

Guidelines for VoIP Service Providers

Consultation Document

Austrian Regulatory Authority for Broadcasting
and Telecommunications (RTR-GmbH)

Vienna | April 2005

Executive Summary

This consultation document aims to clarify the position of the Austrian Regulatory Authority for Broadcasting and Telecommunications (RTR) with regard to the regulatory treatment of Voice over IP (VoIP) services in Austria. It describes regulatory guidelines for providers offering VoIP services in Austria. Interested parties are invited to submit their comments on this consultation document. A final version of the "Guidelines for VoIP Providers" is planned to be published in June 2005. Due to the fact that developments in VoIP regulation attract attention from an international auditorium, it was decided to publish the consultation document and the final Guidelines document in English. Regarding feedback to the consultation document, comments are welcome both in English and German.

The RTR position on VoIP regulation is based on the technology neutral rules of the Austrian Telecommunications Act 2003 (TKG 2003) and related ordinances as the Numbering Ordinance (KEM-V), the results of the national consultation on VoIP in June 2004 as well as RTR's comments on the European Commission Consultation Document regarding "The treatment of Voice over Internet Protocol (VoIP) under the EU Regulatory Framework" of August 2004. Furthermore this document takes into consideration last years work in the VoIP Subgroups of the IRG Fixed Networks WG and the ECC Numbering, Naming and Addressing WG, respectively.

It is important to distinguish between two kinds of regulation. On one hand there are the service definitions of the TKG 2003, mainly those for Electronic Communication Services (ECS) and Publicly Available Telephone Services (PATS), with PATS being a special category within ECS. On the other hand there are regulations concerning market definition and market analysis that might lead to ex-ante obligations for providers with significant market power (SMP) in one or more of the corresponding markets.

Classification as PATS does not automatically include a service in one of the defined relevant markets for provision of PATS. This document deals only with classification of services and not with market definitions and analyses.

Although this paper to some extent interprets the TKG 2003 with regard to VoIP, it should be noted explicitly that the comments in this consultation document do not prejudice any decisions of the Austrian Telekom Control Commission (TKK).

The document identifies two basic scenarios:

- VoIP services including PSTN access that are regarded as PATS
- Internet Only VoIP services that neither technically nor economically comprise the service element of packet transport and therefore are no ECS at all (and therefore no PATS too).

Number usage conditions in Austria are technology neutral, i.e. also geographic numbers may be used as long as the usage conditions are fulfilled (fixed network termination point). For nomadic services two other number ranges may attract the attention of VoIP service providers – location independent fixed network numbers (0720) and the special number range devoted exclusively to ENUM based services (0780).

Finally it shall be emphasised that the conclusions in this document are the result of applying the current legal framework in Austria to typical VoIP scenarios. Should it become necessary to regulate certain Internet applications that are currently outside the legal ECS/PATS framework for various reasons this would only be possible by changing the legal basis in the TKG 2003 (e.g. the definition of an ECS).

1 Scope of this Document

This consultation document aims to clarify the position of the Austrian Regulatory Authority for Broadcasting and Telecommunications (RTR) with regard to the regulatory treatment of Voice over IP (VoIP) services in Austria. It describes regulatory guidelines for providers offering VoIP services in Austria. Interested parties are invited to submit their comments on this consultation document. A final version of the “Guidelines for VoIP Providers” is planned to be published in June 2005. Due to the fact that developments in VoIP regulation attract attention from an international auditorium, it was decided to publish the consultation document and the final Guidelines document in English.

The RTR position on VoIP regulation is based on the technology neutral rules of the Austrian Telecommunications Act 2003 (TKG 2003) [1] and related ordinances as the Numbering Ordinance (KEM-V) [2], the results of the national consultation on VoIP in June 2004 [3] as well as RTR’s comments on the European Commission Consultation Document regarding “The treatment of Voice over Internet Protocol (VoIP) under the EU Regulatory Framework” of August 2004 [4, 5]. Furthermore this document takes into consideration last years work in the VoIP Subgroups of the IRG Fixed Networks WG [6] and the ECC Numbering, Naming and Addressing WG [7], respectively.

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2 General Considerations and Classification

2.1 What is VoIP?

VoIP is the acronym for Voice over Internet Protocol (IP) and refers to the use of IP transport technology for delivery of voice information. In general, this means sending voice information in digital form in packets rather than in the traditional circuits of the public (circuit) switched telephone network (PSTN). The protocols used range from SIP and H.323 standardized by IETF and ITU to proprietary solutions like the Skype protocol. VoIP allows the transmission of voice information over IP networks, regardless of the network’s dimension (local, regional or global) and general characteristics (closed network or public Internet).

It is commonly acknowledged, that VoIP – especially Internet-based applications – is one of the technologies that will significantly affect the electronic communications sector over the next years. It offers the potential to increase competition, to stimulate new and innovative services for the citizens and to reduce operator’s costs. On the other hand VoIP is seen as a possible threat to traditional telephony operators still generating significant revenues with traditional circuit-switched technology.

VoIP comes in different flavours and can be found in many different scenarios. It is therefore difficult to set universal guidelines which cover all possible scenarios and applications involving VoIP.

This document explicitly focuses on VoIP services that have to be classified as publicly available telephone services (PATS) as defined in Art. 3 clause 16 TKG 2003. Therefore in

the following chapters VoIP services being PATS are clearly distinguished from VoIP services being non-PATS.

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2.2 What is an Electronic Communication Service?

The EU regulatory framework as well as the TKG 2003 generally defines an Electronic Communication Service (ECS), to be

- A service normally provided for remuneration
- A service which consists wholly or mainly in the conveyance of signals on Electronic Communication Networks [...]

There is no doubt from a technical point of view that conveyance of (electronic) signals has to be realised by means of an Electronic Communication Network (ECN). Taking this for granted, only two generic possibilities regarding the provision of an ECS remain:

- ECS provider at the same time is ECN operator or
- ECS provider is not ECN operator on his own but has a (resale/wholesale) contract with a third party ECS/ECN operator

In the latter (resale/wholesale contract) case the ECS provider purchases the ECS provided by the third party ECS/ECN operator on the wholesale market and sells it to his own end customers. According to the current regulatory framework, also a reseller of ECS is to be treated as an ECS provider.

Comparing the traditional PSTN service provision model with the typical IP (and Internet) service provision model, significant differences have to be recognised:

- In the world of vertically integrated PSTN networks with routing and transmission technically combined with call and feature control, all PATS providers (including indirect access operators) are therefore at the same time ECS providers (at least by means of reselling an ECS or ECN service).
- The typical IP (and Internet) service provision model is completely different. There is a fundamental split between the rather “dumb” network that essentially only provides the global transport of data packages based on IP addresses, and intelligent applications or services that reside in the nodes at the edge of the network (e.g. application servers or user IP terminals) and rely on the network’s transport functionality.

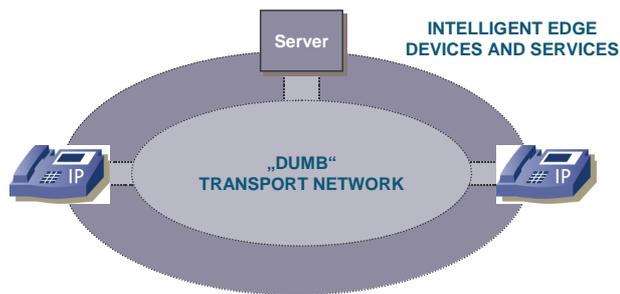


Figure 1: Fundamental Split in IP (Internet) Service Provision Model

The key Internet service enabling the global transport of data packets is Internet Connectivity. Internet Connectivity, as provided by Internet Backbone Providers (on wholesale level) and ISPs, (on retail level) undoubtedly is a classic ECS. On top of this basic ECS "Internet Connectivity" within the "Internet Access" product of ISPs numerous intelligent Internet services and applications are provided by third party providers, e.g. based on corresponding application servers. Both third party service provider and the end customer have to be connected to the Internet and be able to use the Internet Connectivity without restrictions.

For classification of such an intelligent service (e.g. a server based VoIP service) as ECS or non-ECS it has to be investigated if the service offered to the end customer by a specific third party service provider wholly or mainly comprises the ECS Internet Connectivity or not.

In typical Internet-only VoIP applications (i.e. without access to the PSTN) the VoIP provider in essence provides to his subscriber the called party's IP-address only and has no function or responsibility with regard to the transport of the IP voice packets between VoIP users. Therefore it would not be reasonable if a VoIP subscriber complains to his VoIP provider in case of poor voice quality, as the transmission of IP voice packets (i.e. the ECS part of the combination of the two generally totally independent products used by the VoIP subscriber) is not part of the VoIP service. Transmission of voice packets is the technically and contractually independent service of the VoIP user's ISP on request of the user's terminal software.

If therefore the transmission of IP voice packets between the calling party and the called party is not part of the VoIP service (no corresponding cost elements within the VoIP service price, no (re)selling of Internet Connectivity) it has to be recognised, that such a VoIP service does not mainly consist in the conveyance of electronic signals (i.e. IP voice packets in this case) which would be the necessary prerequisite for a classification as ECS (see Figure 2) according to the European framework and the TKG 2003.

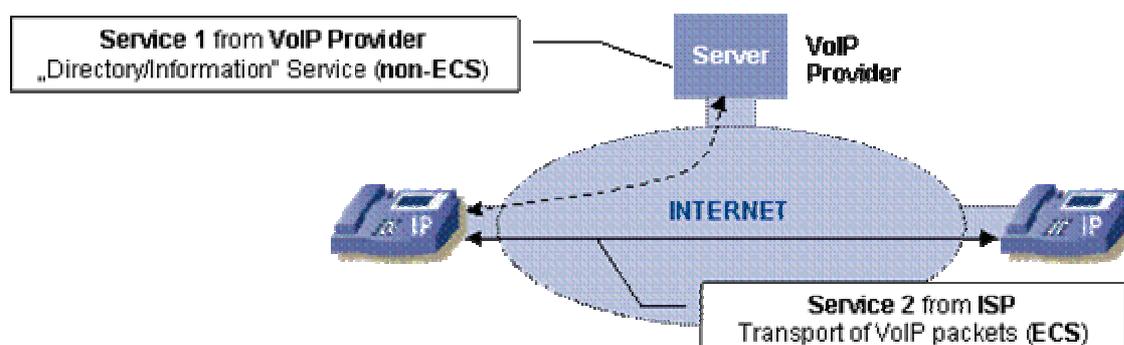


Figure 2: ECS and non-ECS involved in Internet based VoIP service provision model

It should be noted that the “associated facility” as defined in the legislation is an additional facility (i.e. an add-on) to a basic ECN or ECS of a specific provider (and therefore has to be included in regulatory rights and obligations of this provider regarding ECN and ECS). In the above case of Internet-only VoIP services there is no basic ECN or ECS supplied by the VoIP provider at all and therefore the “associated facility” aspect is not applicable in this context.

As a consequence, Internet-only VoIP services of the above kind are generally classified as non-ECS. As the TKG 2003 defines publicly available telephone service (PATS) as a sub-category of ECS, Internet-only VoIP services automatically are non-PATS, as well.

2.3 What is a Publicly Available Telephone Service (PATS)?

As stated in the EU Regulatory framework as well as article 3 clause 16 TKG 2003 a Publicly Available Telephone Service (PATS) is defined to be a

- service available to the public
- for originating & receiving¹ national and international calls
- and access to emergency services
- through a number or numbers in a national or international telephone numbering plan.

Similar to reselling ECS qualifying as ECS, reselling PATS qualifies as PATS. If a provider purchases a PATS on the wholesale market (e.g. a wholesale termination product) to (re)sell this service to his own end customers, this provider automatically is to be treated as a PATS provider himself (see Figure 3).

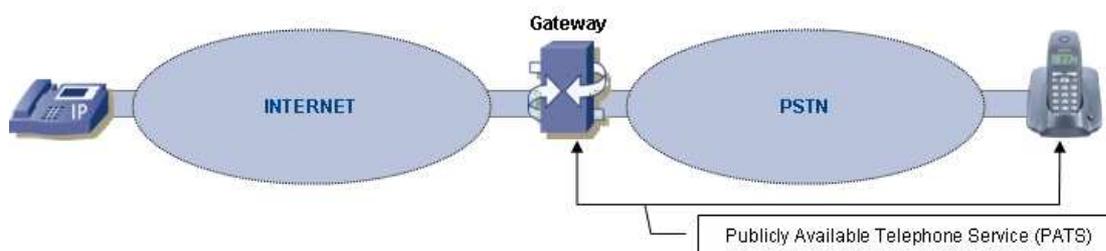


Figure 3: Reselling of PATS

As a consequence, all VoIP services including access to and/or from the PSTN (by means of an IP gateway), generally are classified as PATS. This is because reselling of PATS (from Gateway to called party) turns the VoIP provider into a PATS provider.

¹ Note: The Austrian Telecommunications Act (TKG 2003) does not mention “originating and receiving calls” but of “holding a telephone conversation” in line with the official German transcription of the EU directives.

2.4 Classification of VoIP Services

Based on the current legal framework and the considerations from chapters 2.2 and 2.3 taken into account, RTR defines two generic classes of publicly offered VoIP services to be distinguished as follows:

- **Class A VoIP services:** VoIP services that provide access to and/or from the PSTN and that classify as PATS (and therefore as ECS, as well)
- **Class B VoIP services:** VoIP services that only provide voice communication between Internet subscribers without provision of access to the PSTN and that classify neither as ECS nor as PATS.²

3 Access to Emergency Services

The PATS definition (see chapter 2.3) can be interpreted in a way treating the provision of access to emergency services as a valid discrimination criterion between different services (PATS and other ECS-only³ services) from a regulatory point of view. This topic has been raised on several occasions with the conclusion that the regulatory framework is not absolutely clear at this point and leaves room for interpretation. If the definition of PATS indisputably would require access to emergency services as a mandatory prerequisite for classification as PATS, it would not be consistent to additionally require access to emergency services from all PATS providers in Art. 26 Universal Service Directive. If a service that does not include access to emergency services would therefore not qualify as PATS at all, the requirement would become useless as only PATS providers are addressed.

RTR therefore suggests treating access to emergency services as a feature element of PATS services. The provision of this feature should not be decisive on PATS or ECS-only classification.

The current legal requirements regarding the provision of access to emergency services take into account technical and commercial feasibility:

- Section 19 para 1 (1) of the KEM-V mandates Emergency Service Providers in cooperation with Providers of Electronic Communications Networks (ECN) and Providers of Electronic Communications Services (ECS) to guarantee access to the emergency service from all public communication networks. For the routing to the emergency service centre the specific service requirements within the bounds of technical and commercial possibilities (restrictions) have to be taken into account.
- Section 98 and section 92 para 3 (6) of the TKG2003 mandate in the case of an emergency call providers to provide location data to Emergency Service Providers on demand. Location data is defined as data being processed in the ECN and giving information on the geographic location of the telecommunications equipment.
- Decision Z20/01 Annex 16 and Decision Z2/02 Annex 16 of the Austrian Telekom Control Commission (TKK) mandate two alternative options of routing an emergency call to an appropriate emergency response centre. Subsequently this is to be found in the Reference Interconnection Offer of Telekom Austria. However, as the caller

² Note: In this scenario it is assumed that the end customer's Internet Access product comprises "free" access to the Internet and is not restricted with respect to outgoing or incoming VoIP communication, may it be of technical or of contractual nature by the ISP providing the Internet access.

³ ECS-only means ECS / non-PATS

location is not necessarily available to the VoIP provider and technical possibilities (restrictions) have to be taken into account, routing to an “appropriate” emergency centre is not seen as a legal blocking point for VoIP providers in Austria.

Despite the formal legal situation providers of VoIP services are advised to do their utmost, to provide subscribers with quality access to emergency services to meet the user's expectations. Negative experiences with emergency calls on VoIP could lead to amendments in the legislation.

RTR and the Federal Ministry of Traffic, Innovation and Technology (BMVIT) already set up a working group (“Plattform Notrufe”) bringing together involved players in the field of emergency calls inter alia seeking both short and medium-to-long term solutions for arising problems in the context of VoIP services.

4 General Authorisation

Art. 14 TKG 2003 gives a service provider the commercial freedom to offer services that qualify as ECS and hence to operate with the rights and obligations that apply to a provider of ECS; or to offer services that qualify as PATS, and hence to operate with the rights and obligations that apply to a provider of PATS. The legally relevant classification of a VoIP service offered has to rely on transparent and objective criteria. Classification of a VoIP service as Class A or Class B VoIP service is the responsibility of RTR and is carried out during the course of the general authorisation process necessary for all providers of ECN and ECS.

According to article 15 para 1 TKG 2003, all providers of ECN and ECS have to notify the Regulatory Authority (RTR) of a planned provision of a public ECN or ECS with the Regulatory Authority being obliged to issue a general authorisation. As Class B VoIP services neither classify as ECS nor as PATS, provider of Class B VoIP services are not bound to the general authorisation regime. This regime only applies to Class A VoIP providers.

5 E.164 Numbering Resources

The KEM-V set in force in April 2004 has been designed with regard to technological neutrality and with emerging VoIP services already taken into account. Telephone numbers are assigned to providers regardless of the technology used, be it traditional circuit-switched or packet-switched. Therefore providers of telephone services based on VoIP can utilize numbers from all numbering ranges defined by the KEM-V, as long as the specific conditions of usage for each numbering range are fulfilled. It should be mentioned that porting of numbers to another service provider is only allowed if that service provider is able to fulfil the specific usage conditions of the respective number range.

5.1 Geographic Numbers

Geographic numbers are defined as national numbers according to Art. 36 KEM-V and are designated for addressing fixed-location network termination points assigned to local networks according to Art. 37 para 2 KEM-V. Such a network termination point is defined by Art 3 clause 16 TKG 2003 as a physical point together with the corresponding technical specifications providing subscribers with access to a public communication network. The use of virtual network termination points is not allowed; also the network termination point cannot be located at the gateway between PSTN and IP network, because there is no subscriber

access at the gateway location. Generally, geographic numbers are to be used for providing a telephone service.

As mandated in Art. 36 KEM-V, the usage of geographic numbers is restricted to telephone services provided at fixed locations and requires corresponding technical provisions. Based on the technology-neutral rules in the KEM-V, VoIP services using geographic numbers (in principle) are possible and geographic numbers are already assigned to VoIP operators in Austria. The required technical provisions for fixed usage demand at least some kind of agreement with the end customer's IP access provider if the physical access is not provided by the VoIP provider himself. Article 39 para 1 KEM-V mandates an ECS provider to cooperate with the provider of the corresponding ECN, in order to technically guarantee the fixed usage on basis of an existing geographically fixed network termination point associated with the geographic number used.

Despite the regulations for geographic numbers outlined above that do not allow nomadic use of geographic numbers, it is possible to use geographic numbers in a "pseudo-nomadic" way, i.e. for certain scenarios the difference is practically not visible for the calling and called users.

Unrestricted nomadic use of a geographic number would mean, that the geographic number in each case is associated with the current network termination point used by the user (e.g. an internet access point) and therefore calls from PSTN towards this number would be routed accordingly and calls originating from that point would use the geographic number as the CLI⁴. One could say that nomadic use means that the number "is" where the (nomadic) user is.

Now, in the pseudo-nomadic scenario on the contrary there has to be a fixed network termination point identified by the geographic number where the according user has access to PATS. Nevertheless the network provider of that network termination point may provide a feature that automatically activates call forwarding to any destination on the internet after recognising a login of the according subscriber (0)720 on the internet. As call forwarding destination number a (0)720 number could be used. As a consequence of the call forwarding incoming calls to the geographic number reach the nomadic user in dependently of his location on the internet.

For outgoing calls of the above user independent of the current location his geographic number may be inserted by the VoIP provider according to the CLI regulations in KEM-V. Only in case of emergency calls not origination from the location identified by the subscriber's geographic number KEM-V use of geographic number as CLI is prohibited and use of the (0)720 number required by KEM-V. This leads to according "nomadicity" information at the emergency response center. The (0)720 number may also be used for callback to the calling user.

Besides that, there are two main considerations regarding the use of geographic numbers for (nomadic) VoIP services:

- Today emergency calls from geographic numbers carry important implicit information on the calling party's location. Using static directories the relevant street address associated with the geographic number can easily be investigated by an emergency service response centre or alternatively is available from the calling party's telephone provider on request. This is especially important in case of emergency calls from heavily wounded persons, very upset people or children that may have heavy difficulties or are even unable to provide a reliable street address for the emergency

⁴ CLI: in this document CLI stands for "number of the calling party" according to the TKG 2003 and the KEM-V (and not for a parameter within the ISUP specification).

service response. This benefit would vanish if geographic numbers are increasingly used for nomadic VoIP services in case of emergency calls. Therefore any change in this respect should be carefully discussed with the emergency service operators in advance. As mentioned in chapter 3, RTR and BMVIT already set up a working group dealing with emergency calls in VoIP environments.

- As geographic numbers are assigned in blocks there is realistic danger of block shortages if geographic numbers are assigned to requesting VoIP providers globally without any further prerequisite. Potential counter measures like downsizing of number blocks or introducing an obligation for PATS providers to “port” previously unused numbers to end customers of other PATS providers would need intense discussion with the current network providers on potential unwanted consequences.

5.2 Numbering Ranges (0)720 and (0)780

Two numbering ranges are attracting special attention from VoIP service providers:

- Location-independent fixed network numbers – (0)720
- Numbers for convergent services – (0)780

While location-independent fixed network numbers are designated for use with telephone services (PATS) enabling the end customer to use the number independent of location (and therefore allow offering nomadic VoIP services), numbers for convergent services have a much more general usage scope – they are designated for use with communications services (ECS) enabling interoperability between PSTN and public IP networks by means of according entries in the ENUM database.

The usage conditions defined in the KEM-V for both number ranges mandate the focal point of usage on Austrian territory.

6 References

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