

VoIP Regulation

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Abstract

Voice over IP (VoIP) is currently the uppermost telecommunication regulatory question globally. The purpose of this paper is to enlighten the main regulatory approaches and their problems. The main issue is to define the appropriate level of regulation for different VoIP services.

The author is participating the ongoing VoIP regulation work in European Union (EU). Therefore also the viewpoint of this paper is EU centric. The chosen approach is also supported by the fact that VoIP regulation varies greatly between different countries.

Keywords: VoIP, regulation, requirements, EU

1 Introduction

Traditionally, telephony service has been the most heavily regulated telecommunication service. Therefore, also VoIP is definitely one of the top priority areas for National Regulatory Authorities (NRAs). VoIP services are gaining rapidly more ground and it may be foreseen that in some point of time practically all voice traffic will be carried on top of IP networks. The growth of VoIP services is driven by two main factors:

- **Network convergence:** Standardisation organisations have clearly declared that the next generation network architectures will be based on IP protocol and many major operator have already published their plans to implement the so called NGN network.
- **The Internet:** An open Internet access enables users to select their value added service providers or to use self-provided services running on their personal computers. Especially flat rate broadband connections encourage users to use free or cheap VoIP services.

Most VoIP specific regulatory questions are same for fixed and mobile networks. Therefore, both cases are studied together.

VoIP regulation varies greatly between different countries. For example some countries, like Japan

and South Korea, have specified separate service definitions for mobile, fixed and Internet telephony services [1]. In EU the directives lead to more technology neutral approach.

Some countries have banned the use of VoIP services. For example, in Bolivia it is currently illegal to sell retail VoIP services [2]. However, the restrictions were more common two or three years ago, e.g. it was illegal in Malta to offer VoIP services over WLAN. Although, the regulatory requirements are becoming more similar, there are still large differences between different countries in service classification and regulatory requirements.

Because of the large variation in VoIP regulation and the ongoing work in EU, this paper focuses on the regulatory situation in EU. In addition, a brief case study from US is presented. A large part of this paper is based on the ongoing work of the European Regulator Group (ERG) VoIP group and the discussions the author has had during the process. Therefore, also most of the terminology used in this paper is derived from EU context.

Too strict approach to copy fixed voice regulation from PSTN will practically prevent most innovative VoIP services from emerging. Therefore, taken regulatory approach has a huge impact on VoIP development. The topic is discussed around the world and we are likely to see many NRAs to make their decisions in 2005.

2 EU Regulatory Framework

One of the goals of the European Commission is to harmonise the legislation in EU countries. The tools to make this happen are the directives, regulations and decisions of the European Parliament and of the Council and Commission. These bodies can also give resolutions, recommendations and opinions that are not binding.

Regulations are binding and directly applicable in all EU countries. Directives are to be adapted to national legislation within certain time frame and decisions obligate the named member state governments or private persons.

In some areas directives impose only the minimum level of regulation that has to be applied and the EU member states can make additional national requirements. However, in some areas, including competition legislation, directives impose also the maximum legislation that can be set. This applies also to VoIP services.

As regards voice over IP the relevant directives are the Framework Directive [3], Access Directive [4], Authorisation Directive [5], Universal Service Directive [6], Privacy Directive [7] and Competition Directive [8]. [9]

According to the EU regulatory framework, all actions taken by the NRAs and EU Commission should be proportionate to and aimed at achieving the following policy objectives:

Promote competition by removing competition restrictions, enabling efficient infrastructure investments and promoting innovations.

Contribute to the development of the internal market. The goal of this requirement is to encourage the development and interoperability of pan-European networks and services by harmonising the national legislation and requirements.

Promote the interests of the EU citizens that can be achieved by maximising user benefit in terms of choice, price and quality and ensuring access to universal service, high level of consumer protection, network and service integrity, security and data protection. Also needs of special groups, such as disabled users, have to be taken into account.

Taken regulatory measures should also be proportionate to the following regulatory principles set by the Framework Directive and some other directives: objectivity, technological neutrality, transparency, non-discrimination and proportionality.

The described requirements set also basis for VoIP regulation in EU. The EU regulatory framework defines the following service categories that can be applied to VoIP services:

Electronic Communication Service (ECS) is defined in Framework Directive (Art 2c) as a service that is:

- normally provided **for remuneration**
- which consists wholly or mainly in the conveyance of signals on Electronic Communications Networks

Publicly Available Telephony Service (PATS) is defined in Universal Service Directive (Art 2c) as a service that is:

- available to the public
- for originating and receiving national and international calls
- access to emergency services
- through a number or numbers in a national or international telephone numbering plan

3 VoIP service classification

VoIP technology is used to provide a large variety of market offerings that can be categorised in many ways, e.g. as presented in [10]. However, these definitions are not enough detailed to be used as a basis for regulatory classification. The author is suggesting the following raw categorisation according to whether they fall under the scope of the EU regulatory framework. The basis of the presented classification should also be valid for most of the other markets.

1. Self-provided VoIP:

With most VoIP enabled devices users can place calls directly to other users using similar equipment or software over the public Internet. There is no communication service provider in this model and therefore self-provided services fall outside EU regulatory framework.

2. VoIP services with no specific obligations:

These services are in principle within the scope of the Authorisation Directive, but in which there are no special obligations that constrain the provider. Two most common examples include:

2a) Carrier internal use: Many fixed and mobile network carriers are transporting voice traffic over IP-networks over long distances or planning to start VoIP trunking. These services are totally transparent to users and do not affect the retail service or provider's rights and obligations.

2b) Corporate internal use: More and more enterprises are replacing their existing private branch exchanges (PBXs) with VoIP solutions. These services are covered by the Authorisation Directive, but it does not impose any specific obligations or restrictions.

3. Publicly offered VoIP services:

This category covers publicly available VoIP services in which there is conveyance of signals in an electronic communications network. These services fall under the EU regulatory framework and their

regulatory treatment depends on the nature of the service being offered. These services can be further categorised, e.g. by the following attributes:

3a) Access to other users: This can be seen as the main service classification criteria that divides services according to their ability to enable users to originate and receive national and international calls that at least currently can be seen to be possible only through E.164 numbering plan.

However, the situation is not black and white and there are some providers that offer services with limited access possibilities, like enabling their users to place calls but not receiving them.

It has been argued that also these services should be regulated as POTS services, but also opposite arguments has been presented. Anyway, this classification criterion enables clear ECS services, like PoC and Skype to escape the heavier telephone service regulation.

3b) Level of provider control: VoIP services can be provided using various business models that provide different level of control to the service. First, the service can be provided by a broadband access service provider, like Yahoo! BB, that may or may not operate also the underlying network infrastructure. These providers may be able to offer better quality and ensure the service integrity.

Second, the service can be provided by independent service providers, like Ipon Communications, that only provide telephony service and cannot affect the quality and availability of their subscribers' broadband access.

It has been argued that the level of control could be used as one characteristic to define the applied regulatory requirements. However, the author believes that this may not be feasible in practise.

3c) Level of nomadicity: In some countries nomadic use is restricted, e.g. prohibiting the nomadic use of geographical numbers or making emergency calls. Especially locating the nomadic user is problematic, because there exists no reliable and automatic mechanism to locate the nomadic user.

For this reason provider's ability to route emergency calls to a correct emergency centre greatly depends on the service nomadicity. Therefore, the level of nomadicity affects also the service classification and the level of applied regulatory requirements.

3d) Other regulatory issues: VoIP services can also be classified based on what regulatory requirements, the most importantly emergency call requirement, they fulfil. However, the author believes that it would be a better approach to leave regulatory requirements out of the service definition and set them separately to specified service categories.

Of course, also other classification criteria exists, but, e.g. the frequently used POTS look and feel does not suit well to the most VoIP services, because they can be used either from a software client or using a hard phone. The author sees suggested provider-based classification, e.g. incumbent vs. new entrant, to be even worse classification criterion due to potential legal problems inherit to this definition

4 Main Regulatory Questions

Regulatory requirements for VoIP services can be divided into three categories that are the following:

- **Telephony service specific requirements:** Telephony services have traditionally been heavily regulated. However, most of these regulations, like provision of operator assistance, directory enquiry services, directories and itemised billing, are also applicable for most VoIP services.
- **Common ECS requirements:** In most countries laws and NRAs have defined some requirements common for all electronic communication services, like data protection, security and legal interception. These requirements are valid for all publicly available VoIP services.
- **VoIP specific requirements:** In some countries, regulators have also defined some VoIP specific requirements and service limitations, like allowing VoIP services to be offered only using some VoIP specific number ranges or limiting the number portability. In some countries the protectionism is used even in larger extend and VoIP usage is either prohibited or service providers are issued with extra taxes.

It should be noted that the regulatory approach agreed today for VoIP services will have a long term impact on the regulatory model on electronic communication market. In the future all communication services will be IP based thus the today agreed regulatory approach for VoIP will set the guidelines for future rights and obligations. Next the current regulatory issues are briefly described.

4.1 Level of Regulation

When considering, what regulatory approach should be taken for VoIP services, there is a need to find a balance between different objectives of existing regulatory framework. In EU, the objectives are to promote competition, to contribute to the development of the internal market and to promote the interests of the EU citizens.

This question can be approached by defining service classes, (e.g. PATS and ECS in EU) that are to be regulated and the regulatory requirements for each class. The task is not easy, because the policy objectives are often at least slightly contradictory.

Nearly all obligations impose extra costs to VoIP service providers. In addition, some requirements may not be technically viable and would prevent companies from creating new innovative services. The author believes that if the technical and economic feasibility are taken into account, many obligations are justified for protection of end users (e.g. emergency calls) and promoting of competition (e.g. number portability).

In light of technology neutrality, author believes that that same level of regulation should apply for both traditional circuit switched voice and corresponding VoIP services and regulations should be levelled equally from all telephony services regardless of their technical implementation.

4.2 Extra Territorial Aspects

Especially concerning VoIP, also global regulatory status needs to be taken into account. Contrary to mobile or PSTN telephony VoIP services can be offered globally without any local presence even though local presence may be often beneficial due to lower termination rates.

Due to this fact, regulatory requirements cannot be much more strict than they are in other countries or local providers may gradually lose their competitiveness. This is especially true in Internet and international call markets.

Currently, regulatory requirements differ around the world, but NRAs are co-operating and the author believes that in the long run regulatory requirements will be better harmonised.

4.3 Emergency Calls

Ability to make emergency calls is typically considered to be the most important regulatory requirement and therefore it has been debated a lot.

In principle, access to a national emergency number can be arranged without significant difficulties at least for all VoIP services at fixed or otherwise known location. Nevertheless, in most cases at least national gateway for each country will be necessary. Due to the problem to locate nomadic users, the routing to the correct emergency center obligation cannot at least currently be always applied for nomadic services.

As it can be seen from EU PATS definition, emergency calls have been used as one of the basic service classification criteria, but the author believes that it would be a better approach to leave emergency calls out of the PATS definition, because otherwise service providers could choose not to provide emergency calls to escape also other telephony related regulations. The better approach would be to set the emergency call requirement separately to PATS services.

4.4 VoIP Numbering and Number Portability

VoIP services can be addressed by many alternative addresses, such as SIP address, IP address or E.164 number. Today, E.164 numbers are still the main addressing method and also VoIP providers need to have access to geographical numbers and number portability.

In some countries, only corporate, universal access or VoIP specific number ranges are open for VoIP services. These numbers are, however, seen to be less attractive due to the perceived high tariffs for calling [11].

The general opinion [11] seems to be that number portability should be bi-directional and typically this does not impose any problems. However, e.g. EU Commission has proposed to restrict number portability to PATS subscribers only that is problematic, because it would either require specific ECS number ranges or the number range based portability structure would be destroyed. More importantly, the requirement would effectively prevent providers from upgrading their service from ECS to PATS due to the required number change.

4.5 Unbundling BB

Broadband access unbundling is not directly related to VoIP service regulation, but it has an integral part on how new entrants can enter the market. If unbundling possibility is not available, subscribers cannot choose their Internet access provider and it would be too easy for incumbents to limit independent VoIP providers' possibility to offer VoIP services. Regulations should also prevent incumbents from requiring PSTN access from bitstream customers.

5 VoIP Regulatory Status

This chapter briefly introduces the current regulatory situation in EU and US.

5.1 VoIP Regulation Status in EU

The directives have been implemented in a slightly different manner in each EU member state and differences in national legislation and NRA competencies limit the possibility to agree on common positions and execute them effectively. Therefore, nearly any harmonised approach will require some countries to amend their national legislation.

To harmonise the situation, EU Commission published a VoIP consultation [9] in Autumn 2004 and the work is continued in ERG (European Regulator Group) VoIP group that is lead by FICORA. The goal of this work is to agree a common position in December 2004 ERG meeting. The common position will most likely consist of three parts that are level of regulation, emergency calls and numbering and number portability.

At the time of writing this paper, common position has nearly been achieved between NRAs and only one NRA and Commission are still arguing for different option presented by Commission [12]. The majority of the VoIP group holds a view that legal certainty can be best ensured by having clear criteria in the legislation for types of services falling into certain regulatory categories. Service fulfilling the criteria for a particular definition have to comply with rights and obligations related to that category.

5.2 VoIP Regulatory Status in US

In US, Internet telephony services, like Pulver's FWD, are most likely classified as information services. The US approach is rather similar to the approach being adopted in EU. The Internet and Internet services are regulated very lightly. However, also FCC has recognised a need to ensure social and

public safety for the good of consumers. FCC has defined four key areas [13] where government should and must intervene: universal service, legal interception (CALEA), emergency calls and access to people with disabilities.

The other issue under discussion in US is intercarrier compensation system that FCC is committed to reform [14]. FCC has also organised an FCC Internet Policy Working Group to identify, evaluate and address policy issues that will arise when telecommunications services move to Internet-based platforms.

In November 2004, FCC stated that Vonage's DigitalVoice nomadic VoIP service is interstate in nature and not subject to state regulations [15]. The case is not yet totally clear, because 8th Circuit Court has not yet made its decision on this matter.

6 Conclusions

VoIP services have faced very diverse regulations around the world, and the regulations still differ from country to country. However, the regulatory situation has moved towards a more harmonised approach during the last two or three years. The author believes that this trend will continue also in the future. However, achieving global VoIP regulatory harmonisation will be a very difficult task.

The current regulatory practise regarding telephony services was devised at a time when the dominant technology used was fixed and circuit switched and it is not totally applicable for VoIP services. Some requirements, like power supply, are not technically feasible or the authorities may not just be able to control the compliance due to the fact that the service is provided from abroad. It is equally important that VoIP will break the telephony service monopolies. Therefore, a new regulatory approach is needed.

The author believes that it is possible to apply lighter regulations for all telephony services in the near future. However, this does not mean that all regulatory obligations should or would be removed. For example the emergency call requirement is likely to remain for services classified as telephony services.

In addition, a large variety of other requirements will apply for all publicly available VoIP services. At least security and privacy protection obligations are likely to be applied also in the future. In fact, these requirements may become to be the heaviest burden for new VoIP entrants.

7 References

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