



The True Costs of Telephony

An Educational White Paper

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No organisation can function today without an efficient telephone system, but how many know how much it really costs them.

The answer from most, if honest, is not really. Yes they compared the up-front costs from all the quotes they receive, and they probably look at their quarterly call charges to check they are roughly in line with their budget figures. Nevertheless, most organisations regard telephony costs as a 'necessary evil' of today's business world and, as long as they are roughly in line with their budgets, few look too closely.

A quarterly survey of telephony costs for small and medium sized businesses, carried out by Oftel between Dec 2002 and Feb 2003, found that on average it was costing these companies £33 per employee per month for just calls, rentals and maintenance of their telephone system. For the smaller business the figure was around £38 per month and for the medium sized business, of over 100 employees, it averaged at around £27 per month.

These figures show that telephony costs are a significant proportion of a company's overall overheads. In this paper we will explore the true costs of telephony, highlighting some hidden costs and looking at different options now available.

SET-UP COSTS

Buying the Right System

The headline cost of all traditional telephone solutions is the basic PBX price. These vary dramatically but usually cost thousands of pounds even for systems catering to just a handful of users.

As with all purchases you get what you pay for, but a common dilemma is whether you pay for a system which has far more than you need today, on the basis that you may grow into it, or whether you buy a cheaper PBX that you may need to scrap as your business evolves.

Traditionally, vendors and resellers advise businesses to go for the 'safe' option, purchasing a system that is capable of supporting twice the number of phones currently needed. However this advice is starting to change as IP Telephony takes a hold on the new

business market. IP Telephony is much more scalable than the traditional architecture as the telephony service is delivered over the company's IP network. Consequently, adding a user is about providing a new phone and then activating a software licence on the IP PBX.

Another option is to save altogether on PBX setup and upgrade costs, by taking your telephony service straight from an IP Centrex service provider. IP Centrex delivers all of the functionality of an IP PBX, except that no PBX hardware is necessary. The advanced 'PBX-like' functionality resides at the service provider site, designed to carrier class reliability, and is delivered to the business via a broadband connection. Consequently, with IP Centrex, not only is the problem of purchasing a larger system than you need, is eliminated, but indeed there is no need to purchase a PBX at all.

Handsets

The next major decision when buying a telephony system is what handsets to choose. In the traditional PBX world, options include fully featured, proprietary, digital handsets that give users easy access to all the features of the PBX or low cost, analogue phones. This decision is critical as the costs of phones can double the costs of the PBX, with digital phones averaging at about £175 each.

Typically, managers get the digital phones but despite being roughly twice the price of analogue phones these devices give very little business benefit. In reality few users know which button to press to activate the right PBX feature at the right time. Indeed, comments like 'Does anyone know which button I press to transfer this customer' are commonplace in today's business environment.

◆ Oftel, 23 April 2003: 'Business use of fixed telephony. Oftel small and medium business survey.'



The advent of the IP telephone, with prices varying from £55 to £275, is addressing this issue. Using techniques from the mobile arena, IP phones often have a display where directory listings and call functions are intuitively available at relevant times during a call.

So when choosing the right telephony solution is the base price of the telephone the real cost of using a phone? Numerous surveys and case studies are starting to show significant productivity improvements resulting from IP Telephony and it is possibly that these gains will outweigh the initial investment price. In any case, it is only a matter of time before even high-end IP phones reach a price where there is no discussion at all.

Add-on Features

Following on from the choice of PBX and telephones, the next big decision is about 'add-on' features such as Voicemail and Automatic Call Distribution. Whether these are just software licences or hardware upgrades they are often expensive options, and many businesses opt for the bare minimum, offering voicemail to only a small proportion of users. This is sometimes a real mistake because, when used correctly, these functions can seriously improve business efficiency.

Pricing models are often the obstacle preventing uptake of add-on facilities like voicemail. Many traditional PBXs, based on rigid technology, only offer pricing based on fixed numbers of users. For instance, the uplift from 2 to 8 users can often be substantial.

Utilising an IP PBX or IP Centrex solution, these facilities are generally priced more reasonably as they are activated via software on the network. Adding functionality therefore becomes just a licensing issue.

Installation, Training & Connection

The remaining set-up costs (e.g. installation, training, connection charges), are a 'must have' option. Labour for installation and training will usually add £900 to the cost of the PBX system, based on 2 man days of work. Added to the installation costs is often the price of providing the wiring from the PBX to the desk phones. There is very little difference in cost for analogue, digital or IP network points, averaging at around £75 per point.

In new sites where there is no existing wiring it is cheaper to install an IP solution (be it an IP PBX or IP Centrex), as the same wiring is being installed anyway, to support each PC.

For existing sites an IP solution may require changing the network switches to more modern ones that support

Quality of Service (giving priority to voice traffic over data). Nevertheless, most data networks installed since 2001 will already have switches capable of ensuring Quality of Service.

ONGOING EXPENSES

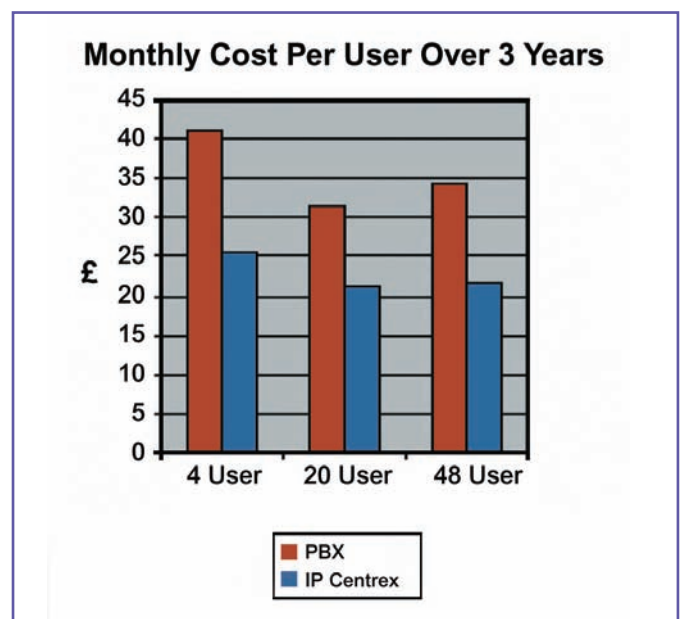
Support & Maintenance

Generally maintenance costs are charged annually at about 10% of the initial capital equipment costs, however the % is higher for lower priced equipment. This is because labour charges, which make up the largest element of maintenance costs, are similar across all types of equipment.

Moreover, as the cost of equipment has dropped over the years, many service providers now limit the terms of their maintenance cover, making additional charges to cover support of day to day operations.

The chart and table below compare typical costs of PBXs (IP and traditional) with IP Centrex solutions for 4, 20 and 48 user systems. The costs include installation, maintenance, support and line rental charges, and the figures come from a Comms Dealer survey, carried out in July 2003.

Total cost over 3 years		
	PBX	IP CENTREX
4 user	£5,932	£3,428
20 user	£22,752	£15,140
48 user	£59,287	£36,789



◆ Comms Dealer, July 2003: 'True Costs of Telephony Survey'



Call Costs

Call costs are the largest element of on-going expenses and, according to Oftel, business call revenues of £4.1B were generated during 2001/2002 by UK Telecom operators. It's therefore not surprising that there are now a plethora of packages on offer from a myriad of service providers.

Initially, many of these packages look very attractive but on greater investigation one finds easily missed 'small print'. Choosing the right package can be very confusing and unless you have access to your history of call traffic it is difficult to make an informed decision. Most organisations end up taking the advice of their PBX supplier, who is usually earning commission from the service supplier.

To illustrate the problem, BT's Business Plan package, launched in early 2003, allows companies who spend over £500 per year on calls to use a tariff of 2.7p per minute. Nevertheless, there is a fixed cap of 10p per call and a set-up cost of 2p per call. Although attractive at first sight, analysis indicates how misleading this package is.

Telecost Ltd, a UK manufacturer of call logging software, carried out a survey of over 100 companies across a variety of industries, analysing over 2 million call records. They discovered an average call length of 2 minutes and 30 seconds. Under BT Business Plan these companies would pay on average 8.55p per call rather than a typical rate of 6p per call.

Line Rentals

Many companies forget the cost of line rentals when budgeting to set up a telephone system. Line rentals are what you pay for connecting to the telephone network, whether the line is a simple analogue line or a digital ISDN line.

ISDN lines now represent over 41% of the installed base of business lines, enabling businesses to take advantage of features such as Caller Line Identifier and CTI. Typically, companies deploy anywhere from one telephone line per 5 employees to 1 for every 2 employees (where there are considerable telemarketing or call centre activities). As can be seen from the following chart, which analyses annual costs of running a PBX over a 3 year period, the line rental costs are a significant portion of the overall costs.

HIDDEN COSTS

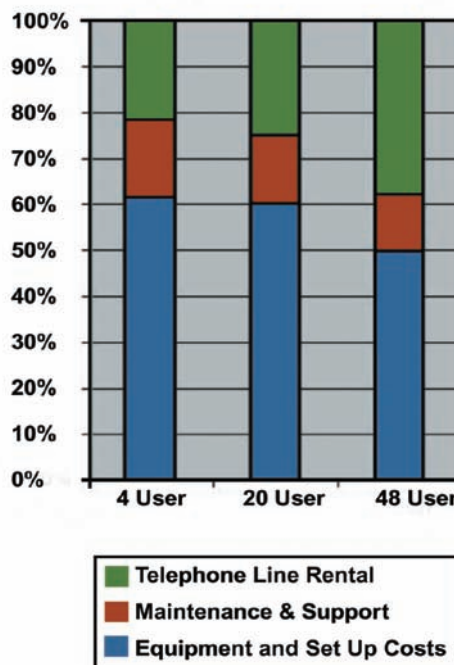
Few organisations take into account hidden charges resulting from businesses evolving and changing; requiring modifications to the PBX.

The Cost of Flexibility

The cost of flexibility is primarily related to 'adds, moves and changes'. With a traditional PBX if an employee moves desks, or a new one joins, an engineer has to visit the premises to rewire and reconfigure the system. In typical businesses, approximately 20% of employees move location in the office every year, and in larger organisations this figure is often much higher. As call out rates for engineers average at £125 per visit, a 20 user site could end up paying an extra £500 per year.

In an IP PBX or IP Centrex solution these cost are dramatically reduced. Adding or moving users is done, in minutes, via intuitive software, and can be handled by almost any staff member with minimal training. In fact, for moves around the building there is no reconfiguring on an IP switch. Users just plug their phone into the network connection closest to their new desk, as physical locations no longer relate to specific users. Indeed, H.B. Fuller, a chemical manufacturer, claimed \$37,000 annual savings on adds, moves and changes after implementing an IP Telephony solution.

Annual Cost of Running a Traditional PBX



- ◆ Oftel, March 2003: 'The UK Telecommunications Industry Market Information 2001/2'
- ◆ Telecost Ltd, March 2003: 'Business Call Durations'
- ◆ Oftel, Q13 May 2003 - 31 July 2003: 'Business use of Internet. Oftel small and medium business survey'
- ◆ Cisco, October 2001; press release on 'Cisco announces new IP-based telephony products that deliver tangible returns on investment for enterprise customers'



GROWING PAINS

Upgrading a PBX

Although many companies purchase a system that gives them some growth, expanding businesses are likely to exceed the capacity of the system within the first few years. Moreover, adding extensions to a traditional PBX is not a linear cost increase. Circuit boards and application software licences tend to support groups of 4, 8 or 16 users, so the addition of one new employee could incur significant upgrade costs. Additionally, there may be a need to install additional telephone lines, incurring extra installation costs and quarterly line rentals.

Enhancing an IP PBX to support a new user is usually much easier as it involves a software licence plus the cost of a new IP telephone. However, as the IP PBX capacity is based on the performance of its call processing server architecture, there is always a limit to the actual number of concurrent IP calls it can handle.

The IP Centrex solution, being built to carrier class standards does not suffer from this limitation and can scale to hundreds of thousands of users. Adding extra users is simply a matter of connecting an IP phone to the network and adding that user to the software directory listing. User capacity is only ever restricted by the capacity of the broadband connection between the client site and the service provider.

Coping with Rapid Expansion

Upgrading a PBX aside, what happens if your business expands quickly and you open other branches or acquire another business?

In these scenarios telephony costs can spiral out of control. The traditional telephony world usually requires buying an additional PBX for each branch with all the associated costs of equipment, telephone lines, maintenance and support. Moreover, this does not include the complexity of linking those branches together, using some kind of wide area network, particularly if large volumes of calls are expected between branches.

Acquiring other businesses can pose even more complex problems. Invariably the other business will already have a PBX, but it's highly unlikely that it will be the same model as yours. Then there are the costs of integrating the PBXs on top of all standard PBX charges. It may require dedicated staff to run the telephone systems and liaise with multiple suppliers and support organisations. Compatibility and integration issues are solved quite quickly if a decision is taken to replace all the old systems with IP PBX solutions. As an IP network would probably be in place, it would just be a case of replacing the PBXs and purchasing IP phones. Additionally, you

can deploy a central IP PBX at the head office and install a survivable IP gateway at remote branches that have small numbers of users. This allows the remote IP phones to function as phones in the head quarters. In the case of a failure in the head office IP PBX or the Wide Area Network, the survivable gateway acts as a local IP PBX. Nevertheless, this does require each branch to have PSTN connections in order to support this survivability.

IP Centrex offers a much simpler solution to supporting multiple branches, and is ideal for fast growing businesses. All that is required at each branch is a broadband connection back to the service provider and IP phones for each user. All phones at all branches then have full 'PBX functionality' at minimal costs, and calls between them are entirely free of charge. Moreover, as the IP Centrex site is built to carrier class reliability standards, it is far less likely to fail than a traditional PBX or IP PBX.

Summary

Setting up and running telephone systems can be expensive and time consuming, particularly for dynamic, evolving businesses.

Small and medium sized businesses clearly require a telephony solution that is simple and easy to budget for, flexible, adaptable and most importantly cost effective.

The nature of traditional PBX hardware configuration, software licensing and pricing means that there are many hidden costs associated with its deployment, ongoing flexibility and day-to-day running.

IP Telephony resolves many of these issues and, according to In-Stat/MDR7, in 2003 shipments of IP telephones in the US will exceed that of traditional digital and analogue phones.

By deploying telephony over an IP architecture it is not only more cost effective to install, cheaper to run and maintain, but also delivers productivity improvements. This freedom of deployment has also led to a more important step in telephony evolution - the IP Centrex solution.

IP Centrex offers a scaled and resilient service with all of the benefits of an IP PBX, but without the substantial up-front capital investments, maintenance, support and telephone line costs.

◆ In-Stat/MDR, April 2003; press release on 'LAN Telephony 2003: IP or nothing' report (www.instat.com).