



Submission on regulatory issues related to telecommunications

Council of Capital City Lord Mayors

The CCCLM represents the interests of seven Lord Mayors and the ACT Minister for Territory and Municipal Services.

Capital cities are major generators of wealth in each Australian state and territory. They are the engine rooms of economic growth and the cradles of national creativity and innovation responsible for 78.3% of economic growth over the last five years.

Australia's continued economic prosperity depends on its capital cities maintaining and enhancing their international standing and we need to invest in their security and sustainability if Australia is to become more competitive, innovative and productive.

Our capital cities are centres of opportunity which attract business, labour, tourists, international students and investment from around the world. They are the face of Australia, projecting its character, and are the international gateways to our region.

Capital cities which are globally competitive must be safe, accessible, supported by efficient transport, sound urban design and sustainable development. Cities must be stimulating and liveable in order to attract a mobile and skilled workforce. They must support a creative and diverse cultural environment, a sustainable built environment and encourage an inclusive social ethos if they are to compete in the global market and capital city councils allocate \$3billion per annum to meet these demands.

Capital city councils work closely with the business sector, deal with the everyday needs and demands of both the urban workforce and their constituents and, at the same time, enjoy strong international relations with cities of strategic interest.

The Council of Capital City Lord Mayors is pleased to provide this submission for consideration.

Industry structure

The economic base of Australia's capital cities is integrally linked to the global knowledge economy.

For a city and its residents to be able to compete globally in a world dominated by rapid flows of information, the infrastructure connecting the city to the commercial telecommunications network must be able to meet both current and future requirements. The CCCLM in its policy document *Australia's Capital Cities: Partners in Prosperity* (see <http://www.lordmayors.org/LinkClick.aspx?link=Partners+in+Prosperity.pdf&tabid=36>) states that:

“the obligation is on communication carriers to ensure dramatically increased bandwidth by:

- Increasing capacity
- Upgrading to a higher bandwidth infrastructure
- Developing technologies that squeeze more bandwidth out of existing infrastructure
- Developing compression technologies that squeeze data in fewer bytes.”

A network which supports and grows Australian cities

It is therefore of paramount interest to Australia's capital city councils, that next generation broadband infrastructure is:

- comprehensively available
- configured and operated in a way that best serves the needs of current and future telecommunication users in the cities

- supported by a regulatory framework which promotes a competitive environment resulting in more choice of services and lower costs for users
- supports the continued global integration and economic growth of Australian cities

A regulatory regime is required to ensure that a structure exists which enables and facilitates the provision of the full benefit of broadband and facilitate the maximum associated improvement to the economic well being of the nation.

The regulatory regime has not adequately provided the framework for the criteria outlined above to be met. Restriction of open competition on services due to pricing policies of network owners favouring their own affiliated service providers has resulted in both higher costs and limited service to end users.

Most importantly, one of the core principles that needs to be mandated under the regulatory regime is complete separation of the ownership and operation of the network itself from the services deployed over it.

The standards specified in the attached *Seven Principles of Highly Efficient Networks*, should also be incorporated under the regulatory regime. These principles include:

- Use of open interface standards (for example, IP and Ethernet)
- Providing access to all “customers” on an equitable, non-discriminatory basis
- Signing up with one service provider must not preclude a customer having other providers for the same service

Safeguarding against degradation of council assets

A regulatory regime is required that ensures that the assets of local government and its activities on behalf of its constituents are not compromised by the broadband rollout and operation.

Councils have to bear long-term maintenance costs from structural damage, aesthetic damage and reduced life to footpaths and pavements due to excavations by telecommunications carriers. To cover this issue, the national broadband rollout project needs to provide for re-instatement of road and footpath pavements and to include this within the cost of the project. Provisions under the Telecommunications Act also need to be enhanced to allow councils to charge fees and to establish a long-term reinstatement fund

When councils and road authorities need to widen or relocate roads as part of their ongoing obligations, the presence of telecommunications hardware in roads and footpaths gives rise to extremely high charges from carriers.

There has also been a significant increase in the number of telecommunication companies installing their own conduit infrastructure in the road reserves of capital cities. Different companies frequently install conduits in the same location using a small conduit size designed to limit access by third parties.

A comprehensive regulatory framework is required to minimise these adverse effects, including mandating utilisation of available ducts wherever possible and the long term planning for ducting to meet future telecommunications needs and avoiding impacts on local government assets. Also included must be a requirement that the national rollout will co-ordinate rollout with the timing of road works wherever possible to minimise disruption.

The inclusion of a technical specification in the telecommunications regulations or Act should be considered to address issues associated with infrastructure installation such as:

- Requirements for notification to and liaison with local government officers
- Specification for compaction of trenches, including minimum requirements
- Reinstatement of roads and road related infrastructure affected by installation works, including minimum requirements for surface reinstatement
- Minimum requirements for traffic management by installer
- Accurate records to be obtained and kept of location of underground infrastructure to within +/- 300mm vertically and horizontally
- Specified maintenance period for any works and procedure established and detailed for handover of works.

Managing risk transference to local government

Footway subsidence also leaves councils open to potential damages claims if people fall or damage occurs. Local Government has to deal with the ongoing public liability issues associated with defective pavement reinstatements. Any change to the regulatory framework needs to recognise the issue of risk transference between stakeholders involved in the establishment of communication assets.

Normal conditions on new development

Whilst it may be in the national interest to ensure that diverse and varied town planning regulations applying in the various states do not impede the national broadband rollout, this should not absolve the project from meeting the normal conditions on new development (such as for equipment housings) that may apply. The regulatory regime needs to ensure that normal development requirements are met, visible hardware infrastructure complies with appropriate urban design guidelines and that asset security principles are observed.

In addition, development standards should be strengthened in new residential and commercial developments, which ensure appropriate building network cabling and services are provided by developers and linked from the street to the front door.

Attachment

The Seven Principles of Highly Efficient Networks

There is not only the opportunity to build a very high speed future-proof fibre optic network, but also the opportunity to create a superior delivery model that multiplies benefits to the economy, the customers, the network stakeholders and to the content and service providers.

The first two principles relate to requiring an open network. That is, open technically (eg. using Internet Protocol (IP) and Ethernet), and open commercially, by allowing "*multiple service providers to access the end user market on an equal basis*".

Principle 1

Use open interface standards (eg IP and Ethernet)

Principle 2

Provide access to all "customers" on an equitable, non-discriminatory basis.

The remaining principles are a natural consequence of modern IP networks.

Principle 3

Signing up with one service provider must not preclude a customer having other providers for the same service.

(Stockab in Sweden and TransACT in Canberra fail on this principle, which seriously devalues their networks, and prevents equal access.)

Principle 4

The network must be symmetric in both directions. (Natural for high-speed fibre.)

Principle 5

Any "customer" must be allowed to be a source of content or services. (Natural for IP.)

Principle 6

The network must have multiple meshed nodes with the same connections to all "customers". Under Principle 4, "providing" customers should feed through the normal network connection like anyone else, and not via any network provided head end.

Principle 7

Customers must be able to connect to any other customer without necessarily needing the brokerage of a provider, or even without having any provider. (For example, small businesses connecting branch offices themselves using the network as a VPN WAN, X-ray clinics sending images direct to specialists, or Uncle Paul streaming his daughter's wedding video direct to relatives by himself. IP networks do this naturally.)

The full benefits of a highly efficient network using Internet Protocol can only be realised when all seven principles are observed. Those accustomed to the notion of a provider piping content and services one-way to “end users” may have trouble appreciating some of these principles and their potential. However the advantages and benefits of egalitarian IP networks must be upheld. Failure to apply the latter principles will nullify the first two.

Principles 1 and 2 specify an open IP network capable of "shifting packets" efficiently. As far as the network is concerned, there are no “end users”, there are no “content providers” and there are no “service providers”. They are all just ports. All ports are “customers”, and some may produce more than they consume, but the network must not care.

Furthermore, on an Internet Protocol network, the ability of one port to send to any other port does not depend on a third port. Hence a customer’s use of the network should not depend on a service provider. IP guarantees equality of access, plus many other technical and operational benefits, but the equality must be universal. At any time any “customer” might be a provider.

Further impetus for these principles comes from modern computers. Even a modest domestic PC has all the functions (such as 100Mbps or 1Gbps ports) necessary to establish and operate networks and provide services. Principle 5 already exists, waiting to be applied. There is more intelligence in customer equipment than there is in the networks themselves. Any user can obtain, mostly for free, easy-to-use packages for:

- VoIP telephony,
- LANs and WANs,
- Virtual Private Networks (VPN),
- web hosting,
- mail self-hosting,
- streaming video transmission
- game hosting

There is already a marriage between technology and these principles, even if the current business models preclude them. Violating these principles requires deliberate non-standard modifications, and would ruin this most efficient model.

Competition Implications

The first implication from operating an open access network is that the network operator must not provide content or services (other than the connectivity). Otherwise, the operator would be competing against “customers”. It would be impossible to give equal access (or be seen to give equal access) if one provider is also the operator who controls the network. The independence of the operator is an advantage to all “customers” (any of whom may be providers) as well as the general economy.

Billing Implications

Because “customers” do not need a service provider, and indeed could be providers, there must be a mechanism to pay for the connection and traffic independent of the services or content. This also turns out to be a major advantage.

A common operational and administrative problem for carriers is large, expensive, error-prone billing systems trying to cope with numerous ever-changing complex plans. Simple billing saves operational costs

and enhances the business case. In this case, every “customer” gets a simple bill from the network operator for:

- The periodic fee for connection - depending on the speed of the port (line rental)
- The traffic charges based on the Gigabytes sent at each Grade of Service

The “customer” who sends the data pays for the traffic. This is consistent with today’s telephony, where the customer making the call pays for the call. Traditional telephony does not sign up some customers as “providers” and others “users”. A billing system under these seven principles does not need to distinguish either. For example, a video provider will send a lot of traffic and will pay for it, just like any other “customer” who sends data.

Customer wanting content or services make their own agreements with fellow customers who are providers, and pay them separately. This already applies today where Internet Service Providers, VoIP providers, music providers, etc. bill separately from the line rental. Providers, like a video provider, can factor their network traffic costs from the operator into the charges to their fellow “customers”.

Providers would be free to bundle their own services or bundle jointly with other providers as they wish. However bundling with the network connection must not apply. It would break, or be seen to break, the equality rule. Furthermore, it would complicate the network operator’s billing system, complicate the providers’ billing systems, and create unnecessary administrative overheads when a “customer” has multiple providers, or switches providers.

To continue the example, traffic within the network (on-network) would be very inexpensive compared with Internet traffic, which today retails as low as \$2 per Gigabyte. “On-network” traffic could probably be charged at around 5c per Gigabyte depending on the Grade of Service (GoS) used. At 5c per Gigabyte, a local phone call cost would be 0.01c per minute. Small businesses running a fast VPN might pay about \$1 per day for traffic using a lower GoS.

With Internet Protocol, the sending customer chooses the Grade of Service on a packet-by-packet basis. It is a perfect fit. The paying customer controls the rate, quality and costs. Interactive services, like voice or video telephony and some games need a low delay and can select, and pay for, the higher GoS. Movies can be buffered by a few seconds so they only require a moderate GoS. Replacement packets can make up for any lost packets in computer data or Internet traffic without noticeable effect, so these can use the economical low GoS. All this happens without the network needing to know (or care) who is a “provider” or a “user”.

Productivity Implications

Principle 5 has important economic benefits. By empowering any “customer” at any time to be a producer of services and/or content, new markets including niche services and specialised content will arise. Such products will be readily exportable to the whole world, because they are already connected. These “producing customers” will have a competitive advantage in world markets because they will have flexible low-cost access, under their own control, to a high-speed bi-directional data network.

Principles 4 and 5 also enable small businesses to operate very economical WANs which were previously only affordable by large corporations. This improves competition, gives all businesses an advantage compared with other regions, and will attract and enhance highly connected businesses.

Marketing Implications

Some customers may not initially be motivated to buy the connectivity unless there is content or a service they want. Content and services cannot be bundled with the connection for all the technical reasons, equality reasons and the billing reasons already discussed. This is not a significant disadvantage. It is like electricity. White goods shops do not hand out electric company service applications when they sell a refrigerator or bundle power with appliances.

Implications for Internet Service Providers

The term "Internet" strictly means a vast interconnected mesh of networks capable of freely transporting all types of data in a wide variety of formats. The Internet is IP based, and it is a highly efficient network, following these seven principles.

Today, to get to the Internet (the interconnected networks, not just the web) one usually goes through an inefficient line that is not part of the Internet. This involves a modem (DSL, cable, wireless, dial-up, etc.). The other end of that line needs a corresponding modem or multiplexer interface before finally being routed to the real Internet. The provider of this equipment and the routing to the Internet is called the Internet Service Provider (ISP).

Highly efficient networks do not use modems. The highly efficient network connected to the Internet becomes part of the Internet, so there are no ISPs. (Old ISPs can still provide e-mail or web hosting, which many customers will not want to do for themselves even though a highly efficient network empowers them. However as hosting providers they would be not called ISPs.)

The network operator must give every customer a public static IP address so they can connect. The IP address can not be supplied by an ISP because the customer depends on their IP address for all the other network services that have nothing to do with Internet access. Some "customers" will have applications (such as on-network private connections) that do not even use the Internet. ISP supplied addresses would be pointless and would undermine the equality prescribed in these principles.

Once the operator gives customers a public static IP address, the customer too becomes part of the Internet. The operator buys bulk Internet connections from carriers and routes their entire network to the Internet. This will not compete with ISPs because there is no need to have ISPs. There will however be a third line on the bill from the network operator for Internet traffic.

The network operator assumes lawful interception responsibility, which is made easier by static public IP addresses for every "customer".