

Designing the NBN menu - food or meals?

Ben Ramsden, 25th August 2009

Executive Summary

The National Broadband Network (NBN) has the potential to unleash a wave of new high tech services to Australians, and turn the existing telecoms sector on its head. The enormity of the change will depend on exactly what the NBN sells and how it is priced. This paper discusses these topics and concludes that the best interests of Australians won't be served by the existing major players getting their own way.

Section 2 of the paper lists 12 lessons from other wholesale markets that are relevant to NBN commercial design.

Section 1 - Introduction

October is traditionally the month when the streets of Beijing fill with cabbages. Everywhere truck loads of them are being shipped into the city and distributed to the population who eagerly take them home and squirrel them away. Large stockpiles can be seen on balconies, pavements and against walls covered by makeshift tarpaulin. To the unexpected observer it is difficult to know whether to smile or panic about this sudden, well executed, cabbage invasion in a city of 17m people.

When Kevin Rudd announced the National Broadband Network it was positioned as caviar rather than cabbage, but the questions and challenges are remarkably similar. What is it all going to be used for? How to roll it out to a country of 21m people? Who's going to pay for it? How will this affect the existing market?

Product and price are key in wholesale.

The NBN will be a *wholesale* market which means that it will deliver key *ingredients* for other companies to convert into products and services for end customers – like food into meals. The fundamental issue in all wholesale markets is the *product* and *price*.

What will the NBN sell?

NBN promises 100Mb/s internet to 90% of the population. This is being described as “ultra-high speed broadband” which is technically correct but unhelpful in trying to understand what people will use it for. Think of a revolution in communications, information, entertainment and control, not today’s internet on steroids. Revolution means radical change, for example when

- the music industry moved from vinyl disks to today’s iPod culture,
- international travel moved from ships to aeroplanes,
- transport changed from horse and cart to motor powered vehicles,
- electric light companies evolved into utilities supplying a fuel by wire powering a plethora of 3rd party applications, etc.

Change will be very significant

Note change takes place over a number of years, major companies decline at the expense of new ones, and it is very difficult to predict the long term future. So we must think as NBN as a major enabler, including for many things that have yet to be invented, by organisations that are yet to exist!

Let’s try and be more concrete about the next few years. Analysts often group services enabled by high bandwidth systems like NBN into 4 categories:

- Voice & video communications
- Messaging
- Infotainment
- Applications

Applications are the next big thing.

Buy the plasma screen...

...bin the computer...

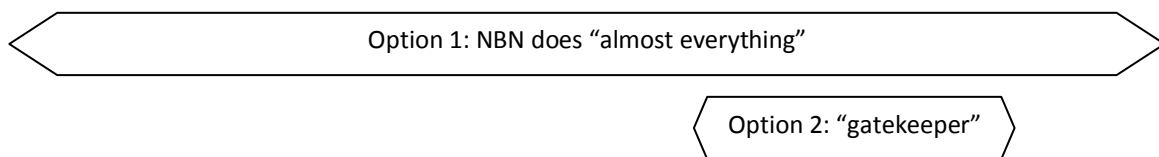
...maybe dentist by wire.

The latter category, applications, is where there are likely to be the most significant innovations. For example: data, processing power, information and applications will be hosted in central warehouses to serve sophisticated displays, cameras, keyboards, machines, etc located in homes and offices. The end user will no longer need to invest in their own computers, software and entertainment consoles. Instead software will be delivered as a service on demand. Reliable, high speed communications will enable new industries and business models to emerge e.g. remote medical diagnostics and treatment. The possibilities are endless.

The NBN is going to wholesale key ingredients for

these services, but which ingredients? The range of possibilities is shown below:

Wayleave	Duct capacity	Dark fibre	Lit fibre	Routed / switched circuits	Guaranteed Quality of Service	Break bulk	Full services
The right to install and operate a cable over a given route	Space to install a cable over a given route	Access to an existing cable	Basic bulk comms between two nodes	Bulk comms that can be routed according to customer need	Managed network for bulk comms	Managed network for smaller circuits	Eg phone, internet, TV, desktop applications



Where to play?

There is a range of potential operating zones for the NBN bounded by these options:

1. Do "almost everything" – this is the classic vertically integrated model that was adopted by many nationalised industries including telephones.
2. "Gatekeeper" – this is the minimum position to ensure control. It is a little similar to the position that supermarkets and retail banks maintain in their sectors.

In the mid-field....

The government will want to balance their dual desires to both control and stimulate industry development. We believe that they will prioritise the first because their top priority is to reduce the dominance of Telstra. Hence they will opt for a model as close as possible to "gatekeeper" because it will give maximum control for minimum capital investment. It's downside is the complexity of commercial relationships required to operate which may increase operating costs and time to market.

...but only after intense negotiation.

We anticipate that specific NBN scope will be subject to intense debate and negotiation because it will directly impact on existing players' future market opportunities. In general today's large players will want a small NBN scope, and small players will want the opposite.

A small NBN would sell only very large circuits or

Today's big boys will want a small NBN....

...whereas a large NBN is better for end customers.

small products in large volumes, thus leaving plenty of opportunity for Telstra, Optus and other current large players to add extra value in future. Conversely a large NBN would sell a large range of more refined services that would allow new entrants to retail directly to the end customer (eg Woolworths, Apple, Google, Sony pictures). This latter scenario would probably bring more innovation and variety to the market and thus is best for Australian customers. It would be a threat to existing large telecoms companies who would lose their network differentiator and face significant additional competition.

Thus the NBN will sell the telecoms equivalent of "processed food" which is neither raw ingredients nor fully prepared meals.

NBN's commercial model

The world won't stand still...

...even if you want it to...

...all things to all people...

...many and varied.

The traditional network company business model is to invest in, operate and maintain an asset whilst extracting an economic rent from those who use it. The challenges with creating a business model for the NBN are:

- Technology capability is evolving rapidly which means that today's latest is quickly superseded. This has implications for innovation, risk, upgrade path, and required rate of return.
- Government control implies a low risk and innovation profile, which sits uncomfortably with the technology fundamentals.
- As a monopoly supplier it must provide all reasonably required services at reasonable prices.
- It is a vital ingredient in a wide range of end-user services with very different monetary values and underlying network requirements.

So how to square the circle?

Technology capability

Telecoms capacity, like computing power, has a continuously improving capability. The telecoms equivalent of Moore's Law means that carriers investing in new technology look for swift returns before obsolesce. The NBN has the potential to make

Managing technology upgrade path is pivotal

significant parts of the industry's existing asset base redundant at a stroke. Technological superiority is one of the few significant differentiators in the Aussie market today. It is no wonder that the NBN is such a sensitive issue. Managing the technology upgrade path is pivotal to the success of the NBN. This means both managing the transition to the new network, and upgrading it periodically once it is built.

Fibre can deliver the internet 56 million times faster than today...

It is important to understand the capability and potential of fibre optic systems because they will set the context for entire commercial structure of the network. These systems first entered commercial service in the late 1970s and for a period during the 1990s were doubling their capability every 6 months. Today maximum transmission speeds of 14Tb/s are *theoretically* possible, this is 700,000 – 56,000,000 × faster than the speed most Australian internet customers use today! In practice other network infrastructure and traffic will limit the capacity to a much slower speed, but still orders of magnitude faster than today.

..for a fixed charge...

= potential for financial disaster.

The key issue is that virtually unlimited speed will be available at fixed cost. This, coupled with the “death of distance” in telecoms charging over the last decade, means that virtually unlimited capacity and reach will be available to many people for a fixed charge. Unlimited supply into a market with limited demand is a recipe for financial disaster unless carefully controlled.

It's happened before...

...and here right now.

This precisely what happened with several major international fibre-optic submarine cable routes in the late 1990s. Too much competition drove low pricing which led to the financial distress of many cable systems. High speed wireless 3G technology is currently causing a similar problem in Australia. The two smaller operators, Vodafone and Hutchison, have been forced to merge because their price based competition is delivering insufficient revenue for them to survive alone.

Handle with extreme care.

So the technology risks destroying operator shareholder value and pricing is critical in controlling this.

Pricing

Prices can be imposed...

...and regulated.

But cost based pricing has significant industry implications

As a monopoly supplier the NBN is ideally placed to control. It will probably set its own prices, within a regulatory regime, to achieve a desired rate of return. Most similar markets use some sort of cost based allocation method to determine pricing. This is challenging in telecoms because each service has a very different underlying network requirement, which is not necessarily reflective of the market value for the end service. It also exposes for the first time underlying network economics which could be used by new competitors to the detriment of existing players. The following example illustrates.

Consider the retail pricing of 3 popular wireless products and, by calculating the network load for each, the implied value of underlying network usage:

Typical pricing for TXT, Voice and Broadband

Product	Retail price	Implied price for network usage (\$/MByte)
TXT	3.9c per message	\$240
Voice	12c per minute	7.1c
Broadband	\$49 for 3 GByte	1.6c

Source: Vodafone prepay \$49 cap & broadband pricing 12-Aug-09

If network costs are related to usage then this example shows that value, not cost, based pricing has been used. Now consider the implication of *retail* pricing being *value* based and *wholesale* pricing being *cost* based:

- Retailer and wholesaler would have very different investment incentives
- Retail parties would be unable to interconnect commercially via the NBN
- New competitors can “cherry pick” high margin products using newly available wholesale capacity

Stimulating innovation...

...may threaten the status quo...

We would applaud the NBN for making wholesale capacity available at *cost* based prices to entrepreneurs to create new and exciting products that may challenge the current players. This is, after all, how Skype, Google, Youtube, eBay, etc came to exist. We also recognise that this represents a significant change to the existing telecoms market and might therefore be vigorously resisted by those players. They are likely to lobby for value based

...leading to a compromise. pricing to be retained for major existing services, like voice, to protect current cash cow revenue streams. Hence wholesale pricing will probably be set on a product by product basis.

This would be a significant step for the NBN because many broadband networks are simply Internet Protocol (IP) “pipes” that are unaware of the type of product traffic that they are carrying, as is the entire global internet.

NBN caused the telephony & internet worlds collide

The macro picture is that high speed broadband accelerates the collision between the internet and telephony commercial worlds. The traditional telephony business model is based on “calling party pays” whereas in the internet world all usage is virtually free once connectivity is paid. Telephone companies have long been worried about the internet cannibalising their revenues. Witness the current US FCC investigation into Apple’s decision to block Google Voice as an iPhone application. It is suspected that Apple did this to prevent harm to the wireless carriers who are their main route to market.

Watch this space.

The debate about the scope and pricing of the NBN is about to start – the future of an entire industry rests on the outcome.

Section 2 - Lessons from other markets and industries

Every market and industry has its own unique features, but there are also a number of commonalities. Based on the author’s wealth of experience in other markets, the following lessons seem relevant to the design of the NBN:

1. Major customers owning network equity creates market stability
2. Good self-governance works, minimises external intervention and provides a fertile investment climate
3. Industry specific regulation facilitates mature dialogue and stable long-term industry development
4. The sooner incumbents accept the reality of a level playing field the better for everybody (themselves included)
5. Participants need to adhere to the letter AND spirit of rules

6. Operational data transparency creates trust and reduces the costs of competition
7. Maintaining end customer relationship is crucial for success.
8. Unrestrained free market activity in broadband destroys value. Wisdom comes too late.
9. The biggest opportunities and threats are often spotted retrospectively
10. Metering and charging becomes a mini industry in itself
11. Operating costs are never small compared with traffic value.
12. Partnering works.

Disclosure

The author is a customer and shareholder of Optus, Telstra and Vodafone. The opinions in this paper are solely those of the author. Nothing in this paper should be construed as advice and any contents should be independently verified before using for commercial purposes.

About the author

Ben Ramsden is an independent business growth consultant - specialising in business development and turnaround. His experience includes.

- 20yrs in regulated telecoms and utility markets around the world
- Commercial contracts in UK wholesale monopoly power market
- Financing major public infrastructure projects
- Fibre-optic submarine cable carrier relations
- Australian telecoms market from within Telstra and Vodafone

Contact:

Phone: +61 406 401 180

Email: Ben.Ramsden@iee.org