

## VoIP - Voice Over Internet Protocol

Brian Wojtczak, Lawyers Online

Since its development in the late 1800s the telephone has become a driving force in our everyday lives. Today we have a huge choice in our telephony service and with many people owning more than one phone number its not surprising that telephony is a subject with ever increasing complexity. It's also a pretty common fact of life that, in a subject clouded by confusing acronyms and seemingly identical offerings, the deciding factor is often the price. For both users like yourself and I, as well as the big service providers like BT, NTL, Vodafone and so forth the cheapest option in many cases is VoIP.

VoIP is an acronym for Voice over Internet Protocol. As implied by the name VoIP is all about using existing Internet connections instead of using dedicated phone lines. While sharing one Internet connection for many things (email, web, VoIP, etc) is a good idea, the VoIP landscape can be a lottery to those who don't insist on understanding what they're getting for their money.

### **Getting Going --- Requirements**

The biggest hindrance to wide spread acceptance of VoIP is probably the huge variety of different components available. To get yourself going you need three things:

1. A VoIP Telephony Service Provider
2. Compatible Equipment
3. A Fast Reliable Internet Connection

#### *1. & 2. VoIP Telephony Service Provider & Compatible Equipment*

If your considering starting out in VoIP an integrated solution is probably your best bet. If your really daring you can try to source your VoIP telephony provider and equipment separately but I wouldn't advise it.

If you do end up in the position that you have equipment but no telephony provider you'll have to ensure anyone you sign up with will work with your equipment. Find the exact make and model of the equipment and ask your potential provider about compatibility before you sign up.

The most common solution for small to medium businesses is to keep your existing telephones but connect them up to a gateway. This gateway will then allow you to use your traditional telephone via VoIP, usually without any added confusion.

Other solutions require software on your computer (Do you have speakers and a microphone on your computer?) or even special telephones that are essentially miniature computers. These solutions can be better in some circumstances but aren't common for good reasons.

#### *3. Fast Reliable Internet Connection*

In addition you'll need to be on the Internet. Broadband or Leased Line technology is an absolute minimum for using VoIP. Satellite connections will introduce time delays of a few seconds into your VoIP phone calls and should probably be avoided.

A single VoIP phone call while in progress will use around 40 Kbps worth of bandwidth. So if you

have a connection with a maximum speed of 256 Kbps then you have enough bandwidth to have 5 simultaneous calls plus 56 Kbps for other Internet usage. The faster your connection (maximum speed) the more calls you can make/receive at the same time. It is important to note that when talking about bandwidth for VoIP your upload speed is just as important as your download speed. This is because a phone call is two way, you're not just listening.

Using VoIP with Broadband is perfect for reducing phone costs but must not be considered a complete replacement for all your phone lines; Internet connections do break and can often take more than a day to fix.

If you keep your existing phone lines in place, or only a few of your existing phone lines, you can utilize the ability to automatically switch back to traditional phone lines in the event of a problem. This ability is included with the majority of VoIP equipment and I personally suggest you consider it a necessity.

### **Other Advantages of VoIP**

Cost is the most obvious advantage and was briefly discussed in the introduction. The other advantages often vary depending on the VoIP telephony provider you choose, however you can expect at least the following services to be available either free or at a small cost.

- No charge for calls between customers of the same VoIP telephony provider
- Online call logs / Itemised billing.
- Voice mail / Answer phone
- Service anywhere you have an Internet connection and your equipment

### **Drawbacks of VoIP**

Throughout this article you may have caught on to my pessimistic opinion of VoIP. This is not because it is inherently bad and I am not telling you not to use the technology. No, my pessimism comes from using the technology, reading and writing the technical documentation and from talking with many existing VoIP users.

My intention here is to point out to you some of the potential pitfalls that you should try to avoid when you move to VoIP. Some of these I may have briefly touched upon above.

#### *Reliability*

The majority of Broadband in the UK is not guaranteed. It says that in the fine print, in reality this means that serious Broadband faults can take anything from a few days to several weeks to be fixed. If you rely on your Broadband for your phone service then you need to have a back up plan in place because simply shouting at your Internet service provider isn't going to get you anywhere.

On top of this it's worth talking about power failure. Traditional phone service takes its power from the telephone line, so in the event of a power cut your phone still works. VoIP equipment on the other hand takes its power from a normal power socket on the wall, as does your Internet access equipment.

To be able use VoIP during a power cut you will need to invest in a backup battery, known as an UPS. These can be costly and need to be replaced on a regular cycle, usually every two to three years.

## *Quality*

A standard telephone call uses 64 Kbps of bandwidth on the traditional telephone network. A mobile telephone call uses around 16 Kbps of bandwidth. A VoIP calls use anything from 8 Kbps to 56 Kbps, depending on many factors.

These numbers determine the quality of your phone call. The more bandwidth in use by a call the better the quality. However if your VoIP call is trying to use 40 Kbps and you only have 20 Kbps available to you then you'll start to hear parts of words missing from the conversation. This can happen if you have too many calls in use at the same time or if you receive a really large email.

It's also important to note that most Broadband services are contended. This means that you share the theoretical maximum bandwidth available to you with other people. If all of the people you're sharing with had VoIP and you all made a VoIP phone call at the same time then you're all going to lose call quality. In some cases your mobile phone with a weak signal may provide better quality than VoIP.

If you want good quality calls via VoIP you need to ensure you purchase a connection with the lowest contention ratio possible ( 1:1 is the best, 5:1 is really good, 50:1 is not good enough ).

## *Emergency Calls to 999*

One of the main advantages to VoIP for a lot of people is the ability to use it from anywhere that you have an Internet connection. Depending on the solution you have you could simply unplug your VoIP phone when you leave the office and plug in it when you get home.

However, with this flexibility prevents the telephony provider from knowing your exact geographical location when you call 999. Without this information it is not possible to route your call correctly. Some VoIP telephony providers get around this problem by routing your call to a non geographical operator, other providers don't provide 999 service.

As well as the technical issues there are many legal issues related to this. I'm not about to even pretend I understand any of the legal issues, especially as most of my legal knowledge is in reference to the US system.

---

Brian Wojtczak is a Technician at Lawyers Online. He specialises in Computer Networking and Network Security. <http://www.lawyersonline.co.uk/>