REVISED GUIDELINES FOR THE IMPLEMENTATION AND PROVISION OF VOICE OVER INTERNET PROTOCOL (VoIP) SERVICES 2021

1 INTRODUCTION

The pervasive nature of the Internet and its attendant technologies has led to a wide spread transition from pure Public Switched Telephony Networks (PSTN) to a convergence of PSTN and Internet Protocol (IP) networks.

This convergence has consequently led to transmission of audio telephony traffic through the IP networks, using Voice over IP (VoIP) technologies. The VoIP technologies confer economic advantages to users, as well as stimulating competition in the telephony market and innovations.

These guidelines serve to steer the industry into the adoption of VoIP technologies in the roll out of telephony services alongside other related innovative voice technologies.

2 DEFINITIONS

2.1 Voice over Internet Protocol (VoIP)

VoIP shall be defined as the transmission of telephony traffic over IP based networks. The IP based networks could be managed, namely Local Area Networks (LANs) and Wide Area Networks (WANs) or public network, namely, the Internet.

3 TECHNICAL IMPLEMENTATION

Advances in technology allow telephone calls to be delivered through the Internet and over IP networks. The Authority encourages the deployment of latest telephony and computing technologies in the delivery of affordable and innovative services to consumers.

The deployment of these new and modern technologies has the potential to confer benefits to operators, including optimization of the public switched telephone network (PSTN) and transmission infrastructure, reduction of network installation and maintenance costs, increased network redundancy and resilience, and facilitation of support and flexibility in the provision of innovative and next generation services.

A situational analysis of the use of VoIP services reveals the following modes of service provision and implementation:

3.1 PC to PC

The VoIP communication is established by individual users who make calls via the Internet from one computer to another. This form of communication comes at no additional cost to the users other than the Internet connectivity charges.

Since the service is not for commercial purpose, no regulatory requirements will be needed for this self-provided or Do-it-yourself (DIY) VoIP classification.

3.2 Smartphone, Computer and IP Phone to PSTN

Due to the limitations associated with availability of PCs and Internet connectivity and the high cost of international calls delivered over legacy TDM switched networks, telephone calls can be originated from PCs or IP phones and terminated on the PSTN.

The only significant cost for these calls (usually long distance and International calls) is the local call charge applied by the terminating PSTN operator.

In this classification the caller would originate a call from a PC or an IP telephone by dialling a complete traditional E.164 number that would be terminated on PSTN over the Internet. The network architecture of the IP to PSTN topology is controlled by VoIP gateways that define and route the call to the terminating gateway.

On the remote end, the terminating VoIP gateway connects to the local PSTN network. SIP, H.323 and MGCP VoIP protocols have been developed to support VoIP and have been utilized to interconnect the IP network to the PSTN.

To roll out this type service, a local entity will be required to obtain an Application Service Provider (ASP) license from the Authority to provide local Smartphone, Computer and IP Phone to PLMN and PSTN Networks. The local interconnect and termination charges shall not be discriminative to the VoIP provider but shall be similar to those charged between any two PLMN or PLMN and PSTN.

However, where such VoIP calls originate from outside the country, the conveying entity terminating the traffic to local networks will be required to declare the origin of such calls to the terminating network by way of providing clear Caller Line Identification (CLI) number to the terminating network. Failure to provide this declaration shall be an offence under the Kenya Information and Communications Act, 1998.

The conveying party and the terminating network will therefore be expected to enter into commercial agreements to facilitate such traffic termination to local networks. The terminating network shall not unjustifiably refuse to terminate the VoIP calls from the conveying party.

3.3 IP Phone to IP Phone

IP network architecture differs from the traditional TDM Switched network as the underlying Internet Infrastructure consists of a dumb core network and Intelligent Customer Premise Equipment (CPEs) while the PSTN consists of an intelligent core network and dumb CPEs.

The application of IP to IP phone conversations are common within Intra-corporate private networks i.e. local and wide area networks. The utilization of VoIP reduces the cost of communication in corporate communications between branch offices.

This is a local VoIP service provider offering end-to-end VoIP (IP Phone to IP Phone) services, and shall require an Application Service Provider (ASP) license and use the leased infrastructure for delivery of the end- to – end VoIP services to its local clients.

3.4 PSTN/PLMN via IP to PSTN/PLMN

Most operators are today migrating traditional circuit switching systems based on TDM technology to IP technology particularly for the provision of long distance services due to the inherent technical limitations and cost of implementation. Carriers and telecommunications operators have adapted and integrated VoIP switching for long distance communications reducing overall costs and improving quality in seamless end-to-end connection to subscribers.

In this model, end-users would dial a traditional E.164 number, and the call is routed from the PSTN/PLMN through a VoIP gateway over an IP network and offloaded to the other PSTN/PLMN via another VoIP gateway and vise-versa.

To facilitate this arrangement fixed and mobile operators would enter into commercial bilateral and service level agreements (SLAs) for call termination to reduce call delivery costs with VoIP carriers. VoIP carriers or operators ' setup VoIP Gateways and platforms to interface with local PSTN/PLMN networks globally creating virtual VoIP networks for long distance calls completely transparent to end users.

As a result, they become carriers of telephony on the existing infrastructure. In this arrangement VoIP operators would purchase bulk voice minutes for resale within a country for example through the use of calling cards, where the end user would be required to dial a toll free or unique number to gain access to long distance telephony services.

Roll out of IP carrier services (IP platform and gateways) shall require an Application Service Provider (ASP) license from the Authority to provide the local IP carrier services. VoIP service providers shall however lease transport network from the existing infrastructure providers.

4 OBLIGATIONS

For successful implementation of VoIP services, relevant licensees are required to meet certain obligations, which are detailed in their license, including but not limited to:

4.1 Interconnection

As per the licence structure, Application Service Provider (ASPs), do not own infrastructure, and are therefore expected to utilize the infrastructure of licensed network operators to provide and/or interconnect their systems to facilitate provision of VoIP services . Network operators shall be required to provide interconnection in accordance with the prevailing Regulations.

4.2 Universal Access

Licensees using VoIP technologies must also ensure equitable access to services are subjected to universal services obligations as may be prescribed by the Authority.

4.3 Numbering, Naming, Addressing And Number Portability

In order to access end-users globally, irrespective of technological applications, licensees deploying IP based technologies shall be eligible for assignment of suitable numbers to facilitate their service provision. They shall also be required to comply with the Authority's numbering plan including Number portability prescriptions.

4.4 Calling Line Identification Presentation (Clip)

Operators shall ensure that calls terminated via VoIP and other technologies displays the full details of the originating call. Failure to do so will be a breach of Kenya Information and Communications Act, 1998 and shall attract appropriate measures including penalty and/or revocation of the license.

4.5 Quality of Service

Whereas VoIP services are delivered over computer networks , which are best effort oriented, providers of VoIP service shall implement efficient routing mechanisms and appropriate pricing. VoIP subscribers must be informed of both quality of service and pricing. In addition, the service providers shall adhere to quality of service standards as outlined out by the Authority from time to time.

4.6 Legal Intercept

The provision of VoIP services shall be subject to enforcement and inspections by the Authority to ensure that providers adhere to the provisions of the license, the Regulations, the Act and the laws of the country.

4.7 Billing

VoIP providers shall be required to adhere to Act, Regulations, license conditions, determinations and other guidelines with regard to billing accuracy.

Whereas traditional telephony services discriminate between international and local telephony calls, traffic on the Internet cannot be categorized along international or local dimensions, as there are no geographical demarcations on the Internet. As such VoIP calls shall all be treated as Internet traffic without distinctions based on origin or destination of the calls.

4.8 Reporting

VoIP shall be required to provide regular reports as per the license conditions. The Authority may request for any information considered useful for the purpose of regulation and dispute resolution.

4.9 Type Approval

All equipment used by the VoIP service providers (both customer premise equipment and service provider equipment) shall be subject to Type approval by the Authority.

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