

**INTERNATIONAL INTERCONNECTION FORUM  
FOR SERVICES OVER IP**

**(i3 FORUM)**

([www.i3forum.org](http://www.i3forum.org))

**Workstream “Services Aspects”**

**Reasons and Benefits to migrate to VoIP**

**(Release 1) May 2011**

## Table of Contents

1	Voice over IP Transport and Interconnect – Why Sooner Rather Than Later .....	3
2	What are the Roadblocks to Rapid Adoption.....	3
3	The Risks of Being Conservative.....	3
3.1	Why Transition Sooner Rather than Later .....	4
3.2	Capex and Opex .....	4
3.3	Technology.....	5
3.4	Commercial.....	5
4	Summary.....	5

## **1 Voice over IP Transport and Interconnect – Why Sooner Rather Than Later**

Adoption of the Internet Protocol (IP) as a transport and interconnect technology for telecommunications international data services has grown significantly over the past decade. However, adoption of IP as a transport and interconnect technology for international voice services has not progressed as rapidly. Although the general benefits of IP are well known in the telecommunications industry, most mobile and fixed service providers are not actively transitioning their international voice services from Time Division Multiplex (TDM) to IP technology. This white paper highlights some of the concerns service providers have about transitioning their international voice to IP transport and interconnect now and why the i3 Forum feels service providers should consider migrating to IP sooner rather than later.

## **2 What are the Roadblocks to Rapid Adoption**

Most service providers still insist on TDM-based interconnects. In general, they view the transition to Voice Over IP (VoIP) transport and interconnect as inevitable, but are not able to justify the transition in the immediate future. The most common reason for delaying transition is the fact that these service providers still have sufficient spare capacity for voice traffic on their existing TDM infrastructures. In addition to having sufficient spare capacity on existing TDM networks, there is also no voice service of immediate significance that requires IP-only transport and interconnect that would help drive the justification for transitioning to IP now as the majority of retail customers are still utilizing TDM-based endpoints. Finally, some service providers still view VoIP as a technology in its early stages and are not confident in its ability to deliver high quality and secure service. The VoIP industry is still fighting the perception of lowered quality and questions around reliable delivery of features such as fax. Therefore, these service providers are employing a conservative strategy of continuing to utilize existing spare TDM capacity and plan to evaluate the potential transition to IP when the TDM network capacity nears exhaustion.

## **3 The Risks of Being Conservative**

There are many risks to taking a conservative approach to the inevitable transition to IP transport and interconnect. For one, as we move forward, the costs associated with operating TDM networks are increasing. The increase is mainly due to the fact that TDM is quickly becoming an obsolete technology and the parts, software and human resources required to support existing networks are becoming increasingly scarce. This diminishing support, which many service providers have already started to experience, leads to higher operation costs. Also, voice over TDM is operating in a climate of falling revenues and margins. The higher cost of operations and maintenance makes the business case for continuing with voice over TDM unattractive.

Another risk of the conservative approach to transitioning to IP is the ability to compete in a market where all services and infrastructures are moving to IP-based technologies. VoIP alone lowers the barriers to market entry for new players. VoIP is not just attractive because of its lower price, but it offers other advantages over TDM voice such as greater flexibility and mobility. VoIP users can more easily work from home or other locations (worldwide) outside of the office. The ability to offer VoIP at equivalent quality and security as TDM voice provides a competitive advantage for competing in this rapidly growing market.

New services (e.g. HD voice) with the potential for rapid adoption are on the horizon. These services require high-quality, end-to-end IP transport. Also, Long Term Evolution (LTE) networks, which leverage IP as the core technology for transport, service applications and QoS, are being deployed worldwide. LTE is being deployed globally faster than was experienced with 3G networks which indicates a demand for a packet-based core mobile networks. There are currently 196 operators investing in LTE networks in 75 countries. According to the Global mobile Supplier Association (GSA), there are 98 LTE user devices from 35 vendors which represents a 55% increase in the last 5 weeks since the GSA initial report. There is some uncertainty of how many of these devices support packet-based VoIP since the specifications have not been finalized. IP interconnects based on IPX will be required to connect LTE islands nationally and internationally. Some service providers will find themselves lagging the market as service providers who are better prepared reap the benefits of being first to market for supporting these new services and infrastructures.

### **3.1 Why Transition Sooner Rather than Later**

There are many benefits for transitioning your voice services to IP transport and interconnect, some of which are stated below. We'll break these into a few categories.

### **3.2 Capex and Opex**

Some service providers have conducted studies that show it is more economical to transition to IP now, even though they have spare TDM capacity, rather than wait to exhaust the TDM capacity. Money must still be spent to operate existing TDM systems and their networks. In many cases, additional capital is still required to support service demands. IP technology is inherently much less expensive than TDM technology. In general, VoIP saves 30% - 50% in capital costs over voice over TDM. Industry trends show that the capital cost per bit of IP technology, a growing technology, is decreasing, while that of TDM, an aging technology, is increasing. Since IP continues to be a growing technology, there are no increased cost impacts due to scarcity of parts, software and human resources to support network operations.

An IP infrastructure allows service providers to reduce operational expenses by supporting multiple services (e.g. voice, video, gaming, messaging) on a single interconnect and single network. This eliminates the need for different interconnects or networks based on service types. In addition, a single network results in simplification and reductions in areas such as power, HVAC and real estate, which also lead to reduced operational costs.

For many service providers, the combination of Capex and Opex savings can justify moving to IP now.

### 3.3 Technology

IP technologies and architectures have matured; service providers can securely deliver very high quality voice services at competitive prices, allowing service providers to effectively compete in the fast-growing VoIP market. Many service providers are evaluating recommended IP architectures such as the GSMA's IPX and the i3 Forum's VoIPX, with commercial deployments of these architectures expected to start in the first half of 2011. In general, these architectural proposals include a private IP interconnect, with direct connectivity to worldwide destinations which enables VoIP providers to control and guarantee performance of their voice services over IP versus the best effort solution using the Public Internet. The GSMA and I3 Forum recommendations were created to ensure high-quality secure, end-to-end IP services.

### 3.4 Commercial

Rapid response to customer requests for service is one of the key differentiators for success. Service provisioning speed and capacity increases are executed much faster on an IP infrastructure than on TDM. For example, a TDM voice capacity increase can take two months to implement, while an equivalent VoIP capacity increase can take only two days. The ability to turn up services or add capacity quickly results in faster revenue recognition for service providers who are ready with an IP infrastructure. Also, the aforementioned GSMA's IPX and the i3 Forum's VoIPX recommendations are designed to allow service providers to maintain existing business models or implement other models.

## 4 Summary

The transition to an end-to-end IP infrastructure is inevitable, driven by the growing market for IP-based services. The market for voice over TDM is shrinking and the decreasing revenue and margin opportunities in this market will result in the consolidation of service providers. To survive as a viable competitor in the new IP ecosystem, international voice service providers must be ready to deliver high-quality, IP-based services worldwide.

VoIP as both a transport and interconnect methodology is a commercially viable technology, appropriate for service providers delivering voice service to quality-focused subscribers. Many service providers have IP in their core and TDM at the edge, but will not attain all the benefits of IP until their network is end-to-end IP. Therefore, service providers need to start the transition to end-to-end IP. This transition does not need to take place all at once, as it is a journey and not an overnight adventure. It is recognized that managing both TDM and IP networks simultaneously could drive up service provider operational costs during the transition period, however, taking a conservative approach to this transition exposes the Service Provider to significant negative business impact due to the delays in technology adoption and operational readiness.