



# How to Profit from IP Telephony

A G U I D E F O R S M E S

# C O N T E N T S

4 - 5	FOREWORD	by The CMA
6 - 7	CHAPTER ONE	What is IP telephony? <ul style="list-style-type: none"><li>· Definitions</li><li>· History</li><li>· Pure IP Telephony vs Hybrid vs TDM</li></ul>
8 - 10	CHAPTER TWO	How does it work? <ul style="list-style-type: none"><li>· The Basics</li><li>· The Equipment</li></ul>
11 - 15	CHAPTER THREE	How will it benefit my business?
14 - 17	CHAPTER FOUR	FAQs - (Frequently Asked Questions)
16 - 27	CHAPTER FIVE	Case Studies
26 - 32	CHAPTER SIX	Jargon Buster <ul style="list-style-type: none"><li>· Glossary of IP telephony terms</li></ul>
33-37	CHAPTER SEVEN	List of useful addresses and associations About Swyx and contact information

## Welcome to this new guide on IP Telephony.

Only rarely does a real technology evolution take place that fundamentally changes the way we run and operate our businesses. The PC revolution and the growth of the Internet over the last ten years are two such examples. The method we use to conduct our telephone calls, however, has altered little since it was first introduced. This is about to change.

IP Telephony, or VoIP (Voice over Internet Protocol) has been around for a number of years now, but it is only recently that the technology has been accessible, useable and more importantly, affordable to small and medium sized businesses ("SMEs"). Within the next five years analysts predict most businesses will have moved to a VoIP telephony solution replacing an existing technology that has not changed in over 60 years.

This booklet has been designed to help managers and owners of smaller businesses understand the real benefits of VoIP and assist them in applying the technology in the most beneficial way that suits their business. The guide has been produced as a reference tool and is packed full of useful information such as the basic principles behind the technology, advice on improving the communications within your company and an invaluable source of relevant trade associations as well as a comprehensive glossary of current technical and industry standard terms.

Every business is looking to maximise the return on investment of its technology. Understanding the technology is the first step in that process.

**Glen Powell**

Chief Executive  
Communications Managers Association

# What is IP Telephony?

Let's start with the basics. VoIP or "Voice over IP" (sometimes pronounced "Voyp"), is the underlying technology for IP telephony communication. IP stands for Internet Protocol and is the language that enables computer networks to "talk" to each other so that e-mails, web-pages and other information, can be accessed and exchanged. Making and receiving voice calls via IP networks has been possible for the last five years but is now a mature and proven technology.

Cheap or free calls for home based consumers using the Internet has been the driving force that has promoted the concept and adoption of IP telephony, however it has also created confusion about what IP telephony really delivers, especially for the business user.

IP Telephony solutions for business offer so much more than lower phone bills, but to achieve the full benefits, you will need to look beyond the free consumer solutions, that have issues with voice quality and network security, towards more 'business-class' IP communications offerings.

So what is available and what are the best options, if you want to benefit from the new technology but avoid an expensive investment that you will have to replace in 2 or 3 years time? At present there are essentially three types of 'business' offerings;

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**Conventional PBXs** - This is the telephone equipment that you are probably replacing, such as a key system. It connects via its own proprietary cabling system and uses its own unique phones. A standard PBX on its own will not give you any of the benefits of IP telephony.

**Hybrid IP-PBXs** - This is an attempt by conventional PBX manufacturers to offer IP telephony. A 'hybrid' offering, can be described as a 'stop-gap' solution - a compromise between a standard PBX and IP-PBX. A hybrid or IP-enabled solution will only give you the limited functionality of lower call costs and will need to be constantly upgraded and even replaced as your business grows.

**Software-based "pure" IP PBXs** - This is the only true IP telephony solution. It is only with pure IP telephony solutions, that you will start to exploit the additional benefits that VoIP can bring. These software-based solutions including Swyx, are designed to run on the same network that is used for your computers. They are easy to install and will accommodate all the future changes and developments of VoIP in the future. In fact by using software-based IP telephony you can build customised communications that best suit the nature of your business, now and in the future.

# How does it work?

**The basics** - To describe exactly the technical process of how IP telephony works would be beyond the scope of this guide. However in very simple terms it works in exactly the same way in which your computer communicates with other computers on a local area network ("LAN"), or when it is connected to the internet or a your intranet.

The concept of sending data over the Internet is very familiar to us. We type a message, press "send" and the message is converted into a "packet". This packet has a unique address, its own IP address, plus the IP address of the receiver, and it is sent out electronically to the big wide world, in much the same as a posted letter. We use packet based data communications every day when surfing the net, sending e-mails and sharing common office resources such as printers. Voice over the Internet works in exactly the same way. Voice signals transmitted from a handset are converted into digital packets, these digital packets are then given an IP address and sent out onto the data network. The "call" is received by the recipient's computer server and then forwarded to their desk top computer, whereby it either "rings" the phone or triggers a "pop-up" message on the screen to indicate an incoming call is waiting. The user answers and talks to the caller in the normal way.

**A long wait for Voice** - So, why has it taken so long for voice to go on the Internet compared with data, such as e-mail? Well, all data networks, including the Internet are what are termed "non-deterministic". This means we cannot exactly predict the arrival time of any message once it has been sent. To make it more complicated, a message is not sent in the order we write it, it is broken up into smaller messages, with each message taking potentially different routes around the network to its destination. When it arrives it is all jumbled up and it is the IP protocol which is clever enough to sort it out and put it back into the correct order. This technique is fine for data, because we don't dynamically communicate with e-mail or even with chat services, we send a message, wait a few seconds or even minutes for a reply and then send an answer if needed. A voice conversation however, is dynamic and we expect a constant dialogue with no delays or gaps, waiting 2 minutes or even a few seconds for each reply would be worse than farcical, it would render the system unusable.

Achieving high quality IP telephony calls is the clever bit and it involves sophisticated mathematical algorithms that are fine-tuned to accommodate the inherent network delays. It is the manufacturers that have developed IP telephony from first principles, rather than as add-ons, that are experts in this field, and are therefore able to offer the highest quality.

**The Equipment** - In most companies that have a traditional PBX system installed, two separate communications infrastructures exist side-by-side. On the one side you have a computer network for PC and data communications and on the other you have the telephone network for voice communications. IP telephony integrates these two networks, therefore reducing the infrastructure and maintenance costs and improving the productivity of a business. With IP telephony both data and voice networks use the same cabling system and only one connection per desk is required.

**The main components of a “Pure”  
IP telephony PBX system are as follows:**

**PBX Software** - Unlike traditional PBX systems, a pure IP telephony PBX system does not require any specialised proprietary hardware, and is installed as software either in a dedicated or existing server connected to a company’s computer network.

**Gateway** - The Gateway consists of an interface card that connects to the digital telephone network, such as a BT ISDN service and a software component that is installed on a computer server. The gateway software allows the “PBX” to connect to the outside world and allows incoming calls from both VoIP and traditional telephone systems.

However a new technology known as SIP (session initiated protocol), which is outside the scope of this guide, will mean there is no need for a gateway.

**Softphone** - With a pure IP telephony system, your computer, whether it is a desktop or lap-top becomes your phone. A software module is installed on your PC that provides a “pop-up” keypad on the screen, allowing you to dial directly from your PC and a whole lot more.

**Handsets** - VoIP systems have typically two types of specialised handsets. The most common connects directly into your PC using the USB port. This, in conjunction with the “softphone” allows you to use your PC as a fully functional IP phone. The other type of handset is more like a traditional telephone with a keypad and is used in areas that a PC may not be available. However there is no requirement for a handset. Businesses can save money buy purely using a software phone and headset.

## How will it benefit my business?

An IP telephony system can open up amazing possibilities for your business, enabling you to gain competitive advantage by spending more time with your clients, providing improved customer service, and maximising your existing technology investment.

IP telephony systems fit around your business allowing you to use it how, when and where you want it. The systems are extremely flexible and will grow with your business and, as it is software based, it can be continually updated with new features as they are developed.

These are the key applications areas for IP telephony.

**Integrates with your existing IT**

**infrastructure** - As IP telephony is essentially a data system, you can open up more possibilities and maximise the benefits of your existing IT infrastructure by integrating it into your other applications such as, Microsoft "Outlook", CRM, sales and customer support systems. Information can be "pooled" and is available at the click of a mouse for every caller.

**Centralised management and support**

- With IP telephony you can get rid of your old telephony cabling infrastructure and maintenance contract. The system offers a single point of management and control for adding new users or moving existing users. Users log-on in the same way as they do with their computers. Their phone details including address books, and speed dials, move with them without having to re-key any additional information. Advantages include the opportunity to connect service, sales or support calls to the correct member of staff regardless of where they are in the building.

**Remote working** - The integrated management functionality is extended to remote or branch offices or home working. This provides a business with more agility, allowing you to choose where and when you work. Whether you are at home, in a different part of the office or, using a wireless connection in an airport lounge, you are always available on the same extension number. In fact the receptionist connecting the call may not be aware of where you are physically working. If you opt to direct your call to voice mail then the message is sent automatically to wherever you are via e-mail.

Remote working can significantly increase an employee's productivity and make them available more often to support a business. This helps when there are staff shortages, short-term peaks in business demand and other times when business may be lost through lack of available resource.

**Call Centres** - Another significant advantage of IP telephony systems is that it enables smaller companies to set-up inbound and outbound call centre operations to manage sales campaigns and/or multiple franchise support. For example, it would be possible to set-up different inbound numbers and associate them with specific brands to provide customers with a more focused level of support even if the resources between the brands were shared. Also the call centres can be "virtual" and cover a number of individuals or small groups spread over different geographical locations.

**Disaster Recovery** - One of the worst-case scenarios for most small businesses is a major failure of the telephone system. The loss of potential new business and the damage to existing business can in some cases cause a business to close. With IP telephony all calls can easily be routed to another location for a

short period so that no calls are lost, e.g. to a home office or another branch office in the organisation. The incoming caller would not be aware of any telephony down time.

**Lower phone bills and improved billing**

- With IP telephony systems you can use the “office phone” to make calls from wherever you are, taking advantage of cheaper call rates and reducing your mobile phone bills. The advantage of this system is that you pay only for what you use.

IP telephony systems allow a company to set up billing accounts for every department and every client allowing easier budgeting and accurate re-charging of calls. Furthermore, for companies that have other offices or home workers connected via an intranet or broadband then the calls are free. Companies with “pure” IP telephony systems will also be able to connect to the new IP exchange lines therefore by-passing any third party “switch”.

This ultimately will allow connection over the

public networks; again vastly reducing long distance calls charges.

Other benefits include, free peer-to-peer calls, conference calls and call recording.

**Reduced Maintenance costs** - Again, this where a “pure” IP telephony PBX system has a major advantage over a traditional telephone system. Traditional telephony system vendors typically sell through a network of franchised dealers that make their money on maintenance. Every move or change of personnel requires an engineer to visit and re-programme the system. This old fashioned model is completely redundant using an IP telephony system. As it is part of your data network, the system can be maintained as part of your data network, therefore, your system administrator can simply carry out all configurations. As it is IP, just like your lap-top, the phones move around the office with you with no need to re-plug or configure the network.

This all adds up to vast savings on maintenance plus major improvements in operational efficiency. It also means employees are concentrating on the task at hand rather than calling voice engineers.

**Summary** - The list above is not exhaustive, but includes the major benefits of IP telephony systems. From this list it is clear that real financial advantages of “pure” IP telephony systems are achieved by the vastly improved efficiencies that can be achieved within the business, not only efficiencies that reduce costs, but more importantly in increased productivity as employees can be more effective in handling new sales enquiries, order processing, and other business development activities.

## FAQ - Frequently Asked Questions

### Is IP telephony right for me?

IP telephony will suit any small business, however the main benefits start to occur once the business has 10 or more employees. The other factor to consider is the lease on an existing traditional system, if you still have a long lease it may be better to wait before changing over to IP – you need to weigh up the potential cost-savings versus the investment in a new system.

### How much will it cost?

Solutions are now available for about the same price as an equivalent traditional key system, therefore the capital or lease cost is not a barrier to enjoying the benefits of IP telephony.

### Can I use my existing telephones?

No, IP telephony systems use a different type of technology for telephone handsets, including a “softphone” which integrates directly into your PC.

### How do I choose the right system?

Chapter 1 of this guide explain the various types of IP telephony system available. The choice of system depends on your current circumstances and the length of any outstanding leases you may have on an existing system. If you have a long lease then you should consider a managed migration path over to IP. For example switching all your remote workers to an IP network that can run alongside your current network to take advantage of the massive cost savings. Or you could consider installing IP conferencing. A solution like this will mean you immediately gain the benefits of IP telephony while waiting for you current contract to expire.

### What about the future, is IP telephony just another technology fad?

Respected industry analysts, such as Frost and Sullivan and the Gartner group predict that 90% of SME companies will have migrated to IP telephony within the next 5 years. In support of this BT is investing £5 billion in national and international IP networks that will serve the next generation of IP telephony users.

## CASES STUDIES

Here are some “real-life” case studies of end users who have benefited from IP telephony solutions.

## Chillisauce

### Industry Sector: Travel & hospitality

**Background:** Short-break, group activity and adventure specialist Chillisauce employs 25 staff and offers a selection of over 150 activities from abseiling to yacht sailing. Chillisauce is a fast paced and changing, 24/7 business and that depends critically on its communication technology.

**Challenge:** Chillisauce recognised that it needed to embrace the latest communication technologies at an early stage and build its sales and marketing plans around the Internet and telephone based response handling, if it was going to quickly win a strong market share. Commercial Director, Will Bicknell at Chillisauce explains,

**“it became very clear that our original PBX was not going to enable us the flexibility and mobility required by the business. We needed everything you could imagine: auto-attendant, caller identity, call routing and forwarding, remote working, call recording, voicemail, hot-desking and statistical and customer call analysis.”**

**Solution:** A Swyxware “pure” IP telephony system was chosen because it offered the full suite of features the company needed for an all-inclusive price. The inherent simplicity of setting up and using the system, combined with the depth and flexibility of features and business functions, allowed the company’s technical staff to undertake much of its own bespoke configuration and upgrades, which it thought would deliver considerable savings and operational flexibility over time.

**Results:** Since implementing an IP telephony system, Chillisaucе has achieved the following benefits:

- Able to provide a 24/7 customer support operation using remote home based workers
- Vastly improved sales through intelligent call routing
- Integration with data system allowed provided more targeted marketing campaigns
- Voice recording quickly and amicably resolved customer disputes

Commenting on the IP telephony system, Bicknell says,

**“I’m glad we had the sense to research IP telephony from the beginning, because it has helped us to achieve strong growth and profitability in a competitive and fast evolving market. IP telephony is an asset at the heart of our business and the system is so scalable that it will expand with the business.”**

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## HSJ Accountants

### Industry Sector - Professional Services

**Background:** Established in 2003, HSJ Accountants (“HSJ”) is a full service accountancy practice that provides high quality private and professional accountancy and business advisory services within the South Wales region. HSJ employs 14 staff at its brand new offices in Newport.

**Challenges:** From conception, HSJ enjoyed considerable growth, and after just 18 months had already outgrown their offices. The move also provided HSJ with the opportunity to review their future telephony requirements. HSJ had a number of specific challenges that it wanted to solve with the new telephone system including:

- **Mobility** - with new offices there was uncertainty over which staff would go into which office, therefore they wanted the facility to move staff around quickly without having to perform complicated configurations or involve the expense and inconvenience of calling out an external engineer
- **Greater call transparency** – Needed to itemise individual client calls for accurate recharging of time and expenditure.
- **Support additional revenue streams** – The company wanted to maximise investment of its new office space and take advantage of spare capacity by offering serviced office facilities for small, local companies. The new communications system needed to enable a centralised reception facility to take and transfer calls for all the different businesses.

- **Support diversification of business services** - HSJ also wanted to establish a new financial services business, therefore they required a system with the ability to record all calls to meet the latest FSA (Financial Services Association) guidelines.
- **Future-proofed system** – the Company wanted a telephony system that would meet its requirements now and in the future, without having to replace it again.

**Solution:** In order to meet these challenges HSJ undertook a thorough investigation of the marketplace to determine which solution best met the needs of the business. There are a number of manufacturers claiming to offer IP telephony, but under closer scrutiny most of these only offer IP as an add-on to an existing TDM system – as far as HSJ were concerned this was no solution at all. Spokesperson, Kay Hussey said “What impressed us about the Swyx offering was that it was a “pure” IP system and therefore completely independent of any legacy hardware or infrastructure”.

**Results:** HSJ now have a flexible, future-proofed system that meets the ever-changing needs of the business. Since installation they have realised the following benefits:

- On-going costs reduced with converged data and voice operation
- More professional image and call handling with multiple phone numbers for different business operations could be routed through a single receptionist
- Easy movement of existing and new employees into new offices, without the need to reprogramme system or call out engineer, saving time and money
- More accurate billing as CDRs (Call Detail Records) could be used for client recharging

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Kay Hussey, Spokesperson for HSJ Accountants sums up HSJ’s experience with IP telephony.

“We have a growing business that has to meet the needs of a rapidly developing customer base. We needed a telephone system that could satisfy those needs today, whilst providing us with the on-going benefits of IP telephony that we could adopt to our future demands, including diversification into new areas of business. The system met all of these objectives”.

## Case Study - Keylet

### Sector: Property Agent

**Background:** Founded in 1996, Keylet is a Cardiff-based property management and letting agent servicing both executive and student markets.

**Challenge:** In 2004, Keylet decided to relocate its existing head office and lettings office to new, custom-built premises; one in Cardiff Bay and one in central Cardiff. Two Ascom telephone systems had been installed a few years previously, but to move them to the new offices would require a system expansion. In addition there was no easy migration path as the systems would effectively have to be decommissioned and re-commissioned in the new offices, leaving the existing office without telephones while the new offices were preparing to opening. The old system did not have all of the functionality that Keylet required, such as call recording, free calls between offices or the ability to support remote working.

#### The Solution:

Keylet looked at many different traditional and hybrid telephony systems including BT, Alcatel, Avaya and Swyx. After much consideration, Keylet could see that a “pure” IP Telephony solution from Swyx would offer their rapidly expanding company the flexibility and future capacity it would need and they liked the tight integration of telephony and computer activities.

#### Results:

Keylet has benefited from substantial cost-savings as a result of implementing the IP Telephony solution. The company now has free calls between its offices and the, Managing Director who regularly works abroad, is able to telephone his office, free of charge from his laptop via WiFi Hotspots. Vidler adds,

“It is amazing, we have the ability to operate in many physical locations, our staff can hot desk between offices or work from home but Swyx functions as if we are all in one office!”

Integration with Outlook and the ability to screen dial from their custom management software means Keylet don't waste time dialling wrong numbers. Call recording helps Keylet resolve disputes more quickly, as well as enabling them to monitor staff performance more easily and therefore maintain their ISO9000 accreditation.

## Company: Zodiac Training

### Industry Sector: Training

**Background:** Established in 1996, Zodiac Training Limited is an award-winning training provider operating throughout the North East and Yorkshire. The company delivers recruitment and training solutions to companies, schools and the unemployed.

**Challenge:** In 2004, Zodiac relocated its head office to new premises at Team Valley, Gateshead. At the same time it established a new customer services team and introduced a non-geographic telephone number. However, by introducing the new number, the company would be faced with call charges for all internal calls if it did not upgrade its existing PBX BT Meridian phone system. Also, with 60% of its staff working in the field as trainers, Zodiac realised it needed an efficient and flexible communication system to support mobile and remote working. With a VPN (virtual private network) already in place, the management team decided it was time to modernise its phone communications and consider IP telephony as an alternative solution.

**Solution:** Zodiac reviewed a selection of IP telephony systems but, after receiving a demo of the Swyx soft IP PBX „all other systems paled into significance“ said John Sushames, Data & Communications Director at Zodiac. „The key driver in our selection was Swyx’s call recording application which unlike other vendors was included as a standard feature at no additional

cost!  
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**Results:** IP Telephony has delivered substantial cost savings to Zodiac. The company has achieved free internal calls between sites, using its VPN, and saved a third on maintenance and cabling. Sushames comments „Compared to other vendors Swyx’s maintenance costs are realistic and affordable, costing around £1000 compared with rivals that wanted to charge £3000“.

However adopting IP telephony has not just been about cost savings. IP Telephony has also helped Zodiac to deliver training more effectively. Zodiac trainers regularly visit ‚Learners‘ in the workplace to monitor and assess their progress, and conduct what is known as ‚guided discussion‘, which forms a crucial part of the training programme. Normally trainers would undertake around 20 visits per week with distances ranging up to 100 miles. But having the facility to record interviews over the phone with Swyx has reduced field visits, cut travelling expenses and enabled Zodiac’s trainers to devote more of their time to alternative tasks.

**To find out how you and your business can benefit from pure software IP telephony contact Swyx by calling +44 (0) 118 325 0110 or visiting [www.swyx.com](http://www.swyx.com).**

# Jargon Buster

## Glossary of IP telephony terms

### **Automatic Call Distributor (ACD)**

A telephone facility that manages incoming calls and handles them based on the number called and an associated database of handling instructions. Provides call queuing, different agent groups and managerial information.

### **Analogue**

As in analogue phone line or analogue transmission - where an electric signal carrying information is represented by a continuously variable voltage or amplitude - i.e. not digital.

### **Auto Attendant**

The part of an interactive voice response (IVR) system that replaces the human operator and directs callers to the appropriate extensions or voice mailboxes.

### **Bandwidth**

Refers to the capacity of a communications line/channel to transmit/receive information. It can also refer to how much traffic a web hosting company will allow each month for data transfer.

### **Circuit-switched**

Traditional telephony services are based on a circuit-switched network.

### **CLI**

Calling Line Identity - information received from the telephone exchange gives the calling party's telephone number. Sometimes referred to as CLID.

### **CPE**

Customer Premises Equipment.

### **DDI**

Direct Dialling Inward - The presentation of the last 2, 3 or 4 digits of a dialled telephone number to a PBX so it can forward the call to the relevant employee.

### **CDR**

Call Detail Records. The recording and reporting of telephone calls within a telephone system. It includes as well calling and called parties as start and stop times of the call.

### **DHCP**

Dynamic Host Configuration Protocol. Software that automatically assigns IP addresses to client stations logging onto a TCP/IP network. It eliminates having to manually assign permanent IP addresses.

### **DTMF**

Dual-Tone Multi Frequency. The type of audio signals that are generated when buttons on a touch-tone telephone are pressed. Gatekeeper A server that translates user names into physical addresses for H.323 conferencing. It can also be used to provide call authorization and accounting information.

### **Gateway**

A gateway is an interface between two different networks, as for instance between an IP network and ISDN.

## CHAPTER SIX

### GUI

Graphical User Interface. A graphics-based user interface that incorporates icons, pull-down menus and a mouse. The GUI has become the standard way users interact with a computer.

### Hub

A central connecting device in a network that joins communications lines together in a star configuration.

### Interactive Voice Response (IVR)

IVR is a software application that accepts a combination of voice telephone input and touch-tone keypad selection and provides appropriate responses in the form of voice, fax, call-back, e-mail and perhaps other media. IVR is usually part of a larger application that includes database access.

### IP

Internet Protocol. The IP part of the TCP/IP communications protocol. IP implements the network layer (layer 3) of the protocol, which contains a network address and is used to route a message to a different network or sub network.

### IP gateway

A device that converts data into the IP protocol. It often refers to a voice-to-IP device that converts an analogue voice stream, or a digitised version of the voice, into IP packets.

### IP telephony

The two-way transmission of audio over an IP network. When used in a private intranet or WAN, it is generally known as „voice over IP,“ or „IP telephony.“ When the public Internet is the transport vehicle, it is referred to as „Internet telephony,“ however, both terms are used synonymously.

### ISDN

Integrated Services Digital Network. An international telecommunications standard for providing a digital service from the customer's premises to the dial-up telephone network.

### ISP

Internet Service Provider. An organisation that provides access to the Internet. Small ISPs provide service via broadband and ADSL while the larger ones also offer private line hookups.

### ITU

International Telecommunications Union. Formerly the CCITT (Consultative Committee for International Telephony and Telegraphy), it is an international organization founded in 1865 and headquartered in Geneva, Switzerland, that sets communications standards.

### IVR

Interactive Voice Response. An automated telephone answering system that responds with a voice menu and allows the user to make choices and enter information via

### LAN

Local Area Network. A computer network limited to the immediate area, usually the same building or floor of a building.

### Least Cost Routing

Least Cost Routing. Money-saving in two ways: 1) the most favourable exit point is chosen when making a call into the PSTN, 2) the cheapest provider is chosen.

### PBX

Private Branch exchange. An in-house telephone switching system that interconnects telephone extensions to each other, as well as to the outside telephone network. It may include functions such as least cost routing for outside calls, call forwarding, conference calling and call accounting.

### POTS

Plain Old Telephone System.

### PSTN

Public Switched Telephone Network. The regular old-fashioned telephone system.

### Router

A device that forwards data packets from one local area network (LAN) or wide area network (WAN) to another. Based on routing tables and routing protocols, routers read the network address in each transmitted frame and make a decision on how to send it based on the most expedient route.

### SIP

The standard that allows handsets and other devices from different vendors to connect to the same IP telephony system.

### Switch

A mechanical or electronic device that directs the flow of electrical or optical signals from one side to the other. Switches with more than two ports, such as a LAN switch or PBX, are able to route traffic.

### TAPI

Telephony API. A programming interface from Microsoft and Intel that is part of Microsoft's WOSA architecture. It allows Windows client applications to access voice services on a server. TAPI is designed to provide interoperability between PCs and telephone equipment, including phone systems and PBXs.

### TCP

Transmission Control Protocol. The TCP part of TCP/IP. TCP and UDP are the two transport protocols in TCP/IP. TCP ensures that a message is sent accurately and in its entirety.

### TCP/IP

Transmission Control Protocol/Internet Protocol. This protocol defines the Internet. Originally designed for the UNIX operating system, TCP/IP software is now available for every major kind of computer operating system.

**UDP**

User Datagram Protocol. A protocol within the TCP/IP protocol suite that is used in place of TCP when a reliable delivery is not required.

**UMTS**

As a third generation (3G) mobile technology UMTS (Universal Mobile Telecommunications System) will deliver broadband information at speeds up to 2Mbits/sec. Besides voice and data, UMTS will deliver audio and video to wireless devices anywhere in the world through fixed, wireless and satellite systems.

**Voice mail**

A computerised telephone answering system that digitises incoming voice messages and stores them on disk or flash memory. It usually provides auto attendant capability, which uses pre-recorded messages to route the caller to the appropriate person, department or mailbox. Voice mail systems may also offer directory lookup by name.

**VPN**

Virtual Private Network. Usually refers to a network in which some of the parts are connected using the Internet, but the data sent across the Internet is encrypted, so the entire network is „virtually“ private.

**WAN**

Wide Area Network. Any Internet or network that covers an area larger than a single building or campus.

## List of useful addresses and associations

**Federation of small businesses (“FSB”)**

Sir Frank Whittle Way, Blackpool Business Park  
Blackpool FY4 2FE  
Tel: 01233 336000  
Web: [www.fsb.org.uk](http://www.fsb.org.uk)

**Institute of Directors (“IOD”)**

116 Pall Mall  
London Sw1Y 5ED  
Tel: 020 7839 1233  
Web: [www.IOD.com](http://www.IOD.com)

**Department of Trade and Industry (“DTI”)**

Department of Trade and Industry  
Response Centre, 1 Victoria Street  
London SW1H 0ET  
Tel: 020 7215 5000  
Web: [www.dti.gov.uk](http://www.dti.gov.uk)

**Communications Managers Association (“CMA”)**

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**Chamber of Commerce**

For detailed information on the nearest chamber to your location please access this excellent web-site: [www.chamberonline.co.uk](http://www.chamberonline.co.uk)

**Business Link**

For practical advice and help on all business issues the government have set-up a useful website: [www.businesslink.gov.uk](http://www.businesslink.gov.uk)

**Small Business Service**

A body of the DTI set-up to assist small business owners. [www.sbs.gov.uk](http://www.sbs.gov.uk)

## ABOUT THE CMA

CMA actively supports communications professionals and the development of the industry of which they are a part. Membership is open to individuals or corporates in both the private and public sectors.

For details visit [www.thecma.com](http://www.thecma.com) or apply to [membership@thecma.com](mailto:membership@thecma.com).

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The Coda Centre 189 Munster Road Fulham, London England, UK SW6 6AW  
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## ABOUT SWYX

**The last telephone system you'll ever need.**

In the current climate, every business has to scrutinise every investment more carefully than ever to ensure they are getting the very best value. This is true particularly when it comes to telephony systems, where choice is plentiful, and technology moves so quickly that traditional telephony technologies are already becoming obsolete.

Swyx develops software-based telephony systems that work like any other software application, such as email, instant messaging and CRM, through your existing data network and server application. So you can take full advantage of all the benefits of business-class VoIP – without having to invest in expensive new telephony hardware.

In addition, the Swyx system has the potential to build into a powerful business

tool. Because a Swyx system is Microsoft Windows based, it integrates seamlessly with your existing IT infrastructure, including all your individual business applications such as security systems, Office applications, Finance and CRM systems and customer support infrastructure, giving you one seamless communication system that will move and grow with your business no matter how many people, sites or locations you expand into.

Swyx is constantly developing its solutions to meet the changing needs of your business. So whatever your business, and whatever your stage of development, choosing an IP telephony solution from Swyx will give your business more possibilities, more agility, more choice and more communication, making it the last telephone system you'll ever need.

Swyx was established in 1999 and now has offices across Europe, with headquarters in Dortmund, Germany. Today the company is recognised as a market leader for IP telephony in major European countries and has enabled in excess of 4500 businesses across the continent to take advantage of the business benefits of IP telephony and associated applications. Swyx is renowned for its product innovation and superior business understanding, and its achievements have been recognised many times through technical and business awards, journalist and analyst comments and reviews, product tests and customer testimonials.

Swyx's management team and supervisory board are recognised industry leaders who have all held senior positions within the telecommunications industry. Everyone at

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Swyx is dedicated to providing world class IP telephony solutions and applications that continually push the boundaries of what is believed possible, while continually delighting its customers and business partners by providing the best possible products and services to make them more competitive in their markets.

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