

ACCC Submission – POIs and Satellite – Australian Private Networks (APN)

Summary

This submission to the ACCC consultation by Australian Private Networks (APN) on the proposed points of Interconnect (POI) is a plea on behalf of the remote Australians to realise the benefit of the competitive supply of broadband satellite services with the NBN Co Long Term Satellite Service (LTSS). The current proposal by the ACCC and NBN Co of a ‘technology agnostic’ approach to broadband access flies in the face of the reality of satellites being ‘location agnostic’ and imposes barriers to entry which also impact technical performance. The APN submission does not take issue with the number of 121 POIs proposed but with the proposed requirement that any customer of broadband satellite be interconnected by their service provider at their ‘nearest’ POI. The proposal will impose such backhaul costs that would make service provision by specialist broadband satellite providers like APN impossible in all but a few selected areas.

1. Introduction

APN and Broadband Satellite

Since 2003, Australian Private Networks Pty Ltd (APN) trading as Activ8me www.activ8me.net.au has been providing satellite-based Internet services to customers across Australia. It has grown to become the pre-eminent ISP in rural and remote Australia.

APN has provided satellite Internet services to over 43,500 customers across Australia, and in the process has become expert in the installation and maintenance of satellite services in rural and remote Australia. We have made major investments in our management systems and processes ensuring we deliver the best possible products and services. The result is a fully integrated service that combines order management, hardware procurement, warehousing and logistics and service delivery into a seamless package that gets customers connected as soon as possible and keeps them informed during the process.

In recent years APN has diversified into related markets:

- Since May 2009, APN has installed 230 large public telephones (ICP phones) in remote areas of Australia, under the Department of Broadband, Communications and the Digital Economy’s Indigenous Communications Program. This programme has been widely recognised for its achievements
- Since 2009, APN has steadily increased the range of products that it sells to its markets; new products includes satellite-connected mobile phones, wireless 3G internet dongles, VOIP services, ADSL, home phone lines and more

- Since 2011, APN has been an accredited NBN Supplier and now re-sells the full range of fibre, wireless and satellite services

APN is thus nominally well placed to help implement the NBN Co's objectives, particularly in terms of the "last 3%" i.e. the satellite services. In this arena APN can continue to be an important player, transitioning to retailing the NBN Co Ka band wholesale offering if the market environment including the cost of backhaul is viable.

Satellite a Key Component of the NBN

Broadband satellite is a core component of the National Broadband Network (NBN) to provide all Australians independent of location access to affordable broadband. Broadband satellite has been key to providing broadband services prior to the NBN decision supported by the Australian Broadband Guarantee (ABG) program. The transition to the improved NBN Co's Interim Satellite Service (ISS) began in mid 2011 and will move to the Long Term Satellite Service (LTSS) in 2015 with the launch of the Ka band satellites.

APN grew as a satellite-based ISP enabled by the Australian Broadband Guarantee program established in 2005. Under the ABG program www.dbcde.gov.au/broadband/australian_broadband_guarantee the installation of broadband satellite services to premises were subsidised for customers who were unable to access broadband in any other way. By 2008, the satellite *ipstar*¹ (see below) had become the dominant broadband satellite infrastructure supporting 68,000 customers nationwide, offered by multiple satellite-based ISPs by the end of 2010. Since 2011 the Interim Satellite Service (ISS) from NBN Co wholesales satellite capacity² to multiple satellite ISPs increasing the level of broadband satellite services possible under the ABG program. The NBN implementation study³ recommended the ABG program transition to NBN Co prior to the availability of the long term solution LTSS.

Backhaul and Broadband

An important component of the NBN addresses the market failure of cost effective backhaul to support broadband services in regional and remote Australia.

The first component of the plan required direct investment by the Government to address identified rural areas of Australia with no or only one supplier. The Government funded the 'Blackspots Program'⁴ ensuring there would be at least two backhaul providers to critical locations in Australia to enable broadband services from the NBN. However, we would suggest having at

¹ http://en.wikipedia.org/wiki/Thaicom_4

² The first phase used Optus but now the ISS is based on the IPStar satellite

³ www.dbcde.gov.au/broadband/national_broadband_network/national_broadband_network_implementation_study

⁴ www.dbcde.gov.au/funding_and_programs/national_broadband_network/national_broadband_network_Regional_Backbone_Blackspots_Program

least two competing backhaul suppliers on a route cannot assure sufficiently low cost backhaul where the fundamental backhaul cost economics⁵ for particular locations are very high (e.g. Tasmania).

The second component of the plan was to review the basis for the Points of Interconnect (POI) to the NBN Co wholesale network. In response to the Government's call to review the basis for Points of Interconnect (POI) for the NBN, the ACCC in late 2010 released its report and recommendations to Government regarding the number of POIs that should be implemented as part of the rollout of the NBN so as to balance a number of approaches in response to NBN Co's initial POI proposal (i.e. 14 POIs) and that of the industry concerned that their backhaul assets would be made redundant (i.e. 'stranded assets'). The ACCC recommended a 'semi-distributed' approach of some 121 POIs which has formed the basis for the initial determination of the specific POI locations and rules of interconnection.

The 121 POIs (40 are deemed regional) have been subsequently identified and are the main subject of this ACCC review. This submission concerns the implications of the need to interconnect with 40 regional POIs plus additional Outer metro POIs with the NBN LTSS satellite from 2015 where there are 10 satellite gateways as listed in Attachment 1.

Backhaul and Satellite

In this submission, APN argues there is the potential for unintended market structure risks associated with the POI plan with the NBN Ka band satellite and has raised the issue within the Satellite Services Group of the Communications Alliance. However, given the competing interests within the Communications Alliance on this issue it appears that there is no single industry view.

The likely unintended consequences are:

- The backhaul costs to the access seeker will be excessive (i.e. backhaul costs could be significant in comparison to access costs) and this is particularly the case for a niche broad satellite service provider with low traffic volumes per region.
- The accumulated latency as a result of the need to transport traffic over multiple interconnected links could excessively degrade latency-dependent services. Latency figures for Perth have been quoted as about 60msec. Satellite latency is unavoidably higher than other services, and any further increase has a noticeable negative impact on services such as VOIP, Skype and gaming

The current interim satellite service (ISS) requires only one POI in Sydney collocated with the *ipstar* gateway and the data centres of the ISPs. This was not always the case for broadband satellite. *ipstar* originally used 3 POIs but

⁵ By cost economics it meant the fixed and variable costs for the traffic to be carried.

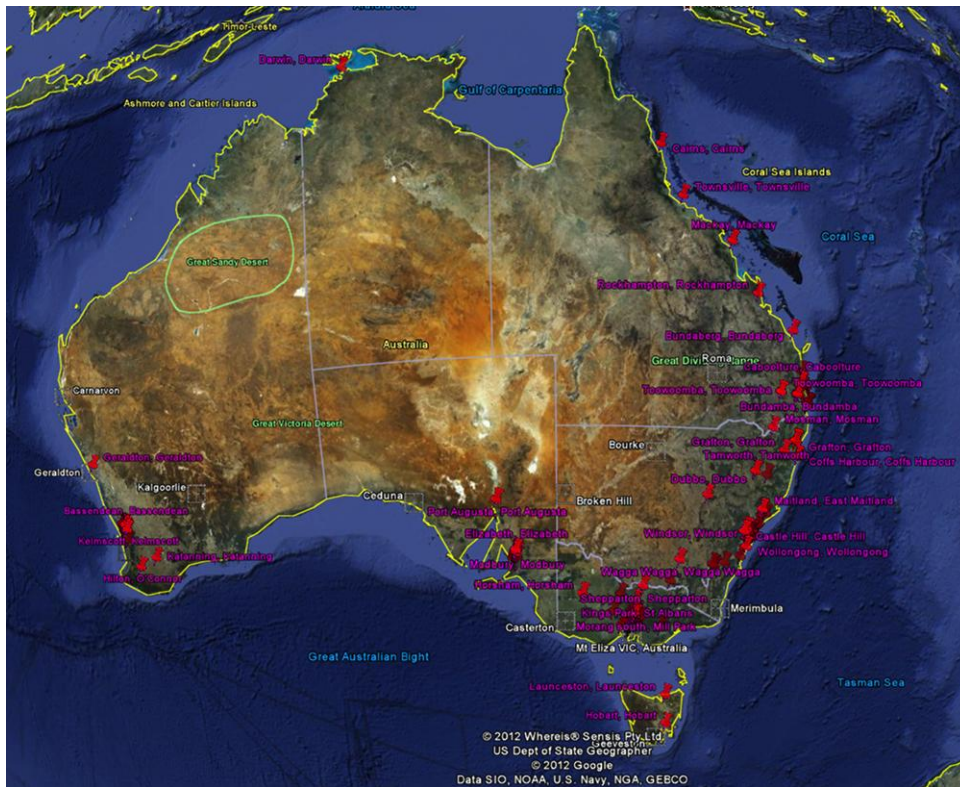
as the market matured with a greater appreciation of backhaul costs, *ipstar* moved to the one POI prior to NBN Co ISS.

However, the LTSS satellite system will employ some ten satellite gateways located around Australia optimised to best utilise the spot beam capability of the satellites. Under the current ACCC rules and NBN Co access architecture design a niche⁶ broadband satellite service provider such as APN faces the prospect of prohibitive backhaul costs as a result of insufficient scale in traffic volumes while having to interconnect to as many as 40 or more of the 121 POIs, depending on the geographic location of their customers. For example a customer of APN in remote northern Western Australia receiving broadband satellite service via the satellite beam associated with the Geraldton Earth station which under the proposed arrangements would interconnect with the NBN Co POI in Geraldton. While this arrangement has compelling logic for interconnection of terrestrial customers, it makes no sense for satellite customers who given the 'distance agnostic' nature of satellite could be interconnected at one of the Sydney area POIs close to the satellite service provider gateway.

⁶ By niche satellite service provider it is meant a provider whose core access technology is satellite with only supplementary fibre and fixed wireless

2. Satellite, Gateways and Markets

In Figure 2.1 is a map of Australia showing the locations of the 121 POIs and the 10 satellite gate-ways of the NBN Co LTSS satellite system. The first observation is that the POIs are concentrated in the urban population centres and even the 40 regional POIs are in major regional cities or towns. The POIs are dimensioned⁷ [Ref 2] for an average of 100,000 premises. The 10 satellite gateways are more regionally based and no higher north than the SA/NT border (eg Geraldton and Roma) so as to minimise the impact of tropical rain on signal levels.



Legend:

- the red pin locations are the 121 POIs around Australia
- the white descriptors are the planned 10 satellite earth stations for the Ka band satellite

Figure 2.1 – Geographic Dispersion of the Points of Interconnect (POI) and satellite earth stations

⁷ By the term ‘dimensioned’ it is meant designed to provide sufficient traffic handling capacity to assure a specified grade of service.

http://en.wikipedia.org/wiki/Network_planning_and_design

The Current NBN Co Plan

Based on the 121 POI decision, NBN Co have outlined their approach to proving service from the local POI independent of access technology.

The locations of the satellite ground stations are still to be finalised but the list provided to the subgroup (Attachment 1) provides a good indication of quantity and location noting, that the sites are regionally based and spread around, favouring southern Australian due to atmospheric conditions. Typically there will be 100K premises per POI resulting from capacity management reasons, a connectivity service area (CSA) may not be connected to the closest POI, e.g. Civic in Canberra but may not be connected to Merimbula or to Carnarvon. The latency introduced by the longer distances is reasonably modest, maybe an extra 5%.

The principle is that all three access technologies are connected to the same POI as illustrated in Figure 3.1. The latest information from NBN Co identifying the POIs and customer regions is given in Ref 2. Managing capacity in this way provides more flexibility for fixed wireless and satellite cut-offs. For example, if a spot beam fills up, the load can be lessened by moving services to fixed wireless. This feature offered by NBN Co would not possible if the satellite service provider was not required to be connected to the same POI. In our view this is less important than having viable competition. While this ‘access agnostic’ approach makes good sense for NBN Co it is not yet clear to broadband satellite retailers which POIs will be connected to the satellite gateways and what specific backhaul will be required.



Figure 3.1 NBN Co Access Architecture

Other interesting exceptions to the principle that benefit from 'distance agnostic' satellite technology are that for Cocos and Keeling Islands and Norfolk island that can only be served by the LTSS satellite service. Unlike Tasmania neither have a POI. Interconnection to the Geraldton POI and therefore requiring backhaul to Sydney would seem curious.

Illustration of the Problem

The *current* solution for the provision of satellite broadband to Tasmania can be considered as one example. The *ipstar* satellite system has a beam covering Tasmania potentially serving approximately 10,000 customers. This beam is accessed by *ipstar's* gateway earth station located at Broken Hill. Internet traffic to/from Tasmania is terminated at Broken Hill⁸, aggregated with traffic from other *ipstar* beams, and backhauled to a Sydney POI. This architecture bypasses the expensive Bass Strait links to Tasmania. However, this level of traffic from satellite access is a minor proportion of the total link traffic and therefore would not impinge on the link commercial viability. On the other hand under the current POI plan, potential LTSS satellite customers would be required to use one of the 2 POIs on Tasmania and the satellite service provider such as APN would have to pay the substantial backhaul costs including those of the Basslink.

A powerful characteristic of satellite technology is that costs are more or less independent of distance, which means the logic of interconnection to the POI closest to the customer can be problematic. For example, the cost to have a POI located in Sydney for Tasmania traffic is the same as actually locating the POI in Tasmania, but it's a lot more expensive for niche broadband satellite providers, who need to provide backhaul.

It should be noted that satellite will be for 3% of premises and will probably be < 3% of traffic (slower speeds etc), so minimal impact on installed backhaul capacity. This raises a significant cost issue for service providers with low traffic volumes expected to interconnect to regional POIs as is the case for niche broadband satellite providers, due to the uncertainty of packages to be offered by backhaul providers.

For the Ka satellite, the 121 POI and the NBN Co approach to service provision always to the POI closest to the customer, individual RSPs need to purchase backhaul capacity (or a package) required to trombone traffic to their respective data centres (e.g. Sydney) which further increases in backhaul costs. While it is early days, APN have estimated backhaul costs for serving customers in Tasmania⁹ to be of the order of 40% and backhaul costs for serving customers in Geraldton to be of the order of 20%, assuming the need for backhaul to one of the POIs in Perth as well as backhaul to Sydney.

⁸ Prior to the black spots program Broken Hill only had a single backhaul provider and backhaul costs were some 40% of access costs.

⁹ Tasmania is somewhat of a special case as even with ideal completion, the cost economics of provision are high.

For example a customer of APN in remote northern Western Australia receiving broadband satellite service via the satellite beam associated with the Geraldton Earth station which under the proposed arrangements would interconnect with the NBN Co POI in Geraldton. While this arrangement has compelling logic for interconnection of terrestrial customers, it makes no sense for satellite customers who given the ‘distance agnostic’ nature of satellite could be interconnected at one of the Sydney area POIs close to the satellite service provider gateway.

One supplier contacted in regard for quotes for backhaul said: “It would be a bit unreasonable of NBN Co to force you to get a trial connection to Geraldton!”

Costs of Backhaul

In table 3.1 are some approximate values of quotations obtained recently from two backhaul suppliers where there is at least a 25% margin increase for protected links where Telstra has a competitive advantage.

Route	Installation	Monthly Rental/month
Hobart	waived (if 3 years)	order of \$40K
Launceston	waived (if 3 years)	order of \$35K
Adelaide	waived (if 3 years)	order of \$5K
Brisbane	waived (if 3 years)	order of \$4K
Perth	waived (if 3 years)	order of \$6K
Melbourne	waived (if 3 years)	order of \$11K ¹⁰

Table 3.1 – Backhaul for 100Mbit/s to Sydney (APN Data Centre)

The vales quoted are very approximate to protect commercial in confidence for unprotected links. Points to note are:

- backhaul costs from Tasmania are prohibitive and cannot be avoided if the current proposal to connect satellite customer to their regional POI were to be retained. Tasmanians would be better off in the Cocos and Keeling islands.
- backhaul costs at least for 100Mbit/s are high though lower bit rate at lower costs are available
- installation costs are often waived for a 3 year contract

While these costs are indicative at these early stages they are so significant give the small regional broadband satellite traffic involved as to be prohibitive for APN and other satellite service providers being able to offer services in regional and remote Australia.

¹⁰ This drops to \$4K for 20Mbit/s

3. Conclusion

The conclusion to be drawn from this submission is that the ACCC should review the principle in the case of broadband via satellite that satellite gateways interconnect to the NBN Co POI closest to their respective regional market.

Further, while 2015 may seem a long way off, current satellite service providers such as APN need to be able to develop their business plans to assure business viability over time.

Finally, if indeed the high back haul costs of the current POI policy remain and specialist mobile satellite providers are unable to offer competitive services in remote Australia, the NBN Co investment in the Ka band satellites to serve all Australians no matter where they live will be in vain.

4. References

- [1] ACCC (2012) *ACCC Consultation Paper NATIONAL BROADBAND NETWORK POINTS OF INTERCONNECTION*, 3rd August 2012-08-27
- [2] NBN Co (2012) *Points of Interconnect Rollout Plan*, July 2012

Attachment 1 – List of Satellite Gateways for the Ka Band System

The likely NBN gateway sites are:

- Bourke
- Broken Hill
- Ceduna
- Casterton
- Geeveston
- Geraldton
- Kalgoorlie*
- Merimbula*
- Carnarvon
- Waroona
- Roma
- Tamworth (last priority)

NBN is looking at 9 active gateways with one backup. The final selection will be made by NBN Co and the satellite provider, Loral.

The two TT&C sites are definite and will likely host gateways*.