



EUROPEAN COMMISSION
Information Society Directorate-General

Brussels, 14 June 2004

COMMISSION STAFF WORKING DOCUMENT

on

**The treatment of Voice over Internet Protocol (VoIP)
under the EU Regulatory Framework**

—

An Information and Consultation Document

This is a working document of DG information Society which does not necessarily reflect the official position of the Commission. No inferences should be drawn from this document as to the precise form or content of future measures to be submitted by the Commission. The Commission accepts no responsibility or liability whatsoever with regard to any information or data referred to in this document.

Executive Summary

Voice over Internet Protocol (VoIP) is a technology that can be used to provide a range of electronic communications services.

Under the EU regulatory framework, players are free to enter the market for electronic communications services without prior authorisation, provided they abide by the conditions set out in the general authorisation applicable in each Member State.

The general authorisation sets out rights and obligations for the providers of publicly available electronic communications networks and services. There are additional rights and obligations for providers of publicly available telephone services and for those providers that have universal service obligations.

This document explains the conditions that apply to these different types of services. The degree to which a provider of VoIP based services will face obligations under the EU framework depends on the type of service offered. One of the aspects where VoIP differs from a traditional telephone service is the fact that users can be nomadic and use their terminal device at different locations. This gives rise to a number of new issues in relation to the provision of emergency services, and the document calls on market players to work together to find solutions. Issues of service availability also need to be addressed.

The continued uptake of VoIP services may have a substantial impact on the interconnect models of the traditional PSTN environment. The availability of geographic and non-geographic numbers will also be important to the success of VoIP services.

This document seeks comments on these and related issues and, in order to focus the debate, sets out proposed positions in a number of areas.

The Commission Services would welcome views and comments on all proposals and questions set out in this Consultation Document. Comments should be sent before 31 August 2004 in electronic format to:

info-b1@cec.eu.int (note that the "1" is the number one)

marked "VoIP" in the subject line.

All comments will be published unless confidentiality is specifically requested. Please give the name of a contact person in your organisation for any questions on your contribution.

Normally a notification of receipt of contributions will be sent by email within 2 working days. In the absence of such a receipt, please contact:

Regulatory Framework Unit (B1)
DG Information Society
B-1049 Brussels
Belgium.

Tel + 32 2 296 8633

Table of Contents

1.	Purpose of this document	3
2.	EU Regulatory Framework	4
2.1.	Introduction	4
2.2.	Explanation of terms	5
3.	Classes of Voice over IP offerings	6
4.	Electronic communications services, Publicly Available Telephone Service & Universal Service.	6
4.1.	Authorisation	6
4.2.	Publicly Available Electronic Communication Services	7
4.3.	Publicly Available Telephone Service	8
4.4.	Universal Service	9
5.	Consumer Protection & Public Safety	11
5.1.	Integrity and availability of the network	11
5.1.1.	Integrity and availability at Fixed Locations	11
5.1.2.	Nomadic Users	11
5.1.3.	In-line powering of terminals	12
5.2.	Emergency Services	12
5.3.	Routing Emergency Calls	13
5.4.	Enhanced Emergency Service - <i>Caller location</i>	14
5.5.	Privacy and Lawful intercept	14
5.5.1.	Data retention	14
5.5.2.	Lawful intercept	15
5.6.	Extra-territorial VoIP providers	15
6.	Interconnection and interoperability	16
6.1.	Interconnection	16
6.2.	Interoperability	17
6.3.	Associated Facilities	17
7.	Numbering	17
7.1.	Introduction	17
7.2.	Geographic Numbers	18
7.3.	Non-Geographic Numbers	18
7.4.	Conditions	18
7.5.	Number portability requirements	19
8.	Summary	19
	Annex A: Rights and Obligations of publicly available ECS providers	21
	Annex B: Rights and Obligations of PATS providers	26
	Annex C: Rights and Obligations of Public Telephone Network operators	28

1. PURPOSE OF THIS DOCUMENT

This document concerns the application of the EU regulatory framework for electronic communications to Voice over IP¹.

The Commission has issued two previous Communications on Voice over IP (in 1998² and 2000³), but they have been superseded by the EU regulatory framework that came into effect in July 2003.

On 15 March 2004, the Commission Services (DG Information Society) organised a public workshop, where a study on Voice over IP by the consultancy firm Analysys Ltd was presented⁴. The study raised a number of questions related to Voice over IP and associated services.

Three broad sets of issues can be distinguished. One set of issues concerns the application of the Directives in the EU regulatory framework, and how they apply to VoIP; another concerns the regulatory safeguards that may be needed to ensure fair competition in the provision of VoIP based services; and the third concerns the impact of VoIP based services on the markets identified in the Commission Recommendation on relevant markets, and on the market analyses undertaken by NRA's under Article 16 of the Framework Directive. This document deals with the first set of issues; the second is more appropriately addressed in the context of the ongoing work of the European Regulators' Group⁵ on remedies; the third will be further considered when the Commission reviews its Recommendation on relevant markets, foreseen for the end of 2005.

Voice over IP is one of many technologies that will affect the electronic communication sector over the coming years. It offers the potential to increase competition, to stimulate new and innovative services for the citizen, and to reduce operators' costs. The EU regulatory framework is designed to facilitate market entry for new players and to accommodate changes in the underlying technologies. The aim of this document is to provide clarification on the application of the Directives of the EU regulatory framework for both new entrants and established operators who may be considering the deployment of VoIP enabled services in Europe.

The document is being issued for information and consultation. Taking these public comments into account, the document will be adapted as necessary and re-issued in the form of (non-binding) Guidelines.

¹ VoIP is used here as the generic term for the conveyance of voice, fax and related services partially or wholly over packet-switched, IP-based networks. (see also Analysys Study p.14)

² OJ C6, 10.1.1998, p.4

³ OJ C369, 22.12.2000, p.3

⁴ http://europa.eu.int/information_society/topics/ecommm/useful_information/library/studies_ext_consult/index_en.htm#2004

⁵ See ERG Common Position on Remedies at http://erg.eu.int/documents/index_en.htm#ergdocuments

2. EU REGULATORY FRAMEWORK

2.1. Introduction

The EU regulatory framework for electronic communications was adopted in April 2002 and came into effect in July 2003.

The convergence of the telecommunications, media and information technology sectors demands a single regulatory framework that covers all transmission networks and services. The EU regulatory framework addresses all communications infrastructure in a coherent way, but does not cover the *content* of services delivered over and through those networks and services.

There are five different directives: the Framework Directive⁶ (2002/21/EC) and four specific directives, being the Authorisation Directive⁷ (2002/20/EC), the Access Directive⁸ (2002/19/EC), the Universal Service Directive⁹ (2002/22/EC) and the Privacy Directive¹⁰ (2002/58/EC). In addition, the Competition Directive (2002/77/EC) applies.

The objectives set out in the EU regulatory framework are:

- To promote competition by fostering innovation, liberalising markets and simplifying market entry;
- To promote the single European market and;
- To promote the interest of citizens.

All Member States are required to implement the EU framework in their national law. The framework lays down the role of Member States and national regulatory authorities, the rights and obligations for market players, and the rights of users of electronic communications networks and services. In addition, Member States may take measures justified on the grounds of public health and public security as set out in the EC Treaty, for example by imposing requirements for legal interception or critical infrastructure protection, and such measures are not covered by the EU regulatory framework.

In order to stimulate the development of new electronic communications networks and services and to allow service providers and consumers to benefit from the economies of scale of the single market, the EU regulatory framework establishes a general authorisation system for providers of such networks and services.

Rights and obligations of such providers are included in the general authorisation. No explicit decision or administrative act by the National Regulatory Authority (NRA) is

⁶ OJ L108, 24.4.2002, p.33-50

⁷ OJ L108, 24.4.2002, p.21-32

⁸ OJ L108, 24.4.2002, p.7-20

⁹ OJ L108, 24.4.2002, p.51-77

¹⁰ OJ L201, 31.7.2002, p.37-47

required in order for a provider of electronic communication networks and services to launch a new service. However some service providers may require an assignment of numbers or frequencies by the NRA.

Considering the fast evolution in the telecommunications, media and information technology sectors, the EU regulatory framework seeks to be technologically neutral, so that it neither imposes nor discriminates in favour of the use of a particular technology. As such it focuses on services and related markets rather than on the underlying technology used.

2.2. Explanation of terms

The EU Regulatory framework defines some terms which need to be explained.

- (1) An Electronic Communication Service (ECS)¹¹, is a
 - service normally provided for remuneration
 - which consists wholly or mainly in the conveyance of signals on Electronic Communication Networks ...
- (2) A Public Available Telephone Service (PATs)¹², means a
 - service available to the public
 - for originating & receiving national and international calls
 - and access to emergency services
 - through a number or numbers in a national or international telephone numbering plan, ...
- (3) Universal Service (US) is
 - the provision of a defined minimum set of services [as defined in the Universal service directive] to be made available at the quality specified to all end-users at an affordable price¹³
 - provided by at least one operator which may be so designated by the National Regulatory Authority¹⁴ to have Universal Service Obligation

Formal definitions can be found in the relevant Directives.

¹¹ Framework Directive, Art.2(c)
¹² Universal Service Directive, Art.2(c)
¹³ Framework Directive, Art.2(c)
¹⁴ Universal Service Directive, Art. 8, Art 3(2) and Art.4(1)

3. CLASSES OF VOICE OVER IP OFFERINGS

Voice over IP technology is being used to provide a variety of market offerings. Some of them fall under the EU regulatory framework, while others may not.

- (1) A VoIP offering that comprises provision of a product (eg a software program to be run on a personal computer), with no ongoing provision of a service, is not within the scope of the EU regulatory framework if it does not entail provision of an Electronic Communications Service¹⁵. This applies even if the VoIP offering allows for voice communications between users who have purchased the product.
- (2) Corporate private networks, used to provide internal communications within large companies, are within the scope of the EU regulatory framework in that they are covered by the Authorisation Directive¹⁶, but there are no specific obligations addressed to private networks. There are no conditions or restrictions on the use of Voice over IP services that are used inside a corporation, for the sole use of that corporation.

The same goes for VoIP technologies that are used within a public operators' core network and that do not impinge on the retail services offered to customers nor on the quality of those services.

- (3) Publicly available Voice over IP services, where there is access to and from E.164¹⁷ telephone numbers, do fall under the EU regulatory framework. There are however many flavours in publicly available VoIP service offerings, and the regulatory treatment depends on the nature of the service being offered.

Any classification of those different flavours is unlikely to be stable, given the pace of technological and market-driven change. Hence, this paper does not propose any formal, rigid classification of different publicly available VoIP service offerings.

4. ELECTRONIC COMMUNICATIONS SERVICES, PUBLICLY AVAILABLE TELEPHONE SERVICE & UNIVERSAL SERVICE.

4.1. Authorisation

The Authorisation Directive establishes a system of general authorisations. A 'General Authorisation' refers to the legal framework established by a Member State, that ensures rights for the provision of electronic communication networks or services and which defines sector specific obligations that may apply to all or to specific types of electronic communications networks or services.

¹⁵ Privacy rules apply to any personal information stored or processed in connection with such offerings.

¹⁶ Authorisation Directive Art.3, Art 4

¹⁷ 'E.164' refers to the international telephone numbering plan set out in Recommendation E.164 of the International Telecommunications Union

While the general authorisation does not require an explicit decision or administrative act by the National Regulatory Authority, this Authority has the right to verify that the undertaking complies with the set of obligations as set out under the general authorisation. Non-compliance may lead to penalties and in extreme cases to suspension or withdrawal of the right to provide electronic communications services.

The general authorisation contains specific conditions that apply to undertakings that provide electronic communication networks or services.

With the specific exception of those operators that are designated as USO providers, the model in the EU framework is that a service provider has the commercial freedom to offer services that qualify him as ECS and hence operate with the rights and obligations that apply to a provider of electronic communications services; or offer services that qualify him as PATS, and hence operate with the rights and obligations that apply to a provider of publicly available telephone services.

4.2. Publicly Available Electronic Communication Services

If VoIP is being used to provide a service to the public (as opposed to use in a private or corporate network) then it is subject to the conditions that apply to publicly available electronic communications services. These conditions are summarised in Annex A.

The set of obligations on undertaking providing publicly available Electronic Communication Services is different from those that apply to publicly available telephone services (see section 4.3).

Some new entrants may offer publicly available electronic communications services as a first step in order to gain rapid entry into the market, and perhaps gradually over time when it makes more business sense to make heavier investments, may decide to take on the rights and obligations of being a provider of publicly available telephone services.

The subscribers of an electronic communications service do not have the right to port telephone numbers from a PATS operator, nor is there the right for ECS subscribers to be listed in the publicly available directory.

There are issues linked to the provision of an electronic communications service that, for example, may have the ‘look and feel’ of a publicly available telephone service but does not offer access to emergency calls. These issues are discussed in subsequent sections of this paper. There are two broad regulatory approaches to such problems: one is to impose traditional PSTN obligations on all new telephone-like services; the other (which is the approach generally followed herein) is ensure that consumers are fully informed and can make their own choices, while encouraging suppliers to find new technical solutions (see section 5).

When consumers subscribe to electronic communications services providing connection and/or access to the public telephone network, consumers have a right to a contract. VoIP services that enable the customer to call or be called from E.164 telephone numbers, and which includes access to the public telephone network, fall

into this category. Art.20 of the Universal Service Directive defines the minimum specifications of such a contract.

If the Electronic Communication Service offered does not provide connection and/or access to the public telephone network but there is a contract between the provider and the consumer, contractual information in accordance with Article 20 must also be included.

4.3. Publicly Available Telephone Service

An undertaking that offers a Publicly Available Telephone Service has a certain number of rights and obligations to comply with as set out in the Directives, and summarised in Annex B.

If the specific range of services offered by an undertaking qualifies him as PATS¹⁸, the undertaking will operate with the rights and obligations that apply to a provider of publicly available telephone services.

In the Universal Service Directive, the core elements of PATS are

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

PATS may also include extra services as described in the Universal Service Directive Art.2 (c).

Note that changing the underlying technology used for a specific service offering, without changing the services offered, does not constitute grounds to alter the obligations or rights associated with provision of that service.

While the Directives establish the obligations that PATS offerings need to fulfil, they also establishes rights associated with the provision of PATS.

- In accordance with the Universal Service Directive¹⁹, only subscribers of PATS have the right to port numbers from other undertakings providing PATS.
- Also, only PATS suppliers can explicitly request access to carrier selection and carrier preselection on the network of an operator with significant market power²⁰.
- Only PATS subscribers have the right to be listed in a public telephone directory²¹.

¹⁸ Note that PATS can be provided on fixed or mobile networks

¹⁹ Universal Service Directive Art. 30 (1)

²⁰ Universal Service Directive Art. 19

Under Article 9 of the Authorisation Directive *any* undertaking offering Electronic Communication Networks or Services can request a NRA to provide it with a standardised declaration detailing its rights under the general authorisation.

When the specific range of services offered by an undertaking qualifies as PATS, the undertaking takes on the rights and obligations associated with being a provider of PATS. In order to facilitate enforcement of this undertaking's rights associated with PATS and the negotiation with other players, it is proposed that:

- NRA's could consider providing, on request, a standardised declaration to those suppliers that undertake to provide *publicly available telephone services* in accordance with the applicable conditions in the general authorisation.

Such a declaration would not be a pre-requisite for offering PATS.

4.4. Universal Service

The Universal Service Directive seeks to ensure users' rights related to electronic communication networks and services. Universal Service is the provision of a defined minimum set of services to all end-users at an affordable price.

This minimum set includes connection to the public telephone network and access to publicly available telephone services (PATS) at a fixed location. It also includes directory enquiry services and directories, public pay phones, and special measures for disabled users.

The Universal Service Directive also identifies conditions related to the provision of this minimum set. These conditions are related to the affordability of tariffs (Art.9), control of expenditure (Art.10) and quality of service obligations placed on designated undertakings (Art.11).

In order to ensure that all consumers have access to this minimum set of services, Member States may designate one or more operators to provide different elements of universal service and/or to cover different parts of the national territory at an affordable price.

Any undertaking can apply for the right to offer universal service.

A Member State is not obliged to designate undertakings to offer Universal Service; it can very well decide that the provision of universal service through the national territory is already been taken care of by undertakings, without those undertakings having been explicitly designated as Universal service providers.

The designating of undertakings by Member States is limited to the offering of Universal Service. As long as there is one operator in a specific geographic area with Universal Service obligations, there is no need for a National Regulatory Authority to designate any other operator to offer Universal Service.

²¹ Universal Service Directive Art. 25(1)

Undertakings with Universal Service Obligation (USO) may use whatever technology is appropriate to meet their Universal Service obligations; provided that they comply with the quality requirements set out in the Directive (e.g. permit functional internet access) and national legislation. This could include use of VoIP technology. USO operators may also develop *new* types of telephone service that are sold and marketed differently from their traditional ‘universal service’ voice offering; those services would not necessarily fall under the Universal Service Obligation of that undertaking.

Universal Service funding schemes

When a National Regulatory Authority finds that a designated Universal Service Obligation presents an unfair burden on an undertaking and if the undertaking so requests, Member States can establish mechanisms for financing the net cost of this undertaking’s universal service obligations. It needs to be demonstrated that offering this universal service can only be provided at a loss or at a net cost that is outside normal commercial standards.

Member States can recover the net cost of different elements of universal service through different mechanisms (e.g. access to emergency services could be funded through a different mechanism than access for disabled people). Member States have the choice on how (if needed) to fund the net cost. They can for instance fund the cost via public funds or via levies on undertakings.

In case of levies on undertakings, Member States have the possibility to exempt undertakings which have not yet achieved any significant market presence, if their national turnover is below a specified threshold set by the Member State.²²

Member States may impose levies on all classes of service offerings. Any exemption needs to comply with the principles of transparency, least market distortion, non-discrimination and proportionality.

In summary, unless exempted under the threshold mentioned above, providers of VoIP based services may be required to contribute to the cost of Universal service, in those Member States where universal service funding schemes exist²³.

Review of Universal Service

Provisions are made in the EU directives for the review of universal service; the impact of VoIP on universal service will be addressed in that context.

²² Universal Service Directive Art.13

²³ Currently only France, Italy and Spain operate universal service funding schemes. See 9th implementation report at: http://europa.eu.int/information_society/topics/ecom/all_about/implementation_enforcement/annualreports/9threport/text_en.htm

5. CONSUMER PROTECTION & PUBLIC SAFETY

There are a number of public policy requirements set out in the Directives, which may affect providers of VoIP based services, depending on the precise nature of the service offered and of the national measures that implement EU legislation.

5.1. Integrity and availability of the network

5.1.1. *Integrity and availability at Fixed Locations*

Member States shall take all necessary steps to ensure the *integrity* of the public telephone network at fixed locations and, in the event of catastrophic network breakdown or in cases of *force majeure*, the *availability* of the public telephone network and publicly available telephone services at fixed locations. Member States shall ensure that undertakings providing PATS at fixed locations take all reasonable steps to ensure uninterrupted access to emergency services. (Art 23 of the US Directive)

The term “fixed location” refers to the location at which a network connection is provided. It does not determine the technology used to provide that connection, which could be ‘wired’ or wireless. Nor does it impact upon the customer’s use of wireless terminal equipment such as WiFi or DECT devices.

The implications of this Article for providers of VoIP based services will depend on the national law implementing this provision.

- It is proposed that Member States consider applying this article in such a way as to recognise that only those service providers that have control over or ownership of the underlying transport infrastructure are able to ensure the availability of publicly available telephone services in cases of *force majeure*.

The provider of PATS at fixed location will normally provide the service at a contractually agreed location. With some VoIP offerings, users may decide to disconnect their terminal from their ‘home’ location and use the terminal to connect at other access points (the ‘nomadic’ user – see below). Where appropriate, consumers need to be informed that certain commitments on network availability and integrity apply only at the fixed ‘home’ location. Such information should be provided in the customer contract drawn up in accordance with Article 20 of the Universal Service Directive.

5.1.2. *Nomadic Users*

Some VoIP based services use what might be termed ‘nomadic’ access to the public telephone network. Users have the possibility to connect their terminal at any suitable access point, such as a WiFi hotspot, and are not limited to a fixed location.

To the extent that such services do not constitute the provision of ‘PATS at a fixed location’, they are not subject to the provisions on service availability described above.

However, this type of nomadic service does give rise to concerns over access to emergency services, as discussed in section 5.2 below.

5.1.3. *In-line powering of terminals*

In-line powering of terminals has traditionally been provided by public switched telephone networks. It means that a basic telephone terminal will continue to function in the event of electricity power failure. This can be particularly important for emergency telephones, for example those in lifts or public places.

In-line powering of terminals is not required under EU law, but some Member States impose obligations for in-line powering on network operators. Depending on the precise wording of such obligations, they could apply to VoIP based telephone services provided over other infrastructures such as cable TV networks.

- Member States are invited to review any legal obligations imposed in this area, and consider adapting them where necessary in the light of technological and market developments.

It is proposed that:

- NRAs could require suppliers of VoIP services that include access to the public telephone network to inform their customer about the impact of power failures on their service, and in particular how it differs from traditional telephone service. Such information should be provided in the customer contract drawn up in accordance with Article 20 of the Universal Service Directive.

5.2. **Emergency Services**

Access to Emergency services is extremely important for citizens, irrespective of how a telephone service may be classified for legal and regulatory purposes.

The Universal Service Directive has an explicit requirement that access to emergency services has to be offered by providers of PATS²⁴, but there is no similarly explicit obligation for providers of ECS who may be offering a telephone service.

From a public policy point of view it is desirable that access to emergency services is available from as wide a range of electronic communications services as possible. This calls for an evolutionary approach in cooperation with the emergency authorities.

In principle, National Regulatory Authorities could impose an obligation on certain ‘non-PATS’ service providers to offer emergency service access, under Condition (8) of Annex A of the Authorisation Directive on “Consumer Protection Rules specific to the electronic communications sector”. However the practicalities of call routing and handling have not yet been resolved by the market (see 5.3 below), and until they are, such an obligation may not be technically feasible and could be disproportionate.

It is proposed that:

²⁴ Universal Service Directive Art.26 (1)

- NRAs could require suppliers of VoIP services that include access to the public telephone network to give precise information to customers on how the VoIP supplier deals with access to emergency services and caller location. Such information should be provided in the customer contract drawn up in accordance with Article 20 of the Universal Service Directive.

The Commission will regularly review evolution in this area.

5.3. Routing Emergency Calls

The possibility to route a call to the nearest Emergency Service centre implies that the service provider (either publicly available electronic communications service or PATS) has sufficient information to allow the call to be correctly routed. This is only possible if the location of the user making the emergency call is known in some way or another, and the service provider knows the nearest emergency service centre to which the call should be routed.

Currently, with some VoIP based services, in particular ‘nomadic’ services, the VoIP service provider has no knowledge of the physical location of the caller, nor of the nearest emergency service centre, and it would be disproportionate at the present stage of market development to impose such routing obligations on all VoIP providers.

It is proposed that the following principles apply as regards the determination of the emergency service centre to which emergency calls will be routed:

- in the case of PATS, the actual making of an emergency call, and the provision of caller location information to emergency services, should be possible without the user having to input any location information either before making the emergency call or when initially installing the terminal device (i.e. this is the responsibility of the network operator and/or service provider).

(This probably means that the provider of such service needs to conclude some agreement with the provider of the underlying transport infrastructure.)

- in the case of publicly available ECS, NRAs could require that the making of a call to the emergency services happens without the user having to provide any location information. The user may be invited to provide location information when initially installing the terminal device at a particular location.

At the current state of the market, it is advisable not to present an undue burden on market players, but it will be necessary to follow developments in this area closely as the market evolves.

In the case of those ECS and PATS services where users have the possibility to move their terminal, and where this causes a problem for the undertaking to determine the users’ location, users need to be warned that when moving their terminals from agreed fixed location, they can not be guaranteed to be provided with emergency services.

- Market players offering VoIP based services are encouraged to devise and rapidly implement operational solutions for the effective handling of calls to emergency services.

The Commission will regularly review evolution in this area.

5.4. Enhanced Emergency Service - *Caller location*

In the context of PATS, Member States are to ensure that undertakings that operate public telephone networks make caller location information available to authorities handling emergencies for calls to the European Emergency call number '112' (see also §5.2 on Emergency Services). In the Directives the provision of this location information is made dependant of the technical feasibility.

Considering the importance of providing location information it is proposed that:

- NRAs encourage all undertakings offering PATS at fixed locations to provide location information.

This may imply some form of agreement between the operator offering the PATS service and the underlying provider of the transport infrastructure.

The Privacy Directive foresees that, where Calling-Line Identification is offered, an undertaking may override a users' elimination of the presentation of this CLI, for calls to organisations dealing with emergency calls.

Given the importance for emergency services of both the location and CLI information, Member States should encourage the provision of this information, both for PATS and for publicly available ECS.

- Market players offering VoIP based services are encouraged to devise and rapidly implement operational solutions for the effective transmission of caller ID and the provision of location information for calls to emergency services

The Commission will regularly review evolution in this area.

5.5. Privacy and Lawful intercept

5.5.1. Data retention

The Privacy Directive is designed to protect the fundamental interests of end-users. It applies to publicly available electronic communications services in general, and so the provisions described below also apply to VoIP-based electronic communications services.

*Traffic Data Retention*²⁵

Processed and stored traffic data needs to be erased or made anonymous when it is no longer needed for transmission of the communication. Traffic data necessary for

²⁵

Privacy Directive Art.6

billing or interconnection payment purposes may be processed, but only for the period necessary and after consent has been given.

Withdrawal of this consent should be possible at all times. Before giving consent subscribers need to be informed of the purposes behind the retention of traffic data and of the types of data retained.

*Location Data*²⁶

Where processing of the location data is allowed with the consent of the user, prior to obtaining such consent the user must be informed of the type of location data that will be processed, the purposes and duration of the processing and whether the data will be transmitted to a third party. It is also important that the user can withdraw its consent at any time.

Security of publicly available Electronic Communication Services

Providers of publicly available ECS must take appropriate measures, if necessary in conjunction with the provider of the public communications network, to safeguard the security of their services²⁷. For VoIP based offerings, this could include measures to protect against viruses and denial-of-service attacks, for example.

They should inform subscribers of the existing security risks.²⁸

Member States must have legislation to ensure the confidentiality of communications and related traffic data carried by a publicly available communications network or service.

Note that Member States may adopt measures to restrict the scope of the rights and obligations as laid out in this section, to safeguard national security, defence, public security and the prevention, investigation, detection and prosecution of criminal offences or of unauthorised use of the electronic communication system.²⁹

5.5.2. Lawful intercept

While this is to be considered a national matter³⁰, it would be advisable for Member States to agree on common standards. This would make it easier for equipment manufacturers to develop the necessary products and mechanisms.

5.6. Extra-territorial VoIP providers

VoIP - like any IP-based service - can be provided by accessing the Internet, and the provider of the service does not necessarily have to be established in the country in which the service is being consumed.

²⁶ Privacy Directive Art.9
²⁷ Privacy Directive Art.4(1)
²⁸ Privacy Directive Art.4(2) and recital (20)
²⁹ Privacy Directive Art.15(1)
³⁰ Framework Directive recital (7)

To the extent that a VoIP-based service constitutes an electronic communications service, its supply to customers in the EU is subject to the Authorisation Directive and to the associated national law (ie general authorisations). In the case of a breach of the conditions of a general authorisation, an NRA could have difficulties imposing penalties on a supplier not established in the EU, but in practice most commercial VoIP providers of any size are expected to have some presence in the EU, in order to serve their European customers effectively.

The investigation, detection and prosecution of criminal offences is outside the scope of the regulatory framework for electronic communications.

6. INTERCONNECTION AND INTEROPERABILITY

6.1. Interconnection

As is made clear in the Authorisation Directive, any undertaking can provide Electronic Communications Networks or Services³¹.

Under the Access Directive, any undertaking providing a public Electronic Communication Network has the right to negotiate interconnection with - and where applicable obtain access to - other providers of public Electronic Communications Networks.

Under the general authorisation obtained in one Member State, the undertaking requesting access or interconnection does not need to be authorised to operate in another Member State if it is not providing services and does not operate a network in that other Member State³².

As noted above, a National Regulatory Authority should issue, at the request of the undertaking or as part of an automatic notification procedure, a declaration that will facilitate an undertakings' exercise of its rights to install facilities and to have interconnection. The issuing of this declaration should take no longer than one week.³³

National regulatory authorities have to ensure, especially where commercial negotiations fail and where there are large differences in negotiating power between undertakings, adequate interconnection and interoperability of services in the interest of end-users. National Regulatory Authorities shall be able to impose to the extent that is necessary to ensure end-to-end connectivity, obligations on undertakings that control access to end-users³⁴.

Interconnection to the PSTN

In many cases VoIP providers seeking interconnection to an incumbent's fixed telephone network will be able to negotiate on the basis of the operator's published

³¹ Authorisation Directive Art.3

³² Access Directive Art.3(1)

³³ Authorisation Directive Art.9

³⁴ Access Directive Art.5

Reference Interconnect Offer. For interconnection to other fixed network operators, commercial negotiation applies. Depending on the structure of PSTN interconnection charges, a VoIP provider may need to have several points of interconnection with the PSTN in order to benefit from the lowest termination rate.

Different rates may also apply depending on the number used by a PSTN subscriber to reach a VoIP user. Hence the importance of the type of numbers allocated to VoIP providers (see also paragraph 7 on numbering).

Direct Interconnection between IP networks

As more operators move to Voice over IP, there will be more traffic passing over direct IP-to-IP interconnections. At the moment IP-to-IP interconnection is realised via commercial peering arrangements between Internet Service Providers, and is not subject to regulation.

Interconnection between VoIP networks via the PSTN

VoIP subscribers may also interconnect by transiting via the PSTN network. This option is only available when the called party has an E.164 number. This is likely to be more expensive than direct interconnection between VoIP networks and also may degrade call quality. However, considering that interfacing to the PSTN is technically and commercially well known and regulated, this could be the preferred choice for VoIP providers for whom direct interconnection is not feasible.

6.2. Interoperability

Problems of technical non-interoperability between networks are best resolved by the parties involved. Disputes can be referred to the NRA for resolution under the procedure set out in Art 20 of the Framework directive. In exceptional cases the NRA may lay down conditions for interoperability, in accordance with Article 5 of the Access Directive.

6.3. Associated Facilities

Associated facilities are “those facilities associated with an electronic communications network and/or electronic communications service, which enable and/or support the provision of services via that network and/or service”³⁵. A facility which allows a VoIP user to locate and verify the presence and availability of another VoIP user may be considered as an associated facility.

7. NUMBERING

7.1. Introduction

Any undertaking providing or using electronic communication networks or services has the right to use numbers. Decisions on the right of use of numbers must, except when granting the right of use of numbers with exceptional economic value, be

³⁵ Framework Directive Art.2(e)

taken, communicated and made public within three weeks after the complete application has been received by the National Regulatory Authority³⁶.

7.2. Geographic Numbers

While the Directives do not stipulate what type of numbers are to be granted, in order to foster competition and stimulate the emergence of new services, Member States are encouraged to give any undertaking providing or using electronic communication networks or services that applies for it, access to geographic numbers.

Offering geographic numbers can be a very important element in the business proposal of a publicly available ECS provider to its prospective clients; this could be linked to the importance attached by users to having a geographic number, or to tariff structures that favour calls to geographic numbers.

7.3. Non-Geographic Numbers

In order to foster competition and stimulate the emergence of new services, Member States are also encouraged to grant any undertaking providing or using electronic communication networks or services that applies for it, access to non geographic numbers. Rights to numbers may also be allocated from a European Numbering Plan, including for example the virtual country code '3883'³⁷.

7.4. Conditions

National Regulatory Authorities can attach specific conditions to the rights of use of numbers (Annex C of the Authorisation Directive).

Where Member States decide that the amount of numbers in a given number range is limited it shall distribute those numbers in an objective, transparent and non-discriminatory matter. Member States should take into account the need to foster emerging innovative services, whether these are based on VoIP or not.

Member States must avoid discriminating between providers as regards the numbering used³⁸. This could for instance be the case if a new undertaking were to receive non-geographic numbers, while its competitors had received geographic numbers; this could result in end-users assuming, whether justified or not, that they would have to pay higher interconnect prices when calling customers of the provider that has only non-geographic numbers.

Failure to assign suitable numbers, or undue delays in assignment of numbers, could constitute discrimination.

³⁶ Authorisation Directive Art.5(3). Authorisation Directive Art.5(4) foresees in specific cases for numbers of exceptional economic value a period of 6 weeks.

³⁷ Authorisation Directive recital (11)

³⁸ Framework Directive Art.10(2)

7.5. Number portability requirements

As already mentioned in paragraph 4.3 on PATS, only subscribers of PATS have the right to port numbers from one PATS supplier to another (hence the usefulness for an undertaking to have a declaration of the National Regulatory Authority that he is providing a PATS service).

8. SUMMARY

Comments are invited on any issues relevant to VoIP. Specifically, comments are invited on the positions proposed in this consultation document, and on the other issues identified below.

On the issuing of declarations to PATS providers

It is proposed that:

- NRA's could consider providing, on request, a standardised declaration to those suppliers that undertake to provide *publicly available telephone services* in accordance with the applicable conditions in the general authorisation.

On Article 23 of the Universal Service Directive (Integrity of the network):

It is proposed that:

- Member States consider applying this article in such a way as to recognise that only those service providers that have control over or ownership of the underlying transport infrastructure are able to ensure the availability of publicly available telephone services in cases of *force majeure*.

On in-line powering of terminals:

- Member States are invited to review any legal obligations imposed in this area, and consider adapting them where necessary in the light of technological and market developments.

It is proposed that:

- NRAs could require suppliers of VoIP services that include access to the public telephone network to inform their customer about the impact of power failures on their service, and in particular how it differs from traditional telephone service. Such information should be provided in the customer contract drawn up in accordance with Article 20 of the Universal Service Directive.

On Emergency Services:

It is proposed that:

- NRAs could require suppliers of VoIP services that include access to the public telephone network to give precise information to customers on how the VoIP supplier deals with access to emergency services and caller location. Such

information should be provided in the customer contract drawn up in accordance with Article 20 of the Universal Service Directive.

- The following principles apply as regards the determination of the emergency service centre to which emergency calls will be routed:
 - in the case of PATS, the actual making of an emergency call, and the provision of caller location information to emergency services should be possible without the user having to input any location information either before making the emergency call or when initially installing the terminal device (i.e. this is the responsibility of the network operator and/or service provider).
 - in the case of publicly available ECS, NRAs could require that the making of a call to the emergency services happens without the user having to provide any location information. The user may be invited to provide location information when initially installing the terminal device at a particular location.
- Market players offering VoIP based services are encouraged to devise and rapidly implement operational solutions for the effective handling of calls to emergency services.
- Market players offering VoIP based services are encouraged to devise and rapidly implement operational solutions for the effective transmission of caller ID and the provision of location information for calls to emergency services.
- NRAs encourage all undertakings offering PATS at fixed locations to provide location information.

The Commission will regularly review evolution in this area.

Other specific issues

On Interconnection

What changes will be needed in the way that PSTN interconnection is currently regulated in light of the growth of Voice over IP traffic?

What interconnection, interoperability and access issues do you see in the market that would hamper the development of Voice over IP?

On Interoperability

What interoperability issues do you see in the market that would hamper the development of Voice over IP?

On Numbering

What broader issues related to addressing do you see in the context of VoIP?

On Extra-Territorial Providers

What issues with extra-territorial VoIP providers do you see?

ANNEX

ANNEX A: RIGHTS AND OBLIGATIONS OF PUBLICLY AVAILABLE ECS PROVIDERS

Publicly Available ECS Obligations	Explanation	Relevant Article(s)
	<i>Note that all obligations applicable to publicly available ECS are also applicable to PATS.</i>	
Notification of the NRA	An undertaking may be required to submit a notification to the NRA, which shall entail not more than a declaration by a legal or natural person of the intention to commence the provision of electronic communications networks or services and the submission of the minimal information which is needed by the NRA to keep a register or list of providers.	AD Art.3(2)
Financing of Universal Service Obligations	<p>In case of levies on undertakings, Member States have the possibility to exempt undertakings which have not yet achieved any significant market presence, if their national turnover is below a specified threshold set by the Member State.</p> <p>As a general rule Member States should share the cost of Universal Service between all classes of service offerings. Any restrictions would need to comply with the principles of transparency, least market distortion, non-discrimination and proportionality.</p>	USD Art.13

<p>Contracts</p>	<p>Where subscribing to services <i>providing connection and/or access to the public telephone network</i>, consumers have a right to a contract. Minimum terms to be concluded in the contract are specified in the Universal Service Directive Art. 20.2 (a) till (g).</p> <p>Where contracts are concluded between consumers and ECS providers other than those providing connection and/or access to the public telephone network, the minimum terms mentioned above shall also be included.</p>	<p>USD Art.20</p>
<p>Quality of Service</p>	<p>Undertakings providing publicly available ECS need to publish comparable, adequate and up-to-date information on the quality of their services.</p>	<p>USD Art.22</p>
<p>Entry information for directory</p>	<p>All organisations <i>which assign telephone numbers</i> to subscribers have to meet all reasonable requests to make available the relevant information, for the purpose of the provision of publicly available directory enquiry services and directories.</p> <p>Note that under the privacy directive subscribers have the right not to be included in the directory.</p>	<p>USD Art.25(2)</p> <p>PD Art.12</p>
<p>Access to directory enquiry & operator assistance services</p>	<p>All end-users with <i>a connection to the public telephone network</i> are to be able to access directory enquiry and operator assistance services.</p> <p>Member States shall not maintain any regulatory restrictions which prevent end-users in one Member State from accessing directly the directory enquiry service in another Member State.</p>	<p>USD Art.25(3)</p>

Conditions attached to use of numbers	Conditions which <i>may</i> be associated with authorisation to use numbers include: designation of service for which the number shall be used, effective and efficient use of numbers; number portability requirements; obligation to provide public directory subscriber information, maximum duration, usage fees for the use of numbers, commitments undertaken in the course of competitive or comparative selection procedure & obligations under relevant international agreements.	AD Annex C
Non-geographic numbers	Member States shall ensure that end-users from other Member States are able to access non-geographic numbers within their territory where technically and economically feasible, except where a called subscriber has chosen for commercial reasons to limit access by calling parties located in specific geographic areas.	USD Art.28
Security Obligations	Publicly available ECS provider must take appropriate technical and organisational measures to safeguard security of its services (if necessary in conjunction with the provider of the public communications network)	PD Art.4
Privacy Obligations	<p>The confidentiality of communications and related traffic data by means of a public communications network and publicly available electronic communications services needs to be ensured</p> <p>Processed and stored traffic data needs to be erased or made anonymous when it is no longer needed for transmission of the communication. Traffic data necessary for billing or interconnection payment purposes may be processed, but only for the period necessary and after consent has been given.</p> <p>Subscribers have the right to receive non-itemised bills</p> <p>Where processing of the location data is allowed with the consent of the user,</p>	PD Art.5,6 7 & 9

	<p>prior to obtaining such consent the user must be informed of the type of location data that will be processed, the purposes and duration of the processing and whether the data will be transmitted to a third party. It is also important that the user can withdraw its consent at any time.</p> <p>Note that the scope of the rights and obligations mentioned in the above section may be restricted to safeguard national security, defence, public security etc. (Art15(1) of the Privacy Directive)</p>	
--	---	--

Note: USD stands for Universal Service Directive; AD stands for Authorisation Directive; PD stands for Privacy Directive

Publicly Available ECS Rights	Explanation	Relevant Article(s)
	<i>Note that all rights applicable to publicly available ECS are also applicable to PATS.</i>	
Right to provide an ECN or ECS	Any undertaking can provide Electronic Communications Networks or Services	AD Art.3 & 4
Consideration of application to use public rights of way.	Granting of rights to install facilities on, over or under public property need to be considered following the principles of transparency and non-discrimination.	AD Art.4 and FD Art.11
Right to negotiate interconnection	Operators of public communications networks have the right and when requested by authorised undertakings an obligation to negotiate interconnection.	AID Art.3 & 4

	The undertaking requesting access or interconnection does not need to be authorised to operate in the Member State where access or interconnection is requested (if it is not providing services and does not operate a network in that Member State)	
Right to have numbers	Any undertaking providing or using electronic communications networks or services has the right to use numbers	FD Art.10 and AD Art.5(3)& (4)
Right to apply for the right to offer Universal Service	No undertaking is a priori excluded from being designated from offering Universal Service	USD Art.8(2)

Note: FD stands for Framework Directive, AD stands for Authorisation Directive and AID stands for Access and Interconnect Directive

ANNEX B: RIGHTS AND OBLIGATIONS OF PATS PROVIDERS

PATS Obligations	Explanation	Relevant Article(s)
	<i>Note that all obligations applicable to publicly available ECS are also applicable to PATS.</i>	
Emergency Services	All end-users of PATS are to be able to call the emergency services free of charge, by using the single European Emergency call number ‘112’.	USD Art.26(1)
Number Portability	All subscribers of PATS can retain their number independently of the undertaking providing the service.	USD Art.30(1)
Integrity & Availability of the Network	In the event of catastrophic network breakdown or in cases of force majeure, the availability of the publicly available telephone services <u>at fixed location</u> needs to be ensured. Providers of <u>PATS at fixed location</u> need to take all reasonable steps to ensure uninterrupted access to emergency services.	USD Art.23
Transparency and publication of information	Transparent and up-to-date information on applicable prices and tariffs and on standard terms and conditions is to be made available to end-users and consumers.	USD Art.21
Directory	Subscribers to publicly available telephone services have the right to have an entry in the publicly available directory. Note that under the privacy directive subscribers have the right not to be included in the directory.	USD Art.25(1) & PD Art.12

PATS Rights	Explanation	Relevant Article(s)
	<i>Note that all rights applicable to publicly available ECS are also applicable to PATS.</i>	
Carrier Selection and Pre-selection	Only PATS suppliers can explicitly request access to carrier selection and pre-selection on the network of an operator with significant market power.	USD Art.19
Right to Number Portability	Only subscribers of PATS have the right to port numbers from other undertakings providing PATS	USD Art.30(1)
Directory	Only PATS subscribers have the right to be listed in a public telephone directory	USD Art.25(1)

ANNEX C: RIGHTS AND OBLIGATIONS OF PUBLIC TELEPHONE NETWORK OPERATORS

Obligations	Explanation	Relevant Article(s)
Emergency Services	Undertakings which operate public telephone networks are to make caller location information available to authorities handling emergencies, to the extent technically feasible.	USD Art.26(3)
Integrity & Availability of the Network	The integrity of the public telephone network at fixed location and, in the event of catastrophic network breakdown or in cases of force majeure, the availability of the public telephone network needs to be ensured.	USD Art.23
Facilities	<p>National Regulatory Authorities <i>are able</i> to require all undertakings that operate public telephone networks to make available to end-users following facilities (subject to technical feasibility and economic viability):</p> <ul style="list-style-type: none"> - Tone dialling or Dual Tone Multi-Frequency (DTMF) - Calling Line Identification (CLI) <p>Note that presentation and restriction of calling and connected line identification is subject to a number of conditions to protect the privacy of the calling and/or called person</p>	<p>USD Annex I Part B</p> <p>PD Art.8</p>
European Telephone Access Codes & Access to European Telephony Number Space.	<p>The '00' code is the standard international access code.</p> <p>All undertakings that operate public telephone networks have to handle <i>all</i> calls to the European telephony numbering space.</p>	USD Art.27(1) & (2)

'Public telephone network' means an electronic communications network which is used to provide publicly available telephone services; it supports the transfer between network termination points of speech communications, and also other forms of communication, such as facsimile and data (Art.2(b) of the Universal Service Directive).