



Commission for
Communications Regulation

User Guide

Voice over Internet Protocol (VoIP): A Guide

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Voice over Internet Protocol (VoIP) – A Guide

1.1 What is it?

Voice over Internet Protocol (sometimes known as Voice over Broadband) is a technology that allows users to make and receive calls over an Internet Protocol (IP) transmission network (including the Internet) rather than the public switched telephone network. IP is the shorthand term for a group of communications standards that enable information to be sent over most packet networks, including the Internet.

1.2 How it works?

Using a personal computer or by an adaptor on your telephone, you can contact someone using a standard phone or another VoIP user, using your high-speed broadband connection over the Internet and/or a managed IP network. The quality levels of this service are heavily influenced by the amount of bandwidth available. Broadband would clearly provide for a higher quality of service. Narrow-band connections can also be used, although it is generally accepted that unless a broadband connection is used the phone quality may suffer.

1.3 What are the benefits for consumers?

One of the key benefits is that VoIP can result in lower call costs. In some cases calls may even be free (for instance calls to users on the same network may be free of charge). New services such as enhanced conference calling, video calling, and the ability to send ones voicemail forward to e-mail will also be possible. Nomadic operation (i.e. unplugging the telephone handset, travelling to a new location (potentially anywhere in the world), re-plugging it and carrying on exactly as if at home) is a capability of VoIP that will be a new experience for traditional phone users.

1.4 What are some of the challenges?

Similarly to the conventional fixed network, if your Internet access (IP network connection) is not available, or if you lose power to your phone, then you will not be able to make or receive VoIP calls. This may impede your ability to make calls to emergency services. It is expected however that many users of VoIP services may have retained another voice service, such as a mobile or fixed line service that can be used in the event of an emergency.

1.5 Expectations of traditional telephone network

Most people in Ireland use the conventional fixed line service to make and receive calls. Because we have used this technology for so long, and because it is very stable (i.e. although new services are offered from time to time, the basic product remains the same), we have very clear ideas of what we expect from it. These include:

- **Always-on**
We generally expect to be able to make and receive calls at any time, barring some natural disaster like a storm which might pull down telephone poles and wires. In this case, the “outage”, i.e. unavailability of the service, is generally localised around that area, and does not affect the majority of fixed line users. In addition,

typical (directly connected) fixed telephones are powered from the local telephone exchange.

With the advent of mobile phones and of cordless fixed line phones which rely on battery power, users are becoming more familiar with the fact that battery life can impact on our ability to make calls. So even though the network is functioning correctly, the actual phone that is used may not work due to a battery failure. In addition, in the case of mobile networks, the “always-on” feature may not always be available in areas of poor coverage.

- **Access to emergency services**

Because our network is “always-on”, we expect to always be able to contact the emergency services (for free) through either of the emergency numbers 112 or 999. Furthermore, we expect that because these agencies use a reverse look-up procedure (i.e. they match the calling number to the installation address for that number; a sort of reverse directory enquiry), they can always identify our approximate location, even without being told. Obviously, battery-dependent phones carry a certain risk that the battery may fail before or during an emergency call, though consumers are aware that this risk is under their own direct control.

- **Directory entry / Directory inquiry services**

Every person or business that currently has a telephone number has the right to have their details entered into what is called the National Directory Database (NDD). This is the database that directory inquiry services use (under licence) to service their business. Of course, every person or business also has the right, under Data Protection legislation, *not* to have their details listed (known commonly as going “ex-directory”).

- **Geographic number information**

Many Irish people associate geographic numbers with a range of information. For instance the “01” area code is commonly associated with the Dublin area, likewise the “021” area code is associated with the Cork area. There is also valuable tariff information associated with these area codes. It is generally assumed that if the number being called is within the same STD code as the number from which the call is made, the tariff applied will be a local, rather than trunk rate. This assumption is becoming less important as trunk rate (or national tariffs) fall in price closer to local rate.

- **Number Portability**

Any traditional telephony user has the right to keep their existing geographic number when transferring (porting) from one network operator to another. (This is separate to moving a geographic number from one address to another, which is known as location number portability, and is offered by some operators).

- **Quality of Service**

The quality of service that we expect from our fixed phone is of a consistent and accepted standard.

1.6 Expectations of VoIP services

Our expectations of VoIP services are that they will probably be somewhat different from a normal fixed line service, though pre-conceptions may be either positive or negative. Different types of services will be readily available such as video calls,

call conferencing and possibly associated data services (such as “whiteboarding”, file transfer and group working). Other, innovative services will no doubt be launched onto the market in due course. New equipment may be required to adapt an ordinary telephone to use these services, though IP telephones that have internal adaptors are already in existence.

Always-on

If your network connection is not working, then you will not be able to make or receive calls, although some service providers *may* offer a back-up service that routes calls over the traditional fixed network.

Access to Emergency Services

Guaranteed connection to the emergency services may not be available if your network connection is not working. If the number used is a new “VoIP” number or another number in nomadic mode (or indeed no number), the emergency service agencies may not be able to locate your position as they may be able to when you use a conventional fixed phone. This is because VoIP numbers can be used in a “nomadic” way, as described below.

Directory entry / Directory inquiry services

ComReg would expect VoIP service providers to offer their customers the same level of directory support as that provided by traditional telephone companies.

Nomadic Use

VoIP services, in some case, can be nomadic, i.e. they can be used away from your home location, with the effect that when you register yourself (or rather the handset does so), your home profile (Line identifier, Voicemail, voice answer service etc.) automatically becomes available in the new location. This is because they use the Internet to make and receive calls, and your service provider may offer you the ability to log-on at any Internet access point, as if at home. Nomadic use will allow you to take your phone number with you when you travel away from home.

Number Portability

Some customers migrating from traditional telephone companies to VoIP operators will wish to take their phone numbers with them, while others may be content to receive new numbers. Depending on the classification of the VoIP operator concerned (i.e. approximately based on whether they offer at least the same level of services as the traditional operators) those customers may or may not be able to ‘port’ their numbers across to the new VoIP service. This is because number portability is currently available only for Publicly Available Telephone Service (PATS)). Those offering PATS are obliged to offer additional key services such as (among others) guaranteed access to emergency services. Potential customers for whom this is important should first discuss this with their prospective VoIP operator, before making the move.

Quality of Service

It is likely, although not guaranteed, that the quality of voice service enjoyed on a VoIP telephone call will be equal to, if not greater than, the quality enjoyed on a traditional fixed line call. This is one of the benefits commonly claimed for VoIP.

1.7 Regulation

1.7.1 Numbers

ComReg will offer both geographic numbers and a new number range with the 076 code, to service providers intending to offer VoIP services. Number portability is not guaranteed to all of these service providers (see above). You should check with your service provider if you will be able to use your existing number for your new VoIP service.

ComReg believes it important that you, the consumer, should have sufficient information to enable you to confidently select the type of service you need. This may be a traditional fixed line service, a new VoIP one up to at least the same standard, or it could indeed be one which offers a more limited service but is cheaper. The important point is that your choice can be an informed one. The 076 access code for VoIP numbers is an indicator of the new services that may be useful for consumers, though of course VoIP services may also be provided on the old traditional number ranges.

Consumers using Carrier Pre-Selection who wish to ring the new 076 numbers from an existing fixed phone should be able to do so and ComReg therefore expects that this new range will be included in the CPS all-calls option in due course.

1.7.2 Consumer Education

Proper consumer awareness is a very important facet of introducing new services to the public, which can make the difference between success and failure. ComReg believes that differences between the new VoIP services and traditional ones should therefore be clearly and honestly outlined to the purchaser in a very forthright way, both at the time of signing-up and subsequently (e.g. via alerts or voice announcements) when features unique to VoIP are being operated. It is also important in the case of critical services – such as emergency calling - to note that there may be other users of these services that will not be aware of the limitations unless alerted somehow. In this case it is important to involve the purchaser in communicating these limitations effectively to those others.