

17 October 2007

Standing Committee on Broadband in Rural and Regional Communities
Parliament House
Macquarie Street
Sydney NSW 2000

Attention: Mrs Cheryl Samuels

Dear Mrs Samuels

Further to your letter dated 25 September 2007, SOUL would like to provide the following information to the Committee and to make members aware of the extent and nature of the infrastructure that SOUL has invested in NSW over the last 7 years.

Attached are two documents that provide insight into SOUL's coverage and technology within the State --

1. Broadband and Rural Regional Presence
2. Australian MPLS Provider Note

The first attachment was previously supplied subsequent to my presentation to the members of the Committee on 22 August 2007. The second document is a recent independent report into data network service providers in Australia. This report highlights the maturity and capability of SOUL's services and relevance in the market place today.

In summary, these documents provide an in-depth explanation of the following key-points:

- SOUL has 108 Points of Presence (PoPs) in NSW today
- SOUL has constructed over 500km of regional fibre tails (SOUL owned connections) within the last 12 months
- SOUL has 70 ADSL2+ enabled exchanges in metropolitan and regional NSW today
- SOUL operates one of the largest MPLS based networks in Australia
- SOUL offers data services today up to 1 gigabit per second to many end-user Customers
- SOUL provides video, voice and data services over a single network today and has done so since 2000
- SOUL provides a comprehensive range of Consumer, Corporate, Government and Wholesale service offerings today
- SOUL has invested heavily in the deployment of infrastructure in a manner which has seen profit growth for the company and returns to shareholders in an environment where many others have failed
- SOUL has been directly responsible for significantly reducing NSW Government telecommunications costs since 2001

The level of competition that has existed in NSW since SOUL's entry into the market in 2000 has not only lead to a significant decrease in cost to NSW Government but has had direct flow-on benefits for both Corporate and Residential Customers. This market tension continues to exist and can only be maintained by the support of NSW Government Agencies.

SOUL would like to thank you for the opportunity to present this information and we would welcome any requests for additional information or assistance.

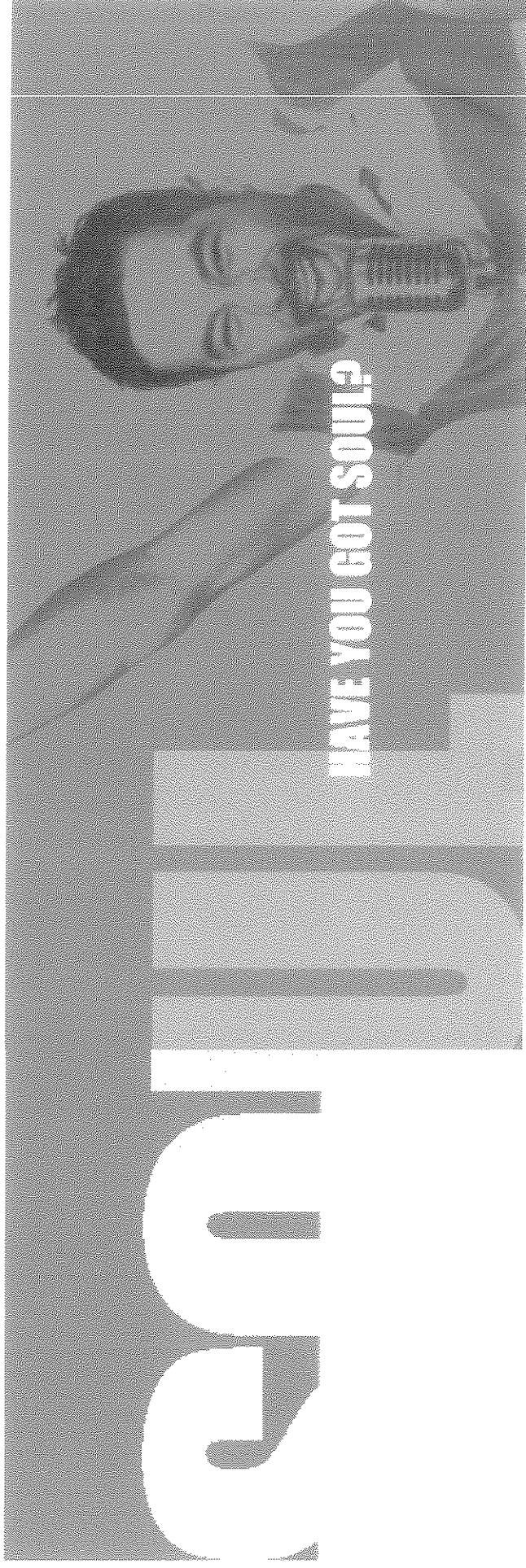
Yours sincerely
SOUL



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Soul Pattinson Telecommunications Pty Limited trading as SOUL



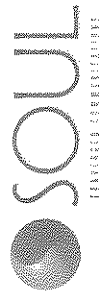
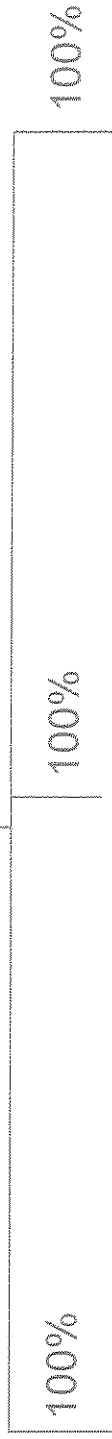
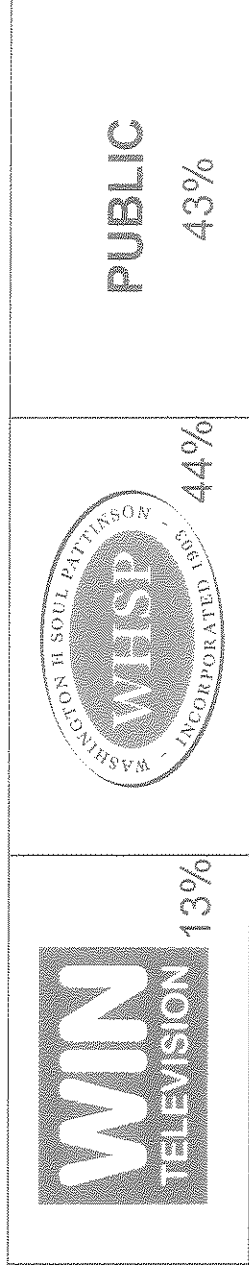
Broadband in Rural and Regional Communities

Presented by: Steve Legge, Chief Operating Officer

22 August 2007



Corporate Profile



DATA



VOICE



MOBILE &
CONSUMER



The Evolution of SOUL

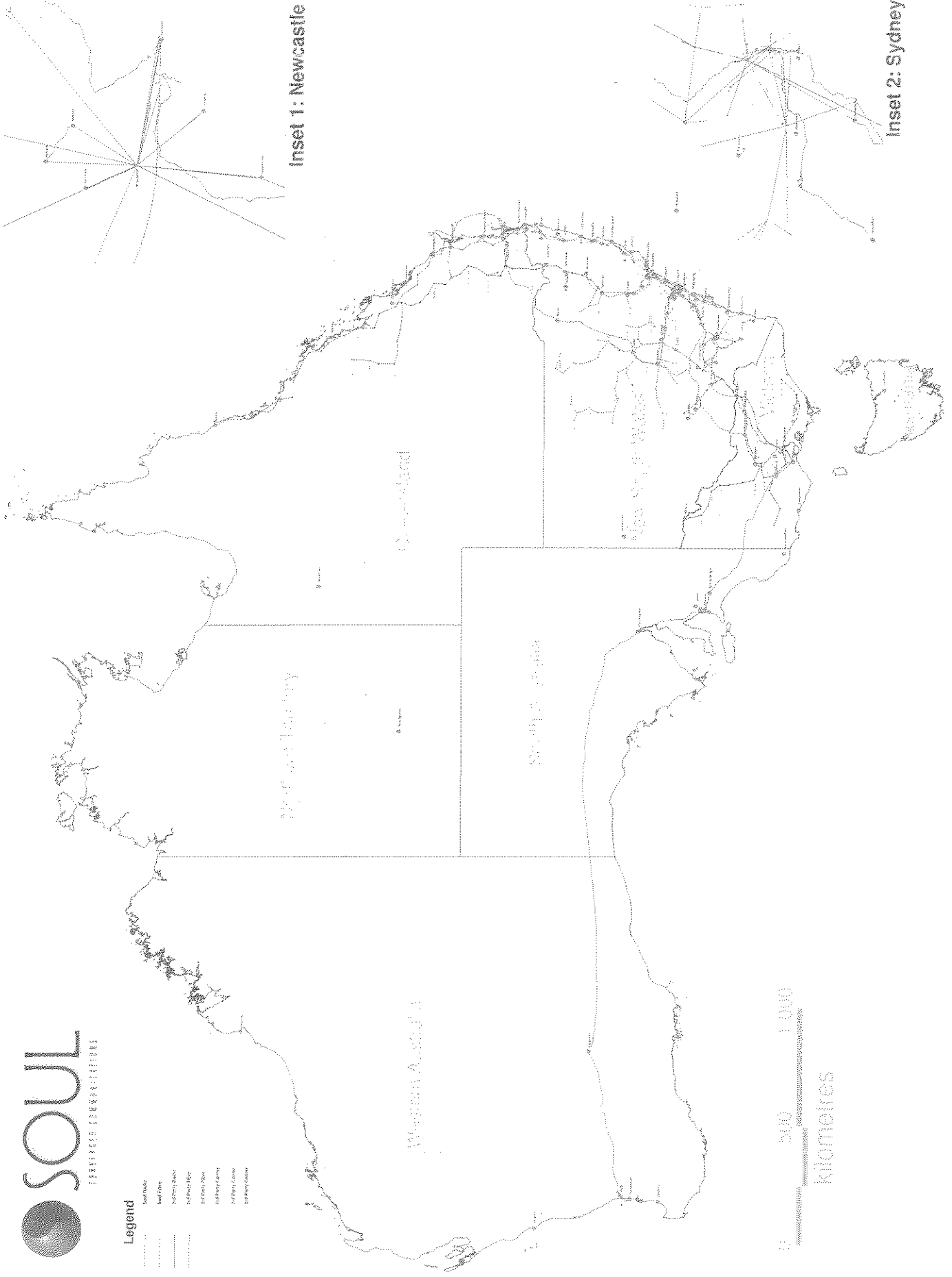
- Australian broadcasters required a broadband network for Digital TV (DTV)
- Buy or Build? Optus or Telstra were the only bandwidth resale options ... (*both expensive*)
- NBN therefore elected to build excess broadband capacity at minimal marginal CapEx and OpEx
- A separate entity was created as a licensed carrier to facilitate the sale of excess capacity, adopting the Soul Pattinson name
- Convergence of broadcast television and telecommunications content and distribution successfully implemented across the network
- The business and network expanded along eastern seaboard of Australia

What are we? What do we have?

- Ability to offer voice over IP, voice and video over broadband
- In excess of 1050 employees in offices throughout Australia
- Interconnect at all Telstra 66 call collection areas for voice and data providing 98.5% coverage of Australia
- The largest Regional Data Network in Australia after Telstra
- The largest Mobile Telephony Reseller in Australia
- The largest Voice Enabled IP Network in Australia
- Fibre network throughout intercapital and regional Australia
- Sophisticated billing and customer care capability providing low marginal cost to manage new customers
- SOUL provides wholesale and retail broadband services in owned infrastructure in metro and regional under an open access arrangement

Legend

- Road Marker
- Road Pole
- Access Point
- Fuel Point
- Air Drop Site
- Air Drop Cache
- Air Drop Centre
- Air Drop Station



Inset 1: Newcastle

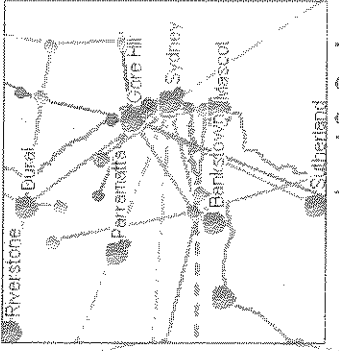
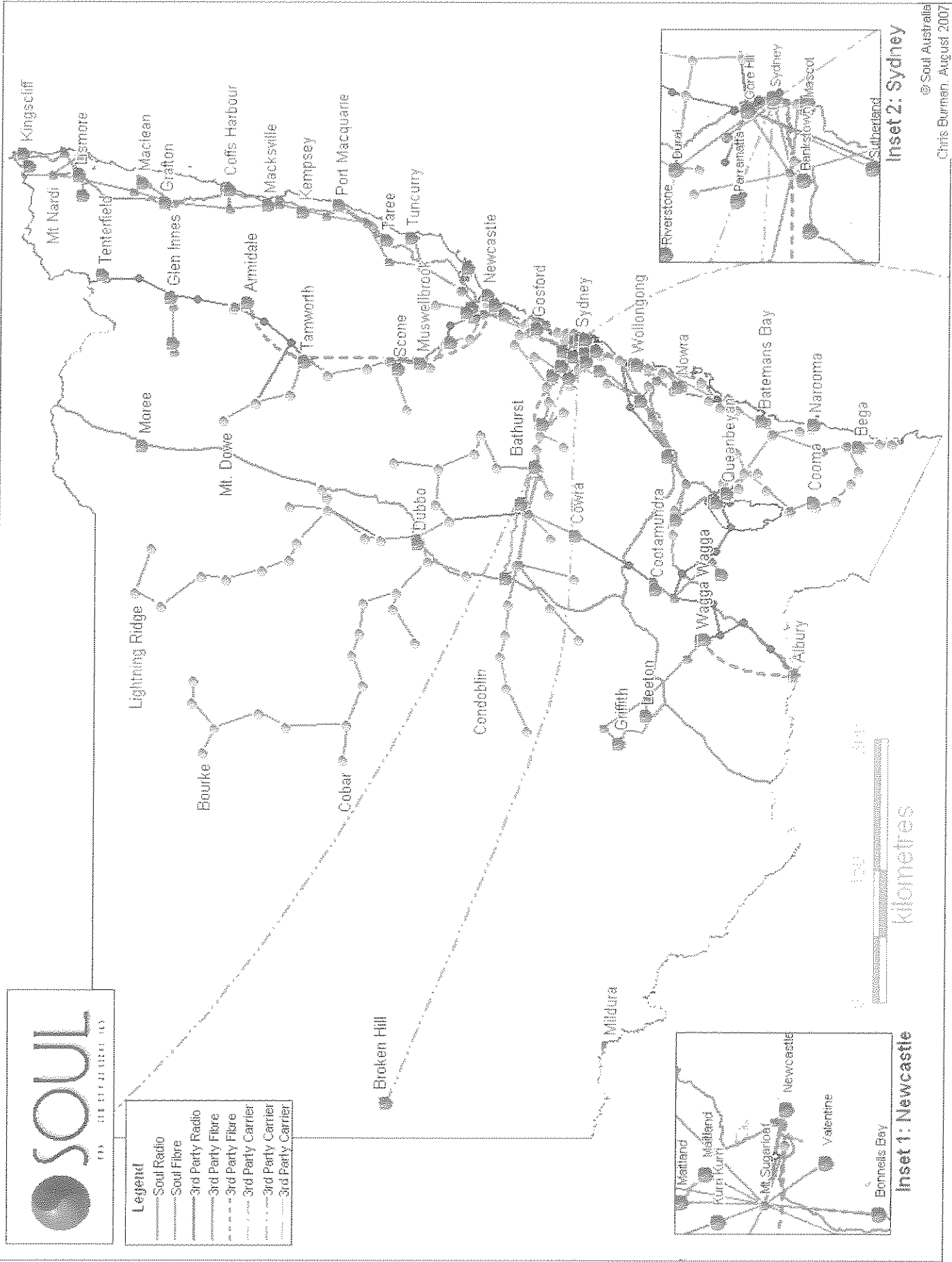
Inset 2: Sydney

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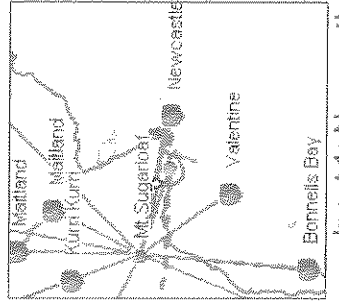


Legend

- Soul Radio
- Soul Fibre
- 3rd Party Radio
- 3rd Party Fibre
- 3rd Party Fibre
- 3rd Party Carrier
- 3rd Party Carrier
- 3rd Party Carrier



Inset 2: Sydney



Inset 1: Newcastle

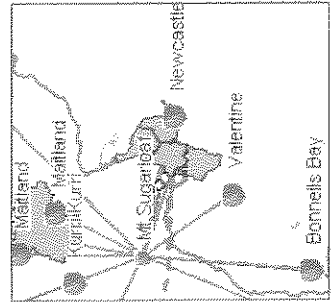
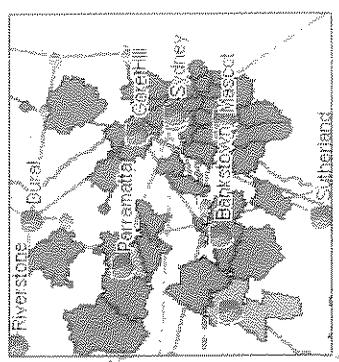
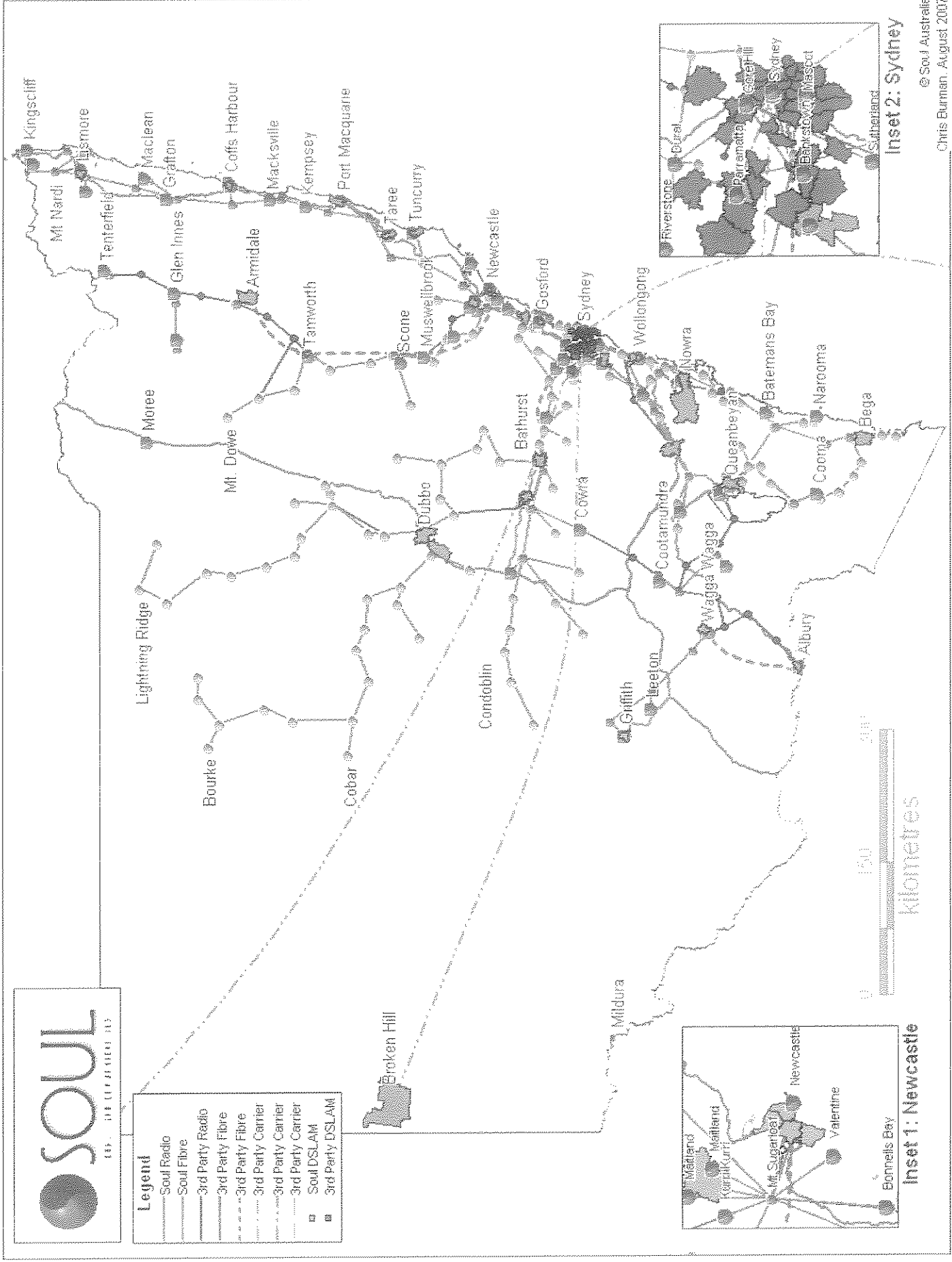


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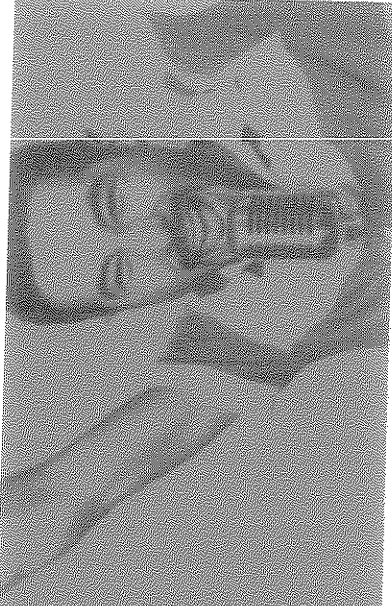
Legend

	Soul Radio
	Soul Fibre
	3rd Party Radio
	3rd Party Fibre
	3rd Party Carrier
	3rd Party Carrier
	3rd Party DSLAM
	Soul DSLAM
	3rd Party DSLAM



Challenges

- Focus on fibre and not immediate opportunities
 - EFM – 40M symmetrical over copper now!
- Use!



Network Access Points (NAPs) and Government Network Access Points (GNAPs)

Map Name	Town/City	State	Exchange ID	ESA ID
GNAP-Bega	BEGA	NSW	BEGA NSW	BEGA
GNAP-Broken Hill	BROKEN HILL	NSW	BROKEN HILL, NSW	BNHL
GNAP-Coffs Harbour	COFFS HARBOUR	NSW	COFFS HARBOUR, NSW	CFSH
GNAP-Dubbo	DUBBO	NSW	DUBBO NSW	DBBO
SPT Gosford (Integrity Solutions) (NAP)	GOSFORD	NSW	GOSFORD, NSW	GSFD
GNAP-Goulburn	GOULBURN	NSW	GOULBURN NSW	GLBN
GNAP-Grafton	GRAFTON	NSW	GRAFTON, NSW	GRNN
GNAP-Griffith	GRIFFITH	NSW	GRIFFITH, NSW	GFTH
GNAP-Lismore	LISMORE	NSW	LISMORE, NSW	LISM
GNAP-Lithgow	LITHGOW	NSW	LITHGOW, NSW	LITH
GNAP-Maitland	MAITLAND	NSW	MAITLAND NSW	MAIT
GNAP-Muswellbrook	MUSWELLBROOK	NSW	MUSWELLBROOK, NSW	MUSL
GNAP-Nowra	NOWRA	NSW	NOWRA, NSW	NWRA
GNAP-Newcastle	NEWCASTLE	NSW	WOLFE, NSW	WOLF
GNAP-Orange	ORANGE	NSW	ORANGE, NSW	ORGF
GNAP-Parramatta	PARRAMATTA	NSW	PARRAMATTA, NSW	PARR
GNAP - Port Macquarie	PORT MACQUARIE	NSW	PORT MACQUARIE, NSW	PTMA
GNAP-Queanbeyan	QUEANBEYAN	NSW	QUEANBEYAN, NSW	QNBN
GNAP-Sydney	SYDNEY	NSW	DALLEY, NSW	DALL
GNAP-Tamworth	TAMWORTH	NSW	TAMWORTH, NSW	TAMH
GNAP-Taree	TAREE	NSW	TAREE, NSW	TARE
GNAP-Wagga Wagga	WAGGA WAGGA	NSW	WAGGA WAGGA, NSW	WAGA
GNAP-Wollongong	WOLLONGONG	NSW	WOLLONGONG, NSW	WLGG
GNAP-ALBURY	ALBURY	NSW	ALBURY, NSW	ALBY
GNAP-ARMIDALE	ARMIDALE	NSW	ARMIDALE, NSW	ADLE
GNAP-BATHURST	BATHURST	NSW	BATHURST, NSW	BATH
Albury (NAP) - Prime Television	LAVINGTON	NSW	LAVINGTON, NSW	LAVN
Armidale TAFE (NAP)	ARMIDALE	NSW	ARMIDALE, NSW	ADLE
Ballina Hospital (NAP)	BALLINA	NSW	BALLINA, NSW	BLNA
Batemans Bay Bowling Club (NAP)	BATEMANS BAY	NSW	BATEMANS BAY, NSW	BATE
Bathurst TAFE (NAP)	BATHURST	NSW	BATHURST, NSW	BATH
Bega Educational Access Centre (BEAC) (NAP)	BEGA	NSW	BEGA, NSW	BEGA
Broken Hill (NAP)	BROKEN HILL	NSW	BROKEN HILL, NSW	BNHL
Campbelltown (NAP) - Telstra Exchange	CAMPBELLTOWN	NSW	CAMPBELLTOWN, NSW	CBTN
Casino Hospital (NAP)	CASINO	NSW	CASINO, NSW	CSNO
Cookamundra Hospital (NAP)	COOKAMUNDRA	NSW	COOKAMUNDRA, NSW	CTMA
Country Energy - Leeton Office (NAP)	LEETON	NSW	LEETON, NSW	LTON
Cowra TAFE (NAP)	COWRA	NSW	COWRA, NSW	COWR
Dubbo - Prime Television (NAP)	DUBBO	NSW	DUBBO, NSW	DBBO
Dural (NAP) **Telstra - Mick Williams has a key	DURAL	NSW	DURAL, NSW	DURA

Network Access Points (NAPs) and Government Network Access Points (GNAPs)

Map Name	Town/City	State	Exchange ID	ESA ID
Glen Innes TAFE (NAP)	GLEN INNES	NSW	GLEN INNES NSW	GNIS
Goulburn TAFE (NAP)	GOULBURN	NSW	GOULBURN NSW	GLBN
Grafton Hospital (NAP)	GRAFTON	NSW	GRAFTON NSW	GRNN
Griffith (NAP) - Telstra Tower, Water Reserve, Kempsey TAFE (NAP)	GRIFFITH	NSW	GRIFFITH NSW	GFTH
Kingscliff TAFE (NAP)	KEMPSEY	NSW	KEMPSEY NSW	KMSY
Kurri Kurri TAFE (NAP)	KINGSCLIFF	NSW	KINGSCLIFF NSW	KCLF
Lismore (SPT) (NAP)	KURRI KURRI	NSW	KURRI KURRI NSW	KKRI
Lithgow (NAP)	LISMORE	NSW	LISMORE NSW	LISM
Liverpool (NAP) - Telstra Exchange	LITHGOW	NSW	LITHGOW NSW	LITH
Macksville Hospital (NAP)	LIVERPOOL	NSW	LIVERPOOL NSW	LIVE
Maclean Hospital (NAP)	MACKSVILLE	NSW	MACKSVILLE NSW	MACS
Maitland TAFE (NAP)	MACLEAN	NSW	MACLEAN NSW	MCLN
Murwillumbah Hospital (NAP)	MAITLAND	NSW	MAITLAND NSW	MAIT
Muswellbrook Hospital (NAP)	MURWILLUMBAH	NSW	MURWILLUMBAH NSW	MBAH
Narooma Water Tower (NAP)	MUSWELLBROOK	NSW	MUSWELLBROOK NSW	MUSL
Norwa TAFE (NAP)	NAROOMA	NSW	NAROOMA NSW	NRMA
Orange (NAP) - Prime Television	NOWRA	NSW	NOWRA NSW	NWRA
Parkes (NAP) - Country Energy Field Depot	ORANGE	NSW	ORANGE NSW	ORGF
Penrith (NAP) - Nepean Hospital	PARKES	NSW	PARKES NSW	PRKS
Port Macquarie (NAP)	PENRITH	NSW	PENRITH NSW	PNTH
Queanbeyan TAFE (NAP)	PORT MACQUARIE	NSW	PORT MACQUARIE NSW	PTMA
Schofields (NAP) - Telstra Exchange Riverston	QUEANBEYAN	NSW	QUEANBEYAN NSW	QBNB
Scone TAFE (NAP)	RIVERSTONE	NSW	RIVERSTONE NSW	RIVE
Singleton - (BEC) (NAP)	SCONE	NSW	SCONE NSW	SCON
SPT Gosford (Integrity Solutions) (NAP)	SINGLETON	NSW	SINGLETON NSW	SING
SPT NAP - Bankstown (Telstra Exchange)	GOSFORD	NSW	GOSFORD NSW	GSFD
SPT NAP - Coffs Harbour Educational Centre	BANKSTOWN	NSW	BANKSTOWN NSW	BANK
SPT NAP - Sydney (Governor Phillip Tower)	COFFS HARBOUR	NSW	COFFS HARBOUR NSW	CFSH
SPT NAP Bowral (Telstra Exchange)	SYDNEY	NSW	DALLEY NSW	DALL
SPT NAP Cooma (Snowy Hydro)	BOWRAL	NSW	BOWRAL NSW	BOWL
SPT POP Site - NBN Tamworth Office (NAP)	COOMA	NSW	COOMA NSW	COMA
SPT POP Site - NBN Taree Office (NAP)	TAMWORTH	NSW	TAMWORTH NSW	TAMH
SPT POP Site - Newcastle (Cooks Hill) (NAP)	TAREE	NSW	TAREE NSW	TARE
SPT POP Site - Southern Cross Tower Site (In	NEWCASTLE	NSW	WOLFE NSW	WOLF
SPTCom - Sydney POP	INVERELL	NSW	INVERELL NSW	INLL
SPTCom Wollongong NAP	Sydney	NSW	DALLEY NSW	DALL
SPTCOM-Albury	Wollongong	NSW	WOLLONGONG NSW	WLGG
SPTCOM-Armidale	Albury	NSW	ALBURY NSW	ALBY
SPTCOM-Bathurst	Armidale	NSW	ARMIDALE NSW	ADLE
	Bathurst	NSW	BATHURST NSW	BATH



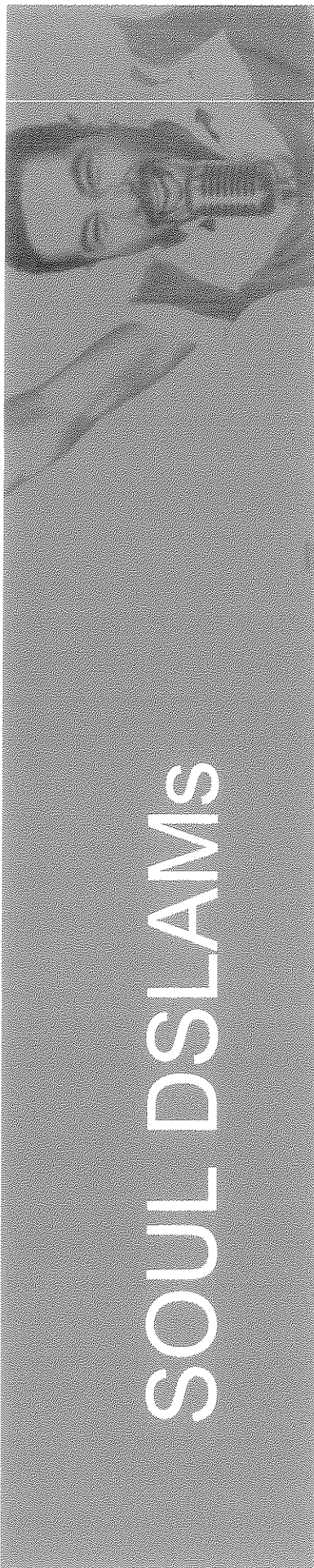
Network Access Points (NAPs) and Government Network Access Points (GNAPs)

Nap Name
 SPTCOM-Bega
 SPTCOM-Broken Hill
 SPTCOM-Campbelltown
 SPTCOM-Coffs Harbour
 SPTCOM-Dubbo
 SPTCOM-Goulburn
 SPTCOM-Grafton
 SPTCOM-Griffith
 SPTCOM-Lismore
 SPTCOM-Nowra
 SPTCOM-Orange
 SPTCOM-Penrith
 SPTCOM-Port Macquarie
 SPTCOM-Richmond
 SPTCOM-Tamworth
 SPTCOM-Taree
 SPTCOM-Wagga Wagga
 SPTel-PARRAMATTA
 SPTel-PORT MACQUARIE
 SPTel-Tweed Heads
 Sutherland Shire Council (NAP)
 Tenterfield TAFE (NAP)
 Tomaree TAFE (NAP)
 Tumut Hospital (NAP)
 Tuncurry (NAP) - Great Lakes Education Campus
 Valentine Primary School (NAP)
 Wagga (NAP) - Prime Television
 Wollongong (NAP) - WIN TV

Town/City	State	Exchange ID	ESA ID
Bega	NSW	BEGA NSW	BEGA
Broken Hill	NSW	BROKEN HILL, NSW	BNHL
Campbelltown	NSW	CAMPBELLTOWN, NSW	CBTN
Coffs Harbour	NSW	COFFS HARBOUR, NSW	CFSH
Dubbo	NSW	DUBBO, NSW	DBBO
Goulburn	NSW	GOULBURN, NSW	GLBN
Grafton	NSW	GRAFTON, NSW	GRNN
Griffith	NSW	GRIFFITH, NSW	GFTH
Lismore	NSW	LISMORE, NSW	LISM
Nowra	NSW	NOWRA, NSW	NWRA
Orange	NSW	ORANGE, NSW	ORGF
Penrith	NSW	PENRITH, NSW	PNTH
Port Macquarie	NSW	PORT MACQUARIE, NSW	PTMA
Richmond	NSW	RICHMOND, NSW	RCHD
Tamworth	NSW	TAMWORTH, NSW	TAMH
Taree	NSW	TAREE, NSW	TARE
Wagga Wagga	NSW	WAGGA WAGGA, NSW	WAGA
PARRAMATTA	NSW	PARRAMATTA, NSW	PARR
PORT MACQUARIE	NSW	PORT MACQUARIE, NSW	PTMA
TWEED HEADS	NSW	TWEED HEADS, NSW	TDHS
SUTHERLAND	NSW	SUTHERLAND, NSW	SUTH
TENTERFIELD	NSW	TENTERFIELD, NSW	TTFD
NELSON BAY	NSW	NELSON BAY, NSW	NLBY
TUMUT	NSW	TUMUT, NSW	TUMU
FORSTER	NSW	FORSTER, NSW	FOER
Valentine	NSW	VALENTINE, NSW	VLTN
WAGGA WAGGA	NSW	WAGGA WAGGA, NSW	WAGA
WOLLONGONG	NSW	WOLLONGONG, NSW	WLGG

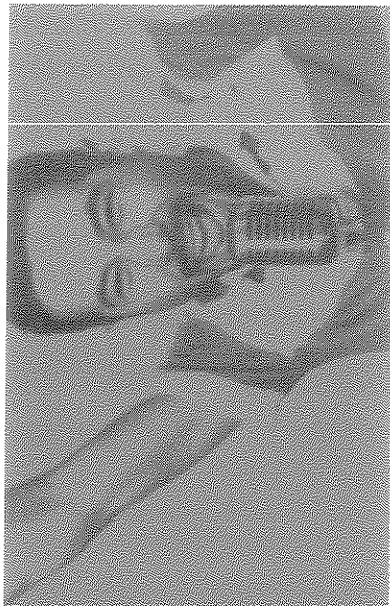
SOUL DSLAMS

ESA	Name	State
ADLE	ARMIDALE	NSW
ALBY	ALBURY	NSW
ASHF	ASHFIELD	NSW
BALM	BALMAIN	NSW
BANK	BANKSTOWN	NSW
BATH	BATHURST	NSW
BEGA	BEGA	NSW
BLAC	BLACKTOWN	NSW
BNHL	BROKEN HILL	NSW
BURD	BURWOOD	NSW
CAST	CASTLE HILL	NSW
CBTN	CAMPBELLTOWN	NSW
CFSH	COFFS HARBOUR	NSW
CHAT	CHATSWOOD	NSW
CHLS	CHARLESTOWN	NSW
CREM	CREMORNE	NSW
CYSH	CITY SOUTH	NSW
DALL	DALLEY	NSW
DBBO	DUBBO	NSW
EAST	EAST	NSW
EDGE	EDGECLIFF	NSW
FREN	FRENCHS FOREST	NSW
GFTH	GRIFFITH	NSW
GLEN	GOULBURN	NSW
GLEB	GLEBE	NSW
GRAN	GRANVILLE	NSW
GSFD	GOSFORD	NSW
HAMN	HAMILTON	NSW
HARB	HARBORD	NSW
HMKT	HAYMARKET	NSW
HOME	HOMEBUSH	NSW
HORN	HORNSBY	NSW
KENS	KENSINGTON	NSW
KNST	KENT	NSW
LANE	LANE COVE	NSW
LAVN	LAVINGTON	NSW
LIDC	LIDCOMBE	NSW
LISM	LISMORE	NSW
LIVE	LIVERPOOL	NSW
MAIT	MAITLAND	NSW



SOUL DSLAMS

ESA	Name	State
MASC	MASCOT	NSW
MAYF	MAYFIELD	NSW
MIRA	MIRANDA	NSW
MONA	MONA VALE	NSW
NEWT	NEWTOWN	NSW
NLTN	NEW LAMBTON	NSW
NPAR	NORTH PARRAMATTA	NSW
NRYD	NORTH RYDE	NSW
NSYD	NORTH SYDNEY	NSW
NWRA	NOWRA	NSW
ORGF	ORANGE	NSW
PARR	PARRAMATTA	NSW
PEND	PENDLE HILL	NSW
PEIE	PETERSHAM	NSW
PITT	PITT	NSW
PNTH	PENRITH	NSW
PTMA	PORT MACQUARIE	NSW
QBNB	QUEANBEYAN	NSW
REDF	REDFERN	NSW
RYDA	RYDALMERE	NSW
SEVE	SEVEN HILLS	NSW
SILV	SILVERWATER	NSW
STLE	ST LEONARDS	NSW
TAMH	TAMWORTH	NSW
TARE	TAREE	NSW
WAGA	WAGGA WAGGA	NSW
WAVE	WAVERLEY	NSW
WETH	WETHERILL PARK	NSW
WLGG	WOLLONGONG	NSW
WOLF	WOLFE	NSW



How to Select Australian MPLS Providers

Bjarne Munch

MPLS services in Australia have evolved well since Gartner's previous evaluation in 2005 however the difference between the most mature and the least mature providers has increased. Enterprises thus need to evaluate providers more carefully.

Overview

MPLS services in Australia have generally reached a good level of maturity level since initial deployments in 2000, although improvement is still needed by all providers in various areas. During the last two years most providers have continued to improve their infrastructure including network refresh, network expansion as well as deploying the tools and processes to measure and monitor services to ensure delivery. Most providers are still evolving their network reach as well as Class of Service offering and some providers have emerging focus towards application performance management. Other areas that need improvement is the providers Service Level Agreements and associated financial compensation in case of non-compliance with all performance metrics, and lack of standard end-to-end performance guarantees.

Key Findings

- MPLS services from leading Australian providers are generally mature however the difference between the most mature and the least mature providers has increased and all providers need to evolve their service offerings in various areas.
- Tier 2 Providers and ISPs are entering the market and while many can support basic data connectivity needs many of these providers lack ability to support complex application and connectivity needs.
- MPLS services continue to have a very network centric view but are evolving towards an end-to-end application performance focus.

Recommendations

- Enterprises should migrate to MPLS based services at the next network upgrade, and define strategies beyond connectivity including requirements for application performance management as well as remote and mobile connectivity to the MPLS VPN.
- Enterprises with complex application portfolio should insist that providers actively assist in the application discovery and classification process as an integral part of service procurement and deployment.
- Enterprises should insist on strong financial incentives in case of SLA non-compliance with performance metrics, and rebates should be paid automatically by providers.

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Strategic Planning Assumption(s)

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Analysis

MPLS services in Australia have progressed well since Gartner's previous evaluation in 2005. Leading providers have mature services and while most other providers are making good strides there is still room for progress.

Network reach and Service Level guarantees are still key issues that enterprises must place emphasis on:

- Most providers have evolved their MPLS network with improved reach although only Telstra and Soul has a nation wide coverage.
- Most providers have also enhanced their Class of Service offerings however only Telstra, Soul and Macquarie offer standard guarantees across the access.
- Most providers do not offer financial compensation in case of non-conformance with Class of Service performance levels, only Macquarie and Soul have introduced this.

While most providers have enhanced their MPLS services the enterprise needs have also evolved and have become more complex. The providers have responded with introduction of services such as end-to-end traffic management as well as more diverse access services to support enterprises with rural or remote offices as well as home workers and mobile workers.

- Some providers, such as Telstra and Macquarie, has progressed their services towards a higher degree of application performance focus as well as more dedicated traffic flow management using tools such as Wide Area Network Optimization.
- Most providers are evolving their services to cater for enterprises increased mobility needs and trends towards Fixed and Mobile Convergence. This includes mobile connectivity to the MPLS VPN, VPN Gateway with full IPSec/SSL.
- Other services such as Voice Gateway and Multicast are only emerging while Internet Gateway has become common. Voice Gateway services are only offered by Soul, Commander and Internode, and only a few providers such as Telstra and Soul offer Multicast.

Despite most enterprises increasingly is describing IT performance from a business point of view and placing more focus on ensuring appropriate application performance from a user point of view MPLS services continue to have a very network centric view. No provider offers application specific performance guarantees as part of their standard SLA. No provider has fully integrated application specific WAN optimization although some providers such as Macquarie and Commander do this on a case by case basis. Most providers are still evolving their Class of Service specifications, although most providers by now have established good monitoring and measuring tools and processes to ensure delivery.

Generally Telstra, Soul, Macquarie and Optus offer the most complete range of services well ahead of other providers. Enterprises should define their strategies and needs beyond connectivity, in particular their needs for mobility as well as traffic management and application performance as part of their provider selection criteria.

1.0 Comparing Australian MPLS Providers

More providers have entered the MPLS services market since 2005 this includes tier 2 data providers as well as ISP's with IP infrastructure. Gartner has included two more providers in the overall comparison, Commander and Internode. Powertel has been removed as it was acquired by AAPT. This comparison is based on evaluating the providers in five key areas and the figure 1 below offers a visual comparison of the providers in each of these five key areas. This comparison is done on a five level scale from good to poor based on provider descriptions in chapter 2.

Figure 1. Comparison of leading MPLS providers in Australia.

Provider	Reach	CoS SLA	Additional Services	Reporting Portal	Service Maturity
Telstra	●	●	◐	◐	●
SOUL	●	●	◐	◐	◐
Macquarie	◐	●	◐	◐	◐
Optus	◐	◐	◐	◐	◐
Commander	◐	◐	◐	●	◐
CFRCC	◐	◐	◐	●	◐
Internode	◐	◐	◐	○	◐
AAPT	◐	○	◐	◐	○

Good ● ◐ ◑ ◒ ○ Poor

1.1 Geographical Reach

Geographical reach of the MPLS network is still used as a basic indicator of provider's ability to deliver acceptable Class of Service performance levels on a national scale, more specifically the number of Provider Edge Routers and their distribution across the country. Within Australia there are no providers that interconnect their MPLS networks via Network to Network Interconnect (NNI) agreements, which means that providers can only extend network reach via various Access Services. A limited national reach means that providers extensively rely on other access services to aggregate customer traffic. While this in many situations does not prevent a provider from delivering acceptable nation wide services via Leased Lines it do limit cost effective scalability for both provider and enterprise. It do also lead to increased risk of degraded or at least unpredictable performance levels and availability, and it should be considered that many providers do not offer service guarantees across access services. Providers with larger number of PE routers will thus be able to deliver best performance levels for more complex solutions and more meshed topologies. Telstra and Soul has by far the largest reach followed by Macquarie and Optus. This also means that Telstra and Soul is able to offer stronger performance guarantees across access services than other providers.

All providers have graded service levels depending on access services and many providers only offer performance guarantees based on their own infrastructure. This is especially the case for DSL services.

DSL services are increasingly used by Australian enterprises to connect smaller offices due to cost effective bandwidth however most provider offer limited performance guarantees across these DSL services. This also means that while DSL is recommended as a cost effective access to the MPLS service however Gartner still recommend that in cases with business needs for strong performance levels clear channel leased lines or Ethernet should be used.

Only Telstra, Optus, Macquarie and Commander also focus on International services. CITEC offer connectivity to New Zealand via their own pop in New Zealand, Internode offer connectivity to North America via their own two pops and AAPT offer interconnection with parent company Telecom New Zealand. Telstra can offer services in the Asian region via Reach and extend globally via interconnection with global providers such as Global Crossing. Optus offer services in the Asia region via Singtel, while Macquarie Telecom offers international services via Virtella. Commander offer services in Asia via interconnection with Asia NetCom. For all four it means that they offer international services via multiple independent services and enterprises must evaluate these separate to the Australian national services. Singtel is a leading provider in Asia Pacific while Telstra and Asia Netcom are followers and Macquarie has limited presence of their own across the region.

1.2 Class of Service SLA

Most providers have improved their Class of Service performance guarantees since 2005 and best practice MPLS service in Australia today include 5-6 Classes of Service as offered by Telstra, Optus and Macquarie.

Most providers such as Telstra, Macquarie, Optus, Commander, CITEC, Internode and partially SOUL offer performance metrics in line with Gartner's recommended best practice.

- Latency guarantee of no more than 40-50ms one-way nationally. This compares with the reported latency from Perth to Brisbane at 30ms, one of the longest fiber stretches in Australia.
- Packet loss should be less than 1% for most critical applications whether that is voice, video or many business applications.
- Jitter is only relevant for voice and video conferencing. For voice the jitter should be below 10ms and for Video it should be below 100ms.

Telstra, Soul, Macquarie and Internode are the only providers with a separate class for Video Conferencing which is needed if there is a substantial level of both Voice and Video traffic to a site. Video and voice have significantly different characteristics and do not work well in the same class. Video frames are significantly larger than voice frames leading to contention issues and possible voice quality degradation. Because enterprises increasingly have both Voice and Video over their network separate classes must be offered. While Macquarie has a specific class dedicated for video the other three providers allow enterprises to nominate any class for video within a given set of classes.

All providers except for Telstra, Soul and Macquarie have a pre-defined standard bandwidth allocation for each COS, often real-time traffic is restricted to 20-30 percent of maximum access bandwidth, and business data, interactive data and other traffic with various bandwidth restrictions. Generally it is the responsibility of the enterprise to conform to this traffic contract and excess traffic within each class is dropped by the provider edge router leading to performance degradation.

- Macquarie allows bursting of traffic beyond each class limits within purchased access bandwidth.
- Telstra has completely removed fixed bandwidth definitions per Class allowing a more flexible dimensioning and purchasing.
- Soul is the only provider that offers complete customization of their class definition. Soul has no standard Class of Service construct but allow enterprises to customize according to their needs making this the most flexible solution on the market.

In another approach Commander do have traffic restrictions on each class but has introduced flexibility on the commercial level. Commander maintains fixed bandwidth definitions but in cases where the most suitable class does not fully suit the enterprise traffic needs Commander offers discounts to make classes commercially sensible. Either way, enterprises should push providers to cost optimize dimensioning of their class of services based on the enterprise actual traffic needs.

A key issue is still that most providers only offer these Class of Service performance levels as standard guarantees within their core network from Provider Edge (PE) router to PE router. Typically performance guarantees for the access service from Customer Edge (CE) router to PE is only offered as part of a fully managed service. Only Telstra, Soul and Macquarie offer CE to PE router performance guarantees as a standard offering not conditioned on a managed service. This is important for enterprises seeking strong and consistent end-to-end performance levels.

While Class of Service performance guarantees have improved well only Macquarie and Soul currently offer rebates in case of non-compliance and Commander is planning introduction during 2007. However rebate schemes are still weak and more focused on limiting the provider's exposure than showing strong commitment. Enterprises should push providers for stronger commitments as well as pushing providers to make the trouble notification and rebate process automated by the provider.

1.3 Additional Services

As enterprise requirements become more complex providers must progress their services towards a higher degree of application performance focus as well as more dedicated traffic flow management. Providers must also evolve their services to cater for increased portability/mobility needs and inclusion of other managed services such as Wide Area Network Optimization, Voice Gateway, and Multicast. So far providers generally offer WAN optimization as a case by case 'bolt-on' service while only Telstra is planning on integrating this with the MPLS services. Most providers are also offering managed SSL/IPSec access to the MPLS service as well as Secure Internet Gateway services, however only Telstra, Optus and Macquarie currently has 3G/HSDPA access to the MPLS VPN while Commander is using iBurst. Only Soul, Commander and Internode offer Voice Gateway services. Telstra is rated ahead of Soul, Macquarie and Optus due to better mobile reach as well as stronger focus on application performance.

1.4 Reporting Portal

Real-time or near real-time reporting via a web portal of jitter, latency and packet loss for all class of services subscribed to by an enterprise for each site, as well as reporting of throughput, router health and overall service availability. Telstra, Soul, Macquarie, Optus, Commander and CITEC all offer near real-time reporting of CoS performance metrics, however Telstra, Commander and CITEC also offer reporting on throughput, router health and overall service availability. In addition to this Commander offer reporting on statistics such as traffic load per class and shaping dropped packets per class which is very useful for ongoing capacity planning. CITEC also offer online change of MPLS service parameters such as bandwidth. Telstra also offer reporting of traffic load per class and online change of bandwidth but this is limited to their IP MAN Ethernet services. Soul has a flexible approach to their portal but more detailed reporting requires the enterprise to purchase a software license.

1.5 Service Maturity

On a basic level most providers have deployed core networks across Australian State capital cities with good resilience and redundancy in each POP as well as redundant and diverse trunk paths to each POP. Providers such as Telstra, Soul, Optus, Macquarie and Commander have deployed very resilient network architecture at both core and edge level. However it is still an issue for some providers that a consistent level of redundancy is not always implemented for the entire MPLS network especially for more distributed PE routers or 3rd Party access services, and some enterprises have reported downtime issues from some providers. For enterprises where service reliability is important it is still recommended to place emphasis on appropriate network resilience at all levels and ensure appropriate availability guarantees backed by strong rebates to demonstrate provider commitment

While it is important that providers have an appropriate number of classes with good metrics for each class, it is just as important that providers proactively measure compliance with all metrics of each of these classes for all subscriber sites from CE router to CE router. Best practice providers use tools such as Cisco IP SLA, InfoVista and Concord to proactively measure and collect all metrics for all classes along all paths of an enterprise VPN. Telstra, Soul, Optus, Macquarie, Commander and CITEC have a mature approach to this.

Many enterprises have a limited understanding of the application traffic that exists in their network and associated traffic load. Some providers, such as Macquarie and Commander, have started assisting enterprises to obtain a good and detailed view of existing traffic as well as matching this to appropriate traffic classes. These providers take an iterative approach by viewing performance levels over a period after deployment and by placing monitoring appliances such as Packeteer in the network to actively discover all traffic and traffic levels prior and post deployment. Enterprises with more complex application portfolio should insist that providers actively assist in the application discovery and classification process as an integral part of service procurement and deployment. Enterprises should ensure appropriate time, e.g. 1-2 months in complex cases, for application discovery, classification and class dimensioning.

Telstra has made good progress the last two years evolving both the basic service capabilities as well as moving towards more complex services and is placed as a clear market leader. Soul and Macquarie has also improved well in basic service capabilities and in more advanced capabilities while Optus has evolved less and has thus Macquarie and Optus are now placed on comparatively similar levels. Commander only recently launched their service, but with a mature and pragmatic approach they are already considered a challenger.

2.0 Profiling Australian MPLS Providers

2.1 Telstra

Telstra has demonstrated good progress and is still placed as the leading provider in Australia. Telstra's MPLS service, IP WAN, was launched in December 2000 however during 2006 Telstra did a comprehensive overhaul of its infrastructure which was launched in April 2007 as part of Telstra Next IP™ network. Technically the new network is superior to the competitors however it is more significant that Telstra has moved from a pure technology focus to be more service focused. Clients generally seem satisfied with service levels and although Telstra often is claimed to be non-responsive they have added features required by clients, but Telstra still need to push the bar. In particular Telstra need to increase application focus as well as introducing strong financial compensation scheme. A key issue is that more advanced serviced is not delivered as

an integral part of the MPLS service except for very large accounts. This, and Telstra's pricing strategy, does tend to make Telstra comparably expensive.

2.1.1 Service Description

The new network has a tiered architecture with an access, edge and core in a highly resilient and redundant design. This currently have 302 MPLS point of presence (PE routers) with 174 placed outside of capital cities.

- Telstra has increased the number of Classes to 6 since 2005 this includes a separate class for video. The metrics of each defined class are in line with Gartner's recommended best practice metrics, although these metrics are offered from PE router to PE router. For access services, CE to PE router, Telstra offer performance guarantees per access service. Financial compensation is not offered in case of non-compliance with CoS performance levels.
- There are no bandwidth restrictions per class and traffic bursting is allowed within the limits of the access while traffic is prioritized such that relative priority is maintained between classes. Application-level performance guarantees are not a standard offering but are done on a case by case customization basis.
- Each CoS is proactively measured and monitored and results made available for customer view via a real time on-line portal, this includes jitter, packet loss, and latency as well as throughput, router health and overall service availability. Telstra also offer online portal for real-time network changes such as firewall policies, as well as placing non-real time requests for other changes such as bandwidth of service parameters such as bandwidth.
- Telstra offer a variety of access services such as Ethernet, ATM, Frame Relay, ADSL, SHDSL, 3G/HSDPA, Satellite, ISDN/PSTN and Remote IPSec access.
- Telstra also offer a range of additional services such as Managed SSL/IPSec MPLS Access, Internet Gateway, LAN management, Managed Security, IP telephony as well as international MPLS services.

2.1.2 Recommendation

Telstra has a very mature service and large enterprises or enterprises with complex needs should consider Telstra. Enterprises should continue to push Telstra for stronger application level and business oriented performance guarantees.

2.2 Soul

Soul has demonstrated the most significant improvements relative to other providers and has progressed from being a 'strong potential' to being a serious competitor. The initial MPLS network was deployed in 2000/2001 however during 2004 Soul initiated a comprehensive overhaul of the infrastructure evolving the service from a New South Wales focus to a national focus. This included rolling out new point of presence, deploying fibre or using 3rd Party dark fibre as well as an ongoing consolidation of operational systems. Concurrently Soul has also progressed with rollout and launch of consumer voice, mobile and broadband services. While Soul has matured well there is still room for improvements. Clients still report service glitches and Soul need to focus on service delivery. While Soul is progressing into more advanced services these are delivered via various partners, which raises question regarding consistency as well as future strategy in this area. A large percentage of Souls customers are government agencies and while some of these may involve advanced solutions they do often not compare to corporate needs. Thus Souls experience still needs to be fully demonstrated.

2.2.1 Service Description

The MPLS network has increased to around 256 points of presence (PE routers) with around 223 placed outside of capital cities. The network has a 3-tiered architecture with a high level of

resilience and redundancy on tier 1 and 2 while more remote tier 3 pops have a varied degree of resilience.

- Soul has a very flexible approach to their classes of service offering where number of classes, metrics as well as application allocation is customizable. Soul can thus also deliver separate classes for voice, video, and other applications with CoS metrics in line with Gartner's recommended best practice. These are also as a standard offered from CE to PE router. Rebates are offered in case of non-compliance however the rebate scheme is weak and leaves very limited exposure for Soul.
- Each CoS can be proactively measured but this is optional and can be customized. Soul make performance statistics available to customers via an online portal but more advanced reporting requires purchase of a software license. Soul is currently deploying operational systems that will allow online service change.
- Soul offer a range of access services such as Ethernet, ATM, ADSL, SHDSL, as well as integration with mobile data services.
- Soul offers additional services such as Secure Internet Gateway, Managed IPSec VPN, Managed Security, Voice Gateway as well as IP Centrex services, while more involved services such as WAN optimization is delivered via various partners.

2.2.2 Recommendation

Soul has a mature service and medium to large enterprises with lesser complex needs should consider Soul. For more complex needs enterprises should diligently evaluate comparable references. Enterprises should also diligently evaluate capabilities and experience of all partners and ensure consistency across all sites. Enterprises that need a high degree of flexibility and customization should consider Soul but should demand stronger financial compensation scheme.

2.3 Macquarie Telecom

Macquarie continues to impress. The Macquarie Private IP Network (PIPn) was launched in 2005 and Macquarie Telecom has expanded and improved the service in several areas since then. The most significant deficiencies reported in 2005 have been rectified, especially increased reach, end-to-end CoS with financial compensation and CoS reporting. Macquarie today has one the most mature services, although geographic reach still can be improved. Clients did initially report service glitches but these appear to have been ironed out.

2.3.1 Service Description

The MPLS network has increased to around 50 points of presence (PE routers), these are predominantly placed in the eastern states but there are points of presence in all states. The network has a tiered architecture with a high level of resilience and redundancy on all levels.

- The service offers 5 classes of service with separate class for both voice and for video. The metrics of each defined class are in line with Gartner's recommended best practice metrics, although these metrics are defined from PE router to PE router. Performance guarantees are also available for the access services, CE to PE router, per access service. Each class is defined with bandwidth restrictions but traffic bursting is allowed and excess traffic is prioritized such that relative priority is maintained between classes. Macquarie Telecom offer rebates in case of non-compliance and it is noteworthy that this is not based on monthly averaged metric values but on daily max values.
- Each CoS is proactively measured and monitored and results made available for customer view via a near real time on-line portal, Macquarie InView, this includes jitter, packet loss, latency, throughput and overall service availability. There is no on-line access to service change.
- Macquarie Telecom offer a variety of access services such as Ethernet, Frame Relay, Leased Line, ADSL, SHDSL, 3G/HSDPA and Remote IPSec access. However performance guarantees is only offered for non-contentious access services.

- On case by case basis Macquarie Telecom also offer a range of additional services such as WAN Optimization, Managed SSL/IPSec VPN, Internet Gateway, managed Security, IP telephony as well as international MPLS services via Virtela.

2.3.2 Recommendation

Macquarie Telecom has a mature service and larger enterprises or enterprises with more complex needs should consider Macquarie Telecom. However for large complex solutions with a national scale and even an International scale enterprises should carefully check allocated staff as well as partners. Delivering large complex solutions on a national as well as on an International basis seems beyond Macquarie's size and enterprises must ensure that Macquarie do not get ahead of their own capabilities.

2.4 Optus

Optus is a disappointment in this survey. Optus Private IP (OPI) was launched in 2000 however Optus have only improved their service slightly compared to other providers and seems to have reacted slowly to changes in customer needs. The main service enhancements since 2005 is increased classes of service from 4 to 6, mobile and IP VPN connectivity. Despite Optus now have a fairly mature service they are challenged by both Macquarie and Commander and there are a number of areas where Optus do not comply with market best practice. Optus seems to lack a clear vision and strong execution which do present a risk of falling further behind. Optus still do have an advantage over Macquarie and Commander in size and ICT capabilities which is critical for delivery a nation wide services as well as complex solutions. Clients also report limited flexibility in pricing.

2.4.1 Service Description

The network has a tiered architecture with 44 core routers and 46 edge routers (PE routers). These are all placed within the major state capital cities except for Darwin and Hobart.

- Optus has increased the number of Classes available to 6, but do still not offer a separate class for video. The performance metrics of each defined class are in line with Gartner's recommended metrics, although these metrics are offered from PE router to PE router. For the access services, CE to PE router, Optus do as standard not offer specific performance guarantees except for access availability and committed information rate. Each class is defined with bandwidth restrictions and there is no bursting or excess within any classes. Excess Voice or video is dropped while excess data can be reclassified to a lower class. All defined CoS metrics are described as service targets and Optus do not offer rebates in case of non-compliance.
- Each CoS is proactively measured and monitored and the results made available for customer view via a near real time on-line portal, together with basic router availability information. There is no on-line access to service change.
- Optus offer a variety of access services such as Ethernet, Frame Relay, Leased Line, ADSL, SHDSL as well as WAP, 3G/HSDPA and Remote IPSec access.
- On case by case basis Optus also offer a range of additional services such as WAN Optimization, Managed SSL/IPSec MPLS Access, Internet Gateway, LAN management, managed Security, IP telephony as well as international MPLS services via Singtel.

2.4.2 Recommendation

Optus has a fairly mature service and larger enterprises or enterprises with complex needs should consider Optus. Enterprises who seek best practice services should compare with competitors.

2.5 Commander

Commander is the big surprise of this survey. Commander has a history in integration and managed data and voice services but Commander only launched their MPLS service in late 2006. However Commander is executing well along a well thought out strategy and despite the MPLS service have certain deficiencies the basis is mature. In particular Commander needs to expand reach, Class of Services as well as end-to-end CoS guarantees. During 2006 Commander also acquired IT service provider Volante which means that Commander can deliver more complex solutions beyond connectivity.

2.5.1 Service Description

The network has 18 PE routers with 9 MPLS point of presence in 6 capital cities with a flat architecture with combined edge and core routers and it is highly resilient with redundancy in each pop as well as redundant and diverse trunk paths to each pop.

- The service offer 4 classes of service including a best effort class, but while there is separate class for voice there is not a separate class for video. The metrics of each defined class are in line with Gartner's recommended metrics, although these metrics are defined from PE router to PE router only. Each class is defined with bandwidth restrictions and there is no bursting or excess within any classes. Excess Voice or Video is dropped while excess data can be reclassified to best effort class. Commander offer rebates on availability targets, but do not offer rebates in case of non-compliance CoS metrics although this is planned for later in 2007.
- Commander offer a variety of access services such as Ethernet, Frame Relay, Leased Line, ADSL, SHDSL, iBurst and Remote IPSec access, but no integration with mobile data services.
- Each CoS is proactively measured and monitored and results made available for customer view via a near real time on-line portal, this includes jitter, packet loss, latency, traffic per class, dropped packets per class, throughput, router health and overall service availability.
- Commander also offers additional services such as WAN Optimization, Managed SSL/IPSec VPN, Secure Internet Gateway, Voice Gateway, Managed Security, as well as IP telephony.

2.5.2 Recommendation

Commander has a mature service offering but due to size only medium sized enterprises or larger enterprises with lesser complex needs should consider Commander. Enterprises should also recognize that Commander still has less than a years experience and that teething problems still should be planned for, as well as ongoing need for service enhancements.

2.6 CITEC

CITEC launched MPLS-based services in 2002. While national scope and vision is more limited than other providers the service has evolved the basic capabilities well and is reasonably mature. CITEC is owned by the Queensland Government and is the primary infrastructure service provider for the Queensland Government. Despite CITEC being chartered as a fully commercial entity the charter is also very politically driven and discussions about CITEC retracting from commercial business is ongoing.

2.6.1 Service Description

The network has redundant core architecture with 14 points of presence (PE routers) in 7 capital cities and major Queensland regional centers. There is no POP in Tasmania but one in New Zealand. CITEC is still the only provider that has migrated all customers onto MPLS and decommissioned the legacy FR Network.

- The service offer 4 classes of service, but while there is separate class for voice there is not a separate class for video. The metrics of each defined class are in line with Gartner's recommended metrics, although these metrics are defined from PE router to PE router. On a case by case basis performance guarantees are also available for the access services, CE to PE router. Each class is defined with bandwidth restrictions and excess traffic within each class is dropped.
- CITEC offers a range of access services such as Ethernet, IP encapsulated Frame Relay, Leased Line, ADSL, SHDSL, but no integration with mobile data services.
- Each CoS is proactively measured and monitored and results made available for customer view via a near real time on-line portal, this includes jitter, packet loss, latency, throughput, router health and overall service availability. CITEC also offer online portal for change of service parameters such as bandwidth.
- On case by case basis CITEC also offer some additional services such as WAN Optimization, Managed SSL/IPSec VPN, Managed Security, as well as IP telephony.

2.6.2 Recommendation

CITEC has a mature service but due to its size only medium sized enterprises or enterprises with non-complex needs should consider CITEC. Enterprises should also seek service continuation guarantees.

2.7 Internode

Internode has been rolling out their MPLS network during 2006 and early 2007 however the service is still incomplete and the strategy appears technology driven and inhibited by lack of service experience. Internode has a history of visionary and entrepreneurial leadership, but with execution constrained by limited financial resources. The biggest concern therefore also is when Internode can enhance the service fully to best practice, especially extending performance guarantees across the access with proactive measurement of all classes and reporting via an online portal.

2.7.1 Service Description

The network has about 20 MPLS PE routers in 7 capital cities and two POPs in North America in a tiered architecture with redundant core routers in Adelaide, Melbourne, Sydney and Brisbane with dual fiber to each router.

- The service offer 4 classes of service including a best effort class, however it is the responsibility of the enterprise to classify all applications appropriately within the available 4 classes whether it is business applications, voice or video. The metrics of each defined class are in line with Gartner's recommended metrics, although these metrics are defined from PE router to PE router only. Each class is defined with bandwidth restrictions and excess traffic is dropped. Internode do not offer rebates in case of non-compliance CoS metrics.
- Internode offer various access services such as Ethernet, Leased Line, ADSL, SHDSL, and Remote IPSec access but no integration with mobile data services.
- While Internode claim to 'obsessively' monitor performance of the core network via 'home grown' tools Internode does not proactively measure performance metrics for any customer CoS and do not offer any online reporting. There is no on-line access to service change either.
- Internode offers some additional services such as Managed SSL/IPSec VPN, Secure Internet Gateway, Voice Gateway and Voice over Broadband.

2.7.2 Recommendation

Internode is mainly suited for small to medium enterprises without complex needs. Enterprises should be cautious about end-to-end performance since Internode does not measure compliance with any individual guaranteed performance levels.

2.8 AAPT

AAPT is the biggest disappointment of this survey. AAPT Managed Network Services for MPLS was launched in November 2003 however since the Gartner evaluation in 2005 there appears to have been no enhancements made of the service and not yet any integration with the newly acquired Powertel infrastructure. As integration of Powertel progress Gartner expect increased maturity. The key issue is AAPT's limited track record in execution leading to risk that AAPT may slide further behind.

2.8.1 Service Description

The AAPT network is still based on six fully redundant core POPs in state capital cities and 11 PE routers in select regional areas.

- The service offer 3 classes of service while there is separate class for voice there is not a separate class for video, and the CoS metrics defined for the 3 classes are below best practice. Each class is defined with bandwidth restrictions and excess traffic within each class is dropped. AAPT do not offer any financial compensation in case of non-compliance.
- AAPT offer a more limited set of access services such as Ethernet, Frame Relay, ADSL, SHDSL, L2TP and no integration with mobile data services.
- AAPT do not proactively measure performance metrics for each customer CoS, but offer near real time online reporting, via AAPT NetReporting, of monitored metrics such as packet loss, jitter and delay. There is no on-line access to service change.
- On case by case basis AAPT also offer some additional services such as WAN Optimization, Managed SSL/IPSec VPN, Managed Security, IP telephony as well as MPLS services to New Zealand via Telecom New Zealand.

2.8.2 Recommendation

AAPT has a fairly immature service and only smaller enterprises or enterprises without complex needs should consider AAPT. While a comparatively low pricing is attractive enterprises should be cautious about performance and push for service improvements.

2.9 Nextgen Networks

Nextgen Networks launched an Ethernet VPLS services in 2006 at present the only Australian carrier offering Virtual Private LAN Services (VPLS) services. The service is offered as a managed Layer 2 service from Ethernet UNI to Ethernet UNI. However the service is delivered via a core MPLS network and has some similarities to traditional MPLS services. For this reason Nextgen Networks has been included in the description but not in the overall comparison due to Layer 2 service focus.

2.9.1 Service Description

The network has 12 point of presence within 6 capital cities in a fully redundant architecture.

- There are 4 classes of service, similar to MPLS, offered within the Nextgen Network only and not across the access. However Nextgen Networks do not prescribe how to divide applications into specific classes, but leave the choice and responsibility to the enterprise based on buffer characteristics of each class. One class is suitable for voice, although jitter guarantee is below Gartner's best practice. There is no additional class fully suitable for video conferencing. Two classes has bandwidth restrictions with excess packets

being dropped, the other two classes can burst within the available access bandwidth. Nextgen Networks do not offer any financial compensation in case of non-compliance.

- Nextgen Networks offer some access services such as Ethernet, Frame Relay, Leased Line, ADSL, SHDSL, but no Remote IPSec access or integration with mobile data services.
- Nextgen Networks does not proactively measure performance metrics for each customer CoS and do not offer any online reporting, although this is planned. There is no on-line access for service change.
- Nextgen offer no additional services except Internet access.

2.9.2 Recommendation

From an MPLS service point of view the Nextgen Networks service would be considered immature, but from an Ethernet transport point of view it would be considered maturing. Medium sized enterprises and enterprises without complex needs should consider Nextgen Networks for Ethernet transport. Nextgen may be a good choice for those enterprises that do not want to make their addressing information available to the provider.

Recommended Reading

Toolkit Best Practices: How to Link Network Performance to Business Performance

Toolkit Best Practices: Key Elements of an MPLS Service-Level Agreement

How to Classify Applications for MPLS

How to Manage Traffic Levels on MPLS

How to Design High-Performing MPLS Access

Evaluate the Risk of MPLS Services

Acronym Key and Glossary Terms

Note X

Note Title