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To: NBN Co Limited
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NBN Consultation Paper: Proposed Wholesale Fibre Bitstream Products

1. General comments

The Internet Society of Australia (ISOC-AU) applauds NBN Co in taking the initiative to consult broadly in the formulation of its broadband services and welcomes the opportunity to respond. In addition, we would like to encourage NBN Co to engage further with the end user community in order to obtain the best outcomes for the network.

ISOC-AU is a non-profit society founded in 1996, which promotes the Internet development in Australia for the whole community. ISOC-AU is a chapter of the worldwide Internet Society and is a peak body organisation, representing the interests of Internet users in Australia.

ISOC-AU's fundamental belief is that the Internet is for everyone. We provide broad-based representation of the Australian Internet community both nationally and internationally from a user perspective and a sound technical base. We have a longstanding and ongoing commitment to the effective representation of these interests in self-regulatory processes in the telecommunications, domain name and Internet-related services industries. We also consistently promote the availability of access to the Internet for all Australians.

2. Response to NBN Co Questions

Not all of the questions provided in the Consultation Paper directly affect end users. We therefore have concentrated on those issues that will be important for end user benefits from the NBN.

What specific challenges or concerns are raised for your organisation as a result of a Layer 2 focus by NBN Co?

ISOC-AU is concerned that by restricting itself to a Layer 2 focus, the opportunities will be reduced to adopt optimal approaches to Internet security and ensuring the broadest possible access to innovative Internet services. ISOC-AU sees that the ideal approach is one where NBN Co provides layer 2, aggregated layer 2 and layer 3 services.

Under a layer 2 only regime locations and communities will still exist where competitive retail network service providers see it as not worth their while to install equipment. A low cost, nationally available Internet service could be provided to community groups by NBN Co and this would best serve the public interest.

In addition, the total cost of ownership to the Australian community would be lower were the Internet Protocol infrastructure to be built by a national service provider, as this would reduce the duplication inherent in multiple service providers installing separate routers across the many POIs. This could then be presented at a smaller number of centralised locations enabling national services in the most efficient manner.

Similarly, an aggregated layer 2 service presented at core national Points of Interconnection (POIs) would reduce the overall barrier to entry by service providers. This would reduce the impact of the inevitable costs associated with switch over to the NBN. With fewer POIs required in order to deliver widespread services, NBN Co will maximise the number of Retail Service Providers (RSPs) able to address the market.

In this way the financial barriers to entry into the broadband market will be reduced, and service providers could focus on the layers where true innovation is highest: services, applications and content. New service models could then freely proliferate without the constraint of waiting for wholesale layer 3 network providers to emerge. Furthermore multicast protocol is an IP – layer 3 – protocol and as such is most mature at the layer 3 implementation.

For RSPs who wish to acquire a Layer 3 wholesale product, which entities are best positioned to meet this need? How might NBN Co facilitate the delivery of such a Layer 3 product by these entities?

In the absence of its own layer 3 product as suggested above, ISOC-AU encourages NBN Co to rapidly determine and make public its OSS specifications in order to facilitate the corresponding development of retail and wholesale systems using flow through provisioning and network monitoring and management.

In addition, NBN Co must quickly establish the appropriate facilities from within which third party equipment can be installed to deliver services. Delays in establishing these will also delay the planning of service delivery.

Network service providers are commonly operating from third party major hosting centres where they have installed equipment, and have access to electricity with generator backup, equipment racks, a broad range of telecommunications services etc. NBN Co would benefit from making its services available from such locations as soon as possible. This would facilitate services being provided to a broad end-user footprint from the earliest possible time.

What are the key implementation issues that the industry and end users wish to raise about Ethernet and GPON?

The key issues identified by ISOC-AU that will impact on end users are:

Low income households and MDU residents may well miss out:

NBN Co is yet to determine how to deliver to multi-dwelling units (MDUs), and which of such premises will receive more than a single connection. Given the correlation between low income and permanent residence of caravan parks, granny flats and flats, it is probable that these groups will be underrepresented in services provided. Indeed the

whole area of delivery to MDUs lacks clarity, with representatives of NBN Co saying [during their January 20 briefing] it “might fibre up MDUs and it might not”. This leaves the question open as to the speeds that will actually be available to MDU residents.

Unclear security:

NBN Co is yet to determine the physical and electronic security regime under which its services will operate. The Gigabit Passive Optical Network (GPON) standards are not as secure as cable Internet mechanisms (when implemented) but show some improvements compared with DSL. In addition, the security of the new telephony system has not been outlined, and there are significant differences between SIP and classical telephony. Without appropriate security, end users will be prone to a range of problems such as identity theft, fraud, spam, billing issues and poor network performance.

Interception and Privacy:

Under the *Telecommunications Interception Act 1979*, NBN Co will have obligations for legal interception. Unsurprisingly, this is not mentioned in the discussion paper, yet it is highly likely NBN Co will bear the burden of the majority of legal interception taking place in the future as law enforcement agencies will see a number of advantages in dealing with one government controlled body. Overall, this should also represent some cost savings for government agencies. It is therefore also imperative to ensure NBN Co has the highest standards of operation, design, security and oversight.

Optical Network Termination:

The specific equipment NBN Co is intending to install on residences is yet to be chosen. It is anticipated it will comprise several ports for wired ethernet, a single telephony port, and potentially an RF television port. It is not clear whether it will itself allow multiple retail service providers presenting across a single physical port, or whether local cabling will be owned by local providers, households or others.

There is no system of certifying household network cabling at this stage. Thus households may experience a range of performance levels.

Performance:

The performance of the network will be determined by usage, and the number of users connected across each piece of equipment. NBN Co representatives stated in the January 20 briefing they did not have the final numbers, but expected some 30 fibre serving areas in the Sydney area and several hundred nationally. Depending on the port density (number of connections per unit) of equipment selected by NBN Co, and the corresponding interconnect bandwidths, consumers will see a range of performance levels. NBN Co's figures cannot be checked, as there is not enough information; however their stated intention is to get effective performance of 100 Mbps across the access network.

End to end performance (ie across the entire network) targets are as yet unspecified. Coupled with unknown standards for future retail network service provider performance means we cannot know what overall performance consumers will see. Since NBN Co is intending to connect its customers at its (as yet not established) local exchanges/POIs, performance will most likely be dictated by the standards of the RSPs as it is today. NBN Co is intending to offer a range of transmission performance grades, under the heading of Quality of Service (QoS), which are also as yet unspecified. These should be specified as soon as possible so that the RSPs can, in turn finalise their own products.

Once the NBN is constructed, NBN Co must publish its actual real time performance measures so that end users can validate claims made by RSPs about their product performance.

NBN Co is also intending to deliver a multicast capability. Multicast is a higher layer service (layer 3) than that being proposed by NBN Co (layer 2) and is a relatively immature technology when implemented at layer 2 and hence likely to be prone to reliability issues. Conversely, should it be implemented at layer 3, additional NBN Co equipment will be required and hence higher costs incurred which would potentially be passed on to all subscribers.

Users may accidentally oversubscribe to services.

Additional services – particularly television – may flood the links to each premises. Users may not realise the compounding effect of multiple services bought, especially when bought from different service providers. Users would benefit from a 'meter' provided by NBN Co to determine access network performance.

Infrastructure Services

NBN Co is yet to commit to the ancillary services it will offer to service providers located in its equipment exchanges. Thus retailers cannot determine their cost profiles to operate. In addition, other infrastructure services are clearly not being considered. This means that economies of scale or overall performance improvements due to collocation with a root DNS, for example, are unlikely to be achieved.

Lack of electrical power 'lifeline' telephony services

Electricity cannot be transmitted over optical fibre. That means that the existing situation in which electricity can be sent over copper wire into people's homes in cases of emergency cannot be replicated in a fibre NBN.

Back up power must be provided where it will clearly be needed in emergency situations (fire and police stations, hospitals, nursing homes, etc). There will also need to be an extensive education campaign so ensure members of the public are aware that their fixed phone service may no longer operate in emergency situations. Special provision will also need to be made for residences in which people with special health or other special needs.

Do you believe this model will help foster participation by RSPs in less densely populated locations? What other barriers exist to participation by RSP in these locations? How might NBN Co help address them?

ISOC-AU is concerned that the requirement to install equipment in remote POIs will deter investment. As in the previous section, ISOC-AU encourages NBN Co to offer widespread aggregation of its services in addition to the option of installing local equipment.

Do you believe this model allow sufficient space for participation and investment by commercial backhaul players? What concerns may need to be managed?

ISOC-AU is concerned that this model is overly reliant on the provision of backhaul services and offers little incentive for RSPs to enter under-served areas with low population densities.

What multicast capabilities have service providers identified? Should the NBN Co access network proxy IGMP functionality and consolidate reporting before passing messages through to the service provider, or do particular services require access to all IGMP communications from all end users? In other words, should NBN Co manage multicast signalling scalability on behalf of the access seekers, or would this unacceptably limit the kinds of multicast services that are being contemplated?

ISOC-AU would prefer to see two way multicast services, that is, where end users can stream multicast. If NBN Co were to manage multicast signalling, this should not preclude end users from originating services.

Whether standards are required for CPE installation, reporting and management to allow customer self install, remote CPE configuration and downstream service provisioning?

ISOC-AU would applaud moves to certify end user premises installation.

We will be happy to provide further comments on issues raised by this Consultation Paper

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