



The NBN – A Peek at the Dark Side

*Possibilities and Pitfalls of Universal
Broadband*

October 2010

- NBN and the NBN Project
- The Promise and the Challenges
- What the NBN Cannot Solve





**May you find what you are
looking for**

**May you come to the attention of
authorities (government)**

May you live in interesting times

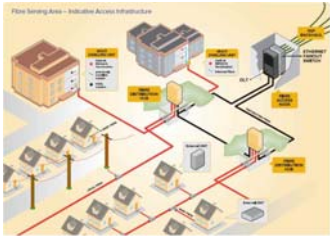


NBN – Official Policy



Australian Government

**Australian Government initiative –
April 2009**



**FTTP to 93% of all homes, schools,
workplaces
(Wireless/Satellite to remote 7%)**



**Fibre Broadband 100Mbps-1 Gbps
Wireless/Satellite up to 12 Mbps+**



**...built in 8 years
(~5,000 connections per day)**



Australian NBN (cont)



<\$43Billion estimated cost



Expected to be commercial utility
(making small profits...eventually)

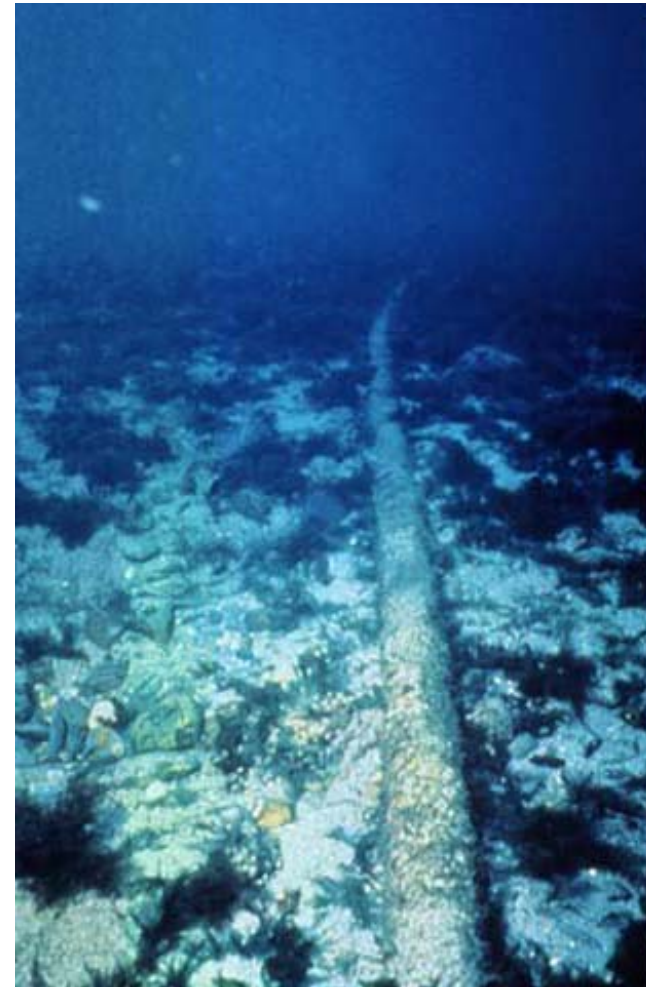


Wholesale-only – not permitted to
sell directly to end users



NBN is the last remaining fibre evolution

- Lasers invented 1960, low-loss optical fibre late 1970's
- 1980/90's – interexchange network converted to fibre
- 1992 – first Australian undersea optical fibre cable (Tasman2)
- *2010s – Customer Access Network changes to fibre*





Communications Alliance

Unified voice representing telecommunications industry in Australia

- Membership**
- Carriers
 - service providers
 - equipment suppliers
 - Consultants
 - experts



- Self-Regulation**
- Codes of Conduct
 - technical standards
 - operational interworking
 - advice to policy and regulators
 - Responsible Consumer Protection

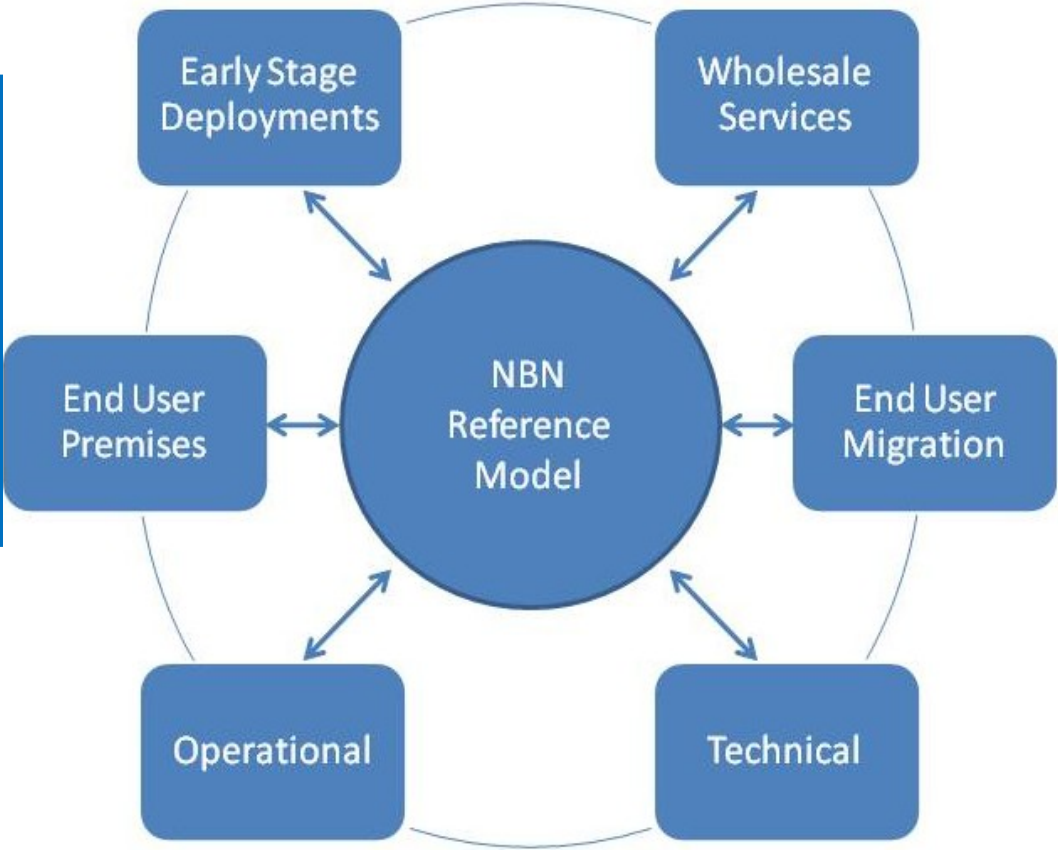
NOT government, NOT NBN Co Ltd
(NBNCo are members)



NBN Project Structure

| |
|--|
| Commenced August 2009 |
| To build agreement on requirements for NBN services from customers |
| To assist NBN Co in delivering the NBN |
| To accelerate the development and rollout of NBN services |

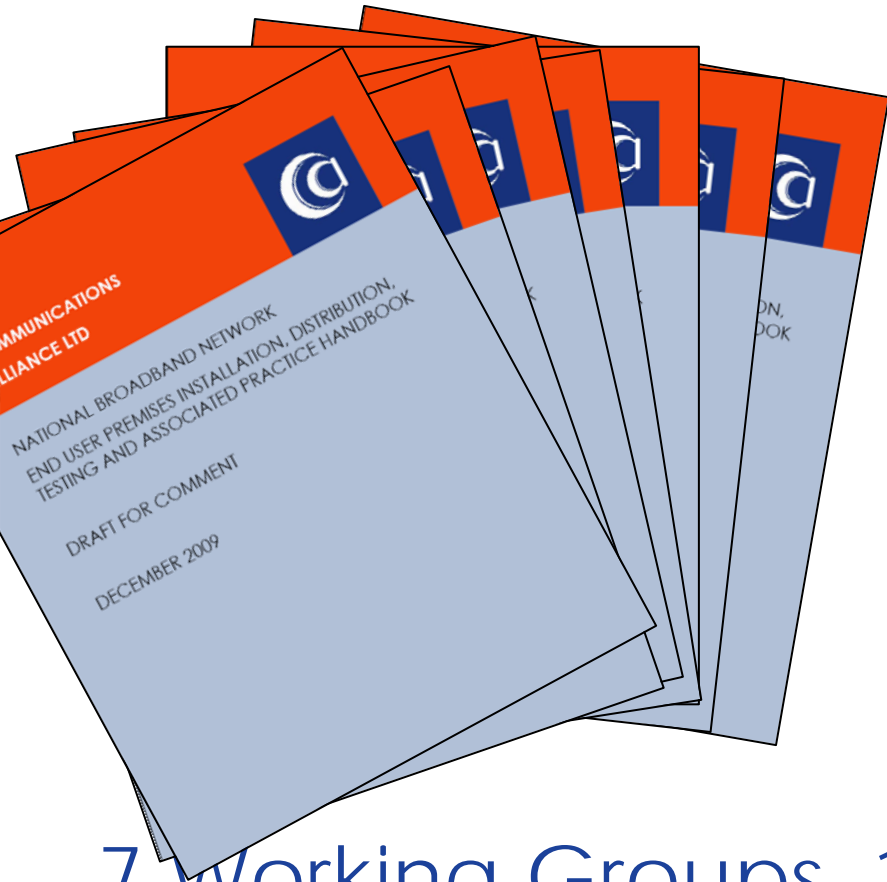
October 2010:
155+ people
65+ organisations



Seven NBN related topics



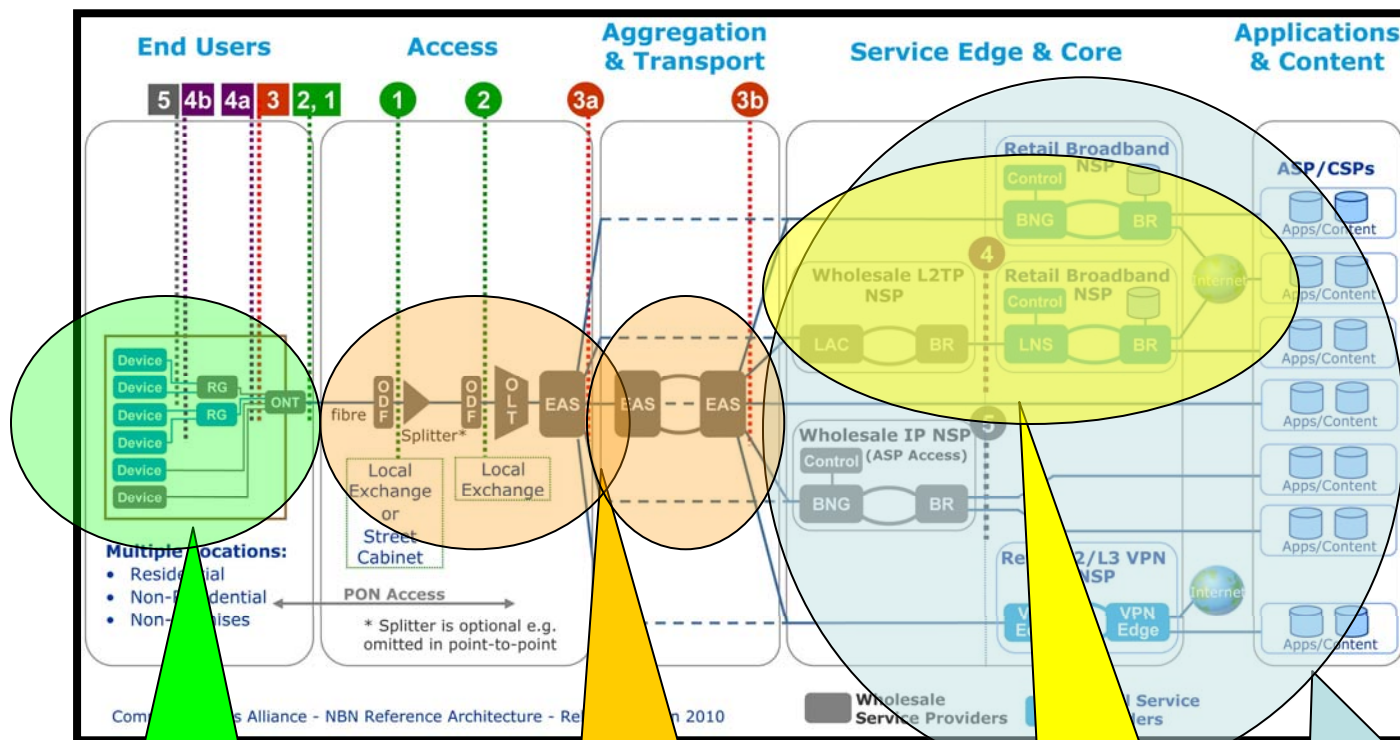
Documentation Created



PRICELESS

7 Working Groups, 13 Documents totalling 600+ pages of reference models, technical specs, handbooks

Architecture Encourages Choice & Flexibility



Many Active Services Simultaneously

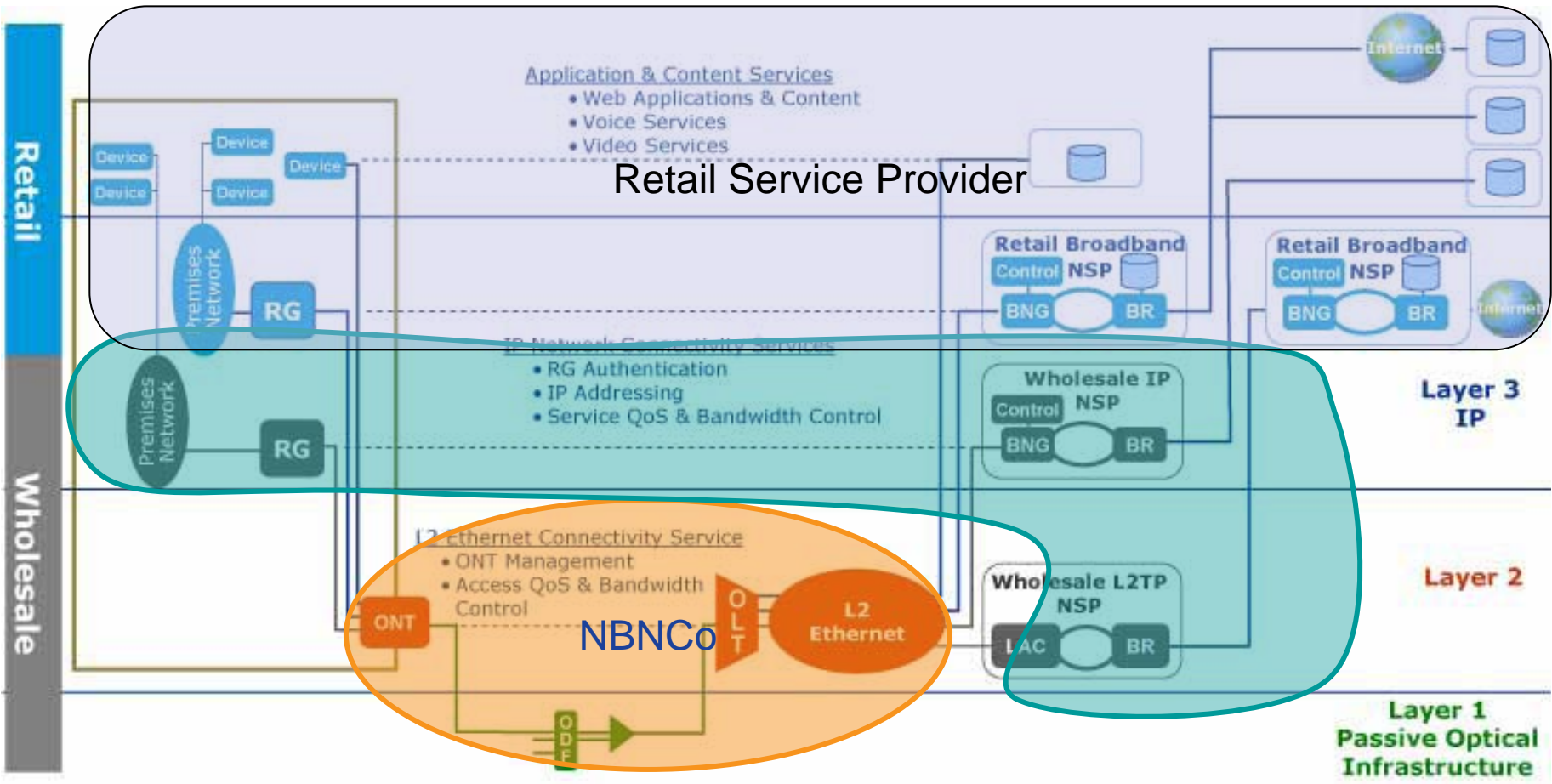
Independent Access and Longhaul Network(s)

Multiple Levels of Wholesale & Retail Service Providers

Multiple Simultaneous Service Providers



Layered Relationships



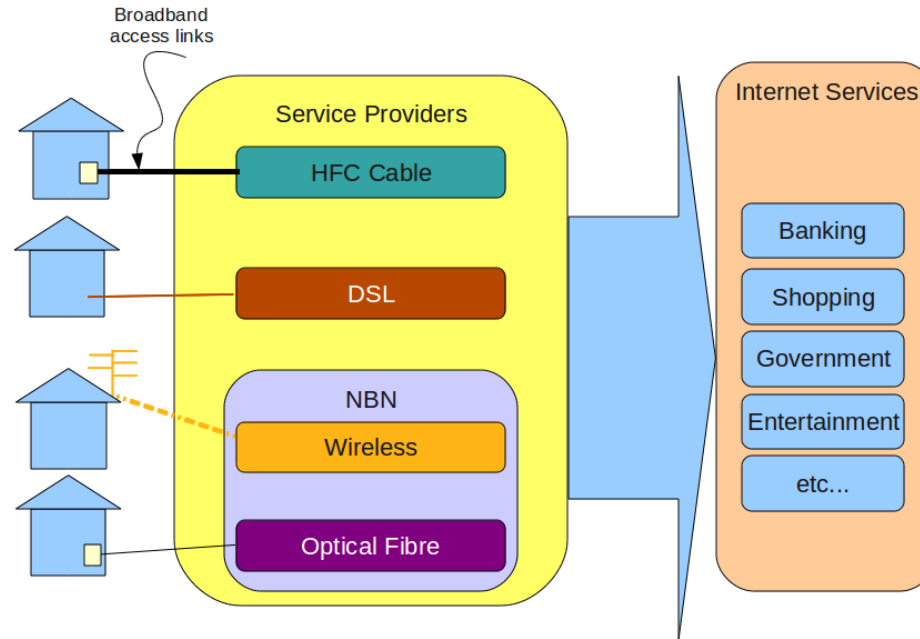


Why Optical Fibre?

- Distance
 - ADSL slows down after only 1 km
 - Fibre full speed to 40km Reach more people
- Upstream speed
 - ADSL maximum 1 Mbps
 - HFC Cable maximum 2 Mbps
 - Fibre 100 – 2000+ Mbps Enable Creativity
- Symmetry
 - ADSL 20:1 ratio
 - Cable 50:1 ratio
 - Fibre 1:1 symmetric Business, Videoconferencing
- Speed – Optical fibre laid today can support 1000x initial speeds – up to 100 Gbps - with no change to cable Optical Fibre is Futureproof



NBN is just a different broadband link



- NBN only affects the link between your house and a service provider
- Consumers link to a Service Provider (through the NBN)
- The Service Provider links to the Internet or private network service
- Just like broadband today, but faster and available to more people

...or is it?



Careful what you wish for

May you find what you are
looking for

Be careful what you wish for – it
just might come true





How hard can it be?



What the End User Sees....

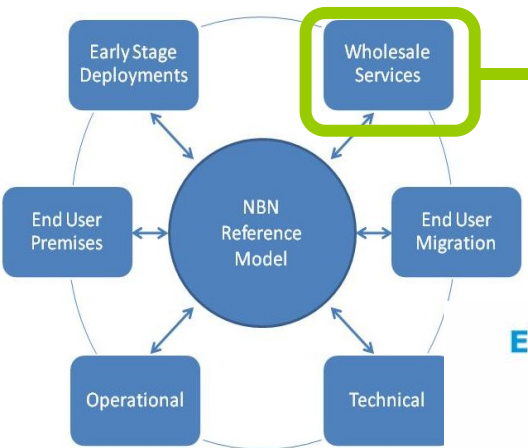
- Standard PSTN wallplate socket (possibly multiple)
- Plug in existing handset
- Socket connects to their dial-tone TSP of choice



No real change from today

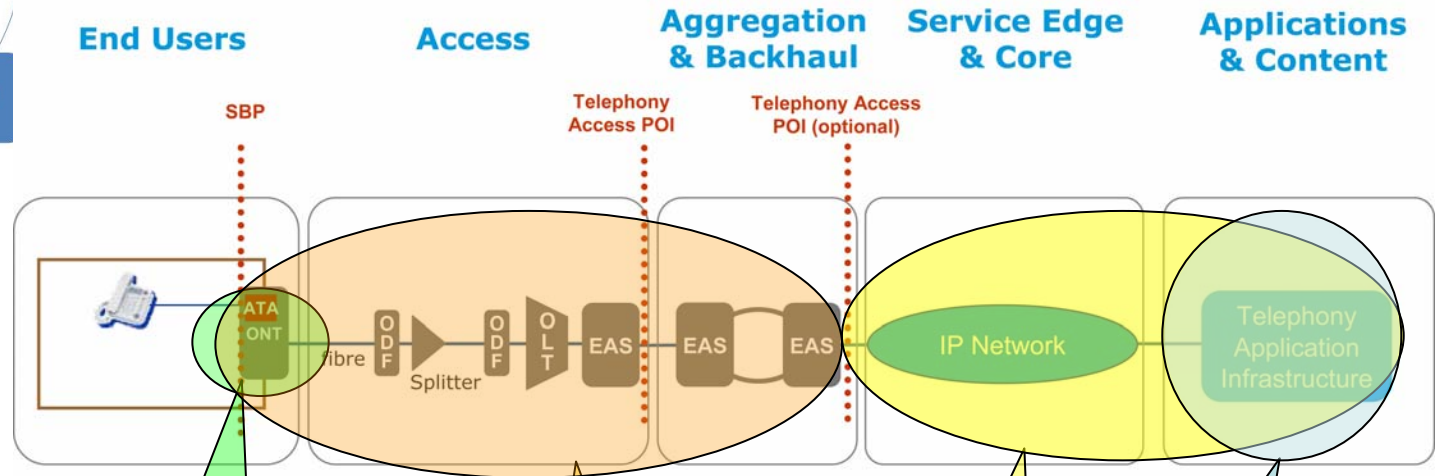


Wholesale Telephony Access Service



Wholesale Telephony Access Service

August 2010 – Wholesale Telephony Access Service Release 1 published



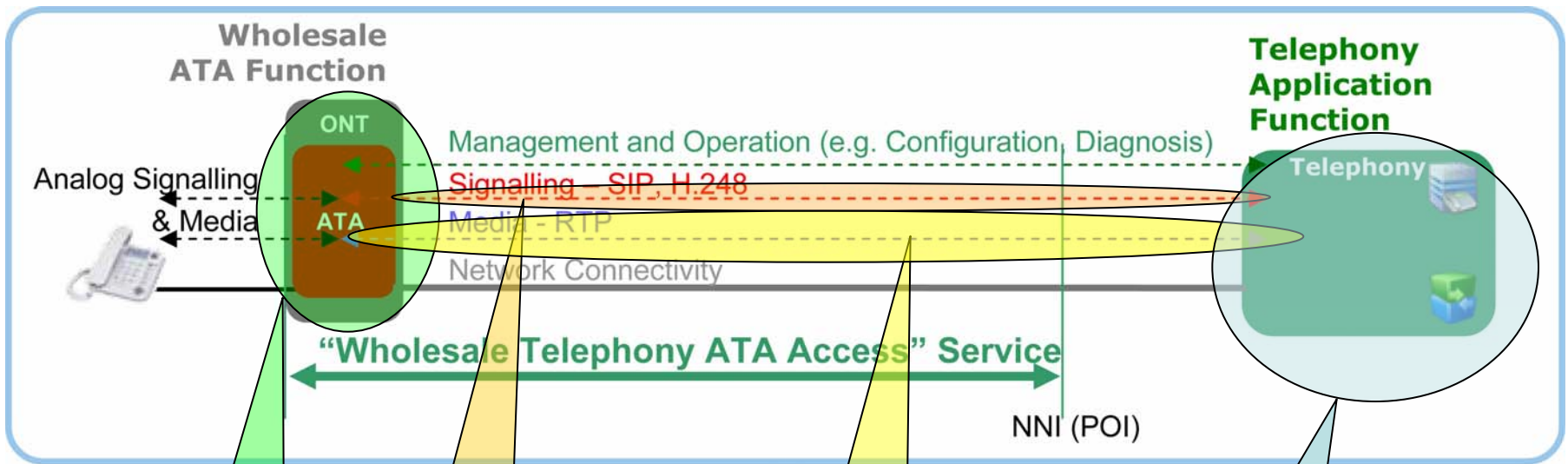
← Wholesale Telephony Access Service →

Communications Alliance – DRAFT NBN Wholesale Service Description Framework - Telephony Access Service – Jun 2010

| | | | |
|---|-----------------------------------|--|---|
| POTS Port built into NTU – embedded IP Telephony Adapter | NBN Area of Responsibility | RSP (TSP?) Area of Responsibility | RSP softswitch controls features & functionality |
|---|-----------------------------------|--|---|



What the RSP sees "Behind the Scenes"



Communications Alliance – DRAFT NBN Wholesale Service Description Framework - Telephony Access Service – Jun 2010

- Embedded ATA – RSP must configure & control**
- SIP and/or H.248 signalling – ideally over IPv6**
- VoIP audio channel on QoS-enabled NBN tunnel**
- RSP’s softswitch must be interop tested with NBNC Co ATA**



What could possibly go wrong?

- Analog port – how many SIP ATAs support decadic dialing?
- Which CODECs to support?
- SIP interoperability is a challenge
- Ethernet VLAN characteristics at the NBN/RSP boundary (and every backhaul/wholesale POI) must be precise and identical – policing, burst sizes, arrival rates etc or frames **will be** dropped.
- ATA has over 120 settings, configured by file download from RSP. Interop testing a new vendor will be ... interesting.



Issue: Telephone Services

For the first time, the quality and reliability of every telephone service will be the responsibility of **at least two** independently configured, independently managed networks and operators. How hard can it be?





Issue: Choice is Good

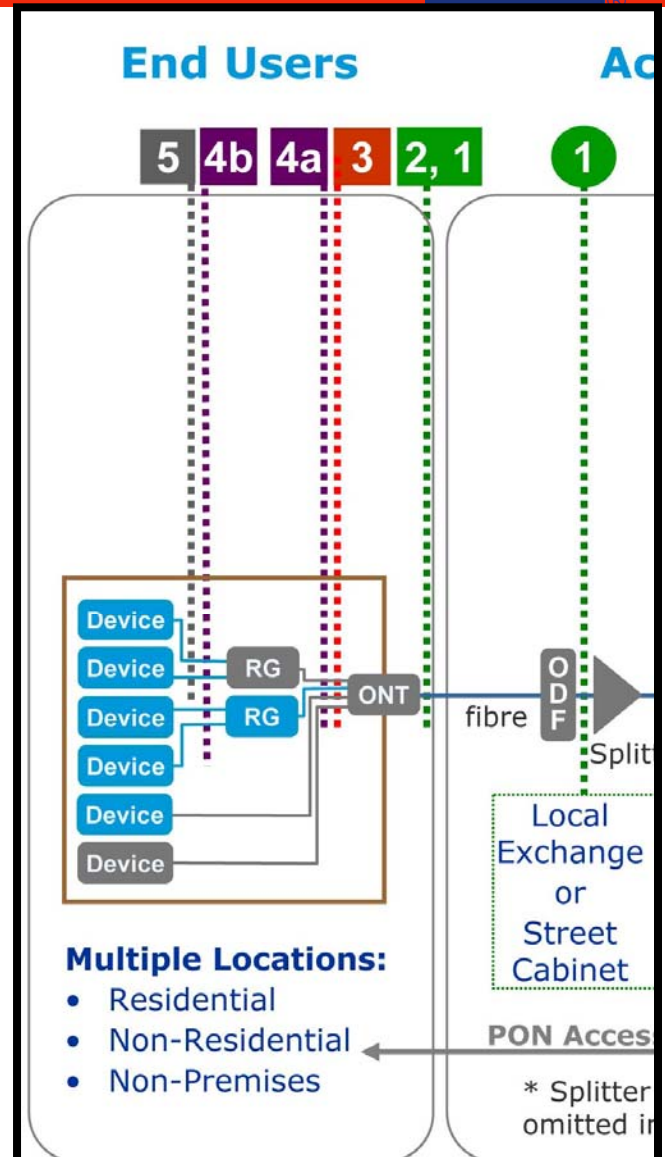


More Choice is Better - right?



With Choice Comes Complexity

- Up to 4 ethernet, 2 PSTN ports per residence
- Each port may connect to a different service provider
- Consumer will need to choose providers
- Consumers may need to keep track of which service is with which service provider – on which port
- Consumers now involved with service cabling
- Services of same technology may not play together





Choice is scary!

- Choice implies responsibility to choose
- Optimise: 500+ providers, bandwidth, speed, data quota, price, reputation,...
- Broadband is complicated - most consumers aren't qualified to evaluate the possibilities
- How will consumers research all the combinations and permutations?
- Who will help a consumer choose?
- Who will help a consumer keep track of which port is which?



Issue – Keeping Services Separated



What service & content providers want...



Issue – Keeping Services Separated



What consumers want...



Issue – Keeping Services Separated



What consumers will do (1)



Issue – Keeping Services Separated



What consumers will do (2)



Keeping Services Separated

Broadband gateways work by 'default routing' to **the** WAN port – singular

How to handle multiple upstream paths?

How to handle different IP address ranges?

How to handle the same overlapping IP ranges?

Have each ISP send routing information to every customer?

- Trust ISP? fake routing?

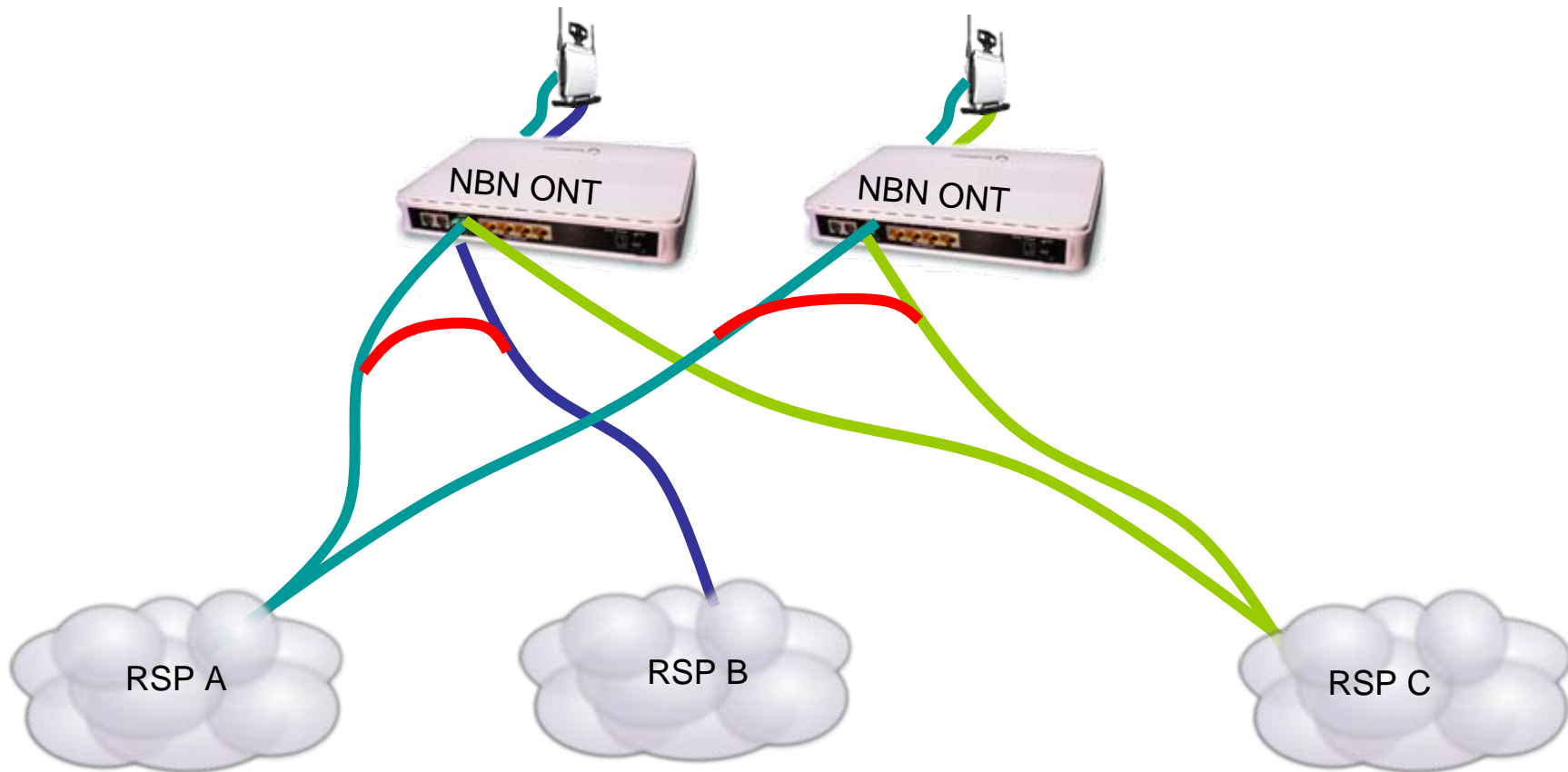
Have every device dual-homed to SP and home LAN?

- (hardware easy – software hard)

Issue – Keeping Service Providers Separated



...at up to 10,000,000 locations nationwide



500+ other RSP networks that might be bridged into yours?



Keeping Service Providers Separated

How will RSPs handle their networks being
bridged together at Layer 2....
distributed all over the country...
at 500...5000...5 million locations?



Careful what you wish for

**May you find what you are
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None of this is the "fault" of the NBN, or NBN Co.
The NBN will be working perfectly!

The NBN and the telecoms industry will be
delivering maximum choice, maximum
flexibility, maximum competition on a level
playing field.

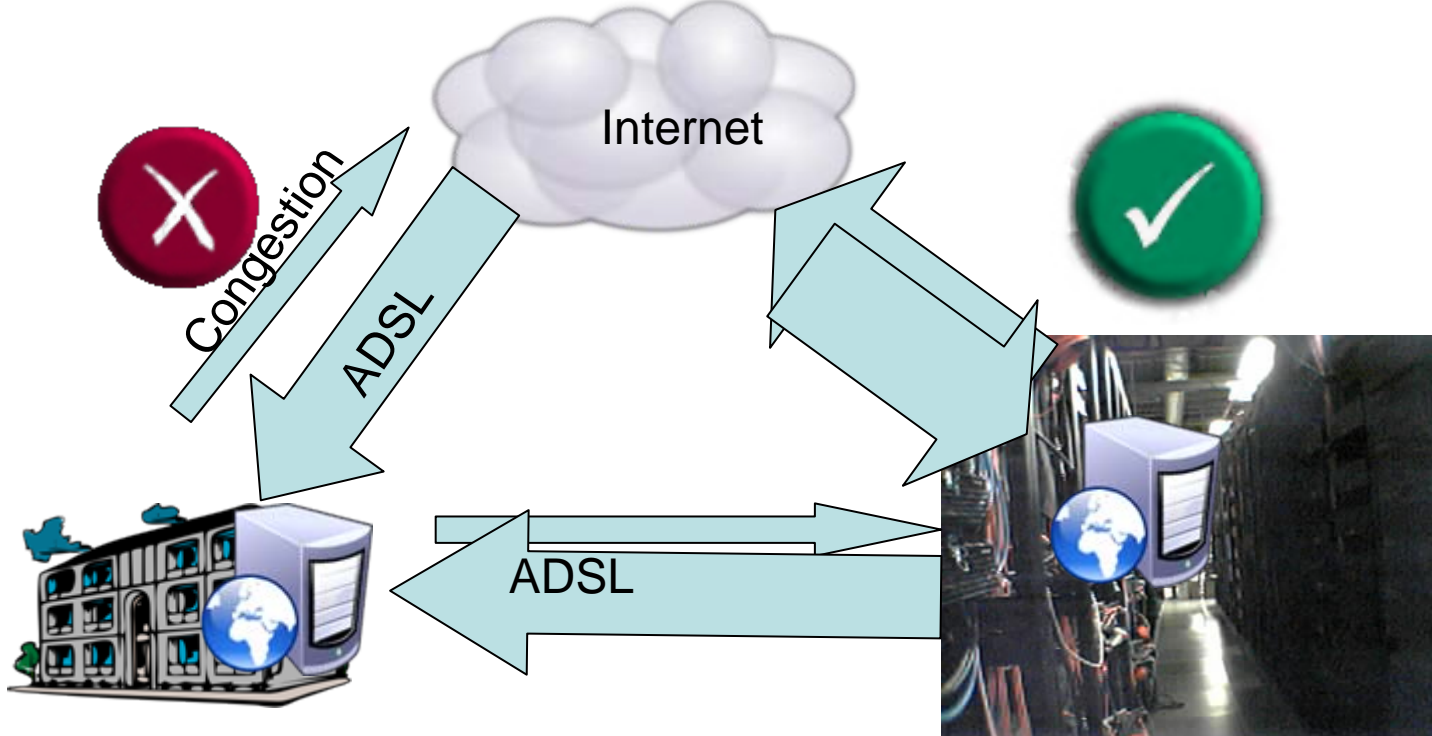
They'll receive what they wished for - will they be
happy?



Why do businesses choose to host systems, especially website servers, in external outsourced data centres?



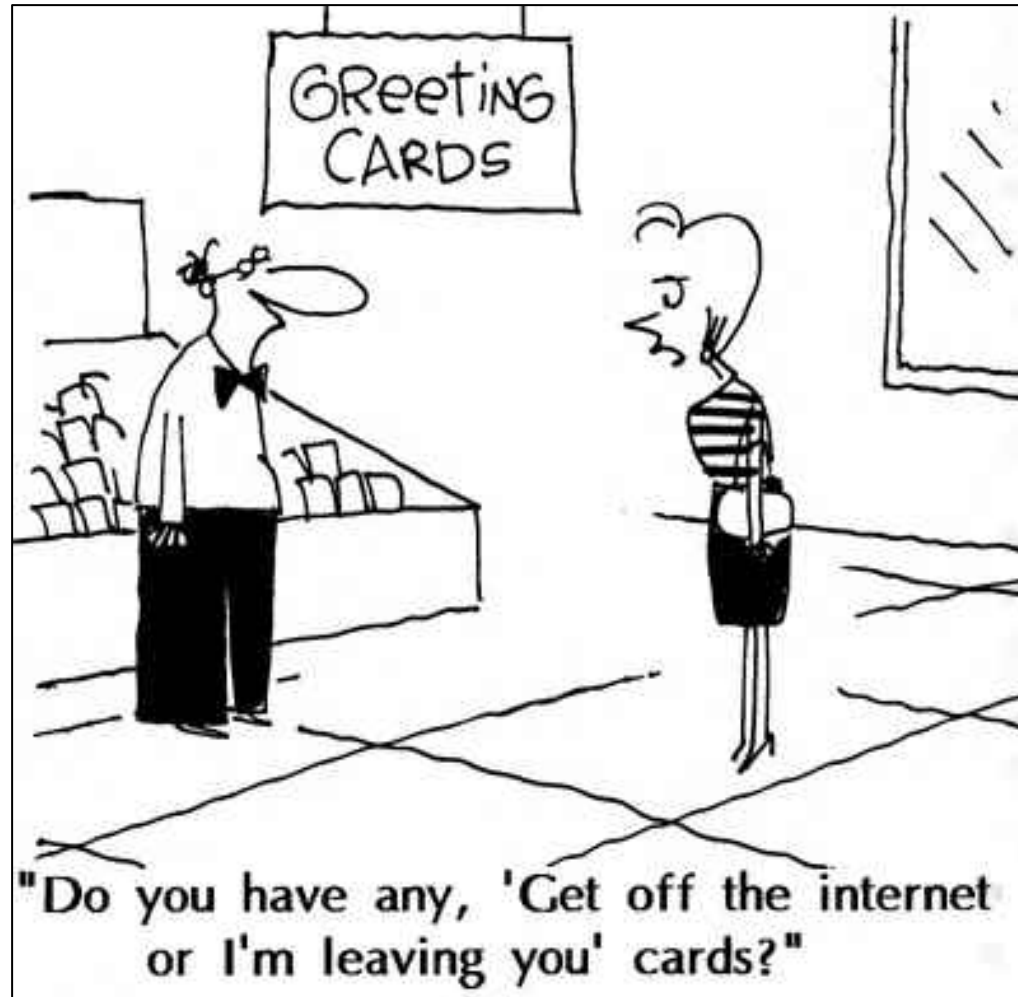
NBN – Blessing or Curse?

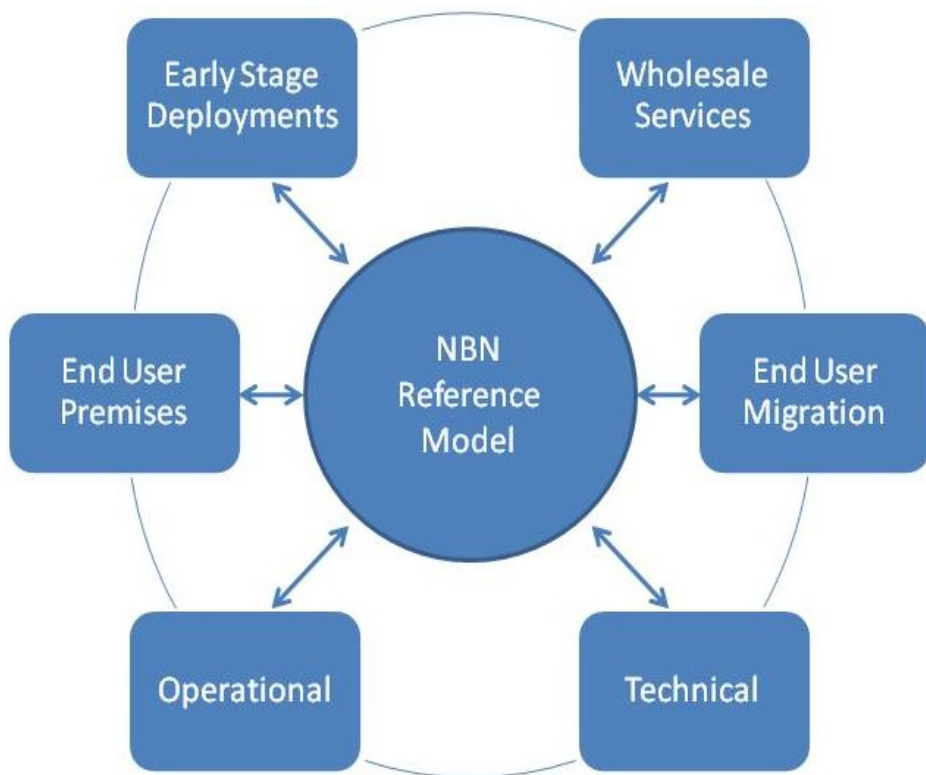


Outbound Bandwidth is key

If you had access to low latency symmetric gigabit capacity – why not keep your servers in your own computer-room?

NBN may make some problems worse!





Thankyou

Paul Brooks

Project Lead

pbrooks@layer10.com.au

<http://www.commsalliance.com.au/Activities/national-broadband-network>