

Are all VoIP services the same?

Deploying voice over IP (VoIP) in your business can yield numerous benefits, such as reduced costs, increased flexibility and simplified voice services. But when it comes to connecting VoIP to the outside world there are a number of pitfalls which businesses would do well to avoid.

As a business manager the pressure is always on to find ways to cut costs, by finding cheaper sources of goods and services or by raising the productivity of your employees. One of the technologies that has held the promise of doing both of these at the same time is voice over IP (VoIP – see What is voice over IP? below).

Converge

Traditionally companies operated two separate networks for data and voice. It has long been the ambition of communications providers to converge these and, indeed, over the past few years, companies have done away with their voice networks and run voice services over their LANs using VoIP. This has enabled them to eliminate all the associated equipment, staff and capex and opex costs of maintaining two separate networks. It can also

increase the flexibility of voice services and reduce telephony bills. (1)

If you have several branch offices connected by a wide area network, you can run voice traffic between them using VoIP and won't run up call charges. And you no longer need a separate PBX for each branch or office and can centralise on an IP-based PBX in one location, for ease of management and cost savings.

Furthermore, voice services, such as conferencing and redirect, can be controlled from employees' PCs or from IP phones. These are more like mobiles to operate than conventional PBX handsets and therefore are more familiar to employees which can raise productivity.

While cost-reduction and efficiency are the main motivators, there are other drivers that may prompt your business ►

What is voice over IP?

VoIP is the technology used to transmit voice conversations over a data network using the Internet protocol (IP). But just because it uses IP doesn't mean a company's VoIP system has to run over the public Internet to connect to the outside world. It can also run over a dedicated line or a private network.

To take full advantage of VoIP, your organisation should connect its VoIP system to the outside world using a carrier-grade VoIP service, which offers better quality and reliability than a public Internet connection.



The Internet cannot be guaranteed to deliver business-grade voice services 100 percent of the time



to adopt VoIP. Maybe your business has outgrown the voice services it currently uses but the incumbent provision is too rigid to allow easy expansion without an expensive upgrade to a proprietary PBX. Or you may be forced into buying additional costly access lines because of the lack of flexibility of traditional voice services. In contrast, an IP connection can scale with little or no physical changes required.

For example, your business may have evolved so that employees need access to configurable voice applications such as voice conferencing, follow-me, presence etc, to improve customer service. Or your

employees may want to integrate voice services with other business applications and running voice and data together on an IP network makes this possible.

If your business is one that fluctuates significantly – e.g. through seasonal peaks – then you will need the flexibility to increase and shrink the number of users, maybe at short notice. To do this with conventional telephony you have to physically install and uninstall new lines. But a VoIP connection can be expanded and contracted as the volume of business demands.

Alternatively, it may well be that your company has been quite happy running



Running voice traffic over the data network eliminates all the expense involved in maintaining a separate voice network



separate voice and data networks but the legacy PBX has reached the end of its useful life and centralising voice services on an IP PBX is a logical step.

External calls

The primary reason why many companies deploy VoIP is the lure of ‘free’ calls. If voice traffic can run over the LAN, then surely the same applies to external calls? However, when connecting VoIP to the outside world, businesses often encounter two drawbacks.

First, consumer-grade services that run voice over the public Internet can reduce your telephony bills but they can’t guarantee the quality, reliability and security of the conventional telephone network (PSTN). Fluctuations in traffic patterns and connection quality mean the Internet cannot be guaranteed to deliver business-grade voice services 100 percent of the time.

As a consumer this can be irritating. But for a company, not being able to talk to an important customer now can mean the difference between profit and loss. ▶



Not being able to talk to an important customer can mean the difference between profit and loss



Quality of service

Unlike the public telephone network, an IP network isn’t point-to-point. The path between transmitter and recipient is determined on the fly, thus data packets can suffer delay or require retransmission. While this doesn’t matter for email, which is only read when all the packets are assembled, it can play havoc with real-time telephone conversation.

Quality of service (QoS) technologies can be deployed to favour voice over other traffic to eliminate these issues. Any company which relies on voice communications as a business tool should ensure that its VoIP provider can guarantee voice service levels in terms of quality and reliability.

However, no provider can guarantee QoS over the Internet. For external calls a private, managed service is the only way of ensuring QoS.



Conventional carriers have much to lose by promoting VoIP because they earn revenue from traditional voice calls



In a recent report (2) on VoIP compiled by industry analyst firm IDC, the authors said: "Service disruption is more or less fatal to VoIP services, especially those designed to replace PSTN connections, since there will be no tolerance for lack of availability. Service quality and availability must be equivalent to PSTN services."

This points companies back to traditional carriers and the second drawback: few PSTN carriers offer a native IP network. Rather, they expect customers to convert VoIP to the protocol on their legacy networks.

Conversion involves further expense to install a converter for every 30 lines; diminished voice quality caused by converting from IP to traditional telephony (and back again if traffic traverses another IP network); and loss of flexibility due to the changes required to your network if you want to increase or decrease the number of lines. By contrast, a native IP carrier network requires no conversion and has a single, expandable interface.

Furthermore, conventional carriers have much to lose by promoting VoIP because they still earn revenue from traditional voice calls. (3) Consequently, many customers have been denied the

What is a VPN?

A common way of linking branch offices is a virtual private network (VPN), which behaves as if a dedicated private line was connecting each branch with the head office systems, although it is running securely over a managed VPN service.

To handle delay-sensitive VoIP traffic the managed VPN uses labelling and prioritisation technology which ensures voice packets take priority over other traffic and travel the same path in sequence to avoid delays.

opportunity to make the most out of VoIP because they are constrained by the lack of carrier VoIP services. The slow pace of migration to IP is dictated by the carriers whose only rival, until recently, has been consumer-grade Internet telephony.



It is possible for your business to have the VoIP services it wants at an affordable cost without compromising quality, security and reliability



Productivity

Faced with this dilemma, you may be tempted to carry on using separate networks for voice and data and a conventional PBX. But that means your business will miss out on the potential cost savings of simplified infrastructure, and potential enhancements to productivity and customer service. Besides, eventually you will have to take the IP route when retiring an old PBX because all are now IP-based.

If you install an IP PBX, you still need to connect it to the outside world in a way

which optimises your VoIP investment. Most IP PBXs have some proprietary features, so even though they may use standards-based protocols, not all necessarily work with any VoIP trunking service. You need to ensure that the features you require will work when connected to the outside world.

Even if you adopt a business-grade VoIP solution to improve reliability there is still the issue of how you connect to the outside world. If this is via conventional Internet access, you will still suffer from a poor quality voice service. To solve this problem, you could buy a leased line to carry VoIP traffic to the carrier, but this is expensive.

However, there are emerging providers who are able to offer managed business-grade VoIP services that guarantee end-to-end quality without the expense of leased lines, enabling you to deploy VoIP without conversion issues and without using consumer-grade Internet telephony. These providers are challenging the limitations that traditional voice can impose on those who have deployed VoIP internally.

To carry VoIP traffic to the outside world they can provide a native VoIP connection that offers the flexibility of VoIP and low cost of traditional ►



A service level guarantee ensures that your business receives the voice service quality required



telephony, like a flexible phone line that operates on IP. This can also be integrated with a managed leased virtual private network (VPN – see What is a VPN?) for multisite VoIP connectivity.

But your business doesn't have to transfer to complete VoIP access in one go. Often companies begin with VoIP on their LAN allowing them to share the data infrastructure for intra-site calls and consolidate into a single PBX. Later they

may connect the internal VoIP to carrier services to make savings when buying converged voice and data services.

The migration path usually involves initial connection of VoIP over the Internet to test functionality before wholesale or gradual migration of traditional voice lines to a managed VPN. The VoIP/Internet connection can be retained as a back-up option.

Although centralising your IP PBX reduces cost of equipment and associated maintenance, it also means that voice services have a single point of failure. To mitigate this risk, you may choose to use a VoIP provider who can host your IP PBX so that the physical equipment is in a secure data centre, backed up, maintained and

administered by data communications professionals. A more resilient system still would use a PBX on the premises and one hosted in a secure data centre.

Service level

This aspect highlights the need for a service level guarantee on quality and availability to ensure that your business receives the service level required without paying for features that it doesn't use.

So are all VoIP services the same? Clearly not. The choice for mid-sized businesses is not limited to poor-quality, unreliable, consumer-grade voice over the public Internet, or retrogressive carrier services. With careful choice of partner, your business can have all the advantages of VoIP access – reduced costs, flexibility and simplicity – without the drawbacks. ■

For further information www.colt.net.

Questions to ask prospective suppliers

- What is the service-level agreement? Is this a business-grade service? What level of service can the supplier guarantee the entire VoIP service, not just the separate elements such as access?
- How easy is it for the supplier to add or subtract extra lines?
- Can the supplier deliver VoIP access as part of an integrated IP VPN or Internet access, or integrated with existing third-party Internet access provision, or as a stand-alone service?
- Does the supplier perform functional tests to ensure its VoIP access service is compatible with your IP PBX?
- Can the supplier host your PBX?
- Can the supplier work with local integration partners?
- Can the supplier continue to provide service and support as the business grows?

(1) Numerous articles in the public domain discuss this argument. For example <http://www.information-age.com/channels/comms-and-networking/features/280806/ip-opportunity.shtml>

(2) IDC market analysis: Western European VoIP market 2008 – 12

(3) For example see <http://www.voip-news.com/feature/carrier-voip-struggles-090808/>