

IPX challenges and opportunities:

Q: We all know the basic premise of IPX, a single secure pipe to deliver multiple services, such as voice, SMS, GRX and signalling, among other advanced services, but what does iBasis believe will be the “killer app” for IPX?

AJ: The advent of IP technology in the core today and soon in the edge of the mobile network (via LTE/4G) will unleash a wave of new applications that require real-time (international) network services between mobile network operators (MNOs). The IPX is well suited to handle this class of applications and deliver the required interoperability. There are several applications one can envision using interactive video, voice, presence and roaming that will need an IPX network connecting MNOs. We believe that the first major application riding the IPX will be voice, but not just traditional voice. A much higher fidelity voice service, referred to as HD (high definition) voice, will utilise IPX to deliver a dramatic improvement in sound quality.

Q: Who are the major players offering IPX solutions?

AJ: We see three types of providers in this market: international wholesale carriers, mobile data service providers, and, to a lesser degree, international data backbone providers. Generally, data services operators do not have the experience in managing international voice traffic required to ensure a smooth transition from TDM to VoIP and must rely on partnerships to round out their product offering. Among wholesale international carriers, iBasis has the distinct advantage of extensive experience with VoIP and TDM interconnections, including direct interconnects with more than 120 mobile operators via TDM. As a result, we can effectively and reliably manage the transition in technology from TDM to IP without sacrificing business continuity. In fact, we have more than 70 customers today leveraging our Premium Voice service, which delivers very high-quality and guaranteed features, over IP interconnections, very much like an IPX implementation. In addition, mobile operators expect measurement and enforcement of certain KPIs and response times, which iBasis has provided for many years and which are supported in the IPX model through SLAs.

Q: What are iBasis' thoughts on the GSMA IPX recommendations AA.80 and AA.81 (The GSMA recommendation for both IPX Transport and IPX Voice)?

AJ: iBasis applauds the work of the GSMA to provide the industry with a working template for contracts and SLAs. These documents

are at the foundation of the contracts we developed for the IPX services we provide. The original GSMA specifications reflected a view of IPX that was not entirely compatible with the current practices associated with the voice hubbing model in use by carriers today. Some of the differences involved the transparency of charging and interconnections, the number of transit IPXs allowed, the demarcation of SLA points, and the necessity to break out to direct TDM end points. The i3 Forum, in which iBasis is very active, has been working with members of the GSMA to accommodate these common practices in the final specifications.

Q: What is the most compelling part of the iBasis IPX offering?

AJ: In addition to being one of the leaders in international VoIP, iBasis has brought to the market the concept of IPX Community Groups. Community Groups challenge the conventional wisdom of maintaining discrete point-to-point circuits, by enabling operators with shared ownership to pass voice and data traffic over the iBasis IPX at very compelling rates. The iBasis IPX takes away the operational challenges of managing multiple interconnects with many parties. As service providers migrate their network to a converged IP (supporting both voice and data) via emerging architectures such as LTE, some of the benefits of using an IPX for interconnecting to other service providers will include:

- > Enhanced voice quality: made possible by reducing the number of TDM transcodings and by using direct termination interconnects;
- > Capital and operating expense savings: IP interconnects are more cost effective, more flexible, faster to install and require fewer resources for network maintenance and development as multiple services can be provisioned across a single service-aware IPX interconnect;
- > Interoperability between disparate networks;
- > Faster implementation of new services;
- > Higher-quality services: SLAs between providers ensure consistent service-specific quality, and enhancements, such as high-definition voice codecs, can be more easily implemented across service providers, resulting in higher value services; and
- > Cascaded billing and payments: the IPX provider will charge based on the specific service across downstream IPXs and service providers.

IPX also enables MNOs to leverage the IP expertise of IPX providers to ensure end-to-end service quality and reliability.

a conversation with iBasis CTO Ajay Joseph

Ajay Joseph is Chief Technology Officer at iBasis, responsible for the technical strategy, innovation and engineering of the iBasis network infrastructure. He and his team are active contributors in GSMA sub-groups and the i3 Forum. Since 1999, Ajay has lead the development of iBasis' network architecture and systems, which resulted in one of the most advanced international VoIP networks in the world. Ajay was also instrumental in the development of iBasis' patented quality management systems, including Assured Quality Routing (AQR) and the PathEngine routing. Prior to joining iBasis, Ajay was manager and architect of the IP Telecom division at GTE Internetworking responsible for new VoIP-based services. He also held senior-level engineering and design positions at DeskNet Systems and NYNEX Science & Technology. Ajay is a graduate of the Advanced Management Program of Harvard Business School. He holds Professional Engineering and Master of Science degrees in Electrical Engineering from Columbia University.



Q: What innovative services will drive the deployment of IPX?

AJ: MNOs are focussing increasingly on the services side of their business. More and more players are in transition from a network-centric to a service-centric organisation. For MNOs, innovation in services and applications provided to users is the key competitive differentiator today. Initial services will span voice, data and signalling, including Premium Voice service over IPX, GRX and enhanced services such as high fidelity voice.

HD voice provides a dramatic improvement in voice quality. In HD voice, a wideband codec doubles the sampling rate and more than doubles the width of the sound spectrum reproduced, from 50Hz to 7,000Hz or 7KHz. In effect, you hear lower lows and higher highs – sounds that simply don't get transmitted through lesser codecs. This adds significant depth and nuance to the transmitted sound – and it reduces the bandwidth requirement to 32Kbps, half that of PSTN transmission. HD voice technology provides CD quality sound and double the quality of typical mobile 12 Kbps calls. With the ever-growing data capacity of IP networks we can expect every IP connection to be voice-enabled with true HD capability relatively soon. HD voice opens a myriad of applications and, for service providers, access to new markets in a more global environment.

The higher bandwidth LTE provides is required by the explosion in mobile data services and applications. IPX will be the network of

networks that connects LTE islands into a global communications fabric enabling the exchange of real-time services between MNOs.

Q: What are the potential obstacles to the widespread adoption of IPX from a technical and business point of view?

AJ: Technically, the biggest potential issue may be interoperability between the parties connected to the IPX. While the GSMA and the many member companies who engaged in IPX trials, including iBasis, continue to work hard to establish the standards and guidelines, the early adopters may experience some growing pains. However, we are confident that the work that has been completed during the last several years will minimize the challenges going forward.

Other challenges are more in the realm of marketing. For example, we must overcome the misperception that IP, in any form, delivers lower quality than TDM. Much of this bias is outdated, as it comes from early experiences using the public internet for real-time communications. Today, even the internet is better and more reliable than this perception. Moreover, the IPX utilises managed IP, typically in the form of MPLS, to deliver guaranteed quality and reliability, backed up by SLAs.

One of the toughest hurdles today for IPX is in regards to the business model, which is still in development. IPX requires a move from a transaction-based to a service-based model. This presents a significant challenge to the traditional minutes-of-use (MoU) model



that still drives the voice communications industry today. Consumers have become accustomed to the “freemium” model, which is typical of internet-based communications services. Providers offer free service as a means to “build community”. Once they have attracted a large number of customers, they begin to monetise the offering through additional value-added features and services. While consumers may be comfortable with this model, traditional telecommunications service providers can’t monetise complementary services or features as easily as internet companies can. The commercial model for the IPX is likely to take longer to evolve than the underlying technology did, but in the end, a sustainable business model benefits both providers and consumers.

Q: With more than a decade of experience in utilising IP for international voice transmission, is IPX a natural evolution for iBasis?

AJ: iBasis IPX builds on the company’s more than 13 years of industry-leading experience in voice over IP, its success in the GSMA IPX trials, and the successful migration to IP of many of our customer interconnects. As a KPN company, iBasis is leveraging KPN International’s MPLS capabilities and reach to 180 countries to provide global access to the iBasis IPX.

In general, the migration of international voice traffic to IP is integral to the core of our business. IPX represents the next generation in that evolution. Naturally, iBasis has been and continues to be an active participant in industry efforts to develop standards and guidelines for IP interconnects and IPX. The company is a founding member of the IP Interworking Alliance (IPIA) and a member of the i3 Forum, both independent associations of service providers committed to developing guidelines and specifications for next-generation interconnect networks and services.

iBasis has successfully migrated international voice bilateral agreements to managed IP in compliance with GSMA IPX guidelines as well as those developed by the i3 Forum. Using SIP-I and the iBasis Premium Voice service, we are delivering the highest quality voice service with guaranteed advanced call features, including CLI, international roaming, ISDN data, fax and ISUPv2. More than 70 iBasis customers are taking advantage of iBasis’ expertise in Premium Voice over IP (VoIP) to capture the efficiencies of IP with premium quality and features and take the first step towards IPX implementation.

Q: Will IPX enhance carriers’ ability to compete with Over The Top (OTT) players (generally, entities that offer consumers voice applications over the internet)?

AJ: The soon-to-arrive mobile broadband networks envision an all-IP world in which the mobile handset is an IP-enabled device. Network owners will need to compete with the “network light” OTT players who

will also have a relationship with the MNOs customer. The IPX and OTT models will co-exist. The need for both of these communities will be driven by the service differentiation in terms of quality and security. The IPX will enable secure, QoS-based operations between MNOs, while OTTs will enable communications between mobile subscribers and other subscribers using the unmanaged internet.

Q: What do you expect to happen in the next few years to fully realise the benefits of IPX?

AJ: Demands on mobile networks are increasing, especially in emerging markets. Operators are keen to exploit, in a positive way, consumers’ growing appetite for increasingly bandwidth-intensive services through mobile devices. Many operators are investing in upgrading their existing 3G networks. However, to keep evolving, to keep offering high performance, competitive services, they must look to the next generation: 4G. Operators seeking to upgrade their networks may choose to “leapfrog” lower-speed technologies to get to LTE. However, the capital investment required for LTE suggests that operators need to find ways of ensuring that services are delivered cost-effectively. Operators’ have already begun exploring approaches to reducing deployment costs such as network outsourcing or sharing. This is creating the demand for a successful IPX ecosystem based on secure and reliable IP interconnections to create a common global environment for all services. This will provide customer choice, quality and security and support appropriate payment mechanisms. A lot of progress has been made already in the IPX design, end-to-end voice traffic exchange and performance monitoring. A lot of work is still required to establish common technical specifications. However, there is no doubt that IP is the way forward for cost-efficient innovation and ubiquitous service availability. ■

Founded in 1996, iBasis is a leading wholesale carrier of international long distance telephone calls and a provider of retail prepaid calling services and enhanced services for mobile operators. In December 2009, iBasis became a wholly-owned subsidiary of KPN. iBasis is an active participant in industry efforts to develop standards and guidelines for IP interconnects and IPX. The company is a founding member of the IP Interworking Alliance (IPIA) and a member of the i3 Forum, both independent associations of communications service providers committed to developing guidelines and specifications for next-generation interconnect networks and services.

For more information about the iBasis IPX solution, please visit:
www.ibasis.com/mobile-operators/ipx.aspx