and quad-plays is not trivial. As you can imagine, many of these communications service providers have established 'silos' of communications services for the past 10 or more years. Orchestrating the activation of an individual in each one of these services and then getting back to the end consumer with a joint value proposition, is not a minor matter. At a high level, our convergence value proposition is about optimizing the consumer experience of these bundles."



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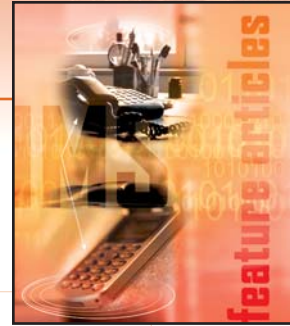
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The Reality of Convergence — Service Transition and Open Solutions Key Drivers for TDM-to-IMS Migration

by Vince Lesch and Phil Shrycok

However, new service roll-out is not a simple undertaking. It's a given that services must be seamless to the subscriber and perform well in early trials. But with different access methods requiring different levels of user knowledge and different user interfaces, service delivery and service usage become all the more complex — frustrating customers who want flexible, personal communications services that are easy to learn and use.

The answer to a smooth service transition is enabling convergence across three domains. At the application level, integrating new IP-based voice, video and data over broadband services that enable increased revenues; at the service level, ensuring service continuity and consistency across access methods to improve the subscriber experience and increase loyalty; and at the network level, to eliminate layers in the network in order to decrease OpEx and CapEx.

The end goal is delivering real-time, anytime, anywhere services centered around the subscriber, rather than the access technology. This is the promise of the IMS architecture: carriers will be able to develop applications once and deploy them across any type of network — wireless, wireline, Internet or broadband — for any type of customer.

The Multi-Vendor Future

Today, both fixed and mobile operators are testing IMS as the solution for enabling convergence, reducing costs and delivering a better customer experience. Early IMS contracts have been awarded to some large network equipment providers, but for the most part, these solutions offer little more than roadmap promises and closed partner ecosystems. Despite what many may claim, the reality is that no single vendor can deliver it all.

Our long-term view, which is consistent with historical operator purchasing patterns, is that operators prefer to implement best-of-breed, multi-vendor solutions. In order for different vendors to interoperate, open solutions are essential and standardization makes this possible. The evolution of 3GPP/2, TISPA and related CableLabs standards are critical to the diversified approach, and these standards will continue to evolve as long-term evolution standards start to materialize.

Enabling IMS from the Signaling Plane

Another key factor to consider is that the complete migration away from TDM networks will take 10 years or longer. In the meantime, operators will need to support convergence across hybrid networks — TDM, next-generation networks (NGN) and, eventually, IMS networks — throughout the transition. No matter where they are in the migration to IMS, operators need to ensure service continuity for subscribers, allowing users to maintain a universal identity and profile while also taking advantage of common services on all types of networks.

Another critical element of IMS migration is that operators need to leverage their existing assets in order to innovate. They must gain more value from their existing assets while also consolidating their networks and reducing OpEx with more efficient technology.

The most logical approach to achieve the interworking of service intelligence is from the signaling control plane, by leveraging signaling system 7 (SS7) control with session initiation protocol (SIP) control and then extending the signaling service framework from the intelligent network (IN) to both the NGN and IMS domains.

IMS Roadmap: Unified Signaling, Subscriber Data, and Multimedia Delivery

The following convergence framework is comprised of three elements. A unified signaling layer unites and interworks disparate signaling and control procedures across multiple network types. Profile management unifies subscriber data for presentation and awareness. Finally, a hybrid media processing platform enables uniform media delivery across various access technologies.

Although complete transition from TDM to the IMS network architecture is still a decade or more away for most telecom operators, today's consumers are not waiting for network technology to catch up with their desire for multimedia services. Traditional wireline voice revenues are declining, and telecom carriers must offer new services to create alternative sources of revenue and to better compete with non-traditional operators that are rolling out new IP-based applications.

Unified Signaling Layer. First, a horizontal signaling control layer interworks, mediates and adapts signaling protocols across multiple network domains and technologies. This approach leverages experience gained in one network domain to augment or improve other domains. It also retains open standards-based practices to support a best-of-breed network approach.

Employing SIP signaling router (SSR) functionality provides centralized session routing for softswitches and enables core signaling capabilities to support a hybrid network architecture across all three domains — facilitating the gradual migration to IMS. Providing call session control function (CSCF) on the same platform completes the signaling bridge to the IMS domain.

Service mediation also plays a key role in making the IMS business case work. Service mediation allows new IMS subscribers to leverage existing services. Operators don't have to replicate services in the IMS domain and as a result, they achieve significant cost savings. In addition, existing subscribers can experience new IMS services, allowing operators to maximize their investments. Another benefit is that operators can minimize expenditures while providing both pre-IMS and IMS service packages.

Unified Subscriber Data. The second element of the convergence architecture, unified subscriber data, is for user profile management. This solution addresses the challenge of how to transition the subscriber profile and services information from PSTN to NGN and eventually IMS domains.

Today, subscriber data is housed in the home location register (HLR) and distributed among 2G services or in the authentication, authorization, and accounting (AAA) in next-generation network (NGN) networks. The best way to support the IMS transition is through the effective interworking of the HLR and AAA with the home subscriber server (HSS), which will house subscriber data in the IMS domain. This approach helps keep the subscriber and service data in the network consistent and coherent across all three domains. The benefit for subscribers is maintaining a single user profile for address books, buddy lists, billing preferences and presence information, independent of access type or network domain.

Unified Media Delivery. The final part of the convergence framework is a hybrid media processing platform, which supports speech-enabled circuit media applications such as Interactive Voice Response (IVR) as well as multimedia-enabled IP services like audio/video broadcasting. The platform supports all major network signaling protocols and enables media applications to be shared across networks.

Implementing the Convergence Framework

By applying the unified convergence framework, carriers can deliver

converged services and applications that simplify the subscriber experience and bridge between current and next-generation worlds. (See Figure 1.)

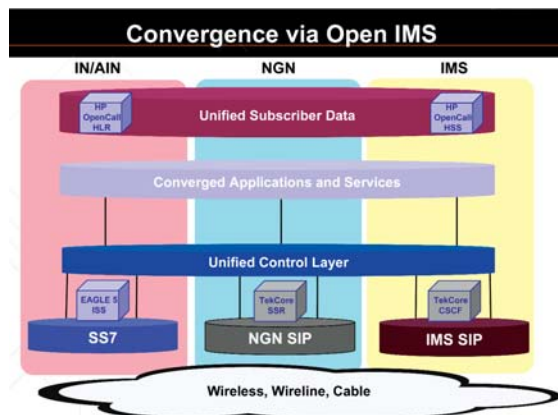


Figure 1. Convergence via Open IMS.

For example, an Instant Communication Solution (ICS) integrates Instant Messaging (IM), multimedia content sharing, audio and video conferencing into one application, making it more convenient for subscribers to use these services. An example of service convergence is Multimedia IM (MM IM), which bridges short message service (SMS) between the 2G and IMS worlds.

Operators should be sure to enable integration with back-office and legacy systems while also providing access to real-time business intelligence for network and service management, billing and fraud detection and prevention.

The aggregate result is a converged environment in which applications, services and network functionalities may speak different languages (protocols) but are still able to fluently and effectively communicate across all network domains — TDM, NGN and IMS — for a fully comprehensive and open solution. (See Figure 1.)

Open IMS Vision Becoming Reality

So how is IMS becoming a reality? One example is Tekelec and HP, which are leveraging their expertise and leadership in SS7 signal transfer points (STPs) and HLR platforms to facilitate the migration to IMS.

The companies have several trials underway employing HSS and CSCF platforms, supporting various applications with real revenue potential. Some of these trials and services will likely become public over the next 12 months, but the key takeaway is that the tools are in hand for these networks to germinate.

This joint Open IMS solution supports CSCF, media resource function (MRF) and HSS functionality, plus multiple application capability, on a single, standards-based platform. It delivers service enablers such as MRF, presence server, electronic numbering (ENUM), group list management and voice call continuity (VCC).

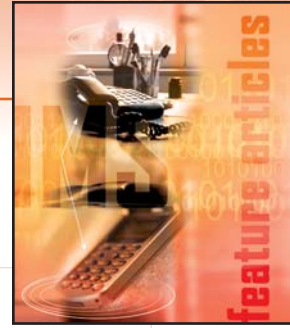
The HP-Tekelec alliance supports an Open IMS vision, and will continue to pursue this strategy by partnering with other vendors to provide operators with an open, best-of-breed IMS solution of their choosing.

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Regulatory Issues — A CALEA Crackdown?

by Richard “Zippy” Grigonis



Will the FCC really crack down on CALEA compliance? Or will the deadline (May 14, 2007) be as ‘loose’ as the early FCC pronouncements on providing E911 service?

Russ Sharer, Vice President of Marketing for Occam Networks (<http://www.occamnetworks.com>) says, “It appears that everyone is quite serious about this one. Still, the U.S. government has been slow to release all of the requirements that are needed for ISPs to meet the compliance deadline. In other words, they’ve defined it in terms of what you have to deliver in terms of the information flow, but as of the last time I checked, they didn’t really ask things such as, ‘What kind of response rate did you have?’ In other words, if the provider receives a warrant, how quickly can they activate the tap? There are also procedural issues that are in question. An ISP needs to keep a couple of people on hand capable of turning on a tap, but no one else in the company should be aware that a tap is in place. Some ISPs or operators will say, ‘I know what I’ve got to do but I don’t really understand what my response time is,’ for example. Things like that will drive the way that operators and providers implement a solution.”

“Another issue is that there are multiple kinds of warrants that a phone company can be served for information,” says Sharer. “Consider the three classes of traffic intercept: There were about 3 million Class 1 intercepts last year, consisting of just call data records. There were about 300,000 Class 2 intercepts last year that have a bit more information associated with the call. Finally, and most important, the Class 3 intercept is the live call flow or data flow of an individual subscriber. Last year there were about 2,900 of those implemented in the entire U.S.; of those, 90+ percent were pretty much confined to California, Florida, New Jersey, New York and Texas. Interestingly enough, we’ve heard a great deal about the scary Patriot Act and anti-terror provisions, and yet the majority of those third class warrants came from local and state governments, as opposed to the federal government. The taps are used mostly to apprehend either drug dealers or child pornographers.”

Sharer muses, “Because of all this, some of the carriers say to themselves, ‘Gee, our chances of ever being approached to do, one of these things is pretty small. I’ve got to be ready to deploy a solution, but until I get a definition of a ‘ready means’ I’m not really sure what to do’ and so they hesitate in terms of implementing a solution.”

Many outsource the CALEA monitoring to what’s called a trusted third party, which audits the network to make sure it’s ready for the solution, and then they’re on a sort of ‘hot standby’ so that if a warrant arrives, they’re ready to either turn on the tap or immediately insert equipment into the network. The cost of these trusted third parties has been pretty high, on the order of thousands of dollars a month.

“Some of the operators and providers are saying that since their odds of getting a warrant aren’t that good, and since it costs thousands of dollars a month to be ready, the cost of this kind of ‘insurance’ is too high,” says Sharer.

“There are two primary architectures for doing CALEA taps,” says Sharer. “One is called ‘passive’ whereby you basically just put probes into the network. Think of them as ‘sniffers’ that are just watching network traffic go by and, when a tap is ordered, they will replicate that data stream and point it off toward the trusted third party. The second type is an ‘active’ tap, whereby one of your network elements is capable of complying with CALEA. Occam’s BLC 6000 product can be provisioned so that you can put a tap on one of our DSL or POTS ports and

In October 1994, Congress enacted CALEA (Communications Assistance for Law Enforcement Act), a law requiring telecom carriers “to assist law enforcement in executing electronic surveillance pursuant to court order or other lawful authorization”. CALEA preserves the ability of law enforcement agencies to conduct electronic surveillance by requiring equipment vendors and carriers (including common carriers, ISPs and VoIP providers) to design and/or modify their equipment, facilities, and services to ensure that they have the necessary surveillance capabilities prior to the issuance of a warrant for a ‘lawful intercept’ of voice or data traffic.


redirect the traffic to a trusted third party. So our BLC is an active element for the monitoring and implementation of a CALEA tap."

At Procera Networks (<http://www.proceranetworks.com>), Vice President of Products Albert Lopez says, "The FCC is standing pretty firm on this deadline. They've stuck firm on the previous February 12 filing of the Monitoring Report, and there was a March 12 filing of policies and procedures and finally there was the May 14, 2007 deadline for compliance to make facilities available and to provide technical assistance to law enforcement whenever they want to engage in the intercept of VoIP conversations. The FCC has said that violators failing to fulfill the demands of a government warrant could result in a fine of up to \$10,000 a day."

"At Procera Networks, our product gear, called Packet Logic, basically sits in the network and can do the wiretaps," says Lopez. "Many CALEA solutions today aren't affordable to smaller ISPs, but we have what I would call the more affordable, 'poor man's solution' to this problem that many ISPs can't afford to deal with. At the same time, our mainline business is being able to see all the traffic going onto the network, not just the traffic on which you'll be doing the wiretap. We can see and control that traffic, which will be an ongoing issue as bandwidth becomes more and more 'used up' by video and other bandwidth-hungry applications. So, in addition to complying with CALEA lawful intercept, we can help ISPs and operators better run their operation and make money. It's a plug-and-play solution that you have the 'insurance' you need as a provider to comply with a potential warrant at a cost effective price, and at the same time it gives you a return on investment on managing your networks and subscribers in a whole different way."

"There are two pieces to the product," says Lopez. "Our Packet Logic product is a device in the network. Then, there's the 'mediation-trusted third party', that we certify. If there's a warrant for a wiretap, they handle the warrant and they can remotely set up the intercept on behalf of the ISP. Packet Logic will extract only the piece of information of interest and deliver it to the requesting law enforcement agency."

"Surprisingly enough," says Lopez, "some ISPs and smaller operators still don't really know whether they're subject to this law. Some have heard of it but they haven't gotten a warrant yet. Others are in denial, because they're small and can't afford a CALEA solution, and they simply hope that the CALEA deadline doesn't apply to them."

No doubt those operators and providers who have stuck their collective heads in the sand will be in for a big surprise. 

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



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From the Desk of Michael Khalilian

"IMS and SIP" and the IMS Forum Plan at NXTcomm



At the highest level, the IETF defines the SIP family of protocols, while for IMS the 3GPP, ETSI and CableLabs defined the network and service enabling architectures. That separation is very important, and emphasizes that there's only one SIP standards body — the IETF. In the past there was a lot of confusion between what is considered the 'original SIP', and the 'IMS SIP'. This confusion is hard to understand as SIP has only one source, the IETF. To look at SIP within IMS in the proper light we should consider the rationale behind moving to the IMS architecture. In contrast to traditional IP networks, IMS offers end-to-end Quality of Service (QoS) and supports standardized interfaces (using SIP and Diameter as the underlining protocols) to deploy all types of IP-based services, support flexible billing and consistent operational and management interfaces.

SIP is used in IMS to support 'service capabilities' as opposed of supporting 'services' in the way PRI and SS7 were used in the Advanced Intelligent Network (AIN) to support fixed or mobile voice.


A key factor in the decision for the IMS group to support of SIP comes from the way SIP supports multimedia. SIP was specified by the IETF as a protocol to establish and manage multimedia sessions over IP networks. SIP inherits many of the characteristics of the SMTP (Simple Mail Transfer Protocol) and HTTP (Hypertext Transfer Protocols), together representing the most widely-deployed Internet protocols. SIP, which is text-based, is very easy to extend; hence it is ideal for adding functionality related to QoS and new services which combine any type of media.

SIP is the most-used protocol in IMS. It is defined by IETF RFC 3261. For IMS the SIP protocol was extended by adding support of QoS, Session control, security and administration. For IMS SIP added a negotiation mechanism using three header fields: supported, required, unsupported. The negotiation is done through a dialogue where the user agent client lists all the names of the required and supported fields. In response, the user agent server sends back an error response for the unsupported fields.

In summary, SIP, now a mature, widely-deployed protocol, is used in many forms of IP services, including IMS and P2P. While the protocol extensions and the scope of the applications make SIP implementations different, it is expected that the two architectures will continue to co-exist in the future.

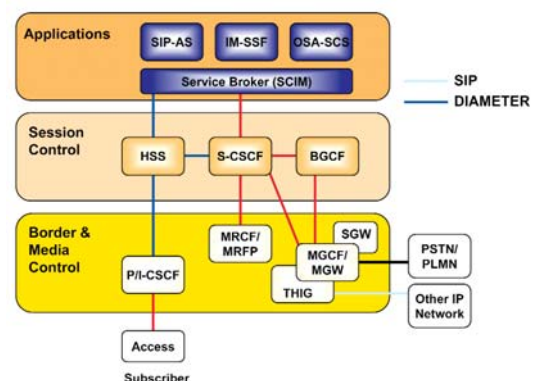
IMS Forum at NXTcomm plan:

The IMS Forum® is a global, non-profit industry association devoted to interoperable IP Multimedia Subsystems services and solutions. IMS Forum's mission is to accelerate the interoperability of IMS applications and services, enabling enterprise and residential consumers to quickly benefit from the delivery of quadruple play voice, video, Internet and mobile services over broadband via cable, wireless and fixed networks. The IMS Forum is the creator and organizer of the IMS Plugfest™, the industry's only event focused on IMS services interoperability verification and certification.

Through its organized Plugfests, working group interaction, and other activities, forum members are able to develop cost-effective technical frameworks for converged IP services over wireline, cable, 3G, WiFi and WiMAX networks. Plugfest II will be held June 4-8, 2007 at the IMS Forum UNH Interoperability Lab. Plugfest II results will be released at NXTcomm, June 18 — 21, 2007 in Chicago at the IMS Forum's booth #3669. For additional information or to join the IMS Forum and the IMS Plugfests. 

To better understand how SIP became the protocol of choice for both peer-to-peer (P2P) communications and IMS architectures, we need to refer to the decisions made by the 3GPP and 3GPP2 task forces in establishing liaisons with the IETF (RFC 3113 and RFC 3131). The 3rd generation wireless task forces decided not to 'reinvent the wheel' and use an existing IETF set of standards defined for the Session Initiation Protocol, or SIP.

IMS Architecture





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