

Notes on VoIP Regulatory Options

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Summary

These notes are an aid to making decisions about how to adapt Australian telecommunications regulation to provide a positive environment for VoIP. They are not a report or a comprehensive survey, but only some notes about approaches to take, plus some examples. They suggest how some changes can be made, if desired; not changes which must be made.

The notes deal only with VoIP offered to the public as a way to access the PSTN. That is where all the regulatory problems are thought to lie. The notes do not deal with various other VoIP applications, such as VoIP used inside a private network, or in the typical Internet computer-to-computer example.

Where are the regulatory roadblocks?

Surprisingly, it has not been possible to find a list of obvious, specific changes which need to be made to accommodate VoIP services. When examined in detail, most of the suggested regulatory obstacles turn out to be either not a problem, or capable of resolving by normal means.

Some ACIF codes and ACA determinations may need limited re-drafting, but not beyond the normal revisions to be expected as services develop over time. VoIP does require a lot of cultural change within the telecommunications industry. If numbering is seen as regulation, then there are certainly major questions for the ACA to decide about how numbers are allocated and managed in future.

Much of the local discussion about regulatory problems faced by VoIP seems to reflect unfamiliarity with how future-oriented and technology-neutral the Telecommunications Act and the TCPSS Act already are. Or it may reflect a feeling that overseas regulatory upheavals must be paralleled in Australia. Or a feeling that because VoIP-related changes in technology and business are substantial, they should require some regulatory change. But the instances of regulatory roadblocks remain to be found.

Many of the changes under way are not really actually about regulation. They are about how existing telcos can co-operate with new VoIP players on topics such as interconnection, identity, interception, customer credit and privacy.

There are some cultural differences between those who make the rules and those work within them, as the notes explain. The 'two cultures' which misunderstand each other in this territory are: the engineering culture, which looks for an ITU-style set of logical scientific principles and definitions; and the culture of Australian law, which is more concerned with the complexity of social and commercial behaviour, and focused on one national regime.

Some examples of existing rules said to cause problems show the true nature of the regulatory issues.

The standard telephone service (STS)

Many experts believe that the standard telephone service (STS) requirements impose onerous consumer obligations, which VoIP could not meet. However, there must be some confusion between two sets of STS requirements:

- a) The general STS obligations applying to providers of any-to-any connectivity. There are no roadblocks here. There are some regulatory issues, but not unusual or unmanageable issues.
- a) Telstra's obligations as STS provider under the Universal Service Obligation. These USO requirements are more onerous, and would be hard for VoIP providers to meet. But they do not apply, and are not relevant.

Emergency location information

VoIP is in the same position as cellular mobile telephony about providing emergency location information. As with a mobile caller, a VoIP caller cannot normally be reached quickly unless s/he can say exactly where he or she is. The words of the TCPSS Act are sometimes misinterpreted as requiring automatic emergency location, but when examined closely they do not. The main requirements are actually in an ACA determination, which probably requires either clarification or a change of requirements as they apply to VoIP.

Within about three years, it is likely that there will be a solution to the emergency location problems, based on a mix of technical advances and improved administrative arrangements. Work is under way on these solutions around the world, driven by the demand from regulators, and from businesses which want to make money out of precisely identifying locations.

Power for emergency calls

Emergency power, to ensure that any VoIP handset can be used for an 000 call, is usually seen as a major problem. However, the issue is shared with many cordless and advanced handsets. Like many VoIP applications, they depend on mains power rather than the line power used by the traditional phone. There is no current regulatory requirement for a handset or service to maintain emergency power, whether via battery backup or other means. There is a widespread belief that emergency power is a regulatory obligation.

Untimed local calls

Traditional phone services are obliged to provide untimed local calls, more accurately described as flat rate local calls. Surprisingly, this obligation may apply to VoIP in many situations. There has been a strong political demand to require untimed local calls. It is enshrined in the Act, and is not variable. It may be inconvenient for VoIP providers, as it is for all providers of fixed telephone services, but it does not impose any special burden on VoIP.

The customer service guarantee

The customer service guarantee was created to give consumers a high level certainty about installation and maintenance of telephone services. All the benefits are for consumers, without any obvious benefit to telcos, so there have often been attempts to lighten the load. The practical level of a service provider's obligation is set by an ACA standard, not by an Act, and so it can be adapted to impose requirements more appropriate to VoIP.

If the government wanted to treat VoIP services more leniently, it could alter its policy, and issue an appropriate direction to the ACA. In theory, it could also encourage, or tacitly tolerate, a large number of temporary exemptions by the ACA. However, the exemptions must be one-off for particular providers, and would raise problems about excessive discretion and competitive neutrality.

Operator services for faults and service difficulties

When examined closely, the operator services requirement is more modern and flexible than generally assumed. For example, it is sufficient to switch customers onwards to an operator provided by another company. A service provider is not obliged to offer an instant service, or a free service. There is no obligation to actually fix the difficulties and faults.

Directory assistance services

The directory assistance required by the Acts can be through 'an automated voice response system or another technology-based system'. In practice, service providers meet their obligation through co-operative industry arrangements including Telstra's traditional service and the IPND. This area required enhanced co-operation, as mentioned below.

This does not mean that the allocation and management of numbers is easy in an era when VoIP, including VoIP over wireless broadband, are enabling users to become nomadic, and

the importance of any change required for VoIP or other developments, the hierarchy can provide a manageable system of change:

Regulations deal with significant additions or variations to the rules in the Acts.

Directions or other written instruments of the executive government (formally 'the Minister') enable the government to direct the ACA how to act.

The ACA is authorised to change specified details of the scheme set out in the Act, the Regulations and Ministerial directions.

Regulations, Ministerial directions, ACA determinations and similar changes are subject to tabling and disallowance before the houses of parliament. This means that even 'minor' changes can spark political controversy.

General Issues

These notes are intended to help people make decisions about what changes they should make, or at least consider, to accommodate VoIP-based services within the Australian system of telecommunications regulation. They are a first edition, for discussion, in November 2004. It is possible that there will be a second edition, if there is sufficient demand.

The notes are focused on the kind of IP telephony service which has been said to raise the most regulatory issues: VoIP services offered to the public, providing access to the PSTN. There are many other uses of IP telephony, such as PC-to-PC, private corporate networks, and carrier-grade VoIP. Those kinds raise few regulatory issues, however revolutionary they might be from a technical viewpoint. These notes do not address those uses. They address only the services which access the PSTN.

The notes have been prepared with some support from the Australian Communications Industry Forum (ACIF), to aid discussion about practical ways to address current and immediately foreseeable VoIP issues in a workable way. ACIF's concern was to encourage discussion of the issues. That was the full extent of the request. No preference or bias was expressed for any particular outcome.

This document is an aid to decision-making, not an attempt to tell people exactly what they should decide. It is not called a 'report', because we have not had time or resources to examine more than some sample areas. A full report on all possible changes which might be made would require a very large document. It would require much more study of the many Acts, Regulations, Codes, Directions, Determinations, Standards, Orders and other regulatory or self-regulatory documents which affect the operation of carriage service providers.

The main question discussed here is feasibility, more than the merits of different options. Feasibility is about what could work, either well or tolerably. The merits are about what should happen, in the view of one person or organisation. The notes do try to suggest how easy or difficult it would be to implement many of the suggested changes. For example, some changes might require only redrafting of industry codes or determinations of the ACA or the Minister. That is not rated as very difficult, although in the case of some determinations it could take a lot of drafting and consultation time. Changes considered to be too difficult are not discussed in detail. For example it would be extremely difficult, within the current regime, to define the wide range of services which use VoIP as a single category, for drafting and interpretation reasons explained below.

We do not try to suggest long-term solutions of the kind addressed in a report to ACIF earlier in 2004: ACIF Next Generation Network Project, NGN Framework Options Group (NGN FOG), *Policy and Regulatory Considerations for New and Emerging Service* (2004).¹ That report analyses the changes taking place in networks, and the characteristics of the future environment in which VoIP services will become more common. Also, the ACA produced an important discussion paper while these notes were being finalised, namely *Regulatory Issues Associated with Provision of Voice Services Using Internet Protocol in Australia*.² It contains a lot of technical and regulatory information, and raises regulatory issues. We try to avoid duplicating what the ACA and NGN FOG documents say. For example, important numbering issues are extensively covered in the ACA paper, and not traversed again here.

Cultural divides

The most visible cultural divide in telephony is between the traditional, structured world of the telcos, and the distributed, entrepreneurial world of the Internet. Institutionally, the ITU symbolises the first and the IETF symbolises the second. VoIP is seen as bringing both

¹ Downloadable from ACIF website:
http://www.acif.org.au/data/page/275/Policy_&_Regulatory_report_final.pdf

² Australian Communications Authority, October 2004. Downloadable from <http://www.aca.gov.au>.

worlds into collision or co-operation, because it introduces the Internet culture into voice, which was the kingdom of the telcos for 100 years. In North America, this used to be characterised as 'Bellheads vs Netheads.'

In caricature, still to be found in some populist magazines and websites, the telcos are portrayed as a conservative club trying to keep out innovation. In return, the Internet players are portrayed as entrepreneurs without a commitment to quality or service. Whatever grains of truth might lie on either side of those caricatures, the telecommunications and Internet cultures at least share a scientifically structured view of the universe. There is a much greater divide affecting the policy issues: between engineering and law:

- The engineering culture looks for a set of logical principles with accompanying scientific definitions, capable of applying across the globe; and
- The culture of law is more concerned with the complexity of commercial and social behaviour, with fundamental differences between national systems.

Part of the concern about difficulties and obstacles standing in the way of VoIP is because few people outside Canberra understand how flexible the Australian system of regulation really is. Most of the changes which networking experts are considering can be accommodated into the Australia system, using inbuilt systems as explained below. The system was deliberately designed to accommodate technology change. Once people have decided what policy changes, if any, need to be made to accommodate VoIP, the rest is fairly routine.

Regulatory schemes are unrelated to the laws of physics, and each national scheme is a separate species, even when different national laws use similar words. This means that solutions designed to plug holes in the regulatory schemes of overseas countries may not fit the Australian system, which as it happens is better prepared to adapt to VoIP than many countries.

There is a big difference between accepted practices among engineers, including standards and protocols on the one hand; and on the other hand regulation (including ACIF codes) which have some force of law. The hard core of compulsory regulation relevant to VoIP is less than many people think. Less change may be needed. For example, many believe that the law requires CPE power supplies for emergency services. In fact, there is none. Also, many experts believe the standard telephone service (STS) requirements to be much more onerous than they are. As explained below, Telstra has onerous requirements as STS provider under the USO, but Telstra's obligations do not apply to other players, VoIP or non-VoIP.

Why does the need for regulatory change become exaggerated? One reason probably goes back to the two cultures or engineering and regulation. The changes to practices and co-operative arrangements used for managing IP telephony are considerable. However, they should not be confused with the need for regulatory change. Another reason is that until very recently, the discussion about regulation has occurred at the theoretical level, without detailed work on exactly what the regulatory requirements are, whether they fit VoIP services, and how they can be changed if they do not. Hopefully, these notes can help the discussion to get more practical.

There are some big changes required, but they are in the area of operational practice between existing telcos, ISPs and the new VoIP providers. As explained later, it is not necessary to have a telco's resources, staff, or experience to provide VoIP. Some VoIP operations are basically running an ASP (application service provider) business. For the first time, very small businesses are entering into a range of issues such as interconnection, numbering, identity, interception, customer credit and privacy which support the telephony system.

There is a major adjustment to be made, for the new entrants and the existing players. It will require a lot of discussion and re-examination of co-operative practices. This may have some regulatory spin-offs through ACIF codes or even the more mandatory ACA directions, but the core challenge is to change technical and business co-operation.

Regulatory approaches and tools

The following are examples of approaches which might be taken, and tools which can be used; but they are not a complete list. They are some of the likely ingredients of a workable package. They are not mutually exclusive. If regulatory changes are needed, the final package would be likely to incorporate several.

Different timescales

Accommodation of VoIP telephony within telecommunications laws to last for 15 years might require a major review of some policies which are sensitive from a consumer, competitive and political viewpoint:

- Whether there is to be a benchmark minimum standard for telephone services to consumers. There is now, not so much through one policy as through the accumulation of obligations in the telecommunications laws. Or will consumer broadband penetration, IP telephony, and the changes flagged in the ACIF NGN FOG project³ move the whole market to a situation where the main consumer protection mechanism is price, with a very wide range of services from low quality and reliability to luxury services, with a corresponding range of prices?
- If there is to be an equivalent of the current standard telephone service ('STS'), what should its features be? For example, will the important features of the current concept which has developed since 1988 in response to crises or political needs be preserved? Can some features relating to directories and emergencies be dropped, and should new features such as Internet connectivity at a serious broadband rate, or sophisticated identity management, be part of a new STS?
- How would a universal service obligation work in a NGN world, and how should it be funded, when the carriers, their market shares, and the technologies will all have changed? Some of the difficulties of operating the current extensive USO regime are highlighted in an earlier Network Insight paper and discussion.⁴
- Will there be some guarantee of network integrity or quality for every step in the chain of communications between customers? How could that be monitored and managed in a true NGN environment?
- Will it be possible to assume that all providers of telecommunications services to the public will have some presence in Australia and be answerable to Australian regulators. Or will serious players be able to provide most of their business from other jurisdictions, as many overseas Internet retail businesses do already?

Even those few examples would involve major change, quite apart from the whole maze of consumer-oriented law now to be found in the Acts of Parliament. There seems to be no inclination, from any viewpoint, to address issues of that kind now. For a start, the Australian industry is still recovering from the effects of constant, fundamental changes to the law throughout the 1990s. There are already major changes pending, such as the full privatisation of Telstra and the merger of the ACA and ABA into the Australian Communications and Media Authority (ACMA). Some people would argue that yet another round upheavals comparable to 1989, 1991 or 1997 might cause long-term exhaustion to a recovering industry.

Creation of a secondary or IP telephony service category

Another approach, which avoids total revision of the laws, is to be found in some technically advanced countries. Japan and South Korea, and also some EU documents affecting EU members, have created a second category of phone service to accommodate VoIP services,

³ ACIF Next Generation Network Project, NGN Framework Options Group, *Policy and Regulatory Considerations for New and Emerging Services (2004.)*

⁴ C Dalton & M Armstrong, *Rural telecommunications Policy Reform*, Network Insight Institute 2002, downloadable from <http://www.networkinsight.org>.

with potentially reduced features or reliability. This concept has been canvassed by the NGN FOG.⁵ Without going into details, that approach embodies a trade-off: in return for less regulation, an 'IP telephone' service will need to be marked out from other phone services by some features such as:

- use of a different number range, thus letting consumers understand that they are using a different kind of service;
- a different name (e.g. IP phone) to give consumers the same message. This approach can go so far as forbidding the VoIP provider from using the word 'telephone' or 'telephony' to describe the new category of service;
- warnings about absence of emergency features to be attached to the CPE, and warnings included in the contract with consumers; and
- a publicity campaign by the regulator or industry to draw attention to the difference between an 'IP phone' and a traditional circuit-switched telephone.

To mention a few pros and cons, VoIP providers may feel that this approach stigmatises their business, or that it makes the services difficult to market. It also requires a fairly long-term decision about what departures from the normal standard telephone service the parliament will allow. A decision made in 2004 might be premature when new standards and technologies available within three years may allow the emergency and QoS problems attributed to VoIP to be removed soon after.

It is notable that South Korea and Japan, two world leaders in domestic broadband penetration, decided to make IP phone a distinct category. Australia, with its slower rollout via both DSL and cable TV, might be able to avoid the need for an interim regime. This is not to suggest that a separate category for the 'IP phone' should not be considered. The key would be for the government to make the courageous decision about what should be the minimum standard of service for IP telephones as distinguished from the continuing standard telephone service.

Disclosure to consumers

Disclosure to consumers could be a practical tool for removing regulatory and consumer welfare concerns about VoIP services. It could achieve many of the advantages of the Japanese and Korean approaches. In principle, the market would protect consumers once they knew what quality of service, reliability and level of features were included with the service they were buying. This could be seen as overcoming consumers' difficulty in knowing what features or reliability a VoIP service may lack. For example only, hypothetical bargain-priced VoIP services might lack these things:

1. consistent service when the underlying broadband link is congested
2. acceptable quality (no unacceptable levels of latency or jitter)
3. ability to function where the household power supply fails or blackout; or where the computer or modem is turned off
4. ability to dial 000 emergency operators in a power failure
5. ability to provide calling location to 000 operators.

It is emphasised that these are just hypothetical examples for the purpose of illustrating a point. In the example, a purchaser who reads an advertisement which conveys the simple message that this is 'a VoIP phone service with STD calls at 20 per cent the usual rate' might subscribe without knowing that s/he was losing quality, emergency functions and other things. The disclosure-based solution would be to ensure that the consumer's attention is drawn to

⁵ ACIF Next Generation Network Project, NGN Framework Options Group, *Policy and Regulatory Considerations for New and Emerging Services (2004)* p 12. Also discussed in N Abrahams & B Farrell 'Regulators Mount Up! VoIP in the Asian Context' *Communications Law Bulletin* vol 23 no 2 2004 pp 10-12.

those things before agreeing to buy the service. If the consumer went ahead with full knowledge of disadvantages, that would be a matter for him or her.

The obvious place for disclosure requirements would be in ACIF codes, as indicated below. It could be that the arrival of many new and small players providing VoIP, and issues such as the five examples above, would require more rigorous requirements than in any existing ACIF codes. Going further, it could be necessary to avoid the appearance of discrimination against VoIP that existing services would need to be subject to the same list of disclosure requirements or compulsory checklist. This approach might seem burdensome to some existing telcos. However, the alternatives if telcos would not participate could be a lot more burdensome. For example, they might find themselves subject to a new set of mandatory determinations imposed by the ACA, on the ground that industry had failed to co-operate in a self-regulatory solution.

Target dates and sunset clauses

One approach to manage a transition, such as the spread of VoIP, is to set a timescale for regulatory change years in advance. This is a common policy device to ensure that all players are able to plan for the future, or for allowing time to prepare changes to regulation. It has been used in many fields, including changes to import tariffs and the introduction of digital television. Some logical options relevant to NGNs (including VoIP services) would be for the government to set a firm date now for the introduction of revised laws for the NGNs. Given the scale of change which may be required, and the newness of the current Acts, the target date might need to be 8 or 10 years ahead. Others would argue that Australia already has an NGN friendly regime, so that major changes need not be flagged.

Another time-based mechanism is a 'sunset' approach towards regulation. For example, the Minister could announce a new approach to VoIP services, with changes (minor or major) to regulation to operate for a trial period of 3 years. Another approach would be to say that there will be no change to regulation for a short period (e.g. 12 months) after which any specific problems manifested would be addressed if consultation and industry self-regulation could not resolve them. We are already in a de facto trial period, as VoIP is being marketed and operated around the country, but Australian regulators do not seem to have been obstructing the rollout or accusing VoIP providers of breaking the rules.

Yet another approach would be to give VoIP services a target date to meet certain requirements, such as providing reliable emergency location information. If the target date were four years, R&D around the world, may well have produced a technical solution. The problem is shared by all developed countries, and a lot of work is being done to resolve it.

These options all have their pros and cons. For example, the expectation that change will be considered can destabilise industry, or force the players to take positions which will create a scenario to support their future case to a regulator; and a trial period can sometimes create a status quo which is difficult to alter.

Inbuilt mechanisms for regulatory change

The Acts which provide authority for most regulation affecting VoIP are the *Telecommunications Act 1997* ('the Telecoms Act') and the *Telecommunications (Consumer Protection and Service Standards Act) Act 1999* ('the TCPSS Act'). They are quite new on the legislative timescale. By normal standards of Australian law, they are still be in their 'running-in' period, with players and regulators just getting a comfortable feel for how they work and what they mean.

Even a 'minor' amendment to an Act can be difficult. Acts are normally expected to last for a long time. Any amendment creates rights and expectations, which are then difficult to remove later. Once introduced into the parliament, even a minor amendment of a section can expose the whole amending Act, or even the parent Act, to wholesale debate. Furthermore, many of the consumer issues relating to VoIP are politically volatile. Obvious examples are changes to the sections of the Act dealing with the USO, the customer service guarantee or emergencies.

Fortunately, the two Acts were designed to adapt to rapid change in telecommunications. They have embedded coping mechanisms, as explained below. Since 1989, Australian

telecommunications laws have been through three total revisions, and countless lesser revisions. That may have been destabilising for industry, but at least it has produced a very flexible and technology-neutral scheme. The two main ‘future-proofing’ features, can be illustrated from the explanatory memorandum to the TCPSS Act.⁶

Future-oriented terms and definitions

The explanatory memorandum places much emphasis on technology neutrality. It explains that the Act carefully avoids reliance on any carriage system. This is shown by the words emphasised in the following brief excerpt from the comments on the definition of the standard telephone service, now in s 6 of the TCPSS Act:

The definition focuses attention on *the functionality of the service*, namely basic communications (by voice, or an equivalent service for end-users with a disability); is *technologically neutral*; accommodates non-voice users of ‘voice services’; supports a consistent definition of the standard telephone service throughout telecommunications legislation; and enables a better, more transparent approach to be taken to definition of the universal service obligation (USO).

The concept of the standard telephone service is *not explicitly linked to the concept of the public switched telephone[network] service or any particular service technology*. By breaking this link between the standard telephone service and the public switched telephone service, it becomes possible to use the concept throughout the Bill and the Telecommunications Act as a device to which to attach certain requirements which are generally applicable to voice telephony, *regardless of the underlying carriage service or delivery technology*.

Thus, Australia does not face the issue which has arisen in many other jurisdictions, about how to patch on new VoIP services. They already fit into the general concepts in the Acts, such as STS and carriage service provider, just as much as if they were circuit-switched analogue services. If there are adjustments which need to be made to take account of different characteristics of VoIP, then the Acts already provide mechanisms to make those adjustments, as explained in the following paragraphs.

Delegated legislation and powers

The second feature to accommodate change is a pattern of mechanisms to alter the rules, mostly in the form of delegated legislation. Just as there is a hierarchy of scientific principles, there is also a hierarchy of legislation, which moves downwards from the Constitution to Acts of parliament, then down through different forms of delegated legislation, and finally to administrative action. Most of the regulatory schemes contained in the Act follow the hierarchy for adapting regulation in a predictable way, depending on how important the issue is:

- Regulations, made by the Governor-General, deal with significant addition or variations to the Acts. Regulations are a distinct kind of delegated legislation, the highest level. They should not be confused with the general concept of regulation.
- Some sections of the Act already authorise ‘the Minister’ (the formal way for referring to the executive government) or the ACA to add to, subtract from, or flesh out the rules laid down. The more politically sensitive decisions are allocated to the Minister rather than the ACA.
- Directions or other written instruments of the Minister enable the government to direct the ACA how to act.
- The ACA is authorised to change certain details of the scheme set out in the Act, the Regulations and Ministerial directions.

Regulations, Ministerial directions, ACA determinations and similar changes to the rules are subject to tabling and disallowance before the houses of the parliament. This means that

⁶ Australia. House of Representatives *Telecommunications (Consumer Protection and Consumer Standards) Bill 1998: Explanatory Memorandum*, especially the commentary on clause 6.

although the Parliament has delegated its authority downwards, there is a procedure to ensure that departures from what the Parliament wanted can be cancelled by the original source, through a procedure much simpler than amending an Act.

ACIF interacts and co-operates with this system, without being answerable to any government source, since it is a self-regulatory body answerable to its industry members. The self-regulatory policy in the Telecommunications Act gives priority to the role of self-regulatory bodies such as ACIF. Except where an Act makes a specific rule, self-regulation is intended to be the first port of call. The issue of mandatory regulation, by the ACA or any other regulator, is expected to arise only if self-regulation has failed.

The hierarchy of powers to update the law is built into the many regulatory schemes, with careful choice of which source of authority will be used to change regulation when required. Some people would criticise the Acts for giving too much power to the executive government to change telecommunications regulation in accord with changing policy. But for the purpose of adapting a new service such as VoIP, that is an advantage. The government has a lot of scope to revise regulation when required, without the upheaval of an amending Act.

There are some exceptions to the flexibility of this scheme, such as the untimed local calls requirement and aspects of the customer service guarantee. However, they are inflexible because of the strong political commitment behind them, rather than because of the structure of the laws. They might be inappropriate or outmoded from a network provider's viewpoint, but the fact is that they were deliberately inserted because the political leaders decided very publicly that certain requirements would be compulsory for telecommunications.

Some differences between Australian and foreign legislation

The Australian legislative scheme is quite different from the US scheme, which has led to some much publicised contests over the classification of VoIP services. Those classification issues are not relevant to the Australian laws. For example, in *Vonage Holdings v Minnesota PUC* 290 F Supp 2d 993 (2002) a federal court held that Vonage's well-known VoIP service was an information service, and therefore protected from State telecommunications regulation. It was not a telecommunications service which could be regulated by the Minnesota public utility commission. The statutory definitions in question are not paralleled in Australia.

The context was competition for regulatory authority between State and federal regulators, which does not exist in Australia. Although the US issues are interesting from a comparative policy viewpoint, there are no jurisdictional questions to resolve before VoIP services can become a normal part of Australian telecommunications. They already have a place. This US-Australia difference is not a case of addressing the same policy issue, namely VoIP, using different terms. It is more basic: a case of a different frame of reference needing different boundaries to be drawn. Similar points could be made about the laws of many other countries.

Self-regulation policy in the Act

Given the hierarchy of Australian telecommunications regulation, it would be sensible to start with the ACIF codes when asking what should change. That is because the ACIF codes are the most flexible and operationally-focused requirements. Then if more changes were required, a review would work up the hierarchy, starting with standards and other delegated legislation of the ACA. Changes to the Regulations or the Act would then be considered only if really necessary.

There is another strong reason for starting with self-regulation: that is what the Act requires. Section 4 of the Telecommunications Act says that: 'The Parliament intends that telecommunications be regulated in a manner that ... promotes the greatest practicable use of industry self-regulation ...' As amplified in the explanatory memorandum to s 4, that policy is to guide the Minister, the ACA, and other regulators such as the ACCC. It is possible that the policy has been overlooked in recent times, with industry seeing the regulators as a starting-point for VoIP. Perhaps regulatory practices have not fully adapted to the scale of the 1997 change, without fully recognising the priority given to self-regulation.

The Act envisages a process where, apart from specific requirements imposed by the Act, the self-regulation path is exhausted before the regulators intervene with their own directions or standards. The natural way to address the growth of a new kind of service such as VoIP would be for ACIF to spend a period of months considering whether existing codes needed revision, or whether any new codes or other arrangements were required. Then the ACA, ACCC and Minister would consider what ACIF had produced, to decide whether the public interest required them to impose any mandatory requirements.

Implementing flexible regulatory options

Here are some examples of how changes necessary to facilitate VoIP might be made. The first situation would be where the goal of revising regulation was only to make references to terminology more appropriate, or to clarify the way regulatory documents affect VoIP without policy change. That is primarily a draft-revision exercise by ACIF and the ACA, the two bodies responsible for most of the 'hands-on' rules. It need not be an elaborate exercise. It is simply a matter of reading through the operative parts of each code, determination and similar document, then spotting places where the words assume non-VoIP technology, then rewriting.

Whilst an expert committee might be needed to resolve the difficult questions of terminology, 90 per cent of the work would be simple rewriting. It would be preferable for ACIF to complete this revision first, as it is a body with greater flexibility and with the ability to involve industry directly. Also, the laws expect self-regulation to be the first stop. Once that task was completed, the ACA would be enabled to assess how far, if at all, its determinations and other delegated legislation required change. The normal ACA involvement in ACA code-making should make that quite easy.

If the goal were to create a regime of fuller disclosure of service features to consumers, so that VoIP customers would be more aware of what they were receiving from VoIP providers in return for the lower prices, then the focus would be on inserting new disclosure and advertising requirements into ACIF codes such as Customer Information on Prices, Terms and Conditions (C521).

If the goal were to create a new regime of voice, including VoIP, with different legal obligations (for emergency services, directory services or whatever), then that would require more extensive change. The normal working of the hierarchy would start with a statement by the Minister, representing the executive government. Depending on the exact changes intended, it might be possible for the Minister to cover all necessary legal changes in one direction to the ACA. The direction would tell the ACA which of its determinations and other rules to change. The ACA would then be able to make the changes, subject to the usual consultation and disallowance procedures.

Statutory definitions and concepts

These are some concepts and definitions which affect the way regulation of VoIP would operate. 'VoIP' is the popular way to describe a wide range of telephony applications, even if it would be more correct to call them 'IP telephony.'

Which use of VoIP?

The two most common ingredients of VoIP are the Internet Protocol and transmission in digital packets (rather than traditional circuit-switched methods). The first IP telephony to be popularised relied on the same public Internet systems as browsers or e-mail, connecting two computer users for voice communication. Now 'VoIP' commonly applies to any IP-based voice service using a broadband connection. The following are three examples, of common uses of the term 'VoIP'. The third has a lot of relevance to regulation:

1. VoIP in computer-to-computer voice dialogue: as when computer users talk with each other using the same public Internet which they use for Web browsing, e-mail or sharing music. This probably has the same legal status as e-mail or instant messaging. It is only marginally affected by telecommunications regulation, unless there is some special situation such as spam, obscenity or invasion of privacy.

2. VoIP in a private corporate or institutional network: as now used by many medium to large businesses, who reap benefits from using the same network which carries their data to provide voice telephony; and increasingly a bundle of other IP-based services such as videoconferencing, document sharing, click-to-dial, presence and instant messaging. If the network is private, then there are few issues to concern anyone except the firm or organisation which operates it.

3. VoIP as a PSTN access substitute: the main subject of regulatory issues. This is VoIP used like a traditional fixed phone to access the PSTN. In a household or small business, this can be the main phone, or a second phone used to save money, especially on STD and ISD calls. It usually looks and feels to the user like the traditional telephone service. Typically, the service provider supplies to the user a gateway device, sometimes marketed as a 'telephone adapter,' to connect the existing phone handset to the user's broadband service. Sometimes the device is a special phone which connects to the broadband service. The broadband carriage is often arranged by an ISP. Increasingly, the broadband will be provided by a carrier who is moving its business into the VoIP arena. Once the interface between the broadband service and the telephone is set up, s/he can make and receive calls via the PSTN in the traditional way.

There are plenty of variants of these examples. For example, it appears to make no difference under the current law whether the user connects to the PSTN via a computer microphone and keyboard or a telephone handset. However it could make a difference to policy. Most Australians would not turn to a computer to make an 000 emergency call, but they would expect to be able to summon help via any device which looks like a traditional telephone handset.

The third example, the substitute for the traditional fixed telephone connected to the rest of the telephone world, raises issues about safety, interoperability, security, price and reliability. Nearly all the regulatory discussion and policy is focused on this type, the 'VoIP access substitute' for lack of a better name. As already stated repeatedly when VoIP is discussed in these notes, we mean only VoIP in the third sense, the access substitute, unless otherwise stated.

'IP telephony' or 'VoIP service' as a regulated category?

The Australian regulatory scheme deals mostly with functions of services. Use of a particular technology or protocol such as IP does not create a new category. From a correct engineering viewpoint, VoIP might be regarded as an application rather than a service. On this view, the underlying broadband is the service, and the VoIP provider is really like any other ASP. It can be argued that the Australian Acts should recognise a separate category of TASP (telecommunications ASP), into which VoIP providers would fall, along with others. The thinking would be that if there were such a definition, it could be used to make easier distinctions between the different layers of communication involved in VoIP, and eventually next generation networks.

On the other hand, the Australian legislation does not try to achieve regulatory goals by attaching to the different layers of a communication. Across all communications, the basic distinction has been between providers of facilities (infrastructure) and providers of services (things done or supplied by using infrastructure). Even operators who provide only content are defined in the telecommunications Acts as 'content service providers'.

There is no legal requirement to create a separate legislative category so as to offer sensitive regulatory treatment of VoIP. The various telecommunications Acts do not stop the ACA, the Minister, the ACCC or ACIF from applying different levels of regulation to ASPs, ISPs or VoIP providers. The issue in most cases is what the codes, standards or directions say on a particular topic. For example, if somebody wishes to set different rules about numbering, emergency services, or interconnection to cater for VoB providers who do not control the underlying broadband infrastructure, there is no obstacle to doing that. A wide range of options is already available, for similar or different treatment of VoIP.

If there are to be different rules for VoIP, it will be necessary to identify which kind of IP application is being indicated. Even if attention is to be focused on VoIP as an access substitute for the traditional phone, there might be a need to be more specific. For example,

there might be different rules for voice over DSL using an ISP's broadband, as opposed to voice over HFC using a pay TV network. The latter case might be based on an established relationship with the customer, with different arrangements for billing, handling of personal data, or reliability.

Where possible, there would be advantages in following the approach of the Act, which focuses on functions rather than technologies. For example, there might be codes or standards about all phone services which are dependent on the domestic power supply, which would treat some cordless phones and VoIP phones in the same category. The regulatory issue would not be VoIP, but all handsets reliant on mains power.

The standard telephone service: different meanings

Most of the regulation raised as a problem for VoIP relates to standard telephone services (STSs). The STS requirements are based on the idea that the shared network which connects all users to each other, the PSTN, needs special protection as a shared resource, and should not be left entirely to the market. Broadly speaking, the Acts impose higher levels of obligation on providers of standard telephone services than on other carriage service providers, but the obligations are often exaggerated. These are some of the main areas where rules affect a STS:

Standard service provider rules in Schedule 2 of the Telecoms Act:

- provision of operator services
- provision of directory services
- co-operation with the integrated public number database (IPND)
- itemised billing

Many Parts of the TCPSS Act:

- Part 2 the USO regime
- Part 4 the untimed local calls requirement
- Part 7 residential customer protection against failure to provide service
- Part 6 TIO scheme participation
- Part 8 Emergency call services

These are not the only obligations of an STS provider. They share many obligations, such as the Customer Service Guarantee, with other carriage service providers.

What is an STS? The standard telephone service was not originally a central concept in the *Telecommunications Act 1989*. With revisions, it grew to meet the need everybody has, when talking about telephony, to refer to some kind of basic public service, the usual kind of phone connecting everybody. The Telecoms Act 1997 (followed by the TCPSS Act 1999) then converted it into a more universal concept; any change to which, for VoIP providers or anyone else, would require a visible political change. The relevant explanatory memorandum, which the courts would use to help resolve doubts about the status of VoIP telephony, says:

The use of a uniform concept of the standard telephone service reflects the practical reality that there is a basic carriage service, based on voice telephony, that the community expects to be available ... to which certain attributes (e.g. untimed local calls, directory assistance, etc) attach.

...By basing the standard telephone service on voice telephony (or its equivalent for people with a disability) the legislation sets a firm baseline below which the standard telephone service cannot fall.

Those words show why it would be difficult to simply abolish any STS requirement. Whatever telcos, old or new, might think about some of the requirements, they have been enshrined in law because political leaders decided, on their reading of community attitudes, they should be there. Whilst most telcos would like to remove some of the requirements, they

are usually accepted as the price of sharing the PSTN. Fortunately, most of the perceived difficulty of the requirements disappears when closely examined, as shown by examples below. The impression of a body of onerous rules burdening new services is difficult to justify.

One source of the impression about a heavy regulatory burden appears to come from confusion between two uses of the term STS. The first might be called the general definition, and the second is the specialised USO definition. VoIP providers do not have to meet the requirements of the USO STS.

The general STS definition

What distinguishes a STS from other services is the 'connectivity test' in s 6(2) of the TCPSS Act. The text is satisfied if the end-user is 'ordinarily ... able to communicate with each other end-user who is supplied with the service for the same purpose, whether or not the end-users are connected to the same telecommunications network.' If the test is met, then STS obligations apply. Broadly speaking, the any-to-any test usually translates into whether a user is connected into the PSTN. The 1991 version of the definition used to refer to PSTN connectivity, but as mentioned above, the PSTN reference was removed as part of an attempt to make the STS concept more function-based.

For VoIP purposes, the non-PSTN services like the computer-to-computer example mentioned earlier are probably not standard telephone services, because they connect computer users to each other, but not to telephone users generally. A VoIP substitute phone service will normally pass the any-to-any test, and so fall within the STS definition. That does not mean that it will have to meet the even higher USO standards mentioned in the next paragraph.

The USO STS definition

Under the USO scheme, the primary universal service provider (usually Telstra) is obliged to provide 'standard telephone services' to all Australians if requested. This is now spelled out in some detail in Telstra documents approved by the ACA as part of the USO scheme. The service required by the USO is a subset of the STS definition, but it is more demanding and closely specified, a special kind of STS. Fortunately for VoIP providers, the USO service is not related to anything they must do.

The essence of the USO STS, in the most common situation, is conveyed by the list of criteria in Telstra's *Universal Service Obligation Standard Marketing Plan* approved by the ACA. Any customer is able to study this list, and its surrounding details, to see what his or her entitlement is, and to demand that any missing features be delivered. The criteria are:

- connection from the network boundary to the local Telstra telephone exchange;
- access to the PSTN being part of the multi-carrier national integrated telephone network;
- the ability to make and receive automated national and international voice grade telephone calls 24 hours-per-day;
- 24 hours-per-day access to an emergency number, which when called by the customer, gives the customer access to emergency services, free of charge;
- 24 hours-per-day access to operator assistance for directory assistance, national and international call connection and reporting of service difficulties;
- a unique telephone number, allocated in accordance with the National Numbering Plan and an appropriate directory listing, except where the customer requests otherwise, for that number;
- a level of privacy and security to enable users to conduct business and personal communications with confidence;
- monthly billing where requested by the customer;

- itemised billing for all calls (itemised billing for local calls is available on request and attracts a fee);
- where technically feasible, calling number display, for use by the called party, transmitted at the discretion of the calling party; and
- a voice grade service which enables the user to establish a telephony connection to another party anywhere on the multi-carrier national integrated telephone network and conduct clear communication consistent with any to any connectivity criteria within the following performance objectives:
 - an ability to originate or terminate calls, as indicated by the presence of dial tone, 99 per cent of the time over a continuous 12 calendar month period. This is a network performance measure, which applies to the connection from the network boundary to the local Telstra telephone exchange, and excludes customer premises equipment;
 - over any three-calendar months more than 95% of non-international calls through each local exchange during the Day period will be successfully switched at the first call attempt to the required number. Calls included are those where dial tone is present at the initiation of each call and a valid telephone number is dialled. A call is deemed to have been successfully switched when the calling customer receives a network response indicating the called party's service is answered, is busy or is ringing;
 - an insertion loss of not greater than 7dB measured between 600 ohms at a frequency of 820 Hertz between the customer side of the network boundary and the customer's local telephone exchange equipment; and
 - a continuous random noise power of not greater than -55 dBmP measured at the customer side of the network boundary: paragraph 2.1

This is just a summary of the most common situation, to which there are many provisos and exceptions. Other features include priority assistance for people with life-threatening illnesses; and arrangements for people with disabilities. A convenient summary of all the features, going well beyond the list above, is to be found in the ACA's *Consumer Fact Sheet: You Rights to a Telephone Service – the universal service obligation*.⁷

Whilst some of the obligations listed do happen to coincide with the general STS obligations which apply to VoIP, the danger of confusing the USO obligations with the general STS obligations is so great that it is best to disregard the list altogether. It is not relevant to deciding any VoIP obligations.

⁷ On its website at <http://www.aca.gov.au>.

Examples of Specific Issues

This section looks at a sample of the existing regulatory obligations. The obligations said to pose the greatest difficulty were chosen, so as to identify serious obstacles to VoIP. The interesting conclusion from study of these ‘worst case’ examples, is that they are not as onerous or as rigid as many industry players fear. In most cases except for untimed local calls, the Acts offer an upgrade path, a way of changing their impact on VoIP, via delegated legislation.

The examples occur in areas where, for political reasons desirable or not, the Parliament has chosen to bolt specific requirements onto the more flexible and future-oriented fabric of the Acts. Because of these bolt-ons, the Acts support a micro-climate of different regulatory schemes. These include untimed local calls, directory services, and emergency services. Each of the species in the micro-climate has its own history and political sensitivities, and each has different levels of adaptability to new services.

The different nature of the regulatory schemes make it unrealistic to draw up a simple list of obligations, then tick those which should apply to VoIP. Even it were easy to draw up such a list, it would be necessary to produce another list, based on how easy each item would be to change, depending on political sensitivities.

Untimed local calls

Part 4 of the TCPSS Act (ss 103-112) deals with untimed local calls. All carriage service providers who charge for calls using a standard telephone service must meet the untimed local calls obligation. The customer must be given an option to have charges for calls ‘worked out by reference to the number of ... calls made during a particular period, regardless of how long each call lasted’: TCPSS Act s 105(2). The obligation is more accurately described as ‘flat rate local calls’ but ‘untimed local calls’ is the popular title.

This obligation does not apply to mobile or satellite services. VoIP-dependent services will be affected if they are ‘of a kind that, immediately before 20 September 1996, a general carrier [Telecom (now Telstra) or Optus] offered to supply, or supplied, on an untimed basis between points’ in a standard local call zone which applied at that time. There are many exceptions and details in ss 103-112, but that is the basic obligation.

Experienced telecoms managers might assume that VoIP services would not be affected, because they seem different from the kind of service provided by Telstra in 1996. For example, some VoIP services will have different numbers for different areas, or may not appear, from a network viewpoint, to be related to an area. But regardless of the technology, if in functional terms from the user’s viewpoint a service is similar to Telstra’s 1996 local service, then local calls must probably be charged on an untimed basis. A confident answer about the obligation could be given only after studying how in practice a VoIP service is provided in a particular area, and then matching that to the tests in ss 103-112 of the TCPSS Act. For example, it is not obvious whether another key term in the untimed calls scheme, ‘standard zone’ means the exact zone with boundaries as defined by Telstra before 1 July 1991, whether it means an area included within such a zone, or whether it means an area in which either of those areas is included.

Whilst it might seem odd to apply the untimed calls requirement to VoIP services, or to circuit-switched calls for that matter, the issue is extremely sensitive politically. It was very sensitive in since the South Australian by-election which led to the current law being introduced. Untimed local calls have also been featured in debates over Telstra privatisation. They were an issue in the last federal election campaign, where the Minister expressly reaffirmed the continuation of Part 4 of the TCPSS Act, and the Prime Minister said ‘I will rule out timed local calls, full-stop.’⁸ There seems little prospect of changing this

⁸ Senator Helen Coonan, Media Release, 17 Sept 2004 ‘Latham Misleading on Timed Local Calls’ at www.minister.dcita.gov.au.

requirement, so that VoIP STS providers will probably find themselves in the same anachronistic situation as other STS providers, who have had to tolerate flat-rate calls for a long time.

The Customer Service Guarantee

The Customer Service Guarantee ('CSG') applies to VoIP services quite differently from the untimed local call requirement. It was introduced in 1998 to give consumers a high level of certainty about installation and maintenance of telephone services. It is now based on ss 113-125 of the TCPSS Act. One of the publicly-stated aims was to reassure consumers about improving service in the lead up to the first tranche of Telstra privatisation. In the debates on the 2004 Telstra privatisation bill, the CSG was again cited by the government as a guarantee for the community that standards would not be reduced if Telstra were privatised.

The basic idea of the CSG is that if the level of service provided to a particular customer falls below set requirements, the consumer is entitled to damages from the service provider. A simple example is that the guaranteed maximum connection period for a new service is two working days from the time the customer requests it.⁹ The CSG generally requires a high standard of timeliness to customers, and clear disclosure of their entitlements.

The scheme gives extra remedies to consumers, without any obvious benefit to telcos, so it is not surprising that a number of them, regardless of any VoIP issues, have sought relief from it on various grounds. In 2004, a 'temporary' exemption scheme was introduced which, despite its name, allows the ACA to exempt any new or small service provider from the scheme for up to five years.¹⁰

The ACA deals with details of the scheme, but the government, through the Minister, can give the ACA directions about how it does so: TCPSS Act s 124. The CSG scheme is much more flexible than the untimed local call obligation. For example:

- It applies to all carriage service providers, not just those who supply the STS; but the ACA can vary its application to different classes of CSP, or even arrange for some to be exempted; and
- The practical level of a service provider's obligation is set by an ACA standard, not by an Act.

If the government wanted to treat VoIP services more leniently, it could probably do so without amending the TCPSS Act or the Telecoms Act. The government could simply alter its policy, and issue an appropriate direction to the ACA.

The words of the Minister's current CSG Direction and the ACA's CSG Standard¹¹ raise an issue for VoIP which can be quite subtle. The terms of the direction and standard appear capable of applying to VoIP service in a rational manner. However, they do appear to be a perfect fit, because they seem to presuppose the model of a fixed, conventional telephone service. For example, there are many references to 'keeping appointments' with customers. Some VoIP providers just sell a service in a box across the counter of electronics shops, with users doing all the software and hardware setup. Others do the contracting process entirely on-line. It is unlikely that appointments with customers are part of their business plan. Other VoIP providers will have service teams who go to customers' premises.

It would not be hard to revise the actual text of the CSG Direction and Standard to change inappropriate terms and concepts. This could be done without changing the current policy. Alternatively, the text could be changed to implement a major change in policy, such as a lighter obligation for some kinds of VoIP providers. The standards apply to 'specified kinds of carriage services'. Whilst any changes are subject to tabling and disallowance by the houses of parliament, the necessary formalities are no greater than for other delegated legislation made by the ACA or the government.

⁹ That applies where a connection is already in place.

¹⁰ *Telecommunications (Customer Service Guarantee) Standard 2000 (No. 2)*, as amended by the *Telecommunications (Customer Service Guarantee) Amendment Standard 2000 (No. 1)*.

¹¹ *Telecommunications (Customer Service Guarantee) Standard 2000 (No. 2)*.

The ACA's existing *Telecommunications (Customer Service Guarantee) Standard 2000 (No 2)* already applies the idea of different levels of obligation for different services. For example, standard 12 applies different fault rectification periods depending on whether a service is in an urban centre of a certain size, or a locality with 200 or more people. Schedule 2 sets out different amounts of damages depending on the kind of failure and the kind of service. Similar differences or even exemptions could be applied when the voice service provider was not the supplier of the underlying carriage service, or did not supply any equipment to the customer, or whatever was the relevant aspect of a VoIP service.

Even where the ACA does not change the standards, it can allow them to be waived by customers of a particular service provider: TCPSS Act s 120. However, the Act does not contemplate blanket waivers for whole classes of service. Also, the right to waive belongs to the customer, not to the service provider or the ACA; and the right appears to be limited to the service of a specific provider: s 120. Clauses 29 and 30 of the current ACA Standard set out the requirements surrounding waivers, which in most cases rely on clear disclosure to the customer of what s/he is losing.

As to the arguments about a change of policy or not, the issue was recently canvassed again in the submissions to the 2004 DCITA review. The final report was titled *Review of the USO and CSG*.¹² In the 2004 review, consumer organisations argued that the CSG should be extended, or at least confirmed. Some submissions argued for the status quo, and others argued for rolling it back to apply only to Telstra as primary universal service provider; and there was a range of opinions in between.

If the government wished to soften the CSG policy, one approach would be to encourage, or tacitly tolerate, a large number of temporary exemptions by the ACA. That approach could be disruptive, because of the high level of discretionary power involved, and the difficulty for the public and industry of ascertaining which services were exempted, and on what basis, without the usual parliamentary scrutiny. An in-between option might be for the government to issue a ministerial direction about circumstances in which the power to exempt should be applied.

¹² Department of Communications Information Technology and the Arts, April 2004, *Review of the Operation of the Universal Service Obligation and Customer Service Guarantee*, pp 207-221.

The Service Provider Rules

The service provider rules are based on ss 98-103 of the Telecoms Act (Division 5 of Part 4). The actual text of the rules is to be found in:

- Schedule 2 of the Act (which is the main body of rules);
- ACA service provider determinations (under s 99 of the Telecoms Act); and
- Any standard access obligations imposed under s 152BA(2) of the Trade Practices Act

Operator services for faults and difficulties

Operator services must be provided to end-users of a standard telephone service (STS).¹³ The operator services are basically for dealing with faults and service difficulties. When examined closely, this requirement is more modern and flexible than generally assumed. For example, a service provider need not supply the operator itself. It is sufficient to refer customers onwards to an operator provided by another company. More important, there is no obligation to offer instant service. It might be enough to have an answering service take messages for the operator. The service need not be free, but can be charged for. There is no clear obligation to actually fix the difficulties and faults, and certainly not an obligation to fix them quickly. That is more the province of the Customer Service Guarantee.

It is not likely that many VoIP providers would have a business motive for leaving customers without an operator service. However, if a decision was made to exempt them, some legislative changes would probably be needed. These need not be major. For example, the law could be changed to allow end users to contract out of the obligation. Then, a customer's service contract could indicate his or her acceptance that s/he was buying a service which did not offer the traditional kind of operator service to deal with faults and difficulties. Alternatively, the concept of the 'operator' could be replaced by words such as 'a service allowing users to seek rectification of faults and difficulties'. This would allow a web-based or e-mail-based contact system for service difficulties. Yet another approach would be to leave this area to be dealt with by industry codes, which could outline suitable requirements for different kinds of voice services, including VoIP.

Any of these changes mentioned would raise questions of principle about the obligations applying to traditional telephone services. For example, the same arguments in favour of low-priced minimal-feature VoIP phones would apply to low-priced minimal-feature circuit-switched phones.

Directory Assistance Services

Directory assistance services are the second of the standard service provider rules listed in Schedule 2 of the Telecoms Act.¹⁴ They are treated similarly to operator services. Thus, the obligation applies to a carriage service provider who supplies a standard telephone service; and the service need not be provided gratis. The Act says that directory assistance services are those provided to an end-user to help him or her find the number of another end-user of a standard telephone service. The services are to be provided by an operator or by means of 'an automated voice response system or another technology-based system'.¹⁵ In practice, service providers meet their obligation through co-operative industry arrangements including Telstra's traditional service and the IPND.

It does not seem likely that there would be a demand to change this obligation. It is already expressed in modern terms, and there are obvious policy reasons for requiring that all STS users are able to use the telephone to find each others' numbers. This does not mean that the

¹³ Telecoms Act, Schedule 2 Part 2.

¹⁴ Telecoms Act, Schedule 2, Part 3

¹⁵ Definition of 'directory assistance services' in Telecoms Act s 7

allocation and management of telephone numbers is easy in an era when VoIP, including VoIP over wireless broadband, and other technological developments are enabling users to become nomadic. The same person can have many numbers of different kinds relating to different identities or geographic areas. The numbering challenges are discussed in detail in the ACA issues paper.¹⁶ However, those issues are about the numbering system itself rather than the specific obligation to provide directory services to find numbers.

Obligations imposed by service provider determinations

More service provider obligations, which would also apply to VoIP services, are contained in ACA service provider determinations under s 99 of the Telecoms Act. The way service provider determinations are made and varied is important, because it affects the way they could be altered, if that were really necessary, to accommodate VoIP services. The ACA does not have free rein to make service provider determinations. In the usual case, it must first be given power to do so by Regulations, prepared under the delegated legislation processes of the government and subject to disallowance by the houses of parliament.

The current Telecommunications Regulations give the ACA power to make rules about the following: some aspects of prepaid carriage services (such as verification and identity checks, and keeping of records); and premium services (such as 1900 numbers). The ACA has used this power conferred on it to make various detailed determinations, such as the *Telecommunications (Service Provider — Identity Checks for Pre-paid Public Mobile Telecommunications Services) Determination 2000* and the *Telecommunications Service Provider (Premium Services) Determination 2004 (No.1)*.

Variation of the service provider rules to allow for VoIP

In the case of the service provider rules, covering all three groups of obligations listed above, the government ('the Minister') has a power to grant exemptions in favour of service providers. Exemptions can be from all the rules, or from one or more specific rules; and the exemption can be subject to conditions.¹⁷ Any exemption is also subject to the usual parliamentary tabling and disallowance procedures. The ACA does not have any power to grant these exemptions.

The power of exemption could not realistically be used to provide a varied regime for particular kinds of VoIP services, except perhaps on an experimental basis. That is because the Minister can exempt only 'a specified service provider', which means naming a particular company. One-off exemptions would raise public policy, competitive and investment problems, with the law applying to different players depending on a government decision. There is no power to exempt a class or kind of service provider, such as all those using a particular technology or providing a particular service configuration.

Emergency services

Emergency services are often mentioned as the one area where it is most difficult to integrate VoIP into the existing scheme of regulation. Most people concerned about the area are under an incorrect impression that the Telecoms Act or the TCPSS Act requires service providers to provide location information, and to maintain a backup power supply.

Obviously, the public place a high value on emergency services, so there is no scope for a wait-and-see attitude. The ability for anyone in distress to pick up the nearest phone and dial 000 (or 112 on some mobiles) is taken for granted by the community, until there is a glitch in the system. Then, any problem with the despatch of an ambulance or other help causes public outrage.

¹⁶ ACA, Regulatory Issues Associated with Provision of Voice Services Using Internet Protocol in Australia, October 2004.

¹⁷ Telecoms Act, s 100.

The two main issues for VoIP are location information and power. These notes highlight some issues under each of those heading. They do not cover emergency services for people with disabilities, which include the USO standard telephone service provided mainly by Telstra, the National Relay Service provided by the Australian Communications Exchange, and other requirements of the TCPSS Act and the *Disability Discrimination Act 1992*. There are a number of issues to be resolved about requirements of callers who use the 106 text emergency call service (the equivalent of 000 for people who are deaf or have a hearing or speech impairment).

Location information

Anyone who calls 000 from a traditional fixed phone will be switched via Telstra's Emergency Call System to an operator responsible for his or her State or region. The State operator will then, via the IPND and the CLI attaching to the number, be able to see the street address of the service from which the call is made. The actual system is more elaborate, but that is the principle. Location information can be vital in an emergency, either to confirm the location for sending help, or when the caller (for example a young child or injured person) does not know the address or cannot state it.

For some reason, every group of engineers to whom we have spoken holds a different opinion about the location potential of current and pending technologies. The problem is that there seem to be not two views, but about six different views. So only a brief, muted view is offered on the technical potential. For a cell phone, there is obviously no fixed address, but the current technologies can at least identify the mobile calling zone, so as to take the caller through to the right State or region emergency operators. In some cases, location can be within one or two kilometres. Locating ability for cell phones is advancing rapidly, for example using triangulation between base stations. Before long, newer cell phones may be able to offer precise location, driven by the commercial attraction of offering location-based marketing and services, as well as by the advantages to public safety.

To a caller in the typical VoIP situation, the handset is just another fixed phone, with the normal expectations about 000. But to the network, the call is just data from an IP address, which has no more location information than any other traffic on a broadband network. VoIP providers have no difficulty connecting a caller to 000, provided there is no congestion on the broadband link, but there is no location information automatically associated with the number. Under current arrangements, this means that a VoIP caller cannot be reached quickly unless s/he can say exactly where he or she is.

It is not impossible to make arrangements for fairly precise information about the origin of a VoIP call. The typical user's VoIP gateway, using the IP address of the subscriber, will be physically attached to a broadband network somewhere, and the network can identify the location of that source: if not to the user's precise location, then at least to the general area. This would require co-operation from ISPs, who in the typical situation supply the broadband carriage of the VoIP service.

Broadly speaking, it is possible, with widespread co-operation, to devise a scheme of emergency location for VoIP services at least as good as that currently applying to mobile cell phones. Even apart from that technical potential, most emergency calls from a VoIP phone could be covered by customer registration, because most broadband accounts are always used from the one house or building, so that in practice they are in the same position as the traditional telephone. For VoIP over HFC pay TV services, it should be easier to provide automatic location, since the TV service is specific to a particular household address. The arrangements could go further, with stickers on the handset could warn that the VoIP phone belonged to that address for emergency purposes. This paragraph is just a pointer to some of the many options for devising a solution, if that is a priority.

There are many longer-term issues, particularly surrounding nomadic users and identities, for example road warriors, who connect to the network wherever they are, ranging from a coffee shop to a client's office overseas, with the same numbers and personality as anywhere else. Another nomadic scenario is the VoIP account with multiple telephone numbers, for example to give local customers the impression that the business is local. However, these issue are not exclusive to VoIP. There may be solutions which now seem fanciful, such as incorporating a GPS (for outdoor use) or other locators in every phone handset. Furthermore, there is a

worldwide effort, and pressure from the FCC and other regulators, to find solutions to the emergency location issue quickly.

Emergency power

There is a common belief that regulation requires emergency power for telephone services, but there appears to be no requirement in the Acts or any delegated legislation for line-powered telephones; and no requirement to provide battery back-up or other alternative power sources. If there were such a requirement, then many non-VoIP service providers would have already been contravening it for several years.

The ACA has recently proposed clarification of this point by a new s 10(6) of its *Telecommunications (Emergency Call Service) Determination 2002*. The proposed amendment¹⁸ will remove the suggestion that VoIP providers might be required to maintain emergency power at all times. Explaining the change, the Acting Chairman of the ACA said:

The changes are designed to remove confusion. At the same time they support current practices designed to improve the efficiency of the emergency call service. ... This particular change will assist in the introduction of VoIP services by clarifying the emergency access obligations on providers.

The amendments clarify that CSPs are not required to provide access to emergency services when that access is affected by something beyond their control, such as a mains power outage. There is a view that VoIP phones are unique because they must be connected to mains power to work. However, cordless phones, PABXs and key systems also require mains power. If the power goes off, these devices suffer the same fate.¹⁹

The traditional fixed phone is powered through the phone line, so that during a blackout or even in vacant premises with the electricity supply disconnected, the handset can still be used to call 000. The VoIP service depends on a broadband connection, usually powered via the mains in the same way as a computer. So when the ADSL modem or other device is switched off, there may be no access to 000.

Access to 000 will depend on how the VoIP service is set up in each particular case. For example, many installations will leave the traditional phone operating normally, with the VoIP element used only for time-charged calls, in which case there may be no problem. Some handsets are designed for dual VoIP and circuit-switched use, which will also leave 000 line-powered and available

The power issues are not exclusive to VoIP. Many handsets with advanced features, and especially cordless phones, also depend on mains power, and are thus unable to deliver 000 when the power is off. Not all of them have this problem. Many handsets using mains power will lose all their advanced features, but still produce dial tone and basic services using power from the line.

The Acts

The Acts themselves do not require that any location information must be provided about emergencies, and no amendment to the Acts would be needed to change the current requirements. The impression that there is a definite requirement seems to come from one of the many emergency call objectives in s 147(2)(i) of the TCPSS Act:

... carriage services used to make calls to an emergency service number should, as far as practicable, provide the emergency call person concerned with automatic information about:

- (i) the location of the caller; and

¹⁸ By the proposed Telecommunications (Emergency Call Service) Amendment Determination 2004 at http://www.aca.gov.au/consumer_info/emergency/ECS_amend_Det_2004.pdf.

¹⁹ ACA Media Release No 51, 5 July 2004, at http://www.aca.gov.au/aca_home/media_releases/media_enquiries/2004/04-51.htm

- (ii) the identity of the customer of the service being used by the caller.

This is only an objective to which the ACA must have regard. The law is clear that an objective set out in that way is not binding even on a regulator, which is required only to 'have regard to' it among the many things it might consider before making a decision. It creates no obligations for any service provider. Even if the requirement were binding on the ACA or service providers, the automatic location information should be provided only 'as far as practicable'. The real situation is that ACA decides what, if anything, is required about emergency location information; either at its own initiative, or subject to directions of the Minister.

ACA determinations and ACIF codes

The ACA *Telecommunications (Emergency Call Service) Determination 2002* is the document which imposes the legal obligations. It is a long and detailed determination which would be difficult to summarise in these notes. Its main, relevant requirement is in clause 30, which requires a carriage service provider to 'ensure, as far as practicable' that if a service is used to make an emergency call, the service must give the emergency system 'automatic information about the number from which the call is made'. Clauses 23 and 24 oblige service providers to supply the information. Among the many details in the determination are some terms which probably need clarification in view of the issues raised by VoIP. For example:

1. What 'so far as practicable' means, and whether it gives a de facto exemption to a service which would not by its nature be able to supply location information?
2. Which services the determination applies to? For example, in the VoIP context, what is the meaning of a 'standard emergency telephone service as a single line service'?
3. If VoIP brings into telecommunications many more players of varying types and sizes, is it necessary to be more specific about the information a service provider must supply for the IPND, so as to be available in emergencies?
4. The definition of a 'standard emergency telephone service' as one which 'an end user would reasonably choose, as a first choice, to make an emergency call...'

This is not to suggest that there is anything intrinsically wrong with the existing determination. It should not be surprising that as technology changes and new services are introduced, the wording of ACA determinations would need updating. If there is no change to the policy about emergency services, the changes to the determination would be relatively minor.

ACIF codes supplement the requirements of the ACA determination, especially by providing management and administrative detail. For example, the IPND Code (ACIF C555), which is mostly concerned with administration of the IPND database, refers to the data to be supplied, obviously including geographic addresses. An ACIF working party is now preparing an IPND data entry guideline, one aim of which is to ensure 'accurate and complete customer name and address information is captured and delivered' to the IPND.²⁰ As well as the new guideline, it would be desirable to revise the existing code to ensure that its application to VoIP services is clear. For example, the concept of a 'location dependent carriage service' is used in two of the definitions. Without close scrutiny of the drafting carefully, it appears that it could be necessary to clarify the role of many VoIP services, which look like location-dependent services, but would not fall within those definitions as drafted.

The code on *Emergency Call Services Requirements* (ACIF C536) appears capable of applying to VoIP services as effectively as traditional fixed line services. However, its terms would require checking to ensure they apply clearly. That should not be a major task.

Industry co-operation

The text of the ACIF codes and the ACIF determination cover some key points about the location-related emergency arrangements, but they do not create a scheme so perfect that it could work on its own. The regulatory documents are obviously drafted on the assumption

²⁰ http://www.acif.org.au/panels_and_committees/ocrp_wc34.

that a network of co-operation exists among engineers, however much their employers might be competitors in the commercial marketplace. It would be a massive exercise to create emergency arrangements which were 100 per cent legally defined and enforceable.

Just as the existing emergency scheme depends on formal and informal agreements and co-operation, so would any redrafting to accommodate VoIP. That will apply regardless of whether VoIP services continue to be covered by existing STS regulation, or whether there are changes to the rules to make alternative arrangements for the short term, such as a scheme for user registration of emergency addresses. Obviously, the sooner the discussions start, the sooner uncertainties will be removed.

Ways ahead

When we agreed to write these notes, we expected that the outcome would be a list of issues on which current regulation was an obstacle to VoIP services, or at least unfriendly to them. However, the more we investigated, the further we moved away from that idea. There is no obvious list of major changes which stand in the way. The first questions to ask before starting a complex process of regulatory change are:

What are the obstacles hindering the spread of VoIP? The ACA discussion paper and the other Australian writings to date have pointed to problem areas, or suspected problems; but they have not said exactly where there is a practical problem. Perhaps there is, but it must be demonstrated in specific terms. There are some ambiguities in drafting of codes, standards and delegated legislation, but these do not require revolutionary change.

Changes to regulation can be compared to surgery. The benefits can be great, but surgery is expensive, because of professional fees if nothing else. It is also risky, since there is the danger of exposing the patient to infections (unexpected new regulatory interventions) once a regulatory issue is cut open. This applies particularly to parliamentary surgery.

Proposing legislative change, or a new category of service, before any major problem is diagnosed is comparable to removing the appendix because the patient recently had indigestion; or removing the tonsils to prevent the possibility of throat infections. The expense and risk are not justified until the 'diagnosis' establishes a specified section of an Act or delegated legislation which cannot be fixed by self regulation or minor redrafting. To continue the medical metaphor, the problems so far establish only a need for routine health maintenance: physical fitness (ACIF codes) and weight reduction (redrafting of ACA directions and standards).

There are some regulatory issues which are not very comfortable for VoIP, as described above, but VoIP shares most of them with circuit-switched POTS. VoIP is part of a major technical and business change, but it is really the kind of change which the government policy-makers have been talking about, and providing for in the legislation, for at least a decade. One example is the 'technology neutral' approach in the legislation, which makes it almost as suitable to VoIP as to circuit-switched.

The big changes, with a few exceptions such as numbering, are about co-operation and interconnection between new and old players, and between larger and smaller players. The other major area is in offering informed choices to consumers, as VoIP spearheads the change towards a wider range of telephony services, accompanied by a wider range of prices. Because informed consumer choice, it is given some extra attention below.

Co-operation between all service providers

Many of the changes required for VoIP services to operate comfortably in the Australian environment turn out to be 'cultural' than regulatory. There are certainly a lot of changes to make at the engineering level, to produce an effective way for VoIP services to interwork efficiently with the existing PSTN and circuit-switched systems. But few of those engineering challenges are muddied by regulatory questions. The real challenges are not about VoIP protocols or services, but about the understanding and shared values among telecommunications professionals who support Australia's networks.

Until now, nearly all telcos offering services to the general public have been large companies with a depth of experience. The big change for the current generation was from the monopoly of the Postmaster-General's Department, which became Telecom and then Telstra, to the full infrastructure competition we now have. Through all that, the players and the professionals remained members of the same professional family. That is reflected in the ACIF codes about quality of service, the IPND, emergency services and other network issues. The codes deal with key points, but they require shared values or a shared engineering culture to operate efficiently.

IP telephony now allows a small business or a new business to enter the market. Some of these businesses are the existing carriers, but others are essentially ASPs (application service providers). Their main business may be software-related, even if they provide a physical gateway device to the consumer. They do not have the same culture or assumptions as the traditional carrier community. That affects how business is done between service providers and carriers at the practical level. Many of the sensitive points of co-operation are starting to be shared by a much larger number of players, many of them small players with limited resources or telecoms experience. The issues include interworking, interconnection, customer confidentiality, customer creditworthiness, billing, and daily co-operation. The core issue is co-operation between old and new players, not regulation.

The obvious way to move co-operation ahead is to get practical 'ecumenical' discussions moving as quickly as possible, so that the different kinds of service providers (including those who are carriers) can discuss what the difficulties are, and how they can change co-operative arrangements if needed. It is likely ISPs will need to be involved at many stages. They are the intermediaries between carriers and VoB providers, who supply the broadband to support the VoIP.

Australian telcos (unlike ISPs or ASPs) have probably got used to the idea of going to the regulator about changes in their industry because the big issue since 1988 has been introduction of competition into what was a Telecom monopoly. The transition to an open market could only be made through extensive regulation. But that is not the situation for the new VoIP-dependent services. There is nothing unlawful, discouraged, or suspect about them. There is no obvious case for turning an industry change into a regulatory change.

Industry co-operation, even across communications sectors, is a role which ACIF was designed as the forum, as reflected in its name; even though some outsiders see it as only a code-making body. ACIF is a more suitable forum than the ACA. That is not because of any defect in the ACA, but because ACA is designed to be a mandatory regulator, thinking of solutions in regulatory terms. If the industry players are comfortable with workable arrangements between each other, it is likely that there will not be many regulatory issues left over for the ACA. As a practical rule for any enterprise, it is a bad idea to call in the regulator or the government unless they are really needed. That is like calling the police to settle a peaceful domestic argument. The solutions an ACA or ACMA can offer will nearly always be regulatory.

Practical arrangements for disclosure to consumers

As discussed above²¹, requirements for full disclosure to consumers can provide the ultimate consumer safeguard. The theory is that if consumers are made aware of what they pay for, they can make informed decisions without regulators needing to protect them. Of course, consumers often do not read contracts or warnings, and governments usually decide that there are basic standards which need to be compulsorily maintained. However, suitable ACIF codes can cover most of the issues about consumer standards, especially new issues. They can set out practical requirements more easily than official regulation, without many of the cumbersome legal baggage the ACA and the Minister are forced to carry. This is not an argument for more intrusive rules from ACIF or anybody else. The reasoning which can lead to extending ACIF codes is this:

- Does VoIP raise issues which will require more disclosure to consumers, about QoS, emergencies, or anything else?
- If so, what is the preferable form of regulation: an enhanced Customer Service Guarantee in the Act? New ACA codes or standards? Or revised ACIF codes?

One small illustration of how ACIF codes offer realistic information to the consumer, is clause 6.5.1(b)(i) of the draft ACIF code on *Customer Information on Prices, Terms and Conditions*. It says that in some situations a supplier must disclose 'any limitations reasonably within the supplier's knowledge or control that might affect the typical

²¹ at page 8.

when the same person may have many identities and number locations. The numbering challenges are not entirely exclusive to VoIP, are discussed in detail in the current ACA issues paper, and do require an independent umpire to set new rules.

Co-operation within industry

Many of the changes required for VoIP to operate comfortably in the Australian environment turn out to be cultural rather than regulatory. There are certainly a lot of changes to make at the operational engineering level, to produce an effective way for VoIP services to interwork efficiently with existing telcos' networks.

The obvious way to move that process ahead is to get practical 'ecumenical' discussions moving as quickly as possible, so that the different kinds of service providers (including those who are carriers) can discuss what the difficulties are, and how they can change co-operative arrangements if needed. ISPs would need to be involved, since they supply the broadband on which many of the VoIP providers depend.

Industry co-operation, even across communications sectors, is a role for which ACIF was designed as the forum, as reflected in its name. ACIF is a more suitable forum than the ACA. That is not because of any defect in the ACA, soon to merge into the ACMA. Rather, it is because the ACA is designed to be a regulator, thinking of solutions in regulatory terms.

Practical arrangements for disclosure to consumers

Many of the alleged dangers or problems of VoIP services come back to the issue that consumers are not well equipped to know what levels of service, reliability or even safety lie beyond their handset, so that they are unable to compare the features of a cheap VoIP service with a more expensive circuit-switched service. However, full disclosure to consumers can provide a safeguard, and an alternative to mandatory regulation.

The extra disclosure requirements can relate, if necessary, to the warning which should be given for limited voice quality, to limited reliability, services, operator services, location, or whatever is important. There are modest precedents for this approach in existing ACIF consumer codes, which could be extended much further as the range of telephony services increases. The extra disclosures need not target VoIP specifically, but could relate to the features and quality of all phone services.

Self-regulation the law's preferred solution

The main solution for VoIP issues, apart from numbering, is industry co-operation, which often produces self-regulation. That is actually the policy laid down by the Telecommunications Act, which opens by declaring a policy to govern the ACA, the Minister and other regulators: 'The Parliament intends that telecommunications be regulated in a manner that ... promotes the greatest practicable use of industry self-regulation...' Following that approach required by the law, the first questions should be what changes should be made to industry co-operation and industry codes. Only when that approach has been exhausted would questions be raised about amending subordinate legislation or the Acts themselves. The initial discussions about VoIP seems to have proceeded from the opposite direction, with the first questions being whether the law should change.

The Australian laws have systems for adapting to VoIP

As background, the notes explain how the Australian laws are designed to adapt to change, if needed. The two Acts which provide authority for most regulation are the *Telecommunications Act 1997* ('the Telecoms Act') and the *Telecommunications (Consumer Protection and Service Standards Act) Act 1999* ('the TCPSS Act'). They are both new, still be in their 'running-in' period, with players and regulators starting to get an understanding of how they work.

Fortunately, the two Acts were designed to adapt to rapid change in telecommunications. The Acts aim for technology neutrality, and avoid reliance on any carriage system or protocol. To the extent that self-regulation has failed on an issue, Act have in-built mechanisms for adapting existing rules where required, mainly through delegated legislation. Depending on

performance and/or availability of the supplier's telecommunications products relevant to that customer.' So far, the requirement reads like official regulation and might leave some readers unclear. However, the clause goes much further by providing realistic examples of the kind of disclosure which should be made:

The speed and capacity of data and internet services in your area may be affected by pair gain and RIM technologies and you may need to consider other products.

If you have a radio concentrator service, you need to ensure that your fax modem is compatible with that service.

This ADSL service may be incompatible with back to base security.

There is no local Point of Presence (POP) in your area for internet and other data services so you will need to make a long distance call to connect.

If you are using a satellite access network, you may experience delay in transmissions for certain services.

This handset may not be compatible with some hearing aids. You may need to seek special advice to ensure compatibility with your particular hearing aid.

Many people argue that consumers need protection in relation to VoIP services because they are not in a position to know how the QoS or functions of a VoIP service may be different from traditional telephony. The ordinary consumer may not know how useful the service is for emergency calls, or whether it will be unusable at some times due to broadband congestion. The obvious way to address this is by adding to the ACIF *Customer Information on Prices, Terms and Conditions* code, or similar ACIF codes. This can be more helpful for consumer, as well as for service providers.

The extra disclosure requirements can relate, if necessary, to the warning which should be given for limited voice quality, limited reliability, operator services, location, or whatever is necessary. If even clearer disclosure were required, the code could have a compulsory ten-point checklist to be given to each consumer before contract, or even ticked off item by item.

The extra consumer disclosures need not target VoIP specifically. They can apply to all telephony services. The difference would be that traditional services would more easily get a positive rating under all of the points, and the cheapest of the VoIP services would probably have the smallest number of positives. This is not the design for a particular scheme; just an indication of how industry could reduce concerns about consumer awareness of VoIP issues, as an alternative to opening up a lot of regulatory issues.

As all or part of a solution this disclosure-based approach has the advantage that it is what the law envisages, as expressed in s 4 of the Telecommunications Act, which requires regulation 'in a manner that ... promotes the greatest practicable use of industry self-regulation ...'