



Khalilian on VoIP and ROI Challenges

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# IMS<sup>TM</sup> MAGAZINE<sup>TM</sup>

IP MULTIMEDIA SUBSYSTEM

VOLUME 2/NUMBER 5 OCTOBER 2007

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When IMS Talks to TDM

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# editor's note

Sees All, Knows All, Does All...

by Richard "Zippy" Grigonis

After working since 1994 in an industry known for its hyperbole, one gets a bit jaded after a while, having "seen and heard it all".


Yours Truly's eyebrows were raised, however, when reading the sentence, "BIG-IP is the only device in the industry that can do everything". As it turns out, it may be that the BIG-IP, a local traffic manager from the well-known application delivery management vendor, F5 Networks ([news - alert](#)) ([www.f5.com](http://www.f5.com)), really does just about everything, except take out the garbage and mow the lawn.

The humble description of the BIG-IP as a "local traffic manager" is a bit deceptive, since the box starts off by including built-in support for managing IP applications based on SIP (Session Initiation Protocol) messaging and IMS (IP Multimedia Subsystem) interfaces, then builds from there. The system is made extremely flexible and configurable via its modularity - instead of adding more single-purpose devices to a network (thus complicating matters further) a network operator or service provider can now choose which functions it wants by selecting various BIG-IP software product modules and BIG-IP feature modules, which are software versions of F5's appliance products, now written to run on BIG-IP devices. Providers are now able to expand or adapt service delivery to changing conditions via software customization of the BIG-IP system.

BIG-IP Product Modules naturally include the namesake Local Traffic Manager (LTM) which, as its name implies, spreads connections across multiple clustered servers, connecting to and sending traffic to the server with the least load, thus speeding transactions.

Other modules are as follows: The Global Traffic Manager (GTM) module automatically routes connections to alternate data centers if the main data center goes offline or becomes temporarily overloaded. BIG-IP's Link Controller (LC) module automatically compensates for link failures or ISP problems by switching traffic to alternate connections. The Application Security Manager (ASM) protects critical applications and their data by defending against application-specific attacks that ignore conventional firewalls. Finally, the WebAccelerator (WA) stops web browsers from endlessly (and needlessly) re-requesting page content from the server, thus enabling fewer web servers to satisfy more users, boosting interactive user performance by a factor of 10.

The even more extensive BIG-IP feature modules can be purchased to add more specialized functionality. Feature modules include Advanced Client Authentication, Advanced Routing (allow BIG-IP to manage the routing information used by traffic traversing networks and to share it with other devices), Fast Cache (reduces server loads by 50% by preventing servers from processing repetitive requests for identical content), Intelligent Compression (15x compression that reduces bandwidth usage and compensates for poor web application performance caused by WAN latency and connection bottlenecks), IPv6 Gateway (pools mixed IPv4 and IPv6 host resources for an easy transition), L7 Rate Shaping (provides priority to traffic classes based on any L4 or L7 parameter), Message Security (a perimeter anti-spam solution that extends security for message applications to the edge of the network, stopping up to 70% percent of unwanted e-mail) and SSL Acceleration (improves the performance of servers and increases security by taking over the task of encrypting and decrypting data, to the tune of up to 48,000 SSL transactions per second available on the BIG-IP 8800).

F5's BIG-IP may not do absolutely everything, but it's the closest thing to a mythical "God Box" that you're liable to see plugged into an IMS network. 

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



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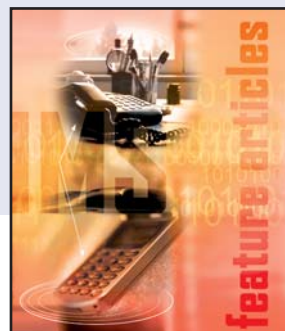
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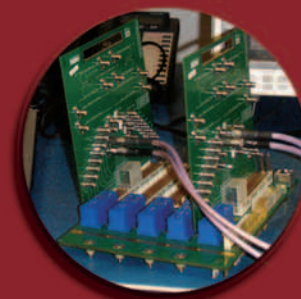
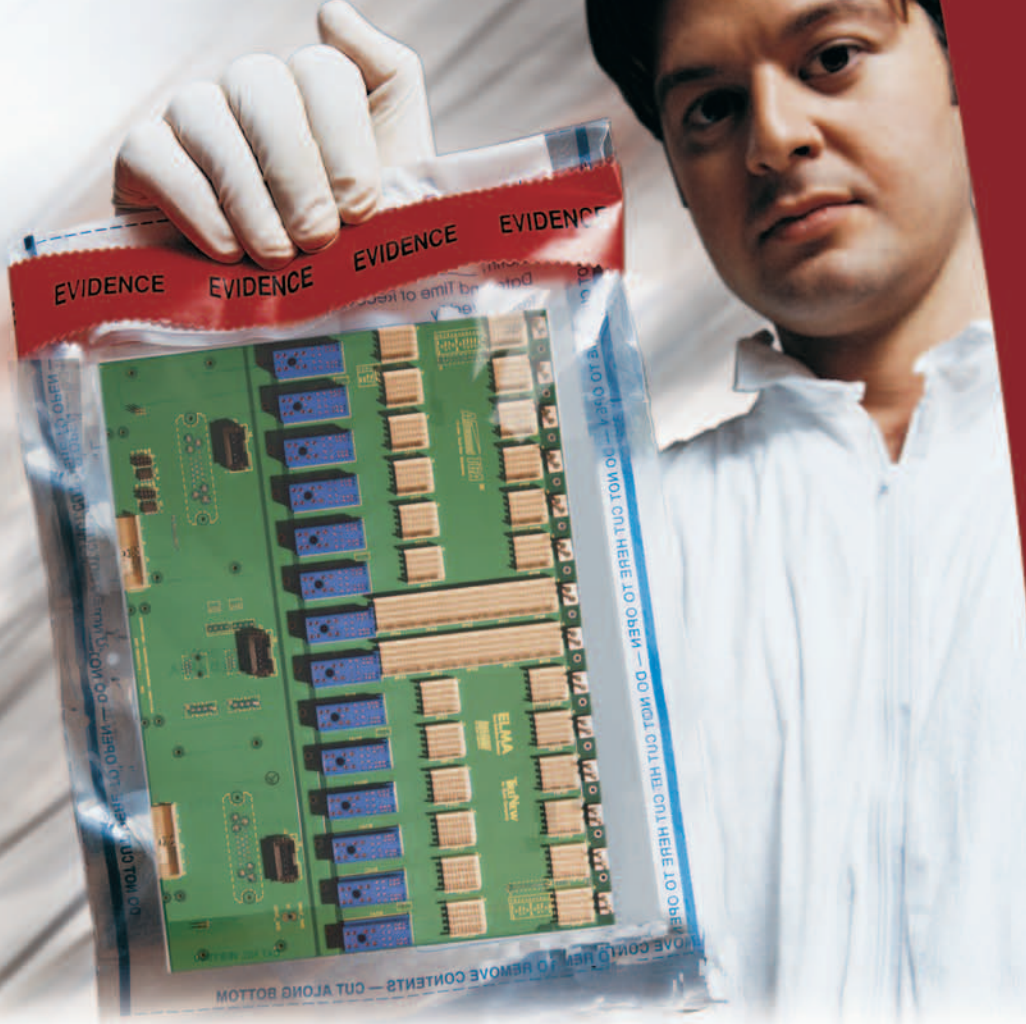
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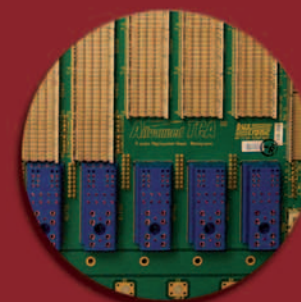
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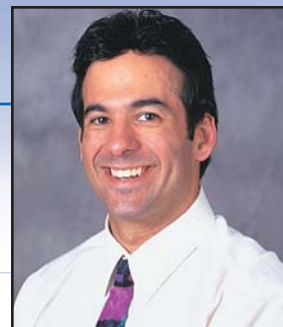


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## IMS Acceptance Accelerates

by Rich Tehrani



Recently, Huawei Technologies Co., Ltd ([news](#) - [alert](#)) signed a contract with the Warid Group, a mobile service provider in South Asia and Africa, to deploy IMS services.

Huawei will implement the IMS core network and combine it with a WiMAX access network. In doing so, Warid will be able to deliver VoIP and IP-based multimedia services to its customers.

"Sophisticated services providers like Warid are seizing opportunities to bring the benefits of FMC to new markets," Ding Yun, Vice President of Huawei, was quoted as saying in a report. "Huawei is excited to be part of this effort. Our IMS products are successfully deployed in both large and small networks and are rapidly proving the value of this architecture. Our total commitment to customer partnership means that Warid is assured of having a network for the future."

In addition to the deployment, Huawei will also provide Warid with GSM network components, wireless base stations, a VAS (Value-Added Service) platform, long-distance/international gateway offices as well as the IP bearer network. These solutions will enable Warid to create an all-IP network for the future.

Warid is considered to be one of the first service providers in the world to offer IMS-over-WiMAX. With the addition of wireless access to data and voice services, customers will be offered the kinds of advanced services they have been seeking for quite sometime now. These services, to be extended to both the business and consumer markets, will include voice, IP Centrex, multimedia communications, and prepaid as well as other value-added services. By deploying advanced FMC services, Warid can woo more customers and experience business growth with no further investments.

This news is good for the IMS market, but I wonder why the equipment choices were of the single-vendor variety. One of the great benefits of IMS is the ability to mix-and-match various vendor products to come up with a best-of-breed solution. Still, we are early in the adoption phase of IP multimedia subsystem technology so perhaps we need to walk before we can run. Avid IMS Magazine readers know that the IMS Forum and other associations are sponsoring plugfest after plugfest with the goal being a future with interoperable IMS solutions. Hopefully I will be able to point out more multi-vendor IMS wins in the near future. ■

**I**MS has certainly been one of the most hyped technologies the communications market has seen in some time. For this reason it is worth pointing out a recent IMS win I came across a few days ago.

### AppTrigger's Chris Todd on the New World Faced by Service Providers

Rich Tehrani recently spoke with Chris Todd, President and CEO of AppTrigger ([www.apptrigger.com](http://www.apptrigger.com)), the company that invented the Application Session Controller and is now a leading developer of Network Layer Service Delivery Platform software for application developers and network operators. Todd has a tremendous amount of sales and marketing experience, gained from his prior executive positions at Cisco Systems, Extreme Networks and Kodiak Networks.







## Who will write the next generation IMS applications?

Rich, that's a great question and hits upon one of the most exciting things going on in telecommunications today. As service providers focus on network convergence, monetizing their networks and creating a vast ecosystem of application developers to drive new and incremental ARPU, they are looking at a variety of technologies to achieve these objectives. As a leader in application connectivity and rich call control, AppTrigger sees more and more service providers complementing their IMS strategies with Web Services. This will enable them to move to an IP infrastructure and at the same time "open their network" to the largest ecosystem of application developers in an API-agnostic manner.

## What will be the most compelling of these apps?

AppTrigger has somewhat of a contrarian view on this particular topic. There's a tremendous amount of hype and energy to define the "next killer app" It's not necessarily a matter of a specific application but rather the ability to move existing legacy applications into IMS architectures in a cost-effective manner. This is important because it frees up the service provider and the application development community to focus on innovation as opposed to replication. This is why AppTrigger introduced the Application Session Controller with new IMS functionality (IN-SCS) that enables revenue-producing legacy applications to migrate into IMS in a cost-effective way and ensuring the subscriber experience remains consistent. With a cost-effective solutions service providers can focus on innovation and application mash-ups.

## What is the best way to generate revenue from these applications?

From an IMS application perspective it is all about complementing and not competing for the subscriber's user experience. That being said, ensuring the subscriber experience

is consistent regardless of network and that IMS and non-IMS applications can work in unison is the goal of every service provider. This is much easier said than done. Based on our experience in the marketplace, the challenge service providers

face with IMS build-outs is that they are becoming 'IMS silos' and require the service provider to maintain multiple application platforms for each network. The key to generating revenue with IMS applications will be to ensure they complement existing applications and the current user experience.

## What is the fastest way for service providers to provide applications on IMS networks?

Rich, I believe this question is one of the key drivers behind the promise of IMS, fast application

delivery. The issue is not what is the fastest IMS deployment model but how does a service provider reconcile their IMS build-out with their other infrastructure investments.

## What is the future of IMS?

AppTrigger believes IMS has many positives for the service provider marketplace but the deployment will take longer than people anticipate or have predicated. The reality most service providers are facing is how to take the best aspects of IMS and leverage them with existing assets to create something unique and operationally efficient. Application Session Controllers are a critical network element which enables service providers the ability to cross leverage IMS applications with legacy networks and legacy applications with IMS networks. ■

*Note: In May 2007, Zippy Grigonis interviewed AppTrigger's VP of Marketing, Patrick FitzGerald, who said, "The traditional model, currently in vogue, is where the application solutions serviced by the service provider utilize independent protocol stacks that they have to put into the application and so these applications are now optimized for just a single network per application. It will be very difficult to obtain the converged user experience if the providers continue down the path of utilizing the current application deployment model. That's why AppTrigger is focused on solving this particular problem of 'de-siloing' the applications."*

# AppTrigger sees more and more service providers complementing their IMS strategies with Web Services

## Whaleback Systems Looks to Make a Big Splash in the SMB VoIP Market



In this issue, Rich speaks with Whaleback's CEO and co-founder Mark Galvin for a discussion about his company and its market environment.

Whaleback Systems ([news](#) - [alert](#)) is a new and fast-growing VoIP managed services provider based in Portsmouth, NH serving major metropolitan markets across the country. The company's CrystalBlue Voice Service is based on software technology developed by Whaleback and includes an on-premise, software-driven IP-PBX system and a voice quality management system for providing centralized monitoring and control of system elements and service levels.

**What was the reason you co-founded Whaleback Systems? With a multitude of IP telephony products and services already in the market place, where do you add value?**

Well, having just come off of Cedar Point where we had built an 80G multimedia switch with an optical backplane to initially serve as a VOIP Class 5 residential switch for Comcast and Charter, it was clear to me that broadband's reach into small and medium business was growing rapidly and that there wasn't any good solution for providing purely broadband-based voice communications to this class of customer. All the incumbent vendors were busily repurposing products that had been developed for completely different applications and each of them seemed to have significant technical and operational limitations that made them far less than ideal. Thanks to our prior successes we were able to take a bunch of really smart people who fully understood the market and technologies along with a clean white board and some money from great investors, who had succeeded with us many times before, and build exactly what this class of customer needed. We knew this would give us the differentiation and advantage we would need to take on the "big guys" who would be selling something that was left over from some prior market in history... technology vs. dinosaurs.

**What's wrong with the existing small office PBX solutions designed for the SMB space?**

Actually, when compared to what is now available from Whaleback, a substantial list of things was in need of improvement. Starting with some of the less "techie" items, existing systems were built for specific line sizes. Great for the vendor, but bad for the small business owner, as you grew your business; your phone system couldn't grow with you so you had to forklift and upgrade to a larger capacity system every couple of years. Sometimes the vendor would offer some sort of hardware add-on or software upgrade which would allow you to keep existing phones and still grow to the next size, but that often came with substantial technical limitations and a big price tag. Whaleback scales with your business and provides a completely predictable expense. It is also predictable because we provide a fully-managed service with all the support, product assurance, and upgrades included in their monthly service price. There is no need for extra staff to manage the phone system and it's very nice for the finance folks to eliminate spikes in expenses associated with the office telecommunication system. Technically, most existing hardware point products don't follow industry standards and have not been structured for proper migration to the ubiquity of IP communications. Having a system designed from the

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





ground-up for the broadband revolution facilitates the introduction of new features like our remote worker and home office integration capabilities. The global Internet virtualizes the phone system allowing the customer to access a full range of voice services from anywhere. Systems having to support legacy TDM interfaces are severely hampered in this regard. I could go on and on...the list is impressively long.



Service combines an integrated voice mail/email/IP fax service, multimedia conferencing, contact center applications and road warrior mobility with an unlimited nation-wide calling plan for a fixed monthly expense. Small businesses are responding extremely well to this value proposition.

**How do you market your CrystalBlue Voice service and how is the company doing?**

**Hosted VoIP services have taken hold to offer a simpler and more cost-effective solution than a traditional PBX system... with many of these services offered by large providers... how will Whaleback Systems compete against them?**

The good news for all providers of hosted VoIP services in the SMB market is the rapid growth projected for the next 3 years. According to a recent study, this market segment will grow over 50% annually and surpass a billion dollars in less than 3 years. With 8 million small to mid-sized businesses in the US there is a huge opportunity for the right solution to be wildly successful. The even better news for Whaleback is that we have developed unique technology that allows us to virtually guarantee quality of service for our customers and a suite of PBX features that dwarfs every competing solution on the market. Our technology allows us to meet a broader set of customer requirements than hosted alternatives and also ensures their satisfaction with VoIP.

**What prevents other hosted VoIP providers from matching Whaleback's service quality and feature set?**

It all starts with a service architecture that combines network redundancy with innovative management tools capable of tracing the route taken by any and every customer call. Our NOC team can isolate service problems down to a single router in any transport or access network used by our service. We have early warning systems tied to call quality metrics that allow our technicians to solve problems before customers are impacted. This capability is unmatched by any competing service. On the feature side, a crack team of software engineers has transformed the sophistication of a big company PBX system into a flexible service for small to mid-size businesses. Our CrystalBlue Voice

We have built an interconnect VAR channel in major metropolitan areas around the US and we are adding new territories all the time. Because interconnect VARs sell traditional PBX systems to business, they bring an existing installed customer base and deep industry experience to the table. That said, we are also finding success with data VARs as well. They understand IP networking extremely well and are highly motivated to add an IP telephony solution to their service portfolio. And earlier this summer we introduced a technology licensing program for carriers and cable operators as well. With so many markets to cover, it's important to have many horses in the race. As for operating results, we have increased our customer base by 10-fold during the last 12 months while our seat volume and recurring revenue numbers are growing by more than 80% per quarter. So our market traction has been very good - to say the least.



**Most interconnect VARs have a long long-standing relationship with one or more PBX manufacturers. Why should they add a new managed service offering to their existing and already-proven product portfolio?**

There is an over-distribution of products in the channel from the major PBX suppliers and that results in shrinking hardware margins. Plus, it's getting more and more difficult to sell service contracts given the reliability of hardware components these days. Contrast that picture with Whaleback's new technology and business model. We provide the interconnect VAR with a solution that wins more deals because of our simplicity, cost-savings and feature set. On top of that, we provide the VAR with a very profitable and recurring source of income tied to long term service contracts. The old PBX model generates revenue that is 90% up-front and one-time. The Whaleback model generates revenue that is 70% long-term and recurring. When you do the math, our approach is a much more appealing business proposition than the status quo.

**You mentioned a technology licensing program for CLEC's and Cable operators...tell me about that. What are the business and technology benefits of your approach for their environment?**

In this era of marketing wars between carriers and cable operators we provide new technology that seriously raises the bar for commercial voice service delivery and can put them in position to leap-frog the competition. However, our licensing program goes well beyond technology. It's a total business opportunity that includes our full-featured IP-PBX with advanced voice applications and comprehensive monitoring and management facility plus a documented process for operations and management as well as the promotional programs and merchandising collateral to go to market. Our solution leverages an existing consumer VoIP service infrastructure so there is usually no additional capex required to implement Whaleback technology. We are providing a sure-

fire strategy for accelerating revenue and market share growth in the commercial VoIP services segment.

**What are key technology elements and how would they integrate with the existing carrier and cable infrastructure?**

It all starts with our software-driven IP-PBX and the benefits of an intelligent device on the customer premise to monitor the remote end. The IP-PBX server is actually an appliance with no customer access to its operational parameters. NOC personnel remotely manage the device or run end-to-end diagnostic analysis of service quality and availability. This is an enormous advantage over competing solutions. We use SIP-compatible phones and we have designed our software to optimize the use of hard and soft keys as well as line appearances and other functions such as voice mail, auto attendant, group paging, hands-free intercom, multi-party conferencing and call management. Any dedicated broadband connection can be used for the access link and multiple WAN connections can be aggregated and

intelligently managed using RAIL, Whaleback's own multi-WAN link management algorithm. Complementing the on-premise appliance is a NOC-based voice quality management system we call OrcaVision. Using OrcaVision, Whaleback remotely manages the PBX configuration and monitors service

**"...we provide the VAR with a very profitable and recurring source of income tied to long term service contracts."**

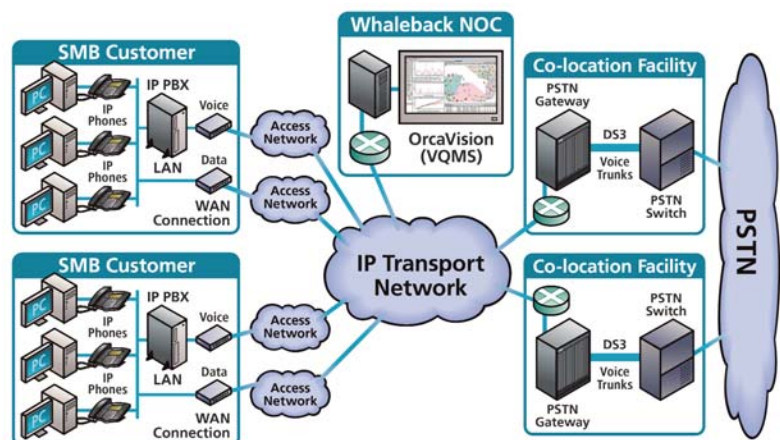


Figure 1: Whaleback's Architecture for Managed VoIP Services





levels for each customer with the help of automated alerts and drill-down diagnostics for isolating any problem the customer may have from a central location. OrcaVision can be thought of as the element management system for Whaleback's VoIP service platform and it will complement existing management systems in use by a carrier or cable operator. The remaining elements of our service architecture are Sonus GSX 9000 gateways owned and managed by Whaleback in multiple co-location facilities. These gateways terminate VoIP sessions initiated by the on-premise PBX and hand-off traffic to the PSTN. Whaleback has performed extensive compatibility testing and integration with Sonus equipment but we have experience with other gateway systems as well. (See Figure 1 on opposite page)

#### **What is your service footprint and your plan for expanding the business?**

Our service footprint is limited only by our sales and marketing coverage because we leverage commercially available broadband for access to a nationwide IP transport network. As a result, our partners can instantly extend their own market reach without expensive T1 networks to connect


customers in multiple geographies. Our plan for growth is to expand our distribution channel while following a well-defined formula that looks a lot like a franchise model. We add partners, provide them with sales and marketing support to ramp the business and augment their technical resources with centralized management and customer support to eliminate unnecessary truck-rolls.

#### **What is your (Mark Galvin's) vision of the future for Whaleback and its partners...what is your crystal ball telling you?**

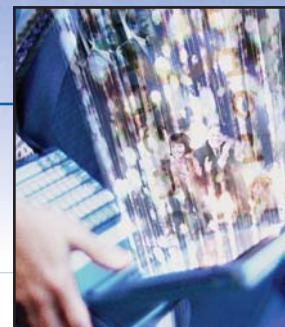
We have only seen the proverbial "tip of the iceberg" in the world's conversion to all voice going over IP networks end-to-end. As this

conversion continues to evolve, many new features and benefits will be available to those that have made the move. Already we have ubiquitous "Roadwarrior" connectivity for everyone on these systems. We have also provided "take it with you" unified messaging integrating fax and voicemail with email. The telephone device, which runs IETF SIP protocols and is pure IP starting at the handset, is already

integrated with laptop contact databases with "click-to-dial" functionality from within any application. For the first time in history, HD codec's have allowed us to provide sound quality far beyond that of the older digital systems, and this equates to real benefits for people trying to conduct business. We have barely scratched the surface of new capabilities which are facilitated by this modern architecture, updated compute resources and advanced programming techniques. I expect to see an ability to have my office

telephone number and extension with me on a wireless device that is simply another station on my primary line appearance - no need for "find-me-follow-me". Just call me. 

**"We have barely scratched the surface of new capabilities which are facilitated by this modern architecture, updated compute resources and advanced programming techniques."**



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**Avaya and Nokia Collaborate to Deliver Next Phase of Fixed to Mobile Convergence Applications for Enterprises**  
Avaya ([quote](#) - [news](#) - [alert](#)) and Nokia ([quote](#) - [news](#) - [alert](#)) announced the next phase of their strategic collaboration with a solution that provides users of Nokia Eseries business devices with one number access and advanced enterprise telephony capabilities as they travel across private WiFi and public mobile networks. With a single mobile device, workers can handoff phone calls at the click of a button, using dual mode communications, as they travel from inside a company building (WiFi) to the outside environment (mobile) and vice versa.

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**Sylantro Systems Introduces First Multiplay Application Feature Server Suite for Converged Services**

Sylantro Systems ([news](#) - [alert](#)) expanded its Synergy Application Feature Server offering: the latest Synergy Release 4.2 is now available as three, new end-to-end editions for the hosted VoIP, mobile, and the emerging "Voice 2.0" markets. "Over the past year our Synergy Application Feature Server and Synapps Web Services have seen significant success when deployed as a common capability across fixed-line networks, mobile (IMS) networks, and in real-time web communication and collaboration interactions, validating our multiplay capabilities," said Marco Limena, president and chief executive officer of Sylantro Systems.

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**Huawei Technologies Successfully Tests "VoIP over HSPA"**

Huawei Technologies ([news](#) - [alert](#)) announced what is the industry's first VoIP service display with an all-IP end-to-end solution based on an IMS-based system platform and commercial chipset. In conjunction with QUALCOMM Incorporated in Shanghai, Huawei successfully completed commercial technology testing for 'VoIP over HSPA.' "For a long time, Huawei has provided advanced technologies to carriers to assist them in migrating to next generation networks," said Chengdong Yu, President of the Huawei Wireless Product Line. "The introduction of 'VoIP over HSPA' will enable mobile phone users to enjoy better voice call quality with more competitive prices."

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**IntelPeer Deploys Sonus' IMS -Based Architecture**

IntelPeer ([news](#) - [alert](#)) has selected Sonus' IMS-based architecture as the foundation for its next-generation voice network. Sonus' solution will replace IntelPeer's existing IP-based infrastructure as it has the ability to scale and seamlessly support new services. IntelPeer is also deploying Sonus' Network Border Switch to support its IP peering service. Brent Bourne, COO of IntelPeer, said the Sonus platform enables them to deliver superior quality of service and to interconnect securely and efficiently with other IP-voice providers. This is essential as more and more carriers migrate towards an all-IP infrastructure.

[www.intelpeer.org](http://www.intelpeer.org)

[www.tmcnet.com/1196.1](http://www.tmcnet.com/1196.1)

**IMS Forum and IMTC Collaborate on Advancing Real Life IMS Interoperability**  
The IMS Forum has signed a Memorandum of Understanding with the International Multimedia Telecommunications Consortium (IMTC), an international alliance of companies focused on improving the customer experience and accelerate market adoption of content delivery and unified communications solutions through interoperability of products and services based on open standards. Both the IMS Forum and the IMTC will establish a technical liaison between their Technical Working Groups and a marketing liaison. These liaisons will enable the two groups to exchange technical information on IMS specifications, testing and interoperability, share interoperability testing best practices, collaborate on technical documents, and organize and participate in future joint testing events.

[www.imsforum.org](http://www.imsforum.org)  
[www.imtc.org](http://www.imtc.org)



[www.tmcnet.com/1200.1](http://www.tmcnet.com/1200.1)

### Nokia Siemens Networks Hosts 3 Scandinavia's 3G Push-to-Talk Service

Nokia Siemens Networks ([news](#) - [alert](#)) recently announced it will host 3 Scandinavia's Push-to-Talk service using its cellular and presence solution via a hosting center in Vienna. Nokia Siemens collaborated with 3 Scandinavia to roll out this commercial 3G Push-to-Talk and presence service in Sweden. The end-to-end push-over-cellular (PoC) solution is a part of Nokia Siemens' IMS offering for fixed and mobile services.

[www.nokiasiemensnetworks.com](http://www.nokiasiemensnetworks.com)

[www.tre.se](http://www.tre.se)



[www.tmcnet.com/1202.1](http://www.tmcnet.com/1202.1)

### Alcatel-Lucent Next-Generation IP Services Delivery System Deployed in Cable Industry's Demonstration and Development Lab

Alcatel-Lucent ([quote](#) - [news](#) - [alert](#)) and CableLabs ([news](#) - [alert](#)) announced the deployment of Alcatel-Lucent next-generation IP multimedia applications and core network technology in the CableLabs PacketCable 2.0 Applications Lab, as part of a cable industry program to increase new advanced services available to cable customers. The lab provides a PacketCable application showcase and development test bed for the cable industry and is a venue where network equipment providers and application developers can test and demonstrate cutting-edge applications for voice, multimedia, wireless, and converged services across PacketCable 2.0 core networks from multiple suppliers.

[www.alcatel-lucent.com](http://www.alcatel-lucent.com)

[www.cablelabs.com](http://www.cablelabs.com)

[www.tmcnet.com/1199.1](http://www.tmcnet.com/1199.1)

ip.access and Orascom aim to Improve Mobile Access for 56 Million People ip.access ([news](#) - [alert](#)) has announced a frame contract with Orascom Telecom ([news](#) - [alert](#)) to deploy ip.access 2G picocell and 3G femtocell technologies. Orascom Telecom will use ip.access solutions to deliver high quality 2G and 3G signals to areas of limited capacity and coverage across its multiple networks. The nanoGSM picocell system will improve 2G in-building coverage and capacity for enterprise customers, whereas the groundbreaking Oyster3G femtocell is designed for use in homes. Both systems will enable Orascom Telecom to improve quality of service to its subscribers, and save costs by exploiting the convergence of IP and cellular technology.

[www.ipaccess.com](http://www.ipaccess.com)

[www.orascom.com](http://www.orascom.com)



[www.tmcnet.com/1197.1](http://www.tmcnet.com/1197.1)

### AppTrigger Selects Continuous Computing's Trillium Diameter to Support IMS Applications

AppTrigger, ([news](#) - [alert](#)) developer of application connectivity solutions for the telecom marketplace, has selected Continuous Computing's Trillium Diameter protocol software to facilitate its support of IMS architecture. Trillium Diameter base protocol, together with an range of additional Continuous Computing protocol stacks, provided the offline/online charging information and policy management signaling to help AppTrigger extend its Ignite Application Session Controller (ASC) to support IMS networks. The AppTrigger Ignite ASC simplifies the delivery of new applications in addition to the migration of legacy applications into the IMS network, and offers a platform to develop new applications that reuse standardized functions such as presence and location information.

[www.apptrigger.com](http://www.apptrigger.com)

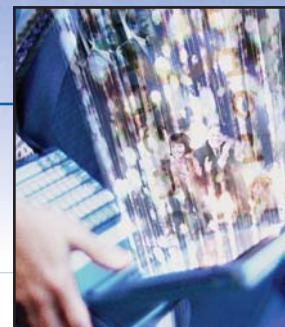
[www.ccpu.com](http://www.ccpu.com)

[www.tmcnet.com/1198.1](http://www.tmcnet.com/1198.1)

### RADVISION Launches Version 5.0 of its ProLab Testing Suite

RADVISION ([news](#) - [alert](#)) has released Version 5.0 of its ProLab Testing Suite, a comprehensive testing solution for voice and video over IP, IMS and 3G networks. The latest version of the ProLab Testing Suite comprises an IMS testing solution with both IMS Terminals and IMS Servers. RADVISION's Version 5.0 includes terminal emulation for High Definition generation and an IMS Server for simulating IMS Core Networks. Eli Cohen, product manager with RADVISION's Technology Business Unit, explains that the ProLab Testing Suite provides a complete testing solution for emerging IMS and IMS SIP products. ProLab also performs media and protocol analysis, including packet distribution, packet loss, bandwidth, errors, and more.

[www.radvision.com](http://www.radvision.com)



[www.tmcnet.com/1201.1](http://www.tmcnet.com/1201.1)

## Ericsson and Vodafone Bring FMC Service to Czech Republic

Ericsson ([news](#) - [alert](#)) has reportedly supplied and integrated its IMS solution into Vodafone's ([news](#) - [alert](#)) network in the Czech Republic. The integration brings fixed/mobile converged services to business customers. Thanks to Ericsson's IMS solution, Vodafone Czech Republic can offer both fixed and mobile users a broad range of next-generation IP telephony and multimedia services. Andreas Laukenmann, vice-president, Vodafone Business Solutions explained that IMS is an important element in crossing the proverbial mobile line. It will help them to launch revolutionary services to business customers, taking away the difference between the mobile and the fixed world while enabling significant cost savings for their customers.

[www.ericsson.com](http://www.ericsson.com)

[www.vodafone.com](http://www.vodafone.com)



[www.tmcnet.com/1203.1](http://www.tmcnet.com/1203.1)

## Aricent Joins IMS Forum

Aricent, ([news](#) - [alert](#)) a full-service, full-spectrum communications Software Company, has joined the IMS Forum, which is dedicated to the acceleration of IP Multimedia Subsystem (IMS) application and service interoperability. The IMS Forum is designed to promote the interoperability of IMS applications and services for wireless, wireline and cable broadband networks.

[www.aricent.com](http://www.aricent.com)

[www.imsforum.org](http://www.imsforum.org)

## ATMIV AMC Controller for ATM to IP Interworking

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- Broadband Networks
- ATM to IP Gateways
- Femtocell Access Controller



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- **192,000 RTP streams**
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- **256,000 TLS and IPSEC sessions**
- **256,000 IMS AKA enabled endpoints**
- **1,000s of IMS AKA registrations per second**

## IMS State of the Union

by Ronald Gruia



The reasons for this sluggish uptake are manifold:

- Service providers are still adjusting to the business case - in a Frost & Sullivan survey\* conducted earlier this year, roughly 33% of operators raised questions about the value proposition and sales pitch of IMS.
- Operators are still coping with how they should migrate their network and service to IMS.
- IMS standardization efforts are ongoing, therefore it is better to wait until things become a little bit more settled.
- Other "high rider" caveats mentioned included the lack of openness of IMS (i.e., the proprietary nature of some of the solutions available in today's marketplace) and the need for more IOT (interoperability testing).

Service providers are realizing that the move to IMS will be a gradual transition over time, entailing the interplay of different network applications, technologies and protocols as the networks evolve. In order to achieve success in the prevalent complex and highly competitive environment, they need to comprehend how the evolution of their networks will affect their business, and more importantly, what is the best transitional path to follow. Not surprisingly, we have witnessed efforts such as A-IMS, which was spearheaded by Verizon Wireless, and involved a strong partnership between that operator and its innovative suppliers. The more successful vendors have been proactive in helping their carrier customer transition to the NGN, by making these operators aware of what is coming and how to best tackle some issues even before they arise.

### Recent Contract Announcements and Pending Tenders

In terms of announcements, there have been a few noticeable contracts awarded over the past year (Table 1). One noteworthy deal that was publicized back in late March was Verizon Wireless. The U.S. operator awarded a three-year \$6 billion contract to Alcatel-Lucent, including wireless and networking equipment and services. While the press release suggested elements of an IMS win, it did not explicitly mention core IMS infrastructure. Our channel checks indicate that Alcatel-Lucent and Nokia Siemens, along with Nortel, have a chance to win the Verizon Wireless IMS sweepstakes. That said we believe that the final decision by Verizon is very likely to be still several months away.

**Table 1- Recent Announcements of IMS Tenders**

Service Provider	Solution	Size (\$M)	Date	Supplier
Maroc Connect (Morocco)	IMS solution including softswitch, media gateway	25	Oct. '06	Alcatel-Lucent
Wind Telecom	IMS, access, routing, optical, and IPTV software	80	Oct. '06	Alcatel-Lucent Microsoft
Versatel (Germany)	Broadband access and IMS solution	~ 10 over 2+ yrs	Dec. '06	Ericsson
Verizon Wireless	CDMA2000 1x EV-DO Rev. A and some IMS infrastructure (maybe)	\$6,000 over 3-yrs	Mar. '07	Alcatel-Lucent

**W**hile the transition to IMS appears imminent, the exact time frame of adoption by most service providers is not clear. There has been progress on the standardization front, with initiatives by bodies such as the 3GPP/3GPP2, TISPAN and efforts such as A-IMS and interoperability testing by the IMS Forum and MSF. However, the market development has been happening at a slower pace than originally forecasted.

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\*Please refer to "IMS - Ready for Prime Time?" by Ronald Gruia, released by Frost & Sullivan in February 2007.



Other deals that could come to fruition soon include T-Mobile. In this particular case, the consensus within the players we talked to is that Alcatel-Lucent is the leading candidate to win this IMS contract, although this is not expected to be a deal as sizeable as AT&T (an earlier IMS win clinched by Alcatel-Lucent).

Another decision expected soon is Verizon. The Verizon IMS opportunity for NEVs has been estimated at around \$50-\$100 million by some Wall Street observers, assuming initial deployments of several hundred million lines. The consensus estimate is that the carrier's IMS decision is imminent, and a first office application to be introduced in the fourth quarter of 2007. Some Wall Street pundits believe that players such as Alcatel-Lucent, Nokia Siemens, and Nortel have been selected from a wide array of vendors in the first stage. For this wireline portion of the carrier's overall IMS deployment, these experts believe that Nokia Siemens currently has a slight edge over Alcatel-Lucent and Nortel in meeting the early stage technical qualifications. Alcatel-Lucent, being the largest vendor (in terms of market share of legacy Class-5 switches at Verizon) cannot be discarded as one of the favorites, and neither can Nortel, which was the recipient of the VoIP equipment contract at Verizon back in 2004.

#### Other Related Market Activity

But going above and beyond these specific announcements and pending contract awards, it is important to note that there have been quite a few related developments that are positive for IMS. One of them is the migration on the signaling front (from SS7 to SIGTRAN, or SS7 over IP) that was discussed in an earlier column (please refer to "3GSM IMS Steeplechase" article, which appeared on the April 2007 edition of IMS Magazine). Vendors such as Tekelec are the beneficiaries of this migration on the signaling front (from SS7 to SIGTRAN, or SS7 over IP). That particular step could be an important initial one as carriers gradually transition to IMS.

The transition to an NGN IMS-like architecture will have a profound impact on the signaling layer, as the signaling protocol will migrate from signaling system 7 (SS7) to session initial protocol (SIP) and the signal transfer point (STP) of the SS7 network will migrate to the call session control function (CSCF) of the IMS architecture. Some early engineering simulations reveal that there will be a significant increase in traffic, expressed both in terms of number of messages per service (which can

grow five times) and overall size in bytes (which can grow by over 25 times).

The issue of message size is particularly important for the air interface. The standards bodies have addressed this issue by defining RFC 3320 Signaling Compression (SigComp) as well as an Internet Draft RFC titled "Applying Signaling Compression (SigComp) to the Session Initiation Protocol (SIP) Standard." Carriers that intend to send SIP over the radio access interface should consider SigComp (or signaling compression).

#### Key Takeaways

Most industry experts agree on one thing: the evolution to IMS will span many years. During this time, there will be a mix of signaling technologies deployed; the market will gradually evolve towards SIP-based signaling, however SS7 will still remain a key

signaling technology for many years to come. The importance of SS7 will be premised by several factors, including its role in enabling roaming in a mobile environment, in addition to the large installed base of SS7 based technology. This will lead to the coexistence of SIP and SS7 in carrier's networks.

In addition, operators will start capping their investments in current technologies and gradually begin to shift them to new equipment purchases. As they embark on their IMS migrations, there will be several

paths open to them, including undergoing an incremental buildout starting from the SCIM component. The idea is to create a framework that centralizes service interaction and mediation at the core of the network. By electing this option, operators will be able to get the benefits of IMS in a "pre-IMS" environment without incurring the cost of deploying a full-blown IMS network.

Finally, as carriers embark on the NGN upgrade journeys, one important consideration is how to interwork their existing networks with future IMS networks in order to deliver a seamless service experience to subscribers regardless of their access technology. Only when they reach this point that they will be able to realize the full promise of IMS.

Note: In the next column, we will take a more in-depth look at how IMS is being looked at by service providers in Latin America, after gathering their opinions at Futurecom, which is the largest telecom show in the region. Futurecom will be held in Florianópolis (Brazil) from October 1-4, 2007. ■

**Most industry experts agree on one thing: the evolution to IMS will span many years.**

# converged views

## The IMS Ecosystem

by Marc LeClerc



### Filling the pipeline

Giving users a much broader offering of content and applications will require a significantly expanded value chain with cross industry partnerships as well as a major increase in the number of parties involved in developing new content and service ideas. To achieve this, it will be essential to engage members of the media community as well as the application development community. This presents a dilemma, as the telecommunication community has limited channels within these communities, and they in turn have limited awareness of the commercial opportunities made possible by "telecom-enabling" their content and applications.

Luckily, multimedia content and services developers don't work in isolation. In fact, these days they rarely work alone, participating in a broad network of platform vendors, tool suppliers, open source communities, aggregators and hosted application services. This is called the "ecosystem" approach and, as with a biological ecosystem, it works best when all members fulfil their role in the chain by filling their specific niche efficiently.

### How ecosystems work

In the world of electronic content and applications, instead of energy, food, oxygen, habitat and safety, the ecosystem provides markets, capital, technologies, suppliers and channels. As in biological ecosystems, the success of the entire chain is contributed to by each member in turn, and when the ecosystem is healthy all members share in that success. So how can the telecoms community use these principles to build a content and application ecosystem that can thrive in the world of networked multimedia?


Markets, like other ecosystems evolve over time, reacting to changes in business climate, technologies and consumer behaviour. New markets start simple and gain greater depth and complexity as new and existing players discover niches that provide them competitive advantage. These niches present new business opportunities to network operators, but can they be exploited while minimizing the business risks involved? As some of these opportunities involve unfamiliar industries, how can operators build the competencies they need in order to compete? And how will they get content and application providers to see telecoms as their channel of choice for bringing their offerings to market?

An ecosystem approach makes it possible to take a gradual approach in entering these markets and build a position of strength by means of progressive investment in that market and acquiring the network of partnerships needed. The first step is to identify a market or activity where network access can offer obvious value to end users and an incremental market or an obvious advantage to content and application providers. Let's take ring tones as an example for the music business. Ring tones and call back tones brought a completely new set of revenues to the music industry long before operators considered offering full track music downloads. The ring tone market provided users a new way to express their individuality and musical affiliations, and it also led to "first contact" between telecoms and music providers. Though it was sometimes a bit rough to work out the revenue split, it was an obvious win-win-win scenario for users and both industries.

Another market building strategy used in the ecosystem approach is for vendors (and sometimes network operators) to offer assistance to content and application developers in the form of software development kits (SDKs), market knowledge and market access. In particular, the SDKs provide highly abstracted application programming interfaces (APIs) that allow developers to quickly integrate network features into their

**I**MS offers telecoms network operators the capability to profitably deliver multimedia content and services via an improved user experience integrating new functionality, scalability, performance, and carrier grade quality of service. Just because telecoms can deliver this new experience does not guarantee user acceptance nor does it guarantee that existing channels will give up their customers without a fight. Indeed each new business area will impose a new learning curve on operators to figure out "where the fish are, and how to swim with the sharks." However, perhaps the biggest challenge will be in finding sufficient content and applications to take advantage of the opportunities IMS provides.





applications. These are often accompanied by validation programs and promotional activities meant to build an initial awareness and demand for the applications - and thus network traffic.

### No one can go it alone

At first the supply chain is very shallow with only a few parties involved. The next step in an ecosystem approach is to work on increasing the efficiency of the supply chain. Sometimes this takes place by introducing "middle-men" who engage in a very small part of the overall solution delivery chain, but who take advantage of economies of scale, finance or simply being faster or less expensive for their own small part. Here we can see aggregators, hosted service providers and brokers. These additional parties in the chain take a portion of the revenues, but free up time and capital for other members that can then be focused on core competencies and cost reduction so that even by sharing the margin the other members still make more.

It is also worth looking at companies that would sometimes be considered competitors to see if by working together in some areas there is a chance to significantly boost the overall market, i.e. making the pie bigger for everyone makes each competitor's slice bigger (even if their market shares remain the same). This is called the "co-opetition" market model, which came to prominence in the IT market, where larger scale compatibility and interoperability led to major advances in the usage of computers, the Internet and the World Wide Web. It has even led to the "Open Source" movement that created Linux and many of the tools and services used in developing applications and offering services over the Internet. A good example of this approach is Ericsson's contribution of IMS SIP container source code to the Glassfish Project, an open source application server activity originated by SUN Microsystems. Ericsson's motivation for this effort is to get more IT developers utilizing IMS based network features in their applications.

### Give me the service I want, when, where and how I want them

Another factor favouring the ecosystem approach results from the increasing emphasis on network convergence. In a convergent scenario, users have the convenience to consistently access any of the content and services they want no matter which network is providing access and what terminal device is being used. In the triple play (cable, Internet, mobile) or quadruple play (cable, Internet, mobile and fixed voice via VoIP) scenario, the convergent network operator can gain economies of scale by using the same infrastructure to deliver services to all access types. Of

course each access type also has its own advantage. With IP-based TV for example, the TV screen (with a broadband set-top-box) offers high-resolution image quality, the PC lets you more easily do searches and interact with media content. And with mobile TV, you can watch your programs whenever you have a few minutes, even if you're on the move. Getting all of this from one entity potentially simplifies the user's life by having a single bill to pay, avoiding the need to maintain several separate identities, getting the same services everywhere and making it much easier to keep all these services synchronized.

The hard part is that doing all of this requires common standards across network types, interoperability across vendors and operator boundaries, and inter-working with legacy systems from all these different access networks. This is a job that would be prohibitively expensive should a single company try to do it alone. However, by standardizing key network interfaces, such as was done across mobile, fixed line and cable industries by the adoption of IMS, the different parties involved in those separate ecosystems can combine efforts to build common offerings by partnering with each other.

Another major benefit is that it provides a broader market for content and application developers, reducing their business risk and thus hopefully attracting more developers. This will make it far more likely that operators with have available to them a critical mass of services with which to compete effectively in their chosen markets segments. ■

Marc LeClerc is Manager, Mobility World Global IMS Expert Centre, at Ericsson ([quote](#) - [news](#) - [alert](#)) ([www.ericsson.com](http://www.ericsson.com)).

### Ericsson's Ecosystem Building Tool: Mobility World

Ericsson's third-party partner support program is called Mobility World. It leverages over 100 years of telecommunications experience to help content and application creators successfully plan, develop, verify and get end-to-end solutions to operators and end-users. Mobility World comprises a global network of regional centers and expert centers that provide:

- Market and Technical Information.
- Software development kits (SDKs) and testing services.
- Developer support and discussion forums.
- Exposure to operators in over 160 countries via demo centers, global and local events, application catalogues and a monthly newsletter.

Membership is free. You can find out more about Ericsson Mobility World at: [www.ericsson.com/mobilityworld](http://www.ericsson.com/mobilityworld)

# IMS, Service Delivery Frameworks, and the Long Tail

by Grant F. Lenahan



Nevertheless, revenues and margins are under downward pressure for traditional high-volume services such as POTS, mobile voice MOUs, "broadcast" video and commodity Internet access. Much of this downward pressure comes from the very fact that the new networks being built-out by fixed, cable and mobile companies allow them to enter each others' markets (e.g.: VoIP over cable, video over broadband), increasing competition and driving down prices. This all says that high-volume, commodity services - on their own - represent a declining market and even faster falling margins.

At the same time, there is significant good news for struggling operators. By offering bundles of voice, data and video, each can address a larger overall market and generate larger monthly ARPUs. More importantly, new IP-based networks open the door to an entire range of new services, from digital content to financial transactions to advertising. Many analysts report the revenue opportunity in digital content and advertising to be larger than today's market for voice, data and messaging services. This opportunity, however, demands a new service paradigm - one in which operators focus on the delivery of interactive, targeted, personalized services. It is important to recognize the operational implications of this - that each of these services will generate smaller revenues, and thus the cost of development, deployment and operations must be correspondingly smaller. And, of course, there must be many more of them.

This situation parallels those already made by many sectors of the global economy. Over the past decade or so, many industries have migrated from the traditional focus on "mass production" to a new paradigm of "mass customization." In effect, flexible manufacturing has made it economical to make products that are targeted to individual market niches.

One highly visible example is the auto industry, where flexible manufacturing has made it cost effective to create a wide range of specialized models, based on a smaller set of common components. "Economic production runs" have fallen from a typical range of 100,000-300,000 30 years ago, to as little as 5,000 units for a niche model to be profitable today. A similar trend has occurred in retailing and distribution, where companies like Amazon.com, Dell, Apple, and Home Depot have built successful businesses based on huge consumer choice and customized configurations.

Ultimately, the "new economics of niche marketing" is summed up in the popular notion of the "Long Tail." The Long Tail basically states that a large proportion of demand comes from niche, often personalized, goods and services that consumers buy as an adjunct to a basic service - such as mobile telephony or broadband communications. One illustrative data point sums it up succinctly: Borders stocks approximately 150,000 book titles in its largest stores. Amazon.com, on the other hand, generates over 50% of its revenues from titles that fall outside the top 150,000. (See Figure 1.)

Clearly we are in a world of customized products and services. Telecom companies that are able to offer attractive,

A fundamental paradigm shift is underway in communications networks. Ironically, it seems that the technologists - protagonists of IMS, Service Delivery Frameworks (SDFs) and flexible service creation - have grasped the fundamental economics earlier than business managers have. Or perhaps it's easier to believe in something if you're not on the hook for the business case.

## The Marketplace

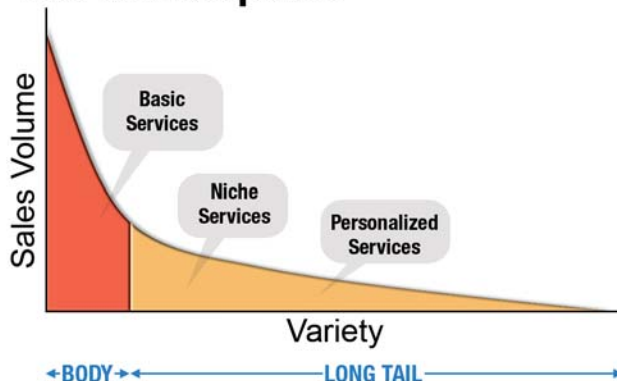


Figure 1. The Long Tail - Applied to Telecoms.



well-targeted and rich services will win market share and likely will be able to defend higher price levels and margins for their services. Their products will be less commoditized - and therefore the propensity for customers to churn for a lower price will be reduced. Most importantly, they will have made the transition from "operating networks" to "innovating in new services" - which will fundamentally place them on a trajectory to increase service revenues over the long term.

This is not an academic argument. Nor does the telecom industry have the luxury of time. Internet and media players are already changing the rules of the marketplace with alerts, enhanced IM, streaming media products and yes - even VoIP. One of their key differentiators is a personalization of services - witness My Yahoo, YouTube, My Google - that binds consumers to their service. This is setting a new bar for the communications industry - new services must be feature-rich, personalized, interactive and they must be created quickly - if they are to succeed in this hypercompetitive environment.

Two essential tool kits for the telecom industry are IMS and the associated service delivery framework. Both provide (or at least promise to provide) modular, flexible environments that enable quick, cost-effective development of rich new services. The main drawback is that IMS development so far has concentrated on the migration of traditional mass-market services to the IP environment: voice to VoIP; TV to IPTV with QoS, etc.

There is no argument that it is essential to support VoIP and TV on broadband IP networks. These will, for the near term, form the economic bedrock for IMS and IP networks. But at the same time, IMS and SDFs need to support the thousands of new services, pricing plans, ad sponsorship arrangements, etc. that we have not thought of -- the multitude of personalized services that for the tail (of the Long Tail). This means that we need to put equal emphasis on the set of services that put customers - and their preferences - at the center of any communications experience. This interactive communications framework is conceptually illustrated in Figure 2.

The interactive portions of a Service Delivery Framework (SDF) and of IMS are neither magical nor mysterious. They are where essential personalization takes place; where customized charging occurs; subscriptions are enforced; preferences are maintained; allowances and usage limits are imposed and promotions and sponsorships are delivered. In essence, it is where generic services are personalized - on an

interactive basis. The three most important and widely applicable capabilities to realize this vision are charging, policy and custom service logic (often called service creation).

Before I conclude, let me call attention to the OSS/BSS portion of this process. Every service needs to be defined, created, activated, executed, charged for and assured/monitored. These operational costs need to be commensurate with the overall revenues derived for a service. As the number of services increases exponentially, while at the same time revenues per service decrease almost as fast, the overall costs of establishing operations must decrease proportionally with overall revenues (preferably more!). Similarly, if time to market must be one week, the operational support must similarly be available within that timeframe. This, too, is a paradigm shift compared with today's expectations. And yet operations are as much a part of the critical path as access facilities, application servers and other critical network devices. After all, the chosen pursuit is pointless unless revenues are collected.

Every chain has its strong links and weak links. As an industry we've already sunk hundreds of billions of dollars/Euros/etc. into the costliest parts of our next-generation infrastructure. The beauty is that 100% of that core broadband and mobile infrastructure is ready to be leveraged. Now its time to spend far less, but wisely, on the SDF and OSS/BSS components that will transform the industry from "facility-based utilities" to "market-based innovators", and from "dumb pipes" to "revenue machines".

Or we can watch web-based competitors do it for us. It's really our choice. 

Grant F. Lenahan is Vice President and Strategist, IMS Service Delivery Solutions at Telcordia Technologies, Inc. ([news - alert](http://news.alert)) For more information, visit [www.telcordia.com](http://www.telcordia.com).



Figure 2. Interactive Services Framework.

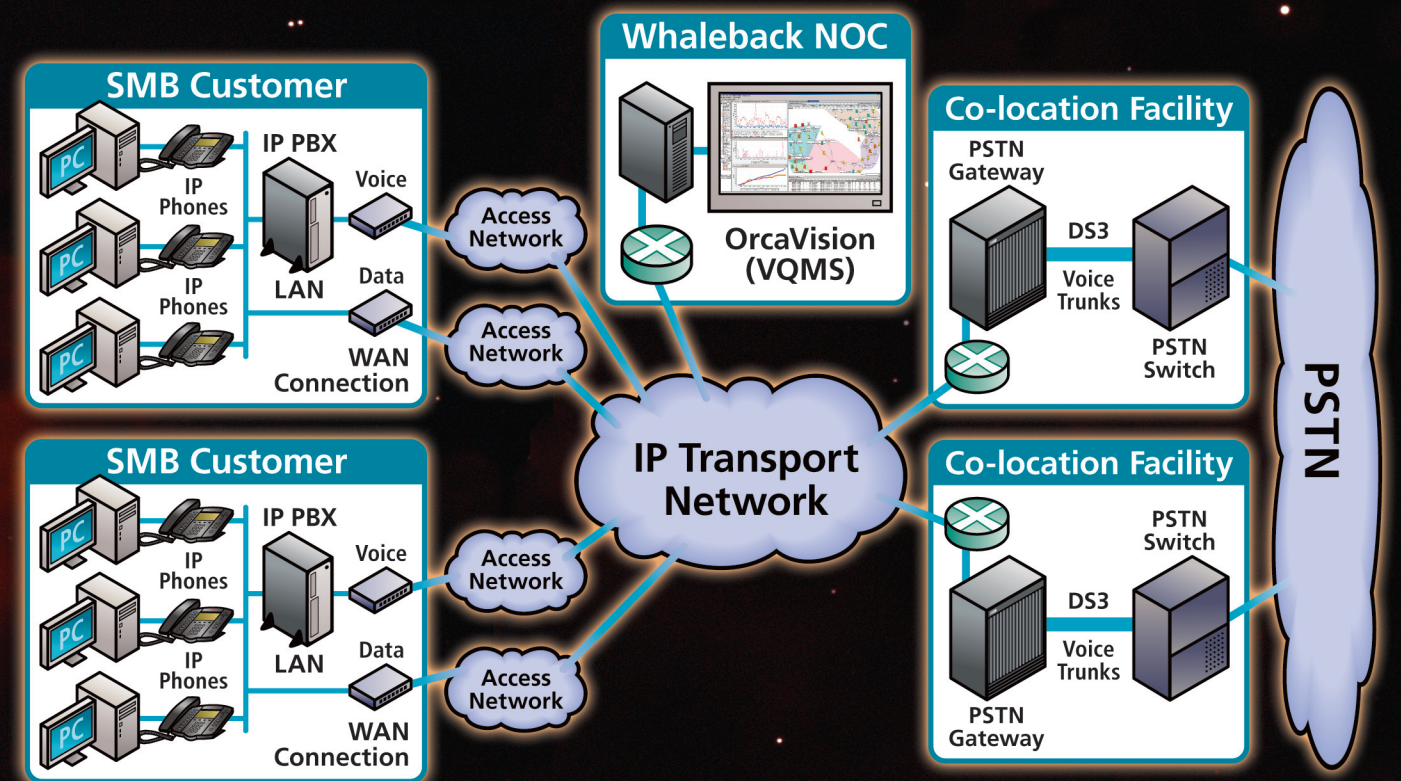


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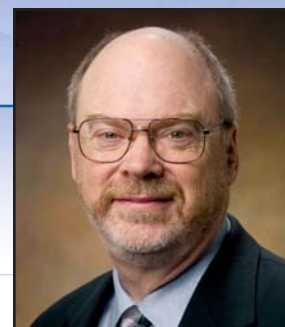
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# The Need for IMS Enabler Innovation

by Mike McHugh



IMS enablers are feature-specific servers that provide Internet and communication services with productivity and community-enhancing features, such as instant messaging (IM), IP conferencing, presence/availability, location, group list management, gaming, and Web 2.0 type of value-added capabilities. IMS enablers are often times referred to as "applications."

In order for new IMS services to flourish, it is very important for network operators to recruit, deploy, and manage a wide ecosystem of innovative, new IMS enablers/"applications" that can be created by in-house developers, SI partners, or by third-party ISV partners. These applications by themselves are not sufficient to generate a large volume of data consumption by end-user consumers. As a result, these so-called real-time communication and collaboration capabilities are being woven into existing Internet services and applications as core value-add capabilities.

Two use-cases exemplifying this type of integration include the addition of IM, presence/availability management (PAM) and VoIP features to Internet mail services, or the embedding of IM, PAM, and IP conferencing with enterprise knowledge worker collaboration suite product offerings. In these application use-cases, IM, PAM, VoIP and IP conferencing are not stand-alone applications, but are actually value-added, productivity enhancing features of existing end-user applications.

Another example is the use of mobile messaging and call control capabilities as IMS enablers at the IMS services layer. In this use case SMS, MMS, and call control capabilities are embedded into existing Internet services, or enterprise knowledge worker applications, such that a pre-configured business process may trigger a SMS, MMS, or call to one or more key decision-makers in a given business process workflow. This could be applied in the context of any vertical industry such as financial services, healthcare, homeland security, supply chain, transportation, or manufacturing.

The key to such IMS service innovation is the ability for operators to attract an ever-increasing and ever-innovating ecosystem of third-party IMS enablers. The innovative features and capabilities implemented in IMS enablers will become the uniquely differentiating service capabilities delivered by network operators over their IMS networks. To leverage these IMS enablers efficiently and cost-effectively, operators will need to implement an IMS Services Layer architecture. This architecture will allow IMS enablers to access, share and extend the features of the various other IMS enablers with the ultimate goal of delivering new innovation to IMS applications.

To this end, network operators must implement an IMS Services Layer strategy that involves opening their IMS service capabilities to third-party developers and ISVs, as well as implementing a policy-based approach to control which IMS enablers from which third parties can be accessed by other third-party developers/ISVs. Hence, the exposure of IMS network capabilities via open APIs, while maintaining the ability to control how third parties use and access various IMS Enablers, will become critical to the new IMS business model.

IMS network deployments and initial commercial service launches are beginning to happen in key communication markets in Europe and Asia, with the Americas soon to follow. As operators plan their future IMS services roadmap, there will be a critical need for the proliferation of new and innovative IMS enablers to provide the uniquely differentiating capabilities of new IMS services. To provide such capabilities, operators must first implement a converged IMS Services Layer to bridge the IT and telecom domains in terms of service creation, delivery, management and orchestration. And into this IMS Services Layer, operators must source a large ecosystem of third-party IMS enablers so the unique capabilities of the IMS network can be implemented as features and ultimately embedded into new and innovative IMS services. 

**E**very operator deploying IMS networks is looking for new services, above and beyond the initial set of IMS-fixed-mobile convergence (FMC) services planned for their first commercial service launch. Although it is clear that there will not be a single "killer app" when it comes to IMS services, what will be required is a "services layer" landscape similar to the Internet domain, where new services are created rapidly, at low cost, and deployed/removed easily. In order to have an IMS services layer that delivers new innovative services, operators must populate the IMS services layer with a diverse portfolio of IMS enablers.

*Mike McHugh is vice president and general manager, BEA WebLogic Communications Platform, at BEA Systems. For more information, please visit the company online at [www.bea.com](http://www.bea.com).*



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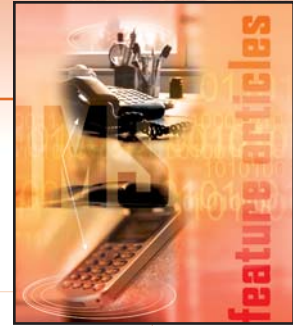
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# The Road to IMS: What Service Providers Need to Know

by Amit Chawla



Initial discussions on the IP Multimedia Subsystem (IMS) began in the early 2000s, initially as an evolutionary path for mobile operators from their GSM/WCDMA-based networks. Very quickly however, wireline operators realized the benefits of IMS and the technology is now seen as appropriate to all telecoms operators.

For wireline operators the vision of IMS is that it will enable them to migrate their decades-old, circuit switched networks to all IP in a single bold step. But existing networks are not coherent entities, they have evolved incrementally over the years. Within a single network there will be a mixture of new and legacy protocols and equipment built using different generations of specifications and utilizing a multiplicity of interfaces and providing a range of specifications. This reality undermines the claims of some vendors' solutions that IMS can be easily and seamlessly implemented using a 'box-based solution'. IMS solutions, architected correctly, can be implemented in networks containing multiple application servers supporting multiple devices, legacy TDM and early VoIP network elements, as well as early IMS implementations. What operators need are flexible solutions that will enable them to support the legacy elements of their networks and their existing users whilst migrating their networks to IMS. Unfortunately, at present, the majority of vendors pushing IMS do not have the capabilities to offer carriers the flexible solutions they require to integrate such diversity of network offerings.

To disguise this lack of flexibility in the solutions they are offering, vendors are trying to persuade operators to agree to a single solution, or box-based implementation, one usually compliant with an outdated generation of specifications.

This approach freezes the network at a particular moment in the evolutionary cycle and does not allow future development as new technologies and specifications come on stream. It also means that only customers with devices compliant with the frozen specification can be supported, those with older or newer devices are somewhat restricted. As it is totally unrealistic to expect users to replace their devices at the behest of the operator, rather than through choice, operators must decide whether to abandon a large number of their customers or remain locked into a solution which will not enable them to innovate for the foreseeable future.

To avoid being trapped operators must develop an IMS strategy which is sufficiently flexible to allow them to migrate their networks in line with technological developments whilst continuing to equally support their legacy and new customers. Most importantly, operators need to determine whether the expertise of their incumbent suppliers is sufficient to meet and overcome the differing challenges of the migration to IMS and rapidly embark on an applications based revenue stream.

At the present time the majority of IMS vendors lack the flexibility and range of skills required to smoothly evolve telecommunications networks to IMS. Ensuring full connectivity for every existing and potential user and device, for example, requires expertise in protocol mediation possessed by few vendors. The vendor needs to have knowledge of legacy technologies at one end of the scale and the very latest 3GPP IMS specification developments at the other. Every network will have its own unique mix of new and legacy protocols and technologies so the vendor needs a huge skill set and the ability to respond flexibly to the different demands of different networks. Protocol 'translation' is not the answer. Instead, choosing the right vendor is the first step on the road to successful migration to IMS. If operators can avoid vendors peddling monolithic and inflexible

**E**ven in an industry famous for hyperbole, the expectations surrounding IMS have been staggering. For fixed and mobile operators IMS has become the Holy Grail, offering increased revenues, greater network simplicity, significantly reduced operational expenditures and the ability to rapidly create and deploy new services. Much of the hype is in fact achievable reality but what vendors are signally failing to tell carriers is that the evolution to IMS can only be achieved with a non-legacy based, true NGN, standards compliant infrastructure.

solutions, then IMS offers them the ability to migrate their networks at the pace most suitable for them, based on their own situation in terms of their existing network infrastructure and customer base.

### **Generating Revenues - It's About Access**

For carriers and service providers the most important benefit of IMS is the capability it offers to rapidly create and deploy new multimedia services and applications which will be the revenue generators of the future. To access these revenue streams effectively operators need to make the new services and applications available to the widest possible range of users so they can deliver to all possible access points; IP phones, black phones, PDAs, softlines from PCs and laptops and wireless phones.

These multiple access points utilize a huge range of differing protocols and interfaces including legacy TDM, IP, VoIP, Wi-Fi, WiMAX, GSM, CDMA and WCDMA to name but a few. IMS is the technology that can bind these disparate technologies together from an application and control perspective, enabling the provision of services and applications to multiple wireless and wireline endpoints. This transparency enables operators to deliver revenue generating services to the widest possible audience. However, not every vendor has the capability to tie these different access technologies into the IMS core network. Some vendors will have expertise in legacy TDM but not in the wireless arena, and others will have the wireless skills but will be lacking expertise in IP. Furthermore, delivering a unified set of applications ubiquitously across multiple access networks is a rare art. To ensure operators have full access to the largest possible market for their new revenue generating services and applications they must select vendors whose skills cover the entire gamut of access technologies.

### **Supporting Legacy Services - Going Back... to the Future**

IMS is all about delivering new services and applications such as presence, VoIP and mobile VoIP, instant voice messaging, mobile instant messaging (MIM), push-to-talk (PTT), video sharing, IP Centrex and click-to-dial from web pages. What is often overlooked is that both fixed and wireless operators already provide a huge range of legacy services based on Intelligent Networking (IN) such as toll free, translation and personal call lists. Many vendors pushing IMS at carriers tend to ignore the huge investment already made in these legacy services. In addition to the considerable investment involved, these legacy services also provide valuable ongoing revenue streams for operators and it is important that these are carried forward as the network evolves to IMS.

### **Enabling Services - Interaction Makes the World Go 'Round**

The implementation of IMS offers operators the capability of creating and delivering new multimedia services and applications

that will generate new revenue streams to offset the decline in voice revenues. As service creation with IMS will be quick and easy, many new applications will be brought to market.

As the number and range of services enabled by IMS grows, operators will have to address the issue of managing inter-service conflicts in real time at very fast rates. This functionality is a key element of the IMS core where it is handled by the Services Capabilities Interaction Manager (SCIM). The SCIM provides a central flowpoint so that, as operators add and subtract new applications and services, the transactions between the application server and the endpoint are managed correctly. The SCIM also allows the operator to mix and match services, including services from outside providers, modify the service flow and add or subtract value. The capability to deliver the SCIM functionality is currently limited to a few vendors as the majority of suppliers active in the IMS space do not have this expertise.

### **Keeping Track of Customers - One Database to Rule Them All**

In the multiservice, multiple protocol/technology/bandwidth/endpoint world of IMS, rapid access to customer data is essential. In today's networks services and applications reside in individual silos, each with its own customer database e.g. data on prepaid customers is in one database, and information on customers using instant messaging in another. The individual databases are not linked and there is no common database containing all the information about the customers. Replicating all the databases is too expensive, too difficult and too prone to error. With IMS it will be essential either to have, either a single large database or if this proves too difficult, the capability to tap seamlessly into multiple databases. Without this capability operators will not be able to access the user, deliver services to the user or charge for those services. In the IMS specification the central database is defined as the Home Subscriber System (HSS) although it is likely that some carriers will retain individual databases for different services with which the HSS is designed to work seamlessly.

### **Converging Networks - The New Frontier**

An interesting, if somewhat unexpected, effect of the migration to IMS is that it is enabling the realization of fixed mobile convergence. Mature cellular markets are now saturated with penetration levels in excess of 100 per cent. Cellular operators are looking to IMS to drive up revenues through the provision of new applications and services but they are also eyeing a move into the wireline space. Technologies such as HSPA will enable cellular operators to deliver broadband connectivity anywhere anytime. With this weapon the operators are targeting traditional wireline customers with bundles of services and applications which are accessible in the office, in the home and on the road.



Wireline operators are responding by moving into the wireless space. Technologies such as WiMAX, which operates in unlicensed spectrum, offer fixed line carriers the ability to deploy regional or hotspot wireless networks which will generate additional revenues through the provision of broadband connectivity.

This ongoing fixed mobile convergence is being enabled by the migration to IMS.

## Migrating To IMS - There is No Big Bang

The migration to IMS will be a step-by-step process rather than the Big Bang of an overnight transition to an all-IP infrastructure suggested by many IMS vendors. Certainly there will be some operators who are well-resourced and ambitious enough to deploy a completely new infrastructure. The majority of fixed and wireless operators will be more cautious, migrating

individual parts of their networks to IP and IMS as the technology becomes proven. This approach will ensure that carriers will be able to support all their legacy devices and users throughout the migration process. By choosing the right suppliers they will be able to migrate each network layer independently and at their own speed.

If operators avoid monolithic and inflexible vendor solutions, IMS offers them the ability to migrate their networks at the pace most suitable for them, independent of the adoption of new devices. This approach enables operators to take advantage of the efficiencies of the migration to IP and IMS, based on their own situation in terms of their existing network infrastructure and customer base. ■

Amit Chawla is EVP, Global Business Units, Veraz Networks. ([news](#) - [alert](#)) For more information, visit the company online at [www.veraznetworks.com](http://www.veraznetworks.com).



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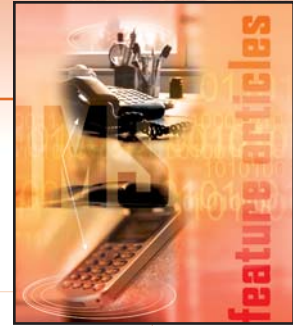
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# Quality of Service in IMS – Essential for Success

by Keith Cobler



At the same time, the market for multimedia communication services has become increasingly competitive. Although brand loyalty plays a dominant role in some customer segments, it cannot be the only barrier to entry as new technologies and changing customer needs and demographics are reshaping the market with increasing speed.

So for new IMS multimedia services, what factors are important for customer retention? Today, cost is certainly one of the key factors as consumers become savvier in terms of what is available and how much they are willing to pay for it. But given the relative infancy of IMS services, quality of service (QoS) becomes an increasingly important factor - especially during the initial deployment and introduction of new services. Consumers rely on communications as a fundamental component of their everyday lives. They are unwilling to compromise when it comes to poor quality - and are likely to drop a service in favor of another service provider that promises better quality and an exceptional experience.

## Why Network Quality Matters

In the past, there were only a few companies that delivered communication services. But over the years, the lines between fixed, mobile and wireless have blurred - a trend that has accelerated with the introduction of IMS. For the traditional fixed or mobile network operator, they now have to deal with new competitors whose strategies and tactics are less familiar, but are creating unrest with their conventional customer base. With convergence, it's almost anyone's market for the taking.

Within this new market environment, network operators have to become more responsive to changing market dynamics and must have the ability to roll out new services and applications as needs arise. With IMS, network operators can develop and leverage single applications for multiple markets, avoiding the silo approach that has plagued them in the past.

At the same time, network operators must streamline their costs by minimizing future network expenditures (CAPEX) and minimizing ongoing network maintenance costs (OPEX). In moving from their current service-specific architecture to a multi-service architecture, there is the potential for huge cost savings from both infrastructure and maintenance economies of scale.

As networks continue to converge, the concept of quality at a given cost for network operators will become more significant - from the customer perspective because they are willing to pay for additional services, and from the network operator perspective because they must leverage existing network infrastructure and resources to deliver quality at a given cost.

## The Evolution of Quality of Service

Historically, networks were developed with specific services in mind and it was understood that all applications did not have the same QoS. This same mindset held true for the initial IP networks that were introduced. On the low end of the scale, the QoS involved with sending data over an IP network was most often a best-case effort. It wasn't until the advent of VoIP that the industry began to focus its attention on improving the quality of voice calls over the Internet. But through constant network monitoring and optimization, VoIP services today are beginning to approach the same quality of service as PSTN - the benchmark for voice services - but now with the CAPEX and OPEX advantages of a converged IP network.

Because of the VoIP experience, expectations for quality are high for video and for converged services using video, voice and data. But within the converged IP environment, it is important to keep in mind that video, voice and data are not all created equal - voice is very sensitive to latency and jitter, while video is very sensitive to dropped packets.

Driving the connection between the customer's need for service and what the network can deliver is the concept of quality of experience, or QoE, which is a measure of the customer's perception of quality. Although it may be easy to

**C**onsumers today are demanding new services that can be accessed anytime, anywhere. There are two segments driving this trend, including Generation Y (those born after 1978) and business professionals who need immediate and mobile access to new data and multimedia applications.



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believe that all that matters is QoE since it focuses on the end user, but it's important to remember the very foundation of QoE rests on having a network that can deliver services and applications with an acceptable QoS.

From a network management and monitoring perspective, it's critical to have complete end-to-end visibility of an entire IMS session - from the core IMS network to the end-user's device - if you want to ensure a given QoS and take full advantage of available network resources.

### Challenges in Ensuring QoS in an IMS Network

QoS is a key component in the original design and conception of IMS. Different from some network architectures of the past, IMS allows service providers the ability to differentiate the QoS they deliver to a given customer or group of customers - a key aspect of future business models.

However, there are challenges in delivering and ensuring QoS in an IMS network.

To begin, IMS is complex. With more than a dozen new network elements, 20+ new interfaces and dozens of protocols involved, there is a great deal of complexity that needs to be managed and monitored. (See Figure 1.)

Some of the new elements in IMS include the Home Subscriber Server (HSS); the Call/Session Control Function (CSCF) which processes SIP signaling and is divided into the Proxy-CSCF (P-CSCF); the Interrogating-CSCF (I-CSCF); the Serving-CSCF (S-CSCF); the Application Server (AS) that hosts and executes services and includes the SIP AS (Application Server); the OSA-SCS (Open Service Access-Service Capability Server) and the IM-SSF (IP Multimedia Service Switching Function); the Media Resource Function (MRF) which provides a source of media for the home network; the BGCF server which connects IMS originated calls to circuit switched terminations;

the Signaling Gateway (SGW) that interfaces the signaling plane of the circuit switched network; Media Gateway Control Function (MGC) that performs protocol conversion; and the Media Gateway (MGW) that interfaces with the media plane or the circuit switched domain.

Another point regarding IMS elements is that 3GPP does not call for the standardization of nodes - but functions instead. So, what does that mean? In simple terms, it means that IMS is a collection of functions linked together by a common set of interfaces. With this approach, network equipment manufacturers are free to split elements apart or combine them - but the underlying basis is for a given functionality. There are potential challenges raised by this approach, including possible interoperability issues since some network equipment manufacturers may choose to spread functionality across several nodes, while others may combine multiple functionality into a single node.

In addition, there is increased session complexity, and depending on the networks involved, it may increase ten-fold over an existing stand-alone network. For example, the signaling associated with a multimedia mobile phone session that accesses IMS resources might include 30-40 individual messages and span multiple network elements and protocols. To further complicate the issue, a given session may contain multiple streams of different data types, each with their own QoS characteristics. If a problem should arise in any step along the way, a service provider needs to have the ability to trace the signaling path and quickly isolate network elements, interfaces or protocols involved with the problem.

### Ensuring Network QoS for Maximum Impact

It is difficult to challenge the importance of QoS in the delivery of next generation services and applications over IMS. However, as we've also seen, delivering QoS within an IMS environment is not without its challenges. Most importantly, network operators need to realize the decisions made today about what they deploy and how they manage and monitor it will have a lasting impact on their long-term business success or failure. And, different from network technologies of the past, IMS is all about delivering those individual services and applications to those individuals willing to pay for them.

From an operator's perspective, it's no longer just about managing the network, but providing the right information concerning services and applications to the marketing, business operations and customer-related departments that depend on it to be successful. By adapting a network monitoring platform to support a wide variety of network types and technologies and diving deep into IMS and other associated protocols, operators will be able to ensure a network's end-to-end QoS. ■

Keith Cobler is Marketing Manager, Network Management, for Tektronix. ([news](#) - [alert](#)) For more information on Tektronix' communications test, measurement and network monitoring solutions, visit [www.tek.com/communications](http://www.tek.com/communications).

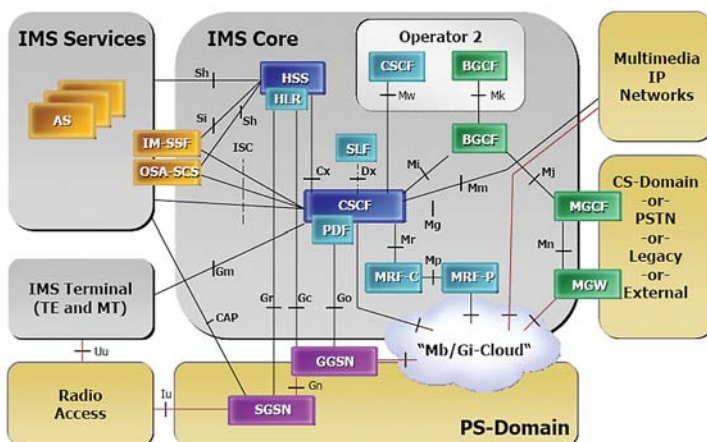


Figure 1. IMS introduces many new network elements in the IMS core, as well as many new interfaces and protocols.



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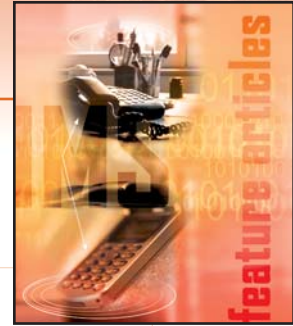
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# Interworking with Legacy TDM Networks

by Richard "Zippy" Grigonis



When the NGN started its ascent, one great hope of reconciling it with the TDM was SIGTRAN, an IETF working group that devised a family of protocols (IUA, M2PA, M2UA, M3UA, SUA, V5UA), and in particular SCTP (Stream Control Transmission Protocol) that could carry PSTN signaling over IP. Ironically, SCTP is now used for datagram services that have little to do with its original purpose.

"Indeed, SIGTRAN can't deal with everything, mostly because the NGN/IMS architecture doesn't specify it," says Patrick FitzGerald, Vice President of Marketing at AppTrigger ([www.apptrigger.com](http://www.apptrigger.com)). AppTrigger offers service providers and network operators their Application Session Controller, a device housing an interesting combination of media, signaling, call control, and a family of APIs for multi-network, converged application deployments.

"We talk with service providers quite a bit about TDM because interworking with it has always been a challenge for the service provider," says FitzGerald. "It's been a challenge inside the core of the network. We hear about a variety of issues over and over again from service providers. We at AppTrigger focus on the interworking protocol mediation issue at the application layer. A key challenge providers have at that layer involves the IMS network build-out. The beauty part of IMS is that it fosters a unified IP/NGN/IMS infrastructure that allows you to create and deploy applications quickly, and you can monetize the services. But the providers say, 'I already have invested millions of dollars in 10 or 20 large-scale TDM/IN applications such as, say, prepaid, that currently generate RPU [Revenue Per User] from 15 or 20 million subscribers. I'm building out an IMS core network. The business case doesn't justify me buying brand-new, large-scale 20 million subscriber applications without any additional revenue from an RPU perspective. Since I don't want to buy new applications, how do I get my existing applications to interwork with my IMS build-out so I can repurpose the applications to work with both kinds of networks?' I would argue that the marketplace in general is struggling with this particular issue."

"Many providers come to us with this problem," says FitzGerald, "and we work with them relative to how to help them interwork - to do protocol mediation for IN-based applications such as Free Phone, into the IMS architecture. Today, in the standards, you have the IMSSF [IP Multimedia Services Switching Functions] that are very focused on 3GSM and CAMEL [Customized Applications for Mobile Networks Enhanced Logic], but what's missing are all of the wireline protocols as well as additional wireless protocols, that are able to mediate and go into an all-SIP/DIAMETER environment."

AppTrigger's Vice President of Sales Engineering, Jose Deras, says, "The IMS networks being built today by the large service providers are essentially 'parallel networks' to the current large-scale, basic PSTN service that they maintain today. They can't do a quick cut-over. They have to use parallel networks, which is in fact the correct thing to do. IMS networks are just starting up, which means that initially they're very small. IMS thus affects a fraction of the operators' overall subscriber base. But, simultaneously, the provider must be able to offer the same capabilities and applications that the larger user population enjoys within the IMS environment."

"Ironically, some basic TDM applications are required to work with IMS which are not even money-making applications," says Deras. "They're just basic network necessities. A good example is LNP [Local Number Portability]. If a portion of the user population is moving to IMS, the operator or provider must assure that those subscribers can still port their numbers, which is mandated by different regulatory bodies in specific

**B**ack in 1997, we all thought - well, salivating Wall Street investors thought - that the world's networks would be whistling IP "any day now". That didn't happen, of course. Neither service providers nor users could dump that much infrastructure that quickly. And even though we still haven't completely moved over to an NGN (Next-Generation Network), something else is on the horizon: a SIP (Session Initiation Protocol)-powered service architecture network called IMS (IP Multimedia Subsystem), that's about to overlay both previous networks. It looks like we'll have an overly dynamic, hybrid network for the next 15 or 20 years. But interworking technology will help tremendously.

countries. So the operator must figure out a way to bring the legacy platform that does LNP over to the IMS world and interconnect it with their SIP-based architecture. If that's not possible, then the operator needs more CapEx to replicate the existing functionality in the new IMS network, where the operator may not necessarily make more money, but the functions are a necessity."

### "SCIM-ing" TDM Networks

Tekelec ([www.tekelec.com](http://www.tekelec.com)) is a network applications company that helps service providers make the huge transition to IMS networks.

Steve French, Tekelec's Manager of Product Marketing, says, "Like many companies, we came up with an IMS strategy. From the beginning, we've always talked about the migration to IMS and IP. Our Eagle 5 integrated signaling system works in the core of the signaling network handling multi-protocol global signaling and real-time transaction-oriented applications. We work within TDM and also play a part in the NGN, so we naturally felt it was pretty critical to leverage whatever was out there. Of course, we are still pitching an IMS story, and we talk about our Call Session Control functionality. We've got partnerships with BEA and HP. That's all part of one of our strategies for getting carriers to move to IMS."

"But we see a couple of other near-term trends relating to different migration strategies," says French. "One is the concept of SCIM (Service Capability Interaction Manager). We all think of SCIM being closely associated with IMS, but we're actually seeing more of a need for SCIM in the existing world, where operators are trying to do things such as CAMEL mediation and mix services, such as Local Number Portability, Prepaid, Calling Name, and so forth, using existing SCPs [Service Control Points] within the TDM network and wanting to be able to combine these services via service interaction and mediation between the different protocols to create bundles of mixed services for their customers."

"Since there can be voice application servers in the NGN, an operator or service provider would want to do some interaction among those and to have them communicate with more conventional technology, too," says French. "Now that you've put down a network for the NGN, you can extend the SCIM to this, and so you can conduct interactions between the TDM/IN network and the NGN network. Of course, eventually that SCIM technology will evolve and continue to move across to cover the IMS network, so you'll have some sort of interaction of the different applications and the SCPs, application servers, or whatever you want to call them, and there will be mediation between and among the different protocols and technologies."


"So that's one concept of SCIM that we definitely believe is here today," says French. "Companies use different terms for this, such

as 'application control switches', 'service mediation', 'service interaction' and we think this is a very near-term phenomenon that allows operators to leverage their existing equipment - which is what they all want to do - and it allows them to start making some money from that existing equipment and incrementally build out the new network and start to leverage it immediately. So SCIM in general is a big topic."

Dan Bantukul, Tekelec's Director of Product Marketing, says, "If you imagine the operation of a hybrid network, you first have the legacy network, and now the NGN, and then at some in the future there will be an overlay IMS network. These three networks will be coexisting within a single physical network operation. For the last few years we have concentrated our efforts on interworking these technologies. For example, between the SS7 TDM and NGN you already have softswitches that help manage connections for VoIP calls between the TDM and NGN. We're also concentrating on getting voice calls to travel between SS7 and IMS and the NGN and IMS. A critical point that people have to look at, beyond just getting the call connected, is to figure out a way for the services to move across network boundaries at will. Enhanced services functionality in an SS7 world must be accessible in an NGN or IMS network. These services must carry across or else they must be dropped and a new type of service established. The industry as a whole must look very carefully at this and what to do."

"At Tekelec our strategy in transitioning to this new world focuses on the signaling information that allows operators to make happen seamless services across the network boundaries," says Bantukul. "We at Tekelec have developed a unified control layer using TekSCIM to interact and mediate applications and capabilities so that value-added services can be delivered to subscribers of services, regardless of the type of access network or device."

Instead of implementing SCIM as a function in an IMS application server or as a function in a CSCF (Call Service Control Function) platform, Tekelec favors creating a standalone functional node (though not a totally independent network element) on the network call control layer. By placing this TekSCIM-powered unified control layer functionality in between the access and application layer, the technology is in an optimum location for handling service orchestration and session management by communicating with the CSCF and SIP router, or the STPs (Signal Transfer Points) in a TDM network, and in the process dealing with such disparate technologies such as GSM, NGN VoIP and IMS as well as the mediation of multiple protocols like CAMEL, BICC and SIP.

Companies such as AppTrigger ([news - alert](#)) and Tekelec ([news - alert](#)) are building Star Trek-like "universal translators" for the world's networks. Thanks to their efforts, the protocol babble that could have stopped IMS dead in its tracks won't be such a problem after all. 

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





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# From the Desk of Michael Khalilian

## VoIP and ROI Challenges




**VoIP** ([define](#) - [news](#) - [alert](#)) technology has been challenged from its inception in every possible way, from its protocol development, interoperability and network integrations to the replacement of incumbent "Class 5" digital voice switches. VoIP has always been an integral part of the evolution of Softswitching and Application Server capabilities and the plan to utilize the rapid growth of Broadband high-speed Internet accessibilities across all markets. With all these changes happening in parallel, it is very difficult to evaluate the impact on OPEX and CAPEX and this has caused the per port cost or subscriber cost questions and concerns of Wall Street investors.

**ROI:** From 20,000 feet view it is self-evident that VoIP technology brings an abundance of savings and opportunities to both greenfield as well as existing networks. So why, when it gets to volume deployment, has VoIP not cornered the voice market yet?

The answer is simple. First of all, traditional TDM (Class 4 and 5) switches are being replaced by IP switches. And while the capital cost is going down, the revenues are also heading the same way. Many VoIP service providers do not own their customer access and broadband networks, which limits their growth while adding substantial marketing costs in order to acquire subscribers. They also have to pay to non-VoIP network providers access and interconnection fees, at the end, reducing or completely eliminating their net revenues. In addition, as time goes by consumers and enterprise customers alike are demanding more applications, more bandwidth and all at a lower and lower cost. Finally, adding to the cost burden we should not forget about costs associated with quality of service improvements and meeting all regulatory requirements such as E911, CALEA, the high cost access fund etc.

Other examples of ROI challenges include the non-facility-based CLECs reselling ILECs services. Most of the CLECs that did not own their own switches and facilities failed due to regulatory changes and the DLECs that came and went overnight that were reselling RBOCs broadband access.

**Bottom line:** VoIP is proven technology, and it should not take the blame for weak or failed virtual VoIP providers' business plans. What is really required is to improve the business plan with creative management and marketing, add more applications and services and listen to customers' issues. These are a few of the challenges for Virtual VoIP providers. The old adage that you need to spend smart money to make money still holds true. Undercapitalization of VoIP Service Providers added to the predicament of technology and service integration. There are a number of small and large service providers with successful business and deployment plans in place that are moving to bundle more services, and enhance service performance by leveraging IMS architectures and partnerships. Still more challenges are facing current business models: broadband networks are also changing with new technologies such as WiMAX and WiFi incorporations into WISP and upcoming broadband satellite services. Industry leaders are taking positive steps by joining groups like the IMS Forum to alleviate these concerns and not repeat past mistakes. 

**T**oday there is great concern on Wall Street that VoIP technologies are unable to produce adequate Return on Investment. Analysts and business people are questioning VoIP business models and their ability to produce strong returns on investment. Their analysis is stemming from a significant number of companies which have required multiple rounds of relatively high investments without delivering on the promised returns.

*Michael Khalilian is Chairman & President of IMS Forum ([www.imsforum.org](http://www.imsforum.org)). Please forward comments and questions to [MKhalilian@IMSForum.org](mailto:MKhalilian@IMSForum.org).*

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