



Advisory Report

# IMS Status Report: A Protracted Adoption

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## ■ Summary

Down but not out. Forgotten but not gone. Postponed but not cancelled. All of these phrases are apt descriptions of the current status of the IP multimedia subsystem (IMS). Despite the fact that the 3GPP-defined standard is “framework non gratis” at most industry events and forums, IMS is still a major talking point in the CTO offices of most major carriers. Telecom operators, with few exceptions, still see IMS as part of the foundation of future service delivery infrastructure. Most, if not all, of the benefits attributed to IMS as part of the overhyping of the technology are still valued by service providers today. So, the issue isn't if carriers will adopt IMS, but rather when they will begin in earnest and what that implementation process will look like.

The most prominent event contributing to the protracted delay of the mass adoption of IMS is the realization by operators that IMS – though promoted as an anti-overlay architecture – is the overlay to end all overlays. Carriers must come to grips with the fact that IMS is too costly and complex to adopt in a wholesale manner and that the architecture will be adopted over the next few years in an incremental fashion.

Another major development in the life and times of IMS is that it is no longer the only transformation catalyst in a carrier's network. IMS has had to share the spotlight over the past year or so with Web 2.0 and service delivery platforms (SDP). Accordingly, future IMS deployments will be done in conjunction with SDP adoption and the opening of carrier networks through Web services. Questions lingering around the adoption of IMS include how long it will take for major service providers to carry out the process, what IMS-enabled services can be released onto the market and what is the business plan for those service, and whether or not the architecture is suitable for an incremental adoption.

## ■ Current Perspective

It's been a tough year for the IMS. The Q-rating of the once high-flying architecture is currently on a downward trajectory that would make even Britney Spears blush. Less than two years ago, IMS was on the lips of nearly every industry executive and pundit, and it was next

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to impossible to read a press release that didn't pay tribute to the acronym of the moment – even if the event or product being promoted had almost nothing to do with the budding industry standard. Within the past year or so, however, IMS has gone from headliner to hardly mentioned. Corporate presentations and industry tradeshows are now bereft of the term, save for the occasional inquiry of whether or not the architecture is at death's door. Those who are already writing IMS's epitaph are chiseling adjectives such as expensive, complex, overhyped or superfluous into the framework's tombstone. The reality of the situation, however, is that IMS is not going gently into that good night. In fact, IMS isn't going anywhere. While the architecture is certainly costly and complex, as well as a victim of the telecommunications industry's flavor-of-the-day hype squad, its demise has been greatly exaggerated. While the adoption of IMS will not be executed at the same pace or in the same manner that was being projected a couple of years ago, it will be nevertheless implemented. Within five years, IMS will be a meaningful architectural foundation of nearly all – if not all -- major telecommunications networks in the world. And while every service offered by a telecom operator in 2013 may not be IMS-based, there's a strong likelihood that any new service introduced after that time will be compliant with the IMS specification.

Given how far from grace IMS appears to have fallen in the past 18 months, readers may have difficulty fathoming predictions of its eventual rebound and adoption. Navigating a series of peaks and valleys, however, is fairly standard operating procedure for most technology introductions. The precipitous dip in popularity that IMS is now experiencing is the traditional aftermath to the surge of enthusiasm and attention that accompanies the introduction of any "next big thing." As observers, in this case carriers, begin to come to grips with the actual capabilities of the architecture and the real-world difficulties of implementing it, a sort of backlash of resentment or pre-buyer's remorse begins to set in. Equipment vendors are as responsible as anyone for the dip in IMS popularity, as they spent the past couple of years telling their customers what they wanted to hear and setting them up for a particularly hard slap from reality. Beginning as early as 2004, equipment makers sold the concept of IMS to their customers by devoting about 95% of their sales pitches to the destination, rather than the journey, hiding a few trifling facts, such as the expense and lack of backward compatibility with the legacy services that produce – and will continue to do so for several more years – the bulk of the carrier's revenue. The exercise was the rough equivalent of a travel agency whipping up excitement around a low-cost excursion to Hawaii without ever mentioning that the travel itinerary included a parachute drop and a 20-mile swim through shark-infested waters.

The reality that has done the most to dampen the enthusiasm for IMS among service providers is the discovery that arguably its most attractive feature – the ability to eliminate the construction of overlay networks with the introduction of each new service – is accompanied by a huge heaping of irony. There's no doubt that the horizontal nature of the IMS architecture enables the separation of applications from session control and transport, thereby enabling carriers to "reuse" the same resources to deliver multiple services. While this is obviously an endearing feature of IMS, carriers soon came to realize that the reusable nature of IMS only applied to SIP-based services and did not extend to existing services – both legacy TDM and IP based. Unless a carrier was building its network from scratch, then, an IMS-based infrastructure would need to be constructed alongside existing, vertically oriented service environments. In other words, IMS, billed as the great overlay network killer, turns out to be the mother of all overlay networks.

What is different about IMS, however, and one of the major reasons that its adoption is postponed but not cancelled, is that most objective evidence suggests it is the last overlay network carriers will need to construct. The major selling point of IMS is still its ability to

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provide common resources for what is virtually an unlimited number of services. This is a boon to carriers, of course, as it enables them to leverage previous infrastructure investments for the construction of new applications, meaning that the capital costs associated with the initial IMS build out become increasingly valuable with each new service the carrier introduces. (See chart for itemized list of reasons why IMS will ultimately be adopted.) Though carriers find this prospect tantalizing, they also recognize that they cannot afford to construct what is essentially a new network in a wholesale fashion while still supporting the infrastructure needed to continue to deliver existing services. Carriers are faced with the same purchasing conundrum as most consumers when it comes to big ticket items: they need to stay within their financial means, regardless of how attractive the product may be. As a result, the construction of an IMS-based infrastructure, while still on the road map, is now a much longer-term endeavor than it was believed to be two years ago and one that will be completed in pragmatic increments – a process discussed later in this report.

**Top 10 Reasons IMS Will be Adopted**

Reason	Supporting Evidence
<b>Near-universal standards support</b>	Beginning with the 3GPP/3GPP2, TISPAN and IETF, IMS has been universally supported by standards organizations.
<b>Framework and not a technology</b>	Though often referred to as a technology, IMS is actually an architecture, meaning that it is for the most part free from the proprietary squabbles that mark most technology-based standards adoptions.
<b>Significant vendor investment</b>	Billions of research & development and marketing money have been spent on IMS, with little return on investment to this point. Equipment makers are not going to walk away any time soon.
<b>Consistent with carrier consolidation</b>	As carriers consolidate and combine fixed and mobile assets, the demand for an access-agnostic service delivery infrastructure gains more momentum.
<b>Integrated with SDP</b>	Despite calls for SDPs to replace IMS, the two architectures are actually complementary, with IMS-based components providing many of the common enablers of an SDP.
<b>Horizontal makes sense</b>	Carriers recognize the operational and service agility benefits of a horizontally oriented network with reusable components. IMS adoption will accelerate the redistribution of network resources.
<b>Network-to-network considerations</b>	IMS also provides guidelines for network-to-network interfaces (NNI), enabling interoperability across carrier networks
<b>Implementation of network-wide policies</b>	IMS is a crucial enabler of QoS and resource policy implementation and enforcement
<b>Already in operation</b>	Though the general industry perception is that IMS is still in the experimental age, multiple carriers have already adopted the architecture – including AT&T, Telefonica, Swisscom and KPN – and are well into integrating IMS into their service delivery infrastructure.
<b>Defense against over the top (OTT) players</b>	IMS allows facilities-based service providers to leverage their local assets to add value to services that originate outside the carrier’s network.

One of the positive side effects of postponing IMS is the creation of a new product and services niche. Recognizing that delays in the adoption of IMS naturally mean increased longevity for softswitch-based voice environments, as well as a stronger demand from carriers for solutions that bridge the interoperability gap between legacy and SIP-based services, software and equipment makers – both those in the IMS business and those not in the IMS business – have seized on the opportunity. A growing list of companies has introduced service mediation and orchestration equipment that is designed to enable services – that are

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based on different technology and are compatible with different protocols and interfaces – to be blended across these technological boundaries. In a sense, the responsibility of these applications and services is to create the same type of services “cocktail,” a blend of multiple features or applications that has been a hallmark of IMS’ promotion, and apply it to legacy and non-IMS-based IP services. At the same time, several equipment makers, recognizing that softswitch infrastructures are now likely to expand in scope beyond what carriers had anticipated, have introduced technology and products for gracefully scaling softswitch-powered environments and gently migrating them to IMS. At least one company has even gone so far as to introduce technology that eliminates proprietary factors from legacy service creation and significantly decreases the time required to create new Intelligent Network (IN) applications. The big question confronting these vendors that are exploiting the elongation of IMS’ adoption cycle is how long the window of opportunity will remain open. But even after IMS is adopted on a large scale, service providers will have a continued need for service orchestration and mediation software, as it will be years before familiar and popular legacy applications are “ported” to an IMS-based infrastructure.

Of course, the recent case of IMS interruptus (to use the Latin term), has also given voice to a chorus of naysayers who posit that what carriers will discover as they adopt transitional technology on their journey to IMS is that, in the end, they don’t need IMS. While critics of IMS have nominated all sorts of architectures and technology to fill the shoes of IMS, the two most prominent of the oft-mentioned IMS stand-ins are Web services and service delivery platforms (SDP). Web services, or the concept of easily integrating telecommunications functions, such as click-to-call, into Web-based applications and services, is the current darling of the telecommunications set – and with good reason. Web services, also referred to as Web 2.0, is the future of service creation. Grudgingly and not a moment too soon, telecom operators have largely acknowledged that the Web is now the platform and that to compete with the Googles of the world, operators will need to start emulating the service creation and implementation techniques of Google and other OTT players. Proposing Web services as an IMS substitute, though, is problematic. Web services, like IMS, is mostly applicable to new services creation and applications built through Web services techniques are not easily compatible with legacy applications. Moreover, Web services does not supply the “connectivity” portion of an overall solution that IMS addresses, such as policy control, billing, QoS and carrier-to-carrier compatibility. These functions will need to be provided in a Web services-dominated environment. Since IMS, which is an enabler of Web services, provides this functionality, it makes little sense to build a new connectivity layer from scratch.

Other IMS critics are also making a case for a well-implemented SDP as an alternative to IMS. Their argument is that SDPs provide all the connectivity – between different services environments, including the Internet – that IMS provides, serving as a middleware layer that enables operators to offer subscribers personalized services that can be concocted from both legacy and NGN service environments. An SDP, they argue, would also work in reverse, enabling new features and efficiencies to be added to legacy applications, such as SMS and POTS. While this assessment is accurate, it overlooks two important pieces of evidence that justify the adoption of IMS. For starters, many of the common enablers that SDPs tap into, such as presence and location servers, as well as policy and charging functions, are IMS-prescribed components. A recurring, but crucial element of a defense of IMS is that so much work – and money – has gone into the development of the standards (by the 3GPP and other groups) that it makes little sense to seek an alternative approach. A second shortcoming of an SDP-only approach is that it does not provide carriers with a future service delivery environment that will eventually serve as a common platform for all new

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services. One of the most important attributes of IMS is its universal positioning and access agnosticism. The appeal of the architecture is that carriers will need to create only a single instance of a service, which, through the magic of standardization, becomes available to all subscribers, regardless of the device or network they are using at the time. This will naturally encourage carriers to move toward a common architecture, allowing them to dismantle all of those other overlay networks that they currently need to maintain - eventually. An SDP, which satisfies compatibility issues by essentially plugging into every service delivery stovepipe, doesn't necessarily promote the dismantling of those stovepipes. From a factual standpoint, telecom carriers are capable of transforming their networks into the agile service delivery engines necessary to compete against OTT service providers without using IMS as a building block. Web services and/or a well-implemented SDP can provide both the service agility and the connectivity with legacy services environments that will enable carriers to offer subscribers compelling and personalized services. At the same time, the addition of IMS provides essential functionality that streamlines the service delivery process and pulls everything together in a cohesive package – ultimately leading to greater subscriber flexibility and personalization. No one is doubting that IMS is expensive and time consuming to implement. A house made of bricks, to delve into the fairy tale realm for an analogy, however, is much more expensive and time consuming to build than a house made of straw.

Accepting the proposition that the implementation of IMS is inevitable, the obvious follow up inquiry is exactly how carriers will construct service delivery environments that ultimately prescribe to the IMS architecture. If IMS is not an over-night sensation, how can carriers wring value from services based on the framework if it is to be adopted on an incremental basis over several years? Carriers understand that for all of the focus and excitement around subscriber experience, personalization and blended services made possible by IMS adoption, advanced users who currently desire those capabilities and will pay for them do not likely exceed 10% of the carrier's user base – and those cutting edge services will not generate more than 10% of revenue for several more years. This is obviously a serious situation for carriers and the major reason they cannot adopt IMS in a wholesale fashion. Instead, carriers are exploring the approach that calls for a more pragmatic adoption of IMS. Instead of building the infrastructure and waiting for the subscribers and services to come, carriers are first starting with services that subscribers are likely to flock to and then building up the infrastructure to support those services. For example, carriers are adding Web services and presence and location servers to deliver personalized conversational services to both mobile and fixed subscriber. Under this scenario, carriers are able to adopt some of the IMS-peripheral components without replacing entire functional systems, such as session control and subscriber management. As carriers derive more and more revenue from these new services they can begin to replace these major systems with IMS-based equipment. When carriers reach this point in the adoption cycle, still several years away, the real value of IMS will begin to reveal itself in terms of the sophistication of the services and the potential operational savings.

A long-time observer of the IMS architecture will immediately recognize that the above scenario – in which peripheral IMS-based components are adopted in advance of core systems – is the opposite of what most equipment makers believed would be the norm two years ago. While there are still plenty of carriers that will start their IMS adoption with the deployment of CSCFs or HSSs, just as many are likely to save those systems for later on in the process and in conjunction with when the majority of carrier revenue begins to be derived from next-generation services rather than those services running on legacy and softswitch-based infrastructure equipment. The timeline for when all of this will happen, of course, varies from one carrier to another. In addition, IMS adoption will be done either

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simultaneously or serially with the implementation of an SDP and the opening up of carrier networks to support the Web 2.0 model. Needless to say, carriers have a lot of work to do to transform their networks into service delivery environments that can compete with and add value to Internet-based services from OTT players and other outside sources. While IMS may no longer be the focal point of the IP transformation process, it remains a vital component and one that carriers are committed to implementing.

**Recommended Actions****Vendor Actions**

- All telecommunications equipment providers, if they already haven't, need to stop focusing marketing material on the benefits of IMS adopting and shift the discussion toward an implementation strategy. Equipment makers need to be completely honest and forthcoming about how carriers will undergo the journey from where they are now to the complete installation of an IMS-based infrastructure.
- Equipment makers need to make a thorough roadmap part of their IMS sales pitch – one that plots a path for operators to adopt IMS-based equipment on an incremental basis. Equipment suppliers need to show their customers how they can begin to introduce new services at every increment of the adoption and how those services will increase in sophistication as more and more of the IMS-based infrastructure is put in place.
- All equipment makers need to interweave IMS into an overall IP transformation strategy. The technology should be part of an overall adoption scheme that also includes opening up the network to offer Web services and the implementation of an SDP.
- Though it has been mostly niche players that have taken advantage of the opportunities opened up by IMS adoption delays, all equipment makers should focus efforts on delivering service mediation and orchestration technology that bridges the gaps between the IMS and legacy/softswitch worlds. In addition, equipment makers offering softswitch solutions should deliver enhancements that enable those environments to scale gracefully to meet future demands.
- To help validate evolving IMS standards, equipment makers should strive to deliver solutions that meet the requirements of pending additions to the overall IMS standards, such as the Multimedia Telephony (MMtel) and IPTV over IMS standards. By introducing commercial products that conform to those standards, equipment makers can begin to inject a shot of adrenaline into the IMS application market.
- Professional services and systems integration expertise will play a significant role in the implementation of IMS. All network equipment makers need to align their professional services groups with their IMS products and marketing groups closely in order to create a detailed technology adoption roadmap for customers.

**User Actions**

- Carriers need to factor the adoption of IMS-based infrastructure into their overall IP transformation strategy. Carriers that have yet to replace Class 5 TDM switches need to reevaluate the advantages and disadvantages associated with spending billions of dollars to build out a new access network against the advantages and disadvantages of slowly migrat-

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ing those TDM users to IP. Resources conserved by not building a new access network could be applied to IMS adoption.

- Carriers that maintain a legacy TDM Class 5 infrastructure should continue to offer VoIP, whether softswitch or IMS based, as a secondary service. Doing so will avoid regulatory requirements for carriers to duplicate little-used TDM features in a VoIP environment. The last thing a carrier wants to do is to expend resources to develop obscure TDM service that will rarely if ever be used in a VoIP environment.
- Telecommunications operators should adopt IMS-based components in conjunction with the adoption of SDP and the opening up of their networks to attract Web services developers. If the carrier is only able to adopt these technologies and architectures in a serial fashion, it would make the most sense to begin with Web services.
- Operators need to draw up an IMS implementation roadmap that prescribes specific thresholds or milestones for implementing addition IMS infrastructure. For example, a carrier may set a requirement that it draw 25% of all revenue from services that run over IMS-related infrastructure before it will invest in evolving its session control layer toward Call Session Control Function (CSCF) components described in the 3GPP specification.
- When calculating how much of the IMS infrastructure to adopt, carriers should start the process from a pragmatic angle. The best case scenario is to concentrate on the services that the carrier believes will be successful and to adjust the network infrastructure to deliver those services.