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September 1999

## Turning The Internet Into The Universal Network

BY RANDY STORCH

Today the Internet holds the greatest potential for becoming the “Universal Network” for communications to the home, small business, and enterprise. This network will deliver an assortment of traditional IP-based applications such as fax over IP (FoIP), voice over IP (VoIP), and unified messaging — plus a host of new, yet-to-be defined applications that will drive greater usage of the Internet. Demand for applications will allow ISPs to offer new services that will help them “fill the pipe,” creating new sources of revenue.

The proliferation of these services is contingent on the ability of service providers to offer new services over their existing infrastructure. What is needed is a way to leverage the existing infrastructure of the Internet to create a single, integrated platform that will treat all these applications the same, and give the ISP central control over associated services. What is needed is an operating system for IP applications.

### IP MESSAGING AT A GLANCE

Voice/data communications is one of the most exciting and fastest growing industries in the world. The integration of the PSTN with packet-switched IP networks is paving the way for innovative communications solutions. The industry is growing so fast that, according to Dataquest, worldwide revenues for the FoIP market are anticipated to grow 224 percent from \$18 million in 1997 to \$4 billion by 2002 (based on 20 billion pages forecasted to be transmitted over data networks that year). VoIP will have revenues of \$25 billion by 2002, according to IDC/Link. Additionally, worldwide telecommunications deregulation is fostering a highly competitive environment in which service providers must be able to differentiate themselves from their competitors, and introduce new services to grow their customer base, while simultaneously broadening their revenue stream — a serious challenge.

Messaging vendors must have the technical and business expertise to allow customers to realize revenue from IP services like IP-enabled fax and voice services today, plus unified messaging and more tomorrow. Service



providers will cut time-to-market for innovative applications; reduce investment by leveraging existing IP network infrastructure; and ensure quality and reliability with proven, commercially installed technology. Service providers must be empowered to offer best-of-breed solutions quickly to their customers. Simply put, rapid deployment equals greater market share.

### **CHALLENGES TO DELIVER MORE IP-BASED APPLICATIONS**

In the rush to offer IP-based services and reduce subscriber churn, service providers are deploying “closed solutions” — systems that are incompatible with a service provider’s existing services. These systems restrict them to a vendor’s own proprietary solutions, and/or are not compliant with increasingly complex industry standards (such as LDAP, SMTP, H.323, T.37, and T.38). The problem with closed and proprietary solutions is that while they offer quick fixes, they are not designed to scale for increased traffic growth — meaning that bottlenecks are likely to happen, leading to potential system failures and delays in growing IP services. In addition to having limited potential growth, a closed solution is generally expensive to start and operate.

To complicate matters further, as a service provider deploys an increasing number of IP-based services — from voice to fax to unified messaging — the provider finds that each application is unable to integrate with the other. This lack of integration complicates already difficult network administration and networking issues, and effectively raises the provider’s cost of ownership — costs which are then passed on to the subscriber. It is vital that service providers pay attention to several key industry trends:

#### *The value of time-critical communication and information...*

People demand the ability to access and generate critical information anytime and anywhere. Service providers need to offer new services to help subscribers send and receive information quickly and successfully from any location.

#### *The importance of single bill and services unification...*

To differentiate from the competition, service providers must offer new unified and integrated services, allowing for simple, straightforward billing.

#### *Convergence of various communication media types...*

The convergence of telephony, computers, communications, and multimedia is accelerating. From the wide acceptance of voice mail to new solutions for hybrid PSTN/IP multiservice networks, both businesses and consumers have greater access to, and demand convenience from a service provider’s offerings. Convergence also opens new service possibilities for users not previously available from PSTN (such as message conversion).

#### *The importance of Internet standards and open systems...*

In order to offer best-of-breed solutions quickly, a service provider must avoid a closed network infrastructure. The difficulty here becomes apparent in the beginning stages of designing a value-added services network infrastructure — careful analysis and long-term planning is essential early on.

*Various applications available to users in the future...*

Making applications IP-ready holds huge revenue potential for service providers who have traditionally relied on Internet access for e-mail, browsing, and Web hosting. FoIP is the first PSTN application that has migrated to the Internet. Industry analysts predict that the market for FoIP will grow from \$80 million in 1999 to \$4 billion in 2002. Many others, such as VoIP and unified messaging, are expected to grow even faster. In fact, VoIP is expected to grow from \$3 billion in 1999 to nearly \$25 billion in 2002.

### **EMBRACING THE PLATFORM APPROACH TO IP SERVICES**

How then does a service provider, faced with competitive pressures, offer IP-based services quickly without sacrificing long-term traffic and revenue growth? The answer is to deploy an IP services creation platform. An IP services creation platform is a platform approach to an application-centric industry. Most service providers deploy single applications that perform one service, such as IP fax, or voice. Unfortunately, as we have seen, trying to integrate these disparate applications is difficult, and administering them is costly. By deploying a platform solution, service providers can deploy many different IP-based applications from various vendors that share a common platform foundation. A common platform that supports various applications — which is analogous to a PC operating system's ability to host many productivity applications — makes it easier for service providers to administer, support, and integrate into their network infrastructures.

A platform approach to IP services not only makes it easier for service providers to deploy — but easier for application vendors to develop — new applications. Much like an operating system, an Internet services creation platform abstracts the hardware and underlying technologies from the applications so that developers can concentrate on building a solution and not worry about communications protocols or other low-level functionality. As a result, vendors can develop applications more quickly than before, while service providers know that the various IP services they deploy will be able to integrate and “talk” to each other via the platform. A services creation platform thus empowers providers with the ability to offer the newest best-of-breed solutions from vendors, and quickly deploy them to their subscribers. The result: Rapid deployment equals greater marketshare.

Key features to look for in an Internet creation services platform are:

*Minimal Startup Costs:* The platform should leverage your existing network infrastructure, such as RAS ports, authentication and billing systems, and telephony boards, to make it easy to get into the market quickly and affordably.

*Carrier-Class Architecture:* The platform should feature a modular and distributed architecture to allow for massive scalability. Other critical considerations include high availability and open interfaces required for carrier deployment.

*Easy Network Administration:* The platform should feature an easy-to-use administration interface that allows network administrators to perform

various tasks remotely, e.g., software upgrades, parameter management, etc. The platform should also support network-wide resource management, provide end-to-end message tracking for effective troubleshooting and customer service support, and allow service providers to leverage existing staff and network management tools, such as SNMP, to achieve lower cost of operations.

*Complete Hardware Abstraction:* By abstracting the hardware, third-party IP vendors can develop applications quickly without worrying about underlying hardware. Like a PC operating system, the platform must abstract the underlying hardware and telephony devices, such as RAS platforms and fax/DSP boards. This would insulate third-party application developers from the complexities of the underlying hardware, enabling quicker integration and testing — especially in situations where the network infrastructure includes a variety of hardware platforms and telephony devices.

*Application Programming Interfaces (APIs):* This platform should provide maximum flexibility for the service provider and developers through a set of extensible APIs. APIs would enable third-party vendors to easily develop new modules or applications for the platform to provide additional IP services. Moreover, APIs would let third parties and providers take advantage of their existing commercial or in-house business operations (such as database services, subscriber provisioning and management, routing algorithms, etc.), allowing for unprecedented flexibility in service offerings.

*Industry Standards Compliance:* The platform should also be compliant with industry-standard protocols, such as T.37, T.38, H.323, SNMP, LDAP, and SMTP, so that it seamlessly interfaces with other vendor solutions as well as the provider's network.

*Media Type Conversion:* The platform should be able to convert from one media type to another on the fly, so that message data received in one format can be received, converted to a different format, and then output to the appropriate device. For example, it should be possible for fax message data to be converted to voice mail, e-mail, or a variety of other formats. Similarly, e-mail data should be able to be converted to fax, voice, etc. The conversion should be on a per recipient basis, with different recipient messages receiving a unique conversion.

*User Defined Address Translation (UDAT):* The platform should allow subscribers to your service to define which device they want to use to receive their messages. For example, if your subscribers are going to be on the road, and want to receive all their messages via voice mail, they can have IP LaunchPad automatically “address rewrite” all their messages to their voice mail number without needing the message originators to change their user experience.

## **CONCLUSION**

Service providers have a great opportunity to introduce new IP applications in their IP networks. The work performed with this next generation technology is expected to be the pivotal piece in bringing disparate message types together on one network — the Internet. But, providers must be

involved with the applications themselves. With a variety of vendors to choose from, service providers can offer subscribers the newest best-of-breed solutions available.

*Randy Storch is Chairman, CEO, and President of Open Port Technology, Inc. Open Port has helped some of the world's leading Internet and telecommunications companies deploy IP messaging services, including China Telecom, Concord Technologies, Inc., GRIC Communications, Inc., the MCI Worldcom Companies, Motorola, and Southwestern Bell Corp. For more information, visit Open Port's Web site at [www.openport.com](http://www.openport.com).*



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