Voice over Internet Protocol (VoIP)

dti

The DTI drives our ambition of 'prosperity for all' by working to create the best environment for business success in the UK. We help people and companies become more productive by promoting enterprise, innovation and creativity.

We champion UK business at home and abroad. We invest heavily in world-class science and technology. We protect the rights of working people and consumers. And we stand up for fair and open markets in the UK, Europe and the world.

Achieving best practice in your business is a key theme within DTI's approach to business support solutions, providing ideas and insights into how you can improve performance across your business. By showing what works in other businesses, we can help you see what can help you, and then support you in implementation. This brochure focuses on these solutions.

Many small businesses are faced with spiralling phone bills. One way of reducing your bills is to use your IT network for phone calls between your branches, and to use the internet for external calls. This is known as Voice over Internet Protocol (VoIP).

VoIP can also dramatically improve the way you work. If you switch your phone calls to your IT network, you can merge voice and data, boosting staff productivity and enhancing customer service.

As the price of high speed internet connections comes down, it's well worth taking a fresh look at your long term plans for your phone and IT network.

This brochure is for: small businesses who want to cut the cost of their phone bill. It's also for those who want to integrate their phone system with their business applications, to make staff more productive and offer better customer service.

It covers: the benefits of implementing VoIP, with advice on how to go about it.

Contents

What is VoIP?

VoIP, short for Voice over Internet Protocol, enables businesses to make phone calls across computer networks, providing a low cost and efficient way to complement traditional phone systems. VoIP can be used in local office networks or between sites, enabling you to integrate call handling with other parts of your business such as your website. Using broadband, it can also deliver telephone services to remote users and home workers. Besides the term ‘Voice over IP’, you may come across ‘internet telephony’, ‘IP telephony’ and ‘voice over broadband’.

The benefits

The main advantage of VoIP is cheaper phone calls. Another key advantage is being able to combine phone calls with business data. It means you can adopt call centre style technology, with each incoming call triggering onscreen pop ups with customer details. Or you can add a 'Click to call' button on your website.

When you consider that the average employee spends hundreds of hours a year on the telephone, it's easy to see why VoIP is attracting a lot of attention. Many large corporates from banks to retail are using it for voice calls. UK bank Abbey is rolling out Voice over IP to its branch network, and sandwich retailer Pret A Manger has installed VoIP to communicate between shops, estimating it will save £10,000 a month.

As the cost of high speed internet access (such as broadband) comes down, VoIP is now within reach of small businesses. Some telecoms companies and ISPs are now offering Voice over IP deals targeted at the small business sector.

Traditional phone calls work by allocating an entire phone line to each call. With VoIP, voice data is compressed and transmitted over a computer network. This means VoIP uses up to 90% less bandwidth than a traditional phone call and is consequently more cost-effective and more efficient.

Phone companies are already using the technology to carry international calls. According to industry estimates, up to 75% of international calls will be carried over the internet by 2007. In fact, if you use a cheap, long distance telephone service, you're probably using IP telephony already without knowing it.

VoIP is helping the phone companies save money, and by introducing a VoIP phone system on your own computer networks, you could do so too. For any business, the immediate benefits can be:

- Cheaper external calls - long-distance and international calls for the price of a local call.
- Free internal calls to all parts of your company that share a computer network. With a Virtual Private Network (VPN) in place you can speak to connected colleagues at different branches or on the road free of charge. This is particularly useful for the growing number of SMEs who have multiple sites – currently 33% according to the Yankee Group.

But cheaper calls are not the only advantage. If you merge your phone and data networks, VoIP can help you work more efficiently and make your company's phone network easier to look after.

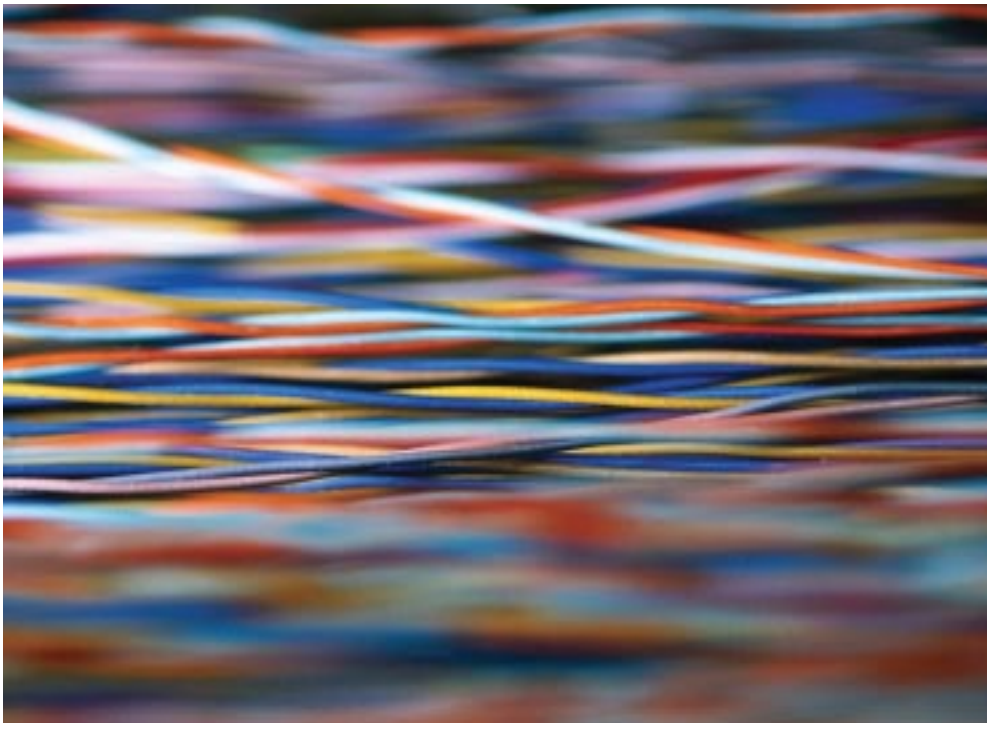
- **Simpler infrastructure.** With VoIP on your computer network you can add telephones and increase call capacity without running additional cabling.
- **Scalability.** Traditional PBX (Private Branch Exchange) phone systems have a set number of ports for telephones to plug in to. VoIP systems provide greater flexibility as you can run a number of 'virtual users' through each network socket.
- **Reduce operating costs.** Because a VoIP-enabled system is based on software rather than hardware, it is easier to manage and maintain.
- **Improve productivity.** VoIP treats voice as if it were any other kind of data, so users can attach documents to voice messages or participate in virtual meetings using shared data and videoconferencing.
- **Wireless-compatible.** With a wireless LAN in place, mobile devices like PDAs and smartphones can use your VoIP system. (If you install a wireless LAN, you need to make sure you have appropriate security measures in place, such as a firewall or encryption.)
- **Enhanced customer service.** By adding a 'Click to talk' button to a website, a VoIP-enabled enterprise can put web users in touch with customer service staff. You could also look at implementing customer relationship management software (CRM). Incoming calls could automatically trigger screen pops with customer account information and contact history.
- **Dependable call management.** Voice-related services, such as follow-me roaming, caller-ID, call forwarding and broadcast messaging, become simpler to maintain and can be updated as needed by your employees.
- **Flexibility.** A Virtual Private Network (VPN) is an allocated amount of bandwidth on the public internet where public access is prevented through encryption. If your company has its own VPN and combines it with VoIP, you can set up a fully functioning office where there is a broadband connection. Green-field sites can be up and running in minutes not weeks.

The VoIP market

The good news is that Ofcom, the UK communications industries regulator, is pushing suppliers to introduce low-cost voice over broadband services in the UK. These services could be of interest to small and medium-sized companies.

As it's a competitive market, expect to see a raft of new products and services over the next few years, from traditional telephone service suppliers such as BT and Cable and Wireless, and from Internet Service Providers (ISPs) who are evolving into Internet Telephony Service Providers (ITSPs). Network suppliers such as Avaya, Cisco and Nortel also offer VoIP products and services. Managed services – where you outsource your phone and data network – are likely to be popular options for those who don't have in-house expertise.

To keep up to speed on industry developments, you could keep an eye on Ofcom's website, www.ofcom.org. For news on products and services, you could visit www.itspa.org.uk, the website of suppliers' organization, the Internet Telephony Service Providers Association, and www.voip.org.uk, a website dedicated to UK IP telephony.



VoIP solutions – getting started

VoIP allows phone calls to be made between PCs that are connected together on a computer network. This can be an internal LAN (either Ethernet or wireless-based) or any computer connected to the internet, as this is in effect part of a single worldwide network.

At its most basic, a VoIP system simply links PCs. But most VoIP systems include connections (called gateways) to the regular telephone network, allowing PC-to-phone and phone-to-phone calling.

PC-TO-PC CONNECTIONS

To make and receive VoIP calls internally in your business you will each need a multimedia equipped PC (Pentium) or an Apple G4. You also need to be connected to some kind of network:

- **Internet.** If you have an always-on internet connection you can, in theory, phone any suitably equipped PC in the world free of charge. Home users who want to try the technology to call friends and relatives overseas can make do with a dial-up connection. But for serious business use, you need a high speed internet connection such as broadband.

If you have installed a firewall on your PC, you will need to make sure the VoIP software or hardware you use is compatible with it.

- **Private networks.** VoIP can work across almost any data network, including wireless or Ethernet-based LANs and Virtual Private Networks (VPN), as well as the internet itself. The quality of service depends on congestion and transmission speeds of the network in question.

On private networks, especially across a LAN, voice quality can be at least as good, often better, than traditional telephone calls. For geographically dispersed networks the key factor is to provide adequate bandwidth, segregate data and VoIP traffic, and minimise network latency – that is, the time it takes for a network packet to travel from source to destination.

SOFTWARE

You need appropriate software to make VoIP calls on your PC or Apple Mac. Many of the latest operating systems include applications that let you make PC-to-PC calls.

- Microsoft Windows 2000 users can use Netmeeting.
- In Windows XP, Messenger has this capability.

- Apple users can use iChat which comes free with your Mac. You will also find free software downloads on www.apple.com such as SquidCam, a video/audio chat program for Mac OS X users. For use with broadband connections.
- Applications such as Skype let PC, Mac and Linux users chat free of charge over the internet. The software is suitable for personal use rather than business use.

HARDWARE

You could use your computer's built-in microphone and sound card to make and receive calls, but most users find headsets and handsets more practical.

- Analogue handsets plug into your existing soundcard. They are simple to operate but sound quality can be variable. They are available for around £25.
- USB handsets plug into any PC and deliver superior audio as they usually have built-in sound cards. Look for models with Session Initiation Protocol (SIP) functionality. SIP models can plug into any PC so you can access your voice mail and make/receive calls from anywhere in the world. Prices start at around £40. For more information on SIP, see page 10.
- Analogue telephone adaptors - units that convert your existing analogue phone into an internet capable (SIP-capable) phone are available from suppliers such as Cisco. Typical costs are around £150.
- IP phones are available from Cisco, Avaya and other suppliers. They plug into the data network. As well as making phone calls over the internet, you can check email, browse the internet and access your company's business applications. But their screen is much smaller than a PC screen. Small businesses may also find their existing network is not sophisticated enough to accommodate them. You can pick them up for £200-£300.

PC-TO-PHONE CONNECTIONS

Not everyone has VoIP-enabled PCs. If you're using your PC to call someone who has a phone, you have to pay the price of a local call at the other end. However, you will still be getting an international call for the cost of a local call.

To call people who have phones rather than VoIP-enabled PCs, your company needs a modern, IP-enabled PBX. They come with a standard gateway which connects VoIP calls to the public phone network.

Alternatively, you could use a third party service provider. Their service links your PC to the traditional telephone network. These Internet Telephony Service Providers (ITSPs), often based in the USA, offer subscription services, which provide gateways to the traditional telephone network. Most offer low tariff international calls on a pay as you go basis. See supplier list on page 22.

When you register with one of these services you are sent a password and log-in details. Typically, you buy time credits and can then place internet calls direct from any multimedia-equipped PC. Calls are routed via the provider's website to the regular telephone network using a local gateway, depending on your required destination.

You may need to download the service provider's software to convert your PC into a telephone, and use a PIN number to access the service. Using an Internet Telephony Service Provider is a low cost option, as you do not need to invest in additional hardware.

PC-to-phone services for businesses can be set up with single or multiple user accounts (with itemised billing) and can be a cost-effective solution if you need to make international or long distance calls on a regular basis. Assuming your Internet Telephony Service Provider offers good deals for the places you call most often, you can make considerable savings.

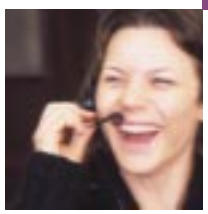
However, it's key to shop around on the internet. You need to look at the countries you dial most often and compare each Internet Telephony Service Provider's rate. It's worth double-checking them against traditional telecommunications providers such as BT.

PHONE-TO-PHONE CONNECTIONS

If reducing your international phone bill is the sole concern you can even opt for an account with an Internet Telephony Service Provider that gives you access to its low tariffs via a calling card solution. Here, you subscribe to a VoIP service and pre-dial its code when you are calling abroad. You don't have to upgrade your network to take advantage of these services, so it's a low-cost option.

You can use a standard phone and save money, but this approach delivers none of the service benefits available to the VoIP-enabled business – you are simply getting cheaper calls, not improving the way you work.

VoIP solutions – going further



VoIP is not just about cheaper phone calls. If you merge your phone and data network, it can dramatically change the way you work, improving customer service along the way.

For example, you can use call centre technology to improve the way you deal with customers. Each incoming call can trigger your database to show a customer's address details and transaction history on screen. Or you can put a 'Click to call' button on your website, to offer customers callbacks at the click of a mouse. For more details, see the section on voice-data integration below.

So if you're planning to upgrade your telephone system or if you're implementing broadband on your IT network, it would be wise to make sure any new systems you install can cope with VoIP.

VOIP ENABLING YOUR SWITCHBOARD

Most businesses use Private Branch Exchanges (PBXs) to manage shared external lines and switch calls between users on internal lines. You can add VoIP capability to this with little or no disruption to your existing phone set-up by installing a sub-network that works within your main PBX.

By taking this route, businesses can preserve their existing investment, and take advantage of VoIP. You may find that the new equipment pays for itself within a year, through the costs you save on your phone bill.

Once installed, you can extend this network, for instance by using your VPN, to offer voice services to remotely based workers and sales teams. This will allow them to use the office extension and, at the same time, access the corporate database wherever they are online.

To do this you will need:

- An IP-Private Branch Exchange server (IP-PBX server). It deals with call routing and connection requests, monitors data traffic and manages bandwidth allocation. You can buy an IP-PBX server for around £350, which connects to your existing PBX and provides VoIP functionality.
- A gateway which provides the bridge between VoIP traffic and the standard telephone network. Expect to pay around £800.
- Software that allows multimedia-capable PCs to operate as high performance telephones using the company network. A 10-user licence software package starts at around £1,250.
- Or you could invest in IP telephones instead of the software – this is an option if you don't want to use a mouse to access your dial pad or if your working environment makes it difficult to set up computers for everyone that needs phone access. An IP telephone means you don't need PCs but can connect directly to your network, often they can also be used as standard phones if your own network fails – providing you have a landline as backup.

VOIP BETWEEN SWITCHBOARDS

If you are mainly interested in cutting the cost of internal calls between different branch locations, you can install VoIP gateways at each branch's PBX telephone system for around £800 per location and bypass the public telephone system. There is no need for equipment changes for the users, as individual phones are unaffected.

This will create a single, multi-location 'office'. You will cut the cost of inter-office phone costs and staff will benefit from remotely accessible voicemail and Direct Dial-In (DDI) numbers. See case study on Parthenon Publishing, page 18.

Staff based abroad will be able to contact their UK colleagues by dialling the relevant extension. The return on investment (ROI) here is straightforward: it's the reduction in your phone bill less the cost of the hardware. With the ratio of internal to external calls at around 4:1 for the average business, the telephone savings could be substantial.

VOICE-DATA INTEGRATION

If your company has different branches, a VoIP-based system that integrates all your communication services across a single, shared network will let you share data between branches as well as send and receive calls. The cost will depend on the number of locations you are integrating and the PC and phone handsets you have.

The benefits are that a VoIP system can provide you with services that existing PBX telephone systems can't and that tighter voice-data integration will be more efficient.

Possible services include:

- using call-centre technology, where an incoming phone call automatically brings up customer details on screen;
- offering customers a 'Click to call' button on your website;
- unified messaging for phone, e-mail and fax messages. Unified messaging offers a way of putting all these messages into a single 'in-box';
- video or audio-conferencing where several people in different locations can work on the same document, while discussing it over the phone or via a video link;

If you're considering using the internet for voice calls, you need to make sure your phone equipment conforms to industry standards.

Check that your PBX is:

- QSIG compliant - QSIG is the open, international standard for PBX systems and it has been specifically designed to support VoIP; or
- DPNSS compliant - DPNSS (Digital Private Network Signalling System) is BT's proprietary standard. Currently more than two-thirds of existing UK private telephony networks use it.

If you don't fancy buying the kit and weaving it together, it may be easier to buy in third-party expertise to provide a solution for you.

- voice activated dialling;
- Voice-based SMS and
- plug-and-play connectivity from any network point for both phone and data.

MOBILE COMMUNICATIONS

If your company is dipping its toe into wireless networks, enabling staff to log on with Smartphones and Personal Digital Assistants (PDAs), consider how VoIP could fit into your strategy. To tap into this developing area, you need to know about SIP (Session Initiation Protocol).

SIP is an emerging IP telephony standard, which is being positively endorsed by the VoIP industry. With SIP-compliant systems users can:

- make and receive calls from anywhere;
- maintain a point of contact that is consistent, whatever device you are using and wherever you may be;
- automatically notify colleagues of their online status;
- provide the same address for e-mail and voice messaging and
- update call management systems using standard contact management and calendar tools like Microsoft Outlook.

Mobile workers with SIP-based applications can use multimedia laptops, even PDAs, to stay in touch. Full function SIP phones remain expensive – they cost around £300.

While wireless networks bring great flexibility, they are relatively new and can bring increased security risks. Anyone with a wireless-enabled gadget can potentially tap into a wireless network, so you need to make sure you put in a firewall or encryption, as well as password protecting data and applications.

Implementation guide

VoIP offers substantial benefits and the technology has now advanced to the point where it can be an attractive alternative for business use. But, unless there is a clear rationale for it, scrapping all your analogue PBX kit and handsets and replacing them with a total VoIP solution is likely to be costly and is probably unwise.

Usually it makes sense to introduce VoIP as an addition to your existing PBX-based system and gradually increase your level of sophistication as and when you need more functionality. Opting for a hybrid system will enable you to retain your installed investment in many popular handsets whilst providing a scalable platform to support future applications and user growth.

An important strength of VoIP architecture is that it can operate side-by-side with your existing systems. By initially restricting the roll-out of VoIP to a single department such as sales, and then extending it to the rest of the business as your needs dictate, you can minimise disruption and stagger your costs.

If you decide to use VoIP it is vital to check out the robustness of the networks you will be relying upon to ensure smooth implementation. Voice communication is too important to not work reliably in all conditions.

You need to look at four main issues:

- Quality of service
- Reliability
- Security and
- support.

QUALITY OF SERVICE

Quality of service is a prime concern. With the traditional phone system, users are accustomed to good quality calls – they may occasionally get 'echo on the line' but this is the exception.

If you're using a data network for voice calls, it means you are chopping up the phone conversation into packets that are reassembled at the other end of the line.

With voice calls, voice transmission has to happen in real-time, and it can be difficult to guarantee this if there is too much traffic on the network. If voice data takes too long to arrive, it can result in a stuttering effect, where words get cut in half and syllables get lost – and this will not be acceptable to users.

Congestion in the network is the most likely reason for loss of quality. You need to test your network performance at peak times and at its weakest point.

As a rough rule of thumb, at least 25% of bandwidth should be kept available for administrative tasks, ie routine automatic system management.

VoIP uses bandwidth efficiently. But you need to look at worst-case scenarios when deciding whether you will need to upgrade your network. Are there bottlenecks at times of high activity?

How does the network perform while very large files are being transferred? It is normally advisable to separate voice and data traffic on the same network to control the potential impact of one on the other. Additionally, you need to plan for the future. Will there be more use of video once VoIP is up and running, as staff start videoconferencing, and how will this affect network performance?

And while it's possible to control your internal network traffic to some extent, it's impossible to manage traffic on the internet, where you have no control over the hubs, routers and pipelines that make up the public network.

RELIABILITY

Next, you need to look at the robustness of the networks you are using. Losing telephony services as well as access to data could be catastrophic. Ask yourself:

- If one or more of your servers fail, is the network able to recover in sub-second time? If not, do you need to build in redundancy and/or mirrored servers?
- The standard ('five 9s') benchmark for telecom network availability is 99.999%, which is equivalent to less than five minutes of downtime a year. How does this compare to the network your VoIP will be working on?
- If you intend to switch all phone calls over to VoIP, you could end up in a situation where you can't use the phones because there's a power cut. Make sure you have a backup solution.
- You need to ensure that you always have phone access to the emergency services, if your hardware or software fails. Landline and mobile phone service providers guarantee access to 999 services, but internet telephony providers are not currently bound by the same regulations.

SECURITY

Because voice is transmitted as data it is potentially more vulnerable to attack than a traditional telephone system. There are a number of ways you are at risk, including:

- exposure to malicious attacks or computer viruses;
- eavesdropping by competitors leading to loss of confidentiality and
- use by hackers of your network to make free calls.

An attack on the voice network may be unlikely, but if it were to succeed it would be crippling. The core techniques for securing voice networks are straightforward, things like firewalls, encryption and password protection, but they need to be embedded from the start in your strategy and planning.

In short, you need to make your VoIP system at least as secure as the rest of your network. Suppliers such as Avaya and Juniper Networks offer security features such as voice encryption for VoIP.

Here are some steps that can help protect your VoIP network.

- Place your IP-PBX servers behind firewalls so they cannot be accessed from the internet.
- Use intrusion-detection systems and install software patches promptly.
- Only give administration rights to certain, trusted members of staff. And set up access lists to limit usage to authorised users.
- Encrypt voice data while it is being digitised, ie in the phone or at the gateway.
- Require all phone points, especially LAN telephones, to have password-protected log-in procedures.
- Set up a virtual LAN so that data and voice transmissions use different parts of the network.

SUPPORT

If you switch voice calls to your IT network, it makes your IT staff responsible for your phone network. Key points to consider are:

- Is everyone aware of their new responsibilities?
- Do you have enough IT staff?
- Will staff need training so they can provide support for the phone system?
- What security changes do you need to make when adding voice to your IT network?

Implementation checklist

RESEARCH & ANALYSE

SET OBJECTIVES

Do you want to:

- reduce the cost of communicating externally?
- enhance internal communications?
- improve communications support for remote and mobile workers?
- introduce integrated voice/data services?

Agree specific, measurable objectives for what you want to achieve.

ANALYSE YOUR NEEDS

- What proportions of voice calls are internal, external, between corporate locations?
- Identify the level of data and voice traffic at peak times. Is this likely to change in future?
- Do you need to upgrade PCs? You will need Pentium PCs or Apple G4s as a minimum.
- Is there sufficient bandwidth during periods of peak activity?
- What management and monitoring tools do you need?
- If you intend to introduce high bandwidth applications like videoconferencing does your cabling/wireless infrastructure deliver sufficient bandwidth to each desktop?

COST BENEFIT ANALYSIS

- Will you need to upgrade your existing network? Allow for the cost of this.
- What is the cost of additional equipment, installation, training and maintenance?
- What are the anticipated call savings?
- What are the expected savings in operating costs?
- Can you assess any productivity benefits?
- How long will it take to plan, install, configure and trial a new system?

EXPLORE THE OPTIONS

- Look at VoIP-enabling your switchboard.
- Do you want to use VoIP to bypass the public telephone system?
- Should you use an ITSP (Internet Telephony Service Provider)?
- Look at interoperability with your existing systems.
- Look at your needs for mobile communications and check for SIP compatibility.

CONSULT

INTERNALLY

- Identify early adopters and discuss their needs.
- Decide which departments/individuals will be VoIP-enabled.
- Do proposed product offerings meet existing as well as anticipated needs?

PROFESSIONAL ADVICE

If you lack the skills in-house, contact a Business Link adviser (or equivalent if you are in Scotland, Wales or Northern Ireland), in the first instance, for help on how best to:

- outline your requirements;
- establish how much you can afford to pay;
- scope the project;
- implement;
- provide training and software support and
- get ongoing traffic analysis and network advice.

PLAN & TEST

PLAN YOUR VOIP ARCHITECTURE

- Which VoIP applications do you want to offer staff?
- Which services (eg conferencing, queuing, voice transfer) will the network need to support these applications?
- What is the physical infrastructure (eg protocols, switches, routing mechanisms) required to deliver this?
- Do you want to add voice services to one or several LANs?
- Do you want to add voice services to VPNs?
- Build in strong security measures.

PLAN THE ROLLOUT PHASE

- Look at training implications – what will the cost be?
- Decide which staff will require training and allow time for them to adjust to the new system.
- Break down the project into manageable chunks.
- Make it clear who is responsible for updating, maintaining and securing IP phones and other gateways.
- Make sure that your plans are scalable.

ACT

IMPLEMENT VOIP

- Roll out any necessary training.
- Begin by replacing VoIP in a self-contained part of the business then gradually extend its use.
- Encourage staff involvement and feedback, this will help smooth implementation, as staff buy-in can make or break a technology project.
- Consider setting up a cross-departmental taskforce to manage the implementation process – it will help with staff buy-in and ensure that implementation works company-wide.

EVALUATE

- Monitor and review the impact on your business and against your objectives.
- Monitor quality of service and network availability.
- Get feedback from staff, customers and suppliers on the changes.
- Evaluate the impact after six months and one year. Have you achieved your objectives? Establish how you could improve things further.

Case studies

STAMCO TIMBER

Company: **Stamco Timber, Timber and builders merchant for B2B and B2C**

Location: **East Sussex**

No staff: **100**

Website: **www.stamco.co.uk**

OBJECTIVES

Stamco Timber, a successful supplier to the building trade, has a reputation for pioneering new products. Its success in the trade has led to an increase of direct sales business.

To cater for this increased demand, the company decided to start manufacturing its own products, and built a £2.5m production mill and distribution centre.

The new, purpose-built mill needed an efficient communications link to head office to feed customer orders to the production line. The aim was to install a cost-effective communications link, to help the company manage its customer service and sales systems.

Stamco had an existing data link, but in order to maximize the efficiency of its staff it installed IP handsets and voicemail at the distribution centre, as well as a cordless telephony system to ensure all key workers were contactable.

IT Director Nicholas Wilde explained the need for efficient communications links: "We needed to ensure the orders being placed at head office were being communicated properly to our distribution site. One of the major issues we faced was that staff were always on the move and needed to be contactable at any time."

SOLUTION

The company already had an automated production line, broadband data links, WAN networks between the sites and a fibre-optic system covering the five and a half acre factory site.

Mr Wilde decided to opt for Voice over Internet Protocol (VoIP), where a company can use data links to carry phone calls as well as business information. VoIP can bring great savings on the cost of telephony.

Stamco chose an IP-based system so it could run Voice over IP, and cut phone bills

Stamco chose an IP-based system, the Axxess Communications Platform from Inter-Tel, as it conformed to standards such as Digital European Cordless Telecommunication (DECT) and catered for voicemail and IP telephony. It also offered flexibility for future growth – when new staff join, IP handsets can be plugged into the system with ease, as and when necessary.

BENEFITS

The main benefit of the VoIP system is lower phone bills, but it has also helped staff work more efficiently, bringing better customer service. Stamco has a bespoke ordering system, built around its Sage accounting software. By integrating the VoIP system (with voice and data at each node) with this ordering system, it enabled any member of staff to access customer or order information as and when needed. It enhanced teamwork. "This ensured the whole company became part of the sales and customer service team," said Nicholas Wilde.

CHALLENGES

VoIP is still seen as cutting edge technology. Being an early adopter of VoIP brings its own challenges. When Stamco first launched its VoIP system, it didn't work, and the UK-based reseller that provided the Inter-Tel platform couldn't isolate the problem. It was their first implementation in the UK and they had little expertise in the system.

To solve the problem, the highly experienced internal IT team and the suppliers worked together and got the system up and running within the day.

One of the biggest challenges was staff training. The company needed to ensure the new system was used effectively. Stamco's original approach was to train key operators in the new system and rely on them to train other colleagues. It proved only a partial success.

Once a broader training system was implemented, this problem was overcome. "You can only make the most effective use of technology if everyone involved understands exactly how to use the systems," said Mr Wilde.

He is a firm believer in taking advantage of new technology (within budget constraints). He says: "Don't be afraid of advances in technology – if implemented well, it benefits the business and the customer, and at the end of the day it's the customer that keeps the business going."

CONTINUED INVESTMENT

Stamco plans to continue its ICT investment, with a view to working more closely with suppliers. For e-collaboration, Stamco plans to evaluate Electronic Data Interchange (EDI) and eXtensible Markup Language (XML). Mr Wilde believes technology is the best way to service customer needs: "We've always been customer focused, whether internally or externally. The ongoing question is: how can we improve customer service? If you improve the systems, the benefits flow through the whole company."

He believes that new technology is vital to drive the growth of the business: "By improving our systems, we can work more efficiently and serve more customers without increasing the burden on existing staff. It's about using technology to achieve our long-term goals. "Our customers are happier, our business is more efficient and that makes us able to grow effectively and fast."

PARTHENON PUBLISHING

Company: **Parthenon Publishing Group, Publishing company**

Location: **Lancaster and London**

No staff: **50**

Website: **www.parthpub.com**

OBJECTIVES

The Parthenon Publishing Group produces books, journals, videos and multimedia software for healthcare professionals and environmental scientists around the world. The company has a head office in London and an office in Lancaster.

Due to a rapid increase in business in 2002, the company needed to expand from one office in Lancaster to two. The company wanted the two sites to work as one entity. Creating two separate computer networks and telephone systems would have been prohibitively expensive.

The goal was to integrate their phone and data networks. Parthenon chose an IP telephony-enabled product from BT, Business Communications Manager (BCM), which brought voice and data together in one, easy-to-operate 'single box.'

SOLUTION

As a foundation, BT engineers laid fibre optic cables between Parthenon's two Lancaster offices. The two buildings were then linked through BT's Business Communications Manager system, to create a single Local Area Network (LAN).

The company was now able to integrate e-mail, fax, telephone and other applications across the two sites for cost effective inter-office communications. The project cost £20,000.

BENEFITS

Parthenon Publishing has enjoyed significant benefits from the integrated system – it has made the company more efficient, more productive and saved money on telephony costs as well.

Linking the two offices via fibre optic cables removed the need for expensive new telephone systems in the new office.

Business Communications Manager Jeremy Smith is pleased with the implementation. "The second office behaves as if it was part of our other building. It has been totally seamless," he said.

Parthenon Publishing has installed an IP-telephony enabled network to join two offices and cut phone costs.

There are seamless links between offices. Thanks to the integration of email, fax and voice, staff can work in either office and access all the applications and data.

Using BT's IP technology, Parthenon has made cost savings on telephone calls. If someone in the original office needs to speak to a colleague in the new building, calls are carried over the IP network which costs significantly less than using the external public telephone network.

The new network also makes the phone and IT system more flexible. Mr Smith added: "When new staff join or employees move to a different location, it's easy to make the changes to the system using Business Communications Manager".

Parthenon relies heavily on e-mail so an efficient network is vitally important. Staff deal every day with authors and printers who send in copy and designs. Sending these items electronically saves a great deal of time and money. Mr Smith continued: "We have seen a huge rise in the use of e-mail attachments. Using this method, the speed of getting content in is much faster than by courier and we can respond instantly".

The new network is also key to the company's website. Medical research, the mainstay of the company's business, can be posted on the site almost immediately after publication rather than the weeks it takes to print it.

CHALLENGES

Jeremy Smith is a firm believer in the benefits of investing in technology. "There is not an area within our business that hasn't been favourably changed by our technology implementations," he said.

Parthenon Publishing takes a cautious approach to new technology. The IT team assesses the requirements of the people who will be using the system before adopting any new solutions.

Mr Smith emphasizes the importance of managing users' expectations of a new system. "Some employees expect too much when new systems are implemented," he said, "However, with regular and informative communication of the abilities of systems these problems are overcome."

He believes it's important not to underestimate user needs. "Always provide more than you thought in terms of hard disk space, internet networks etc. Expectations change and unforeseen demands occur," he said.

FUTURE FLEXIBILITY

Parthenon believes its communications system is flexible enough to grow as the business develops. If the company expands to further sites, he is confident the same productivity and efficiency levels will be maintained as the infrastructure is already in place.

Glossary

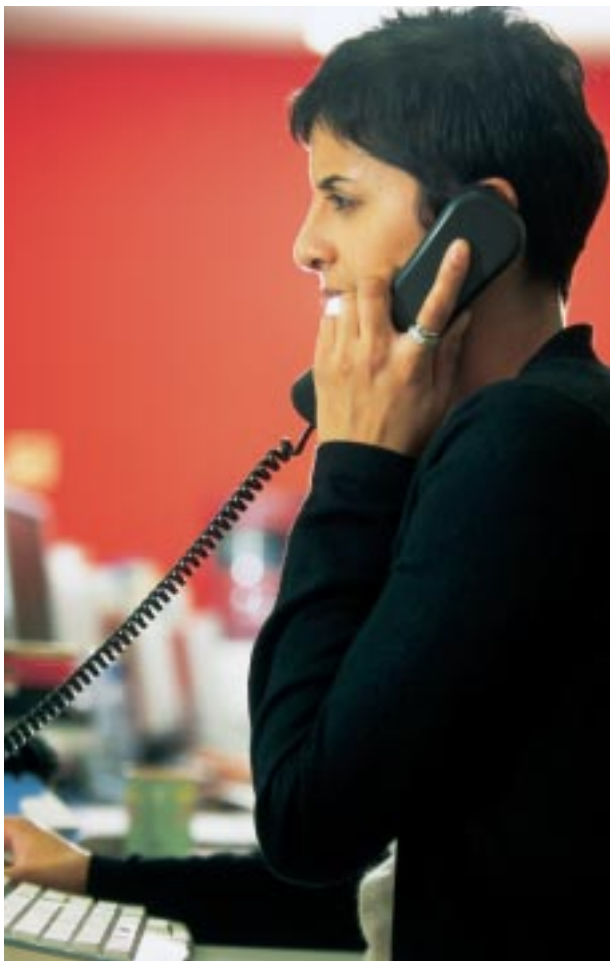
ITSP – internet telephony service provider. A company that offers cheap phone calls that run over the internet.

PBX – Private Branch Exchange. A phone system that connects a company to the public telephone network.

SIP – Session Initiation Protocol. SIP is an emerging IP telephony standard that is being enthusiastically endorsed by the VoIP industry.

USB – Universal Serial Bus. An interface standard for connecting devices such as digital cameras to computers.

VoIP – Voice over Internet Protocol, enables businesses to make phone calls across computer networks. Also known as Internet Protocol telephony and IP telephony.



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- call us on 0870 150 2500 to order from our range of free best practice publications or visit www.dti.gov.uk/publications

Contact your local Business Link adviser by visiting the website at www.businesslink.gov.uk or calling 0845 600 9006

GENERAL INFORMATION ON VOIP

www.ofcom.org – Ofcom, regulator for the UK communications industries

www.telecomsadvice.org.uk – independent advice for small businesses

www.sipcenter.com and www.openh323.org – technical sites with updates on industry standards

www.voip.org.uk/ – reviews of UK Voice over IP service providers

www.VoIP-calculator.com – site for network managers to calculate viability of VoIP

www.itspa.org.uk – Internet Telephony Service Providers Association

A SELECTION OF SOFTWARE, HARDWARE AND SERVICE PROVIDERS

Software for VoIP

www.microsoft.com/windows/netmeeting/default.asp – Microsoft Netmeeting

www.messenger.msn.com – Microsoft Windows XP Messenger

www.apple.com/downloads/macosx/email_chat/skype.html – Apple's VoIP download

PC to phone services

www.dialpad.com

www.net2phone.com

www.webphone.com

www.neteasyphone.net

www.callserve.com/Homepage.asp

http://www.gossiptel.com/

http://www.sipcall.co.uk/

http://www.sipphone.co.uk/

VoIP hardware and solutions providers

www.avaya.com/eclips – Avaya

www.cisco.com/ – Cisco Systems

http://connecthere.net/ – ConnectHere

www.btbroadbandvoice.com/bbv4b/bb_voice_home.html – BT's Broadband Voice for Business

Pre-paid telephone services

www.alphatelecom.com/uk/default.aspx

www.tele2.co.uk/homepage.aspx

GENERAL BUSINESS ADVICE

You can also get a range of general business advice from the following organisations:

England
- Call Business Link on 0845 600 9 006
- Visit the website at www.businesslink.gov.uk

Scotland
- Call Business Gateway on 0845 609 6611
- Visit the website at www.bgateway.com

Wales
- Call Business Eye/Llygad Busnes on 08457 96 97 98
- Visit the website at www.businesseye.org.uk

Northern Ireland
- Call Invest Northern Ireland on 028 9023 9090
- Visit the website at www.investni.com

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