

**Telecommunications: Competition
Regulation and Communication
via the Internet**

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Introduction

There are three broad points I want to make today.

The first, which I am sure will be the least contentious, is that a far-reaching transformation is underway in the telecommunications network and in the services it provides. It will also be uncontroversial that that transformation is providing substantial benefits to consumers and to society more generally, and will do so to an even greater extent in future.

The second is that regulatory interventions have the potential to seriously distort, and indeed have been seriously distorting, that transformation. Here it is my contention that our current regulatory arrangements, as reflected in the access regime, are not at all well-suited to the emerging telecommunications environment. The problems this creates are then seriously aggravated by specific regulatory decisions, those decisions being, in my view, ill-conceived and more likely to harm economic efficiency than to promote it.

Third and last, I will argue that any legitimate goals those interventions are pursuing can be better achieved by a drastic simplification of the current arrangements. I will try to set out the main elements such a simplification would entail.

Tomorrow's network and today's

Let me start with what, I am sure, is common ground. Continuing rapid advances in the technology both of telecommunications networks and of the services provided over those networks are leading to the availability of platforms that deliver ever greater bandwidth. These platforms are capable both of carrying information more quickly and of carrying a wider range of applications over a single medium, using common underlying protocols. Central among these is the Internet Protocol ("IP"), and there is a widespread view that the Internet Protocol will emerge as the basis for conveying almost all types of information over future networks. These future networks, it is widely expected, will ultimately be based on optical fibre to the premise as far as the fixed network is concerned, with ever more capable radio-based technologies being used for mobility applications, for fixed connections in areas with low subscriber density or hostile geographies, and as a competitor to the fixed network.

It is not only in terms of bandwidth that these future networks will differ from the network we now have. Rather, two other aspects are worth mentioning.

First, the current network is essentially an overlay of a myriad of distinct networks that share some common elements. There is, in fact, multiplicity at every layer in the network

architecture. For example, we operate a mix of circuit switched networks, most notably the PSTN and the ISDN, and packet switched networks, such as ATM, Frame Relay and IP. Although this overlay approach has a strong and continuing economic rationale, it is also true that it has costs in terms of foregone scale and scope economies.

Looking to the future, we will see a move to greater integration of those overlays into a single core network, which will be digital and packet-switched end-to-end (though some elements of what we now call circuit switching may be transposed into session management in an IP world). Across this network there will be a common underlying transport service, that provides for the transparent (in the sense of service- and application-independent) movement of digital information at predefined bit rates and quality levels. In other words, today we transport video largely separately from, and differently from, audio, and computer-to-compute data separately and differently from each of these. In the future these and other uses will share a common means of transport, not only in terms of the physical support over which that transport occurs, but also of the form the information takes in the course of transmission. A similar move towards commonality of equipment, processing and protocols will occur in those elements of the network that deal with the management of the flow of communications, that is, those functions that are exercised in the circuit-oriented world by switching and signalling systems.

In short, we will move from a world of somewhat jumbled and overlapping overlay networks towards one in which there is a significantly greater degree of integration in the transport and management layers.

Second, as this move towards integration occurs in the underlying network, there will be greater separation between the network on the one hand and the services and applications it supports on the other. It will be easier in such a world to provide new and differentiated uses than it is in the network as it now stands.

This is partly because today's network is still "hard wired" in many respects, so that introducing radically new services involves coordinated change in key aspects of the network's internal functioning. In contrast, with common, transparent, protocols, that are largely service and application independent, introducing new services will be more like putting a new make of car on the road than like trying to run rolling stock with one gauge over tracks with another.

However, it is also because in future networks, as in today's Internet, many of the key functions of communications control – the intelligence that determines how communications flow – will reside not in the core network, but in the devices at the network's edge, and most notably in those at the customer end.

This is a drastic change from today's circuit-switched systems, where intelligence is largely centralised in the core network. Thus, in the telephone system, many dumb terminal devices communicate through a small number of extremely intelligent intermediaries.

The reasons for this are simple. The telephone network developed at a time when it was extraordinarily expensive to make devices "intelligent", in the sense of being able to carry out complex tasks by associating input signals to a wide repertoire of responses. As a result, in the telephone network, the most ubiquitous device – the telephone on each desk and in each home – has very limited functionalities. All the 'smarts' are concentrated in the network itself: originally in the operators who linked customers as and when needed; nowadays, in electronic exchanges and the information systems that hang off them.

However, by the time the technology underpinning the Internet was coming into use, the situation had changed dramatically. Providing smart devices to end-users had become so cheap that millions of consumers had personal computers on their desks that could undertake a vast range of information processing activities. Adding to these devices the capabilities required to manage the main Internet protocols involved little incremental cost, if any. This trend to locating communications functionality in end-user devices will continue into the future, especially in the fixed network, meaning that it is the edge, rather than the core, that will be in control.

As a result, introducing new services, applications and more generally functionalities no longer requires coordinated change in the network itself. Rather, it can occur by exploiting existing capabilities in the edge equipment or through the selective up-grading of those capabilities. This both increases flexibility and creates the scope for greater service differentiation than the current network architecture can support.

These trends will clearly not play themselves out overnight. The existing networks are far too large and reflect too many interdependencies for change in network architectures to be a rapid process. Historically, processes of generational change in the telecommunications network, such as digitization of the PSTN, have taken 20 years or more to occur, and there are some ways in which the very pace of technological change, and the uncertainty it creates as to the precise shape of future networks, makes it economically efficient for the transition to be slower than it would be in a world where technology was not charging ahead. That said, it is apparent that the move to a broadband world is well upon us, most visibly so in the spectacular development of high-speed access to the Internet.

From a competition perspective, it is difficult to see this as anything other than a good thing. The move from the existing network – in terms of the access layer, transport and network management – to a substantially new network creates great scope for contestability, both through competition to be the future network of choice and by greater

opportunities for service and applications layer competition within those networks. The competitive pressures this creates are accentuated by the fact that acquiring a base of broadband customers today can enhance revenue-earning opportunities tomorrow, both by lowering the marketing cost of selling those customers a wider range of services and by providing foundation customers for future network up-grades. As a result, there is a premium on signing up the early adaptors, making current competition for broadband customers intense.

That said, there are inevitably competition and regulatory issues that arise from the interaction between the emerging network on the one hand and the legacy environment on the other. Central among these are concerns that market power in the legacy network will be leveraged into the new world, undermining the prospects for efficient competition to develop. How well are we managing these concerns? In my view, not well at all.

Bungled intervention

In saying this, I have two issues in mind. First, I believe that the Competition Notice process has been used and is being used in a manner that is inappropriate and distorting. Second, it is my view that if competition concerns are to be met and met in a manner consistent with economic efficiency, the current access arrangements need to be overhauled.

Let me start with the Competition Notice system. That system, which provides the ACCC with the capacity to threaten Telstra with massive penalties, has been used by the ACCC as a primary instrument for dealing with what it perceives as competition issues arising in the broadband environment. The ACCC has, in particular, used Competition Notices first in respect of Internet Peering and then most recently in respect of Telstra's pricing of wholesale and retail ADSL.

It is my view that in each of these cases the economic analysis on which the ACCC proceeded was deficient in important respects. Moreover, I believe that in each instance the result has been to distort the process of transition to broadband.

Thus, in the Internet peering case, the main effect of the ACCC's intervention was to provide selected players with access at a locked in price of zero, to Telstra's Internet bandwidth. This has both distorted the investment incentives these players face and conferred an advantage on them relative to other ISPs. However, as the ACCC never set out principles that could guide any change to this situation in line with changing circumstances, that pattern and its effects have persisted, despite the rather obvious anomalies and distortions they entail.

Equally, in respect of ADSL, the ACCC's current intervention seems focussed on forcing down Telstra's wholesale ADSL prices, to the obvious benefit of Telstra's competitors. This is despite the lack of compelling evidence of a vertical price squeeze – as evidenced not merely by extensive imputation testing but also by the fact that Telstra's retail competitors have consistently led prices down and set retail prices that Telstra has not matched.

In my view, this focus on reducing Telstra's wholesale prices until there is a substantial gap between those prices and retail ADSL charges is not only inefficient but also self-defeating.

This is quite simply because retail competition in ADSL is driven by the desire to sign up customers to entry level plans and then over time, shift those customers to higher revenue options. The evidence of market behaviour over recent months suggests that this requires setting entry-level prices at levels that are very close to those for dial-up plans – in other words, at least initially, the bulk of residential consumers place little value on the higher speed and other features that broadband offers. However, the evidence also shows that these consumers then increase their valuation of the broadband service, and their willingness to pay for it, over time. Given a market which though highly competitive, is not frictionless (as the textbook models of perfect competition are), ISP's then have incentives to "subsidise" the initial stages of take-up, recouping those "subsidies" through future sales of the higher margin services. Much as in the mobile phone market (where the handsets were "given away" in the expectation of future call revenues), it is those subsidies for first-time consumers that are at the heart of the very narrow, and in many cases negative, spread between wholesale and retail ADSL prices.

Driving wholesale prices down will not alter this situation. Rather, all it will do is reduce the price point around which that very narrow, and in many cases negative, retail spread accrues. This undoubtedly increases consumer demand for ADSL; but it also reduces, if it does not eliminate, the incentive for Telstra and for others to roll-out ADSL networks. This disincentive effect is accentuated by the complete lack of clarity or predictability around quite what level of wholesale prices the ACCC believes to be ultimately acceptable for ADSL.

In both these cases, the ACCC has used the Competition Notice system as a surrogate access regime – that is, as a way of providing Telstra's competitors with low-cost access to Telstra's resources. Using the Competition Notice system to this end has been attractive to the ACCC because it does not require it to go through the Declaration process, as is required for an access regime to be imposed on a service under Part XIC, the resulting obligations can be quarantined to Telstra (as could not readily be done under Part XIC) and none of the safeguards that Part XIC provides apply. But while this use of the

Competition Notice system has been and remains highly attractive to the Commission, that system is extremely poorly suited to the task of regulating access. It lacks predictability; it has no obvious means of adapting to changing circumstances; and because it provides few effective safeguards, it is highly vulnerable to regulatory rent-seeking. Its main impact, in my view, has been to inject into the Australian broadband market distortions that, in international terms, are unique.

That these consequences should flow from the Competition Notice system is, in my opinion, unsurprising. In effect, using that system to resolve access issues is little different from seeking to address these issues by relying on section 46 – and at least since the Hilmer Report, it has been pretty widely accepted that that is a difficult, if not impossible, thing to do.

To say that the Competition Notice system should not be used as the ACCC has and is using it does not mean that the ACCC should ignore access issues in respect of broadband. Rather, where Telstra controls essential facilities that could be used to prevent efficient access by competitors to emerging broadband market, regulation has a natural role. The key issue is the form that regulation takes. This naturally raises the issue of whether the access regime provided for under Part XIC of the Act could provide a better means of addressing any legitimate needs for regulatory intervention.

The many general deficiencies of our current access regimes, including that set out under Part XIC, are well-known, and have been extensively analysed by the Productivity Commission in its reports on the National Access Regime, on the telecommunications access regime, and most recently on the Gas Code. They include the lack of clear, economically rational, principles that can guide access pricing, an excess of discretion vested in the regulators, and an undue narrowing of rights to full merits review of regulatory decisions. It is to be hoped that the current Productivity Commission review of National Competition Policy will highlight the importance of addressing these concerns and help overcome the obstacles that rent-seeking by the beneficiaries of the current arrangement (not least the regulators) create to reform.

However, in addition to these general deficiencies, there are specific problems that the manner in which the current telecommunications access regime has evolved creates for the transition to a broadband environment.

In particular, for reasons that are quite understandable, our current telecommunications access regime involves a large number of application- and technology-specific declared services. These are priced on a basis that at least in some cases, is inconsistent and which is likely to distort investment and output decisions affecting the transition to broadband.

The ACCC's proposed pricing arrangements in respect of the Line Sharing Service highlight the severity of this problem.

In essence, the ACCC proposes to price this service, which provides spectrum to be used for ADSL, on a basis which makes no contribution to line costs, that is, to recovery of the costs of the local loop, or more generally to the shared costs of the CAN. This will distort demand relative to substitutable services, such as ISDN, DDAS and ULLS, which are priced on a basis that includes contribution to the joint and common costs of the CAN.

Two factors will accentuate the extent of this distortion. First, the ACCC proposes to spread the service-specific costs of line sharing service across an expected level of demand that even the Commission describes as "aspirational" and which in my view is simply unrealistic. By further artificially lowering the line sharing charge, this will make the service even more attractive than it would otherwise have been. Second, the ACCC has indicated that the LSS price should be set on a geographically averaged basis. Since the ULLS price is geographically de-averaged, demand will undoubtedly shift to line sharing in non-metro areas.

From an economic perspective, it is difficult to believe that the efficient level of recovery of shared costs from line sharing service could be zero, especially when substitute services are expected to make substantial contributions to the recovery of those costs. Additionally, it is difficult to see on what basis the ACCC could justify having "aspirations" as to the level of demand for an access service – that implies a "social engineering" approach which history shows contributes nothing to the long-term interest of end-users. Finally, to then further distort choice by treating geography differently as between substitute services is also troubling.

The overall result, in my view, will be both to artificially shift demand towards line sharing and to skew retail and wholesale prices for ADSL, relative to prices for substitutes (including dial-up access to the PSTN). As separate provision of telephony and ADSL over a single line involves foregone economies of scope, there will additionally be a direct loss in productive efficiency.

To these distortions must be added the adverse consequences in terms of overall cost recovery in the PSTN. We can, in particular, expect to see revenue loss from the PSTN as telephony traffic, which currently contributes to the Access Deficit, migrates to Voice over IP ("VoIP"). At the moment, a constraint on the attractiveness of VoIP is that it does not provide for emergency service access, on which consumers place a relatively high value. Additionally, VoIP, at least over ADSL, does not support the levels of reliability that are engineered into the PSTN. However, given the pricing of the line sharing service, customers could have the option of using VoIP on a line sharing line, while using a low-volume-user option for their PSTN rental.

The outcomes that flow from this are perverse indeed. In effect, this combination – of a low-volume-user rental and VoIP over ADSL – is likely to be most attractive to customers with significantly above average call volumes. However, the low-volume-user option was intended as a “safety net” service for customers who might otherwise be adversely affected by the progressive move to PSTN rebalancing (in which non-traffic sensitive charges are brought into closer alignment with non-traffic sensitive costs). Far from fulfilling this function, it risks becoming the means by which the higher volume, wealthier, consumers avoid contributing to common cost recovery.

The implications for CAN cost recovery need to be seen taking account of the fact that PSTN calling is relatively highly concentrated – in the sense that a small number of customers account for a disproportionate share of call volumes. The top 5 per cent by traffic of business and residential PSTN lines account for close to 60 per cent and 30 per cent of pre-selectable call volumes for each of these groups respectively. As a result, even a relatively small shift in traffic off the PSTN would have major implications for the scope for cost recovery and, if recovery is to be secured, for the burden on remaining users.

It may be that some complicated, and in my view, likely extremely implausible, second best argument can be found justifying these outcomes. However, the reality is that these effects are best understood as emerging from a situation where the regulator fails to keep in mind the distinction between promoting competition and assisting particular competitors. The problems this creates are then accentuated by the proliferation of arbitrage opportunities among a myriad of separately priced declared services.

In short, our current regime both has caused serious distortions in the transition to broadband and now threatens even greater distortions for the future. What then should be done?

The way forward

In my opinion, a drastic simplification of our telecommunications access arrangements is required if we are to have a regime compatible with making an efficient transition from the legacy network to the network of the future.

At the centre of this simplification would be progressively replacing the current declared services with a single transport service. That service would provide transport of an IP stream from user premises to points of interconnection. It would be technology, service and application independent, but would make provision for a range of speeds and for varying levels of quality of service. It would thus take full advantage of the technological transformation that is now underway. As it was phased in, all other service declarations, including those affecting the mobile services, would be withdrawn.

Accompanying this shift would be a move to access terms and conditions more supportive of long term investment. In seeing why this is so important it is useful to note that our copper pair network, though it has gotten a new lease of life from ADSL demand, will soon need substantial refurbishment and in many areas, root and branch replacement. There is a need to gradually phase out that network in favour of extensive deployment of fibre cable first towards, and then to, the home. Even if this is done over a twenty year period, very significant investment will be required for it to occur.

Without prejudicing the issue of whether any mandatory third party access should be required to such a replacement network, the investment building that network entails is more likely to be made if the terms and conditions of any such access are clear and certain. To my mind, the basic condition should be that if third party access is provided, it should be on terms that allow any prudent investment made to be recouped. This would be best done by allowing the access price to be set on the basis of cost actually incurred, including due allowance for risk, without the assets being exposed to ex post regulatory stranding.

It could be argued that this outcome could be achieved under the current regime. Perhaps it could. But that regime is so discretionary that in reality, the ACCC would have every ability to frustrate an access undertaking that was consistent with full cost recovery and seek to bargain better terms for its favoured parties as the price of obtaining regulatory approval. In my opinion, the regime should be changed so as to significantly reduce the scope for such abuses of regulatory powers.

Conclusion

It is an open and controversial issue whether the telecommunications regulatory regime that came into place in the 1990's delivered any real efficiency benefits. Obviously, such an assessment depends on a consideration of the counterfactual, and that in turn requires an analysis that goes far beyond the scope of this paper. What can be said is that that regime has been very effective in redistributing income towards access seekers: over the period from 1997/98 to 2001/02, the share of Telstra's Total Factor Productivity gains that was passed on to access seekers was approximately twice as great as their share of PSTN usage and significantly exceeded the share of those gains that flowed to Telstra's shareholders.

However, whatever one's views may be of how the regime has performed to date, there are, in my opinion, clear reasons to believe it can and should be changed to perform better in future. The transition to a broadband world provides both an important impetus for, and the opportunity to, make those changes.