



The ISPhone Step-up Approach:

**Moving from a traditional telephone system
to a complete IP solution one step at a time**

Introduction – *Changing the Way We Communicate*

Not since Antonio Meucci first heard an “electroponic” sound over a charged wire in 1849 has there been such a fundamental revolution in telecommunications as Voice-over IP. The world is moving to a converged network of voice and data over a single IP network, changing the way we communicate and powerfully disrupting traditional telephony systems. By 2009, 74% of corporate phone lines are predicted to be IP lines (source: Radicati Group). One day everything will be run on IP.

Today businesses large and small are exploring the world of VoIP, trying to understand how it works, what quality can be expected, what benefits are brought, what risks are faced and how to easily deploy a business grade VoIP solution.

In the case of Australian SMEs, many businesses are aware of the great cost savings and added features involved, yet are hesitant to throw out their existing PABX telephone system and install a completely IP based solution. Indeed VoIP is still considered a high-risk proposition, particularly as the market is flooded with cheap, low quality, unreliable carriers.

However, as experience in other parts of the world has taught us, business grade VoIP is achievable if deployed through a quality single carrier network and not the public internet, and if delivered via sophisticated end user hardware that is capable of QoS and prioritisation and not a simple Analogue Telephone Adaptor (ATA).

This paper explores a “step-up” approach to IP migration whereby the business end user is able to firstly integrate a solution into their existing system risk-free to test business VoIP and take advantage of immediate cost savings; secondly expand that into multiple sites to have free calling between offices; thirdly implement a feature-rich IP PBX with IP telephones; and finally converge all voice and data onto a single network in order to have a powerful, cutting-edge completely IP based telecommunication system.

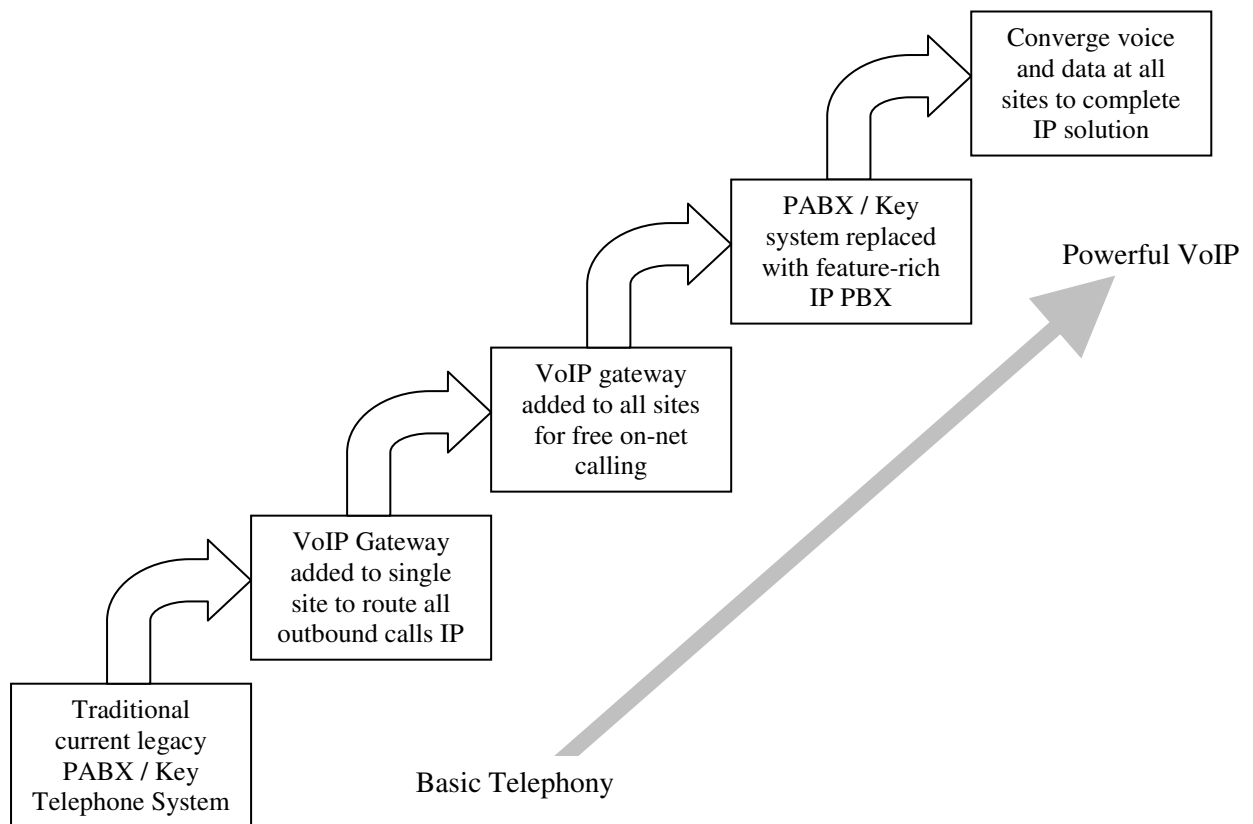
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A simple truth of business: We rely on our telephones. Every call must go through and the quality must be carrier-grade. (This is the primary reason one cannot adapt a home solution – such as a simple ATA – to a business environment.) Thus in order to successfully “evolve” into the world of VoIP the business end user must feel comfortable and confident with each step of growth. That means an understanding of the process and basic science behind IP telephony and the reassurance of knowing they can return to the Public Switched Telephone Network (PSTN) if unsatisfied.

There is no question of the benefits of VoIP. Once businesses see the huge call cost savings, line rental savings, free calling between multiple sites or to remote employees, and indeed the many features of an IP PBX, they are naturally drawn to this new technology. So long as the quality and reliability is never compromised.

Of course the best way to prove a business grade quality of service with VoIP is to provide a risk-free solution. Which brings us to Step One, *Adding VoIP Capability to the Existing Infrastructure.*

Step-up approach: From traditional telephone systems to a complete IP solution

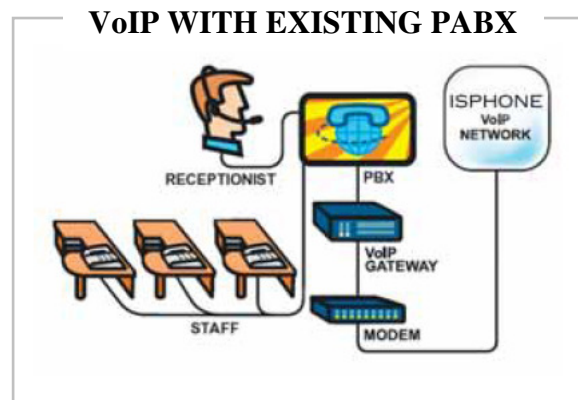


Step One – Adding VoIP Capability to Existing Infrastructure

The first step of migration involves adding an intelligent gateway to the current PABX/Key system across the existing PSTN lines. The gateway connects to the back of the PABX and then into the company LAN via the router, sitting between the two in order to “capture” the outbound calls and route them over IP. This may also include fax calls.

In this scenario the business will see no change in the behaviour or performance of their existing telephone system (and no reprogramming of their PABX is required), though they certainly will see a change in their call costs! And in the unlikely event that the IP network or the gateway fails, all calls are simply routed back over the PSTN line, even in the case of complete system failure such as power loss.

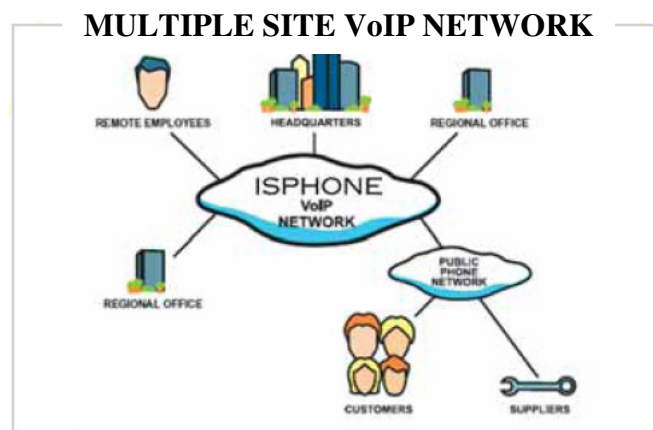
In order to assure a high level of quality it is important to deploy a robust gateway which supports QoS. The gateways we recommend provide multi-path architecture and included such features as prioritisation of voice over data, packet saver to reduce bandwidth usage, constant monitoring of VoIP calls for jitter, packet loss and latency with automatic switchover to the PSTN, and NAT firewall access within the network. As a result all calls are always at a level of quality equal to fixed line.



Finally, because no equipment is replaced or thrown out, the business is able to trial VoIP with zero risk. If they are not satisfied with the call quality or service, they can simply remove the gateway and return to their previous system of PSTN. However, it should be noted that we have yet to see a customer in Australia remove our VoIP solution.

Step Two – Adding VoIP Gateways to Multiple Sites and Remote Employees for Free On-net Calling

One of the most important and powerful advantages of Voice-over IP is the ability to make free on-net calling. That means for businesses with multiple sites and/or remote employees all calls between sites are free. In fact, they never even traverse the PSTN at all! With gateways deployed in each location (as below), the calls will go from one site to another, routed through a central switch, solely over IP. In the case of remote employees who perhaps work from home, a simple device such as an ATA can be deployed, though naturally the quality will be greatly dependent upon the broadband connection at their premises.



A further benefit to a multi-site business is that each site can be connected and controlled by a central PABX, thereby acting as a simple extension off the main switchboard. Calling someone across the country or even to other countries can be as simple as dialling a three-digit extension number! And of course that also gives the central switchboard PABX the ability to send inbound calls to any location connected to their VoIP WAN without additional costs. The ability to extend all the features of an existing PABX to anywhere in the world presents a powerful proposition for businesses.

Step Three – Implementing a Feature-rich IP PBX with IP Phones

The next step in an SME's evolution to VoIP involves moving onto an IP-based PBX and adding IP phones at each extension. These systems are a replacement for an existing telephone system and offer a variety of additional tools and features not available in a traditional PABX, including applications that work with your PC. Thus begins the elegant path to convergence of voice and data.

An IP PBX comes in two forms: either server-based at the business premises or as a hosted solution. In the case of the server solution IP phones are directly connected to the hardware and all functionality is built into the system and can be managed in-house by the IT Manager. For a hosted solution the IP phones sit "on the edge", that is are connected straight into the LAN or WAN, and all management is held off-site.

Depending of course on the needs of the business and what they wish to spend, IP PBX features (in addition to basic traditional PABX functionality) can include unified messaging (voicemail to email, fax to email), call forwarding/follow, virtual conference rooms, presence management, call recording, calling from desktop applications such as Outlook, sophisticated operator controls, video conferencing...the list grows each day as more developments in the industry occur and price points continue to drop. As well, any additions, moves or changes can usually be completed in-house by the system administrator or via a remote interface, rather than having to pay the PBX reseller to come out to the site.

In general we have seen that IP PBXs are deployed when a traditional PABX reaches the end of its life or when a business moves office or adds a new office. However, there are certainly instances when a CTO/CIO, IT Manager or other decision-maker has the foresight to understand the compelling argument for an IP-based system. (IDC statistics show that almost 50% of new telephone systems are IP enabled in 2005 / 2006.) With prices starting around a thousand dollars for the IP PBX, and quality IP phones below two hundred dollars, there is indeed a strong case to be made for a total replacement. Based on the direction of telecommunications towards IP and the high return on investment, many corporations have already made the move. We believe the SME market will naturally follow so long as they have an affordable system and network at a business grade quality.

Under the step-up approach, the role of the gateway(s) deployed in **Step One** and **Two** can be integrated with the new IP PBX thereby acting as the principle routing mechanism. This means the investment made previously is not lost, but in fact extended. By using the existing VoIP gateway an SME does not need to spend additionally on routing cards for the IP PBX, thus lowering further the cost of adding a new IP PBX.

Step Four – A Complete Convergence of Voice and Data

The ultimate goal is a completely converged network. That means a robust IP PBX controlling all IP phones to multiple sites with enormous functionality across the entire network. All IP phones will be on three-digit extensions regardless of their location, including IP phones at all staff homes. Central operators will be able to "see" all employees and manage all calls from anywhere to anywhere. CRM and voice calling will be integrated, while data and voice will work seamlessly in such applications as video conferencing and PowerPoint demonstrations. Sharing and editing documents while holding virtual

conferences over the same network at no cost will be the norm. In short, the PC and telephone will work together as never before. WiFi phones will eventually integrate with mobiles, allowing for least cost routing where hotspots are available. And as more and more applications are developed and technology increases the benefits of convergence will continue to grow.

Summary – *Voice-over IP: The Future of Telecommunications*

Today VoIP is still considered the great unknown for many SMEs. Fears about quality and reliability are still keeping business users away. At the same time, people are more aware than ever of the massive cost savings and increased functionality with VoIP. There is no question that VoIP is the future of telecommunications. But business users need a business grade service.

The best way to convince someone that something works is to let them try it risk-free. For SMEs that means a solution that will allow them to keep their existing phone system yet still take advantage of VoIP with the comfort of knowing they can always return to the PSTN.

In doing so, the small to medium business will take their first step into the exciting and profitable world of Voice-over IP!