gsc11_Userworkshop_16

Consumers' Telecommunications Network

Consumer Research:

Expectations and Experiences with Voice over Internet Protocol (VoIP)

March 2006

Enquiries:
(02) 9572 6007
ctn@ctn.org.au
Unit 2, 524-532
Parramatta Road
Petersham, NSW 2049

Acknowledgements

The Consumers' Telecommunications Network's representation of residential and other consumers' interests in relation to telecommunications issues is supported by the Commonwealth through the 'Grants to fund Telecommunications Consumer Representations' program of the Department of Communications, Information Technology and the Arts.

Ryan Sengara, CTN's Project Officer, was primary author and researcher, and was assisted by Teresa Corbin, CTN's Executive Director, Sarah Wilson, CTN's Policy Officer, and Annie McCall, CTN's Information Officer. CTN would like to acknowledge the contributions made by its Council members: Robin Wilkinson (Tasmanians with Disabilities), Lola Mashado (Australian Financial Counselling & Credit Reform Association), Jack Crosby, Myra Pincott (Country Womens' Association Australia), Nicholas Agocs (Ethnic Communities Council of WA), Nan Bosler (Australian Seniors Computer Clubs Association), Len Bytheway, Stephen Gleeson (Community Information Strategies Australia Inc.), Ross Kelso (Internet Society of Australia), Maureen Le Blanc (Australian Council of Social Services), and Darrell McCarthy (Better Hearing Australia).

CTN would also like to acknowledge the time volunteered by CTN members and other VoIP users who helped to develop and complete the survey.

Expectations and Experiences with Voice over Internet Protocol (VoIP)
March 2006

Contents

Introduction

About CTN

The Consumers' Telecommunications Network (CTN) is a national peak body of organisations and of individuals representing community interests in developing national telecommunications policy. CTN advocates policies for better access, quality of service and affordability of telecommunications for all residential consumers. CTN's members are individual consumers, and national and state organisations representing consumers from non-English speaking backgrounds, Deaf consumers, indigenous people, low income consumers, people with disabilities, young people, pensioners, superannuants, rural and remote consumers, women and consumers generally.

Background and Aims of the Research

With the rising interest in VoIP in Australia, there has been intense discussion of what regulation may apply to VoIP services and, moreover, what regulation should apply. In November 2005 the Department of Communications, Information Technology and the Arts (DCITA) released a series of recommendations on VoIP regulation[1] to the Minister, Senator the Hon. Helen Coonan, following a regulatory review by the Australian Communications Authority in October 2004. Senator Coonan accepted all thirty recommendations and committed the Government to their implementation:

> The report finds that there is no immediate need for any changes to the regulatory framework and recommends some small adjustments to existing numbering, emergency services and customer service regulation to accommodate VoIP services[2].
> (Senator Coonan 2005)

Recently, the Australian Communication Industry Forum (ACIF) has begun to address VoIP in the self-regulatory arena in Australia[3]. There has, however, been little research undertaken on the residential VoIP market, the most notable coming from Telsyte in November 2005[4]. See note 5 in the *References Cited and Notes* section for resources that offer an introduction to VoIP.

CTN has felt the need to better inform its work to ensure accessibility, affordability and quality of VoIP services. This VoIP research aims to develop an understanding of the residential VoIP market in Australia and the experiences of consumers with VoIP services. Specifically, the research probes consumers' initial expectations of VoIP, their experiences with quality and usability of VoIP services, the costs of VoIP, and the information offered to consumers both before and after purchasing a service.

Based on an *exploratory* survey of VoIP consumers, this research offers *qualitative* insights into emerging VoIP use and consumer, policy and regulatory issues. CTN stresses that further, broader research across a range of consumer groups is needed, and that industry, regulators and government need to consult widely with all consumers on VoIP.

Methodology

After conducting a series of interviews with CTN members to identify the key areas to explore, a comprehensive survey was developed for consumers who were VoIP users. The survey contained a mix of multiple choice questions and free-answer questions (questions in which respondents could write freely in a text box). The survey was conducted completely online through CTN's website because the target audience was expected to be regular Internet users and because of the efficiency offered by an online survey tool. We advertised the survey through our membership network and the VoIP thread on the discussion site www.whirlpool.net.au (with permission). The survey ran from October 2005 to January 2006 and was completed by a total of 87 respondents. The respondents, on the whole, seem to be experienced and keen Internet users, but as a group of early adopters their usage and responses offer important, qualitative information that sheds light on areas of emerging concern.

Executive Summary

The residential VoIP market in Australia is in its early days, yet there are a number of VoIP providers, based in Australia and overseas, offering a range of services aimed to provide low cost calls to consumers. This research aims to provide readers with a snapshot of the residential VoIP market in Australia, and an exploration of the expectations and experiences of VoIP users. CTN would like to alert consumers, consumer representatives, the telecommunications industry, regulators and government to the value this research can provide in achieving better accessibility, affordability and quality of VoIP services to residential consumers.

Overview of Results

The following is a summary of results from CTN's online survey of VoIP users, comprised of a mix of CTN members and participants in the VoIP forum on www.whirlpool.net.au:

DEMOGRAPHICS & CHOOSING VOIP

- The majority of VoIP users surveyed (74.7 per cent) were under the age of 50, and the overwhelming majority (93 per cent) were male.
- The majority of VoIP users surveyed (72.4 per cent) had used VoIP for less than 12 months, highlighting the recent growth in the uptake of residential VoIP services.
- The overwhelming majority of VoIP users (89.7 per cent) had first used VoIP for its lower costs, showing that financial benefit is a key driving force behind consumer interest in VoIP.
- 66.7 per cent of VoIP users surveyed spent between 1 week and 3 months researching before signing up to a VoIP service, suggesting that many early VoIP users are concerned with exercising informed consumer choice.

SET-UP & USAGE

- 36 per cent of VoIP users surveyed had already replaced a standard telephone line or mobile phone with a VoIP service, a worrying result considering how vulnerable consumers can be in an unregulated market void of industry codes or guidelines.
- Almost all VoIP users surveyed (93 per cent) had a broadband connection over 200kb/s download speed, demonstrating the close relationship between broadband and VoIP services and highlighting the need for widespread access and reliability of broadband services, especially for consumers in rural and remote regions of Australia.
- 47.1 per cent of VoIP users surveyed had not used any software for their VoIP service, and no single hardware configuration was used by a strong majority, demonstrating the non-standardised yet flexible arrangements available for the delivery of VoIP. This highlights the need for universal accessibility, especially for disabled consumers.
- Astratel (31 per cent), Oztell (27.6 per cent) and Engin (23 per cent) were the three most commonly used VoIP providers but not dominantly so, with 44 different companies listed by users surveyed highlighting the fragmented state of the residential market.
- 44 per cent of consumers surveyed had used overseas VoIP providers, showing that there is significant global competition in the market.
- Most users surveyed had called landlines (85.1 per cent), mobiles (63.2 per cent) and PCs (47.1 per cent) across national and international boundaries, showcasing VoIP's functionality.

PRODUCT QUALITY & SERVICE

- The majority of VoIP users surveyed had experienced echo (75.9 per cent), noise (62.1 per cent) or voice dropout (60.9 per cent) during VoIP calls, and over 20 per cent had trouble connecting to landlines and mobiles, illustrating serious call quality and call connection problems with VoIP services.

- 15 per cent of VoIP users surveyed had tried to make what they considered an urgent call with their VoIP service and been unable to, an alarming figure reflecting service reliability, especially when considering the importance of emergency services calls.

- 19 per cent of VoIP users surveyed either rarely or never found it easy to identify problems they experienced with their VoIP service, and 30 per cent did not report problems to anyone, demonstrating the need for development of technical support and complaints handling.

- 20 per cent of VoIP users surveyed had security concerns with their VoIP service, with call interception topping the list at 17.2 per cent, suggesting that privacy may be a source of angst as the market grows.

COSTS

- The overwhelming majority of VoIP users surveyed (89 per cent) had paid for a VoIP service, dispelling the notion that residential consumers will only use free services.

- 62.1 per cent of VoIP users surveyed had spent less on VoIP than they had anticipated, suggesting that VoIP services are, on the whole, delivering cost savings. However, many also experienced costs they were unaware of, showing that there is a need for consumers to be aware of the ‘total cost’ of VoIP services, including the cost of an underlying broadband connection.

AWARENESS AND PRODUCT INFORMATION

- 23 per cent of VoIP users surveyed felt that their VoIP provider advertised their service as a replacement for a telephone line, a worrying result considering providers currently adhere to few service guarantees or standards.

- 17.2 per cent of VoIP users surveyed said that their VoIP providers did not give them enough information, gave them confusing information or gave them false information, demonstrating that misleading or deceptive advertising may be a major concern as the market grows.

- 41 per cent of VoIP users thought VoIP providers in Australia should be regulated the same as landline and mobile phone companies, while 51 per cent disagreed, reflecting the split in opinion on heavy-handed or light-touch regulation of VoIP among the wider public.

- VoIP users surveyed identified quality of product and customer service (23 per cent), consumer awareness and education (12.6 per cent) and improving broadband conditions (10.3 per cent) as the top three areas CTN should focus on to improve consumers’ experiences with VoIP.

Key Findings

This research has generated a wealth of insights into VoIP consumers and their use of VoIP. The survey results show that the market has taken off in the last 12 months and that lower telecommunications costs are the top driver behind consumers' forays into VoIP. Current VoIP consumers seem to be capable technology users willing to invest significant amounts of time into researching services and exercising informed choice. If data from this survey holds true, the majority of VoIP users are males under the age of 50. However, as the market grows, CTN predicts much more diversity among consumers, which means a more complex set of customer needs and expectations for industry to address.

VoIP has also provided access to a broad range of services to consumers. The strong majority of VoIP users surveyed had made local, national and international calls to landlines, mobile and PCs. Over time this functionality will undoubtedly expand, something future research should explore. Furthermore, not only did we find that the overwhelming majority of VoIP users were willing to pay for VoIP services, but most also paid less than they anticipated, showing that VoIP users are not just interested in free services, and that VoIP is delivering cost savings for end users.

However, despite all of these insights, what clearly emerged was an urgency for consumers to be better protected and served in the current market. This urgency was best illustrated by the fact that 36 per cent of VoIP users surveyed already had replaced a standard telephone line with a VoIP service, despite the absence of service standards or guarantees. CTN highlights the following as key findings of the research:

F1. Though an Internet connection is essential to the delivery of VoIP, the accessibility and quality of broadband services available to VoIP consumers varies wildly.

Most VoIP providers recommend a broadband connection to run their service, and indeed 93 per cent of VoIP consumers surveyed had an Internet connection over 200kb/sec download speed. However, few VoIP providers explicitly state the minimum or optimal broadband speeds required to run their services, and those VoIP consumers we surveyed had used widely varying types of connections to access VoIP services with mixed results. Furthermore, across Australia there are no guarantees of access to broadband services nor are there substantive guarantees on broadband performance. If consumers can't purchase a reliable broadband connection, neither will they be able to access a reliable VoIP service. This is especially a problem for consumers in rural and remote parts of the country.

F2. Though the wide range of equipment and software available to deliver VoIP is providing flexibility to consumers, VoIP services need to be more user-friendly and accessible.

No one hardware set-up was favoured by a strong majority of VoIP consumers surveyed, 47.1 per cent had not used software for their VoIP service, and 41.4 did not use the software provided to them by their VoIP provider. There is great opportunity for industry, regulators and government to make significant strides in making VoIP not only more user-friendly, but also universally accessible, especially for consumers with disabilities.

F3. VoIP consumers favour on-going competition and freedom of choice in the VoIP market.

Respondents had used over 40 different VoIP providers without a clear leader emerging, and their written comments indicated that they wanted high competition in the market to drive down prices and improve services.

F4. There is a strong international flavour to the VoIP market in Australia that needs to be monitored to ensure Australian consumers have protection.

44 per cent of VoIP users surveyed had used overseas VoIP providers – a situation which directly affects any effort to regulate VoIP in Australia.

F5. VoIP call quality and call connection (interoperability) are pressing issues.

Well over 60 per cent of VoIP consumers surveyed had experienced echo, noise or voice dropout on their calls, over 20 per cent had trouble connecting to landline and mobile numbers, and over 12 per cent had problems connecting to other VoIP numbers. The fact that 15 per cent of those surveyed had tried to make an urgent call using their VoIP service and been unable to should ring alarm bells, specifically regarding access to emergency services. A serious consumer incident, aside from its direct harm, would generate bad publicity for VoIP in Australia and undermine its long-term take up. Industry must deliver in these areas, regardless of the complex technical issues and corporate relationships that may exist behind the scenes.

F6. VoIP consumers require better technical support for their VoIP services.

As less technically capable consumers begin to use VoIP, technical service and complaints-handling processes must be easily accessible and effective. CTN is worried about the high proportion of VoIP consumers surveyed who could not identify the problems they were experiencing with their VoIP service (19 per cent), or did not report their problems (30 per cent). 20 per cent of VoIP consumers surveyed were also worried about the security of their VoIP service, highlighting concerns such as privacy that are constantly evolving.

F7. Consumers are in need of more public education efforts regarding VoIP.

Though VoIP consumers surveyed were frequent technology users and spent significant amounts of time researching VoIP, some were not aware of the uncertain availability of emergency services, some were not aware of some of the technical limitations and issues surrounding VoIP, and some were not aware of concerns over the full disclosure of terms and conditions of VoIP services. A small percentage also experienced costs they were unaware of such as research and broadband costs. In their comments, many respondents stressed the importance of consumer education for the general public as the market grows.

F8. Misleading, deceptive or incomplete product advertising for VoIP is a major concern.

23 per cent of VoIP consumers surveyed felt that their VoIP provider advertised their service as a replacement for a telephone line, and 17.2 per cent answered that their own VoIP providers had not given them enough information, had given them confusing information or given them false information. Misleading or deceptive advertising or conduct is contrary to law and will be a serious impediment to the expansion of VoIP markets if not addressed swiftly and robustly.

Recommendations

While the Australian Government has chosen a "light-touch" approach to regulation in the short term, CTN's research demonstrates the need for more urgent consumer protection in the market. However, considering the split in opinion on regulation (even among consumers), a balance needs to be struck between more stringent short-term measures and promoting continued growth and flexibility in the market. CTN's recommendations, therefore, aim to strike this balance with the ultimate goal of achieving better accessibility, affordability and quality of service for residential VoIP services for Australian consumers. CTN's recommendations attempt to extend consumer protections with VoIP and to address new issues that have been raised by VoIP:

R1. Customer guarantees and industry standards must be established to provide wider accessibility and higher quality broadband Internet connections in Australia, especially in rural and remote regions. VoIP providers should also be required to explicitly state the minimum and optimum broadband requirements for their service.

R2. The development of standardised and user-friendly VoIP equipment and software, especially for consumers with disabilities, while maintaining a high degree of consumer choice, must be actively encouraged by government and industry bodies.

R3. Close monitoring of competition in the VoIP market is essential, and steps to keep costs low need to be taken while encouraging more functionality of services. These measures should include a register of VoIP providers and implementation of number portability.

R4. Agreements or Memorandums of Understanding with overseas regulatory bodies should be negotiated to protect Australian consumers using VoIP services based overseas.

R5. Standards, agreements and technological solutions to deliver higher quality and more reliable VoIP services should be put in place. Specifically, guaranteeing availability to emergency services and establishing Internet Peering arrangements and Quality of Service (QoS) mechanisms.

R6. More universally accessible and effective technical support for VoIP services should be developed, including direct action to address consumers' security concerns, including privacy.

R7. Consumer education campaigns must be launched to alert the public to the current issues and concerns with VoIP and the steps being taken to address them – specifically accessibility of emergency services, the complex technical relationships behind VoIP, terms and conditions of contracts, and the 'total cost' of a VoIP service.

R8. Enforcement action must be taken to ensure VoIP service providers comply with all applicable regulations and legislation, specifically legislation such as the *Trade Practices Act 1974 (Cth)* to halt misleading and deceptive conduct and advertising.

R9. A registered industry code of practice for VoIP providers must be developed and implemented. This will ensure that consumer protection issues are addressed proactively, will ensure that there will be a smooth path for adoption of VoIP for residential consumers, and will set a strong precedent for future convergent technologies that emerge in Australia.

Snapshot of the Residential VoIP Market

Residential VoIP Users

There are varying accounts of the size of the residential VoIP market in Australia. Figures quoted are disputed[6] and often no distinction is made between business and residential users. The corporate VoIP market seems to have grown quicker than the residential market. A number of large organisations have employed VoIP on their networks, including government organisations[7]. Skype, the company known by many as a pioneer of VoIP services, claims over 282,000 Australian users without ever having advertised in Australia[8]. Australian providers Engin and iiNet claim to have at least 15,000 and 10,000 VoIP customers, respectively[9, 10]. Another indicator of the growth of the residential market came in March 2006 when Primus Telecom, Australia's 4th largest telecommunications company, announced plans to offer a VoIP service[11].

The Australian Government, through its 2005 recommendations on VoIP regulation, has indicated it does not regard the residential VoIP market as significant enough to attract strong regulatory attention and has chosen to adopt a wait-and-see approach:

> While take up of VoIP is strong in the corporate market in Australia, consumer take-up of VoIP is still in the early stages and it is unlikely to become a major mass-market technology in the next two to three years.
> (DCITA 2005)

Telstra seems to agree, having commissioned research by Roy Morgan that established that in the third quarter of 2005, only 2.2 per cent of Australians had made VoIP calls and only 3 per cent intended to do so[12]. Telstra has also commissioned IDC research that estimated VoIP usage as a percentage of fixed line calls at 1.5 per cent for 2005, and at approximately 8.1 per cent in 2009[12].

Residential VoIP Providers

The VoIP market swelled in 2005. According to Telsyte research, in November 2005 there were at least 43 Australian-based VoIP providers, up from 30 in June 2005[4]. Our own research (see Question 15) revealed 44 VoIP providers among a sample of 87 VoIP users. Many providers adhere to no regulations. Of the 43 providers identified by Telsyte, 4 had carrier licenses and were members of the TIO (Telecommunications Industry Ombudsman), 27 were TIO members and 12 appeared to be non-compliant with any regulation at all.

VoIP Products

There are a number of VoIP products and services offered to residential consumers, ranging from free calls between users with accounts on the same provider, to prepaid credit, to monthly subscription fees that include set amounts of credits, to fees for services such as voicemail, audio conferencing and video conferencing. All the VoIP services we've looked at offer calls to local, national, mobile and international numbers, and are advertised as being cheaper than standard telephone rates. Many services include the purchase or provision of hardware and software. At this point there are very few VoIP providers that offer a broadband connection and/or a telephone line as part of a bundle of services.

Issues Surrounding Residential VoIP services

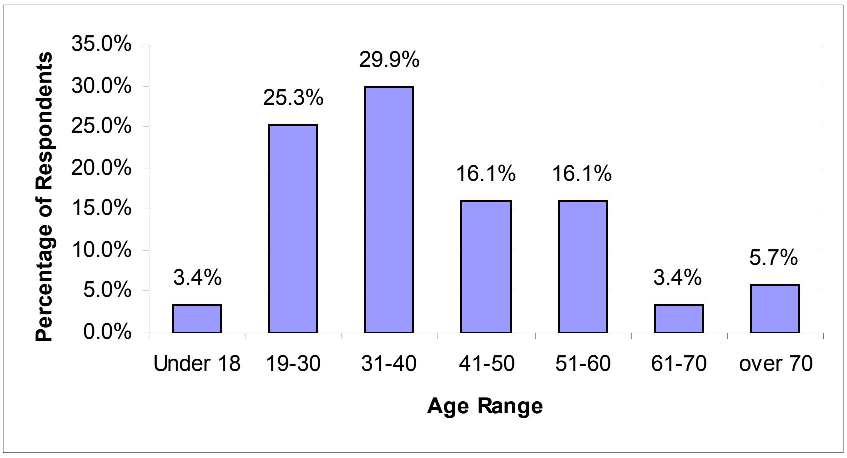
The accessibility of Emergency Services through VoIP has received much publicity[13], especially in the United States, foreshadowing a broader area of concern among consumer groups – information provided to customers by the VoIP industry. In Telsyte's November 2005 research, alarm was raised over the quantity and quality of information given to consumers in crucial areas such as terms and conditions of contracts, connection requirements, equipment compatibility, complaint handling, regulation protection, the bill calculation process, disability support and more. CTN's research attempts to probe deeper into some of these areas.

Survey Data and Analysis

In this section of the report, survey results are grouped into sections, shown in graphical format, summarised and commented on.

DEMOGRAPHICS AND CHOOSING VOIP

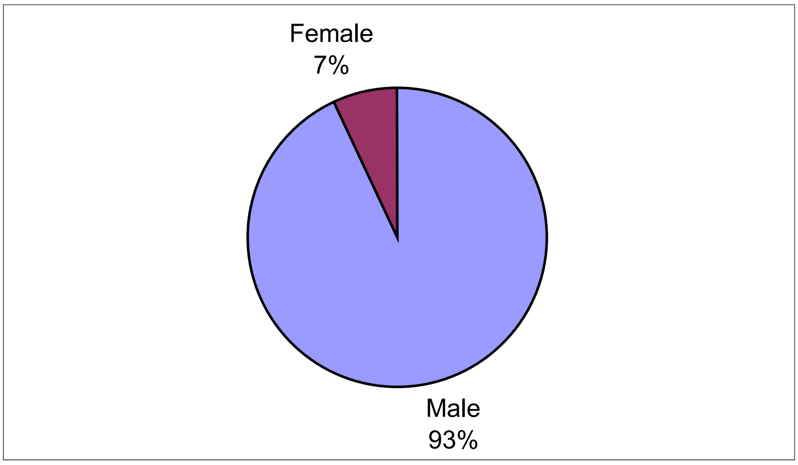
Question 1: What is your age range?



Summary: 3.4 per cent of respondents were under the age of 18, 25.3 per cent were between the ages of 19 and 30, 29.9 per cent were between the ages of 31 and 40, 16.1 per cent were between the ages of 41 and 50, 16.1 per cent were between the ages of 51 and 60, 3.2 per cent were between the ages of 61 and 70, and 5.7 per cent were over 70 years of age.

Comments: Approximately 3 out of every 4 respondents (74.7 per cent) were under the age of 50, with most (55.2 per cent) between the ages of 19 and 40. Most age groups are well represented. Notably, almost 1 in every 10 respondents (9.1 per cent) were over the age of 60, showing the breadth of CTN's network and demonstrating that it's not just IT professionals in their 20's or 30's using VoIP.

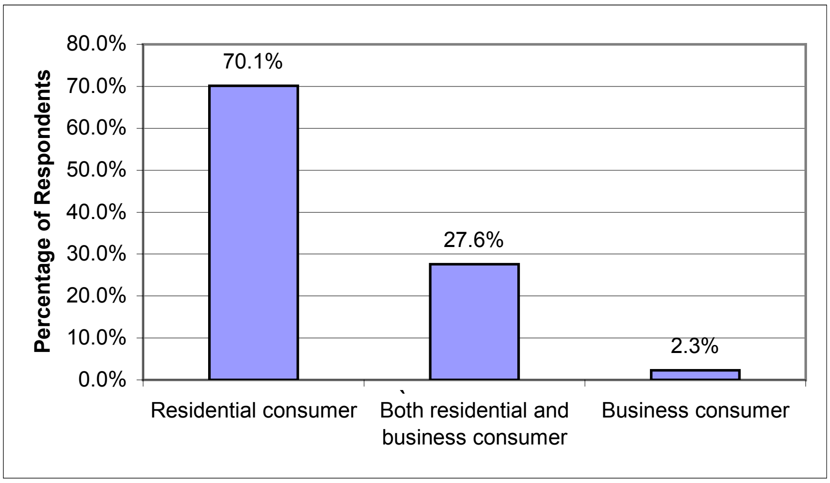
Question 2: What is your gender?



Summary: 93 per cent of respondents were male and 7 per cent were female.

Comments: CTN would be surprised if this lopsided result continued to reflect the demographics of the residential VoIP market as it grows.

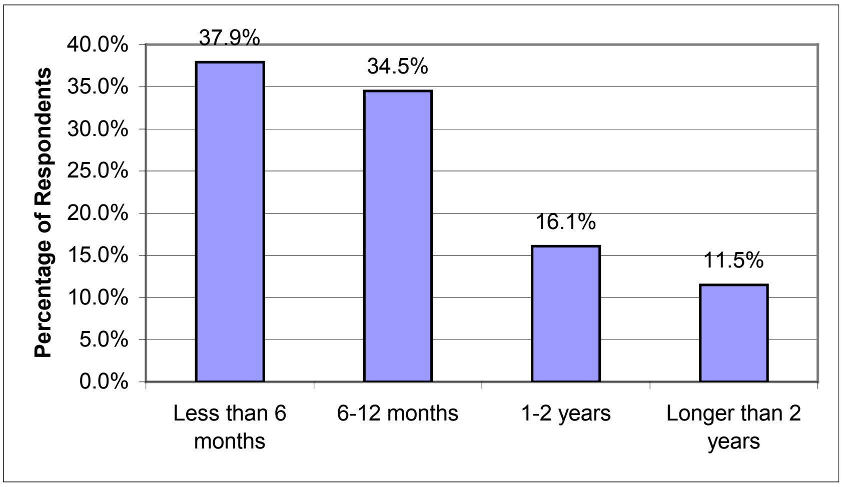
Question 3: You are completing this survey as a…?



Summary: 70.1 per cent of respondents answered that they were completing the survey as a residential consumer. 27.6 per cent answered that they were completing it as both a residential and business consumer, while 2.3 per cent answered that they were completing it as a business consumer.

Comments: These results match the target audience for the survey, but they also show that VoIP is crossing over from the corporate world to the home – possibly through home businesses. We did not include a question in this survey asking respondents which state or territory they lived in, or whether they were located in metropolitan, regional or rural areas – something we will rectify in future surveys.

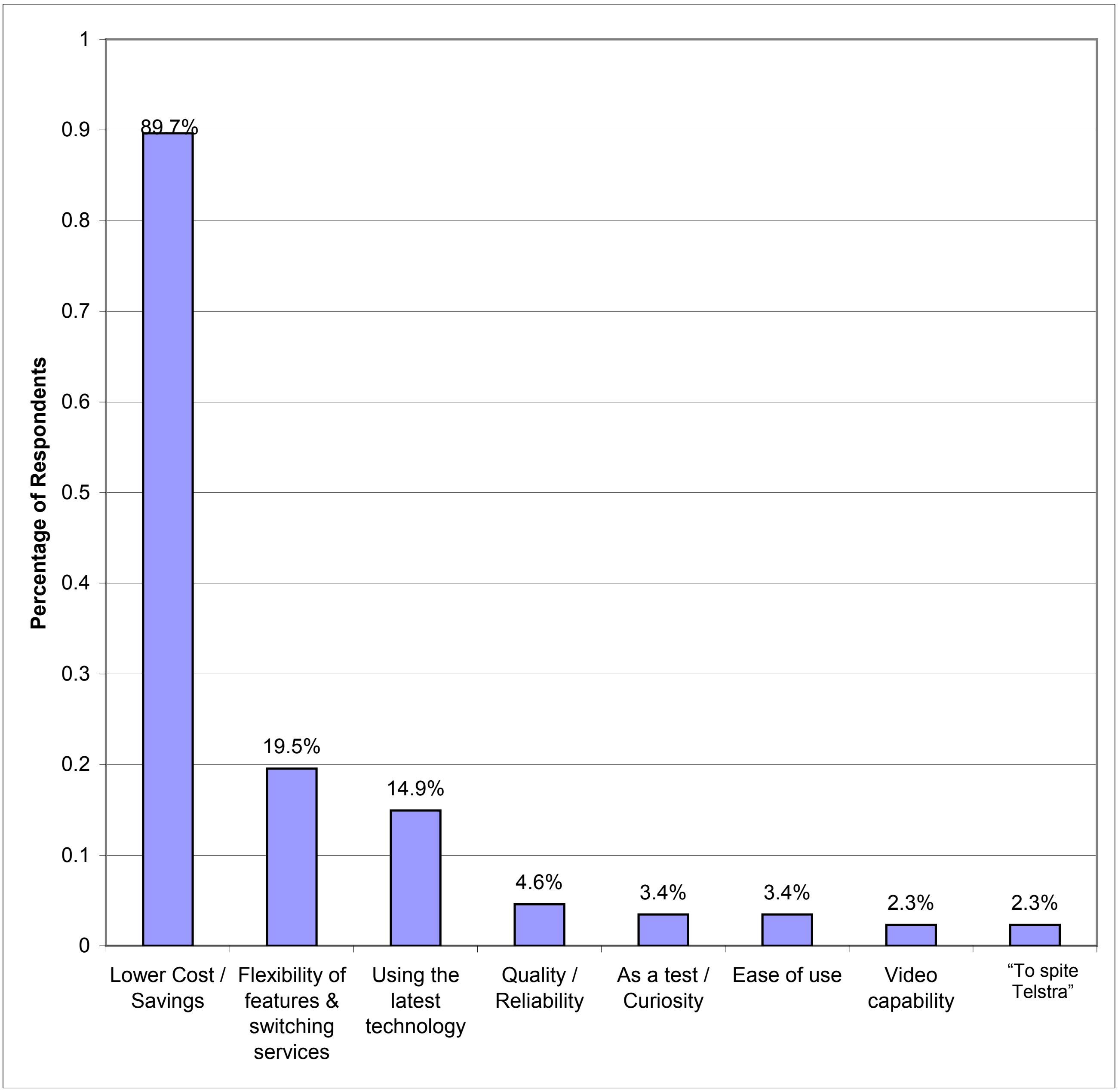
Question 4: How long have you been using VoIP?



Summary: 37.9 per cent of respondents had been using VoIP for less than 6 months, while 34.5 per cent had been using it for 6 to 12 months and 16.1 per cent had being using it for between 1 to 2 years. 11.5 per cent of respondents had been using VoIP for longer than 2 years.

Comments: More than 7 out of every 10 respondents (72.4 per cent) had been using VoIP for less than 1 year, with most of these (37.9 per cent) having used it for less than 6 months. These results seem to reflect the recent spike in residential (and media) interest in VoIP services.

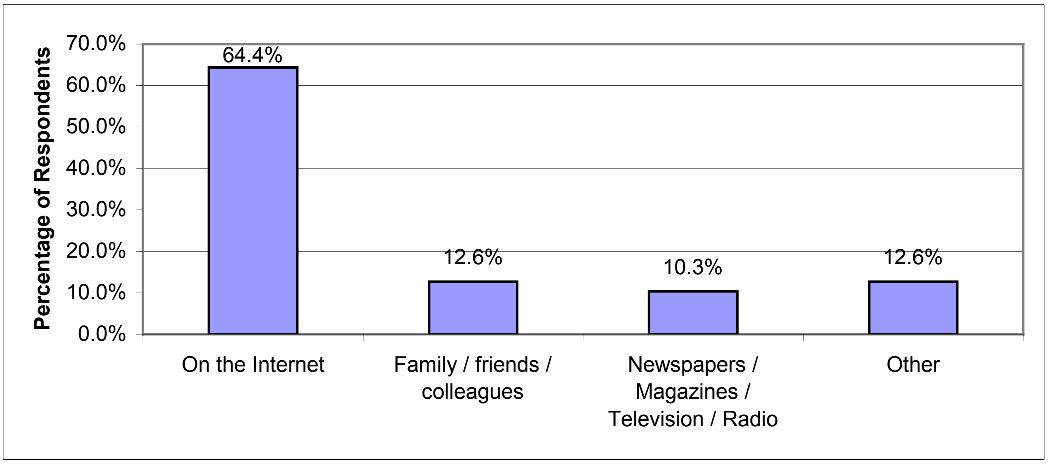
Question 5: What were the main reasons why you first started to use VoIP?



Summary: 89.7 per cent of respondents listed lower cost or savings as the main reasons why they first started to use VoIP. 19.5 per cent of respondents listed flexibility of features and services as a main reason, 14.9 per cent listed using the latest technology as a main reason, while 4.6 per cent listed quality and reliability as a main reason. 3.4 per cent of respondents listed curiosity and testing as a main reason for first using VoIP, while 2.3 listed video capabilities, and an equal 2.3 per cent listed 'to spite Telstra'. This was a free-answer question.

Comments: Lower costs were the clear driver for consumers' choice to use VoIP, confirming VoIP as a price-driven technology, at least among this sample of consumers. The second most popular reason was for the flexibility and choice VoIP services provide, as discussed on page 5. A high level of technical awareness and ability among early VoIP users may be reflected in the third most popular reason for first using VoIP – using the latest technology.

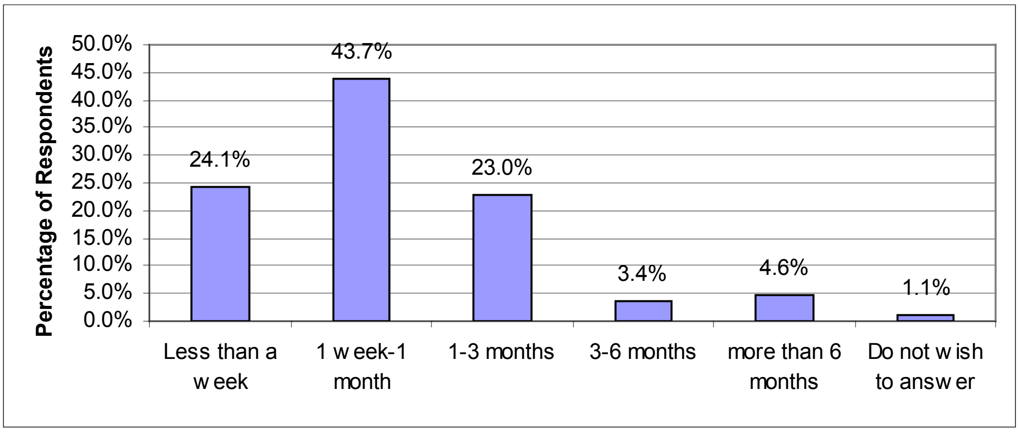
Question 6: How did you first hear about VoIP technology?



Summary: 64.4 per cent of respondents first heard about VoIP technology on the Internet. 12.6 per cent first heard though family, friends or colleagues, while 10.3 per cent first heard through print media and 12.6 per cent heard in other ways. CTN will endeavour to replace the phrase 'hear about' with 'become aware of' in a future survey question such as this.

Comments: This data illustrates the strong connection between VoIP and Internet use, with more than half of respondents having first become aware of VoIP online. As the market develops it will be interesting to see if this continues to be the case, or if traditional mediums of print and television will be more of a focus in reaching consumers.

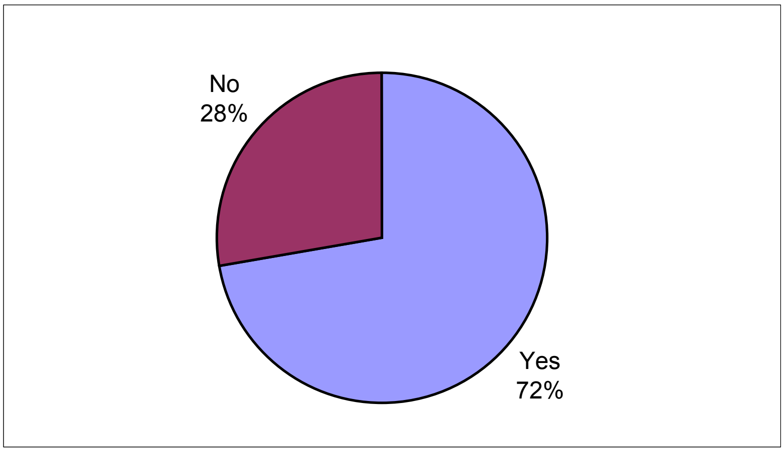
Question 7: How long did you spend researching VoIP before signing up to a service?



Summary: 24.1 per cent of respondents spent less than a week researching VoIP before signing up to a service, 43.7 per cent spent between 1 week and 1 month researching, and 23 per cent spent between 1 and 3 months researching. 3.4 per cent of respondents spent between 3 and 6 months researching VoIP, while 4.6 per cent spent more than 6 months. 1.1 per cent did not wish to answer.

Comments: More than 3 out of every 4 respondents (75.9 per cent) spent 1 week or longer researching VoIP before signing up to a service. Most (66.7 per cent) spent between 1 week and 3 months researching. This data seems to indicate that, at the moment, consumers are investing a significant amount of time in researching VoIP technology and VoIP services on offer before making a choice – again, perhaps indicative of technically capable consumers keen to exercise informed choice.

Question 8: Do you know other people who regularly use VoIP?

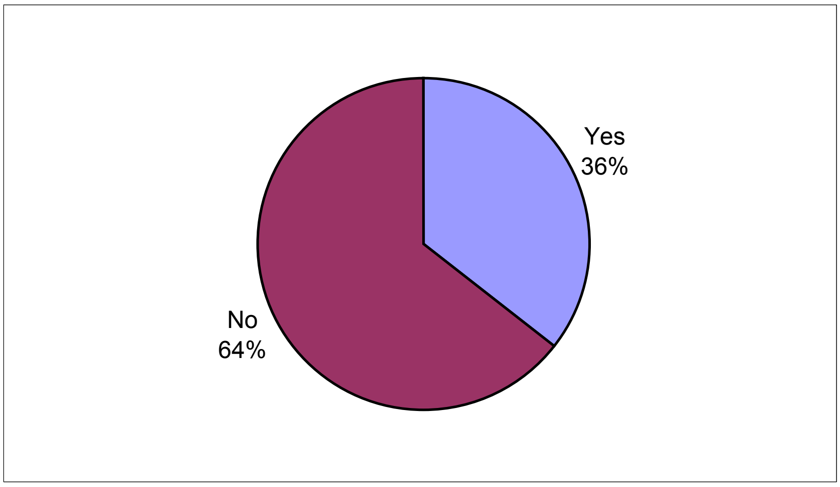


Summary: 72 per cent of respondents knew other people who regularly used VoIP. 28 per cent of respondents did not know other people who regularly used VoIP.

Comments: Almost 3 out of every 4 respondents knew someone who regularly used VoIP. Since these results don't reflect the popularity of VoIP in the wider Australian public, they may signal that VoIP is a service more commonly used, for the moment, among groups of frequent technology users.

SET-UP AND USEAGE

Question 9: Have you replaced your standard telephone line or mobile phone with a VoIP service?

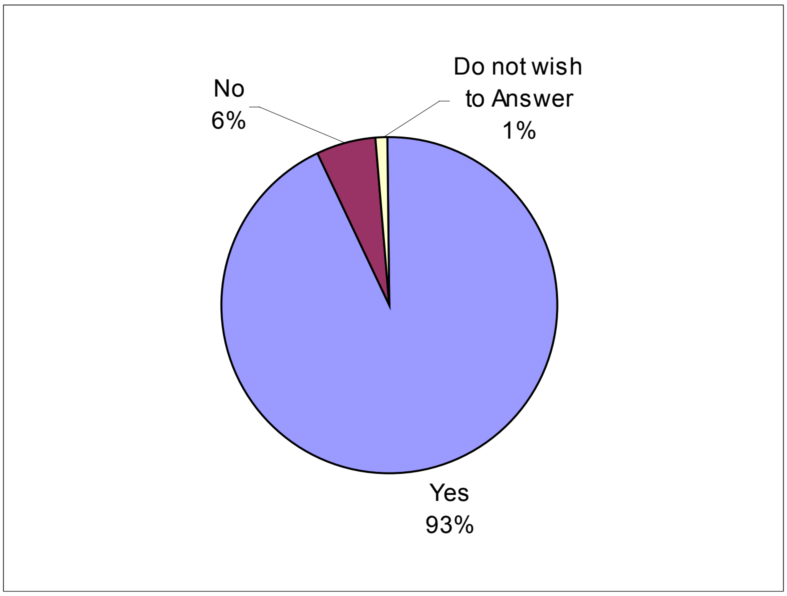


Summary: 36 per cent of respondents had replaced their standard telephone line or mobile phone with a VoIP service, while 64 per cent had not.

Comments: These are among the most significant results of the entire survey. More than 1 out of every 4 respondents (36 per cent) had replaced their telephone line or mobile phone with a VoIP service, making proper consumer protection and ensuring product quality are urgent issues in the residential VoIP market.

A key question here is whether this decision was made through fully informed choice or through misleading and/or deceptive advertising or conduct. Since VoIP is not yet recognised by the government or industry as a replacement for a standard telephone service (see Question 41), CTN is very concerned, not only about consumer safety, but the ramifications of the quality and reliability of services for consumers. Clearly there is a need for more research to be done around this key issue to ensure that when new services such as VoIP are rolled out and adopted, essential consumer safeguards are not compromised.

Question 10: Do you have a broadband connection (over 200kbits/second)?



Summary: 93 per cent of respondents had a broadband connection over 200kb/second, while 6 per cent did not and 1 per cent did not wish to answer.

Comments: Precisely what line speed constitutes a broadband connection is a topic that is debated internationally[14]. For this survey CTN used the definition given by the Australian Competition and Consumers Commission (ACCC) in their broadband statistics reporting (any high-speed connection greater than 200kbits/sec over a mix of media) [15].

This question, along with the following two questions, places a spotlight on the relationship between a consumer's Internet connection and their VoIP service, since VoIP runs over an Internet connection, and most providers recommend a broadband connection.

It is surprising that more than 1 in every 20 respondents (6 per cent), have run VoIP services at less than 200kb/second – something the industry does not appear to recommend. In fact, in written comments, a number of respondents told us that they had successfully used a VoIP service over a dial-up connection:

> *"The use of VOIP over dial-up…sometimes can be of good quality. I have good results over dial-up more often than not. In many third-world countries where broadband connections are not readily available, nearly all VoIP calls are made over dial-up."*

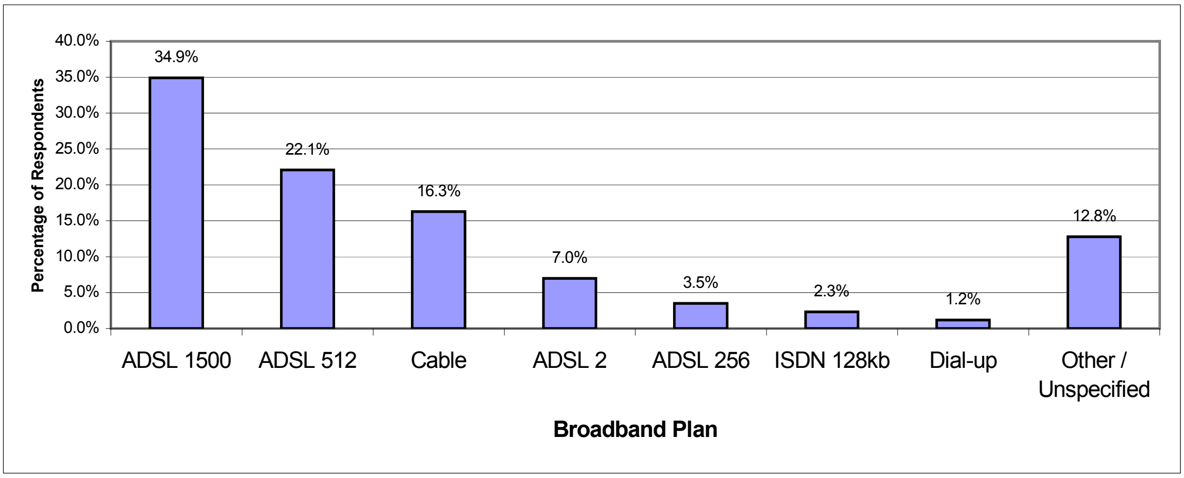
To ensure consumers receive a quality VoIP service, they must be aware of the correlation between their Internet connection and the performance of a VoIP product. An onus must be placed on VoIP providers to stipulate, exactly, not only the minimum broadband requirements on which to run their products, but also the optimum speeds on which to do so.

Moreover, since there is such a close relationship between an Internet connection and a VoIP service, guarantees and standards must be developed in Australia to provide wider and more affordable broadband access and more reliable and better performing broadband services – issues repeatedly raised by respondents in their written comments to us:

> *"In Sweden a government initiative was to connect 95% of households at greater than 2mb/second by 2002. In 2002 a truly unlimited 1mb/second broadband set-up cost AU$ 50 per month. Compare that to Australia..! In Metropolitan Melbourne I can't even get any ADSL! "*

Specifically, these issues are a concern for consumers in rural and remote regions of Australia. CTN urges the industry, regulators and government to avoid creating any further technological gap between consumers in urban centres and consumers in rural or remote areas. If affordable and reliable broadband connections aren't available to all consumers, neither will affordable and reliable VoIP services.

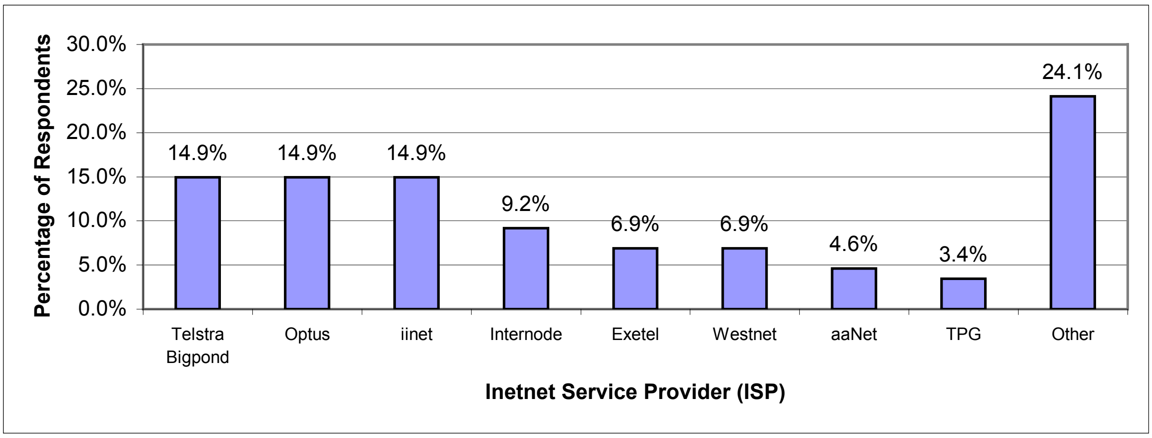
Question 11: What plan are you on for your broadband connection? (i.e. ADSL 512kb)



Summary: 34.9 per cent of respondents were on an ADSL (Asymmetrical Digital Subscriber Line) 1500 plan. 22.1 per cent of respondents were on an ADSL 512 plan, 16.3 per cent were on a cable plan and 7 per cent were on an ADSL 2 plan. 3.5 per cent of respondents were on an ADSL 256 plan, 2.3 per cent were on an ISDN 128 plan, and 1.2 per cent were on a dial-up plan. 12.8 per cent of respondents were on either unspecified or other types of plans. This was a free-answer question.

Comments: ADSL was the broadband technology of choice in this sample of VoIP users. More than two-thirds of respondents (67.4 per cent) had either a 1500, 512, 256 or ADSL 2 plan. Little over 1 in every 5 consumers (23.5 per cent) had 'high-speed' broadband in the form of Cable or ADSL 2 plans, a potential reflection of the bias of this sample towards heavy Internet users.

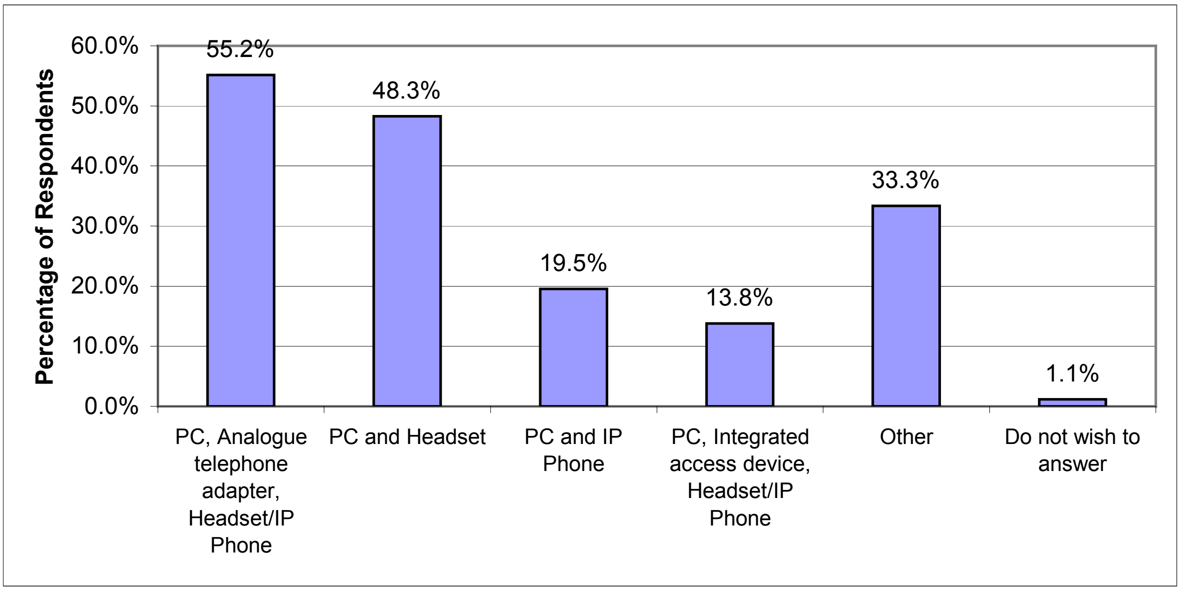
Question 12: Who is your Internet service provider (ISP)?



Summary: Equal proportions of 14.9 per cent of respondents chose Telstra Bigpond, Optus, and iiNet as their Internet Service Provider (ISP). 9.2 per cent of respondents were on Internode, 6.9 per cent on Exetel, 6.9 per cent on Westnet, 4.6 per cent on aaNet and 3.4 per cent on TPG. 24.1 per cent of respondents had other ISPs. This was a free-answer question.

Comments: There was no dominant ISP in this sample. The wide range of ISPs used (25 listed in total) reflects the fragmented ISP market in Australia. On this list, there are few ISPs that offered a bundled VoIP service, highlighting the fact that many VoIP providers are deploying a service over networks they are not in control of. CTN is also aware of cases, in other countries, in which ISPs have offered a VOIP service but limited their customers' access to other Internet-based VoIP services – a situation that must be avoided in Australia. Some respondents suggested, in written comments, that regulators should take steps to ensure VoIP data packets are not blocked or given a low priority over broadband networks.

Question 13: What equipment have you used for your VoIP service? (you can select more than one)

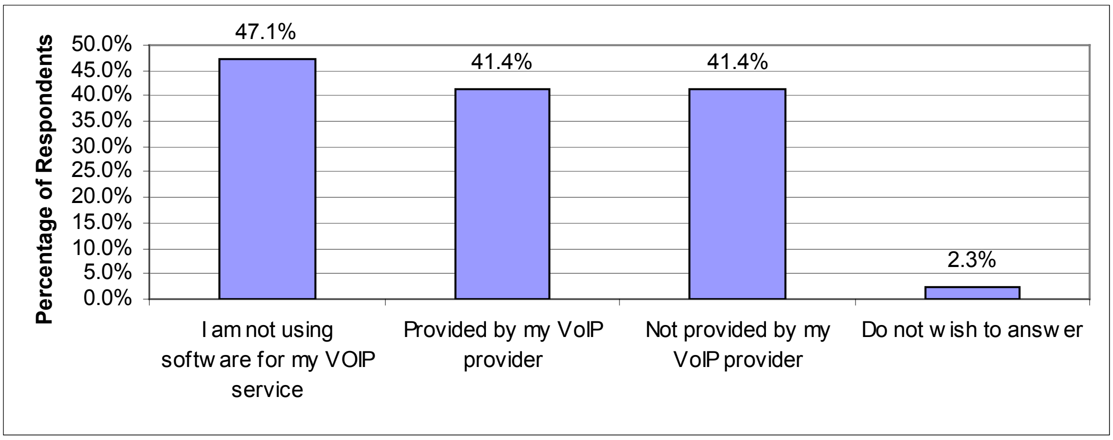


Summary: 55.2 per cent of respondents had used a PC, analogue telephone adapter and a headset or IP phone for their VoIP service. 28.3 per cent had used a PC and a headset, 19.5 per cent had used a PC phone and an IP phone, and 13.8 had used a PC, integrated access device, and a headset or IP phone. 33.3 per cent of respondents had used other types of equipment arrangements, while 1.1 per cent did not wish to answer.

Comments: The range of equipment arrangements available for the delivery of VoIP is complex. For a user-friendly introduction, see the DCITA report listed as item 16 in the *References Cited and Notes* section. There is no widely accepted norm or industry standard, and consumers are often left to determine their own desired arrangement, which can be overwhelming for those unfamiliar with the offerings. By the high percentage of respondents who selected 'Other', and through written comments we received, a significant percentage of respondents used a set-up that did not include a PC at all, most likely through a VoIP ATA (Analogue Telephone Adapter), a device that turns an analogue phone into an IP telephone by connecting directly to a broadband connection.

Although the flexibility produced by a wide range of options is desirable (and should continue), consumers can be better directed towards safe, reliable and affordable equipment by providers. In written comments to us, some respondents supported the concept of 'plug-and-play' – the ability to safely and effectively use equipment with little or no setup.

Question 14: What type of software have you used for your VoIP service? (can select more than one)



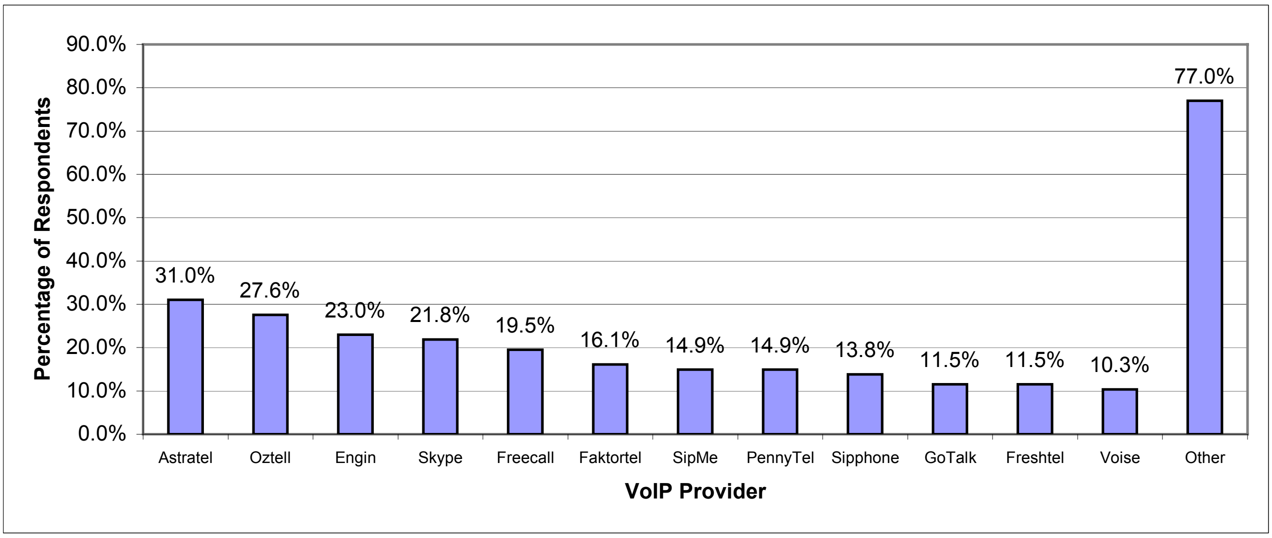
Summary: 47.1 per cent of respondents had not used software for their VoIP service, while 41.4 per cent had used software provided by their VoIP provider, and 41.4 per cent had used other types of software. 2.3 per cent of respondents did not wish to answer the question.

Comments: These results reflect the number of methods through which VoIP can be delivered to consumers. Along with flexibility in hardware, many respondents had taken advantage of flexibility in the software used to run a VoIP service. These results also reflect the fact that many respondents did not use a PC for their VoIP service.

Also, these results combined with those to Question 13 and written responses we received, highlight a very significant area of concern for CTN – accessibility of VoIP services, especially for disabled consumers.

CTN stresses that while VoIP is in its early development in Australia, there exists a tremendous opportunity for industry, regulators, and government to incorporate and support the principles of universal accessibility. Along these lines, CTN member Gunela Astbrink, a representative of TEDICORE (Telecommunications and Disability Consumer Representation), recommends a presentation by Jim Tobias of Inclusive Technologies titled *Voice over Internet Protocol (VoIP) Accessibility*, which discusses the potential of VoIP services to become more accessible and usable than conventional telephony if providers consider the barriers and opportunities presented by the hardware and software they develop, use, or support to deliver their services[17]. Universally accessible VoIP services would not only provide benefit to all consumers, but has the potential to act as a catalyst for market growth as well.

Question 15: Please list the VoIP service provider(s) you have used?



Summary: 31 per cent of respondents had used Astratel as their VoIP provider, 27.6 per cent had used Oztell, 23 per cent had used Engin, 21.8 per cent had used Skype, 19.5 per cent had used Freecall, 16.1 per cent had used Faktortel, 14.9 per cent had used Sip Me, 14.9 per cent had used Penny Tel, and 13 per cent had used Sip phone. 11.5 per cent of respondents had used Go Talk, 11.5 per cent had used Freshtel and 10.3 per cent had used Voise. 77 per cent of respondents had used other VoIP providers than these listed. In all, respondents had used 44 different VoIP providers. This was a free-answer question.

Comments: The highly fragmented and diverse supply of VoIP is displayed in these results. Respondents had used over 40 different VoIP providers without a clear leader emerging. Astratel, Oztel and Engin were the only providers that over 20 per cent had used, and many respondents had used more than one provider.

These results highlight a major area of interest and concern for VoIP users and CTN – competition in the residential VoIP market. Ensuring on-going competition in the VoIP market was a clear theme that emerged from the survey results, especially through written comments we received. Many respondents wanted on-going freedom of choice in the VoIP market:

> *"Ensure major phone companies do not exploit VoIP for corporate gain at the expense of small operators"*

According to respondents, the desire for high levels of competition was aimed to maintain and drive down VoIP costs and support increasing VoIP functionality. One common suggestion from respondents was to establish a public listing or register of VoIP providers:

> *"Keeping a list of .au VoIP providers would be useful. They're difficult to locate."*

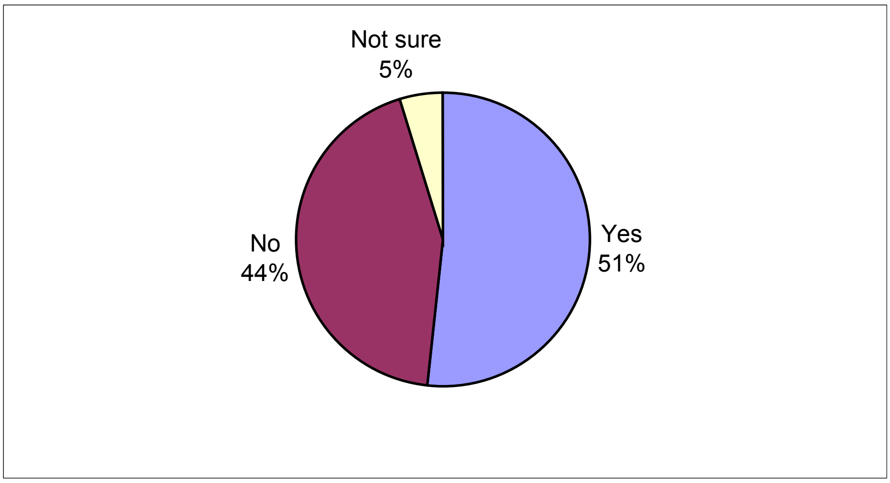
> *"Clearly showing what service is rated best in terms of quality, cost, infrastructure owned…"*

This suggestion may be achieved through mandatory membership for VoIP providers to the Telecommunication Industry Ombudsman or another type of industry body. Online forums such as Whirlpool.net.au are also valuable tool for consumers to support competition. Respondents also expressed concern about being locked into bundles, especially with the control Telstra has on the telecommunications market:

> *"If Telstra tries to get legislation introduced that inhibits VoIP – we should all make sure that does not happen"*

The most common suggestion to achieve on-going functionality was number portability – the ability to keep the same number across different providers[18].

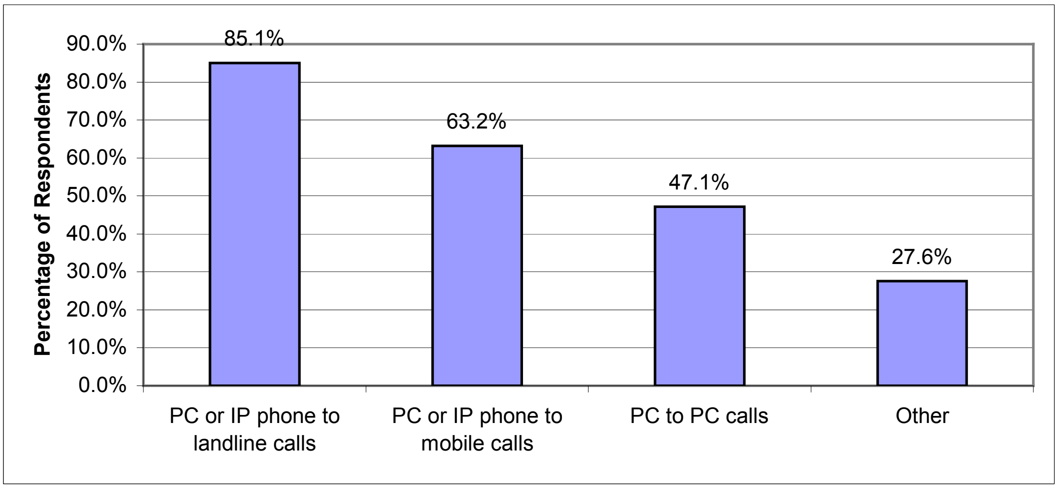
Question 16: Have all of the VoIP providers you've used been based in Australia?



Summary: 51 per cent of respondents had used VoIP providers who were all based in Australia, while 44 per cent of respondents did not and 5 per cent were not sure.

Comments: Both the international popularity and international supply of VoIP are reflected in this sample of consumers. This situation may effect how regulators and government choose to raise consumer awareness around VoIP services. It may suggest that an international approach similar to the Memorandums of Understanding signed with foreign bodies for Australian Spam regulation could be a useful avenue to pursue.

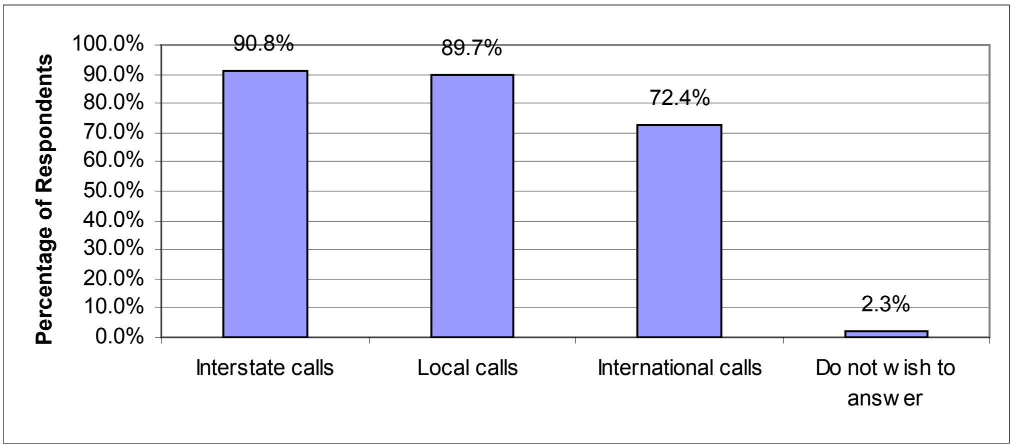
Question 17: How have you used your VoIP service? (can select more than one)



Summary: 85.1 per cent of respondents had used their VoIP service to make PC/IP phone calls to landlines. 63.2 per cent of respondents had used their VoIP service to make PC/IP phone calls to mobiles, 47.1 per cents has used it to make PC to PC calls and 27.6 per cent had used it to make other types of calls.

Comments: It is obvious, at least in this sample of consumers, that VoIP services are being used in the some of the same ways traditional telephone services are. More respondents had called landlines or mobiles with their VoIP service than other PCs, dispelling the notion that VoIP users only contact other VoIP users. However, if these figures are to increase, the industry and government must work to resolve interoperability issues.

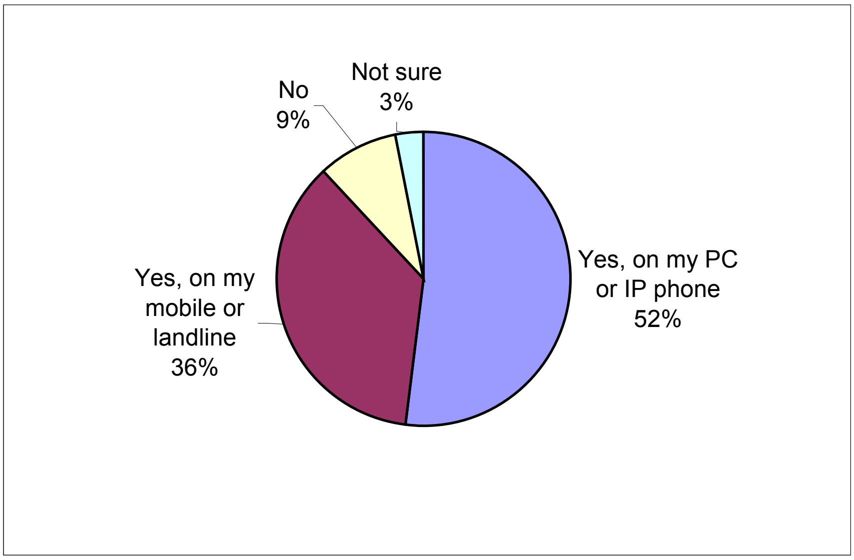
Question 18: What types of calls to mobiles or landlines have you made using VoIP? (can select more than one)



Summary: 90 per cent of respondents had made interstate calls to mobiles or landlines using their VoIP service, 89.7 per cent had made local calls and 72.4 per cent had made international calls. 2.3 per cent of respondents did not wish to answer the question.

Comments: Following on from the previous question, consumers in this sample showed that they had used their VoIP services for a wide range of calls. Almost all respondents (9 out of every 10) had made either interstate or local calls. Though VoIP has been advertised as a cheap way to make international calls, it is still impressive to see that more than 7 out of every 10 respondents (72.4 per cent) had done so.

Question 19: Have you received any VoIP calls? (can select more than one)

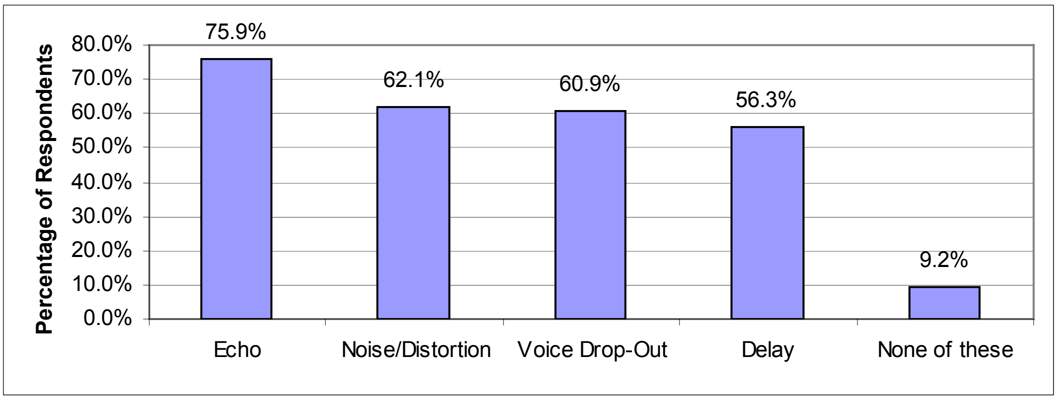


Summary: 52 per cent of respondents had received VoIP calls through their PC or IP phone, 36 per cent had received VoIP calls through their mobile or landline, while 9 per cent had not received any VoIP calls and 3 per cent weren't sure.

Comments: These results confirm our earlier supposition that VoIP users are actively in touch with other VoIP users. Almost 9 out of every 10 respondents had received VoIP calls (88 per cent), most through their PC headset or IP phone. As the market develops, though, it would be reasonable to suggest that VoIP calls to landlines and mobiles will increase.

PRODUCT QUALITY AND SERVICE

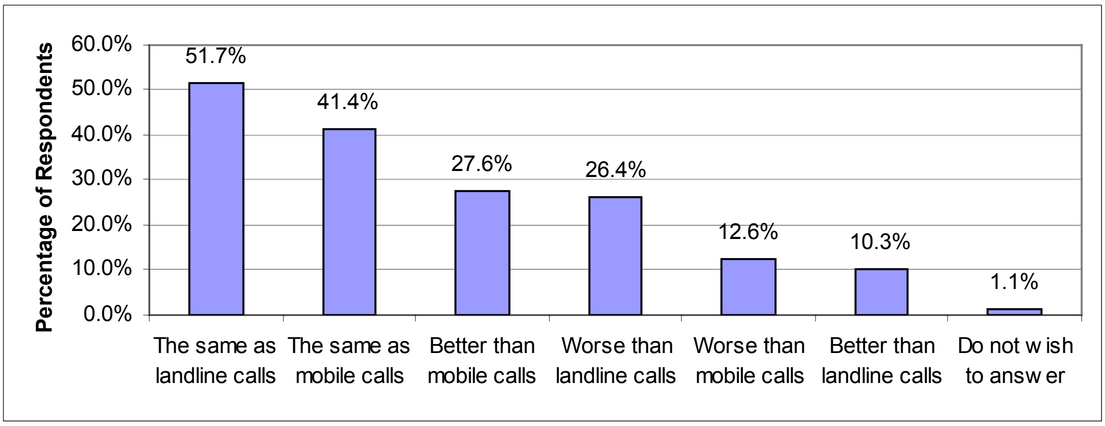
Question 20: Have you experienced any of the following during a VoIP call? (can select more than one)



Summary: 75.9 per cent of respondents had experienced echo during a VoIP call. 62.1 per cent had experienced noise or distortion, 60.9 per cent had experienced voice dropout, 56.3 per cent had experienced delay, and 9.2 per cent had not experienced any of these.

Comments: These results show that residential VoIP users are experiencing call quality problems. The majority of respondents had experienced some kind of call quality problem – echo was the most common, experienced by 3 out of every 4 respondents, while noise or distortion, dropout and delay were also widely experienced. This is a major area of concern for CTN and for the development of the industry. In written comments to us, some respondents proposed the idea of a call quality rating system.

Question 21: How would you compare the overall call quality of your VoIP service(s)? (can select more than one)

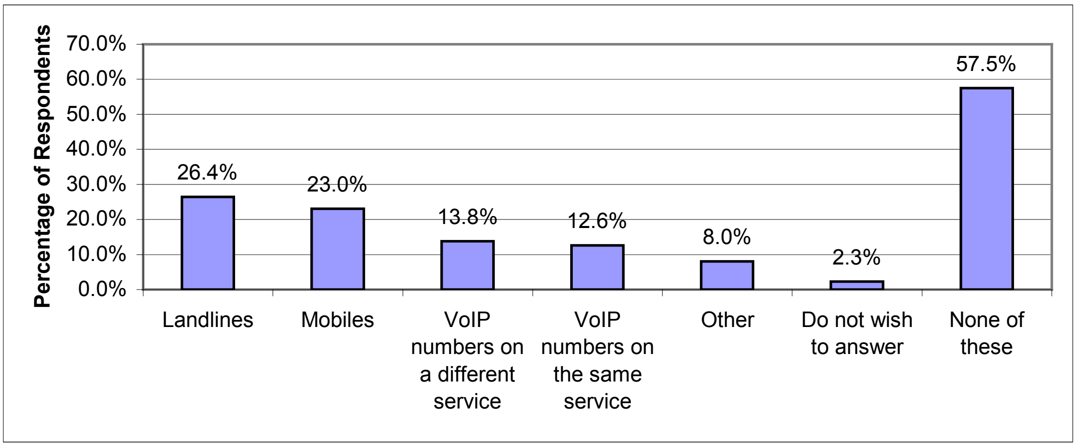


Summary: 51.7 per cent of respondents rated the call quality of their VoIP service the same as landline calls. 41.4 per cent rated it the same as mobile calls and 27.6 per cent rated it as better than mobile calls. 26.4 per cent rated their VoIP services as worse than landline calls, 12.6 per cent rated it as worse than mobile calls, 10.3 per cent rated it better than landline calls and 1.1 per cent did not wish to answer.

Comments: The majority of respondents (69 per cent) ranked VoIP call quality the same or better than mobile calls, while 1 out of every 2 (51.7 per cent) ranked VoIP call quality as the same as landlines. However, 1 out of every 4 respondents (26.4 per cent) ranked VoIP calls below the quality of landlines and 1 out of every 10 (12.6 per cent) ranked them worse than mobile calls. The juxtaposition in these results was echoed in written comments we received, which ranged from enthusiastic support of VoIP services (*"VoIP rocks!"*) to comments such as:

> *"VoIP is still a technology in its infancy and I have now cancelled all accounts due to inconsistent results, poor quality and unreliability".*

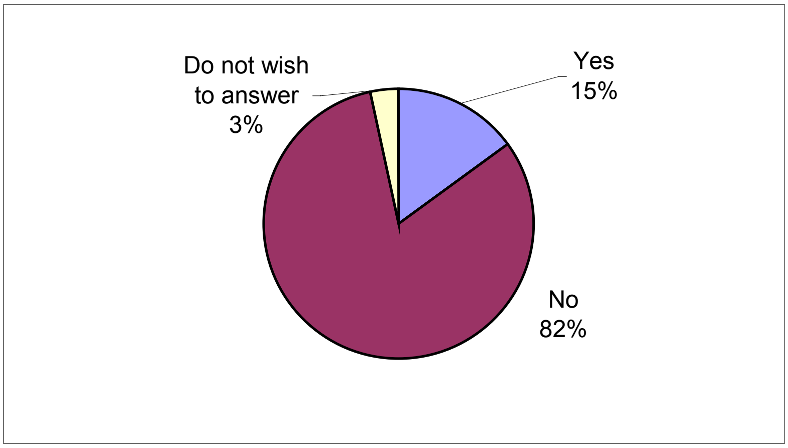
Question 22: Making a VoIP call have you had problems connecting to…? (can select more than one)



Summary: 26.4 per cent of respondents had problems connecting to landlines from their VoIP service, 23 per cent had trouble connecting to mobiles, 13.8 per cent had trouble connecting to VoIP numbers on a different service and 12.6 per cent had trouble connecting to VoIP numbers on the same service. 8 per cent had other types of connection problems while 57.5 per cent of respondents experienced none of these problems. 2.3 per cent did not wish to answer.

Comments: Successfully connecting a VoIP call appears to be just as serious a problem in this sample of VoIP consumers as call quality. Approximately 1 in every 4 respondents had problems connecting to landlines and mobiles. Likewise, respondents had significant problems connecting to VoIP numbers on a different service (13.8 per cent) or on the same service (12.6 per cent).

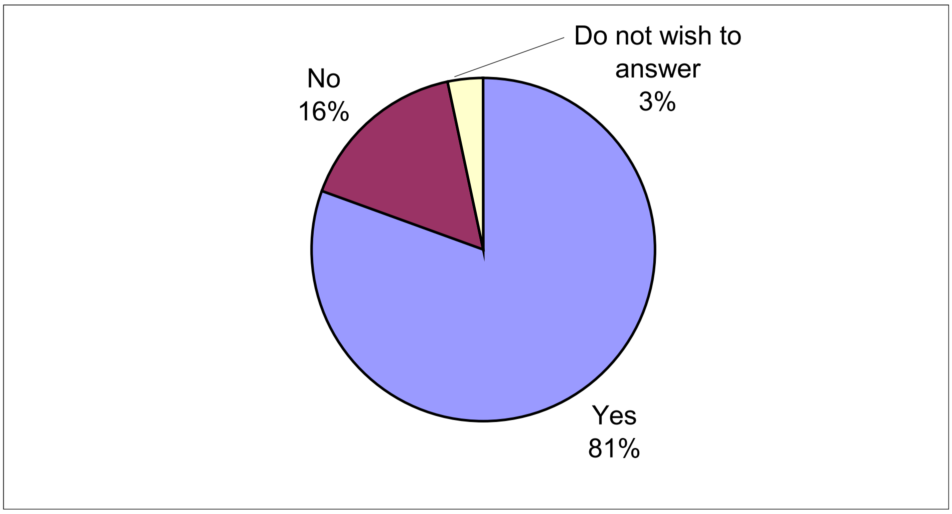
Question 23: Have you tried to make an urgent call with your VoIP service and been unable to?



Summary: 15 per cent of respondents had tried to make an urgent call on their VoIP service and been unable to. 82 per cent not been unable to make an urgent call while 3 per cent did not wish to answer.

Comments: More than 1 out of every 7 respondents had been unable to make an urgent call through their VoIP service. CTN is very concerned with these results. They show how vulnerable consumers are to potentially not being able to connect to emergency services through VoIP, especially those consumers who have replaced a standard telephone line with a VoIP service. It is not a stretch to say that an unacceptable proportion of current VoIP users are ‘at risk’ in this regard. Several respondents, in their written comments, stressed the need to ensure emergency services availability.

Question 24: Do you consider your VOIP service(s) to be reliable?



Summary: 81 per cent of respondents considered their VoIP service to be reliable, while 16 per cent did not and 3 per cent did not wish to answer.

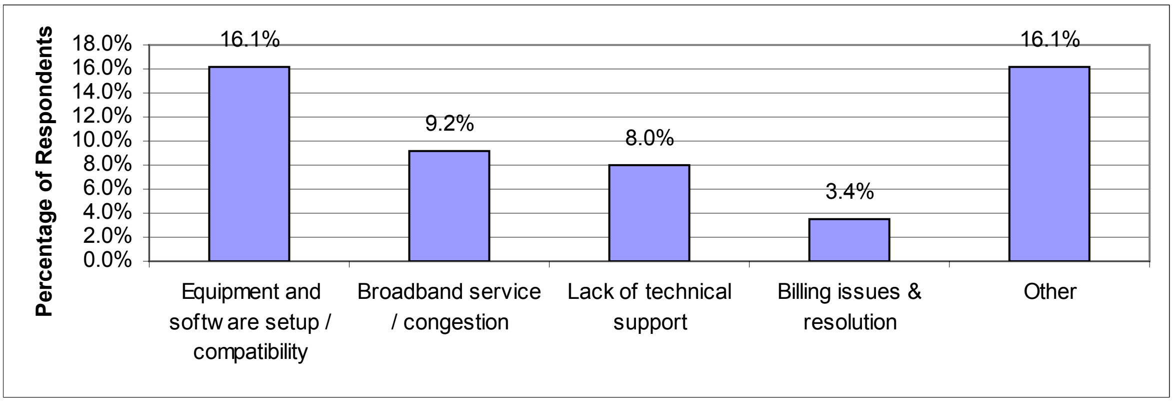
Comments: In future research we would define the description of 'reliable' to include variables such as cost, equipment set-up and location of one's provider. More than 3 out of every 4 respondents (81 per cent) rated their VoIP service as reliable. While this number bodes well for VoIP providers, in CTN's view it is very important that a significant number of respondents (16 per cent) did not consider their VoIP service reliable – a figure that will have to improve as the market grows.

Questions 20 through 24 highlight the serious technical issues that need to be resolved in order for VoIP consumers to enjoy a high quality, reliable VoIP service. These results support CTN's concern that consumers are prematurely replacing a standard telephone service with a VoIP service (see Question 9) and underscore the need for more consumer protection and basic assurances of product quality and reliability.

Since many Australian VoIP providers are not Internet Service Providers, the inter-industry relationships that are behind these technical problems are complex. In late March 2006 the Australian Communications Industry Forum released an industry discussion paper titled, *Quality of Service (QoS) Based VoIP Interconnectivity*[19], for public comment, which discussed a number of these technical issues. Two concepts proposed in the paper, on which we also received numerous comments of support from respondents, were "peering" and "Quality of Service" (QoS). Peering is the practice of exchanging Internet traffic between service providers – "exchange of data routing between two or more Internet service providers for the purpose of ensuring that traffic from the first can reach customers of the second, and vice-versa"[20]. In their discussion paper, ACIF defined QoS as, "the capability of a network to provide better service to selected network traffic, and is often referred to as traffic engineering", going on to say that, "QoS mechanisms can be deployed across various technologies, and at various network layers". These mechanisms include practices such as "admission control", "packet classification", "bandwidth management", "queue management", and "queue scheduling" – see page 33 of the ACIF paper for further explanation of these mechanisms.

Though CTN recognises the complex technical issues behind call quality and call connection problems with VoIP, whether through peering, QoS mechanisms or other measures, industry, regulators and government must act on providing higher quality and more reliable VoIP services, specially since some consumers are already replacing a standard telephone service (STS) with a VoIP service.

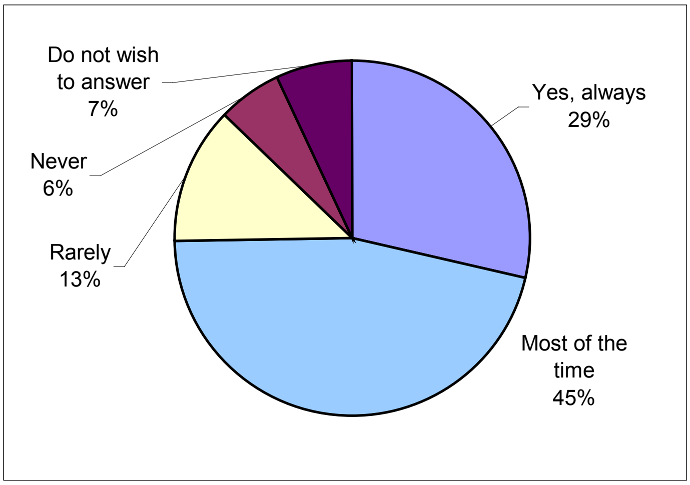
Question 25: Please list any other problems you have had in using your VoIP service?



Summary: 16.1 per cent of respondents had problems with their equipment and software set up and compatibility. 9.2 per cent had problems with their broadband service, 8 per cent had problems with technical support, and 3.4 per cent had problems with billing. 16.1 per cent of respondents listed other types of problems. This was a free-answer question.

Comments: Aside from call quality and call connection, there were a number of other problems that respondents have had with their VoIP service. The equipment and software problems experienced by respondents, as well as the problems they experienced with their broadband service are two issues highlighted and commented on in previous questions, in which we stressed the need for universal accessibility and broadband standards. A lack of technical support is an issue that is explored in more depth in questions 26 through 30, while billing is an issue covered in the next section.

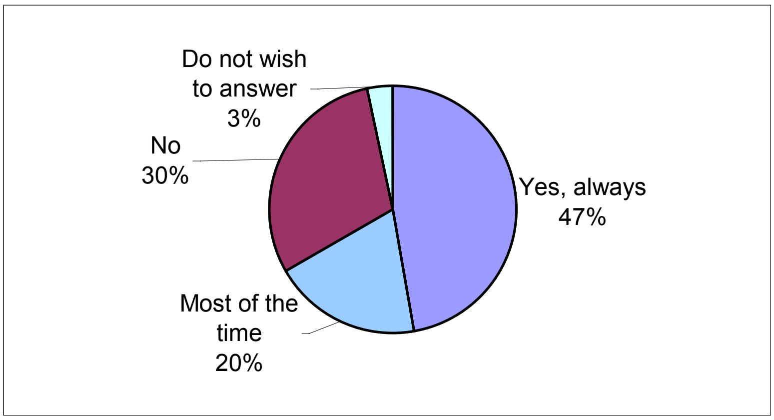
Question 26: When you have experienced problems with your VoIP service, has it been easy to identify what the problem was?



Summary: 29 per cent of respondents found it always easy to identify the problems with their VoIP service, while 45 per cent found it easy most of the time. 13 per cent of respondents rarely found it easy to identify the problems with their VoIP service, while 6 per cent never found it easy. 7 per cent did not wish to answer.

Comments: This question begins to probe consumers' experiences with technical support for VoIP. In this question, we are shown how respondents had navigated through troubleshooting on their own. The fact that 3 out of every 4 always found it easy to identify their problems, or often did, may reflect the technical skill in this sample of consumers. CTN expects the proportion of VoIP consumers who cannot easily identify problems with their service, already at 19 per cent, to increase as more users adopt VoIP.

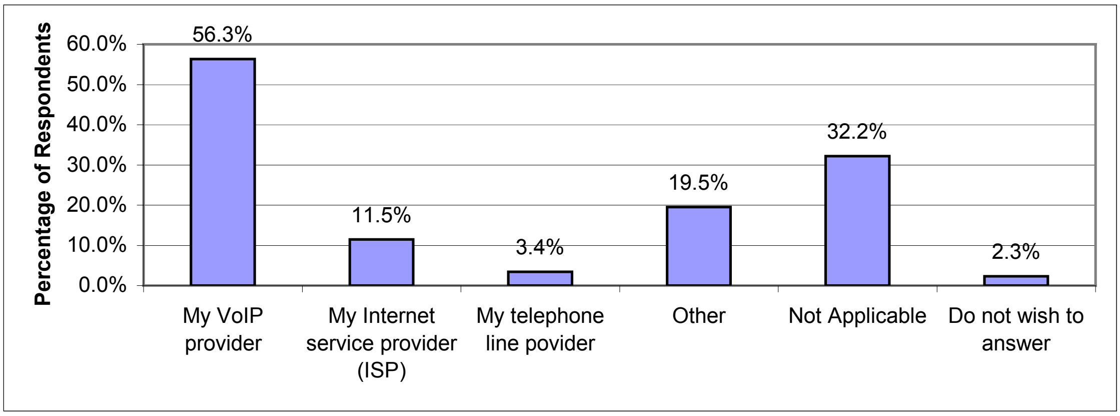
Question 27: Do you report problems with your VoIP service to anyone?



Summary: 47 per cent of respondents always reported problems with their VoIP service to someone. 20 per cent reported problems most of the time, while 30 per cent did not report problems. 3 per cent did not wish to answer.

Comments: Though most VoIP consumers surveyed could identify problems, not all of them reported these problems to a second party. This could indicate a number of things, from problems solved without the need for help (see Question 30) to, more worryingly, inaccessible technical support. It also raises the question of whether VoIP consumers are aware that their complaints can be escalated to the Telecommunications Industry Ombudsman.

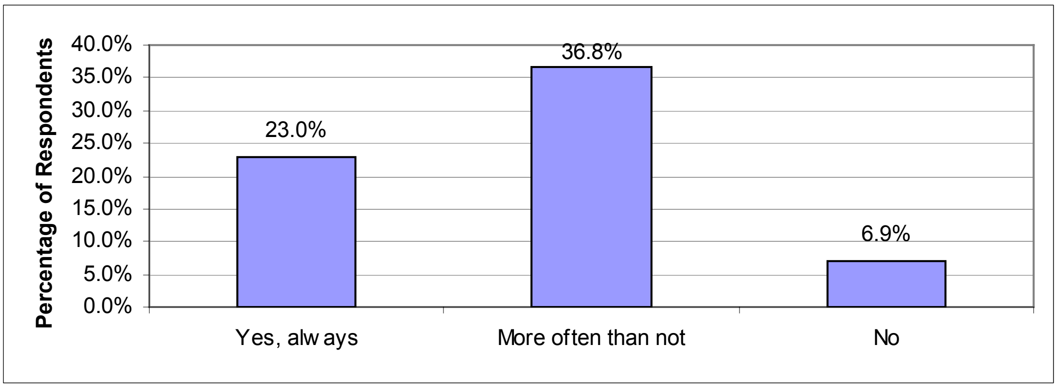
Question 28: To whom do you report the problem? (can select more than one)



Summary: 56.3 per cent of respondents reported problems to their VoIP provider, while 11.5 per cent reported problems to their ISP and 3.4 per cent reported problems to their telephone provider. 19.5 per cent of respondents reported problems to other groups, while 32 per cent deemed this question not applicable to them. 2.3 per cent did not wish to answer.

Comments: Fault reporting and restoration are contentious issues in VoIP regulatory discussions. In this sample, the majority of respondents reported problems with their VoIP service directly to their VoIP provider, though with significant numbers reporting problems to other groups, it's easy to see why reporting a problem can be a confusing proposition for consumers. CTN supports a 'one-call' philosophy in which the industry has inter-company arrangements to efficiently deal with fault reporting and restoration originating from one call from a consumer. Solving customer problems will be key in creating a positive image and positive word of mouth among consumers – something the Whirlpool discussion forums demonstrate well.

Question 30: Was the assistance you received helpful?



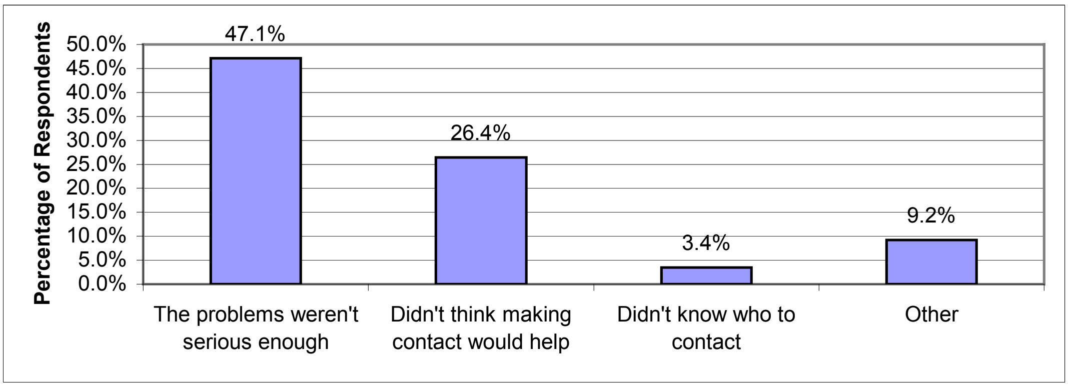
Summary: 23 per cent of respondents said that the help they received from a second party was always helpful, while 36.8 per cent said it was helpful more often than not. 6.9 per cent of respondents answered that the assistance received was not helpful. 29.9 per cent said this question was not applicable to them.

Comments: It appears that the technical support provided to VoIP consumers surveyed performed reasonably well. However, as the market reaches a more diverse consumer base, technical support services must remain a major focus for the VoIP industry – a point articulated by one survey respondent who wrote:

> "*There seems to be a general lack of customer support…This is okay while most people using it are 'technically' [able] people & know other sources of support (e.g. forums). This won't be good when the general public starts to be more aware & starts wanting to just buy & plug-in*".

Clearly, technical support is an area that would benefit from more in-depth research.

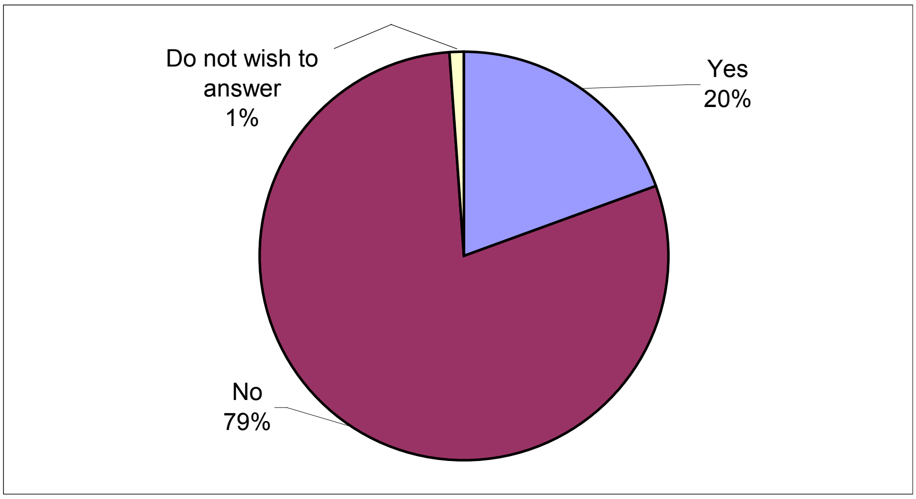
Question 30: In instances when you did NOT report the problem, why was this? (can select more than one)



Summary: 47.1 per cent of respondents did not report problems to anyone because they didn't consider the problems serious enough, while 26.4 per cent didn't think making contact would help and 3.4 per cent didn't know who to contact. 9.2 per cent gave other reasons.

Comments: This question continues on from Question 27. In instances where respondents did not report a problem, the most likely cause was that the problem was minor. It is reasonable to suggest, though, that as VoIP reaches a wider audience fewer consumers will be able to make a distinction between a minor and major problem. Also worrying is that more than 1 in every 5 respondents did not think it would help to seek assistance, indicating, in the least, low confidence in the effectiveness of technical support. Similarly, though the fact that 3.4 per cent of this sample did not know who to contact may represent a small number of consumers, when extrapolated to the greater public it is an issue that the industry needs to address, presumably through better communication with their customers.

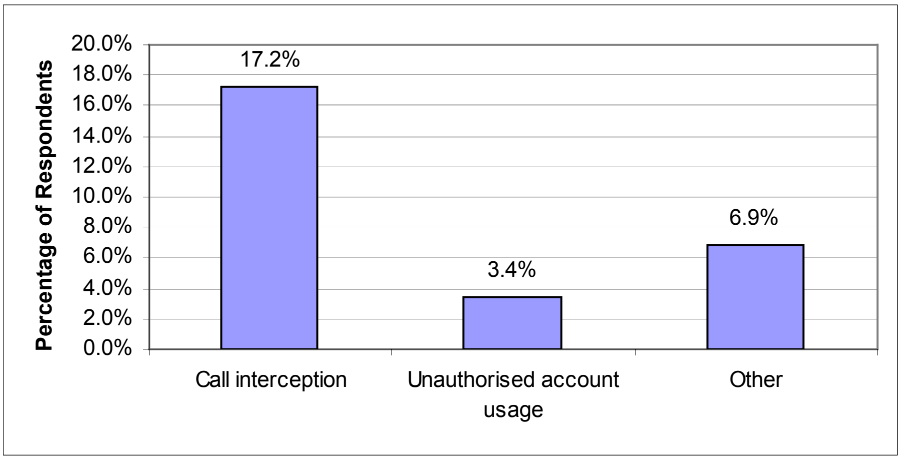
Question 31: Do you have security concerns with your VoIP service?



Summary: 20 per cent of respondents had security concerns with their VoIP service, while 79 per cent did not have concerns and 1 per cent did not wish to answer.

Comment: Security is clearly an issue among this group of consumers. 1 in every 5 respondents had security concerns. Considering many surveyed here were technically inclined users, these results could point to an even bigger issue among the wider public.

Question 32: Please list your security concerns?

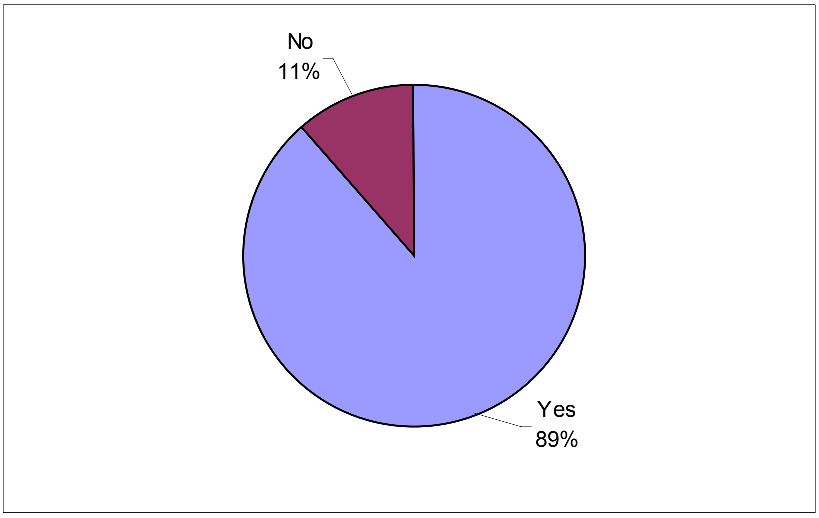


Summary: 17.2 per cent of respondents listed call interception as a security concern, while 3.4 per cent listed unauthorised account usage and 6.9 per cent listed others concerns.

Comments: Call interception was the top security concern, indicating that privacy is potentially a major issue among VoIP users. The high proportion of respondents answering 'Other' reflects the always-evolving nature of security issues and highlights the need for on-going consumer protection. A recent concern related to unauthorised account usage has been call ID fraud[21]. In the least, information about security issues and how VoIP users can protect themselves from them, as well as the measures VoIP providers are taking to address these concerns, must be readily available. If not, the VoIP industry could suffer from bad publicity as their services become more widely used.

COSTS

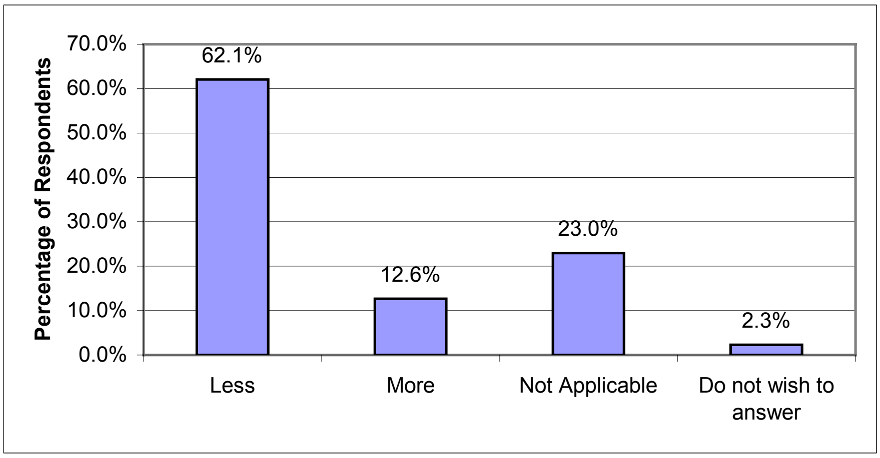
Question 33: Have you paid for any of the VoIP service(s) you have used?



Summary: 89 per cent of respondents had paid for some of the VoIP services they had used, while 11 per cent had not paid for any VoIP services they had used.

Comments: This is both a surprising and important finding, especially when considering the popular notion that consumers would only widely use *free* VoIP services. The overwhelming majority of consumers in this sample chose to pay for VoIP services, even when free services were available. Although the wider public may not yet invest in a VoIP service, these results should encourage VoIP providers.

Question 34: Has your use of VoIP cost more or less than you anticipated?



Summary: 62.1 per cent of respondents answered that their use of VoIP has cost less than they had anticipated, while 12 per cent answered that their use of VoIP had cost more than they had anticipated. 23 per cent of respondents answered that this question was not applicable to them, while 2.3 per cent did not wish to answer.

Comments: In this sample of consumers, it appears VoIP is delivering the cost savings consumers thought it would:

"*Phone bill down from $200/month to only $30."*

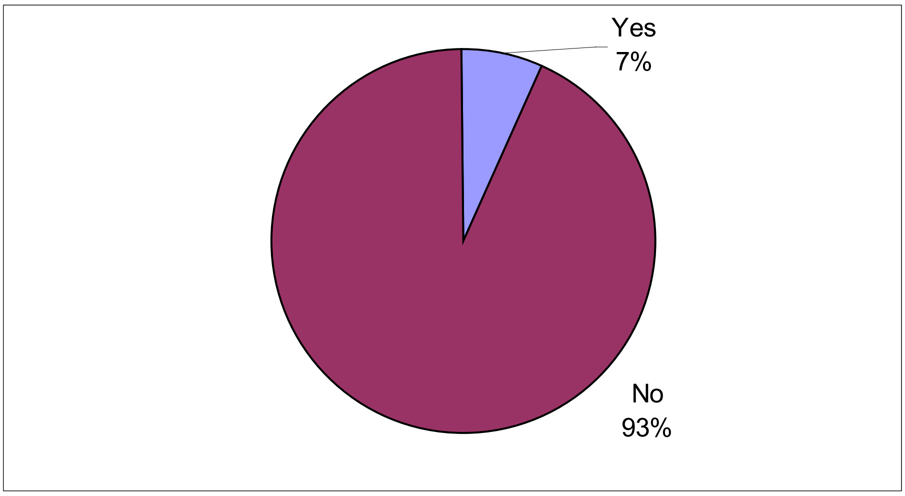
"I love VoIP because it saves me hundreds of dollars on overseas calls."

"I think VoIP is great. It has cut our phone bill by 80%."

However, while these are pleasant findings for consumer groups like CTN, more research around VoIP affordability should be conducted, specifically determining consumers' total cost, especially considering VoIP cost more than anticipated for 12.6 per cent of consumers surveyed. Some VoIP consumers are also turning to other alternatives:

"We've reverted to phone cards as they are usually 50% price of VoIP calls."

Question 35: Have there been any costs you were unaware of?



Summary: 93 per cent of respondents answered that they had experienced no costs they were unaware of, while 7 per cent had experienced unexpected costs.

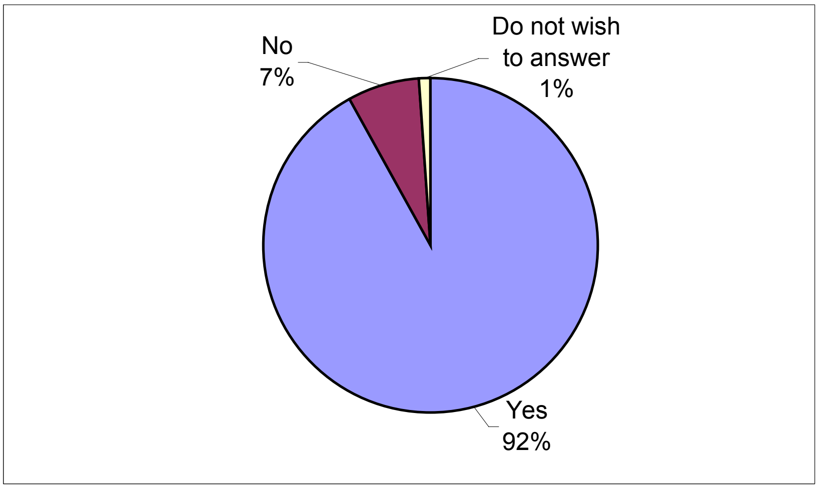
Comments: Though these results are encouraging for residential VoIP consumers, considering other recent research has revealed that some providers do not fully disclose all relevant terms and conditions for their products (see page 5) CTN is concerned that a higher proportion of consumers will experience unexpected costs as the market grows.

Question 36: Please list the costs you were unaware of.

Costs respondents were unaware of	**Percentage of Respondents**
Prepaid credit on 'free' plans	1.1%
Need for higher broadband speed	1.1%
Research time	1.1%
Equipment set-up time	1.1%
Forwarded calls	1.1%
Increase in cost calls for 1300 number	1.1%

Comments: When extrapolated to a much larger market, each of these 'unexpected costs' may reflect a serious systemic issue. Therefore, industry and regulators need to take them seriously. These results also highlight the need for consumers to be aware of the 'total cost' of VoIP services (which can include expenses beyond call costs such as broadband costs and research time).

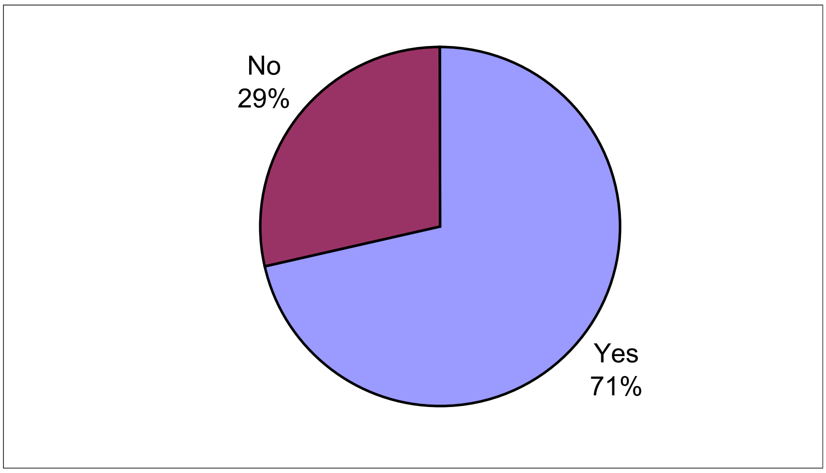
Question 37: Do you know how all of the charges are calculated for your VoIP service (i.e. you know all the rates you are being charged at)?



Summary: 92% of respondents knew how all of the charges were calculated for their VoIP service, while 7 per cent did not and 1 per cent did not wish to answer.

Comments: These results demonstrate that residential consumers, at least in this sample, have a high level of interest in how their bills are calculated and further illustrate VoIP as a cost-driven technology. This isn't surprising given the extensive research undertaken prior to purchasing a service and the fact that cost savings were a key driver in the uptake of services.

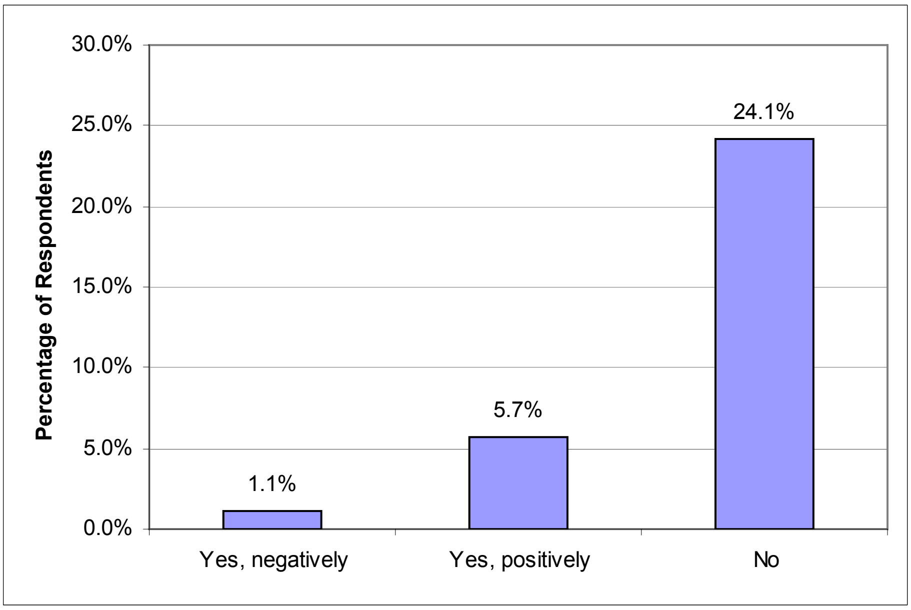
Question 38: Have you used 'real-time' billing? (i.e. you are given instant information on your use and costs)



Summary: 71 per cent of respondents had used 'real-time' billing while 29 per cent had not.

Comments: Many VoIP providers appear to be providing billing in real-time, a service desired by CTN members for some time because of the support it lends to cost planning and cost monitoring. CTN supports the rollout of real-time billing across all telecommunications services and reminds the industry of the financial, administrative and customer satisfaction benefits that this service can produce.

Question 39: If your VoIP provider is based overseas, has this affected your billing?

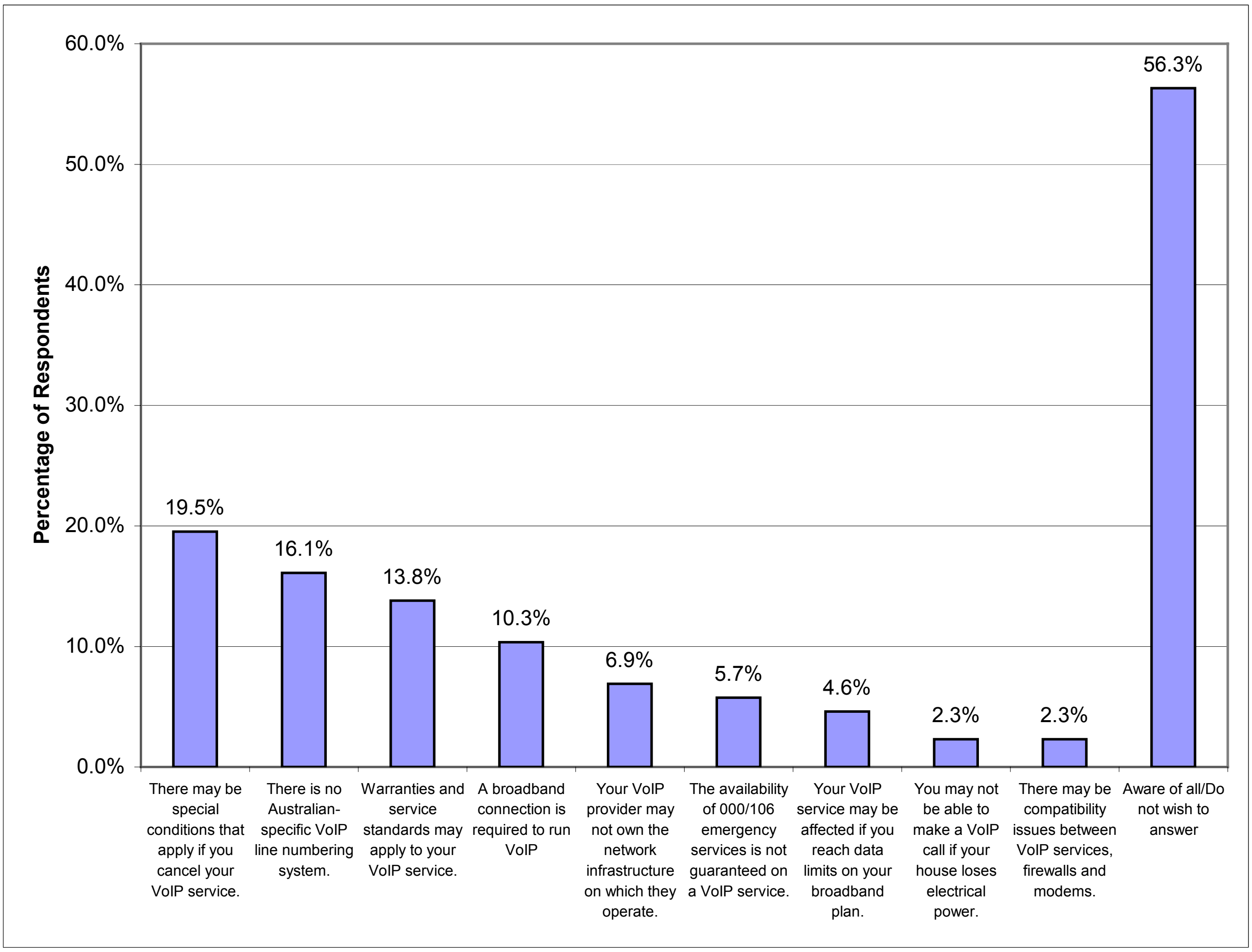


Summary: 24.1 per cent of respondents answered that using an overseas VoIP provider did not adversely affect billing. 5.7 per cent answered that having an overseas VoIP provider positively affected billing while 1.1 per cent answered that it negatively affected billing.

Comments: These results strongly pertain to question 15, which showed that 44 per cent of respondents had used overseas VoIP providers. It appears that, for consumers in this sample, overseas-based services hadn't adversely affected billing experiences. If these results continue into the future, consumers' billing concerns may not create a significant barrier to entry in the VoIP market and consumers can expect to see continued international competition. Furthermore, these results highlight the need, in any Australian regulatory effort, to continually monitor the international market.

AWARENESS AND PRODUCT INFORMATION

Question 40: Which of the following are you NOT aware of? (can select more than one)



Summary: 19.5 per cent of respondents were not aware that there may be special conditions activated if they cancelled their VoIP service. 16.1 per cent were not aware that there was no Australian-specific VoIP line numbering system (DCITA has since proposed such a system). 13.9 per cent of respondents were not aware that warranties and service standards may have applied to their VoIP service, while 10.3 per cent were not aware that a broadband connection was required to run VoIP (though most providers suggest rather than stipulate this). 6.9 per cent of respondents were not aware that their VOIP provider may not have owned the network infrastructure on which they operated. 5.7 per cent of respondents were not aware that the availability of 000/106 emergency services was not guaranteed on a VOIP service. 4.6 per cent were not aware that their VOIP service may have been affected if they had reached data limits on their broadband plan, 2.3 per cent weren't aware that they may not have been able to make a VoIP call if their house lost electrical power and 2.3 per cent were not aware that there may be compatibility issues between VoIP services, firewalls and modems. 56.3 per cent of respondents were aware of all of these issues or did not wish to answer.

Comments: The purpose of this question was to gauge respondents' awareness of key issues surrounding VoIP consumer education. Some comments we received from respondents, however, questioned the absolute nature of some of the survey statements (for example some respondents told us they had successfully accessed VoIP services with a dial-up connection). In future surveys we will attempt to make such a question more open-ended.

There are significant points to extract from these results. 1 in every 20 respondents was not aware that the availability of emergency services is not guaranteed on a VoIP service. When extrapolated to the general public, and factoring in less technologically aware consumers, this figure is not acceptable considering the importance of the issue. VoIP providers, regulators and government (and indeed groups like CTN) need to either find solutions to this lack of awareness or ensure that consumers are well educated as to the potential ramifications of non-guaranteed access to emergency services.

1 in every 5 respondents was unaware of the existence of terms and conditions attached to their VoIP services, specifically when cancelling a service, and more than 1 out of every 10 respondents were not aware that warranties and service guarantees might apply to their service. The need for better consumer education in these areas is clear. Furthermore, if consumers are to make informed choices this information must be readily available from providers in a user-friendly format.

The impetus for industry, regulators and government to ensure reliable broadband services is highlighted by the fact that more than 1 in every 10 respondents did not know that a broadband service was required to run VoIP.

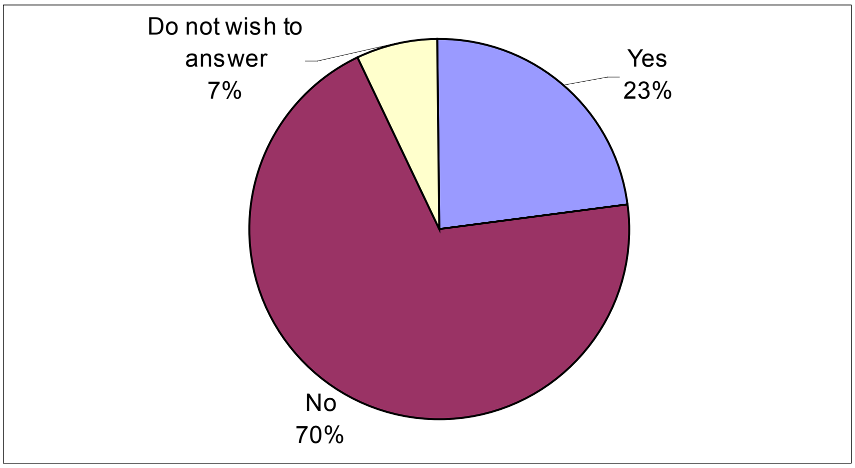
The need for better consumer education on VoIP was repeated a number of times in written comments we received:

"In the current market you need to be tech savvy to understand it all…some operators are causing negative impact on usage."

"It is now moving from "First Adopters" stage to a commercial realisation for many, and as such there are still some not so serious operators out there trying to tell people they are."

"Providing accurate information is probably the best idea.'

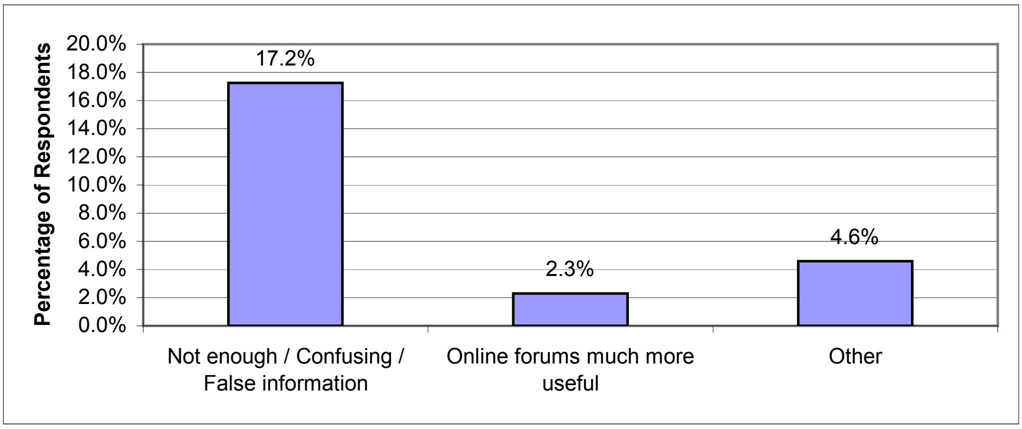
Question 41: Do you feel your VoIP provider advertised/advertises VoIP as a replacement for a telephone line?



Summary: 23 per cent of respondents felt their provider advertised VoIP as a replacement for a telephone line, while 70 per cent did not. 7 per cent of respondents did not wish to answer.

Comments: These are very significant results. They show that misleading advertising is an issue of major concern for residential VoIP consumers, and hence, CTN. Approximately a quarter of all respondents felt that their VoIP provider advertised VoIP as a replacement for a telephone line – a dangerous situation considering the unregulated and uncertain quality of the current VoIP market in Australia, especially when compared to the heavily regulated telecommunications market, and considering the use of VoIP providers based overseas.

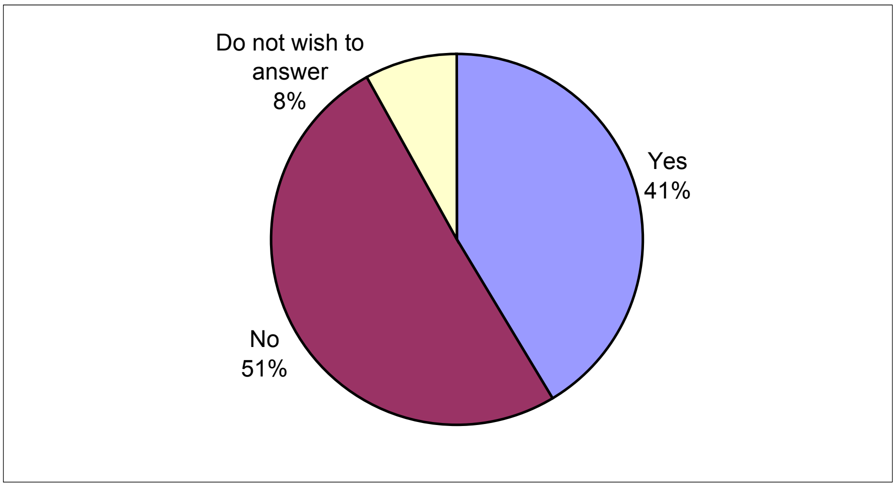
Question 42: Do you have any comments regarding the information given to you by VoIP providers?



Summary: 17.3 per cent of respondents wrote that their VoIP provider gave not enough, confusing or false information. 2.3 per cent of respondents wrote that online forums were much more useful while 4.6 per cent gave other comments. This was a free-answer question.

Comments: These results further illustrate the points made in the previous question. In this sample of consumers there are serious concerns raised over not only the quantity, but also the accuracy of information disseminated by VoIP providers. These results raise the issue of whether some VoIP providers may be in possible or potential breach of the *Trade Practices Act 1974 (Cth)*[22]*.* They also raise the issue of whether consumers are aware of the recourse they may take[23], and highlights the need for the ACCC and state fair trading bodies to lead in both consumer and industry education initiatives and enforcement action if necessary.

Question 43: Do you think VoIP providers in Australia should be regulated the same as landline and mobile phone companies?



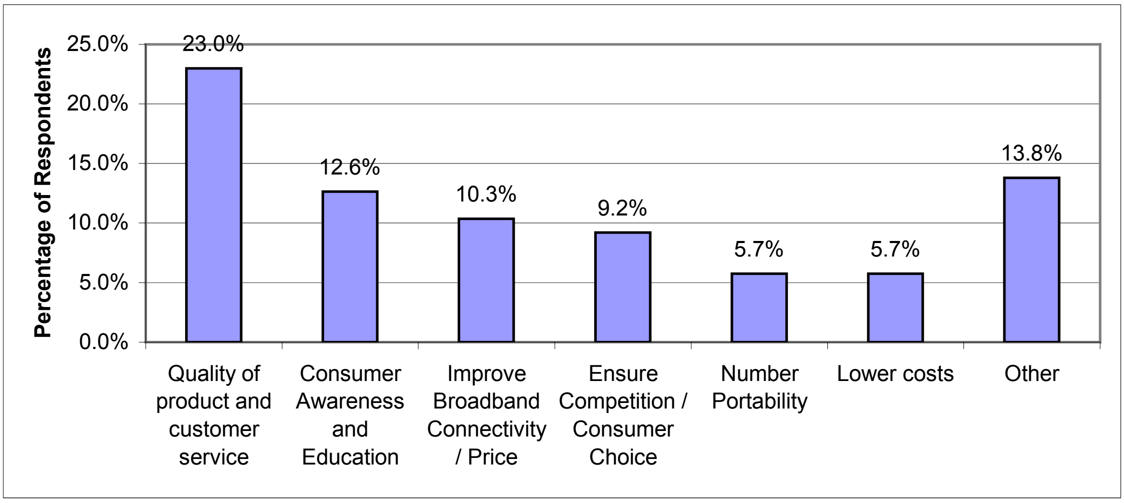
Summary: 41 per cent of respondents thought VoIP providers in Australia should be regulated the same as landline and mobile phone companies while 51 per cent of respondents did not think VoIP providers should be regulated the same. 8 per cent did not wish to answer.

Comments: The split in opinion among this sample of consumers reflects the differing opinions among consumer groups, industry and government on VoIP regulation. This spilt was further demonstrated by written comments we received:

> *"Tell the government to keep their hands off."*
>
> *"Don't make it more expensive than it is by wrapping it up in bureaucracy."*
>
> *"I am still not 100% convinced VoIP is never going to be a total replacement for PSTN calls nor am I convinced, until at least there is some regulation of the industry, that VoIP has a future."*

Considering the bias of this survey towards more technically inclined consumers, CTN places additional significance on the high proportion of respondents who answered in favour of heavier regulation, specifically in relation to consumer protection. Such protection will encourage more confidence in VoIP and should lead to greater take up of services.

Question 44: What do you think CTN's priorities should be in improving access and service for VoIP for Australian consumers?



Summary: 23 per cent of respondents wrote that CTN should focus on quality of VoIP products and customer service. 12.6 per cent wrote that CTN should focus on consumer awareness and education, 10.3 per cent suggested improving broadband connectivity/price and 9.2 per cent suggested ensuring competition and consumer choice. 5.7 per cent of respondents wrote that CTN should focus on number portability, 5.7 per cent wrote that CTN should focus on lower costs and 13.8 per cent made other comments. This was free-answer question.

Comments: We grouped the written comments we received for this question, while dispersing their flavour throughout the rest of the report. CTN takes these suggestions very seriously. They will help direct our work in VoIP in the coming year.

References Cited and Notes

1. Department of Communication Information Technology and the Arts (DCITA) 2005, *Examination of Policy and Regulation Relating to Voice Over Internet Protocol (VoIP) Services – Report to the Minister for Communications, Information Technology and the Arts*, Department of Communications, Information Technology and the Arts, Canberra.

2. Coonan, Sen Hon H, 2005, *VOIP policy framework announced*, media release, Senator the Hon. Helen Coonan, Minister for Communications, Information Technology and the Arts, Canberra, 22 November.

3. Note: See: <http://www.acif.org.au/projects/voip>.

4. Evans, S (Telsyte), presentation to the Australian Communications Industry Forum *VoIP – Identifying the Missing Links*. 6 December 2005.

   Note: In February 2006 Engin, a VoIP provider, and the Australian Telecommunications Users Group (ATUG) released research polling VoIP customers' experiences.
   See: <http://www.atug.com.au/atug2006/DavidWaterhouseATUG2006Pres.pdf>

5. See: Australian Seniors Computer Clubs Association (ASCCA), *Information Guide to Interactive Communications*, <http://www.seniorcomputing.org/>.

   Department of Communications, Information Technology and the Arts (DCITA) 2005, *Backgrounder: Emerging Voice Services – Voice over Internet Protocol (VOIP)*, Department of Communications, Information Technology and the Arts, Canberra. <http://www.dcita.gov.au/__data/assets/pdf_file/23408/VOIP_Backgrounder_with_diagrams 041221.pdf>.

   Symbio Networks 2005, *A consumer's guide to VoIP services in Australia*, < http://www.acif.org.au/__data/page/13230/A_consumers_guide_to_VoIP_in_Australia_V2.pdf>.

6. ZDNet, "Pacific Internet defuses Optus VoIP hype", *ZDNet*, viewed 27 October 2005, <http://www.zdnet.com.au/news/communications/soa/Pacific_Internet_defuses_Optus_VoIP_hype/0,2000061791,39219289,00.htm>.

7. iTWire, "NT government forges ahead on VoIP", *iTWire*, viewed 6 March 2006, <http://www.zdnet.com.au/news/communications/soa/NT_government_forges_ahead_on_VoIP/0,2000061791,39240797,00.htm>.

8. 7:30 Report, "Telstra boss outlines new threat to core business", television program, *ABC Television*, Reporter: Emma Alberici, 25 October 2005.

9. iTWire, "VoIP provider Engin Claims 15,000 users", viewed 29 November 2005, *iTWire*, <http://www.itwire.com.au/telecommunications/industry/voip_provider_engin_claims_15%2c000_users_200511292789/>.

10. iiNet, "iiNet Surpasses 10,000 VOIP subscribers", media release, *iiNet*, viewed 23 November 2005, <http://www.iinet.net.au/about/investor/voip_10000.pdf>.

11. iTWire, "VoIP nears prime time with Primus launch", *iTWire*, viewed 6 March 2006, <http://www.itwire.com.au/content/view/3528/127/>.

12. White, C (Telstra), presentation to the Australian Communications Industry Forum *VoIP – Identifying the Missing Links*. 6 December 2005.

13. Crawford, M, 2006 "Telstra steps in on VoIP emergency services confusion", *Computer World*, viewed 17 February 2006, <http://www.computerworld.com.au/index.php?id=194969860&eid=-246>.

    Note: See a United States Federal Communications Commission (FCC) public notice here: <http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-05-2358A1.doc>.

14. BBC News, "Ruling raps broadband definition", *BBC News*, viewed 23 February 2006, <http://news.bbc.co.uk/1/hi/technology/3563320.stm>.

15. Australian Competition and Consumer Commission (ACCC) 2005, *Snapshot of Broadband Deployment as at 30 September 2005*, Australian Competition and Consumer Commission, Canberra. < http://www.accc.gov.au/content/item.phtml?itemId=721272&nodeId=file43bb20329f183&fn= Snapshot%20of%20broadband%20deployment%20(30%20Sep%2005).pdf>

16. Department of Communication Information Technology and the Arts (DCITA) 2005, *Backgrounder: Emerging Voice Services – Voice over Internet Protocol (VOIP)*, Department of Communications, Information Technology and the Arts, Canberra.
See: <http://www.dcita.gov.au/__data/assets/pdf_file/23408/VOIP_Backgrounder_with_diagrams 041221.pdf>.

17. Tobias, J, 2006 "Voice over Internet Protocol (VoIP) Accessibility", *Inclusive Technologies*, online presentation, viewed 16 February 2006, <http://www.inclusive.com/trng/voip/online-live/>.

18. Sydney Morning Herald, "Number portability a problem for VoIP", *Sydney Morning Herald*, viewed 30 September 2005, <http://www.smh.com.au/news/breaking/number-portability-a-problem-for-voip/2005/09/30/1127804632393.html>.

19. Australian Communications Industry Forum, 2006 (authors Evans, S & Chirgwin, R), *QOS-Based VoIP Service Interconnectivity*, industry discussion paper, North Sydney, March.
See: http://www.acif.org.au/__data/page/12628/ACIF_QoS_Report_22-03-2006.pdf.

20. Canadian Radio-television and Telecommunications Commission, *"CRTC Telecommunications Industry Data Collection Glossary"*, *Canadian Radio-television and Telecommunications Commission*, viewed March 2006, < http://www.crtc.gc.ca/dcs/eng/glossary.htm>.

21. Colley, A, 2006, "Call ID fraud hits net phones", *The Australian IT*, viewed 15 March 2006, < http://australianit.news.com.au/articles/0,7204,18371299%5E15346%5E%5Enbv%5E15306-15320,00.html>

22. Trade Practices Act 1974 (Cth), Sections 52 and 53.

23. Australian Competition and Consumer Commission, "What to do if you think you have been misled", *Australian Competition and Consumer Commission*, viewed March 2006, <http://www.accc.gov.au/content/index.phtml/itemId/11810/fromItemId/3871>.