Fixed-Mobile Convergence: Compelling Market — IMS: Enormous SIP Opportunity

By R. Brough Turner, SVP, CTO and co-founder of NMS Communications

VoIP is hot, but it's still small potatoes when compared with mobile telephony's 1.7 billion subscribers and continued high rates of subscriber growth. Unfortunately, mobile telephony is still based on traditional circuit-switching — the move to VoIP has barely begun. The good news is market pressures are opening up opportunities for SIP-based solutions in mobile telephony.

In developed countries, mobile phone operators are running out of new prospects (already there are more mobile phones than people in Sweden). New data services may increase the average revenue per user, but there's a limit to consumers' budgets. And while battles for market share help consumers, they're costly and provide limited growth for operators. But there's one enormous revenue base that's ripe for disruption — that of the traditional fixed line operators.

Today's fixed line telecom revenues are roughly split between consumer and business. For mobile operators, the most promising line of attack is on the business side. Winning a business account means direct enterprise revenues plus the potential to convert the personal subscriptions of their employees. The keys to operators' success are in a pair of three letter acronyms: FMC (fixed-mobile convergence) and IMS (IP multimedia subsystem). Both represent opportunities for our favorite three-letter acronym — SIP.

Fixed Mobile Convergence

Like any convergence vision, FMC is an umbrella for several potentially disruptive capabilities. The most popular is a single handset working simultaneously as your mobile phone, home phone and office phone. Another is one phone number, with its set of services, that follows you across multiple devices — your mobile handset, your office phone and even a conference room speakerphone. The critical point for both of these is the convergence of fixed and mobile networks to enable a range of new services that work irrespective of location, access

technology or terminal. Those new services are the lever mobile operators need to disrupt traditional relationships and capture fixed line revenues. But they are also the opportunity we in the SIP community have to penetrate the largest and most rapidly growing telecommunications segment — mobile telephony!

Of course, turmoil in the lucrative enterprise market is significant for anyone with a stake in telecommunications, including incumbent phone companies and newer VoIP players. But while converged networks open the doors to any application provider, in the real world of incremental migration, mobile operators have the edge, as discussed below.

How to implement FMC? In the long term, IMS offers mobile operators their best shot at the enterprise FMC market. But meanwhile, IP-PBX vendors, like Avaya, are already attacking the FMC opportunity. And, not surprisingly, interim solutions for mobile operators are showing up, for example, Unlicensed Mobile Access (UMA).

Interim Approaches

The Avaya approach works with dual-mode mobile phones (SIP/WiFi & GSM) from Motorola, Nokia and others. It uses SIP and RTP over WiFi when the phone is in building and a gateway to the traditional mobile network when the phone is beyond the range of the WiFi network. In Avaya's case, the gateway is Motorola's Wireless Services Manager — software that runs on a dedicated Sun server - which handles call handoff between the Avaya IP-PBX and the cellular network. More interesting to the rest of the SIP community is the advent of dual mode phones. Driven by this application, Motorola has announced three dual mode phones, the A728, A832 and A910, and Nokia has announced plans to introduce multiple dual mode phones, based on their series 60 platform, before the end of the year.

The UMA solution is more directly useful for mobile operators, but less interesting for SIP proponents. UMA extends existing GSM signaling and GSM voice (and even GPRS data) to devices with wireless LAN capability by tunneling legacy protocols through the IP network (using TCP for signaling and RTP/UDP for media). British Telecom has already rolled out a service, BT Fusion, based on UMA — and other carriers are interested. On the other hand, the major focus of most wireless operators is getting to IMS — the platform they are pinning their hopes on for the next generation of mobile and fixed, voice and multimedia communications.

IP Multimedia Subsystem

IMS is an evolving architecture for providing voice, video and other multimedia phone services to mobile and fixed phones. IMS is based on the protocols and principles of IP telephony — IMS call control is based on SIP. The important difference is one of focus — IMS emphasizes the central management and billing functions so critical to the operators. IMS allows operators to offer centrally administered VoIP and other IP services, on a managed IP network, in a "walled garden" if desired.

IMS standards come from the 3rd Generation Partnership Project (3GPP), a consortium focused on evolving GSM networks to 3G W-CDMA. But the IMS architecture and service models are also being used by 3GPP2 (a different organization focused on CDMA2000 networks) and TISPAN (a European organization focused on next generation fixed networks). Thus IMS principals are the basis for all variants of the next generation network (NGN) envisioned by the traditional telecommunications industry. IMS specifications are available for free from 3GPP at http://www.3gpp.org/specs/specs.htm.

While the task of finding the IP Multimedia Subsystem specifications in the mass of 3GPP material is daunting, the actual migration path for existing VoIP products is fairly clear. A Session Border Controller evolves into a SIP-based Proxy Call Session Control Function (P-CSCF), application servers and feature servers adopt additional interfaces to other well defined IMS services like the Home Subscriber Server (HSS), and media servers become Media Resource Functions (MRFs). Today's specifications call for MRFs to be controlled by the H.248 protocol, but it appears this will also evolve into a SIP interface in the future. Through the fog of new acronyms, most IMS functions can be recognized as a fine decomposition of a SIP-based next generation VoIP service platform.

Of course today's mobile systems are hybrid networks using circuit switching for voice telephony and packet switching for newer data services. There is no economic justification for the immediate replacement of mobile circuit-switching equipment, so first generation FMC on IMS will involve hybrid IMS & older mobile switching systems. Operators and equipment suppliers realize this and are designing hybrid solutions accordingly. In addition, IMS standards come in several revisions (3GPP Release 5, Release 6, etc.), most not fully baked at this point, and additional revisions will emerge over the coming years. So today's "IMS" products, widely

hyped at this year's CTIA and Supercomm telecommunications industry trade shows, are evolving hybrids that are "IMS-ready," but deployable today.

Mobile Operators' Advantage — for Now

Today mobile operators have an FMC advantage, as VoIP can run over any fixed broadband network, while mobile voice uses the mobile operators existing voice equipment or their managed network — their "walled garden." Eventually this advantage will disappear as fixed and mobile broadband Internet access (WiFi, WiMAX and 3.5G/4G) becomes widely available from multiple competing providers. Market forces will then work against walled gardens. Since 3rd party VoIP services (Vonage, Skype, etc.) can run over anyone's broadband connection, in the long term, mobile operators will lose their lock on mobile voice services. Neither Skype nor Vonage uses or needs IMS. But right now, mobile operators have a big window of opportunity to launch FMC services and capture enterprise telecom revenues.

Large SIP Opportunity

And today, mobile operators have the largest and fastest growing subscriber bases in the world, so it makes sense for SIP technology and product vendors to pay close attention to the emerging IMS opportunity.

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