

## Consumer Awareness to Protect Internet Users - A Scenario

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### ABSTRACT

This Paper focuses on the “encouragement” approach which communication has taken. This is because in order for QoS initiatives to be meaningful to consumers the information must keep pace with changing technological and market developments. The communication providers are best placed to provide the relevant QoS indicators in a timely fashion. However, the ability to provide meaningful data does not necessarily mean that communication providers will be willing to provide it without regulatory intervention. As competition increases, there are clear incentives for providers with a high quality of service to produce and promote timely and accessible QoS information for consumers. Conversely there is no economic incentive for those providers offering a low quality of service to do the same. The trends are likely to affect both the type and quality of the services offered in the market. For example, with some routine Internet activities such as web browsing and email all that is normally required is sufficient bandwidth. The IP-protocol should not as rule experience any difficulty with delay, jitter etc. However as consumers demand more interactive functions such as conversations and video-conferencing, a low level of end-to-end delay and jitter, low packet loss, and a guaranteed bandwidth are all needed to ensure standards are maintained.

**Key words:** Consumer Awareness, Internet, Cyber Crime.

### INTRODUCTION

In the Present Network Environment, using IP connectivity to support fixed, wireless and mobile voice, video, data, and broadcast TV services, provides new opportunities to increasing consumer choice. It also raises new challenges for Quality of Service (QoS) and for consumer protection. Consumers have certain expectations of the quality of their communication service, primarily based on their past experience of the well established PSTN voice quality.

Consumers need to be equipped with the necessary skills and information to make fully informed purchasing decisions. They need access to comparable, reliable and independent information about price, quality and service features to empower them to switch with confidence. Even the most well informed consumer may still need protection against threats to cyber security, such as malicious virus

dissemination via SPAM, the transmission of harmful content, etc.

### Quality of Service

The Present Internet network support a converged communication framework using internet protocol (IP) based packet technologies on top of various transport technologies eg cable television (CATV), wireless and mobile technologies, etc. This facilitates the provision of multiple services to consumers, including voice, data and multimedia. The associated disaggregating of the service or application layer from the transport layer reduces the barriers for consumers wishing to access services provided by competing service providers. There are number of QOS – related aspects that need to be addressed for Present Networks, when deployed. These include

- ‘ Service disruption during the migration from one network to the other.
- ‘ Management of end-to-end voice quality of service

- Access to emergency services and emergency call location
- Number Portability
- Differentiation of QoS.
- Network Integrity
- Network Security

From a customer perspective, quality of service may relate to the communication service itself eg. voice quality, picture quality, delay, speed, etc. It may also describe the quality of customer experience when interacting with the communication provider eg whether the bills received are accurate, how quickly a service is provided, how likely it is that there will be a fault with the service and how long the provider takes to repair it, how long it takes the call centre staff to answer the telephone and how helpful they are, etc. To avoid disappointment and complaints later on, customers need to be aware of the service levels they can expect before signing a contract for a product or service. This is especially important where a bundle of services is provided under the same contract.

**Management of end-to-end voice quality of service**

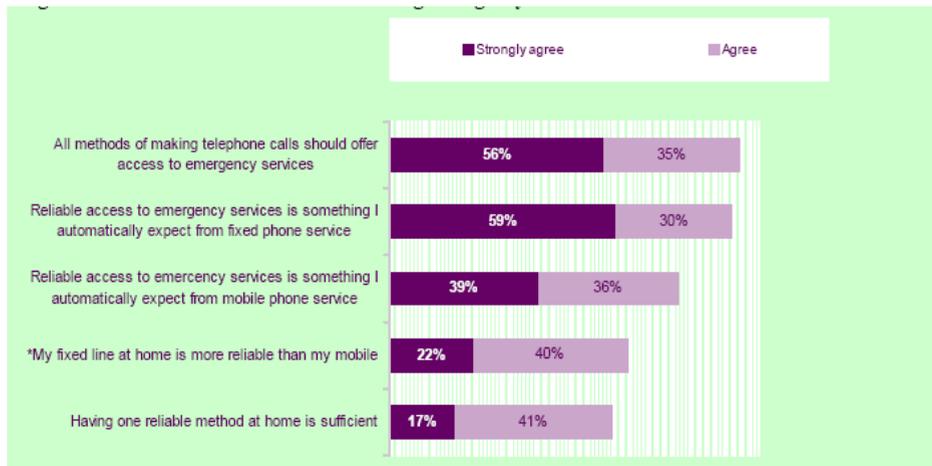
The reliability and performance of a VoIP (Voice over Internet Protocol) service depends on a number of elements. VoIP traffic will typically include signaling and media data, which take diverse routes through an IP network. For example, for a VoIP service running over an xDSL network,

reliability will be affected by the quality and reliability of the PC, software and adaptor; the local access; the broadband access network (including the Digital subscriber line access multiplexer (DSLAM), Asynchronous transfer mode (ATM) and IP network); the core IP network and Internet peering arrangements; the service and application layers (e.g. home subscriber server, call server and media gateways) and interconnection into other networks.

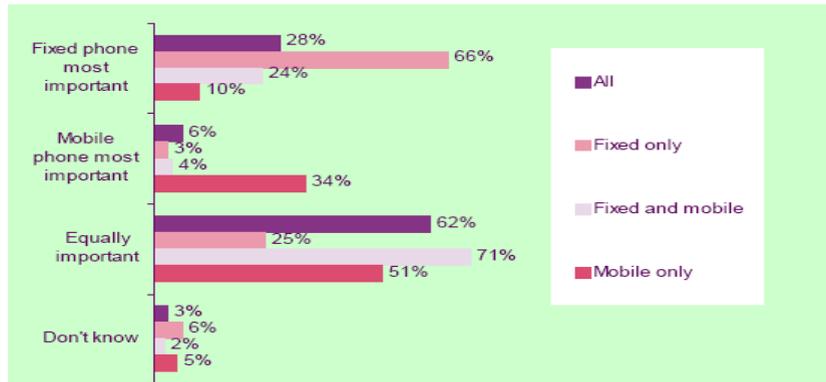
In the case of an xDSL service, use the associated PSTN line for emergency access to ensure that in the event of power failure emergency calls would be routed to the associated PSTN line by use of software or control in the CPE/broadband adaptor. The distinctions between mobile and fixed services are also likely to become harder to draw in future as new services start to offer some form of mobility and enhanced functionality.

**Access to emergency services and provision of emergency location information**

VoIP services are dependent on mains power for their terminal equipment. Some VoIP services may not offer any access to emergency calls or reliability of the access may be affected by a power cut or power failure, or through failure of a broadband connection. As in the following figure 1 and figure 2, consumer expectations do not seem to accord with the actual situation with most expecting access to emergency services through their fixed line phone service.



**Fig. 1: Consumer attitudes towards accessing emergency services**



**Fig. 2: Most Important device in home for reliable access to emergency services**

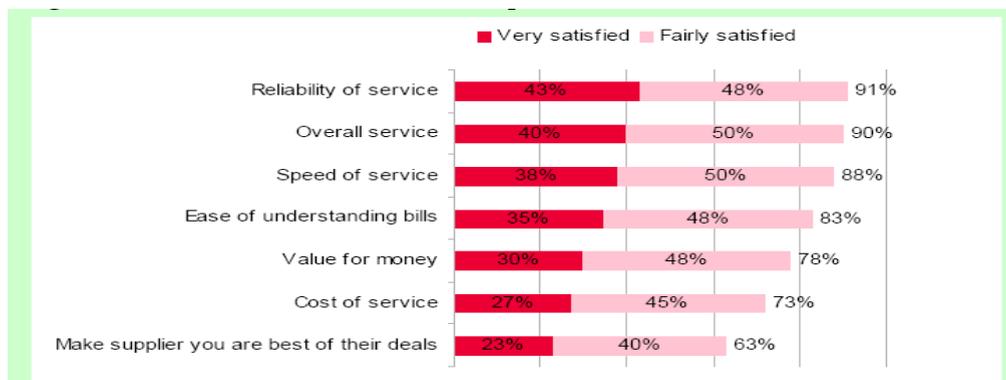
**Number Portability**

Number portability plays an important role in the promotion of competition and benefits consumers by removing the cost and inconvenience of having to change telephone numbers when switching providers. The central issue in number portability is how communication providers route calls and messages to numbers that have been ported. In order to route calls correctly, providers need to know the location of the destination number, based on a number range analysis.

about the quality of service of a communication services, based on previous experience of the well-established PSTN, mobile and Internet services. Consumers are highly unlikely to consider QoS from a technical perspective. Rather, they tend to focus on customer-related aspects of the service they receive from providers eg reliability, speed, etc. This is illustrated in Figure 3 below, which shows the results of an independent consumer survey undertaken for NASSCOM, in which consumers are asked to express their satisfaction with different elements of their internet service.

**QoS: What matters for consumers?**

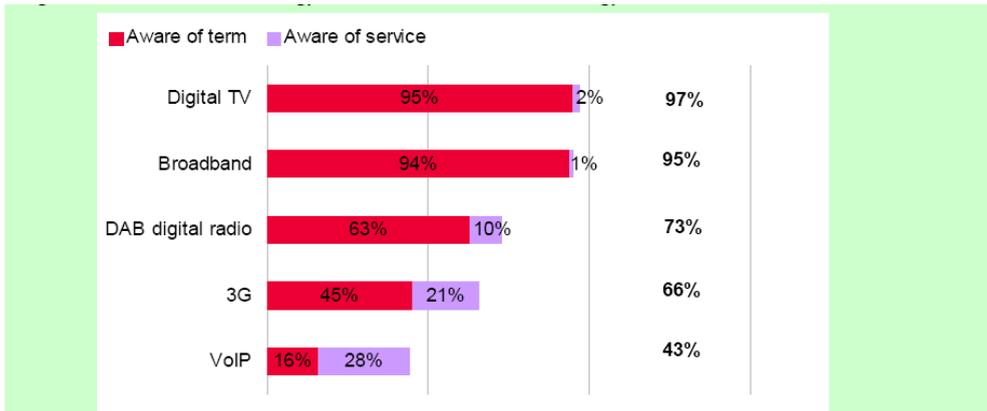
Consumers have certain expectations



**Fig. 3: Satisfaction with Internet Service Providers**

Quality of service is consistently mentioned by consumers as the most important factor after price when choosing a new supplier.

Consumers are increasingly likely to have experienced degraded quality or loss of service eg on international calls over satellite and/or Digital Circuit Multiplication Equipment (DCME)



**Fig. 4: Awareness of Technology and the Services this technology**



**Fig. 5: Importance placed on Cost and Quality when choosing a new supplier**

compression, mobile to mobile calls with low signal strength and “free” VoIP services. These may alter their perception of and satisfaction with the overall QoS provided. Some consumers may demand a higher quality of service than they currently experience, which could be provided, for example, through wide-band speech 22, or expect the same level of service from a different technology, for example IPTV.

Consumer may be prepared to pay more for faster Internet speeds and access to new content and applications. In turn, this may lead to a more transparent quality of service-related pricing

mechanisms, provided consumers demand the relevant QoS information needed to differentiate between the products and services on offer. What is not clear is whether consumers will be prepared to “trade” quality for the more choice of products, services and features.

**Consumer Protection and cyber security:**

Over the past decade, the internet has grown to become a central part of the cultural and economic life of many people around the world. The internet is a powerful platform for the distribution of services to their intended audiences. It spans the world and connects a global audience with a globally

provided set of content and services. The internet's flexibility means it has been an engine for innovation, enabling the development of new businesses and new business models, new content and new communications services; and its openness has allowed operators of every scale, from multinationals to individuals, to create and offer content and services as well as benefit from them. Alongside global reach, openness and flexibility, many observers attribute the success and importance of the internet to the limited extent of internet service regulation.

The international nature of the internet has generated new opportunities for consumers but it has also put them within easier reach of those seeking to take advantage of them. The internet has given rise to many new types of crime – for example, identity theft by phishing, malicious virus dissemination via SPAM, and online grooming of children. It has also made it easier for criminals to circumvent the law by taking advantage of the impersonal nature of the internet to misrepresent or disguise their true identity.

In response to both the growing role the internet plays in delivering services to consumers and the risks it exposes them to, there has been an immense amount of activity at national and international levels in developing legislative and regulatory frameworks to deal with internet-specific issues. While some of these efforts have sought to achieve international cooperation and harmonization of laws, many have also been tailored to suit the particular circumstances, and cultural and political

norms of local markets.

To protect the integrity of the network, operators need to take account of potential security threats at every level of their network infrastructure as well as at the customer level e.g., laptops, personal digital assistants and mobile phones. High quality and network security management is therefore likely to become an increasingly important aspect of brand reputation and the associated customer satisfaction.

### CONCLUSION

The Present Network System offers the possibility of delivering real benefits to citizens and consumers in terms of innovative new services and greater choice. However, the convergence of different services onto a single network raises important issues around quality of service, consumer awareness and consumer protection. For example whereas new voice services may seem at first sight to consumers to be identical to traditional voice services, they may not be able to deliver certain features, such as access to emergency services, that consumers have in the past taken for granted.

The internet's flexibility makes it an engine for innovation. With the advent of Networks it is likely to play a much greater role in citizens' lives. In relation to cyber security, high quality and network security management will be essential to protect brand reputation and protect consumers from harm.

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