



**Australian  
Competition &  
Consumer  
Commission**

# **A strategic review of the regulation of fixed network services**

**ACCC position paper**

**June 2006**

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## Glossary

ACIF	Australian Communications Industry Forum
ADSL	Asymmetric digital subscriber line
BDSL	Business-grade digital subscriber line
CAN	Customer access network
CLLS	Conditioned local loop service
CSP	Carriage service provider
DSLAM	Digital subscriber line access multiplexers
FTM	Fixed-to-mobile
FTTN	Fibre-to-the-node
HFC	Hybrid fibre-coaxial cable
IEN	Inter-exchange network
IP	Internet protocol
ITU	International Telecommunications Union
LCS	Local carriage service
LSS	Line-sharing service
LTIE	Long-term interests of end-users
MDF	Main distribution frame
POI	Point of interconnection
PSTN	Public switched telephone network
PSTN OTA	PSTN originating and terminating access
RMRC	Retail minus retail cost
SAO	Standard access obligation
TSLRIC	Total service long run incremental cost
ULLS	Unconditioned local loop service
VoIP	Voice over Internet protocol

WLR	Wholesale line rental
xDSL	Refers to the ‘family’ of Digital Subscriber Line services (eg. ADSL, HDSL etc.)
CLLS	The conditioned local loop service is a service for the supply of unswitched transmission capacity between an access-seeker’s customer location in an urban area and the access-seeker’s frame or like equipment. The service is a conditioned two wire service which supports full duplex voice using loop/ring signalling. The service is a bundled product and includes the services of a customer access line, jumpering at the local exchange and a connection to the access-seeker’s frame or like equipment.
LCS	The local carriage service is a service for the carriage of telephone calls from customer equipment at an end-user’s premises to separately located customer equipment of an end user in the same standard zone. The service is used by competitors to resell local calls.
LSS	The line-sharing service allows similar functionality to a ULLS service to a competitor, but where the voice service is still provided by another party.
PSTN OTA	Domestic PSTN originating access is the carriage of telephone calls from the calling party (the A-party) to a point of interconnection (POI) with an access-seeker’s network. A POI is usually located at a trunk (or transit) exchange.  Domestic PSTN terminating access is the carriage of telephone calls from a POI within an access-seeker’s network to the party receiving the call (the B-party).
ULLS	The unconditioned local loop service is the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user’s premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with a customer access module and located on the end-user side of the customer access module.
Wholesale DSL services	Wholesale DSL services comprise both a local access component (analogous to ULLS) and a transmission component between DSL exchanges and CBD exchanges.
Wholesale line rental (WLR)	Wholesale line rental is a service providing line access to

customers, but sold on a wholesale rather than retail basis.

## Summary

On 21 December 2005 the Australian Competition and Consumer Commission (the Commission) commenced a public inquiry to explore a range of issues relating to the regulation of fixed network services, including the declaration of the Unconditioned Local Loop Service (ULLS) and Public Switched Telephone Network (PSTN) Originating and Terminating Access Services (PSTN OTA). In its discussion paper, the Commission also raised the possibilities of declaring a form of wholesale Digital Subscriber Line (DSL) service and revoking the Conditioned Local Loop Service (CLLS) declaration.

The Commission has found that despite the emergence in recent years of a number of local access networks based on microwave, fixed wireless, optical fibre and satellite technologies, Telstra continues to have a large degree of market power in originating and terminating voice calls, as well as the provision of fixed services including wholesale and retail high bandwidth carriage (broadband) services.

The Commission has concluded that declaration of the ULLS and PSTN OTA will promote competition and efficiency in infrastructure usage and investment and is therefore in the long term interest of end-users (LTIE). The Commission's draft decision is therefore to continue the regulation of declaration the ULLS and PSTN OTA services on a national basis for a further period of three years.

No party, including Telstra, advocated the complete removal of these declarations at this stage. The Commission expects that there will be more certainty about emerging technologies and take-up of alternatives to Telstra's wholesale services in particular areas during this time.

The Commission expects that there will be more certainty about emerging technologies and it is possible to consider any changes to the market over that period.

The Commission recognises that infrastructure roll-out and competition are not likely to emerge evenly in all areas. Hence, there is a need for the regulatory framework to reflect this market dynamic. To date, the Commission has not received sufficient information to justify a change in the service description of the ULLS and PSTN OTA to exclude certain areas on the grounds of effective competition. Therefore, while continuing the declarations of these services, the Commission proposes to monitor the development of alternative infrastructure and the competitive pressure they place on Telstra's ULLS and PSTN OTA over this period.

As part of its monitoring program, the Commission considers there is merit in developing an audit of infrastructure, as suggested by Telstra, to further inform its analysis of access bottlenecks. As input to this process, the Commission seeks comments regarding the necessary factors that the Commission must consider in considering whether to roll back regulation of various fixed network services.

In any case, if an access provider can demonstrate that an exemption from regulation could be justified on the basis of effective competition in any given sub-region, then it could lodge an application under the ordinary exemption provisions of the TPA (s152AT). This provides a tool for withdrawing from regulation in a timely and targeted fashion, as appropriate.

The review has also considered whether there is a case for declaring a wholesale xDSL service to address market power concerns over the provision of such services. The Commission, however, considers that a compelling case for declaration of a wholesale xDSL service at this time has not been made. In the face of potentially significant growth in the ULLS, wholesale declaration could encourage greater reliance on resale of xDSL services in place of greater take-up of the ULLS, which could drive lower wholesale xDSL prices and innovation (by Telstra or a ULLS-based competitor). To the extent, however, that ULLS may be affected by an FTTN roll-out, the Commission would tend to agree with parties who suggest that a regulated form of fibre-based bitstream access may be more appropriate under an NGN/FTTN scenario.

The Commission will continue to monitor the supply of wholesale xDSL services and may re-examine whether to declare the service, if significant concerns about access to this service are apparent.

As foreshadowed in its discussion paper, the Commission has also made a draft decision to revoke the declaration of the Conditioned Local Loop Service, on the grounds that this service provides little or no competitive benefits.

Key issues for consideration by interested parties

The Commission has identified the following as areas of particular interest in terms of comments from interested parties.

- The merits of conducting an audit of infrastructure, as suggested by Telstra in its submission to this review, to further inform the Commission's analysis of access bottlenecks;
- The appropriateness of maintaining geographic market definitions on a national basis for the markets identified in this report and any other markets considered relevant. Parties may also wish to comment on the timing in which market definitions are likely to change;
- The necessary factors that the Commission must consider in considering whether to roll back regulation of various fixed network services.
- The most appropriate mechanism for the future removal of regulation. For example, parties may wish to comment on whether the TPA's exemption process is more appropriate or preferable to an ongoing review process;
- The Commission's draft decision to continue the declaration of the ULLS and PSTN OTA services, and other matters raised in this report. In particular:
  - Should ULLS in Band 4 (rural areas) continue to be declared?
  - Should PSTN originating services continue to be declared in CBD areas
  - Should there be a single PSTN OTA service covering both transit exchange and local exchange interconnection?
- Issues raised in Chapter 7 regarding the need for declaration of a wholesale xDSL service.

## Chapter 1 Introduction

In December 2005, the Commission commenced the Strategic Review of the Regulation of Fixed Network Services (fixed services review), in accordance with s. 152 ALA of the *Trade Practices Act 1974* (the TPA).

This review considers the future regulation of key wholesale services that are delivered over Telstra's copper-based fixed network, having regard to emerging market, technological and network developments.

The main focus of the review is an assessment of whether to continue the declarations of the ULLS, and the PSTN OTA). These declarations are due to expire in July 2006 (ULLS) and December 2006 (PSTN OTA). The review also considers whether wholesale DSL services and the CLLS should be declared.

The Commission can declare eligible services where it is satisfied that declaration will promote the long-term interests of end-users (LTIE). In considering the LTIE, the Commission must have regard to the likely impact of declaration on competition, any-to-any connectivity and economically efficient usage of, and investment in, infrastructure.

Once a service is declared, under Part XIC of the TPA, an access provider who supplies a declared service to itself or another person must also supply the service, upon request, to carriage service providers (CSPs). Declaration ensures service providers have access to the inputs they need to supply competitive communications services to end-users. Declaration also ensures the terms and conditions of access are in accordance with the standard access obligations (SAOs) in s. 152 AR of the TPA.<sup>1</sup>

In order to inform this review, the Commission released a discussion paper on 21 December 2005 and invited submissions from interested parties. The Commission received the following eight submissions in response to the discussion paper:

- the Australian Communications Industry Forum (ACIF)
- the Australian Telecommunications Users Group (ATUG)
- the Communications, Electrical and Plumbing Union (CEPU)
- the Competitive Carriers' Coalition (CCC)
- Optus
- Telstra
- TransAct

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<sup>1</sup> Further details of the Commission's approach to declaration inquiries is outlined in its publication titled *Telecommunications services – Declaration provisions*, July 1999.



- Vodafone

The remainder of this report is structured as follows:

- Chapter 2 provides a strategic overview of the regulation of fixed network services for the foreseeable period.
- Chapter 3 defines the markets the Commission considers relevant for its assessment of whether declaration of the eligible services promotes competition.
- Chapter 4 provides an assessment of the state of competition in the provision of fixed network services, and an overview of emerging technologies and services.
- Chapter 5 contains the Commission's statutory assessment of whether to extend the ULLS declaration.
- Chapter 6 contains the Commission's statutory assessment of whether to extend the PSTN OTA declaration.
- Chapter 7 contains the Commission's assessment of whether to declare wholesale xDSL services.
- Chapter 8 contains the Commission's assessment of whether to extend the CLLS declaration.
- Appendix 1 contains the legislative framework for declaring eligible services.
- Appendix 2 contains the service description for the ULLS.
- Appendix 3 contains draft amendments to the service description for Domestic PSTN originating and terminating access services.

### **Timetable and inquiry process**

The Commission seeks comments regarding the ULLS and PSTN OTA service declarations separately from those concerning the broader regulatory issues raised and discussed in this report.

#### *ULLS and PSTN OTA declarations*

In accordance with Part 25 of the Telecommunications Act 1997, the Commission invites interested parties to make written submissions on its draft decisions concerning the ULLS and PSTN OTA declarations no later than **Friday 7 July 2006**.

Following consideration of these issues, the Commission aims to publish a final report setting out its final decision in July 2006.

In the event that the Commission is satisfied that it would be in the LTIE to continue to declare the ULLS and PSTN OTA services, the declarations would take effect upon release of the final report.<sup>2</sup>

*Issues concerning the regulation of fixed network services*

The Commission invites interested parties to make written submissions concerning the broader regulatory issues raised and discussed in this report by **31 August 2006**.

**Making submissions**

The Commission seeks comment from all industry participants, other stakeholders and the public more generally. It encourages these groups to consider the key aspects of this draft report, and make submissions to the Commission to further assist it in determining whether to continue to declare the ULLS and PSTN OTA services, and other matters raised in this report.

To foster an informed and robust consultative process, the Commission proposes treat all submissions as non-confidential, unless the submissions indicate otherwise.

Unless the author of a submission requests that the submission be kept confidential, written submissions given to the Commission will be made available to interested parties upon request. If submissions contain confidential information, then the author should provide the Commission with a copy that is marked confidential and a masked copy of the submission. This masked copy may be available to interested parties upon request.

Submissions can be addressed to:

Gabrielle Ford

Communications Group

Australian Competition and Consumer Commission

GPO Box 520

Melbourne VIC 3001

In addition to a hard copy, parties making submissions are encouraged to provide an electronic copy of the submission to [gabrielle.ford@accc.gov.au](mailto:gabrielle.ford@accc.gov.au)

Enquiries can be made to Gabrielle Ford on 03 9290 1942 or John Bahtsevanoglou on (03) 9290 1849.

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<sup>2</sup> As the PSTN OTA services do not expire until December 2006, the Commission may not finalise its declaration decision or the final service specifications for these services until sometime after July 2006.

## **Chapter 2 Overview of the regulation of fixed network services**

### **2.1 Regulatory framework**

In general, there are three broad ways that competition in the provision of fixed line services can take place:

- Full facilities-based competition, consisting of competing forms of stand-alone infrastructure that can directly serve customers and provide a range of end-to-end telecommunications services that are substitutable. While this represents the best basis for durable or sustainable competition, it is not always viable, given the existence of economies of scale and other barriers to entry.
- Quasi facilities-based competition, where firms provide a range of services using a combination of their own infrastructure and access to wholesale/network services provided through another party's network (for example, the installation of competitor DSLAMs in Telstra's exchanges, combined with the use of Telstra's ULLS – copper lines) allowing more significant service/quality/price differentiation.
- Service-based (resale) competition, based on access to wholesale services, which are generally modified versions of end-to-end retail services, providing an early market entry point for competitors, allowing the building of market share and a customer base

These forms of competition are not mutually exclusive nor do they mean that there is an inevitable and immutable move from resale to full-facilities based competition in all areas and over any clearly defined period. It would be expected, however, that resale-based entry will progressively give way towards quasi-facilities based forms in the larger markets and that technological progress, such as in wireless technology, will also impact on the dynamics and feasibility of full facilities-based entry in some areas and given a sufficiently long period. This progression has sometimes been referred to as a “stepping stone” or “ladder of investment” approach and, importantly, to the extent it is successful, would be associated with a progressive reduction in the extent of economic regulation that is appropriate.

In its Discussion Paper, the Commission sought comment from interested parties about whether the stepping stone approach to regulation was still relevant and whether it sends the right build versus buy signals to access-seekers.

#### **2.1.1 Submissions from interested parties**

A range of views regarding the stepping stone approach were put forward in submissions. The Competitive Carriers Coalition (CCC) submitted that the stepping stone model is an important driver of competition for the future. The CCC noted that competitors were using wholesale asymmetric digital subscriber line (ADSL) services

to build critical mass and then investing in their own DSLAM networks to deliver product and price differentiation and reduce their reliance on Telstra.<sup>3</sup>

Optus supports the stepping stone approach to regulation and submitted that:

“The ‘stepping stone’ rationale still holds relevance, although Optus does not consider it to comprise a necessary condition for declaration. Optus’ proposed DSL rollout would not have been possible if the PSTN OTA service was not available as a means of enabling Optus to build scale in its customer base.

Notwithstanding this, there are many locations where, in the absence of government subsidies, infrastructure rollout simply will not occur. In such areas, the promotion of retail based competition through the service declaration will certainly benefit the LTIE relative to provision of retail services by a single monopolist...So even if there is little or no prospect of PSTN OTA being used as a stepping stone to facilities based competition, the continued declaration may still be desirable.”<sup>4</sup>

By contrast, Telstra argued that the stepping stone model has been a failure and is being wound back around the world. It states:

“Instead of a smooth transition from resale to facilities-based competition, regulators have found that competitors quickly find the access option that gives them the greatest margin and then build their businesses around that.”<sup>5</sup>

Telstra also argues that the development of alternative networks in various locations is evidence of facilities-based competition, and removes the need for regulation of Telstra’s copper network on the basis that it is no longer a bottleneck in such locations.

The Communications, Electrical and Plumbing Union (CEPU) submitted that there is extensive duplication of broadband infrastructure (fibre) in Australian CBDs and that in these circumstances, a policy aimed at actively encouraging further facilities-based competition (with ULLS as a “stepping stone” in this direction) would be misdirected.<sup>6</sup> The CEPU also submits that the argument that ULLS services provide a “stepping stone” to more substantial facilities-based competition has not been born out in practice in other jurisdictions.

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<sup>3</sup> Wholesale ADSL is not a declared service.

<sup>4</sup> Optus, Optus submission to the ACCC on a Strategic Review of the Regulation of Fixed Network Services, February 2006, p.29.

<sup>5</sup> Telstra, Submission to the Australian Competition and Consumer Commission, Response to the ACCC proposal – A strategic review of the regulation of fixed network services, February 2006, p15.

<sup>6</sup> Communications, Electrical and Plumbing Union, Submission to the ACCC Strategic Review of the Regulation of Fixed Network Services, Response to ACCC Discussion Paper, February 2006, p14.

### 2.1.2 Commission's considerations

Despite advocating a stepping stone approach to competition, the Commission does not consider that full facilities-based competition is the end goal in all circumstances. Rather, the Commission only seeks to promote facilities-based and quasi facilities-based competition where it is economically efficient. For example, it would not be appropriate to encourage facilities-based competition where the demand for services in a market can be satisfied at a lower cost by one facility than two or more facilities. In these circumstances, the goal of competitive downstream markets would be best served by an effective access regime. The Commission therefore takes the view that service-based, quasi facilities-based and facilities-based forms of competition do not necessarily represent a seamless continuum that will apply in all geographic locations.

Competitors' decisions about the basis on which to compete will, in large part, depend on access prices relative to investment costs. So long as these signals are correct, the market should make appropriate decisions about whether to invest in alternative infrastructure, and/ or rely on Telstra's network and the extent of this reliance. If access prices do not reflect efficient costs, or there are market failures or uncertainty, then competitors' decisions about whether to build or buy could be distorted.

The Commission notes Telstra's concern that competitors appear to be basing their business on access to Telstra's services rather than building their own facilities. However, the Commission does not consider this indicates a problem with the stepping stone model. Rather, the Commission considers it reflects competitors' concerns over the level of ULLS access prices, current market uncertainties and the barriers that results from scale economies associated with the copper CAN, which lessens the feasibility of alternative networks. It should also be noted that more significant forms of entry, such as through the ULLS, are costly, take time and therefore are associated with significant negative margins in the early periods of deployment. This is particularly evident for those operators serving the mass market.<sup>7</sup>

In rural and some regional areas, however, even quasi-facilities investment (through the ULLS) is not technically feasible, and hence competition will either occur via resale or through subsidised investment in alternative networks. Over time, with improved technology and lower costs, it is plausible that alternative networks could be developed in some areas. Indeed, this is already occurring with plans for fibre or wireless networks in some areas or regions. In this situation, resale competition will continue to be an important stepping stone, which allows competitors to build a customer base that they can transfer to their own infrastructure. However, it is likely that there will be other areas where resale is the only technically and economically viable option for competition for a long time.

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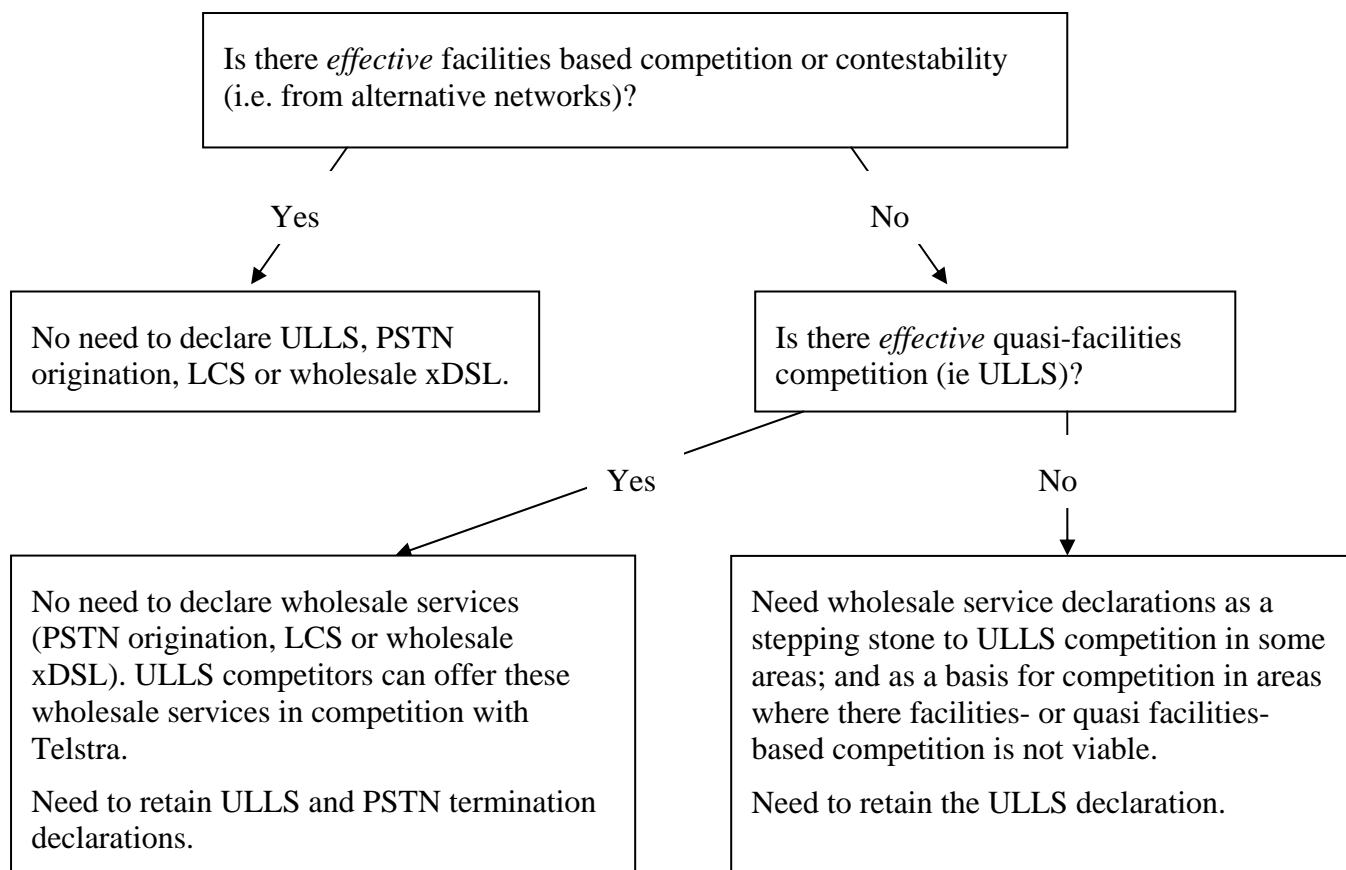
<sup>7</sup> ACCC, Imputation testing and non-price terms and conditions report relating to the Accounting separation of Telstra for the December quarter 2005, April 2006.

## 2.2 Should regulation be eased?

### 2.2.1 Framework for easing regulation

In looking at whether existing declared services should be re-declared for a further period, this review inevitably raises the issue of when the Commission should be easing back the extent of regulatory intervention. For this purpose, the following framework can be seen as useful guide to the need for different forms of regulation: resale, access/network etc. and when regulation can be eased or changed as appropriate.

The following diagram provides a simplified illustration of this. The key point, as noted above, is that to the extent that alternative build is viable and is acting to constrain the behaviour of an incumbent operator, the need for intrusive access or retail regulation is reduced. Similarly, to the extent that quasi-facilities-based forms of entry (through ULLS) are occurring in a significant way, the need for resale forms of regulation is correspondingly lower. It should be noted of course that the shift from one form of more intrusive regulation to a lighter-handed form is not instantaneous or seamless. It may occur progressively over time and impact in different ways and at different times in different areas/regions. The objective of any declaration review is having set up a framework for ongoing review of these market developments, decisions can be made at the appropriate time on the means and timing of regulatory intervention.



In determining whether there is *effective* competition, it is appropriate to conduct a case by case assessment including consideration of the following, non-exhaustive, list of matters:

- the height of barriers to entry to the market;
- the level of concentration in the market;
- the degree of countervailing power in the market;
- the extent to which substitutes are available in the market, or are likely to be available in the market;
- the dynamic characteristics of the market, including growth, innovation and product differentiation;
- the linkage between supply of the eligible service and the supply of downstream services;
- the nature and extent of vertical integration in the market; and
- changes in costs and prices over time.

For example, it is unlikely that the presence of two networks, where there are high barriers to entry, would necessarily result in competitive outcomes. More generally, effective competition will depend on factors including, but not limited to, the height of barriers to entry, competitors' wholesale and retail market concentration levels, and the prices and costs of services provided. Hence, it is when conditions for competitive new entry exist and there is evidence of effective competition in an appropriately defined market (or the prospect of this in a clearly defined time-frame) that removal of regulation should be considered.

Ideally, markets will evolve to a point where there is enough competition to justify the reduction of regulation. In broad terms, this might involve a combination of less concentrated retail markets and more infrastructure options for local access, which could reduce the need to regulate wholesale services.

However, the Commission recognises that infrastructure roll-out and competition are not likely to emerge evenly in all areas. Hence, there is a need for the regulatory framework to reflect this market dynamic. The Commission broadly agrees with Telstra's view that in the future it will no longer be appropriate to consider the need for regulation on a national basis. The Commission will therefore seek further comment on the appropriate markets within which competition should be measured.

As part of its declaration inquiries, the Commission typically has regard to many of the above factors and the depth of its analysis is closely related to the extent of information readily available on these aspects. In future inquiries, the Commission intends to collect relevant market information on a more systematic basis to facilitate its declaration assessment. That said, the Commission has considered as many of the above matters as currently available information allows and has concluded that continued regulation of the ULLS and PSTN OTA is appropriate, as outlined in the next section.

### **2.2.2 Findings from this current inquiry**

The Commission notes the emergence of various local access networks, mostly in CBDs, which rely on alternative technologies such as fixed wireless, optical fibre and

satellite services. However, while these networks may have the technical capability to deliver services that are, to a degree, substitutable for those offered via Telstra's CAN, the mere existence of alternative infrastructure is insufficient to warrant the removal of regulation entirely. Rather, the Commission needs to analyse the competitive pressure these networks place on Telstra before rolling back regulation in these areas.

To date, the Commission has not received sufficient information to determine whether there is effective competition in particular areas where some form of competitor infrastructure exists. It is therefore not appropriate, at this point in time, to change the service description of the ULLS and PSTN OTA to exclude certain areas.

Therefore, for the purpose of this current declaration inquiry, the Commission has conducted the LTIE tests for ULLS and PSTN OTA on a national basis. The Commission has concluded that both services should be declared for a period of 3 years. The Commission expects that there will be more certainty about emerging technologies and take-up of alternatives to Telstra's wholesale services market in particular areas by this time. The reasoning for these decisions is contained in chapters 5 and 6.

### **2.2.3 The process moving forward**

The Commission sees the current review of fixed network services as part of an ongoing evaluation of the need for regulation. This ongoing process is necessitated by the need for the regulatory regime to reflect the changes in technology and service delivery that occur over time.

To this extent, the Commission considers it appropriate to conduct a more comprehensive survey of infrastructure, as suggested in Telstra's submission to this review, as part of its monitoring of market developments which will assist with future declaration reviews or assessments of exemption proposals. In addition, the Commission will be looking to analyse the effectiveness of facilities and quasi facilities-based competition. As input to this process, the Commission seeks comments regarding the necessary factors that the Commission must consider in considering whether to roll back regulation of various fixed network services.

While the Commission intends to review these service declarations again in three years, interested parties are of course able to lodge applications for exemption from regulation of specified services (or a subset of services) or in specified areas/regions, based on the development of competition in particular services and/or regions as appropriate.



## Chapter 3 Relevant markets

### 3.1 The Commission's approach to market definition

When conducting a declaration inquiry, sub-section 152AB (2) of the TPA requires the Commission to consider whether declaration is likely to promote competition in markets for particular carriage services and services supplied by means of carriage services.

The Commission can only declare an eligible service; that is, a listed carriage service or a service that facilitates the supply of a listed carriage service (within the meaning of the *Telecommunications Act 1997*).<sup>8</sup>

The ULLS and PSTN OTA are network services that are used as inputs for the provision of wholesale and retail carriage services. These services therefore satisfy the definition of an eligible service. The ULLS and PSTN OTA services are described in further detail in the following sections. The formal service descriptions, for the purpose of declaration, are contained in Appendices 2 and 3.

Declaration of an eligible service is likely to promote competition where the following conditions are present:

- the eligible service is an input that is used, or that could be used, to supply carriage services or services provided by means of carriage services (often referred to as 'downstream services'); and
- competition in the market for the supply of the eligible service is unlikely to be effective in the future and this is likely to have a detrimental impact on competition in markets for downstream services.
- Where competition in the market for the supply of the eligible service is already effective (and is likely to remain effective), then declaration of the eligible service is unlikely to lead to any significant changes in quantity, price, and other terms and conditions of the supply of the eligible service.

On the other hand, if competition in the market for the supply of the eligible service is ineffective (and is likely to remain so), then declaration of the eligible service could lead to changes in the quantity, price and other terms and conditions of the supply of the eligible service. This in turn could lead to increased competition in markets for downstream services. For instance, where the eligible service was not supplied, or was available only at a very high price, declaration could lead to improved access to the eligible service and enable more efficient competitors to enter the downstream markets, and thereby promote competition in those markets.

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<sup>8</sup> s. 152AL(1) of the Trade Practices Act (1974)

The Act directs the Commission's attention to the market(s) in which competition is likely to be promoted. In most cases, this is likely to be the market(s) for downstream services rather than the market in which the eligible service is supplied (where these markets are separate). That said, the Act does not prohibit the Commission considering the market in which the service is supplied where this will assist in examining the impact of declaration on competition in the relevant (e.g. downstream) markets.

Accordingly, the Commission must have regard for both:

- the market in which the eligible service is or would be supplied; and
- the market or markets in which competition may be promoted (where these are separate markets).

With respect to fixed network services, the relevant markets impacted by declaration could be upstream, downstream or at the same level as the eligible service.

To begin the market definition process, it is necessary to identify the services under consideration and the firm(s) supplying those services. Once the relevant services and source(s) of supply have been identified, they are then described in terms of the four market dimensions: product, geography, function and time.

Part XIC of the TPA states that it may not be necessary to precisely define the scope of the market, for the purpose of a declaration inquiry. In certain circumstances, to analyse competition it may be sufficient to broadly identify the scope of the relevant markets likely to be affected by declaration. Furthermore, over time, declaration itself might affect the dimensions of these markets, particularly in relation to the functional dimension. Accordingly, market analysis under Part XIC should be seen in the context of shedding light on how declaration would promote competition rather than in the context of developing 'all purpose' market definitions.<sup>9</sup>

### **3.2 The eligible services under consideration**

As discussed above, the absence of effective competition in downstream (dependent) markets can lead the Commission to consider the degree of competition in the market(s) in which the eligible/input services themselves are supplied. This implies, in effect, that the eligible services exhibit natural monopoly characteristics. This is where the services are supplied by a facility or a technology which is both a necessary input to firms in dependent markets and is difficult or uneconomic to duplicate. There is therefore scope for the owner of such a bottleneck facility to reap abnormally high profits, either through restricting the supply of the service or demanding high prices. -

As the majority of fixed telecommunications services provided via the ULLS and PSTN OTA services supplied by Telstra as wholesale inputs and subject to these features, it may be concluded that downstream markets are not effectively or

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<sup>9</sup> Refer to ACCC, Telecommunications services – Declaration provisions – a guide to the declaration provisions of Part XIC of the Trade Practices Act, 1999.

sustainably competitive. However, the Commission recognises that due to technological change, the degree of reliance on Telstra's fixed network as a basis for competition in downstream markets may change over time. Therefore, it is appropriate to define the markets in which these services are supplied, and subsequently consider the degree of competition for the supply of the necessary wholesale inputs.

### **3.2.1 The unconditioned local loop service**

The unconditioned local loop service involves the use of unconditioned copper pairs between the network boundary at an end-users' premises and a point (at a customer access module) at which the copper terminates. This point might be at a main distribution frame inside a telephone exchange building or inside equipment housing (e.g. street-based furniture) closer to the end users. This allows competitors direct access to Telstra's copper lines that connect customers to local telephone exchanges.

With this service there is no prescribed bandwidth as the access seeker receives the twisted copper pair without conditioning or specific carriage technology. This allows access seekers greater choice regarding the products and services they provide to end-users. The access seeker deploys its own infrastructure (such as DSLAMs for xDSL provision) in Telstra's exchange to supply a range of downstream services, including the supply of high bandwidth data communications, and voice services. Access to ULLS also allows access seekers to provide a much higher quality, and more diverse range of broadband services than is currently possible by simply reselling Telstra's existing ADSL service. The ULLS can be used to supply voice calls on a wholesale basis, this requires significant investment in, or access to, a range of switching and other network equipment. The Commission understands that take-up of the ULLS for this purpose has only occurred to a minimal extent to date.

The ULLS satisfies the definition of an eligible service since it is an input, which when combined with xDSL technology and a competitor's own customer access network, facilitates the supply of high bandwidth and voice carriage services, as well as upstream and downstream services, provided by means of the carriage service.

### **3.2.2 The local and domestic PSTN originating and terminating services**

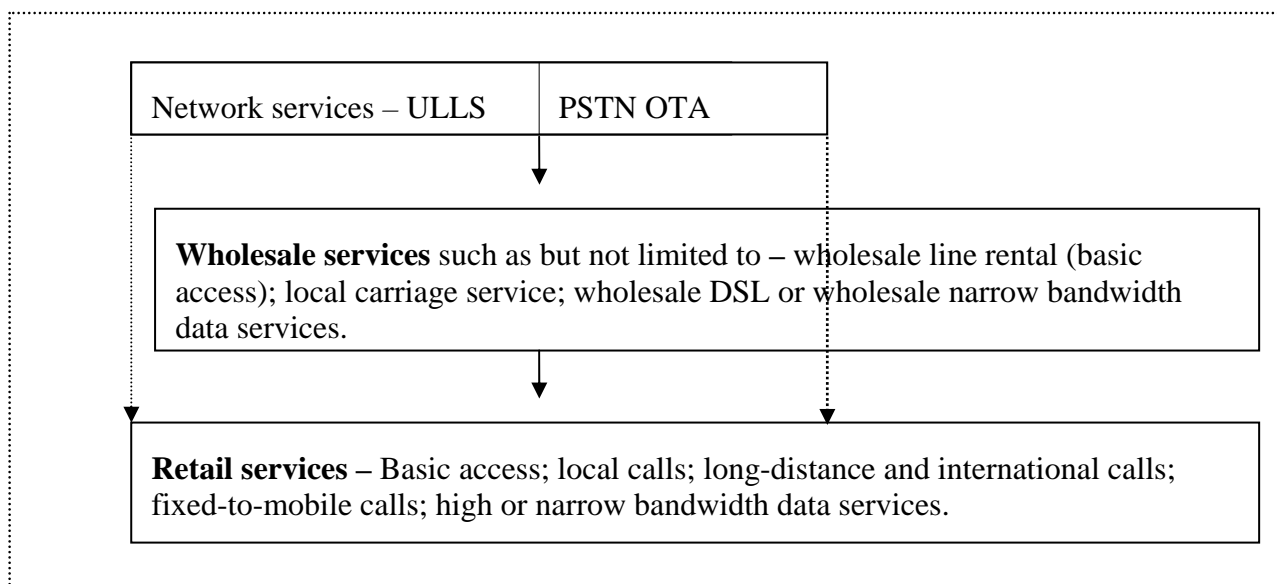
Domestic PSTN originating access is the carriage of telephone calls from the calling party to a point of interconnection (POI) with an access seeker's network. Currently a POI is usually located at a trunk or transit exchange. Domestic PSTN terminating access is the carriage of telephone calls from POI within an access seeker's network to the party receiving the call. Domestic PSTN originating and termination access services are limited to the carriage of voice calls and data over the voice band.

Access seekers currently use PSTN originating and terminating access services to provide the following services: national long-distance calls; international calls; mobile phone to fixed network calls; fixed network to mobile network calls; and local calls.

The Commission also declared a local PSTN OTA service in 1999 to enable access-seekers to connect to a local level switching point in Telstra's network. This provided further flexibility to connect into a fixed network for those competitors who have a certain amount of local transmission available. There are no fundamental functional or pricing differences for this service compared to the domestic PSTN OTA service.

### 3.3 Relationship between the eligible services

The ULLS and PSTN OTA are network services that are used as inputs for the provision of wholesale and retail carriage services. Examples of the relationships between these functional levels, as they relate to the services under consideration, are illustrated in the diagram below.



### 3.4 Market in which the eligible services are supplied

Consistent with the discussion above in section 3.2, the following section defines the markets in which the eligible services are supplied.

The Commission defines the market in which the eligible services are, or would be, supplied, to include the services and all those sources, and potential sources, of close substitutes that effectively constrain the price and output decisions of the supplier(s) of the eligible services.

#### 3.4.1 Supply of the ULLS

Demand for the ULLS exists in CBDs, metropolitan and regional areas, which would suggest that the market should be treated as national. However, the Commission recognises that the deployment of additional customer access infrastructure in certain locations, particularly CBD areas, suggests that the features affecting competition in these areas may be different than in other areas. There is a risk that these features may be overlooked if the market were treated as national.

While the Commission can therefore see the benefits of identifying separate geographic markets, it is not clear that such an approach at this time is appropriate. For example, while there are separate infrastructure builds in CBD areas, this does not mean this necessarily covers a significant number or the majority of services in these areas or that the geographic boundaries as defined by Telstra for CBD areas would accurately match the network roll-outs of competitors. The Commission notes Telstra's suggestion that an examination of whether the CAN is a bottleneck should be conducted on the basis of local area exchanges. However, it is not clear this would constitute a relevant part of the market for consideration of the removal of regulation or that the presence of a single alternative competitor would be sufficient to justify

this. The Commission considers that until such further detail is available (through its ongoing infrastructure survey) it is appropriate to maintain the view that the market for the ULLS is national.

### **3.4.2 Supply of the PSTN OTA services**

The PSTN OTA services involve the carriage of communications between equipment at the customer's premises and the access provider's local switch, along with switching provided by means of the local switch.

The Commission considers that competing networks in metropolitan and regional areas are not yet sufficiently developed to provide for competition at the originating access level, and 87 per cent of access lines are supplied by Telstra's copper-based CAN, of which only a small amount is via the ULLS.

Even where competitive infrastructure is available, the competing network would still need to interconnect with other networks to terminate services. Telstra's PSTN is likely to remain the dominant source of wholesale terminating services in metropolitan and regional areas, for terminating long-distance, international, and fixed-to-mobile calls for the foreseeable period.

## **3.5 Related markets, in which declaration may promote competition**

Broadly speaking, the Commission has identified the following as the markets in which competition is likely to be promoted as a result of the continued declaration of the ULLS and PSTN OTA. Submissions to the review did not propose classifying additional markets in respect of the delivery of fixed line services.

### **3.5.1 Customer access market (basic access)**

The ULLS and PSTN OTA services are inputs for the supply of fixed customer access services (basic access).

Delivery of fixed voice services requires interconnection with a CAN. A customer access network essentially provides a physical ongoing connection between an end-user's premises and the PSTN, allowing end-users to have access to a range of telecommunications services including the voice calls and data transfer (internet access) outlined above. This is referred to as basic access.

Given the fundamental need for customer access to use any network services, this is treated as a relevant product market in its own right rather than as an adjunct to another call service.<sup>10</sup> Customer access services are provided in such a way that an end-user can connect to any other end-user (any-to-any connectivity), and the Commission therefore considers the relevant geographic dimension of customer access services to be Australia-wide.

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<sup>10</sup> ACCC, Local Services Review: Draft Decision, March 2006

Telstra provides basic access directly to its retail customers and charges them a line rental product for the use of the access line. Telstra also supplies a wholesale line rental product to wholesale customers who resell it to end-user customers.

Basic customer access can also be provided via a range of other infrastructure, including:

HFC networks owned by Optus and Telstra (however Telstra's HFC network is not presently used to provide basic voice services); and

various local access networks provided using microwave, fixed wireless, optical fibre and satellite services. To date, these have emerged to a minimal extent only.

Although possible, these alternative network operators do not commonly supply access services to third party wholesale customers. Rather, they 'self supply' the wholesale service as an input to their own retail local service. Declaring the ULLS promotes competition for the use of the unconditioned copper line at the wholesale level as well as the retail functional level. Access seekers may then supply a product such as line rental to end-users. Therefore, in the context of the functional dimension, the relevant field of rivalry is at the wholesale and retail levels.

Geographic markets could be defined very narrowly in the case of wholesale line rental services. Indeed, at times the Commission has explicitly reflected this in regulatory decisions, by removing wholesale regulation in relation to local call services provided to business users in the CBD areas of major Australian cities.<sup>11</sup> Where substitution possibilities are less determinative on the relevant market, the Commission believes it is appropriate to consider other, more qualitative measures such as the 'commercial realities' involved with supply or whether there exists 'common pricing constraints' such that a broader market would better capture the competitive constraints in practice.

In this context, the Commission believes that the relevant residential basic access services market could be defined to be an Australia-wide market. The largest and only ubiquitous supplier of these services, Telstra, does not distinguish between different geographic areas within Australia when pricing its wholesale residential services. While this may be a product of regulation, this does not appear to undermine the relevance of the market definition. Ultimately, while there may be differing levels of competition in areas where there are other suppliers of networks able to supply wholesale line rental services for use by residential customers, this has not substantially affected Telstra's ability to price on an averaged basis while maintaining its strong market position.

Consequently, for the purposes of the declaration review, the Commission considers that it is appropriate to proceed on the basis that there is a national market for both wholesale and retail customer access/ line rental.<sup>12</sup>

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<sup>11</sup> See ACCC, Local Services Review 2005: An ACCC Discussion Paper, April 2005, p. 23.

<sup>12</sup> It would be expected that over time as the impact of the Government's subsidy programs in regional areas is evident, the geographic definition of this market could change.

### **3.5.2 Wholesale local calls**

The provision of local calls by competitors is primarily facilitated by the declaration of the Local Carriage Service (LCS). The ULLS and PSTN OTA can also be used for the provision of local calls to end-users.

The Commission previously defined a market for the provision of local calls in its draft decision in relation to the Review of Local Services. The Commission indicated that a relevant service for consideration is the wholesale supply of local call services to carriers or carriage service providers by Telstra or other carriers. In examining the impact on competition the Commission's inquiries were concerned with the supply of these services to other carriers or carriage service providers who provide local calls to end-users. A local call is defined as a call where both the calling and called party are located in the same standard zone.<sup>13</sup>

The definition includes wholesale services which other carriers and carriage service providers could purchase from Telstra or other carriers to supply retail local call services to end-users. The Commission's Review of Local Services draft decision (March 2006) contains a fuller discussion of the Commission's consideration of the various dimensions of this market.

The Commission concluded that the relevant market is the national market for providing local calls to other carriers and carriage service providers via the local carriage service or other means in the national market, with the exception of those CBD areas covered by the current exemption to the LCS.

The Commission considers that the product and functional dimension of that market definition are appropriate for the purposes of examining the impact of the ULLS declaration on competition. However, due to the ubiquity of coverage offered by the ULLS, the Commission considers that the relevant geographic market is likely to remain national.

### **3.5.3 Retail fixed voice services**

#### **Product dimension**

The PSTN OTA and ULLS are used as inputs for the provision of local calls, long distance calls, fixed-to-mobile calls, and international calls by carriers and carriage service providers to end-users. The provision of local calls by competitors is also facilitated by the declaration of the LCS.

The Commission has considered whether these voice services can be considered as substitutes for each other, and hence whether they are in the same market.

Local calls cannot be substituted for other call types, for example long distance calls. The nature of a calling relationship simply means that substitution is not possible.

In relation to mobile services, the Commission notes that there is an increasing trend towards fixed-mobile substitution. However, the Commission does not have sufficient

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<sup>13</sup> The term 'standard zone' is defined in s.227 of the *Telecommunications Act 1997*.

evidence to suggest that mobile services currently act as a constraint on the pricing of local services to residential users. In the Local Services Review discussion paper, the Commission notes some of these trends but concludes:

In its Mobile Sector Update, Citigroup asserts that ‘the proliferation of mobile bucket plans are likely to reduce the mobility premium in Australia over the next three years, which is likely to accelerate fixed to mobile substitution.’

The proliferation of 3G mobile networks this year is expected to further reduce the gap between fixed and mobile prices, as basic voice services will become more commoditised. Mobile ‘bucket plans’ are already offered by most providers, and these are likely to offer more and cheaper services as competition in the 3G mobile market intensifies.

Further, the high level of functionality provided on most mobile handsets has started to place some pressure on fixed-line services. Deloitte estimates that 10 per cent of all calls that are made within the home are made using mobile telephones because of the greater convenience of dialling. This effect is likely to be magnified as mobile prices decrease, and will be reinforced by the fact that timed mobile calls may be cheaper than untimed local calls when the duration is short.

However, despite the availability of more attractive mobile packages over the last few years, there is little evidence of any significant shifts from fixed to mobile to date. This is at least in part due to the mature and ubiquitous nature of the fixed-line network, which consumers will not quickly abandon. It is not currently clear that fixed-line prices will fall due to mobile competition, or that fixed-line services will be replaced to any great extent by mobile services in the foreseeable period.

### *Retail bundling*

The Commission also notes that residential end users tend to purchase not only retail local services from a single service provider, but also other call types.

In the first instance, as Telstra does not separate the supply of local calls from its line rental product (for use of the copper connection to a premises by end-users), local calls are usually bundled together with a line rental product for sale by retailers to end-users.

There is evidence that the majority of fixed-line competition is between full-service companies providing bundled services including line rental, local call services, long distance call services, international call services, and fixed-to-mobile call services.<sup>14</sup> Therefore, it may be possible that other call services, such as long distance and fixed-to-mobile calls, may be considered to be in the same market as local call services. There are broad similarities in the retailing functions across local services and other call services, so that the majority of service providers provide all call types.

That said, there are certain providers that only supply international, long distance, and fixed-to-mobile calls. The ACA reports that in 2004, 75 per cent of residential customers bought all fixed-line services from a single supplier. While it may be argued that the majority of consumers would only consider the overall costs of ‘fixed line and call services’, there is a significant minority of consumers who are relatively

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<sup>14</sup> ACA, *Consumer satisfaction survey 2004*, Special Report No. 14, August 2004, figure 11.



heavy users of particular call types, such as long distance, and who find it rational to unbundle their purchases. This primarily occurs through pre-selection or call override arrangements which enable end-users to select a carrier to carry all or some proportion of fixed-to-mobile and long distance calls, while local services remain supplied by their primary provider such as Telstra. Carriers and carriage service providers require access to PSTN OTA services to provide retail calls including long distance, international and fixed-to-mobile calls. The domestic PSTN OTA services can also be used to supply local calls, however the Commission understands that it is not widely used to do so for non-business users.<sup>15</sup>

The Commission considers that, in regard to the product market, the evidence is mixed, as to whether local calls and other call types should be considered as being part of one market, and that relevant downstream markets could be more precisely defined as being narrower than a market for retail fixed voice services. As discussed, market analysis under Part XIC should be seen in the context of shedding light on how declaration would promote competition in at least one other market rather than in the context of developing an ‘all purpose’ market definition. Therefore, the Commission will consider whether the ULLS and PSTN OTA services promote competition according to either possibility, noting that even if these services were analysed as separate markets, the conclusions in relation to the degree of competition are likely to be the same.

#### **3.5.4 High bandwidth carriage (broadband) services market**

The ULLS can be used by access seekers as an input to supply carriage services to end-users, with bandwidth above 256 Kbps. These services are generally referred to as high bandwidth carriage services or broadband services.

Product and functional dimension – the end user services and substitutes

There are three features or functionalities that distinguish broadband services as higher quality services than narrowband (dial up) internet access:

- the service is always on, i.e. no dial-up is required (allowing the user to maintain a permanent connection to the network enabling real time delivery of services such as email);
- it is possible to use both voice and data services simultaneously; and
- they have much faster download speeds than a dial-up internet service.

The main reasons why dial-up PSTN OTA is unlikely to be a substitute for broadband services are functional. Dial-up subscribers require use of their phone line while connected, while, as noted above, broadband offers the convenience of “always-on” connection without impeding incoming or outgoing calls. Also, dial-up is a significantly slower and less reliable technology than broadband.

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<sup>15</sup> These so called PSTN override services have traditionally been used in conjunction with older PABX equipment by some business customers, but is no longer understood to be widespread.

The bit rates supplied by dial-up PSTN services are at least 5 times slower than even the slowest broadband services. Previous market enquiries conducted by the Commission have led it to conclude that end-users of ADSL would be likely to only consider dial-up PSTN a substitute if there was a large price increase in ADSL. With greater competition in broadband services, these pricing distinctions have become less significant – base level broadband services are not significantly higher priced than dial-up services – which means the key distinguishing feature between the two are the functional differences noted above. On balance, the Commission considers that dial-up services are not substitutes for the provision of broadband services.

The majority of broadband services are provided via xDSL technologies, which are specifically designed for use on copper networks.<sup>16</sup> These include ADSL, which is the most common type and features a high bandwidth downstream service coupled with a lower bandwidth upstream service. There are also symmetric forms of DSL, such as HDSL, SHDSL. VDSL can provide a very high speed in both directions or an even higher downstream speed in an asymmetrical mode. Within the various xDSL sub-categories there are also different generations of services with differing capacities; eg ADSL2, ADSL2+, VDSL2/2+, which provide much greater bandwidth than first-generation ADSL.

HDSL is a technology which enables copper pairs to carry communications at speeds of approximately 2 Mbits per second in both directions.<sup>17</sup> Current generation ADSL enables copper pairs to carry communications at up to 8 Mbits per second downstream (i.e. to the end-user) and at slower speeds upstream.

Newer generation ADSL technologies now being deployed (ADSL2/2+) provide significantly higher download speeds of up to 24Mbits per second, while VDSL and VDSL2+ is understood to be capable of supplying up to 100Mbs, although over relatively shorter distances. VDSL2+ is promoted for use by large corporations, small businesses and residential users. The technology is particularly well suited for internet access or for the supply of broadcast services such as video (or virtual video) on demand. It can also be used for carriage of both data and voice communications simultaneously by adding a ‘splitter’ to the line, which essentially separates voice communications from data communications.

Business-grade DSL (BDSL) services are designed to address a different set of needs to ADSL services. Some customers, particularly businesses, require services which deliver symmetric bandwidth capacity, more secure and committed data quality and better service levels. These services are not always used for internet access – Telstra’s retail BDSL services offer a number of different uses, including as an entry point into another type of network (frame relay or ATM), as a point-to-point service as well as

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<sup>16</sup> ACCC, Snapshot of broadband deployment as at 31 December 2005, March 2006.

<sup>17</sup> The actual bandwidth depends on factors such as length of the copper line and the level of interference from other lines. HDSL carriage technology can be used to carry both data or voice communications (for instance, it can provide 30 voice channels). However, the Commission understands that at present it tends to be used predominantly for data applications.

for internet access. To provide these services, carriers have invested in specific DSLAMs in many of Telstra's local exchanges (these are distinct from the DSLAMs used to supply ADSL services).

For the purposes of this declaration inquiry, the Commission considers that it is sufficient to examine whether declaration promotes competition in the supply of broadband services, which as noted above, consist of those services with bandwidth at around, and exceeding, 256Kbps – but with business-grade services supplied to retail and wholesale customers being distinct products (for the reasons outlined above).

Broadband services can also be supplied by technologies including HFC, satellite, microwave, wireless, and 3G mobile phone networks, although the specific capabilities of each differ.

#### *Geographic dimension*

The Commission understands that the majority of service providers charge customers a uniform price for ADSL services regardless of their geographic location. This suggests that the market is not split into separate geographic areas at the retail level.<sup>18</sup> Further, Telstra offers volume discounts to its wholesale broadband customers, which increase as their customer base increases. Market inquiries previously conducted by the Commission have suggested that in order to be a viable competitor and achieve volume discounts, it is necessary for service providers to have a national presence.

However, the Commission recognises the potential for other broadband services, such as wireless or mobile broadband, to be used in certain geographic locations, and that this needs to be taken into account when defining markets.

#### *Temporal dimension*

Demand for broadband services is growing. As of December 2005 broadband take-up had reached 2,785,000 connections, and throughout 2004-05, volume growth of broadband take-up had increased by more than 100 per cent in three consecutive quarters. In response to this, a number of supply-side alternatives that are capable of delivering broadband services at increasing levels of speed and mobility have emerged or are being developed. These include fibre and particularly wireless networks, and as noted above, various DSL technologies, which enable the supply of higher bandwidth services over copper networks. Therefore, in time, the product market definition for broadband may change to reflect differing speeds and functionalities using a range of technologies.

### **3.5.5 Mobile telephony market**

Competition in the provision of mobile telephony services requires access to the PSTN for the termination of mobile calls on the fixed network.

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<sup>18</sup> This, however, does not imply that input prices need to be averaged in different areas. Indeed, both efficient supply and competition is promoted where input prices are based on underlying costs – particularly where these differ markedly between different areas.

Therefore, in the context of the eligible services under consideration, a key factor is the ability for end-users to make calls from mobile phones to fixed network connections. In terms of product substitutes and as noted above, the Commission considers that there is an increasing trend towards fixed-mobile substitution. However, due to the mobility characteristic of mobile telephony, fixed-to-fixed calls cannot easily substitute calls made from mobile to fixed networks because the calls can only be placed from a fixed location.

For the purposes of examining whether declaration of the PSTN will promote competition, the Commission considers the relevant functional level to be the retail supply of mobile services, as mobile retailers must be able to offer the ability to make mobile-to-fixed calls to the end-users. Further, given the requirement for retail mobile suppliers to offer national coverage, the Commission considers the relevant geographic dimension to be Australia-wide.

### **3.6 Submissions from interested parties**

In response to the discussion paper, only one party directly addressed the question of whether the current market definitions were still relevant. TransACT agreed that the previously defined market sectors<sup>19</sup> in relation to fixed line services remained relevant. However, it suggested that manner of accessing those markets could change if Telstra were to proceed with deployment of FTTN.

Telstra broadly argued that the Commission should conduct an exchange by exchange assessment of whether Telstra's copper based network remains a bottleneck. It argued that this is consistent with the principles of market definition that begin with the narrowest possible markets. As noted previously, the Commission is looking at instituting a more comprehensive and regular series of infrastructure studies.

### **3.7 Conclusion**

In light of the discussion above, the Commission considers the following to be the relevant markets for the purposes of this declaration inquiry are:

- national markets for the wholesale and retail supply of fixed voice services;
- national market for the retail supply of mobile telephony services;
- national market for the wholesale and retail supply of local call services;
- national market for the wholesale and retail supply of customer access services;
- national market for the wholesale supply of broadband services;
- national market for the retail supply of broadband services to residential and small business users;

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<sup>19</sup> ACCC, A Strategic Review of the Regulation of Fixed Network Services: Discussion Paper, December 2005, p21

- national market for the wholesale supply of BDSL and other high bandwidth, business grade data services to wholesale customers; and
- national market for the retail supply of BDSL and other high bandwidth, business grade data services to retail customers.

However, as noted previously, the Commission recognises that more product and geographic markets may emerge in the future.

## Chapter 4 Current and emerging competition and technologies

This chapter provides an overview of the current state of competition in the markets defined in chapter 3. It also discusses emerging technologies and services that could impact on future competitive outcomes within these markets.

### 4.1 Current state of competition

#### 4.1.1 Overview of facilities- and quasi facilities-based competition

Competition in the various fixed line services predominantly takes the form of resale competition based on access to Telstra's wholesale services, with facilities-based competition only occurring to a limited extent.

Telstra's copper network is the basis for the provision of most fixed services at the wholesale and retail levels. The vast majority – up to 87 per cent of Australian homes and businesses rely on voice services provided using Telstra's CAN. Approximately 12 per cent of basic access is provided by Optus' Hybrid Fibre Coaxial (HFC) cable network, which services approximately 1.4 million homes.<sup>20</sup> While Telstra also owns an HFC cable network, this is not currently used for the provision of basic telephony services.<sup>21</sup>

A number of local access networks based on microwave, fixed wireless, optical fibre and satellite technologies have emerged in recent years. However, while these networks may have the technical capability to deliver services that are, to a degree, substitutable for those offered via Telstra's copper customer access network (CAN), most of these networks are located in discrete geographic areas. For instance, optical fibre networks are mostly located in central business district (CBD) areas and are targeted toward corporate customers. Some fibre-based and/or HFC networks are also deployed in certain regional areas such as the ACT and some regional cities in Victoria, NSW and other areas. Many of the wireless networks that have been developed recently are targeted at end-users in regional and remote areas. The fragmented nature of facilities-based competition means that Telstra continues to have a large degree of market power in originating and terminating voice calls, as well as the provision of fixed services more generally.

The following table sets out the alternative network infrastructure in place in capital cities (primarily in the CBDs) as at June 2004.<sup>22</sup>

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<sup>20</sup> Optus, op.Cit, p27.

<sup>21</sup> Deutsche Bank, Telstra Corporation, PSTN to NGN Evolution, 28 April 2006.

<sup>22</sup> ACCC, Telecommunications Infrastructure in Australia 2004, June 2005, pp. 16-17

Carrier	Sydney	Melbourne	Brisbane	Adelaide	Perth	Canberra	Hobart	Darwin
AAPT	O/M	O/M	O/M	O/M	O/M	O		
Access Providers		M						
Alphalink (Australia)		C/M						
Ancom Telecommunications				O	O			O
Bareena Holdings	S	S	S	S	S	S	S	S
Big Air Australia	M							
Broadcast Engineering Services					H			
Eastern Wireless		M						
IWireless					C/M			
Link Innovations	M	M	M					
Macquarie Corporate Telecommunications	O	O						
MCI WorldCom	O	O						
National Power Services		O			O			
Nextgen Networks	O	O	O	O	O	O		
New Skies Networks	S	S	S	S	S	S	S	S
Northern Technological Solutions								M
OMNIconnect		M						

Carrier	Sydney	Melbourne	Brisbane	Adelaide	Perth	Canberra	Hobart	Darwin
PanAmSat Asia Carrier Services	S	S	S	S	S	S	S	S
PIPE Networks (formerly IX Services)	O		O	O			O	
Powercor Australia Telecom		O						
PowerTel	O	O	O			O		
Primus Telecom	O	O	O	O	O			
Satellite-wireless.com			M					
SingTel Optus	O/H/M/S	O/H/M/S	O/H/S	O/M/S	O/M/S	O/M/S	O/S	O/S
Swiftel Communications					O			
Telstra	C/O/H/M/S	C/O/H/M/S	C/O/H/M/S	C/O/H/M/S	C/O/H/M/S	C/O/M/S	C/O/M/S	C/O/M/S
TransACT						C		
Unwired Australia	M							
Victorian Rail Track		C/O						
Windytide (AUSTAR)								H
<b>Total</b>								

C = copper; O = optical fibre; H = HFC; M = microwave, LMDS, MMDS, ISM and modified spread spectrum, and fixed wireless; S = satellite

Quasi facilities-based competition is comparably more developed. This form of competition predominantly relies on the ULLS, which enables competitors to install their own DSLAMs in Telstra's exchanges and offer both broadband and voice services. The line sharing service (LSS) is a similar service, though only provides access to part of the copper line. It is used by competitors to provide broadband services only, with standard voice services being provided by a separate operator.

After several years of slow take-up, the level of quasi facilities-based competition is increasing. Several carriers have signalled their intention to take-up large numbers of

ULLS as part of plans to install their own DSLAMs for the provision of xDSL products. Industry analysts recently reported that Optus, iiNet, and Primus are currently undertaking national deployments of DSL infrastructure, and estimated that by the end of 2006, these carriers will have deployed around 200,000 DSL ports. It also appears that several niche ISPs are installing DSLAMs in regional areas.<sup>23</sup>

Optus submits that it is currently in the process of rolling out a DSLAM network that will reach 340 exchanges in metropolitan Australia. This will allow it to reach an additional 2.9 million households and businesses in addition to those addressed by its HFC network. It will also enable broadband speeds of 12 Mbps for premises located within 1.5 km of a local exchange, and up to 24 Mbps in more restricted areas.<sup>24</sup>

According to Optus, approximately 560 DSLAMs are either active or planned by competitors other than Optus and Telstra. It estimates a total of 2918 active and planned ULLS-based investments (including Optus and Telstra's deployments), with 2018 of these belonging to Telstra.<sup>25</sup>

The CCC also submits that the level of ULLS take-up has been significant, and notes that the cumulative investment and planned investment in DSLAMs and associated infrastructure by its members is approximately \$100 million.<sup>26</sup>

While several carriers have announced intentions to increase their use of the ULLS, the extent of their DSLAM roll-outs is currently uncertain and has been affected by Telstra's FTTN announcements, as well as uncertainty surrounding ULLS charges.

#### **4.1.2 Barriers to effective and sustainable competition**

In general, the high barriers to facilities-based competition in fixed line services arise from substantial sunk costs and economies of scale. These limit the ability of new entrants and existing players to deploy network infrastructure that can serve as an effective substitute for Telstra's CAN.

For instance, the significant economies of scale associated with telecommunications networks mean that competitors need to invest on a large scale in order to achieve per unit network costs that could potentially rival Telstra's.

In addition, a large retail customer base is typically necessary to justify investment in infrastructure before a new entrant can compete effectively with Telstra.<sup>27</sup> To date,

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<sup>23</sup> Macquarie Research, *ULLS – big decisions, high stakes*, 9 November 2005.

<sup>24</sup> Optus, Optus submission to Australian Competition and Consumer Commission on A strategic review of the regulation of fixed network services, February 2006, pp6-7.

<sup>25</sup> Optus, Optus Submission to the Australian Competition and Consumer Commission on a strategic review of the regulation of fixed network services, February 2006, p7.

<sup>26</sup> Competitive Carriers' Coalition (CCC), Submission to the ACCC strategic review of the regulation of fixed network services, February 2006, p11.

<sup>27</sup> This is also true for competitors seeking to take advantage of access to the ULLS as a basis for broadband and voice services competition.



competitors generally seek to build scale in retail markets through the resale of other wholesale services. However, this strategy is itself subject to barriers including high customer switching costs (such as contract lock-in), customer inertia and reliance upon Telstra for necessary wholesale inputs.

Telecommunications consumers face high costs of switching between retail suppliers. Supply contracts typically involve a fee for the costs of physically disconnecting and churning customers. These costs, in addition to general information asymmetries about the range of competitors' products, mean that consumers tend not to change their service provider unless there is a compelling reason to do so.

Further, the decision to choose a retailer other than Telstra for services such as long-distance, or international calls, usually means that a customer faces a penalty by way of higher charges for local calls provided by Telstra. Together, these conditions provide Telstra with a considerable competitive advantage as the dominant, incumbent provider of retail services on the fixed network.

In addition, new entrants are often reliant on Telstra for the wholesale inputs that are necessary to compete at the retail level. Competitors who provide local telecommunications services rely upon Telstra to provide wholesale services as well as maintenance and customer switching (churn) processes. In such circumstances, economic theory suggests that the incumbent will face a strong incentive to discriminate against its competitors by providing lower quality or higher cost wholesale services.<sup>28</sup>

Together, these factors create difficulties in generating customer churn and provide Telstra with considerable advantages as the dominant and incumbent provider across the range of retail fixed services. Potential competitors must offer an inducement to customers, such as lower prices, to overcome this, which itself is an additional barrier.

Without a strong retail market position, a potential entrant faces the likelihood of being in a highly asymmetric position relative to its rivals in terms of the volumes of originating and terminating services that it buys and sells. This makes profitability as a wholesale and retail provider generally more difficult to achieve, which increases the risks of failure, and subsequently the risks of new entry.

The Commission considers that these factors tend to reinforce the fragmented nature of competition, and limits the extent that alternative networks pose a strong competitive threat to Telstra at this point in time.

In addition to these systemic barriers to entry, there are a number of market developments that potentially pose threats to the development of effective and sustainable facilities and quasi-facilities based competition.

First, Telstra's decision in early 2006 to charge an average ULLS price of \$30 in all areas has created uncertainty and risk to the ongoing viability of existing DSLAM

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<sup>28</sup> Literature on the economics of sabotage was reviewed in the ACCC's *Competitive Safeguards Report 2003-04*.

investments in residential areas and therefore affects the voice and broadband competition that relies on access to the ULLS.

Second, Telstra's FTTN proposal has significant implications for ULLS-based competition. The Commission understands that the deployment of fibre from the relevant local exchange to the node could mean that it is technically unworkable for competitors to use the copper between the relevant local exchanges, where ULLS is currently provided, and the proposed nodes.

Telstra states in its submission:

“Competitors who have rolled out their own DSLAMs into exchange buildings in metropolitan areas will be affected. These DSLAMs cannot serve customers who are serviced by FTTN.”<sup>29</sup>

Further, it is not clear the extent to which the copper can continue to be used in the long term. For one thing, putting aside any potential technical limitations, as highlighted above, the addressable market for potential ULLS take-up may be significantly reduced, as Telstra indicates in its submission:

“...a full FTTN deployment in metropolitan areas (i.e. a roll out of fibre and DSLAMs to some 20,000 nodes) would mean that DSLAMs in exchange buildings would only be able to service approximately 40% of the customer base, some 3 million customers, with the rest of the customer base serviced from the nodes. However, DSLAMs in exchanges accessing an available customer base of around 3 million can hardly be characterised as “stranded” or “by-passed”.<sup>30</sup>

This may have the effect of reducing the ability of competitors to build sufficient scale in their DSLAM deployments to ensure the economic viability of their investments. Hence, the deployment of FTTN could foreclose competitors' ability to install DSLAMs using the ULLS, within the FTTN footprint (or at least the 60 per cent of service lines as estimated by Telstra who will be served from nodes), whilst existing DSLAMs assets could become inoperable and therefore stranded.

#### **4.1.3 Wholesale basic access and local calls**

As discussed above, the vast majority of wholesale and retail customer access services rely on Telstra's CAN (87%) and Optus' HFC (12%). Although the take-up of Optus' HFC network for retail broadband services has increased, its use as a wholesale platform for resellers to provide basic access and local calls has not changed markedly in the past year.

The Commission understands that some of the local access networks in CBD and metropolitan areas provide some level of access to other service providers.

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<sup>29</sup> Telstra Corporation Limited (Telstra), Submission to the Australian Competition and Consumer Commission, Response to the ACCC proposal – “A strategic review of the regulation of fixed network services”, February 2006, p21.

<sup>30</sup> Ibid.

With regard to provincial centres, several carriers have deployed local access networks in cities such as Wollongong and Newcastle in New South Wales, and Geelong, Bendigo, Mildura and Ballarat in Victoria. However, setting aside these specific areas, Telstra provides **[c-i-c per cent]** of connections in provincial areas.

In rural and remote areas, Telstra is the only carrier that operates in all states and provides copper and optical fibre local access networks (as opposed to satellite). In June 2004, approximately **[c-i-c per cent]** of subscribers connected to Telstra **[c-i-c per cent]** or Optus **[c-i-c per cent]** local access networks.<sup>31</sup>

#### **4.1.4 Retail basic access and local calls**

The main form of competitive activity in this market arises from the re-supply of Telstra's services. That is, Telstra supplies local call services to service providers who then re-supply the services and add retail activities such as billing and customer care services.

Approximately 70 per cent of basic access and local call services are supplied by Telstra's retail business, with around 17 per cent supplied by resellers of Telstra's wholesale services. In 2004-05 Telstra increased the number of wholesale access lines supplied to the industry, of which all were taken up by competitors for the resale of basic access and local calls at the retail level. Most of Telstra's reduced retail market share appears to have been taken up by Optus, whose local call resale customers grew by 6.8 per cent in the year to 30 September 2005.<sup>32</sup>

In terms of retail revenue, only 7.2 per cent of basic access revenue and 9.5 per cent of local call revenue was earned by competitors other than Telstra and Optus in 2003-04.<sup>33</sup> Further, ACMA states that carriers other than Telstra and Optus provide only 916,000 of a total of 8.9 million basic access lines that are sold under the CSG.<sup>34</sup> Given that this share of the market is then divided amongst approximately 10 competitors, retail competition appears to be relatively immature.

Imputation testing shows that competitors equally as efficient as Telstra that resell only wholesale line rental and the local carriage service, would not be able to make a profit. Thus the sale of local calls and basic access, without the provision of other fixed services such as long distance, international and FTM calls, would not appear to be a viable entry option. None of the competitors that have entered the resale market sell local calls only, which suggests that new entrants may be viable only if they enter as a full voice service operator.

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<sup>31</sup> *ibid*, see tables 4, 5 & 6.

<sup>32</sup> Optus, Media Release, The SingTel Group's results for the second quarter and half year ended 30 September 2005, 10 November 2005.

<sup>33</sup> ACCC, Telecommunications Market Indicator Report 2003-04, June 2005, p 11.

<sup>34</sup> ACMA, Telecommunications Performance Report 2004-05, p 60.

The overall number of basic access lines supplied in the industry has also declined, largely arising from consumers' migration from dial-up to broadband internet which has reduced the need for multiple connections such as second phone lines. These points tend to suggest that competitors cannot look to new customers to the market for building up a retail customer base and need to rely on customer churn.

#### *Pricing conduct*

Overall prices for local calls decreased in 2004-05. The overall decrease largely consisted of reductions in local call charges for residential and large business customers.<sup>35</sup> The prevalence of bundled service offerings (such as those incorporating discounts for combinations of fixed-line and mobile phones, internet access, and pay-TV), of which low-priced or free local calls are a major part, is likely to have influenced the price reductions for residential customers.<sup>36</sup>

Basic access prices increased overall in 2004-05, and the only price reductions were observed in the large customer segment. Basic access prices in the residential and small business segments increased significantly. These results support the view that alternative access networks have made very little competitive impact to date.

#### **4.1.3 National long-distance, international long-distance, and FTM calls**

Competition in the provision of long-distance and FTM call services is possible through four competitive models:

- a competitor may enter as a preselect provider, supplying long-distance and fixed to mobile services to a consumer who buys basic access and local calls from another provider;
- a company may enter as an override competitor, offering long-distance call, international and FTM calls to consumers that are willing to enter an override code calls;
- a company may compete through calling cards; and
- various forms of internet access can be calibrated to provide calls via VoIP technologies.

Each of these strategies requires access to Telstra's PSTN, including where bundled services are provided.

Outside the local call segment, Telstra has a dominant role in providing long-distance and FTM services, albeit slightly less pronounced. Telstra has a market share of 65

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<sup>35</sup> Additional detail on price changes will be available in the ACCC's annual *Changes in the prices paid for telecommunications services in Australia 1997-98 to 2004-05*, which the Commission expects will be released in late June 2006.

<sup>36</sup> Bundling generally refers to the situation where two or more products or services are sold as a single package. The price of the package is usually at a discount to that of acquiring given amounts of a product separately. The residential consumer is likely to receive only one bill for all the services provided in bundles.

per cent in national long-distance, 52 per cent in international and 65 per cent in FTM.<sup>37</sup> If both long-distance and FTM services are considered together, Telstra is estimated to have 63 per cent market share, Optus is the second largest provider with 12 per cent, AAPT has 9 per cent, Primus Telecom has 7 per cent and the remaining 9 per cent is divided up amongst other carriers.<sup>38</sup>

There are substantial margins in the provision of these services. Telstra's margins vary significantly among the three retail services and between the residential and business customer segments. Telstra's most recent imputation tests indicate that an equally efficient access seeker would earn margins of 68 per cent and 66 per cent in business and residential domestic long distance respectively. The international long distance margins are 57 per cent and 47 per cent for business and residential services respectively. FTM margins are 24 per cent and 41 per cent for business and residential customers respectively. Margins increased in all segments in 2004-05 with the exception of domestic long distance calls.<sup>39</sup>

Prices for all services fell in 2004-05, with reductions of three per cent in national long-distance, 4.1 per cent in international, and 3.9 per cent in FTM.<sup>40</sup> This continues the trend of the previous six years. As noted above, a competitor as equally efficient as Telstra could not make profits if it only sold local services.

#### *Preselection arrangements*

Several carriers provide long-distance calls through preselection arrangements. Some provide services via calling cards or override numbers, which allow customers to retain their existing contract but make a call-by-call choice. All of these carriers offer broadband ADSL products in addition to long-distance calls.

However, there are significant difficulties associated with attempting to compete in the long-distance call market by way of preselection. Customers opting to receive long-distance services from alternative providers will be charged a higher price for basic access and local call services and will not be eligible for Telstra's 'reward options'.

The preselect competitor must compensate the customer for these losses. Unlike when competition first evolved in the early-mid 90s, the main form of long-distance competition now occurs by way of bundled offerings rather than preselect or override competition, as was the case.

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<sup>37</sup> National long-distance and international market shares are taken from Telstra, Annual report 2004. FTM market share is taken from ACCC, *Mobile service review: mobile terminating access service*, June 2004 and are for the 2002-03 financial year.

<sup>38</sup> Deutsche Bank, *Aust/NZ Telecommunications*, 15 June 2004, p.27.

<sup>39</sup> ACCC, Imputation testing and non-price terms and conditions report relating to the Accounting Separation of Telstra for the September quarter 2005, p22.

<sup>40</sup> ACCC, Changes in the prices paid for telecommunications services in Australia 2004-05, release forthcoming.

As bundling grows it will become increasingly difficult to operate as a preselect provider alone. As the market currently stands this is a limited, but potentially useful, competitive option. As noted above there has been a modest decline in the number of consumers who have chosen a preselection offer in favour of bundling offers made by Telstra. However, it should also be noted that Telstra's 'rewards' packages accentuate the decline in preselection, because if customers do not purchase Telstra's full bundle of services, they must pay an extra charge for the services that they do buy.

#### *Calling-card and override competition*

In the national long-distance segment, calling-card and override competition in national long-distance requires, at a minimum, the purchase of a local call or PSTN origination and PSTN termination. It therefore relies on the current access pricing regime and is not sustainably competitive in the long-run.

Calling-card and override competition in the international market, however, may take two forms. In one model the competitor buys PSTN origination and provides a traditional circuit switched call. This will be a high-quality call but will rely on the PSTN access pricing regime.

Alternatively a calling card provider can buy a local call, and use a packet switched (usually VoIP) service to provide the call. The local call can be bought, from Telstra retail. This option therefore does not rely on regulation entirely and will generally be a more sustainable competitive option. As this option involves relatively low costs of entry, and reduced reliance on Telstra's PSTN, sustainable competition in this segment may eventuate.

Override and calling card competition are most effective in the provision of national and international long distance services as call rates are often cheaper for specific destinations. It is less effective for FTM services for several reasons. First, FTM does not easily allow for the use of VoIP. Second, new entrants may face high contract costs as they must arrange mobile termination services with all four mobile service providers to obtain, as well as PSTN origination services from Telstra. Finally, mobile network operators currently have a significant cost advantage to provide mobile termination. The Commission estimates that average retail mobile termination prices are currently more than double their underlying costs. This means that a new entrant would have to pay high termination charges while the horizontally integrated mobile operators face lower costs.

The ability of the FTM service provider to set prices close to underlying cost will be limited by the extent to which it can acquire mobile termination services at cost. In this context, a barrier to entry into the market within which FTM services are provided may exist where mobile termination service access prices are above cost. This is because competitors purchasing wholesale inputs at above cost access prices may find it difficult to compete with integrated carriers who face lower internal transfer prices for on-net calls. The Commission is of the view that mobile termination access prices are substantially above the costs of providing the service, leading to a possible price-squeeze by integrated carriers compared with fixed-only carriers.

Therefore, competitors are essentially limited to full-service or preselect competition. The difficulties involved with full-service and preselect competition also exist in relation to FTM services.

It also appears that while these services display substantial margins, they are niche options only. This is due to their specialised application, the degree of inconvenience from having more than one service provider, and because the pre-select option effectively involves higher prices for local call services given current bundling practices.

There are, however, signs that there may be some increase in competition for FTM services. This year's price changes report shows a decrease in FTM prices of 3.9 per cent, continuing the slow downward trend seen over the past six years. As with other services, however, this overall price decrease hides the 19.9 per cent price increases for small business consumers. However, competition for corporate services is more intense, where FTM prices decreased by 21.3 per cent.

#### **4.1.4 Mobile telecommunication services**

There are four mobile network operators – Telstra, Optus, Vodafone and Hutchison – who all own mobile network infrastructure and operate at the wholesale and retail levels.

The mobile services market also consists of resellers of mobile services, mobile virtual network operators (MVNOs) and retailers. Examples of resellers include Primus Mobile (resells Telstra services), SIMplus (Optus), and BDigital (Optus). ACMA reported that there were almost 90 resellers of mobile services in 2005.<sup>41</sup>

The market structure, comprising four competing networks, is more inclined to deliver competitive outcomes in downstream markets than the markets for fixed-line services. As outlined previously, infrastructure based competition, as is observed in mobile telecommunications, generally means that sustainable competition in retail mobiles markets is possible, resulting in less need for regulatory intervention.

However, the existence of four separate networks does not lead to competitive outcomes for mobile termination services, whereby regulated access to bottleneck termination services is necessary for the promotion of competition in fixed network services.

There were encouraging signs of more vigorous competition at the retail level during 2004-05, particularly in the residential pre-paid segment. This segment, which made up 51 per cent of 2G retail mobile accounts at 30 June 2005, underpinned the continued growth in the take-up of mobile services. There was a decrease in per-minute call charges for pre-paid customers, and bills for pre-paid and residential customers also fell.<sup>42</sup> Average revenue per user (ARPU) also decreased across the

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<sup>41</sup> ACMA, Telecommunications Performance Report 2004-05, p79.

<sup>42</sup> Further details to be provided in the ACCC's *Changes in the prices paid for telecommunications services in Australia 1997-98 to 2004-05*, due to be released in June 2006, following tabling in Parliament.

industry in 2004-05. Only Telstra's post-paid segment recorded an increase in ARPU, further illustrating that the overall take-up of mobile services has mostly occurred in the lower value pre-paid segment.<sup>43</sup>

The market is highly concentrated at the carrier network level. Telstra and Optus have a combined market share of 78 per cent, and the addition of Vodafone's increased market share means that 95 per cent of the market is concentrated among only three operators. However, Telstra's and Optus's respective market shares both declined in 2004-05, whereas Vodafone and Hutchison both increased their market shares (up to 17.2 per cent, and 5.2 per cent respectively).<sup>44</sup> This indicates increasing customer churn, as well as increased migration of 2G subscribers to 3G services.

More importantly, the Commission has consistently observed high profit levels among the largest network owners. Telstra's mobile business EBITDA levels are 42 per cent, and Optus reported EBITDA of 40 per cent for 2004-05.<sup>45</sup> Although Optus issued profit downgrade warnings for its mobile business, the Commission notes that its expected profit levels for the 2005-06 financial year are well in excess of those expected in an effectively competitive mobile industry.<sup>46</sup> These are not observations normally considered consistent with effectively competitive markets.

Certain barriers to entry prevent potential entrants operating as a fully effective constraint on the behaviour of the incumbents, and mean the concerns outlined above may be difficult to address. These primarily include the need to provide national geographic coverage, and the high sunk costs associated with a mobile network.

It is possible for a new entrant to achieve national geographic coverage by entering into a roaming agreement, or roaming agreements with other carriers who have such coverage or by simply re-selling carriage services provided on the network of a carrier that has such coverage. However, due to the ability of incumbents to control a new entrant's access to networks necessary to achieve national geographic coverage, the extent to which such entry represents a threat to the incumbents is diminished. Given that only 10 per cent or less of all retail mobile services sold are sold by resellers,<sup>47</sup> and that those operators with less than full geographic coverage (such as Hutchison) have very small market shares, it would appear that new entrants seeking to become substantial players face the hurdle of securing national geographic coverage.

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<sup>43</sup> ACMA, Telecommunications Performance Report 2004-05, p79.

<sup>44</sup> Ibid, p 78.

<sup>45</sup> SingTel Optus Management Discussion and Analysis of Results of Operations for the Year Ending 31 March 2005, p 43

<sup>46</sup> Christian Guerra, Australian Mobiles Market? Competitive? You must be kidding, Goldman Sachs JBWere, 19 May 2005.

<sup>47</sup> Australian Communications Authority, *Telecommunications Performance Report 2001-02*, November 2001, p.161.



The costs associated with establishing base stations and other mobile infrastructure to achieve national geographic coverage necessitates significant up-front investment costs by new entrants which quickly become sunk. A mobile operator can reduce commercial risk by setting up local networks and negotiating domestic roaming arrangements with other MNOs. However, the extent of any such reduction will depend on the terms and conditions of any roaming agreements. Carriers may also choose to avoid paying for all fixed costs themselves by entering into infrastructure cost sharing agreements with other mobile operators. In late 2004 the Commission approved 3G network infrastructure cost sharing arrangements between Hutchison and Telstra, and Optus and Vodafone.

Additionally, as noted above, new entrants can establish retail operations as an MVNO or reseller. However, while new entry according to these models may introduce some competition into the retail market, this is unlikely to diminish the market power of network owners because the incumbents will maintain control over their networks and will be able to control (to at least some extent) the network costs faced by such new entrants.

Over the past year the mobiles market has exhibited strong growth in both subscriber numbers and revenue, and overall prices have continued to fall. The number of mobile services in operation grew by 12 per cent in 2004-05, resulting in 90 per cent penetration in Australia. ACMA reports that penetration may reach 100 per cent in 2006. However, despite the strong growth in mobile services in absolute terms, the growth rate has declined, continuing the trend observed in the previous year. The growth of new services (1.9 million) was slightly lower than in the previous year (2.2 million). These points indicate that the market is close to reaching maturity, and that sustainable new entry might not be expected. Competition appears more likely to come from churn between existing suppliers rather than growth in the market that otherwise could make new entry profitable.

The combination of high margins and a maturing market provide some cause for concern. High margins generally reflect the presence of market power, which enables network owners to charge prices that are well in excess of their underlying costs. In the context of mobiles, the Commission has long been of the view that prices for the mobile terminating access service (MTAS) are well above costs.

All mobile network operators have control over access to all calls received on their networks. This control over access gives the mobile operators market power over calls to their networks such that they are subject to very weak competitive constraints when setting prices for this service.

High mobile termination prices have negative impacts on wholesale and retail competitors. This is particularly so for FTM calls, where the Commission's analysis indicates that consumers are paying, on average, more than double the actual cost of a FTM call, partly because of the high price charged by the network service providers for calls received on their networks. This is despite a 3.9 per cent decrease in the prices of FTM calls in 2004-05.

The high termination costs also make it difficult for those providers of fixed-line services that do not own and operate mobile networks to compete with those fixed-line service providers – such as Optus and Telstra – that do. This is because the high price charged for receiving calls on their mobile networks gives Telstra and Optus a

cost advantage for calls made and received on their own networks over those who only provide the fixed-line service.

These factors led to the Commission's decision to declare the mobile terminating access service in June 2004. Having declared the service, the Commission also made a pricing principle determination that indicated the price for calls to mobiles should be lowered to a level closer to the actual cost of the service. As a result of these actions, the Commission has become engaged in several regulatory processes around this service. This includes the provision of access undertakings by Vodafone, Optus, and Hutchison, and the notification of fourteen access disputes in 2004-05.

Australian consumers seem to be making a gradual transition towards consuming new and innovative services of the type that are now being enabled, most recently through the development of 3G networks which are capable of delivering mobile broadband services. This may counter the slowing growth rates for mobile subscriber numbers and industry revenue that was observed in 2004-05. As noted above, all mobile network operators are developing 3G network infrastructure and services due to demand for enhanced mobile services. The deployments of these networks are still in the early stages, but the Commission expects these developments, and consumer take-up of 3G services, to accelerate in the coming year. For example, Hutchison announced in early 2006 that it intends to migrate its 2G customers to 3G through a range of plans including handset subsidies.<sup>48</sup> Optus has indicated the initial deployment of more than 2000 base stations for the provision of 3G services, covering the six major capital cities by March 2007.<sup>49</sup> Meanwhile, Telstra announced in late 2005 that it will shut down its CDMA network and use the 850 Mhz spectrum to replace the CMDA network with a national 3G GSM network.

The growth of 3G mobile services creates both opportunities and challenges for competition. On one hand, the growth of 3G offers a host of new value-added services to consumers and provides a strong new competitor to existing network service providers in the form of Hutchison.

However, 3G also creates potential for growth in market power through the control of content. While it is likely that voice calls will continue to be the main service provided over 3G networks in the short term, the success of 3G mobile networks in the long term is likely to depend on the availability of compelling content to make full use of the higher bandwidth provided by 3G mobile networks. Should individual competitors be able to fully control the availability of certain content, it is possible that they will wield substantial market power over mobile services and competition on 3G mobile services may suffer. The potential for this kind of market domination is even greater when there is an integrated provider that supplies both 3G, broadband, and pay television.

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<sup>48</sup> Hutchison Telecoms, Media Release, *Hutchison Telecoms Announces Plans for Orange*, 1 February 2006.

<sup>49</sup> ACCC, Optus's undertaking with respect to the supply of its Domestic GSM Terminating Access Service (DGTAS), Final Decision, February 2006.

#### 4.1.5 High bandwidth carriage (broadband) services

In general, broadband services can be supplied in a number of ways, including through:

- carriers' own customer access infrastructure, including fixed or wireless networks at the wholesale or retail functional level;
- reselling Telstra's wholesale xDSL services (supplied via its copper network) at the retail level; and/or
- combining access to the ULLS with other infrastructure (such as DSLAMs) to supply wholesale or retail broadband services.

As noted in the Commission's *Snapshot of Broadband Deployment as at 31 March 2006*, almost 80 per cent of broadband connections are delivered via ADSL or xDSL technologies, an increase of approximately 2 per cent on the previous quarter. By contrast, broadband connections delivered via cable networks constitute around 18 per cent of the total broadband connections, and have gradually decreased over time. Therefore, it can be deduced that Telstra's copper-based network is the dominant infrastructure for the provision of broadband services in Australia. Further, the Commission estimated that at 30 September 2005, the percentage of total broadband connections using Telstra's wholesale DSL service was around 70 per cent, while Telstra also supplies residential broadband services using HFC and wireless technologies.<sup>50</sup>

Telstra's competitors are increased their usage of the ULLS for supplying broadband in 2004-05. As noted above, activity increased in 2005-2006 with some carriers planning significant deployments of DSL-based infrastructure in Telstra's exchanges.

Technological developments via DSLAM could deliver broadband at speeds in the range of 6-12 megabits per second (Mbit/s). For competitors, these investments would require access to parts of Telstra's copper access network, but the overall reliance on Telstra would be substantially reduced.

While ULL services also offer potential for wholesale broadband competition this hasn't emerged to any great extent as yet.

ACMA reported that 26 of the 40 new carrier licensees propose to deploy wireless broadband access technologies.<sup>51</sup> Most notably, wireless broadband accounts for the majority of regional broadband network operations.

ACMA reported that in 2004-05, wireless broadband networks were in development or being deployed in regional, rural, and remote areas. At 30 June 2005,

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<sup>50</sup> Total ADSL connections was 2.0m, total broadband connections was 2.8m, which equates to 75 per cent. The extent of supply of ADSL services using ULL as an input is not expected to have been significant at that time. See <http://www.accc.gov.au/content/index.phtml?itemId=693170>

<sup>51</sup> ACMA, Telecommunications Performance 2004-05, November 2005.

approximately 11.5 per cent of Higher Bandwidth Incentive Scheme (HiBIS) customer connections were by wireless.

However, these developments are still in their early stages, and it is an open question as to what extent these new networks can viably compete with the existing ubiquitous fixed-line network into which substantial costs are already sunk. Government's HiBIS and other programs have subsidised the entry of new broadband network operators.

Growth in the take up of broadband continued to be significant in 2004-05. At 30 June 2005, 2,183,300 broadband connections were reported, a 108 per cent increase on the previous year. The growth continued after the 2004-05 reporting period, with 2,593,600 broadband connections reported at 30 September 2005, an increase of 98 per cent from the previous year.<sup>52</sup> This outcome continues the growth of broadband take-up that emerged during 2004-2005.

While Telstra's competitors have obtained shares of the growing market, the Commission believes the overall shift from dial-up to broadband is assisting Telstra, and that it wins the majority of new customer acquisitions. More generally, Telstra's retail market share has been reported to be around 43 per cent as at 31 December 2005.<sup>53</sup>

There are factors which could undermine the sustainability of broadband services competition.

First, networks that are capable of supplying high-bandwidth carriage services are expensive to build and are characterised by large economies of scale.

Second, customer access services are an input necessary to supply broadband services to end-users. These services can be supplied by means of copper, optical fibre or HFC fixed networks or wireless networks. As previously noted, Telstra is the main supplier of these customer access services and is thus in a position where it controls access to the majority of inputs necessary for competition in the broadband services market. This supports the continued need for regulated access to ULLS.

Finally, uncertainties around the impact of any FTTN network on existing access obligations are likely to be most relevant to the position of those access-seekers who have, in reliance of the availability of CAN access provided by the ULLS, undertaken substantial investments of their own to provide better quality services in competition to Telstra.

### **Business-grade DSL services**

As described in chapter 7, the degree of wholesale competition in business-grade services varies throughout geographic markets. In areas comprising extensive fibre networks or other relevant BDSL infrastructure, competition appears to be relatively effective.

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<sup>52</sup> ACCC, Snapshot of Broadband Deployment as at 30 September 2005, January 2005.

<sup>53</sup> *Broadband growth surprises*, AustralianIT, 9 February 2006, at <http://australianit.news.com.au/articles/0,7204,18090638%5E15306%5E%5Enbv%5E,00.html>

Optus submits that

“There is competitive supply of wholesale BDSL services only in those geographic areas where there has been DSLAM deployment. Optus, PowerTel and AAPT are the only wholesale BDSL suppliers of any note other than Telstra (which, as outlined already, is effectively refusing to supply a wholesale BDSL service in order to foreclose competition at the retail level).”

Optus currently has a wholesale BDSL network covering 208 exchanges. PowerTel’s network covers 110 exchanges and sits largely within Optus’ footprint. AAPT has a 44 exchange network. All are tiny compared with Telstra’s BDSL network covering 1,235 exchanges. (Telstra also offers a limited wholesale BDSL service, L2BG, from Nextep’s 99 exchange network. This network sits largely within Optus’ network.)<sup>54</sup>

However, it should be noted that competition in these areas is often still dependent on reasonable access to Telstra’s ULL service. Further, in areas where there has been only limited DSLAM deployment, concerns remain as to the ability of competitors to access wholesale services which would allow them to competitively supply services to retail customers. Hence, it is clear that Telstra’s copper-based network is the predominant form of infrastructure for the provision of wholesale BDSL services.

It is difficult to ascertain the degree of retail competition for BDSL services. The Commission understands that BDSL services tend to be an input to retail packages consisting of voice and business data services. Further, submissions from interested parties were not expansive on this point. A more detailed discussion of competition in relation to ADSL and BDSL services is contained in chapter 7 of this document.

## **4.2 Emerging technologies and services**

New technologies using microwave, fixed wireless, optical fibre and satellite services to provide local access networks have emerged but only to a very minimal extent to date. Each of these technologies is assessed below.

### *Fibre*

The only plans for an extensive metropolitan fibre network are those announced by Telstra in November 2005. There has been some rollout of fibre to the premises (FTTP) by Telstra in new estates but, other than that, widespread deployment of fibre, either to the node or to the premises, is likely to be at least 3 years away.

### *Fixed Wireless*

There are a number of wireless technologies that have been touted as possible alternatives to the copper CAN, such as WiFi, WiMAX, and satellite. There has also been increased interest in 3G+ mobile networks being used as wireless local loops. Services based on the two main 3G mobile families of CDMA2000 and UMTS/WCDMA have been suggested as main such technologies in this regard.

WiFi relies on ‘hot spots’ and is a short range (30-1000m) means of connecting to a network. It uses publicly available, free spectrum in the 2.4GHz band. It is generally

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<sup>54</sup> Optus, Optus Submission to the Australian Competition and Consumer Commission on a strategic review of the regulation of fixed network services, February 2006, p19.

for use from a laptop computer, but some handheld devices (such as PDAs) may also be used in conjunction with WiFi. However, equipment manufacturers appear to be concentrating their development effort more on future devices for WiMAX and 3G mobile technologies.

WiMAX is a suite of longer range technologies that rely on the establishment of 'cells' and are therefore similar in architecture to mobile networks. It is suited to nomadic use within the cell, and allows access to a core network at speeds at least equivalent to design speeds of current ADSL technologies. More recent work on WiMAX development is focused on a mobile version, known as the 802.16e standard. Devices are generally designed for use over individually allocated spectrum. At this stage, international agreement on what range of spectrum should be used has not been reached.

Satellite is also dependent on allocated spectrum and involves sending and receiving signals between a provider's earth station and the customer's dish and base station via a transponder on the satellite. Simplex services (one-way) require an ISDN uplink.

### *Suppliers*

A number of ISPs are offering WiFi services by setting up hot spots around their points of presence. They are also available in airports, hotels and shopping centres in over 50 capital cities and regional centres.<sup>55</sup> However, there is no single supplier with a significant national network, although Personal Broadband Australia (PBA) has established coverage in Brisbane, the Gold Coast, Sydney, Canberra and Melbourne for its proprietary iBurst offering.<sup>56</sup>

A number of ISPs and carriers have announced plans for WiMAX. These include Austar<sup>57</sup>, which announced that its first pilot network was in construction and would begin trials in June 2006. It also announced that it eventually planned to rollout service in 25 regional centres, but the Commission is unaware of the likely timeframe for completion. Unwired has also been rolling out an early version WiMAX network – sometimes called 'preMax' – in Sydney and parts of Melbourne<sup>58</sup>, and has plans to extend deployment to over 70% of the population. It is uncertain when the rollout will be complete. Other providers such as BigAir have announced their intention to migrate existing fixed wireless networks to the WiMAX technology.

Satellite access is potentially available to 100% of Australia for duplex services and 97% of the population for simplex services<sup>59</sup> - simplex relies on ISDN for the uplink. Telstra, Optus, Austar, IPStar and NewSat Networks all offer satellite access services.

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<sup>55</sup> ACMA, Telecommunications Services Availability in Australia 2004-05, November 2005, p65

<sup>56</sup> <http://www.pba.com.au/?main=whereisit> viewed 19 May 2006

<sup>57</sup> Communications Day, Austar WiMAX in the blocks as numbers bolster confidence, 3 May 2006

<sup>58</sup> Unwired website, <http://www.unwired.com.au/about/background.php> viewed 19 May 2006

<sup>59</sup> ACMA, Telecommunications Services Availability in Australia 2004-05, November 2005, p64-65

However, satellite access appears to be used mostly for subscription-based television service, or for providing access to regional and remote parts of Australia.

Other wireless access services such as LMDS and MMDS have not succeeded in being rolled out to any great extent.

#### *Technical assessment*

The viability of many of these technologies, particularly for delivering Internet and next generation services, is dependent on a number of factors. These include technical, regulatory and commercial considerations. The technical factors which have most bearing are capacity constraints, quality of service, the existence - or otherwise - of appropriate standards, and interoperability between customer devices.

Wireless technologies generally offer lower capacity and throughput speeds than fixed access technologies. WiFi is generally limited to speeds of a maximum of 1Mbps over distances of 500m, although some reports claim speeds of 10-54Mbps over distances of less than 100m. WiMAX is supposed to offer throughput speeds of up to 15 Mbps within 4 km of the base station, however, 'real world speeds' taking account of the number of served subscribers and spectrum availability are likely to be less than this (see below). A WiMAX cell size of 12km may still offer a minimum of 1.5Mbps at the edge, providing it is operating in the appropriate frequency range, and depending on customer demand. Satellites are generally limited to 512Kbps download speed, and have additional capacity constraints associated with the size, number and orientation of the transponders on the satellite itself.

Whether or not wireless technologies can deliver these speeds over the specified distance depends on the physical location of antennae, whether or not line of sight can be maintained between the transmitter and the receiver, and atmospheric conditions such as rain, fog and dust; and, in the case of satellites service, sun-spot activity. Signal propagation is affected according to the positioning of antennae, with latency and loss of signal having much less effect if the antennae are mounted externally rather than indoors. Line of sight is one of the most significant factors in the quality of wireless service, and trees are a main contributor to line of sight problems.

Quality of service is also affected by latency, which is the delay between the signal being propagated and received. WiMAX offers the lowest latency of the technologies mentioned in this section, and lower also than many mobile technologies,<sup>60</sup> as is discussed in the mobile substitution section.

In addition to these problems, satellite transmission is also subject to greater latency than other wireless technologies because of the distance between the earth station and receiver and the satellite.

Further, the standards governing many of the newer wireless technologies are still under development. As a result, it is not yet certain which spectrum bands will be internationally adopted, in particular for WiMAX. This may have implications for the

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<sup>60</sup> Analysys report for the ACCC, Comparative Costing of Wireless Access Technologies in ULLS Bands 3 and 4, April 2006

mass production of customer devices and interoperability of service functionality with other manufacturers.

Finally, contention ratios will have a significant impact on the throughput speeds that can be achieved. This is not an issue that is limited to wireless services, but has greater impact on wireless because of the relatively greater constraints on spectrum availability (see regulatory issues section).

#### *Regulatory spectrum issues*

There are two main regulatory issues that affect the viability of wireless services: spectrum availability; and mandated access to fixed services. The second of these is the main subject of this report. However, the first is administered by ACMA, which is currently reviewing its management of wireless spectrum.

As noted above, wireless service quality is dependent on signal propagation properties, among others. Generally, the range of wireless signals improves the lower the frequency at which they are transmitted. Line of sight also becomes less of a factor at lower frequencies. In Australia, the lower frequency bands are reserved for use by television broadcasters.

The lowest frequencies that are potentially available for wireless broadband access in Australia are in the 501-520 MHz band. However, this particular band is extensively used and is for regional and rural areas only. Most other bands are also allocated, either for other uses or to individual license holders, including mobile network operators. That said, some bands may become available in the short to medium term only in regional areas as a result of ACMA's review. The lowest of these bands is 1725-1805 MHz paired with 1820-1880 MHz. Other higher frequency bands may later be released for use in metropolitan areas. In the longer term, 520-820 MHz may be used for wireless access once analogue television services are converted to digital delivery; and 820-960 Mhz may also be available for future use since some segments of the band are only lightly used.<sup>61</sup>

Aside from the only partial availability of these bands, they do not necessarily correlate to those specified in international standards for the various wireless access technologies. For example, WiMAX is likely to be specified to operate in the 2.5, 3.5 and 5GHz ranges.<sup>62</sup> However, only the upper bands of the 5GHz range are currently available for Australian use.<sup>63</sup> Consequently, customer equipment costs are likely to be higher because of the need to convert to the frequency range used in Australia, if this is different to what has been adopted overseas.

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<sup>61</sup> ACMA Spectrum Planning Discussion Paper SPP1/06, *Strategies for Wireless Access Services*, February 2006, p17-23

<sup>62</sup> OECD, The implications of WiMAX for competition and regulation, DSTI/ICCP/TISP(2005)4/FINAL, 2 March 2006, p5

<sup>63</sup> ACMA, *Register of Radio communications Licences*, available from [http://web.acma.gov.au/pls/radcom/assignment\\_range.range\\_lookup](http://web.acma.gov.au/pls/radcom/assignment_range.range_lookup), viewed 24 May 2006



### *Mobile substitution*

The extent that Telstra's copper CAN remains a bottleneck may also be affected by the uptake of mobile telephony as a substitute to fixed line telephony. Telstra reports that the number of its basic access lines has fallen by 340,000, or 4 per cent, between December 2004 and December 2005.<sup>64</sup>

However, the reduction in basic access lines is not solely attributable to fixed to mobile substitution. There has also been significant migration from dial-up Internet access to broadband Internet access. Many customers, particularly business customers and higher use residential customers, had multiple lines which have now been reduced as a result of their migration to permanent, 'always-on' Internet access. The Commission's *Broadband snapshot report* for the March 2006 quarter shows that the number of xDSL services – i.e. those using copper – increased by over 1 million, or 100 percent, in the same period as Telstra's reported reduction in the number of basic access lines. It is also instructive that the number of dial-up services fell by 264,000, or 6 percent, in the six months between September 2004 and March 2005.<sup>65</sup>

Various commentators also point to the reduction in fixed local calls, the rise in mobile voice minutes, and the increase in SMS messages as evidence of fixed to mobile substitution. Vodafone has also commissioned a customer survey, and forecasts that 1.4 million people will substitute their land line for a mobile handset over the next two years.<sup>66</sup> However, during 2005, there was significant uptake of VoIP services, a large proportion of which rely on the fixed networks. VoIP calls will also have a direct impact on trends in local and long distance call volumes, although there is very little information available on the extent to which VoIP has penetrated the marketplace to date. Estimates generally put the global number of VoIP users in the tens of millions, but the ACCC understands that VoIP take-up is presently limited to the corporate segment.

At this stage, the Commission considers it likely that there is, and will continue to be, increasing substitution of mobile for fixed services, but that the extent of such substitution is unlikely to have a material impact on the degree of reliance on the copper CAN within the short to medium term.

More broadly, 3G networks may also offer an alternative to the copper CAN. Telstra has already announced that it will switch off its CDMA network, and convert it to W-CDMA. It has also announced that it will offer mobile broadband services in regional and rural areas using HSDPA technology. Consequently, ongoing development of its 3G networks will now occur under the Universal Mobile Telephone System (UMTS) standard. This is an extension of the GSM standard and includes developments such

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<sup>64</sup> Telstra Corporation Ltd, 2005 Half yearly report, Statistical data summary, p8

<sup>65</sup> Australian Bureau of Statistics, *Internet Activity Statement, Australia, March 2005*, 12 August 2005

<sup>66</sup> Vodafone public submission, p6

as W-CDMA and HSDPA. Hutchison will continue to offer CDMA services under its '3' brand. CDMA developments include EV-DO, which is also a 3G technology.

As outlined above in the Fixed Wireless section, wireless services are generally less able to meet customer demand for bandwidth than fixed services because of the difficulty of using available spectrum efficiently. As a member of the wireless 'family', the same is true of mobile networks. As a result, there has been significant effort put into developing upgrades to current mobile technologies to allow greater throughput speeds.

Current 2.5G mobile technologies are generally limited to effective throughput speeds of 384kbps, while 3G services now on offer can achieve speeds of up to 2Mbps. This is still well short of the speeds attainable by fixed technologies including ADSL, ADSL2+, HFC, and FTTN. It may therefore be that mobile services continue to be seen as a complement to fixed services instead of as a substitute, at least in areas of high population density.

In those regional and rural areas where population densities are lower, mobile network coverage may be seen by investors and new entrants as a viable alternative to Telstra's copper access network. This is likely to be especially true where DSL services are not currently available, and satellite offers the next best option for delivery of higher bandwidth services.

There are a number of regional community-based carriers that have recently begun to explore the possibility of using mobile technologies to meet the regional demand for broadband access. CountryTell is one such carrier, and has plans to construct a network consisting of CDMA soft switches, a portable WiMAX-based local loop, with a WiFi municipal mesh in the major towns.<sup>67</sup>

#### *Cost issues*

The cost of alternative access networks is the subject of a report prepared by Analysys Consulting Ltd for the Commission as part of this review. The report compares the cost of deploying alternative wireless access technologies.

The key findings of the report are:

- In the relatively built up parts of the Band 3 and Band 4 zones, WiMAX may provide a lower cost alternative to fixed network technologies for delivering broadband services;<sup>68</sup>
- 3G/HSDPA may also be cheaper than fixed broadband in some areas, although it is likely to lack the range and capacity of WiMAX;

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<sup>67</sup> Murray Regional ICT Committee CountryTell consortium, Submission to DCITA discussion papers Broadband Connect Clever Networks, 2006, p10

<sup>68</sup> However, the report only compares the costs of WiMax to *aggregated* costs of supplying copper in bands 3 and 4 – rather than comparing the costs of supplying copper within each of the built up areas/towns within these bands, which are expected to be significantly lower than the averaged bands 3 and 4 costs.

- Satellite is likely to remain the best option for delivering lower ‘broadband’ speeds (256kbps) to customers in remote areas.
- For new entrants, WiMAX is likely to be the most economically attractive option for delivering broadband access to Band 3 and Band 4 areas, however, the business case is dependent on achieving certain economies of scale and scope; and
- Mobile operators may be able to use existing mobile network assets to compete against other providers by leveraging the advantages of mobility.

The Commission will publish Analysys’ report on its website.

*Interconnection / Termination*

Even if one of these alternative technologies eventually takes a significant share of the market for broadband access,<sup>69</sup> the issue of interconnection with the copper network will still remain.

Critical mass for the viable deployment of WiMAX (as the most economically attractive option) is assessed to be about 20% of the potential customer base in the areas where it is deployed by a new entrant.<sup>70</sup> Consequently, termination with the Telstra network will be necessary for 80% of fixed calls within the footprint of the calling network – assuming symmetric calling patterns – and considerably more for calls outside the network footprint.

Even as the Telstra share of the customer base is whittled down over time, interconnection with the Telstra network will still be necessary for any-to-any connectivity. The experience with interconnection of mobile networks in Australia shows that, even where there are three roughly equivalent sized networks, there are still issues regarding the cost of call termination. Similarly, the example of the development of SMS shows the desirability, if not the necessity of interconnection.

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<sup>69</sup> With a number of potential technologies, it is possible that no one radio technology will emerge as dominant to go head to head against the fixed network, thus leading to further service and network fragmentation and reducing the extent of scale benefits for alternative operators.

<sup>70</sup> Analysys report for the ACCC, *Comparative Costing of Wireless Access Technologies in ULLS Bands 3 and 4*, April 2006, forthcoming on ACCC website.

## Chapter 5      The Unconditioned Local Loop Service

In this chapter, the Commission considers whether declaration of the ULLS will promote the LTIE, in particular through promoting competition in relevant markets; achieving any-to-any connectivity; and encouraging economically efficient use of, and investment in, infrastructure. An overview of the legislative criteria for assessing whether to declare a service, and the Commission's approach, are contained in Appendix 1 of this report.

### 5.1 Will declaration promote competition?

In deciding whether the ULLS will promote competition, the TPA requires the Commission to consider whether declaration will remove obstacles to end users gaining access to the service. Prior to declaration in 1999, Telstra did not provide access to the ULLS. This was despite demand for such a service and Telstra's position as the dominant possible supplier by virtue of its ownership of the CAN. Telstra did, however, provide limited access to a service with similar functional characteristics – permitted attachment private lines (PAPL). The Commission, therefore, considers that declaration of the ULLS has clearly removed obstacles to end-users gaining access to the service.

An assessment of whether declaration of the ULLS will promote competition requires an investigation into the existence of substitute services and the degree of competitive pressure these alternatives place on Telstra's ULLS. The Commission considers effective competition would exist where alternative services, which provide wholesale and retail customer access, voice and broadband services, constrain Telstra's ability to limit access and increase prices for the ULLS.

In response to the discussion paper, most submitters argued that limited substitutes currently exist to the ULLS. Optus, for example, stated:

New technologies may allow for local loop competition in the future. However, ... there remain substantial barriers to the rollout of such networks including their high cost, market share constraints (most involve a higher proportion of fixed costs than copper networks) and technological limitations.

Optus went on to argue that:

... alternative access technologies cannot be said to place any effective constraint or discipline on Telstra as the owner of the dominant copper loop. Regulation of the copper local loop remains, therefore, a key priority.

In contrast, Telstra submitted that various alternative networks currently exist which provide effective substitutes to Telstra's copper based CAN. According to Telstra, these developments mean that:

“Almost 100% of the Australian population have access to a mobile alternative to the incumbent fixed network... But more importantly perhaps, by the end of this financial year well over half of Australian households will have access to an alternative fixed access network.”

As discussed in chapter 4, there is limited facilities-based competition, since alternative networks are only of a relatively small scale and are only available in limited areas. As a result, the Commission considers that, at most, existing alternative networks would only place localised pressure on Telstra's ULLS pricing.

In other areas, where xDSL technology is viable, the ULLS services as an important platform for competition in basic access, voice and broadband services.

In the absence of effective facilities-based competition and ULLS declaration, retail competition in customer access, voice and broadband services would be limited to service providers on-selling Telstra's wholesale products. Retail competition would be stifled as customers would not have the same degree of customer choice as is available via ULLS based competition.

Revocation of the ULLS declaration in areas where there is not effective facilities-based competition would also negatively impact on emerging wholesale competition. Service providers that rely on wholesale products would be limited to purchasing such services from Telstra, without competitive pressure from ULLS based competitors that could sell at a wholesale level. This lack of competition at a wholesale level would have a negative flow on effect to end-users.

The Commission considers that, in most areas, declaration of the ULLS will encourage more effective and sustainable competition in the provision of customer access, voice and broadband services than would occur in the absence of declaration. In these areas, the Commission considers that the continued ULLS declaration will promote competition in carriage services, and constrain the price of the ULLS.

The Commission considers there is merit in excluding from the ULLS declaration those areas where there is an alternative network, providing there is effective facilities based competition in these areas and the ULLS provides marginal competitive benefit. The Commission would not withdraw the ULLS declaration in an area where there is an alternative network if this network does not constrain Telstra's ability to limit access or charge high prices for the ULLS. Competition based on service providers reselling Telstra's wholesale products is not sufficient grounds for rolling back the ULLS since it does not offer the same scope for improving customer choice and reducing prices as either ULLS or facilities based competition.

Exclusions from the ULLS declaration could be achieved by either: the Commission varying the existing ULLS service description so as to exclude certain areas from declaration; or Telstra could seek an exemption from the standard access obligations, under s. 152AT of the TPA.<sup>71</sup> If a carrier or carriage service provider considers there is a case for excluding certain areas from the ULLS declaration, then it may apply to the Commission for a written order exempting it from all or any of the standard access obligations in respect of these areas. If the Commission were to receive such an application, then it would need to consider whether the exemption would be in the

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<sup>71</sup> In 2002, the Commission made a decision to grant an exemption from the local carriage service (LCS) declaration in the central business districts of the five major capital cities. The exemption was granted on the basis that there was sufficient alternative local access infrastructure and declared services that was either being used, or that could readily be used, by alternative carriers and carriage service providers to act as a constraint Telstra's prices. As a result, the de facto declaration of line rental was also effectively removed. In its recent draft determination for the declaration of the LCS, the Commission decided to amend the LCS service description to exclude these five CBD areas.

long term interest of end users. Given such an application is likely to have a material effect on the interests of a person, the Commission would be required to publish the application and invite interested parties to make submissions before reaching a decision.

On the basis of the information to hand about the effectiveness or otherwise of competition from alternative networks, in CBD or other areas, the Commission has little justification to restrict the scope of the ULLS declaration, by amending the service description, at this time. Unlike the LCS, it would not be appropriate to amend the ULLS service description to exclude whole CBD in some capital cities, since alternative networks do not necessarily align closely with Telstra's ULLS boundaries or exchange areas and the extent of the available alternative infrastructure would need to be carefully considered.

The Commission does, however, consider that regulation should be wound back where it is unnecessary and where the market is delivering effective, sustainable competitive outcomes and agrees that a more systematic and regular monitoring process should be initiated in this regard.

Hence, as noted in Chapter 2, the Commission sees the current review of fixed network services as part of an ongoing evaluation of the need for regulation. To this extent, the Commission considers it appropriate to conduct a more regular and comprehensive infrastructure survey, including an audit of the extent to which the CAN remains a bottleneck and where alternatives to the ULLS exist. The Commission anticipates that it would gather additional information, such as concentration ratios, entry barriers, retail and wholesale prices and costs to assist determine the extent of the competitive pressure from alternative networks, and whether the ULLS should continue to be declared in these areas.

However, the Commission considers it appropriate at this point to continue to declare the ULLS in all areas. If, for example, it became evident that there were areas where there is effective facilities-based competition, and the ULLS provided marginal competitive benefits, the Commission could either look to vary the declaration or Telstra could lodge an exemption application.<sup>72</sup>

Does declaration promote competition in the market for broadband services and other markets that utilise this service?

In considering whether declaration of the ULLS promotes competition for broadband services, the Commission has considered whether regulated access to the ULLS constrains the market power Telstra has in the provision of these services. The Commission is of the view that, in the absence of the ULLS, Telstra has significant market power in the provision of broadband services, which arises from several factors. Firstly, given that around 78 per cent of broadband services are provided via

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<sup>72</sup> The ACCC can also initiate such an exemption process under s.152AS for a class of carriers/CSPs of its own volition.

DSL-based technologies, it is evident that Telstra controls the infrastructure by which the overwhelming majority of broadband services are provided.<sup>73</sup>

Second, Telstra enjoys a strong position in retail markets for broadband services, where, as noted in chapter 4, it is believed to have the majority of new broadband customer acquisitions.

Third, there are high barriers to entry in the provision of wholesale broadband services, including high sunk costs of infrastructure investment, economies of scale and scope arising from Telstra's control of the ubiquitous copper network, and significant time delays in developing alternate broadband networks.

These points are reinforced by Optus which stated in its submission that:

Telstra's market share in this wholesale ADSL market is near 100%. Telstra's conduct in this market and the retail market for ADSL services has been the subject of Competition Notices, most recently in March 2004. Optus does not believe the circumstances in these markets have materially changed since that last Notice was issued such that the conclusion that Telstra has substantial market power should be changed.

Further, Optus argued that:

Telstra is overwhelmingly dominant in the markets for retail and wholesale business data services. At the retail level, Telstra is the sole provider of BDSL services and other business data services, such as Digital Data Services (DDS) in many geographic areas. It is also dominant at the wholesale level by being the sole provider of business data services, such as Data Access Radial (DAR) (the wholesale equivalent of its DDS service), in many geographic areas.

There is competitive supply of wholesale BDSL services only in those geographic areas where there has been DSLAM deployment.

The Commission acknowledges that there are alternative platforms for delivering broadband in some areas, such as Telstra's HFC network; Optus' HFC network; and smaller alternative cable, fibre, microwave, satellite, wireless, and potentially 3G mobile networks. As discussed in chapter 4, the Commission expects that broadband markets will over time be characterized by the entry of new providers utilising new generation and wireless and mobile services, such as 3G (super GSM) and WiMAX technologies. Most notably, wireless broadband accounts for the majority of regional broadband network operations. However, these developments are still in their early stages, and it is an open question as to what extent and over what time-frame these new networks can viably compete with the existing ubiquitous fixed-line network

In more sparsely populated areas, where the exchange is more than 5 kms from the customer's premises, DSL technology is not effective for the delivery of broadband services. In these areas, it is envisaged that high bandwidth services would be supplied via wireless, mobile or satellite technology, rather than DSL. This also raises the issue of whether there is any need for the Commission to declare the ULLS in rural/remote (Band 4) areas, given it is unlikely there will be any material ULLS/DSLAM roll-out in such areas. The Commission would be interested in the views of interested parties on this issue.

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<sup>73</sup> ACCC, Snapshot of Broadband Deployment as at 31 December 2005.

The Commission considers that, in the absence of the ULLS declaration, competitors will be largely reliant on reselling Telstra's wholesale DSL broadband services in order to provide high speed internet services in more densely populated areas. Reselling Telstra's services provides limited scope for competition, since, wholesale customers are subject to Telstra's control over the price, quality, and terms and conditions of access to wholesale xDSL. For example, under current pricing structures for wholesale services, access seekers are limited to services comprising high bandwidth download speeds of 256 kb/s, 512 kb/s, and 1.5 Mb/s. In addition, there is no guarantee that Telstra will supply the service or that it will be at reasonable terms. In support of access seekers' concerns in this regard, the Commission notes that recent competition issues have arisen in relation to these aspects of wholesale xDSL supply. This issue is discussed further in chapter 7.

However, by gaining access to the ULLS, and diverting customers onto their own network, competitors have a greater degree of flexibility to differentiate their services, and more control of their underlying costs. This allows access seekers to offer more competitive bundles of services. For example, the Commission is aware that through various DSLAM configurations, access seekers can supply broadband services in a range from 1.5 mbit/s to as high as 20 mbit/s.<sup>74</sup>

The Explanatory Memorandum to Part XIC states that:

...it is intended that particular regard be had to the extent to which the ... [declaration]...would enable end-users to gain access to an increased range or choice of services<sup>75</sup>

As noted in chapter 3, access to the ULLS enables competitors to supply BDSL services, which are a symmetric, high quality data service supplied via Telstra's copper network. BDSL is primarily used by business customers who have requirements for a low-medium speed (up to 4 mbps) but high grade symmetrical service, with very high data quality, and provides functions that are substantially different to ADSL services.

The Commission is aware that a number of competitors supply BDSL services via access to the ULLS and, indeed, this formed the majority of initial ULLS connections in CBDs and inner city areas following declaration in 1999. Whilst business-grade data services can be supplied through fibre networks or DAR, the Commission understands that it is virtually impossible to provide a competing retail service without BDSL as an input due to price and functionality differences.

Telstra is the sole provider of symmetrical xDSL services in most non-metropolitan areas of Australia. However, Telstra does not supply a wholesale BDSL service. Although technical substitutability for DSL services is possible, the price differences

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<sup>74</sup> The extent to which certain speeds can be provided depends on the distance between an end-user's premises and the local exchange where a competitor's DSLAM is located.

<sup>75</sup> Trade Practices Amendment (Telecommunications) Act 1997 (Cth) Explanatory Memorandum.



prohibit these from being effectively competitive substitutes.<sup>76</sup> Therefore access to the ULLS is important for the competitive provision of business-grade data services.

In addition to downstream competition, ULLS access also enables access seekers to offer wholesale services in competition with Telstra, whereas it would not be feasible to on-sell Telstra's wholesale products to other market participants.

Therefore, the Commission considers that the ability for access seekers to control the range of services offered, product quality, and underlying costs – promotes rivalry in all dimensions of the price-product-service package offered to wholesale and retail customers.

End-users will not be reliant solely on Telstra's choices in terms of product and quality of service offerings, but rather are likely to benefit from competition which delivers them a greater choice of products, services and prices. These services include internet access, video on demand, remote local area network, and interactive multimedia.

The Commission believes that revoking the ULLS declaration would reduce competition in broadband services, notwithstanding the recent emergence of alternate networks in some locations. That said, the Commission recognises that market conditions can change, and considers that the ULLS declaration will need to be re-examined in areas where new alternative platforms for carriage services are rolled out (such as FTTN), or where existing alternatives (such as wireless networks or Optus' HFC) are expanded. Such an examination would consider whether these options are a replacement of, or an alternative to the ULLS, and the impact that these services have on competition for carriage services.

### **Does declaration of the ULLS promote competition in the provision of voice services?**

The Commission is of the view that the use of the ULLS for voice services promotes competition by expanding the range of potential voice service providers and therefore the ability for price competition.

The ULLS provides access seekers with full access to the copper wire, allowing them to physically terminate the line from a customer's premises to their own equipment located in Telstra's exchanges. This enables access seekers to supply local and long-distance telephony services and other standard (circuit-switched) voice services in competition with Telstra. without relying on the resale of Telstra's wholesale and local call services. In turn, access seekers have more control over the range of services that can be supplied as well as reduce costs.

Access to the ULLS also allows access seekers to configure DSLAMS to provide VoIP services more directly. This allows the access seeker to differentiate and obtain cost savings compared to purchasing wholesale DSL or using the LSS for their high bandwidth capability that is necessary for the provision of broadband or voice services.

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<sup>76</sup> This is explained in more detail in chapter 7 of this document.

VoIP service offerings (through low cost or zero cost calls and value-added data services) have the potential to provide a competitive alternative to traditional fixed-line (circuit-switched) voice and data services and more access-based competition because they can be provided over existing broadband services without duplicating extensive access infrastructure networks.

To date, the take-up of VoIP has mainly occurred in the corporate market. Although ACMA has licensed 15 carriers with the intention to provide fixed voice services using VoIP since 2002, including nine in 2004-05<sup>77</sup>, most of the CSPs did not actually provide VoIP services to the market.<sup>78</sup> Widespread take-up in the residential and small business sectors is not expected to occur before a number of key concerns are addressed. These include significant concerns about the quality of VoIP services, as well as uncertainty over numbering issues, customer equipment, the workability of VoIP services providing access to the emergency call service, privacy, call charging accuracy, preselection issues and number portability.

It is difficult to predict the take-up of VoIP with any certainty, and there appear to be no reliable forecasts available. Telstra statistics note that as little as 2.2 per cent of consumers have made a VoIP call by the third quarter of 2005, and only 3 per cent have intentions to make a VoIP call.<sup>79</sup> These statistics do not clarify whether consumers intend to use these calls as substitutes for local calls, or whether they are willing to cease making local calls or other PSTN calls wholly or in part as a result of the availability of VoIP. Telstra's statistics do however point to increasing numbers of 'VoIP' households, with VoIP penetration rising from 1.5 per cent in 2005 to 5.8 per cent in 2008.<sup>80</sup> However, again these statistics provide no guidance as to the extent to which households are likely to give up PSTN access or calling services as a result of VoIP's increasing availability...(LCS draft decision, p56). The Commission does not envisage that VoIP-based calling services are likely to represent a viable or widespread alternative to local calling services at this stage.

However, as ULLS uptake increases, and as broadband access speeds and penetration also increase, the use of VoIP technology for both local and other call services is likely to become more viable as an alternative to the traditional circuit-switched network.

Therefore, continued declaration of the ULLS will enable end-users to gain access to an increased choice of telephony service providers for local, long-distance, fixed-to-mobile, and international calls (including VoIP), therefore improving their access to

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<sup>77</sup> ACMA, Telecommunications Services Availability in Australia 2004-05, p 13.

<sup>78</sup> ACMA, Telecommunications Performance Report 2004-05, p 195.

<sup>79</sup> Ms Carol White, Telstra Corporation Ltd, *View of an Integrated Provider*, Presentation to 2<sup>nd</sup> ACIF VoIP Forum – Identifying the Missing Links, 6 December 2005, p. 4. Available at: [http://acif.org.au/data/page/14630/Presentation 8. Carol White Telstra - Case Studies.pps](http://acif.org.au/data/page/14630/Presentation%208.%20Carol%20White%20Telstra%20-%20Case%20Studies.pps).

<sup>80</sup> *ibid.*

those services and providing greater scope for price competition in voice services. Such end-users are likely to be located in CBDs, inner city and suburban areas and regional locations (i.e. the same areas in which access seekers using the ULLS are most likely to supply broadband services).

### **Basic access**

The use of ULLS also provides access seekers with the ability to offer a full service alternative to that provided by Telstra, including the ability to configure the line to provide various voice and data services. The competitor may be able to offer some combination of fixed line, voice and data charges which may be similar or different to that traditionally offered by Telstra. For example, a ULLS-based competitor may decide to restructure his pricing approach and provide services for a relatively high fixed fee (similar to Telstra's line rental charge) but without call charges (so-called subscription model). This is similar to what is now more commonly found for broadband and VoIP services.

In this sense ULLS can also be seen as promoting competition in basic access services independently of its impact in particular call services.

## **5.2 Will declaration achieve any-to-any connectivity?**

In addition to the impact of declaration on competition the Commission must consider whether declaration is likely to achieve the objective of any-to-any connectivity, which enables end-users to communicate with each other, irrespective of the network to which they are connected. As the explanatory memorandum to the Trade Practices Amendment (Telecommunications) Bill 1996 noted, the concept of any-to-any connectivity is not always relevant in the declaration context.

The explanatory memorandum states that the objective of any-to-any connectivity will only be relevant when considering whether a particular service promotes the long-term interests of end-users of a carriage service that involves communications between end-users. When considering other types of services (such as carriage services which are inputs to an end-to-end service or distributive services such as the carriage of pay television), this criterion will be given little, if any, weight compared to the other two criteria.

Based on this view, and in the absence of any submissions on this matter, the Commission considers that declaration will have no impact on the objective of achieving any-to-any connectivity.

## **5.3 Will declaration promote economic efficiency?**

### **5.3.1 Economically efficient use of, and investment in, infrastructure**

Declaration of the ULLS has enabled access seekers to combine existing customer access infrastructure with their own equipment so that they can bypass Telstra's wholesale voice and data services and engage in more competitive provision of high bandwidth services, and voice services to end-users, as well as to other service providers.

As noted above, this will enable end-users to gain access to an increased choice of high bandwidth and telephony service providers, therefore improving their access to those services and providing greater scope for price competition in those services.

The competition that results from ULLS-based investment encourages innovation, product differentiation and price discipline in the supply of voice and broadband services, and is therefore likely to enhance productive and allocative efficiency in those markets.

This results in the more efficient use of infrastructure used to supply the ULLS, as well as downstream services such as broadband services and voice services. The Commission considers that this promotes the long-term interests of end-users.

*Technical feasibility – technology in use or available*

In assessing the impact of declaration on the objective of encouraging efficient use of infrastructure etc, the TPA requires the Commission to consider whether it is, or is likely to become, ‘technically feasible’ to supply and charge for the ULLS.

Given Telstra’s history of providing third party access to the ULLS since 1999, it is clear that it would be technically feasible to continue to supply and charge for the ULLS. Furthermore, Telstra has not submitted that the technical feasibility of supplying the ULLS has fundamentally changed since the service was declared.

The Commission acknowledges that Telstra will incur costs in supplying and charging for the ULLS. These include the technical costs of supplying the service, costs associated with complying with the Standard Access Obligations (SAOs) and the cost of systems to provide billing information to access seekers. The Commission considers that these costs are reasonable, given the regulatory regime allows Telstra to recover the efficient costs of supplying and charging for the ULLS through the ULLS and other charges.

*Legitimate commercial interests of the access provider*

The concept of the ‘legitimate commercial interests’ of the access provider has a number of dimensions. For instance, it covers the provider’s ability to exploit economies of scale and scope; its interest in earning a commercial return on its investment; its interest in maintaining contractual obligations; and its interest in using the network for future requirements.

When the ULLS was initially declared in 1999, the Commission determined that declaration would not adversely impact on Telstra’s ability to exploit economies of scale and scope. Since Telstra has not raised concerns on this point, the Commission believes that continued declaration of the ULLS would not change Telstra’s ability to exploit economies of scale and scope.

Telstra’s legitimate commercial interest in earning a commercial return is protected through the Commission’s pricing principles for the ULLS, which apply a total service long run incremental cost (TSLRIC) approach to determining access charges.<sup>81</sup> The TSLRIC methodology assumes that Telstra’s network is rebuilt at the start of the regulatory period, with predominantly brand new assets, and costed and priced on this basis. This approach ensures that Telstra can recover its operating and maintenance

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<sup>81</sup> ACCC, Pricing of Unconditioned Local Loop Services, March 2002.

costs, and the capital costs it incurs in providing the ULLS. Capital costs comprise the cost of capital (i.e. the opportunity cost of debt and equity used to finance the firm) and depreciation (i.e. the decline in economic value of assets) of capital that is specific to the production of the service. Relative to the network which is actually in place, TSLRIC+ prices are more than sufficient to compensate Telstra for its actual investments.

Telstra's legitimate commercial interest is also protected by s. 152AR (4)(b) of the TPA, which provides that the access provider is not required to supply the eligible service if to do so would prevent it from obtaining a sufficient amount of the service to meet its reasonably anticipated requirements.

In summary, the Commission is satisfied that declaration of the ULLS is consistent with Telstra's legitimate commercial interests.

### *Incentives for investment in existing infrastructure*

Efficient infrastructure investment makes an important contribution to the promotion of the long-term interests of end-users. It can lead to more efficient methods of service delivery, fostering increased competition and lower prices, as well as enhancing the level of diversity in the goods and services available to end-users.

Interested parties did not raise any issues relating to the impact of declaration on incentives for efficient investment in existing or new services used to supply high bandwidth and voice carriage services.

The price that Telstra can charge competitors for the ULLS is a crucial determinant of its decisions whether to maintain, improve or expand its existing infrastructure, or whether to invest in new infrastructure. The access price will also significantly impact on competitors' decisions whether to utilise the ULLS or invest in alternate infrastructure.

As discussed, the Commission's pricing principles for the declared ULLS use a TSLRIC approach to determining access prices, which ensures that Telstra can earn an appropriate rate of return on its investments. These pricing principles advocate a de-averaged, or cost reflective, approach to pricing as this minimises the distortions to investment decisions. This approach is designed to provide the correct incentives to Telstra and competing providers to invest efficiently in existing and alternative networks on a forward-looking basis.

In response to the discussion paper, Telstra argued that continued access regulation imposes significant costs in terms of negative and distorted signals for efficient investment because it is based on a wholesale service competitive model which does not encourage dynamic efficiency and innovation.

Other submitters, however, disagreed with this view. The CCC, for example, argued that:

Many operators are in the midst of network roll-outs which offer substantial competition benefits to customers. The contribution of these current roll-outs plans as well as further investment plans are likely to be entirely dependant on the continuation of the current declaration.

Similarly Optus stated that:

...the declaration of the ULLS has allowed the commencement of plans for at least five competitors to Telstra to rollout DSLNs that will provide new broadband services to consumers.

These networks will also allow for increased competition in traditional telephony markets. At least Optus, Primus and iiNet have indicated that they will provide telephony services over their respective DSLNs. Significantly, in response to these competitive investments, Telstra has begun upgrading exchanges to ADSL2+.

As discussed previously, declaration of the ULLS promotes competition in the delivery of voice and broadband services, as well as upstream and downstream services.

It is clear – from developments in Australia and internationally – that customer demand for broadband services, and ULLS based competition, are the key drivers of network modernisation initiatives such as Telstra’s FTTN proposal.

The Commission considers that the regulatory framework is appropriate to ensure efficient investment in the existing ULLS and DSLAM networks and alternative networks used for the provision of voice and broadband services.

In areas where there is no facilities based competition, the absence of regulation would mean there would be little, if any, incentive for Telstra to make efficient investment decisions with respect to infrastructure used to provide the ULLS. If the ULLS were not declared, there would be no prescribed methodology for negotiated access charges, and hence, competitors may be required to pay access charges that exceed the costs of providing the service. This in turn could discourage otherwise efficient use of the ULLS in some areas, and encourage inefficient decisions to bypass Telstra’s ULLS network.

#### *Incentives for investment in new infrastructure*

Demand for broadband services seems to be driven by the strong growth in broadband that has occurred recently – where annual volume growth of more than 100 per cent was observed in three consecutive quarters in 2004-05.

For newer competitors the increasing take-up of broadband - to more than 2.8 million services by December 2005 – has helped to justify the transition from heavy reliance on Telstra’s wholesale DSL services to their own DSLAM infrastructure for the supply of broadband services.

As noted above, this competition tends to result in productive efficiency, as competitors to seek to increase margins by lowering their costs through more efficient service delivery.

There has also been increased interest in new technologies such as wireless broadband, fibre and HFC networks, which are increasingly capable of offering an array of more advanced services to retail customers without needing access to the PSTN or traditional fixed network.

For Telstra, it can be argued that competition has driven it to respond by accelerating its own DSLAM program, and to propose a large-scale deployment of fibre-to-the-node (FTTN).

The investment in infrastructure by both Telstra and its competitors also leads to increased allocative and dynamic efficiency, as consumers’ demand for broadband services and voice services can be met through a variety of suppliers, with innovative, differentiated products and prices.

The Commission believes that this competition and further investment is unlikely to have taken place in the absence of competition that has been facilitated by declaration of the ULLS.

In the absence of declaration of the ULLS, the ability of access seekers to provide a range of high bandwidth and voice services that are differentiated from those supplied via Telstra's wholesale services, or to acquire it on reasonable terms and conditions, would be inhibited. This is essentially due to the substantial barriers to entry involved with establishing the customer access infrastructure that could act as an effective substitute for Telstra's copper CAN.

It has been argued that wireless technology, where voice services are provided using VoIP, presents a possibility for an alternate local loop that does not exhibit the same natural monopoly characteristics as Telstra's copper CAN, and which could therefore reduce reliance on the CAN. However, the effectiveness of wireless technology as a mass-market solution is still unproven. Further, in relation to incentives for new investment, the availability of ULLS has not diminished incentives for new investment in alternative technologies by other providers in various areas of Australia which may be more suitable than copper-based DSL technologies.

In relation to Telstra, the issue therefore that needs to be addressed is whether continued declaration of the ULLS is likely to impede its investment in new technologies – aimed at providing new and improved voice and broadband services at presumably lower cost to end-users.

## **5.4 Conclusion**

The ULLS currently allows access seekers greater choice regarding the products and services they provide to end-users. As direct access to the local loop enables competitors to bypass large sections of Telstra's network, it can make the deployment of new infrastructure, (such as DSLAMs for xDSL provision), more economic and practical, thereby promoting quasi facilities-based competition. Access to the ULLS also allows access seekers to provide a much higher quality, and more diverse range of broadband services than is currently possible by simply reselling Telstra's existing ADSL service.

The Commission considers that the LTIE is promoted by competitors' ability access Telstra's copper network to provide a larger range of services. This is particularly significant given that, in most areas, there are no widespread, alternative networks available or in prospect to compete with Telstra's copper network.

The Commission therefore concludes that, at this point in time, it is in the LTIE to declare the ULLS in all areas for a period of 3 years. Within this time there is scope for regulatory forbearance in certain geographic areas, such as through the TPA's exemption mechanisms.

The Commission believes that there would still be demand for access to the ULLS in areas outside of the FTTN footprint, and that continued declaration would be consistent with the LTIE.

Further, the Commission considers that it is appropriate – particularly in terms of promoting competition – to continue the declaration for a transitional period of time, even within the FTTN footprint, at least until Telstra's commitment to deploying FTTN is assured.

## Chapter 6 The PSTN Originating and Terminating Access service

On 30 June 1997, under s. 39 of the *Telecommunications (Transitional Provisions and Consequential Amendments) Act 1997* (the Transitional Act) the PSTN OTA services were deemed to be declared services for the purposes of Part XIC of the Trade Practices Act.<sup>82</sup> Section 39 of the Transitional Act was a transitional provision to allow the Commission to declare certain services prior to the commencement of Part XIC on 1 July 1997.

A basic description of this service and its role in providing access-seekers with access to the fixed (PSTN) network to provide a number of retail services is outlined in chapter 3. Full descriptions of domestic PSTN OTA services are provided in Appendix 3.

At the time of the deeming of the PSTN OTA in 1997, the Commission saw the service as being central to the provision of long-distance services to end-users. Further, the Commission has noted in the past that without terminating access to end-users on Telstra's PSTN, other market participants would not be able to offer competitive services in the mobile telephony market. Similarly, terminating access is required to ensure end-users on other fixed networks can access Telstra's customers and vice versa (connectivity requirement).

The two issues that seem most pertinent to the need for the PSTN OTA declaration in its current form is whether such a declaration is still appropriate having regard to:

- the impact of other declared services, such as the ULLS and transmission capacity; and
- if regulation of this service is still justifiable, how do new network modernisation developments associated with an IP upgrade to core networks, affect the way such a service should be regulated and the form of its declaration

Each of these issues is examined below.

### 6.1 Will declaration promote competition?

The main argument for the declaration of PSTN OTA in 1997 was that the CAN, a key element comprising the service, was a bottleneck facility. The CAN has traditionally exhibited natural monopoly characteristics, with significant economies of scale and scope enabling one network to supply the market demand at a cost below that of multiple networks. It was recognised that new technologies with different cost structures and revenue potential would imply that more than one CAN could be

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<sup>82</sup> See Australian Competition and Consumer Commission, *Deeming of Telecommunications Services – A statement pursuant to section 39 of the Telecommunications (Transitional Provisions and Consequential Amendments) Act 1997*, 30 June 1997.



economically developed in certain areas. However, the deeming statement recognised the number of networks that could be economically developed was likely to remain limited in the foreseeable future. This was especially so since it was considered at the time that alternative technologies such as wireless local loops (WLL) had a low degree of substitutability due to significant differences in functionality and cost.

Consequently the deeming statement concluded that the CAN exhibits strong bottleneck characteristics and as a result declaration of PSTN OTA, which includes the services of the CAN, was likely to promote competition in related markets for carriage services and promote efficient investment by discouraging inefficient development of additional infrastructure.

The Commission concluded that the need for the PSTN terminating access service was even more crucial for competition in the long-distance market. The Commission's view was that even if access to some customers was possible through the duplication of facilities, for a service provider to compete effectively in the long-distance markets it requires ubiquitous terminating access. Being unable to terminate a long-distance call would severely limit the ability of the service provider to compete in the long-distance market. Similarly, a high proportion of calls from mobile phone users are to end-users on fixed networks. Without PSTN terminating access it would not be possible to compete in the mobile telephony market.

The central issue that concerned the Commission in its previous considerations in respect to the need to regulate the PSTN OTA service was the ability of the access-provider to engage in vertical market power abuses, such as foreclosure and price squeezes, by exploiting its control of essential bottleneck facilities to the advantage of its own retail operation.

As Optus commented in response to the discussion paper:

In areas where Telstra is a monopoly (or near-monopoly) wholesale provider of basic access services, as a vertically integrated carrier Telstra may face strong incentives to:

- exclude retail competitors from markets downstream to PSTN OTA; or
- disadvantage competitors by selling PSTN OTA services at discriminatory rates.

The declaration facilitates the prevention of such behaviour.

In the period since 1997, the Commission has declared the ULLS and other forms of PSTN access and refined its declaration of transmission service so that it applies in areas where alternative transmission capacity is not available. A question that arises is therefore whether the original bottleneck nature of the service is still evident. For example, if the local access component (the CAN) and IEN is seen as fundamental, does the separate availability of these services, through ULLS and transmission capacity mean that the PSTN OTA service can be removed or significantly modified?

As discussed in chapter 4, several competitors have plans to roll-out ULLS investments, generally in metropolitan areas. These announcements indicate the potential for increased access-based competition, (particularly in the broadband segment). In Telstra's view, the increasing take up of ULL and line sharing and the reach of Optus' HFC network means that by July 2006, more than half of all Australian households will have access to an alternative fixed access network.

However, some submitters to this inquiry stressed that notwithstanding the increasing take up of ULL services, the bottleneck nature of the CAN, at least in many

geographic areas would remain for the foreseeable future. For example, the Competitive Carriers Coalition argued that:

The local loop is likely to remain an enduring bottleneck in the foreseeable future. While ever this is the case, PSTN OTA services remain critical for ensuring any-to-any connectivity.

Even where competitors have developed their own facility based networks, access to Telstra's ubiquitous network is essential. Telstra's market power, and advantages in terms of scale and scope require that this access, continue to be regulated.

Similarly Optus stated that:

An ongoing need for PSTN OTA regulation will remain in areas where there is ineffective competition at the CAN level. Given the emerging ULLS roll-out plans, it would be premature to undeclare PSTN in metropolitan areas at this time.

Optus went on to argue that:

As alternative networks emerge, the PSTN OTA service will likely diminish in importance in some locations. However, in the absence of government subsidies to promote rollout of competing infrastructure, it is highly unlikely that such networks will be deployed in low density areas for some time and even in high density areas barriers to entry remain significant. This is because at this point in time, these networks would not be able to compete on cost and/or quality with Telstra's network.

In addition new IP-based services, such as VoIP are beginning to emerge which over time will increasingly become substitutable services to traditional PSTN-based voice telephony. However, widespread take-up in the residential and small business sectors is not expected to occur before a number of key concerns are addressed. These include significant concerns about the quality of VoIP services, as well as uncertainty over numbering issues, customer equipment, the workability of VoIP services providing access to the emergency call service, privacy, call charging accuracy, preselection issues and number portability.

According to Optus, factors that currently pose barriers to the rollout of competing infrastructure include the high cost of backhaul, limited availability of spectrum for use of wireless technologies and service quality issues for the delivery of voice services over broadband wireless technologies. As a result, Optus considers that:

The introduction of new technologies for the delivery of customer access services in the future could reduce the need for regulation of PSTN OTA over time. However, until such technologies are able to provide comparable services at comparable cost, continued regulation would be required to safeguard the LTIE in areas where competition is weak or non-existent.

In the Commission's view, networks such as those discussed above will increasingly become more important and may over time provide effective competition, at least in many geographic areas, to Telstra's ubiquitous CAN network. However it is also evident that these emerging competitive networks are yet to have any real bearing on the bottleneck nature of Telstra's copper CAN except in the CBD areas of the major capital cities.

Thus, despite the increase in services resold by Telstra's competitors, the degree of reliance of Telstra's infrastructure in many areas remains largely unchanged, and alternative networks have not increased their influence.

There are substantial barriers to entry which limit the ability of new entrants and existing players to deploy customer access networks and compete effectively in local telecommunications using only their own infrastructure, especially in metropolitan and regional areas. The establishment of telecommunications access infrastructure

involves substantial investment that largely becomes sunk. This increases the risks of investment and potential for failure, thus making new investment less attractive.

Telecommunications networks are also characterised by significant economies of scale, so duplication of existing networks is unlikely to always be efficient. These economies of scale are reinforced by the significant economies of density that exist over the customer access network in metropolitan and central business district areas.

Together, these economies are likely to continue to limit the extent of network deployments in non- CBD areas in the foreseeable future.

The discussion paper also sought submitters' views on the extent to which PSTN OTA was still required for the provision of downstream retail services. The Commission's initial analysis in respect to the downstream markets in which PSTN OTA is used as an input is set out in chapter 3.

In summary, Telstra is the dominant provider of local call services with a market share of approximately 70 per cent. Outside the local call segment, Telstra has a dominant role in providing long-distance and FTM services, albeit slightly less pronounced. Telstra has a market share of 65 per cent in national long-distance, 52 per cent in international and 65 per cent in FTM.<sup>83</sup> If both long-distance and FTM services are considered together, Telstra is estimated to have 63 per cent market share, Optus is the second largest provider with 12 per cent, AAPT has 9 per cent, Primus Telecom has 7 per cent and the remaining 9 per cent is divided up amongst other carriers.<sup>84</sup>

The discussion paper noted that one of the main uses of PSTN OTA in the past—that of providing long-distance services through preselection—has become a less appealing option in recent years.

This is because this option requires that the consumer takes basic access and local calls from Telstra, while long-distance and FTM services are provided by an access-seeker. As the Commission observed in the 2004 Competitive Safeguards report, several difficulties arise in respect to this model as Telstra will charge the consumer a higher price for basic access and local call services than if the customer preselected long-distance with Telstra and the consumer will no longer be eligible for Telstra's 'reward options'. The increase in local call prices and loss of rewards is the penalty to the customer for preselecting another competitor and the preselect competitor must compensate the customer for this loss.

As a result the Commission concluded in the 2004 Competitive Safeguards report that it is difficult to make a profit as a pure preselect provider across a range of customers and that this form of market entry is becoming less popular and less relevant over time.

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<sup>83</sup> National long-distance and international market shares are taken from Telstra, Annual report 2004. FTM market share is taken from ACCC, *Mobile service review: mobile terminating access service*, June 2004 and are for the 2002-03 financial year.

<sup>84</sup> Deutsche Bank, *Aust/NZ Telecommunications*, 15 June 2004, p.27.

That said, while bundled service strategies are now more common forms of competition in fixed service markets, competitors would be expected to rely on combinations of local access, resold local calls (LCS) and PSTN OTA to provide a bundle of fixed services to customers.

As Optus notes:

At this point in time, PSTN OTA remains a vital input into the provision of downstream retail services to a substantial proportion of fixed telephony users in Australia. Alternative technologies for delivering services of comparable quality at comparable cost are not readily available for Australia-wide deployment.

... the vast majority of long distance traffic originates and terminates on Telstra's network. If Telstra refused to provide PSTN OTA services on reasonable terms, then access seekers could find themselves unable to compete effectively in the market for long distance services.

### **Continued declaration of PSTN termination in CBD areas**

This also raises a more immediate issue, however, in relation to need for the originating access service in CBD areas at this time. Here, the situation is less clear cut. The preceding discussion indicated that effective competition via alternative technologies has emerged at least in the CBD areas of Melbourne, Sydney, Brisbane, Perth and Adelaide. The Commission is mindful to ensure that where effective competition exists, regulation does not continue for longer than required. However, at the same time, the Commission wishes to ensure that emerging next generation networks, as well as new services such as voice services over IP networks, have equality of access thus enabling them to effectively compete against traditional services.

Even where competitive infrastructure is available, the competing network would still need to interconnect with other networks to terminate services. If networks are of a similar size and reach, there may not be need for regulatory intervention as such two-way access markets should be able to achieve an optimal arrangement for terminating access on their own. However, regulation may still be relevant to the extent there is significant asymmetry between the size and reach of networks. This feature can affect the larger network owner as much as the smaller player – each would have a degree of market power in relation to terminating access, in a similar way that mobile network operators do. This suggests that a terminating access service will still be required in the foreseeable future.

At this stage the Commission considers that it would seem appropriate to continue providing an originating service in metropolitan and regional areas and terminating access service in all areas, at least in the interim period, while new networks are rolled out and new commercial and technical arrangements are determined by industry. The Commission considers, therefore, that the PSTN OTA declaration should be extended in these areas for a period of three years in which time there is likely to be greater certainty about the impact of alternate networks on the PSTN.

Given the level and nature of competition in CBD areas of major capital cities, however, and the conclusions reached by the Commission around the need for wholesale regulation of the LCS, the Commission is interested in whether this would also justify the removal of the PSTN originating service in the CBDs of the mainland state capital cities. For example, the originating service provides a form of direct wholesale access to service providers in order to provide various voice services not unlike that provided by LCS to supply local calls. On the other hand, originating access is also used to provide other services, such as special number services and has

also been used to provide local calls in certain customer segments. Its significance in an NGN setting are also unclear.

At this stage, the Commission considers that given the uncertainties around future NGN developments in particular, it would be premature to revoke the originating service even in CBD areas, however, it would be interested in further submissions from industry on this matter.

### **Single PSTN OTA service definition**

The Commission considers that it is also appropriate to have a single originating and terminating service that can be provided at any feasible local or transit point of interconnection (POI) rather than separate local and domestic service definitions. This could be achieved by generalising the Domestic PSTN OTA service description and revoking the Local PSTN OTA service description. In any case, it appears that the local PSTN OTA service is not used by access seekers to a significant extent, if at all.

The Commission notes that the main reason why the local PSTN OTA was declared in the first place was to remove a perceived ambiguity in the domestic PSTN OTA service description relating to whether or not the domestic PSTN OTA service permitted interconnection at the local exchange. As such, the local PSTN OTA service is merely a subset of the domestic PSTN OTA service and the Commission will now take the opportunity to rationalise the number of declared services by combining the two service descriptions by ensuring that the single service description allows interconnection at either of the currently defined POIs. The interaction between the PSTN OTA service and next generation networks (NGNs)

## **6.2 Will declaration promote any-to-any connectivity?**

One key reason for the declaration of PSTN OTA in 1997 was that such declaration was likely to promote any-to-any connectivity. This is because at the time there were no alternative means of obtaining access to directly connected end-users on Telstra's PSTN. The Commission concluded that in the absence of an access obligation, a carrier may have an incentive to restrict access to its core network to inhibit the ability of other carriers to compete.

The Commission considers that any-to any connectivity is still a key consideration in assessing the need for declaration of the PSTN OTA service. As the Commission has noted in the past, access to customers is necessary both for successful entry and for continued competition. The need for any-to-any connectivity confers on telecommunications network owners market power in access to their own customers.

Even where a new entrant employs its own network facilities, it will need to interconnect its network with Telstra's ubiquitous PSTN so that its subscribers can make calls to and receive calls from Telstra's customers. According to Optus, for example, new entrants typically need to interconnect 90% or more of their local traffic with the incumbent.

As the Productivity Commission observed<sup>85</sup>, therefore,

All but a small minority of end-users, ... either originate and/or terminate a service on the Telstra network — whether it be for a fixed-to-fixed local, domestic long distance, or international call, or a fixed-to-mobile or mobile-to-fixed call.

The Commission therefore concludes that declaration will promote any-to-any connectivity.

## **6.3 Will declaration promote economic efficiency?**

### **6.3.1 Economically efficient use of infrastructure**

Declaration of the PSTN OTA enables access seekers to combine existing customer access and switching infrastructure with their own equipment so as to provide end-to-end retail and wholesale local and long-distance voice services to end-users, as well as to other service providers.

This enables end-users to gain access to an increased choice of telephony service providers, therefore improving their access to those services and providing greater scope for price competition as well as product and service improvements.

The competition that results from the ability of competitors to access customers by using the PSTN OTA service encourages product differentiation and the creation of new and innovative bundled product packages, increases the likelihood of price competition in the supply of voice services, and is therefore likely to enhance productive and allocative efficiency in those markets.

In respect to the technical feasibility of providing the service, Telstra has been providing third party access to the PSTN OTA service since the early 1990s. It is clear, therefore that it would be technically feasible to continue to supply and charge for the service. Furthermore, Telstra has not submitted that the technical feasibility of supplying the PSTN OTA service have fundamentally changed since the service was declared such that to continue the declaration would not be technically feasible.

### **6.3.2 Economically efficient investment in infrastructure used to supply the PSTN OTA service**

To examine the likely impact of declaration on the economically efficient investment in infrastructure by which the eligible service is supplied, the Commission will consider the impact of declaration on the:

- legitimate commercial interests of the access provider;
- incentives for investment in the existing infrastructure used to supply the eligible service under consideration; and
- incentives for investment in new infrastructure which could be used to supply the eligible services under consideration.

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<sup>85</sup> Productivity Commission, Telecommunications Competition Regulation, December 2001

### **Legitimate commercial interests of the access provider**

As already discussed, the legitimate commercial interests of access providers include their ability to exploit economies of scale and scope.

The Commission considers that declaration of the PSTN OTA does not impact adversely on the ability of access providers to exploit economies of scale and scope. Telstra has not raised concerns with the Commission on this point.

The concept of the 'legitimate commercial interests' of the access provider has a number of dimensions. For instance, it covers the provider's interest in earning a commercial return on its investment, its interest in maintaining contractual obligations, and its interest in using the network for future requirements.

As already discussed in chapter 5 the legislative framework ensures that, in providing access to declared services, Telstra is able to earn a commercial return on its investment and the costs of providing access to the service. The Commission, therefore, does not consider that Telstra's legitimate commercial interests would be harmed from continued declaration of the PSTN OTA service.

#### *Incentives for investment in existing infrastructure*

In the Commission's view, one key determinant of the level of efficient investment in existing network infrastructure is the access prices that follow from the PSTN OTA service being declared. These access prices are crucially important for establishing appropriate signals for investment in the existing network. In this regard, the regulatory framework is designed to ensure that access prices are sufficient to allow the access provider to invest in existing networks, and receive a commercial return on that investment. In any case the declaration does not appear to have discouraged Telstra from deciding to switch its focus from the existing PSTN network to a new IP core network as its recent decisions to this end appear to attest.

The Commission also considers that the regulatory framework protects Telstra's flexibility in making necessary investments, as well as its rights to charge access prices that allow it to earn a commercial investment. At the same time, the regulatory framework ensures that these prices reflect the costs of investment that is efficient by assessing the underlying costs.

#### *Incentives for investment in new infrastructure*

Investment in new infrastructure can be considered both from the perspective of the incentives on Telstra to invest in new networks and the incentives on access seekers to invest in their own facilities or networks.

As already discussed above Telstra has announced plans for the rollout of a next generation IP based core network to replace the current PSTN over time.

Telstra's plans in this regard are partly driven by increasing demand for broadband services. In the Commission's view, customer demand for these services and competition are the key drivers of network modernisation initiatives such as Telstra's NGN proposal.

The Commission considers that there is no evidence to suggest that the continued declaration of PSTN OTA service is likely to negatively impact on Telstra's incentives to undertake investment in this, or any other new infrastructure. This is

based on the view that the PSTN OTA service has been declared for a long period; there has been a high level of investment in PSTN infrastructure during this time.

Nevertheless, as noted above, the pricing of access to the PSTN OTA service can have an impact on the incentives for Telstra and other parties to invest in alternative infrastructure. In this context, the Commission, in approving or arbitrating access prices for the PSTN OTA service takes into account the long-run efficient costs of providing and maintaining the PSTN OTA service including a risk-adjusted return on investment, and the impact of prices on competition.

The approach is designed to provide the correct incentives to Telstra and competing providers to invest efficiently in existing and alternative networks on a forward-looking basis. However, relative to the network which is actually in place, the Commission's access price methodology is designed to recover Telstra's full economic costs of providing PSTN OTA services.

As Optus commented in response to the discussion paper:

Optus does not believe that continued regulation of the PSTN OTA would detrimentally distort Telstra's investment decisions. In setting access prices, the ACCC is required to have regard to the legitimate business interests of the access provider. This means that the ACCC will generally attempt to set prices that enable cost recovery by the access provider. So long as the access provider is recovering its reasonably incurred operational and capital costs, its investment decisions should broadly reflect those of a competitive market participant. If the access price is set at an appropriate level, therefore, we would not expect the investment decisions to be affected in a manner that is either unreasonable, or unreasonably harms Telstra.

In relation to the impact of declaration of the PSTN OTA service on incentives on access seekers to invest in their own facilities or networks, the discussion paper observed that in deeming the PSTN OTA service in 1997, the Commission considered that service based competition through preselection would provide a stepping stone to greater levels of infrastructure based competition. This is because it was considered that as competitors established a market presence through effective service based competition, it was likely that they would slowly move toward lower level access services and eventually to the use of stand-alone facilities. As the Commission has stated in the past, access regulation itself derives from a recognition that in some circumstances, associated with significant scale economies, facilities-based competition is not viable or only partially so.

Facilities-based competition, on the other hand, provides the basis for an eventual easing back of regulatory requirements and the substitution of a largely self-policing industry structure as the means for achieving and maintaining the LTIE. The viability of resale and repackaging as the basis for competition, in contrast, rests to a large and continuing extent on regulatory intervention.

The discussion paper sought submitters' views on the extent to which the declaration of the PSTN OTA service has assisted in the attainment of infrastructure based competition and whether, given the significant time that has elapsed since the deeming of these services, the "stepping stone" rationale for continued declaration is still appropriate. The discussion paper also sought views on whether continued declaration of PSTN OTA is sending the right signals to the market in respect to appropriate build versus buy decisions for the delivery of voice services.

In response to these issues Telstra submitted that:

In practice the stepping stone model has been a failure and is being wound back throughout the world. Instead of a smooth transition from resale to facilities based competition,



regulators have found that competitors quickly find the access option that gives them the greatest margin and then business around that. This problem becomes particularly acute when access prices are set below cost.

In Telstra's view:

Around the world we have witnessed the perverse effect of new entrants mothballing their own investments and cheap-riding on the incumbent's network because the regulator has set particularly low access prices.

Telstra presented evidence purporting to show that both in the US and Australia competitors investment in their own networks stalled when they received low regulated prices for unbundled network elements or resale services.

On the contrary, Optus submitted that:

Optus' proposed DSLN rollout would not have been possible if the PSTN OTA service was not available as a means of enabling Optus to build scale in its customer base.

Optus also argued that:

It is the access price, rather than the existence of regulation per se, that will determine whether or not the appropriate build-buy signals are sent to the market.

However, ... in the absence of effective competition at the wholesale level, an access provider will be likely set access prices at levels that could tilt the build-buy decision in favour of build. Continuing regulation of PSTN OTA services in non-competitive areas could therefore protect the LTIE against the potential for over-build.

Similarly, the Competitive Carriers Coalition (CCC) argued that:

Despite recent attempts by Telstra to discredit the regulatory approach known as the ladder or stepping stones of investment, independent analysis of the development of competition across European countries has concluded that the concept is being proved in practice by evolving experience in those countries.

The CCC presented information which suggested that both in Europe and the US the stepping stone approach to regulation is likely to have increased new carriers ability to obtain the market share and market presence required to compete against incumbent operators and to invest in the rollout of their own competing networks.

In the Commission's view, declaration of the PSTN OTA has assisted in creating the preconditions for competitors to gain the critical mass required to compete effectively and roll out competing infrastructure for the provision of narrowband and broadband services. The discussion in chapter 3 is evidence that competitors are increasingly investing in alternative infrastructure for the provision of traditional and next generation services especially in CBD and metropolitan areas of major capital cities. Given the current and emerging plans by competitors for further infrastructure rollout, the Commission is mindful to ensure that these developing strategies are not frustrated by premature removal of the PSTN OTA declaration in those areas where effective and sustainable competition is yet to emerge.

Overall, therefore, the Commission believes that declaration of the PSTN OTA does not inhibit efficient investment in new infrastructure by access providers to supply broadband services and voice services and promotes efficient investment by access seekers in both alternative infrastructure and in downstream retail markets.

### **International approaches**

As part of considering whether or not there is a continuing need for declaration of the PSTN OTA service, the Commission has also examined international approaches to

the regulation of these services has assessed to what extent international approaches are relevant to the Australian situation.

The Commission notes that in respect to the approaches adopted in other jurisdictions, most see a continuing need of regulation of the PSTN OTA service, at least in the short to medium-term.

The European Commission, for example, has identified the call origination, call termination and conveyance markets as relevant markets for *ex ante* regulation<sup>86</sup>. Similarly, various European regulators have identified a number of barriers to entry and market power issues in these markets which have led them to conclude that the markets should be regulated.

In the UK Ofcom, as part of its strategic review of telecommunications<sup>87</sup> is proposing a phased approach to the review of regulation in fixed voice markets, including the markets for origination, termination and conveyance. Ofcom is proposing staged reviews between 2006 and 2010 to assess whether continued regulation is required.

However Ofcom has recognised that<sup>88</sup>:

The fixed voice market is likely to be much more competitive in some locations than in others, and may provide greater choice for some customers (for example those taking broadband services) than others. The regulation that Ofcom puts in place should aim to ensure that all types of consumers, and consumers in all areas, are able to benefit from competition.

### **Possible NGN implications**

#### Impact on PSTN service specification

In looking at the regulation of PSTN OTA and its form, the impact of prospective network and technological changes in coming years by moving to an IP-based core network will need to be considered.

The Next generation Core (NGC) refers to the core IP network and is characterised by replacement of legacy transmission and switching equipment with IP technology in the core, or backbone network. It involves changing telephony switches and installing routers and Voice over IP equipment. NGN network architecture allows for simpler, less costly and straightforward networks that are used to deliver all services.

The features of an NGN related to having an IP- based architecture are:

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<sup>86</sup> Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC.

<sup>87</sup> Ofcom, Strategic Review of Telecommunications Phase 2 consultation document, November 2004.

<sup>88</sup> Ofcom, Strategic Review of Telecommunications Phase 2 consultation document, November 2004, p. 85.

- Multi-service access nodes (MSAN) – these allow multiple services to be offered through a single node.
- Application level network support – this allows easy integration of existing applications, which can be run over the same underlying network platform. It is easier to integrate, configure and maintain different applications including voice and data over the same infrastructure. Services will reside in applications: not within the network’s switching infrastructure
- Easier integration of new applications – new applications can be rolled out more quickly because they can be added on to the existing IP infrastructure
- Integration of fixed voice – voice and data services can now be brought into a single network infrastructure.
- Network design/configuration becomes easier to manage – the greatest single benefit in moving to an all IP environment is that the infrastructure becomes much simpler, and easier to manage. The design/configuration is much simpler and web-based monitoring can deliver efficiency improvements.
- Network reach becomes ubiquitous – IP reduces networking complexity. IP VPNs stretch flexibly from managed private connections with class of service to secure connectivity over the public Internet. IP networks offer a wide range of access methods for remote works and smaller branch offices from centralised applications.
- Fewer physical assets and resources required – as management of voice and data networks can be combined, and control has become more easily available through sophisticated web-based online monitoring tools, fewer resources are required for network maintenance.

In 2005 Telstra announced plans to implement an NGN based on a fully IP based core. Telstra is planning to complete the new IP based network within a five year timeframe, which would mean full deployment around 2010. The main elements of the network build out include:

***MPLS core*** - Currently there are separate cores for Internet and business. The new network will have a single IP-MPLS core.

***Multi-service edge*** - Telstra plans to remove the separate edge and core for ATM/Frame Relay and IP VPN services. Telstra will build a common, multi-service edge. Capacity of the platform will increase from 60 to 400 Gbits/s.

***Ethernet distribution*** - There are currently nine different types of distribution networks. Telstra intends to provide a common Ethernet transport network as part of its build-out. This is expected to increase capacity from 40 Gbit/s per node to 160 Gbits/s per node.

As it is most likely that NGNs will not be deployed all at once, but rather that there will be a period where NGNs and other existing networks such as the PSTN operate along side each other, this will mean PSTN-PSTN interconnection, PSTN-NGN interconnection and NGN-NGN interconnection will be required. The differences for interconnection in each case is as follows:

**PSTN-PSTN interconnection** – PSTN to PSTN interconnection will not change with the deployment of NGN networks. The current arrangements for interconnection will apply.

**NGN-PSTN interconnection** – Interconnection between the NGN and PSTN networks will require some form of gateway function. Interconnection is unlikely to be available at all points of interconnection with the PSTN as NGN deployments so far have shown fewer interconnection points in an NGN.

**NGN-NGN interconnection** – Interconnection between NGN networks will occur in fewer locations than in the PSTN. This will mean simpler and less costly interconnection for incumbent operators, but will be potentially more costly for smaller operators as above.

Given the different NGN architecture which will create a physical and digital rearrangement of networks, interconnection will be different from that in a circuit switched network. In this context, one key issue which needs to be resolved is how should the current service description be altered to ensure that technological and service neutrality and in light of the move to an all IP-based core network<sup>89</sup>. Regulation in a technology neutral and service neutral way is required to ensure that, in a convergent environment, regulation does not prevent the emergence of new services due to distortions created by access services being defined in a technology or service specific manner. This will ensure that new services such as voice services over IP networks have equality of access thus enabling them to effectively compete against traditional services.

As the European Telecommunications and Professional Electronics Industry (ECTEL) commented in relation to the EU's Green Paper on Convergence of Technologies<sup>90</sup>:

Taking into account the fact that different networks can deliver essentially similar services, regulators must strive towards system and technology neutral regulation: no specific technology, system or sector should be favoured by regulation. This requirement applies between converging sectors, and within sectors. In the telecommunications sector it applies to convergence between fixed networks (PSTN, ISDN, packet switched networks including Internet Protocol based networks, future broadband networks), cable TV networks, mobile networks, and satellite.

The current service description for the PSTN OTA service is not technology neutral. It describes PSTN OTA services as being services for the carriage of circuit switched communications over the voice bandwidth. The key issue, therefore, is whether the move to an all IP core network means that in order to capture the essential elements of the existing declaration over narrowband interconnection the service description needs to be made more generic or IP-capable.

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<sup>89</sup> The Commission notes that Telstra's network is not likely to change significantly in the short term in terms of location of POIs. The Commission understands that Telstra's IP upgrade is not due to be made until at least 2009. This would mean that in the interim period no substantial change to the PSTN OTA service definitions would be required to reflect NGN developments.

<sup>90</sup> Joint EUROBIT-ECTEL Comments on the Green Paper on Convergence of Technologies by the EC, April 1998.

Currently PSTN OTA service interconnection occurs at the trunk exchange (or LAS) element of the PSTN OTA service. This reflects the fact that, historically, switching functions for voice traffic were performed at this level of the network.

However, if the Commission were to alter the PSTN OTA service description to ensure technological neutrality, then interconnection at the trunk exchange may no longer be meaningful since IP based voice services do not require the switching functionality provided by the trunk exchange.

Thus the logical consequence of making the descriptions of the PSTN OTA services technology neutral, would be to expand the points at which interconnection would be available. Under this scenario, interconnection would no longer be limited to trunk switches but would be permitted at any technically feasible point in the core network<sup>91</sup>.

To explore these issues, the Commission commissioned OVUM<sup>92</sup> to assess the types of changes that may be required to the existing PSTN OTA service descriptions to ensure technological neutrality and promote efficient competition between different technological platforms. Ovum's analysis suggests that of the 25 parameters included in the existing Domestic PSTN Originating Access Service specification, 9 of them are affected by a move to an NGN environment. These are:

- Service Description and Definition
- Channel Capacity
- Services
- POIs
- POI Locations
- POI Designation for Codes
- Signalling
- Nature of switchports
- Network Conditioning

Ovum's views on the appropriate modifications to the PSTN OTA service declarations for the interim period are set out in the table below.

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<sup>91</sup> This, for example, is the approach being adopted by the Malaysian Multimedia Commission which has altered its description of PSTN OTA services to reflect the continuing convergence between switched and packet based voice traffic.

<sup>92</sup> Ovum, Review of PSTN Declared Services – Final Report to ACCC, May 2006.

<b>Channel Capacity</b>	<p>The existing Domestic PSTN originating and terminating access Declarations state, “The service will establish a connection for the purposes of voice communication with the standard bandwidth of 3.1 kHz”</p> <p>An NGN is an always on network, unlike a PSTN where the connection is formed. Therefore this element of the specification would need to be changed.</p>	<p>A suggested change to this section of the Declaration would be, “The service will establish a connection for the purpose of voice communication with the standard bit rate of 64 Kbit/s</p>
<b>Signalling</b>	<p>For PSTN/NGN interconnection, at the PSTN end the terms of the existing declared service could remain. PSTN interconnection is currently based on SS7 signalling (the two variants being IUP and ISUP).</p>	<p>NGN is likely to use a combination of SIP (between call servers in different networks) and other NGN specific protocols (for example between MSANs and call servers within the same network).</p>
<b>Network Conditioning</b>		<p>Network conditioning is not relevant to the NGN environment although it would still be required for PSTN interconnection.</p>
<b>POI designations for codes</b>	<p>Table POASD2 is only relevant for PSTN interconnection</p>	<p>Table POASD2 referred to in the existing Declaration may need to be upgraded to include the listing of the geographical number range associated with each new POI for an NGN.</p>

In addition, OVUM observed that further changes would likely be required for the creation of a generic originating and terminating access service description which would cater for NGN interconnection. These changes relate to the nature and location of the POIs which would be required for interconnection of NGN networks. However, given to early stage of NGN development in Australia and around the world, it does not seem possible, or indeed appropriate, to set out in any detail the specific interconnection arrangements which will be required in the NGN environment.

At this stage, the Commission does not consider that any significant changes are required to be made to the service descriptions to address the various NGN issues noted above. These issues, will however, need to be reviewed at the next scheduled review point, at which time NGN developments are expected to be clearer. In the meantime, a slightly revised service description, reflecting the issues raised in this section, is proposed as noted in Attachment 2.

NGNs and bottleneck power

Another aspect of NGNs is the broader issue of bottleneck power and whether new and emerging service models and architectures create opportunities for abuse of market power or regulatory gaming<sup>93</sup>. It is uncertain at this point, where the NGN interconnection points will be, or what structure the network will have, since the physical and logical location of interconnection points in an NGN are as yet undefined. It is therefore currently not possible to identify possible bottlenecks, but, neither can it be shown at this point that there will not be bottlenecks.

As Devoteam stated in a report to the European Commission<sup>94</sup>:

It would be important for regulators to understand where to look for those control points that can become sustainable and/or irreversible sources of dominance and which would lead to market failure unless addressed by ex ante regulations. Such control points would probably involve ownership of elements that would be necessary in order to provide certain services and that could not easily be replicated. The local loop is a classic example of such an element. In an IP setting, there could be other elements that could be equally critical for the provision of a certain set of services. They would probably be strongly related to individual customers, such as customer identity information or information on customer preferences.

Control points could also take the form of market power that would enable an operator to impose bundling and/or interoperability limitations which reduce customer choice and/or competitive alternatives.

The key issue here is whether similar access and co-location mandates that currently exist as part of the PSTN originating service declaration will be required in the interconnection arrangements which will apply for PSTN to NGN interconnection and for NGN to NGN interconnection. To the extent that such access and co-location arrangements are required in the NGN environment, there may be a case for continuing some form of generic originating service declaration in all geographic locations.

As the ITU has noted in relation to broadband<sup>95</sup>:

A collocation regime is a necessary complement to network open access policies. Often, the process of collocating a competitor's equipment at an incumbent's exchange or main distribution frame (MDF) is a complicated and slow process that can involve considerable delaying tactics by the incumbent. As a result, most regulators have required incumbents to provide collocation to new entrants on mandatory terms and conditions and within a fixed timeframe.

The Commission will further explore the extent to which various NGN technologies will rely on the ability to interconnect or collocate at different points of the incumbent's core PSTN or NGN. As these developments are still under consideration, it is likely to be more appropriate for this issue to be reviewed in the next scheduled review period in three years time.

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<sup>93</sup> ACIF, *Policy and Regulatory Considerations for New and Emerging Services*, undated.

<sup>94</sup> Devoteam and Cullen International, *Regulatory implications of the introduction of next generation networks and other new developments in electronic communications*, May 2003.

<sup>95</sup> ITU, *Birth of Broadband*, September 2003.

## 6.4 Conclusion

Based on the discussion presented in the previous sections, the Commission considers that competing networks in metropolitan and regional areas are not yet sufficiently developed to provide for competition at the originating access level, and 87 per cent of access lines are supplied by Telstra's copper-based CAN, of which only a small amount is via the ULLS. Therefore, access seekers will continue to rely upon Telstra, as the dominant provider of wholesale originating services in metropolitan and regional areas, for originating long-distance, international, and fixed-to-mobile calls for the foreseeable period.

As alternative networks become more developed over the next few years, this will change the market dynamics of providing voice services. For example, those relying on the ULLS will be providing their own originating access to their own customers and would only need terminating access to provide end to end calling and other services. Similarly, those carriers relying on other forms of infrastructure will also require terminating access. Once this occurs, it would be expected that originating access in metropolitan and regional areas would become a much less vital part of interconnection and access arrangements. This means the originating service in these areas should be reviewed in three years to assess whether it is still necessary to meet LTIE objectives.

Even where competitive infrastructure is available, the competing network would still need to interconnect with other networks to terminate services. If networks are of a similar size and reach, there may not be need for regulatory intervention as such two-way access markets should be able to achieve an optimal arrangement for terminating access on their own. However, regulation may still be relevant to the extent there is significant asymmetry between the size and reach of networks. This feature can affect the larger network owner as much as the smaller player – each would have a degree of market power in relation to terminating access, in a similar way that mobile network operators do. This suggests that a terminating access service will still be required in the foreseeable future.

At this stage the Commission considers that it would seem appropriate to continue providing an originating service in metropolitan and regional areas and terminating access service in all areas, at least in the interim period, while new networks are rolled out and new commercial and technical arrangements are determined by industry. The Commission considers, therefore, that the PSTN OTA declaration should be extended in these areas for a period of three years in which time there is likely to be greater certainty about the impact of alternate networks on the PSTN.

Given the level and nature of competition in CBD areas of major capital cities, however, and the conclusions reached by the Commission around the need for wholesale regulation of the LCS, the Commission is interested in whether this would also justify the removal of the PSTN originating service in the CBDs of the mainland state capital cities. For example, the originating service provides a form of direct wholesale access to service providers in order to provide various voice services not unlike that provided by LCS to supply local calls. On the other hand, originating access is also used to provide other services, such as special number services and has also been used to provide local calls in certain customer segments. Its significance in an NGN setting are also unclear.



At this stage, the Commission considers that given the uncertainties around future NGN developments in particular, it would be premature to revoke the originating service even in CBD areas, however, it would be interested in further submissions from industry on this matter.

The Commission considers that it is also appropriate to have a single originating and terminating service that can be provided at any feasible local or transit point of interconnection (POI) rather than separate local and domestic service definitions. This could be achieved by generalising the Domestic PSTN OTA service description and revoking the Local PSTN OTA service description. In any case, it appears that the local PSTN OTA service is not used by access seekers to a significant extent, if at all.

The Commission notes that the main reason why the local PSTN OTA was declared in the first place was to remove a perceived ambiguity in the domestic PSTN OTA service description relating to whether or not the domestic PSTN OTA service permitted interconnection at the local exchange. As such, the local PSTN OTA service is merely a subset of the domestic PSTN OTA service and the Commission will now take the opportunity to rationalise the number of declared services by combining the two service descriptions by ensuring that the single service description allows interconnection at either of the currently defined POIs. The interaction between the PSTN OTA service and next generation networks (NGNs)

## Chapter 7 Wholesale DSL services

### 7.1 Introduction

The Commission noted in its discussion paper that a number of competition issues had arisen in relation to DSL-based services, both in regard to asymmetric services (usually provided to households/consumers, who use these services to access the Internet) and symmetric services (more commonly provided to business users).

These competition issues have primarily related to the terms and conditions of access. In its discussion paper, the Commission questioned whether it would be appropriate to begin regulating wholesale DSL services more directly to promote competition, instead of relying solely on *ex post* enforcement action under Part XIB of the Act.

In the case of wholesale DSL-based services, *ex ante* Part XIC mechanisms could be seen as useful longer terms remedies for what may be seen as systemic or regular concerns with wholesale service provision. However, in order for such regulation to be used, the Commission must be satisfied that such regulation (of wholesale services) would promote relevant competition, investment and efficiency objectives discussed earlier, and would not discourage forms of facilities-based competition such as ULLS.

Having said that, at this stage, the Commission's thinking has not sufficiently progressed to undertake a full LTIE analysis of declaration of a particular service. In part, this reflects the complicated dynamic in which the future of DSL service provision is liable to substantively change. This section of the draft report is therefore necessarily limited in scope. The Commission's comments are limited to the identification of some issues in relation to the potential application of Part XIC to DSL services.

### 7.2 ADSL, BDSL and other DSL-based services

The Commission outlined the relevant characteristics of ADSL, BDSL and other DSL services in its discussion paper (see section 6.4).

In broad terms, DSL services use digital technology that enables high bandwidth services (such as broadband internet access) to be provided to end users. The key feature of these xDSL technologies is that they have been specifically designed for use on copper networks. The fact that Australia has a near-ubiquitous copper network originally built for telephony services gives these technologies wide application. By contrast, other network technologies, such as optical fibre, have advantages over copper networks (not subject to the same bandwidth limitations), but these do not have the same degree of ubiquity as copper and are expensive to install.

The two DSL services that have been the source of contention between Telstra (as the copper access network provider) and (potential or actual) access seekers have been ADSL and business grade DSL (often called BDSL or SDSL).

ADSL services are an asymmetric service (asymmetric in the sense that a high bandwidth downstream service is coupled with a lower bandwidth upstream service) that is most commonly used as a form of consumer internet access.

BDSL services are designed to address a different set of needs to ADSL services. Some customers, particularly businesses, require services which deliver symmetric bandwidth capacity, more secure and committed data quality and better service levels. These services are not always used for internet access – Telstra’s retail BDSL services offer a number of different uses, including as an entry point into another type of network (frame relay or ATM), as a point-to-point service as well as for internet access. To provide these services, carriers have invested in DSLAMs in many of Telstra’s local exchanges (these are distinct from the DSLAMs used to supply ADSL services).

Both the Wholesale DSL services – ADSL and BDSL – are comprised of both a local access component (analogous to ULLS), and a transmission component between DSL exchanges and CBD exchanges. In this respect the Wholesale DSL services can also be thought of as a more bundled service than those that are currently declared (eg, ULLS, Domestic Transmission Capacity Service).

### **7.3 Submissions to the Review**

Submissions to the Review were asked to comment on the state of competition in markets in which ADSL, BDSL and other DSL services were supplied, and whether, as a consequence, there was a case that declaration of a wholesale DSL service would be in the LTIE.

The comments received were largely limited to the type of service that should be declared, and under what conditions a service should be declared. Submissions did not address in detail the relevant markets that would be affected by a service declaration, or what the state of competition was like in those markets.

Optus made the following comments in relation to competition in markets in which DSL services are supplied:

“Optus believes there is strong evidence to suggest that there is a separate market in which residential wholesale broadband services (ADSL) are supplied...Telstra’s market share in this wholesale ADSL market is near 100%...

...Telstra is overwhelmingly dominant in the markets for retail and wholesale business data services. At the retail level, Telstra is the sole provider of BDSL services and other business data services, such as Digital Data Services (DDS) in many geographic areas. It is also dominant at the wholesale level by being the sole provider of business data services, such as Data Access Radial (DAR) (the wholesale equivalent of its DDS service), in many geographic areas.”

Telstra did not comment on likely markets or market power in relation to DSL services.

Having claimed that Telstra had a significant degree of market power in relation to wholesale ADSL and BDSL services, Optus was reticent as to the immediate need for declaration:

“Optus believes that declaration should be reserved for services that provide enduring market power to the service provider. By contrast, where there is the imminent prospect of wholesale competition, declaration should be delayed in favour of competition regulation.”<sup>96</sup>

...it is Optus’ view that forbearance may be the appropriate response at this point in time. For the reasons stated above, it is unclear whether market outcomes and cost conditions will allow for wholesale broadband competition in metropolitan and regional areas. That said, it may be best for the long term if the market determines whether competition is feasible.”

Whilst not explicitly stating that was against a wholesale broadband declaration, Vodafone submits that regulatory forbearance should be the default position of a regulator until such time that it can be clearly demonstrated that a durable market failure exists, and that regulatory intervention should be targeted and shown to deliver a superior outcome compared with market delivered outcomes.

By contrast, the CCC was strongly in favour of regulating a ‘technologically neutral’ wholesale service:

“The CCC submits that the declaration of a wholesale broadband service that could be used, among other things, to provide secure, high quality and high bit rate broadband services to corporate and other business customers would be in the LTIE.”<sup>97</sup>

Optus and the CCC both noted the potential effect of new network developments by Telstra, such as implementation of a FTTN network:

“As discussed above, Telstra’s deployment of a FTTN may create a significant barrier to ubiquitous access based competition from DSLNs. If retail competition is lessened by competitors not being able to provide equivalent speeds, then competition may be promoted through the declaration of a wholesale broadband service from an appropriate POI to the end-user’s premises.

4.32 Furthermore, Optus believes that any declaration should be technologically neutral. It should allow access to a service for the carriage of data at defined speeds and quality from a point of interconnection to an end-user’s premises.”<sup>98</sup>

Telstra’s message in relation to the need for further wholesale declarations with a FTTN network was mixed. In relation to “bottleneck hotspots”, Telstra stated that:

More broadly the Commission needs to make a call on what service competitors can obtain to access the bottleneck hotspots – is it a resale product or is it an unbundled product. Telstra can see no justification for the current smorgasbord approach where every possible mode of access (and price) appears to be catered for.”<sup>99</sup>

Later in its submission, Telstra stated that:

Where an exchange area is found to no longer be a bottleneck hotspot, new customers in that area are to be served by infrastructure providers. For those customers beyond a node, in many areas they will have pre-existing access to alternative infrastructure such as HFC or will progressively have access to

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<sup>96</sup> Optus, op. Cit, p. 19

<sup>97</sup>ibid

<sup>98</sup> Optus, op. Cit, p24

<sup>99</sup> Telstra, op. Cit, p14

competing infrastructure - such as ULL from the node and new technologies such as WiMax. Telstra will provide competitor access to its infrastructure on commercial terms.<sup>100</sup>

## 7.4 Status of wholesale broadband regulation in other jurisdictions

In reviewing the possible case for further regulatory intervention into the supply of wholesale DSL services, the Commission has sought to examine approaches taken by regulators overseas. While the Commission has not undertaken a comprehensive review, it notes that *ex ante* regulation of wholesale DSL services is widespread in Europe, and is also undertaken in New Zealand. By contrast, there is no wholesale regulation in the United States.

### Europe<sup>101</sup>

The European regulatory framework on electronic communications requires the European regulatory authorities to conduct a market analysis in relation to wholesale broadband access. Whilst 6 of the 15 member states have concluded the market analysis, the consultation process is yet to be concluded in most other member states. Having said that, it is anticipated that in the near future all European incumbents will offer a wholesale ‘bitstream’ service (at layer 2 or 3) under regulated terms and conditions and at regulated prices.<sup>102</sup>

Outcomes of the concluded (and pending) analysis highlight a common path. In most cases the national incumbent operator has been deemed as having significant market power in the market for wholesale broadband access. Consequently, a set of specified remedies have been imposed (or at least proposed) upon it. These commonly include a requirement to supply on non-discriminatory terms. In most cases, ‘retail minus’ is the favoured pricing approach, as it does not substantially undermine investment incentives for the incumbent, and protects alternative operators against a retail-wholesale price squeeze.

The table below highlights that although the market analysis has not been concluded, some form of rate regulation is already in place in several countries.

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<sup>100</sup> Telstra submission, p. 23

<sup>101</sup> This summary is largely drawn from Ovum, *The status of bitstream availability in Europe*, 9 November 2005.

<sup>102</sup> The term “bitstream” appears to have varying definitions for different parties. At times it is described as being akin to a Layer 2 DSL service. In submissions to this review, and in the Commission’s own references in this document, bitstream is referred to more generally, and without precisely distinguishing the differences from the so-called Layer 2 DSL services currently provided by Telstra.

**Table 1 Status of wholesale DSL or bitstream regulation in Europe, June 2006**

Country	Bitstream availability	ATM bitstream	IP bitstream	Market analysis status	Current rule for rate regulation
Austria	yes	yes	yes	in consultation	none
Belgium	yes	yes	–	in consultation	–
Denmark	yes	yes	no	in consultation	cost orientation
Finland	yes	–	–	completed	none
France	yes	yes	yes	completed	cost orientation/margin squeeze test
Germany	no	no	no	in consultation	none
Greece	yes	no	yes	in consultation	none
Ireland	yes	yes	yes	completed	retail minus/margin squeeze test
Italy	yes	yes	yes	in consultation	retail minus
Luxembourg	no	no	no	in consultation	none
Netherlands	yes	–	–	in consultation	none
Portugal	yes	yes	yes	completed	retail minus
Spain	yes	yes	no	to be started	retail minus
Sweden	no	no	no	completed	none
UK	yes	yes	yes	completed	retail minus

Source: Ovum

## New Zealand

New Zealand has been regulating access to a bitstream service since December 2001. A limited upload speed service was introduced instead of local loop unbundling following an investigation into ULL in 2002/3.

Subsequently, a review of the New Zealand telecommunications sector in late 2005 revealed that the introduction of a wholesale bitstream service had only had a limited impact on competition in the broadband market, and that the key competition issue remained the reliance on Telecom's fixed local loop network for access to end users in most areas.

In May 2006, the Government determined that that competition and uptake of broadband service could be promoted by making available both a regulated unconstrained bit stream service and a ULL service. Accordingly, it has proposed changes to its telecommunications regulatory framework, and these are expected to be implemented in the middle of 2006. These changes will also include the removal of the 128 kbps limitation on the upstream speed on the bitstream service, which had limited competitor's abilities to offer differentiated services.

## United States

In contrast to Europe and New Zealand, there has been a substantive move towards deregulation of broadband services provided by incumbent telecommunications operators in the US.

After a period of regulation of both unbundled network elements and wholesale bundled services, the FCC has made a number of recent decisions which have lessened requirements on incumbent operators. In 2005, the FCC classified broadband internet access services as "Information services", which relieved providers from the requirement to unbundle the transmission components and grant access to other ISPs.

The move to deregulation has been based on the view that access regulation has only limited value given the existing and potential inter-modal competition. This competition is based on a much greater deployment of network facilities by cable

operators, who originally invested in networks to supply video programming services. For example, almost six lines out of ten in the US are today provided through cable, with DSL providing the rest, and the overall broadband penetration rate is around 12 users per 100 persons.<sup>103</sup>

Although this level of broadband penetration is similar to those reported for the larger European countries such as France and the UK, these countries have quite different industry structures. In France and the UK, multi-platform competition in broadband is far less entrenched, and cable operators do not impose the same degree of competitive constraint on the incumbent telecommunications carrier.

## **Conclusions**

It is apparent that there are very different approaches being taken towards promoting competition in broadband services in the US and Europe. The US, with a far greater degree of inter-modal competition, is pushing towards less regulation to encourage facilities-based investment. By contrast, the common approach in Europe is to provide a number of different paths for access seekers to develop competition, based on network services provided by the incumbent telecommunications operator. The industry structure in Australia appears much more closely aligned with that of European countries and New Zealand than the US, with DSL infrastructure (in the hands of an incumbent operator) being the main source of growth in the retail broadband market. This suggests that it would not be out of step with international precedents to declare a wholesale DSL service in some form.

## **7.5 Commission's considerations in relation to wholesale and retail DSL services**

The Commission notes that there are divergent views as to the whether regulating wholesale DSL services would be in the LTIE.

In large part, these reflect different views of the most appropriate use of the Part XIC telecommunications access regime in delivering effective competition in telecommunications markets.

One view is that formal access regulation should focus wherever possible on the deepest network level at which competition is (or will become) feasible. This is thought to promote the most sustainable and effective form of competition.

Another view is that access regulation should be seen as a set of tools which should be directed at facilitating further investment in network services in the longer term, but should also provide for service providers to develop a retail customer base before the more extensive network investments are required (hence reducing the risk for service providers). This has sometimes been called the 'stepping stone' or 'ladder' approach to investment.

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<sup>103</sup> Figures as at August 2005, provided by OVUM: *FCC changes rules over DSL and broadband competition*, Stefano Nicoletti, 09 August 2005

In seeking to obtain the right regulatory balance, the Commission has been cautious of regulating end-to-end wholesale services. It has mindful that doing so could result in an undesirable dependence on regulation, which could stifle a move towards a greater degree of facilities-based competition. That is, by making it easier for competitors to gain access to a wholesale service, there is some risk of reducing their incentives to invest in their own DSLAM (or alternative) infrastructure, and use more unbundled declared services such as transmission and the ULLS.

That said, a key issue which does need to be further addressed on an ongoing basis is defining at which point in the network competition is feasible. For example, it may be that in certain less populated areas, it would be uneconomic to employ multiple DSLAMs to supply DSL services. This might be due to the economies of scale involved in supplying these services. In that case, there would be benefits to competition and efficiency from ensuring that access to a wholesale DSL service on reasonable terms was available in these areas.

While relevant to consideration of current market structures, this issue appears even more relevant in relation to Telstra's FTTN proposals. As noted earlier in this report, there is a risk that an FTTN investment would undermine existing investments based on ULL services, and the economics of further investment (i.e. at the node) may be unattractive for entrants if no alternatives were available. In this environment, there may be a question as to the likely extent of facilities-based investment that could be expected.

The Commission notes that at the current time it is difficult to make a judgement on these issues. While there is evidence to suggest that competition at the wholesale level is not effective (as discussed below), submissions do not make a compelling case that declaration of a wholesale service is a priority at this time. For these reasons, the Commission does not intend to undertake a formal LTIE analysis in this draft decision.

#### **7.5.1 Relevant considerations – Wholesale DSL services**

Having noted the limited nature of this inquiry, the Commission believes that there would be some value in identifying its preliminary views on the case for the declaration of wholesale DSL services. This may also serve as a means of elucidating further information from stakeholders, which would allow the Commission to conduct a more rigorous and timely analysis.

The Commission will clearly have cause to revisit these views as further developments unfold in relation to the ongoing investment in ULL and other broadband-capable network services, and in relation to changes in Telstra's network.

The two services that have been the source of ongoing complaint to the Commission are wholesale ADSL services and wholesale business grade (BDSL) services.

#### **7.5.2 Possible service descriptions – wholesale ADSL services**

There were no specific comments on an appropriate service definition for wholesale ADSL services.

Broadly speaking, there appear to be two options in defining an appropriate service for declaration.

The first would be to define a broadly similar service to that already provided by Telstra wholesale (based on ADSL). In relation to Layer 2 services, the characteristics



of such a service would be that it uses asymmetric digital subscriber line access technology to transmit data from the boundary of a telecommunications network at an end-user's premises to an exchange. This might occur at various speeds. It might also specify how that data should be aggregated and transmitted (e.g. Layer 2 tunnelling protocol).

A second option would be to define a 'technology neutral' service, which is capable of meeting some specified standard (e.g. of certain speed and quality). Such a definition might include non-DSL based broadband services supplied by Telstra and potentially other carriers.<sup>104</sup>

While the Commission does not conclude on which type of definition would be more appropriate, it notes that an important factor in deciding on an appropriate service description would be whether it focuses on the area of "bottleneck market power". That would make the service declaration more likely to promote competition.<sup>105</sup>

## 7.6 Would declaration promote competition?

One of the key issues within the LTIE framework is whether such a declaration would promote competition. The need to assess competition points to the need to identify the relevant markets in which ADSL services are supplied.

In chapter 4, the Commission identified the markets likely to be broadly relevant to this review: national markets for the wholesale and retail supply of broadband services to residential users. Note these markets are not limited to particular technologies (e.g. ADSL), because from an end-users point of view substitution between technologies is feasible and prevalent.

Telstra appears to hold a strong position in the market for wholesale broadband services supplied to residential users. Broadband-capable networks are expensive to build and involve significant economies of scale. Telstra's market power in this market is reflected in its high and relatively stable market share. The Commission estimated that at 30 September 2005, the percentage of total broadband connections using Telstra's wholesale DSL service was around 70 per cent, while Telstra also supplies residential broadband services using HFC and wireless technologies.<sup>106</sup>

The ubiquity of Telstra's wholesale DSL service, together with Telstra's very high market share in the supply of wholesale residential broadband services, suggests that

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<sup>104</sup> Assuming that these non-DSL based broadband services are supplied in the same market, which is discussed further below.

<sup>105</sup> See Explanatory Memorandum for the Trade Practices (Telecommunications) Amendment Bill 1996 — item 6, proposed s. 152AL, which also explains that services could also be described generally to promote any-to-any connectivity. Any-to-any connectivity would not seem to be a relevant criterion for assessing whether declaration of a wholesale DSL service would be in the LTIE.

<sup>106</sup> Total ADSL connections was 2.0m, total broadband connections was 2.8m, which equates to 75 per cent. The extent of supply of ADSL services using ULL as an input is not expected to have been significant at that time. See <http://www.accc.gov.au/content/index.phtml?itemId=693170>

Telstra is currently unlikely to be meaningfully constrained in its wholesale pricing and product offering decisions.

Where competition at the wholesale level is not effective, it seems likely that declaration would improve the opportunities available to wholesale customers of Telstra to competitively supply a retail ADSL service in the short term. While there is no suggestion that Telstra has refused supply of the ADSL service, it is apparent that customers have little bargaining power in dealing with Telstra to ensure that the wholesale service is provided on reasonable terms and conditions. Consequently, over the last few years it has been the source of a number of complaints, Part XIB investigations and competition notices.

That said, there are emerging competitive constraints on Telstra. These include the supply of broadband services via separate networks (including fixed wireless networks and Optus' HFC network) and via competitors accessing Telstra's ULL services (including Optus, Primus and iiNet).<sup>107</sup> While, at this stage, these entrants lack the national coverage and the substantial economies of scale enjoyed by Telstra, in the absence of fundamental changes in Telstra's network architecture, it seems plausible Telstra's wholesale market power could be undermined over the coming years.

Further, there is a possibility that the relevant wholesale and retail markets may become more geographically disaggregated. Relatively dense areas such as CBDs tend to be developed first as the economics of investment are more attractive than in less dense areas. In these less dense areas there may be little new investment, even in the longer term. This suggests that wholesale regulation might only need to focus on certain geographic areas where competition is less effective.

The Commission also needs to consider whether any potential competitive benefits of the kind identified would be offset by the risk that declaration could inhibit longer-term competition by encouraging a degree of regulatory dependency on use of a wholesale DSL service, particularly in areas where it appears economically viable to duplicate that service via the ULL service. Such risks can be overstated – the Commission notes that these could be minimised by a commitment to declare the service only for a relatively short period – but it again emphasises that wholesale regulation may be better targeted on areas where there is unlikely to be significant ULL-based or other network entry.

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<sup>107</sup> The Commission notes that wholesale market power is not solely a function of competition from other wholesale suppliers. Retail suppliers of broadband services who do not rely on Telstra's wholesale service could also apply a competitive constraint on the supply of those wholesale services. For example, suppose that Telstra raised wholesale broadband prices from the competitive level. Assuming a reasonable degree of competition in the retail market, this would be passed through to final consumers (at least in part). This would likely cause end users to switch away from retail services using Telstra's wholesale service as in input towards those retail services that do not. The ultimate market power question is whether that substitution effect (towards retail services that do not rely on Telstra's wholesale input) is strong enough to constrain Telstra's wholesale prices to the competitive level.

The Commission also notes that there are other risks from declaration that need to be factored into any LTIE analysis. These can include those related to economic efficiency and on incentives to invest. Again, however, such risks can be overstated, as these risks primarily relate to the pricing of the wholesale service. Pricing approaches are available which mitigate the risk of pricing access services below cost, for example, an approach such as ‘retail minus’.

#### **7.6.1 Possible service descriptions – wholesale BDSL services**

Again, there were no specific comments as to an appropriate service definition for a BDSL-type service. The CCC again supported a broad definition that would enable the supply of variable quality, technologically-neutral broadband services.

As noted above, Telstra currently supplies wholesale BDSL services – a symmetric, high quality data service with a number of different access seeker / end user configurations. It would seem that Telstra’s current wholesale service could therefore form the basis of an appropriate service description for the purposes of the following discussion.

#### **Would declaration of a wholesale BDSL service promote competition?**

The Commission’s preliminary analysis suggests that there are likely to be two relevant product markets in which BDSL services are supplied:

- a wholesale market for the supply of BDSL and other medium bandwidth, business grade data services to wholesale customers; and
- a retail market for the supply of business grade data services (including BDSL) to retail customers.

The Commission accepts the view put forward by Optus that the scope of substitution from other ‘business grade’ data services is likely to be quite narrow – in particular, the Commission rejects the view that services such as Transmission, Frame Relay, ISDN and ATM are effective substitutes for BDSL. In areas where retail BDSL services are commonly supplied, technological substitutability is in many cases possible, but the pricing differences between the services are very significant, and wholesale customers could not realistically substitute these for BDSL. In terms of a more formal SSNIP analysis, it appears that the pricing differences between BDSL services and many substitutes are significantly greater than the 5-10 per cent threshold for the ‘hypothetical monopolist’ test, meaning that a price rise of this magnitude from the competitive level would not result in effective substitution. This is suggestive of relatively narrow markets.

Evidence put forward in submissions also suggests that the geographic dimensions of the wholesale and retail markets are likely to be different. The relevant wholesale markets are likely to be much more narrowly defined, as substitution by customers to alternative services (or alternative suppliers) will simply not be possible in many geographic areas where Telstra has already established a presence. Telstra is the sole provider of symmetrical DSL services in most non-metropolitan areas of Australia. Competitors wishing to supply to these retail customers have claimed to the Commission that it is virtually impossible to provide a competing retail service without wholesale BDSL as an input due to price and functionality differences.

By contrast, the relevant retail market appears to be broader (perhaps national), reflecting the fact that even though there may be limited substitution between BDSL and other retail services, many retail business customers operate in both metropolitan

and regional areas, and most competitors consequently seek to provide a national service to business customers.

The degree of competition in the various wholesale geographic markets varies substantially. In many areas characterised by extensive fibre networks or rivalrous BDSL infrastructure, competition appears to be relatively effective (noting that competition in these areas is often still dependent on reasonable access to Telstra's ULL service). However, in areas where there has been only limited DSLAM deployment (i.e. by Telstra), concerns remain as to the ability of competitors to access wholesale services which would allow them to competitively supply services to retail customers.

It is also notable that Telstra geographically de-averages its wholesale and retail prices for BDSL services, with higher prices in more remote areas. While this is consistent with higher costs of serving customers in less dense areas, it is also consistent with the view that it faces less competition in those areas. This pricing appears to present a particular problem for wholesale customers who want to supply end-users that have sites in multiple geographic areas – some where there is a reasonable degree of competition, and others where that competition is lacking.<sup>108</sup>

Given that the relevant retail market appears to be national, it may be relatively straightforward to determine whether declaration of a BDSL service would promote competition. Declaration of a BDSL service in those areas of limited competition would seem likely to assist those access seekers who seek to provide a business grade data service on a national basis, particularly to multi-site customers. That said, it would not be a simple exercise to determine in which wholesale markets BDSL services should be declared – while it may be relevant to examine the issues in relation to existing network investments, there is potential for those investments (and the market analysis) to change over time.

This returns us back to the fundamental question of whether competition would be more effectively promoted by providing support only for those prepared to invest in network infrastructure (which may result in greater sustainability of competition), or whether the Commission should provide multiple paths for access seekers to provide competitive retail services.

## **7.7 Preliminary conclusions**

In this section of the report, the Commission has examined a limited set of the issues surrounding the potential declaration of wholesale DSL services. It has not undertaken a formal LTIE analysis, nor considered specific service definitions. Rather, the Commission has sought to outline some of the relevant issues in light of both fundamental strategic issues around the use of Part of XIC and of recent network developments.

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<sup>108</sup> It should be noted that the ACCC will be issuing pricing guidance on ULLS shortly which revises prices downwards from existing de-averaged levels and which in the process reduces the disparity of pricing between city and regional areas.

Given the prevailing uncertainties, it would be difficult to definitively analyse the impact of any DSL declaration. At this point, the Commission believes that certain issues surrounding the supply of wholesale DSL services remain, and that the wholesale markets within which both ADSL and BDSL services are supplied are not effectively competitive. This suggests there could be some potential benefits from service declaration. That said, the case for declaration is not currently overwhelming – particularly in light of the relatively sparse submissions that were received on this issue. There are certain risks involved in declaring wholesale services, particularly in terms of the effect on facilities-based competition and in light of possible future network developments. Issues of differences in the geographic scope of competition are also highly relevant, yet were not addressed in detail in submissions.

The Commission believes that there is some further scope to consider these issues in the future, and seeks comment on the analysis presented in this chapter to further its understanding of the effect any declaration could reasonably be expected to have on the LTIE.

## Chapter 8      Conditioned Local Loop Service

The conditioned local loop service (CLLS) was deemed as a declared service in 1997 because it had been provided by Telstra to Optus as part of the original access agreement in the early 90s. It provides a type of managed local loop service, but the scope of this service and its precise use has never been clear in the post 1997 environment. It appears that the service would be mainly used to provide voice grade or services over the voice-band of a copper line. Section 152AO (1) of the TPA states that

1(A) If:

- i) a declaration under section 152AL relates to a particular service; and
- ii) in the Commission's opinion, the service is of minor importance;

the Commission is not required to hold a public inquiry under Part 25 of the *Telecommunications Act 1997* about a proposal to revoke the declaration.

The Commission is not aware of whether there has been any material use of this service since 1997 and it is not even clear whether Optus still acquires this service.

Therefore, in the discussion paper, the Commission advised its intention that, subject to any views, it would revoke this declaration at the expiry of this service in June 2006.

The Commission did not receive any submissions in relation to the CLLS; therefore in accordance with section 152AO (1) of the TPA, the Commission's draft decision is to revoke the declaration of the CLLS.

# Appendix 1 Legislative background

## The access regime

Part XIC of the TPA sets out a telecommunications access regime. The Commission may determine that particular carriage services and related services are declared services. Once a service is declared, carriage service providers (CSPs) are required to comply with standard access obligations (SAOs) in relation to supply of the declared service. The SAOs facilitate the provision of access to declared services by service providers in order that service providers can provide carriage services and/or content services. In addition to its SAOs, a carrier, CSP or related body must not prevent or hinder access to a declared service.

## Maintaining, varying or revoking an existing declaration

Section 152ALA of the *Trade Practices Act 1974* ('the TPA') requires the Commission to review each declaration within the year preceding its expiry date.

The purpose of the review, as set out in section 152ALA(7) of the TPA, is to determine whether or not the expiry date for the declaration should be extended, whether the declaration should be allowed to expire, whether or not the declaration should be varied or revoked or if a new declaration should be made. An extension to an expiry date, or the expiry date for a new declaration, may not be for a period exceeding five years.

Pursuant to section 152ALA of the TPA, the Commission must:

- hold a public inquiry in accordance with Part 25 of the Telecommunications Act 1997 on whether to extend the expiry date for the declaration, vary or revoke the declaration, or allow the declaration to expire (with or without a new declaration being made)
- prepare and publish a report setting out the Commission's findings.

The Commission's powers to extend the expiry date for a declaration, vary or revoke a declaration, or allow a declaration to expire (with or without a new declaration being made), are set out in sections 152AL, 152ALA and 152AO of the TPA. In exercising these powers, the Commission is required to consider the effect on the LTIE of carriage services and services provided by means of carriage services.

## The Commission's approach to the LTIE test

The Commission must decide whether declaring the service would promote the LTIE of carriage services, or of services supplied using carriage services ('listed services').

Section 152AB of the TPA provides that, in determining whether declaration promotes the LTIE, regard must be had only to the extent to which declaration is likely to result in the achievement of the following objectives.

- promoting competition in markets for listed services
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users

- encouraging the economically efficient use of, and the economically efficient investment in, the infrastructure by which telecommunications services are supplied.

Section 152AB also provides further guidance in interpreting these objectives.

The three objectives are discussed below.

### **Promoting competition**

Subsections 152AB(4) and (5) provide that, in interpreting this objective, regard must be had to, but is not limited to, the extent to which the arrangements will remove obstacles to end-users gaining access to listed services. The Explanatory Memorandum to Part XIC of the TPA states that:

...it is intended that particular regard be had to the extent to which the...[declaration]... would enable end-users to gain access to an increased range or choice of services.<sup>109</sup>

This criterion requires the Commission to make an assessment of whether or not declaration would be likely to promote competition in the markets for listed services.

The concept of competition is of fundamental importance to the TPA and has been discussed many times in connection with the operation of Part IIIA, Part IV, Part XIB and Part XIC of the TPA.

In general terms, competition is the process of rivalry between firms, where each market participant is constrained in its price and output decisions by the activity of other market participants. The Trade Practices Tribunal (now the Australian Competition Tribunal) stated that:

In our view effective competition requires both that prices should be flexible, reflecting the forces of demand and supply, and that there should be independent rivalry in all dimensions of the price-product-service packages offered to consumers and customers.

Competition is a process rather than a situation. Nevertheless, whether firms compete is very much a matter of the structure of the markets in which they operate.<sup>110</sup>

Competition can provide benefits to end-users including lower prices, better quality and a better range of services over time. Competition may be inhibited where the structure of the market gives rise to market power. Market power is the ability of a firm or firms profitably to constrain or manipulate the supply of products from the levels and quality that would be observed in a competitive market for a significant period of time.

The establishment of a right for third parties to negotiate access to certain services on reasonable terms and conditions can operate to constrain the use of market power that could be derived from the control of these services. Accordingly, an access regime such as Part IIIA or Part XIC addresses the *structure* of a market, to limit or reduce the sources of market power and consequent anti-competitive conduct, rather than directly

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<sup>109</sup> Trade Practices Amendment (Telecommunications) Act 1997 (Cth) Explanatory Memorandum.

<sup>110</sup> Re Queensland Co-operative Milling Association Ltd; Re Defiance Holdings Ltd (1976) ATPR 40-012, 17,245.



regulating conduct which may flow from its use, which is the role of Part IV and Part XIB of the TPA. Nonetheless, in any given challenge to competition, both Parts XIB (or IV) and XIC may be necessary to address anti-competitive behaviour.

To assist in determining the impact of potential declaration on downstream markets, the Commission will first need to identify the relevant market(s) and assess the likely effect of declaration on competition in each market.

Section 4E of the TPA provides that the term ‘market’ includes a market for the goods or services under consideration and any other goods or services that are substitutable for, or otherwise competitive with, those goods or services. The Commission’s approach to market definition is discussed in its *Merger Guidelines*, June 1999 and is also canvassed in its information paper, *Anti-competitive conduct in telecommunications markets*, August 1999.

The second step is to assess the likely effect of declaration on competition in each relevant market. As noted above, subsection 152AB(4) requires that regard must be had to the extent to which declaration will remove obstacles to end-users gaining access to listed services.

The Commission considers that denial to service providers of access to necessary upstream services on reasonable terms is a significant obstacle to end users gaining access to services. In this regard, declaration can remove such obstacles by facilitating entry by service providers, thereby providing end users with additional services from which to choose. For example, access to a mobile termination service may enable more service providers to provide fixed to mobile calls to end-users. This gives end-users more choice of service providers.

Where existing market conditions already provide for the competitive supply of services, the access regime should not impose regulated access.<sup>111</sup> This recognises the costs of providing access, such as administration and compliance, as well as potential disincentives to investment. Regulation will only be desirable where it leads to benefits in terms of lower prices, better services or improved service quality for end-users that outweigh any costs of regulation.

In the context of considering whether declaration will promote competition, it is therefore appropriate to examine the impact of the proposed service description on each relevant market, and compare the state of competition in that market with and without declaration. In examining the market structure, the Commission considers that competition is promoted when market structures are altered such that the exercise of market power becomes more difficult; for example, because barriers to entry have been lowered (permitting more efficient competitors to enter a market and thereby constrain the pricing behaviour of the incumbents) or because the ability of firms to raise rivals’ costs is restricted.<sup>112</sup>

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<sup>111</sup> Trade Practices Amendment (Telecommunications) Act 1997 (Cth) Explanatory Memorandum.

<sup>112</sup> See also *Re Sydney International Airport* [2000] ACompT 1 at paragraph 106 for discussion on when competition is promoted.

### **Any-to-any connectivity**

Subsection 152AB(8) provides that the objective of any-to-any connectivity is achieved if, and only if, each end-user who is supplied with a carriage service that involves communication between end-users is able to communicate, by means of that service, or a similar service, with other end-users whether or not they are connected to the same network. The reference to ‘similar’ services in the TPA enables this objective to apply to services with analogous, but not identical, functional characteristics, such as fixed and mobile voice telephony services or Internet services which may have differing characteristics.

The any-to-any connectivity requirement is particularly relevant when considering services that involve communications between end-users.<sup>113</sup> When considering other types of services (such as carriage services that are inputs to an end-to-end service or distribution services such as the carriage of pay television), the Commission considers that this criterion will be given less weight compared to the other two criteria.

### **Efficient use of, and investment in, infrastructure**

Subsections 152AB(6) and (7) provide that, in interpreting this objective, regard must be had to, but not limited to, the following:

- whether it is technically feasible for the services to be supplied and charged for, having regard to:
  - the technology that is in use or available
- whether the costs that would be involved in supplying, and charging for, the services are reasonable
- the effects, or likely effects, that supplying, and charging for, the services would have on the operation or performance of telecommunications networks
- the legitimate commercial interests of the supplier or suppliers of the service, including the ability of the supplier or suppliers to exploit economies of scale and scope
- the incentives for investment in:
  - the infrastructure by which the services are supplied; and
  - any other infrastructure by which the services are, or are likely to become, capable of being supplied:
- in determining the extent to which a particular thing is likely to encourage the efficient investment in other infrastructure, the Commission must have regard to the risks involved in making the investment.

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<sup>113</sup> Trade Practices (Telecommunications) Amendment Act 1997 (Cth) Explanatory Memorandum.

These matters are interrelated. In many cases, the LTIE may be promoted through the achievement of two or all of these criteria simultaneously. In other cases, the achievement of one of these criteria may involve some trade-off in terms of another of the criteria, and the Commission will need to weigh up the different effects to determine whether declaration promotes the LTIE. In this regard, the Commission will interpret long-term to mean the period of time necessary for the substantive effects of declaration to unfold.

Economic efficiency has three components.

***Productive efficiency*** refers to the efficient use of resources within each firm such that all goods and services are produced using the least cost combination of inputs.

***Allocative efficiency*** refers to the efficient allocation of resources across the economy such that the goods and services that are produced in the economy are the ones most valued by consumers. It also refers to the distribution of production costs amongst firms within an industry to minimise industry-wide costs.

***Dynamic efficiency*** refers to the efficient deployment of resources between present and future uses such that the welfare of society is maximised over time. Dynamic efficiency incorporates efficiencies flowing from innovation leading to the development of new services, or improvements in production techniques.

The Commission will need to ensure that the access regime does not discourage investment in networks or network elements where such investment is efficient. The access regime also plays an important role in ensuring that existing infrastructure is used efficiently where it is inefficient to duplicate investment in existing networks or network elements.

### **The technical feasibility of supplying and charging for particular services**

This incorporates a number of elements, including the technology that is in use or available, the costs of supplying, and charging for, the services and the effects on the operation of telecommunications networks.

In many cases, the technical feasibility of supplying and charging for particular services given the current state of technology may be clear, particularly where there is a history of providing access. The question will be more difficult where there is no prior access, or where conditions have changed. Experience in other jurisdictions, taking account of relevant differences in technology or network configuration, will be helpful. Generally the Commission will look to an access provider to demonstrate that supply is not technically feasible.

### **The legitimate commercial interests of the supplier or suppliers, including the ability of the supplier to exploit economies of scale and scope**

A supplier's legitimate commercial interests encompass its obligations to the owners of the firm, including the need to recover the cost of providing services and to earn a normal commercial return on the investment in infrastructure. The Commission considers that allowing for a normal commercial return on investment will provide an appropriate incentive for the access provider to maintain, improve and invest in the efficient provision of the service.

A significant issue relates to whether or not capacity should be made available to an access seeker. Where there is spare capacity within the network, not assigned to current or planned services, allocative efficiency would be promoted by obliging the owner to release capacity for competitors.

Paragraph 152AB(6)(b) also requires the Commission to have regard to whether the access arrangement may affect the owner's ability to realise economies of scale or scope. Economies of scale arise from a production process in which the average (or per unit) cost of production decreases as the firm's output increases. Economies of scope arise from a production process in which it is less costly in total for one firm to produce two (or more) products than it is for two (or more) firms to each separately produce each of the products.

Potential effects from access on economies of scope are likely to be greater than on economies of scale. A limit in the capacity available to the owner may constrain the number of services that the owner is able to provide using the infrastructure and thus prevent the realisation of economies of scope associated with the production of multiple services. In contrast, economies of scale may simply result from the use of the capacity of the network and be able to be realised regardless of whether that capacity is being used by the owner or by other carriers and service providers. Nonetheless, the Commission will assess the effects of the supplier's ability to exploit both economies of scale and scope on a case-by-case basis.

### **The impact on incentives for investment in infrastructure**

Firms should have the incentive to invest efficiently in infrastructure. Various aspects of efficiency have been discussed already. It is also important to note that while access regulation may have the potential to diminish incentives for some businesses to invest in infrastructure, it also ensures that investment is efficient and reduces the barriers to entry for other (competing) businesses or the barriers to expansion by competing businesses.

There is also a need to consider the effects of any expected disincentive to investment from anticipated increases in competition to determine the overall effect of declaration on the LTIE. The Commission will be careful to ensure that services are not declared where there is a risk that incentives to invest may be dampened, such that there is little subsequent benefit to end-users from the access arrangements.

## Appendix 2: Service description for the unconditioned local loop service

The unconditioned local loop service is the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user's premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with a customer access module and located on the end-user side of the customer access module.

### Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

In this Appendix:

**boundary of a telecommunications network** is the point ascertained in accordance with section 22 of the Telecommunications Act 1997;

**communications wire** is a copper based wire forming part of a public switched telephone network;

**customer access module** is a device that provides ring tone, ring current and battery feed to customers' equipment. Examples are Remote Subscriber Stages, Remote Subscriber Units, Integrated Remote Integrated Multiplexers, Non-integrated Remote Integrated Multiplexers and the customer line module of a Local Access Switch;

**public switched telephone network** is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies.

Note:

If a carrier or a carriage service provider supplies "declared services" (whether to itself or to other persons), the carrier or carriage service provider is taken to be an "access provider" and the declared services are taken to be "active declared services" (section 152AR(2) of the Act). The "standard access obligations" of access providers in relation to active declared services are set out in sections 152AR(3), 152AR(5), 152AR(6), 152AR(7) and 152AR(8) of the Act.

An access provider must, if requested to do so by a service provider, take all reasonable steps to ensure that:

- the technical and operational quality of the active declared service supplied to the service provider is equivalent to that which the service provider provides to itself (section 152AR(3)(b) of the Act); and
- the service provider receives, in relation to the active declared service supplied to the service provider, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself (section 152AR(3)(c) of the Act).

If an access provider either owns or controls one or more facilities, or is a nominated carrier in relation to one or more facilities, it must, if requested to do so by a service provider:

- permit interconnection of those facilities with the facilities of the service provider (section 152AR(5)(c) of the Act); and
- take all reasonable steps to ensure that the technical and operational quality and timing of the interconnection is equivalent to that which the access provider provides to itself (section 152AR(5)(d) of the Act); and
- take all reasonable steps to ensure that the service provider receives, in relation to the interconnection, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the service provider provides to itself (section 152AR(5)(e) of the Act).

If a service provider uses active declared services supplied by an access provider in order for it to provide carriage services and/or content services, the access provider must, if requested to do so by the service provider, give the service provider billing information in connection with the services (section 152AR(6) of the Act). The billing information provided must comply with the Trade Practices Regulations (section 152AR(7) of the Act).

Access providers also have other standard access obligations under section 152AR of the Act.

The terms and conditions of access to a declared service are as agreed between an access seeker and an access provider. Failing agreement, the terms and conditions of access are as set out in an undertaking that has been accepted by the Commission, or, as determined by the Commission following an arbitration. In addition, model terms and conditions relating to compliance with the standard access obligations are contained in the approved TAF Access Code and may also be relevant.

## **Appendix 3: Possible Domestic PSTN originating access service description**

**Note:** proposed deletions are highlighted by strike-through text; and proposed additions are highlighted by underlined text.

### **Service description and definitions**

An access service for the carriage of telephone ~~(ie PSTN and PSTN equivalent such as voice from ISDN)~~ calls ~~(ie voice, data over the voice band)~~ to a POI from end-customers assigned numbers from the geographic number ranges of the Australian Numbering Plan and directly connected to the Access Provider's network. For the avoidance of doubt, the service also includes a service for the carriage of telephone calls from customer equipment at an end-user's premises to a point of interconnection, or potential point of interconnection, located at or associated with a local switch (being the switch closest to the end-user making the telephone call) and located on the outgoing trunk side of the switch.

The following service description is provided for Domestic PSTN originating access and applies to the provision of Domestic PSTN Originating access service by any Access Provider (AP) to any Access Seeker (AS).

The Service as described comprises a number of different elements as follows:

Access via Preselection, AS number ranges such as those numbers listed in POASD7 or 14xy Override code as required to achieve the objective of any-to-any connectivity

Call Barring

POI Location

Forwarding a call beyond the POI of table OASD2 to OASD3 where applicable (see POIs below)

Signalling

CLI provision

Provision of Switchports

Network Conditioning

Fault Handling

Inter C/CSP Billing

Restrictions on availability and others factors relating to the provision of Access are further described below.

In accordance with the Trade Practices Act Part XIC, these elements:

may not be available from all APs

may have restrictions in their availability

### **Availability**

The availability of the services may vary depending on the geographic and technical capability of the AP's network at the time at which a request for the service is made or the service is delivered.

The AP will make available to ASs documents describing the availability of this service on its network. See Services & Interconnection hand over arrangements below.

### **Channel Capacity**

The service will establish a connection for the purposes of voice communication with the standard bandwidth of 3.1kHz.

The service will establish a connection for the purpose of the provision of services over the voice band with the standard bit rate of 64 Kbit/s.

### **Services**

The service is provided on a call that is made with:

preselection, or

a AS specific code including Special Services codes and number ranges (with some exceptions) as per table POASD7, or

a long distance, international or shared operator codes dialled with an over-ride/access code in accordance with the Australian Numbering Plan.

The AP will publish at least half yearly, tables detailing the geographic number ranges where there are restrictions on the provision of this service.

### **Service Restrictions**

At least annually, the AP will advise of end-customer services that may restrict the provision of this service eg. Real Time Metering in a Table POASD5.

### **Barring**

The AP may provide a service that will allow barring of over-ride codes at the request of the end -customer.

End-customers may request generic barring services which may restrict access to these services.

The AP should detail this barring in a table POASD6.

### **Interconnection handover arrangements**

The AP and the AS are each responsible for the provision, installation, testing, making operational and monitoring of all the network on their respective sides of the POI.

### **POIs**

"Point of Interconnection" or "POI" means an agreed location which:

is a physical point of demarcation between the networks nominated by the AS and the AP; and

is associated (but not necessarily co-located with) with one or more gateway exchanges of each of the networks nominated by the AS and the AP in respect of the POIs nominated by the AP.

Calls originated by the A-party will be handed over to the AS at Points of Interconnection agreed by the AS and the AP in accordance with POI locations and POI designation for codes.



## **POI locations**

The AP will provide a table (Table POASD1) listing of POIs where this service may be provided. This listing will be updated at least annually. The AS may request a point of interconnect with the AP's network at a location other than one specified by the AP. The AP must, to the extent technically and operationally feasible, permit the location of a point of interconnect at that location.

## **POI designation for codes**

The AP will provide a table (Table POASD2) listing of the geographic number ranges associated with each POI, upgraded from time to time to include the listing of the number range associated with each new POI for networks utilising IP-based protocols. When Originating Access is being provided access from these codes will be provided at the corresponding POI. The POIs in table OASD2 will be the POI for "near end handover" of calls from the origins listed.

The AP will provide a table (Table POASD3) listing of POIs and of associated POIs from which traffic that could have been handed over as per table POASD2 may be collected. [Different charges will be payable where traffic that could have been collected at the POI in table POASD2 is collected at a POI in table POASD3.]

The AP will indicate how these tables POASD2 and POASD3 apply to the different call types of paragraph 1.3.

The provisions of this Service Description apply to traffic collected at POIs listed in Table POASD2 or POASD3

## **Signalling**

Signals for this service will use CCS#7 signalling. Unless otherwise agreed, this CCS#7 signalling will be in accordance with the NIIF/ACIF Interconnection-ISUP specification.

The AP will provide a table (Table OASD4) of the locations where the AS may interconnect its CCS#7 signalling network with that of the AP for the purpose of accepting this service.

Signalling interconnection may not be provided at all POI's. The POIs of 1.4.1.1 may provide for interconnection of only voice circuits. Control of voice circuits where direct signalling interconnection is not provided, will be via "quasi-associated signalling" using Signalling Transfer Point (STP) operation, with signalling via a nominated other gateway where signalling interconnection is provided.

Signalling for this service may also use other IP-based protocols as agreed between the parties.

## **CLI**

The CLI of the A-party will be provided as part of the CCS#7 signalling or any other agreed signaling system for this service.

## **Nature of switchports**

At POIs the calls will be delivered to the AS at 2.048Mbit/sec Switchports. The switchports will operate at 2.048Mbit/sec in accordance with the ITU Recommendations G.703, G. 704 and G.732 (Blue Book).

### **Send and receive speech levels**

The send and receive levels for speech will be -13 dBr unless specified otherwise in the Australian Network Performance Plan.

The AP will not provide Echo Control unless this is a requirement within the AP's own network for calls between the end customer and the AP's gateway exchange.

### **Forecasting, ordering and provisioning arrangements**

#### **Interconnection forecasting and planning requirements**

##### **Forecast of port requirements**

For each POI the AS should provide forecasts, at least half yearly, of switchport requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the switchport requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days. Forecasts will be used by the AP for network planning and not for charging purposes.

##### **Forecast of network capacity requirements**

For each POI and for each of the AP's charging districts the AS should provide forecasts, at least half yearly, of traffic requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. These forecasts should provide daily and weekly profiles for the traffic forecasted and advice of any material non-uniformities in the dispersion of the sources of originating access traffic. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the traffic requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days.

##### **Ordering of Switchports**

The AP will accept orders for switchports up to the level of the agreed forecasts for each POI. The AS should order switchports allowing 6 months for their provision.

The AP will provide access up to the level of the agreed traffic forecasts for each POI.

The AS may request and the AP will give reasonable consideration to such provision, but is under no obligation to provide access of switchports above the level of the agreed forecasts. If such access is provided, delivery times may be longer than those specified in Ordering of Switchports.

#### **Interconnection Ordering Requirements**

##### **Compliance testing**

The AS will be required to demonstrate compliance with the agreed CCS#7 signalling System or any other agreed signalling system prior to the provision of the service.

The AP and the AS will develop an agreed test plan and the AS will provide results of tests to this plan from an appropriate test house or other such party. The AP will provide results of such tests if it is not otherwise seeking a switched access service from the AS.

The AP and the AS shall review the test results of the agreed test plan within 20 business days and if the AP accepts that the test results of the agreed test plan are satisfactory then the AP and the AS will agree a date for commissioning tests.

The test results of the agreed test plan will form the prime documentary basis for ongoing operations, fault analysis and fault management of signalling between the AP and the AS.

### **Network Conditioning**

In respect to PSTN-related services, Network Conditioning of the AP's network will be required before the provision of the service.

### **Operational and Fault handling arrangements**

The AP will provide a contact point for the Operation and Maintenance of the service. Faults may be reported to this centre which will manage the clearance of these faults.

### **Inter C/CSP Billing frequency**

The AP will invoice the AS on a monthly basis for this service.

### **Provision of Tones and Network Announcements**

Where calls attempting this service do not progress to the POI the call may be connected to tones as per AUSTEL Technical Standard TS002 or to a network RVA in the AP's network.

### **Customer Billing**

Customer billing should be in accordance with an approved telecommunications access code.

### **Domestic PSTN terminating access**

#### **Service description and definitions**

An access service for the carriage of telephone (~~ie. PSTN and PSTN equivalent such as voice from ISDN~~) calls (~~ie. Voice, data over the voice band~~) from a POI to end-customer assigned numbers from the geographic number ranges of the Australian Numbering Plan and directly connected to the Access Provider's network. For the avoidance of doubt, the service also includes a service for the carriage of telephone calls from a point of interconnection, or potential point of interconnection, located at or associated with a local switch and located on the incoming trunk side of the switch to customer equipment at an end-user's premises.

The following service description is provided for Domestic PSTN terminating access and applies to the provision of Domestic PSTN Terminating access service by any AP to any AS (AS).

The Service as described comprises a number of different elements as follows:

Access for calls forwarded for termination in the AP's fixed network

POI Location

Forwarding a call beyond the POI of table TPASD3 to TPASD2 where applicable (see POIs below)

Signalling

CLI provision

Provision of Switchports

Network Conditioning

Fault Handling -

Inter C/CSP Billing

Restrictions on availability and others factors relating to the provision of Access are further described below.

In accordance with the Trade Practices Act Part XIC these elements

may not be available from all APs

may have restrictions in their availability

Domestic PSTN Terminating Access" is an Access Service for the carriage of telephone (ie PSTN and PSTN equivalent such as voice from ISDN) calls (ie. voice, data over the voice band) from a POI to end-customers assigned numbers from the geographic number ranges of the Australian Numbering Plan and directly connected to the AP's network.

### **Availability**

The availability of the services may vary depending on the geographic and technical capability of the AP's network at the time at which a request for the service is made or the service is delivered.

The AP will make available to ASs documents describing the availability of this service on its network. See Services & Interconnection Handover arrangements

### **Channel Capacity**

The service will establish a connection for the purposes of voice communication with the standard bandwidth of 3.1kHz.

The service will establish a connection for the purpose of the provision of services over the voice band with the standard bit rate of 64 Kbit/s.

### **Services**

The service is provided on a call that is handed over for termination to a customer directly connected to the AP's network with numbering in accordance with the Australian Numbering Plan.

### **Service Restrictions**

At least annually, the AP will advise of end-customer services that may restrict the provision of this service eg. Services barred from accepting Reverse Charge Calls in a Table PTASD5.

### **Interconnection Handover arrangements**

The AP and the AS are each responsible for the provision, installation, testing, making operational and monitoring of all the network on their respective sides of the POI.

### **POIs**

"Point of Interconnection" or "POI" means an agreed location which:

is a physical point of demarcation between the networks nominated by the AS and the AP; and

is associated (but not necessarily co-located with) with one or more gateway exchanges of each of the networks nominated by the AS and the AP.

Calls originated by the A-party will be handed over to the AS at Points of Interconnection agreed by the AS and the AP in respect of the POIs nominated by the AP in accordance with POI locations and POI designation for codes.

### **POI locations**

The AP will provide a table (Table PTASD1) listing of POIs where this service may be provided. This listing will be updated at least annually. The AS may request a point of interconnect with the AP's network at a location other than one specified by the AP. The AP must, to the extent technically and operationally feasible, permit the location of a point of interconnect at that location.

### **POI designation for codes**

The AP will provide a table (Table PTASD2) listing of the geographic number ranges associated with each POI upgraded from time to time to include the listing of the number range associated with each new POI for networks utilising IP-based protocols. When Terminating Access is being provided access to these codes will be provided at the corresponding POI. The POIs in table PTASD2 will be the POI for "far end handover" of calls to the destinations listed.

The AP will provide a table (Table TPASD3) listing of POIs and of associated POIs from which traffic that could have been handed over as per table TPASD2 may be handed over for termination. [Different charges will be payable where traffic that could have been handed over at the POI in table TPASD2 is handed over at a POI in table TPASD3.]

The provisions of this Service Description apply to traffic handed over at POIs listed in Table PTOASD2 or PTOASD3

### **Signalling**

Signals for this service will use CCS#7 signalling. Unless otherwise agreed, this CCS#7 signalling will be in accordance with the NIIF/ACIF Interconnection-ISUP specification.

The AP will provide a table (Table PTASD4) of the locations where the AS may interconnect its CCS#7 signalling network with that of the AP for the purpose of accepting this service.

Signalling interconnection may not be provided at all POI's. These POI's would provide for interconnection of voice circuits only. Control of voice circuits where direct signalling interconnection is not provided, will be via "quasi-associated signalling" using Signalling Transfer Point (STP) operation, with signalling via a nominated other gateway where signalling interconnection is provided.

Signalling for this service may also use other IP-based protocols as agreed between the parties.

## **CLI**

Unless otherwise agreed the CLI of the A-party should be provided as part of the CCS#7 signalling or any other agreed signalling system for this service.

## **Nature of switchports**

At POIs the calls will be delivered to the AS at 2.048Mbit/sec Switchports. The switchports will operate at 2.048Mbit/sec in accordance with the ITU Recommendations G.703, G. 704 and G.732 (Blue Book).

## **Send and receive speech levels**

The send and receive levels for speech will be -13 dBr unless specified otherwise in the Australian Network Performance Plan.

The AP will not provide Echo Control unless this is a requirement within the AP's own network for calls between the end customer and the AP's gateway exchange.

## **Interconnection Forecasting, ordering and provisioning arrangements**

### **Forecasting and planning requirements**

#### **Forecast of port requirements**

For each POI the AS should provide forecasts, at least half yearly, of switchport requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the switchport requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days. Forecasts will be used by the AP for network planning and not charging purposes.

#### **Forecast of network capacity requirements**

For each POI and for each charging district of the AP the AS should provide forecasts, at least half yearly, of traffic requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. These forecasts should provide daily and weekly profiles for the traffic forecasted and advice of any material non-uniformities in the dispersion of the terminating access traffic. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the traffic requirements from operative dates of at the end of the quarters ie 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days.

#### **Ordering of Switchports**

The AP will accept orders for switchports up to the level of the agreed forecasts for each POI. The AS should order switchports allowing 6 months for their provision.

The AP will provide access up to the level of the agreed traffic forecasts for each POI.

The AS may request and the AP will give reasonable consideration to, and use reasonable endeavours to provide, such provision, but is under no obligation to provide access or switchports above the level of the agreed forecasts. If such access is provided, delivery times may be longer than those specified in Ordering of Switchports.

## **Interconnection Ordering Requirements**

### **Compliance testing**

The AS will be required to demonstrate compliance with the agreed CCS#7 signalling system or any other agreed signalling system prior to the provision of the service.

The AP and the AS will develop an agreed test plan and the AS will provide results of tests to this plan from an appropriate test house or other such party. The AP will provide the results of such tests if it is not otherwise seeking a switch access service from the AS.

The AP and the AS shall review the test results of the agreed test plan within 20 business days and if the AP accepts that the test results of the agreed test plan are satisfactory then the AP and the AS will agree a date for commissioning tests.

The test results of the agreed test plan will form the prime documentary basis for ongoing operations, fault analysis and fault management of signalling between the AP and the AS.

### **Network Conditioning**

In respect to PSTN-related services, Network Conditioning of the AP's network will be required before the provision of the service.

### **Operational and Fault handling arrangements**

The AP will provide a contact point for the Operation and Maintenance of the service. Faults may be reported to this centre which will manage the clearance of these faults.

### **Inter C/CSP Billing frequency**

The AP will invoice the AS on a monthly basis for this service.

### **Provision of Tones and Network Announcements**

Where calls attempting this service do not progress to the end customer the call may be connected to tones as per AUSTEL Technical Standard TS002 or to a network RVA in the AP's network.

### **Customer Billing**

Customer billing should be in accordance with an approved telecommunications access code.