

DrayTek

Routers and NBN in Australia

Presenters



Roy Panetta
Technical Manager
i-LAN Technology Pty L td
DrayTek Aust & NZ



Edward Eroy
Network Engineer
i-LAN Technology Pty L td
DrayTek Aust & NZ

AGENDA

1. What is NBN
2. Multi-Technology Mix
3. DrayTek NBN ready Routers
4. NBN's FTTN/FTTB Network
5. Latest Developments

1. What is NBN

What is NBN

1. **NBN (National Broadband Network)**
2. **Australia Government funded national data network.**
3. **Aims to deliver up to 100Mbps Internet upstream speed to all Australian households and businesses by 2021.**
4. **NBN Co setup by Aust. Government to execute the NBN plan.**

What is NBN

Reasons for NBN

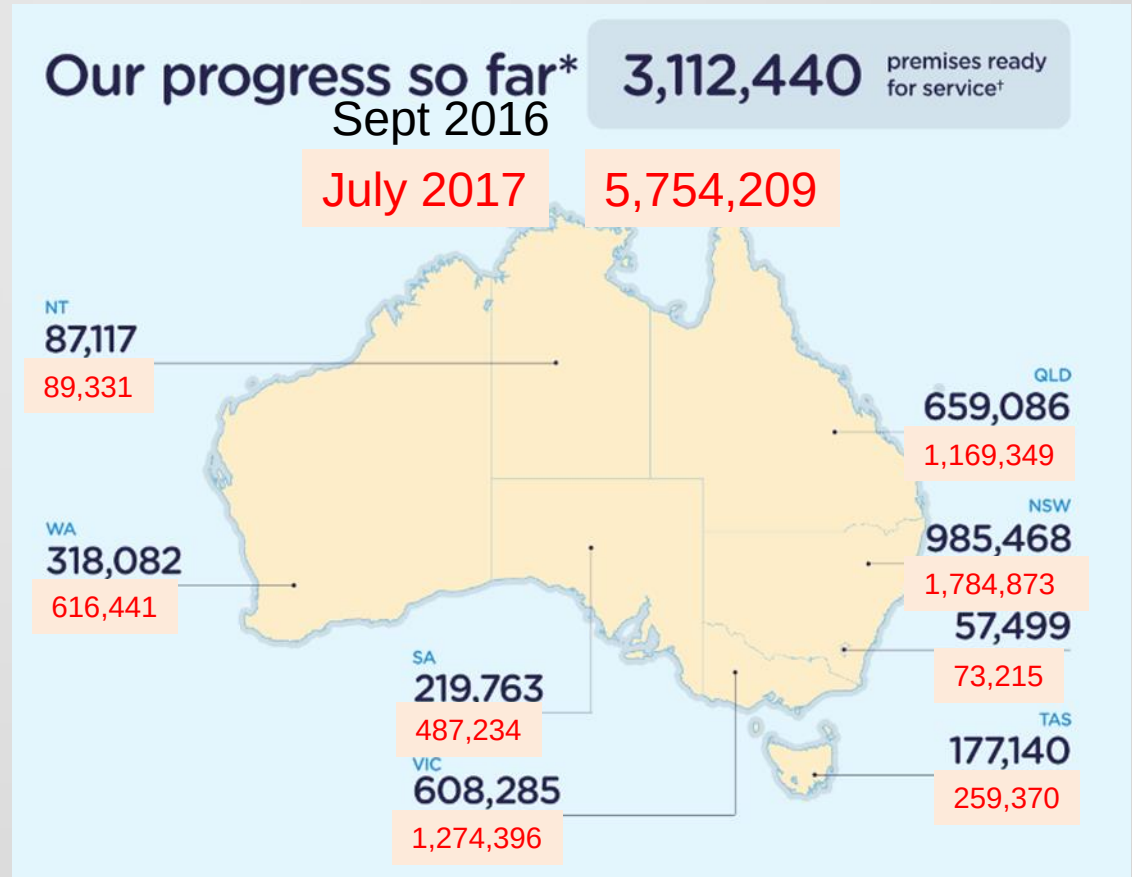
1. Aging copper infrastructure
2. Higher speeds required
3. Increased reliability
4. Aim to provide Internet access for all Australians

What is NBN

NBN Target: Reach 12m premises by 2020

Progress to 30 Sept 2016:

Progress to July 2017
50% target reached



2. Multi-Technology Mix

Multi Technology Mix (MTM).

The Liberal Government adopted MTM

Factors

- Vast areas in Australia have small populations
- Most residents don't need/expect 100Mbps; from <1Mbps to ~ 20Mbps will satisfy most of them
- But, they want it YESTERDAY
- ROI too high for small populations/towns

Solutions

- Cost reduction while still providing acceptable speeds
- Speed up deployment by using various technologies
- Reserve capacity to upgrade in the future

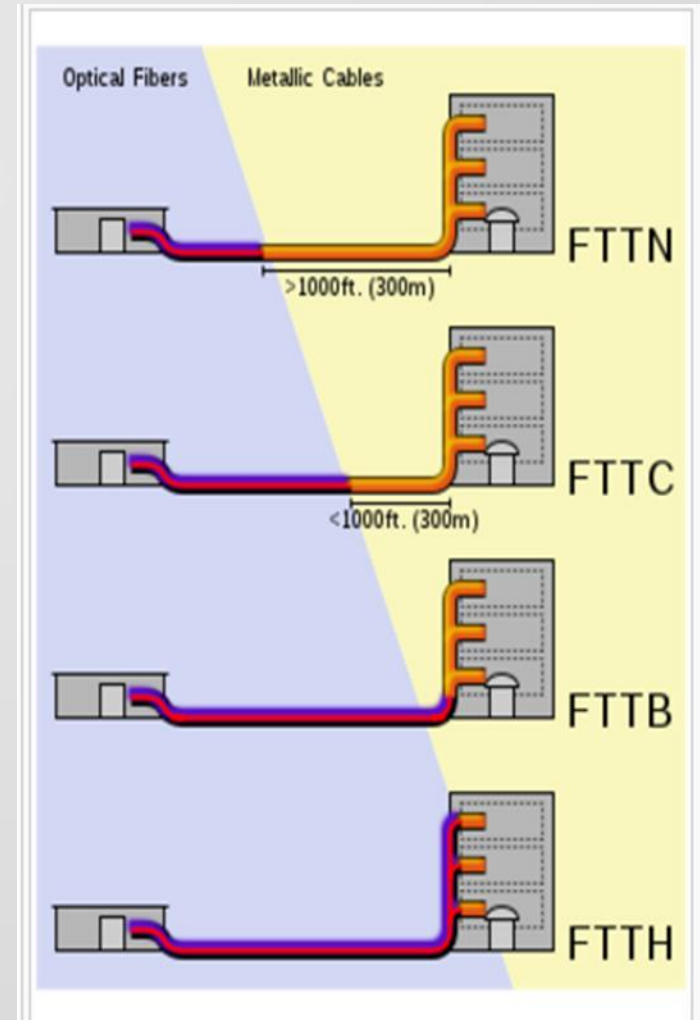
Multi Technology Mix (MTM).

Technology Distribution

<u>Technology</u>	<u>Population covered</u>	<u>Download Speeds</u>	<u>Upload Speeds</u>
<u>Fibre to the Premises (FTTP)</u>	<u>~25%</u>	<u>1 Gbps</u>	<u>400 Mbps</u>
<u>Fibre to the Node (FTTN)</u>	<u>~29%</u>	<u>25 Mbps</u> (up to 100 Mbps)	<u>5 Mbps</u> (up to 40 Mbps)
<u>Fibre to the Basement (FTTB)</u>	<u>~11%</u>	<u>25 Mbps</u> (up to 100 Mbps)	<u>5 Mbps</u> (up to 40 Mbps)
<u>Hybrid Fibre-Coaxial (HFC)</u>	<u>~27%</u>	<u>100 Mbps</u>	<u>40 Mbps</u>
<u>Fixed Wireless</u>	<u>~5%</u>	<u>25 Mbps</u> (up to 50 Mbps)	<u>5 Mbps</u> (up to 20 Mbps)
<u>Long Term Satellite</u>	<u>~3%</u>	<u>25 Mbps</u>	<u>5 Mbps</u>

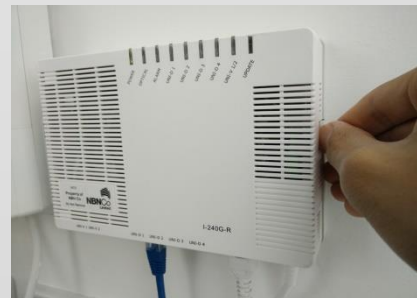
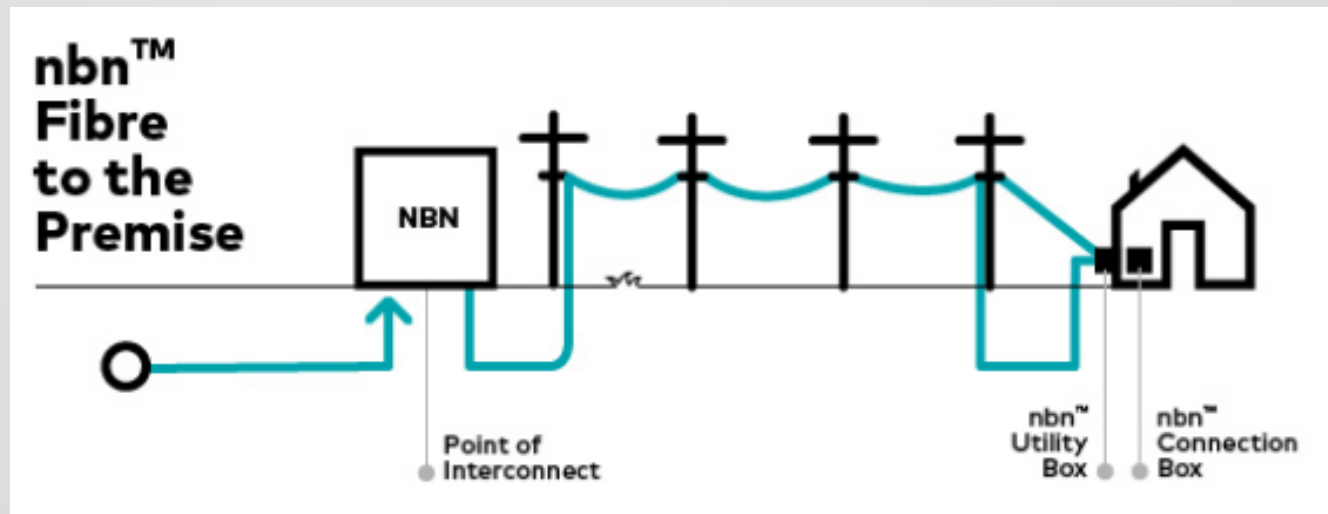
Multi Technology Mix (MTM).

Fibre – Copper
technologies in a glance:



Multi Technology Mix (MTM).

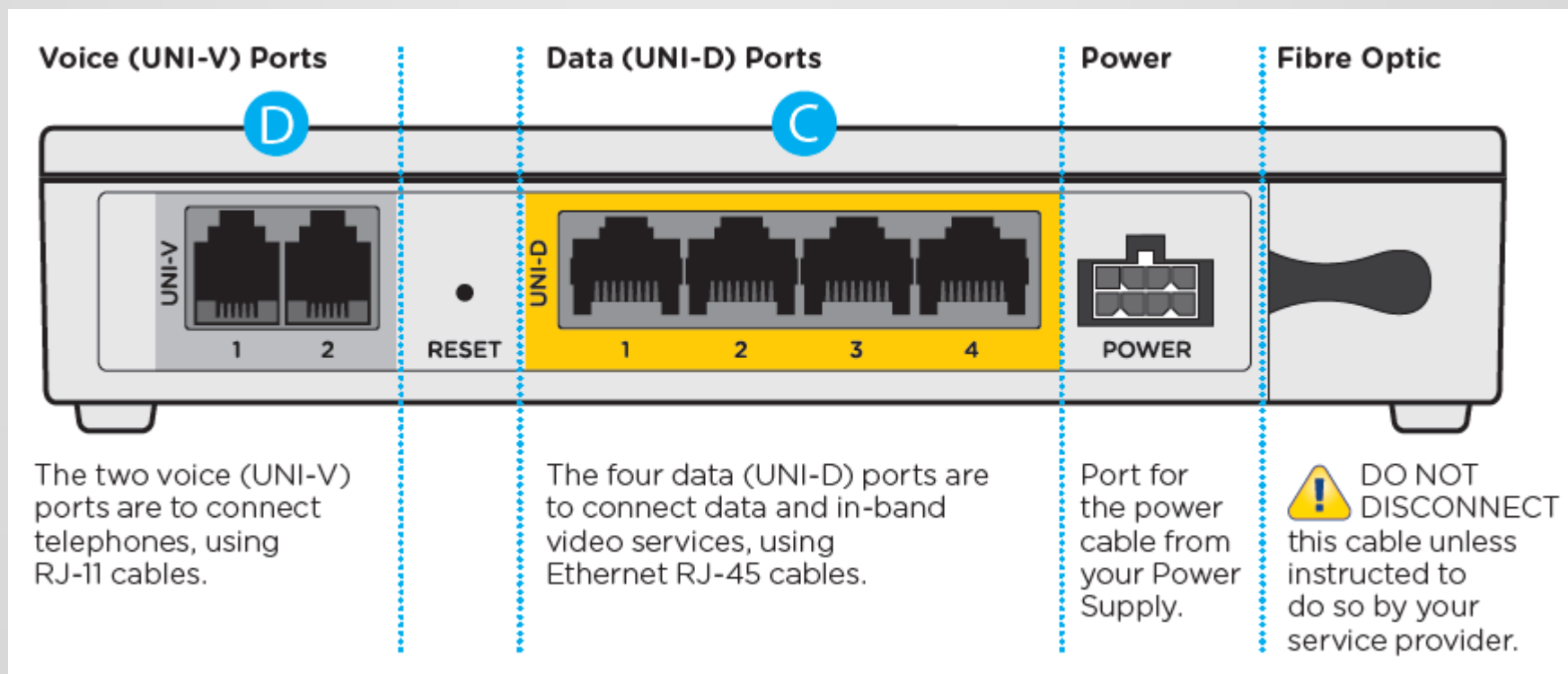
FTTP (Fibre to the Premises)



← Ethernet WAN socket

Multi Technology Mix (MTM).

FTTP (Fibre to the Premises)



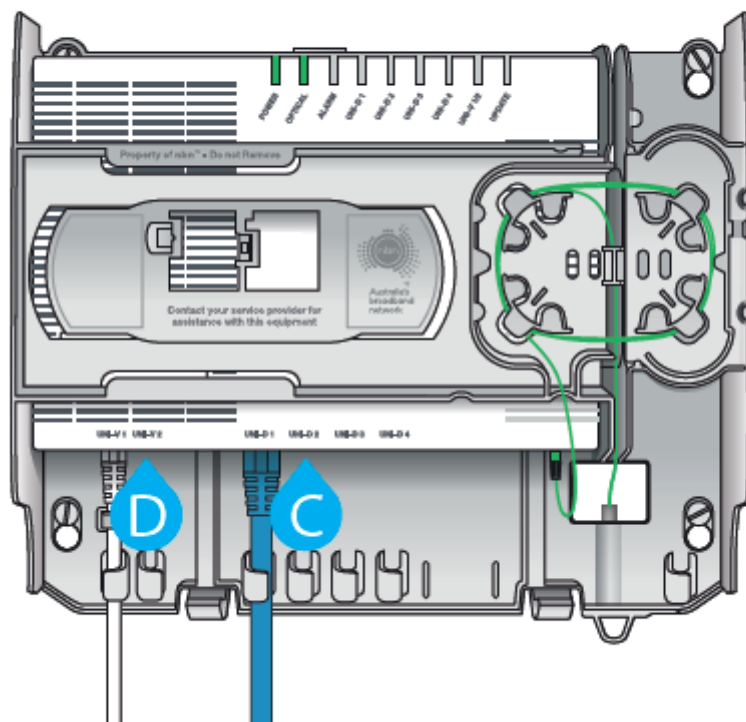
NBN Connection Box

Source: NBN Fibre User Guide

Multi Technology Mix (MTM).

FTTP (Fibre to the Premises)

nbn™ connection box (with cover removed)

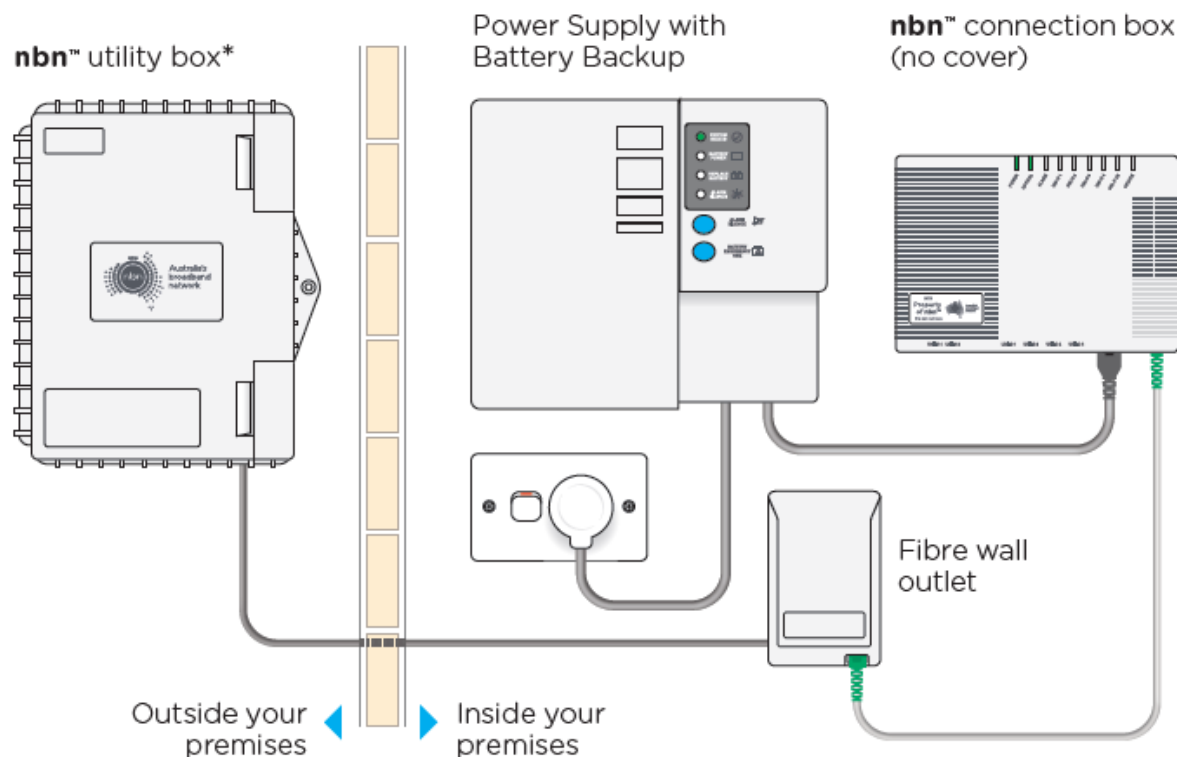


Source: NBN Fibre User Guide

Multi Technology Mix (MTM).

FTTP (Fibre to the Premises)

With nbn™ connection box (no cover), Fibre Wall Outlet and Power Supply with Battery Backup



**NBN
Utility
Box**

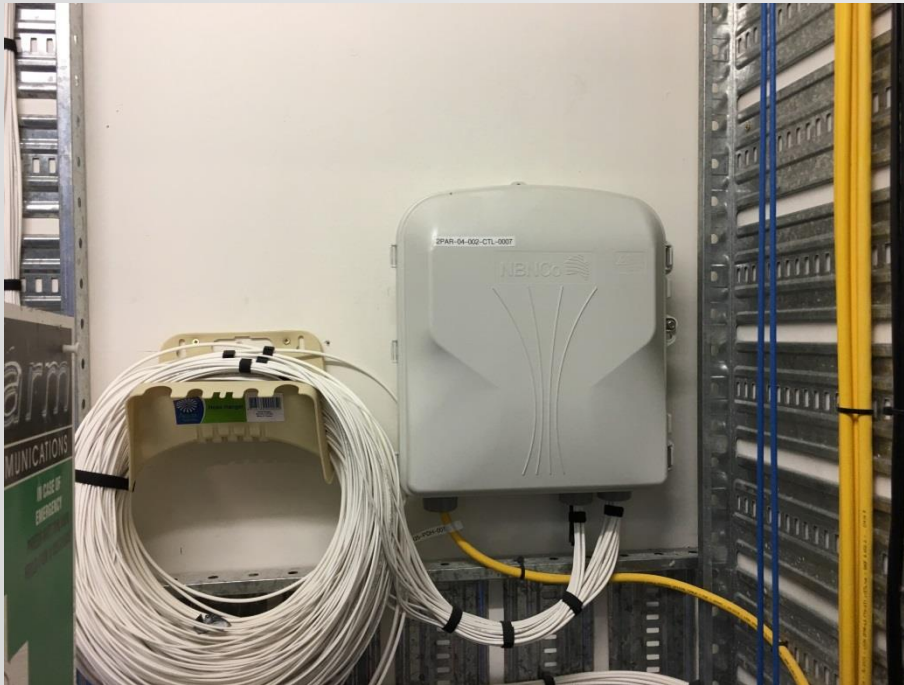


Source: NBN Fibre User Guide

Multi Technology Mix (MTM).

FTTP (Fibre to the Premises)

Multi-Dwelling FTTN Installation



Fibre Termination to the Building

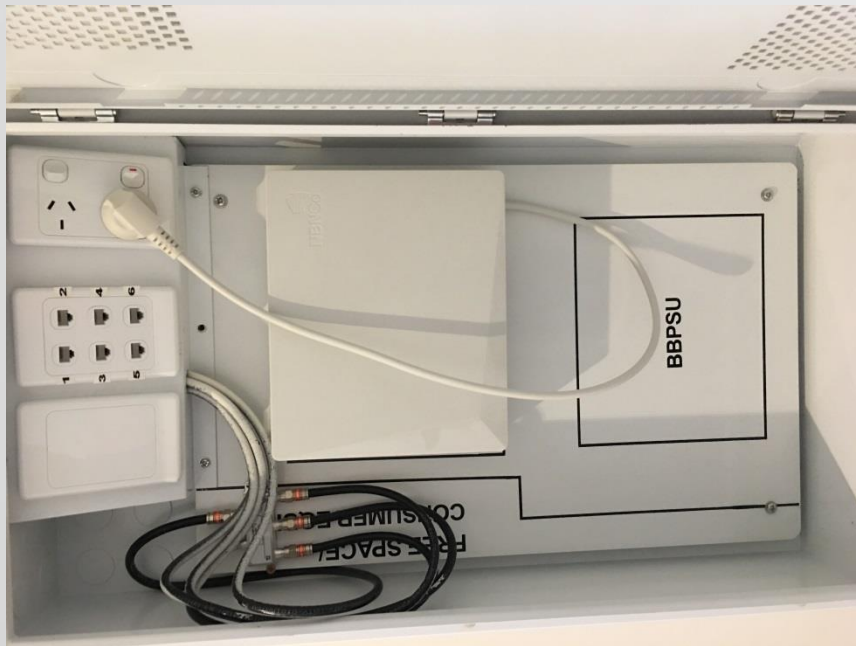


Fibre Run Between Floors

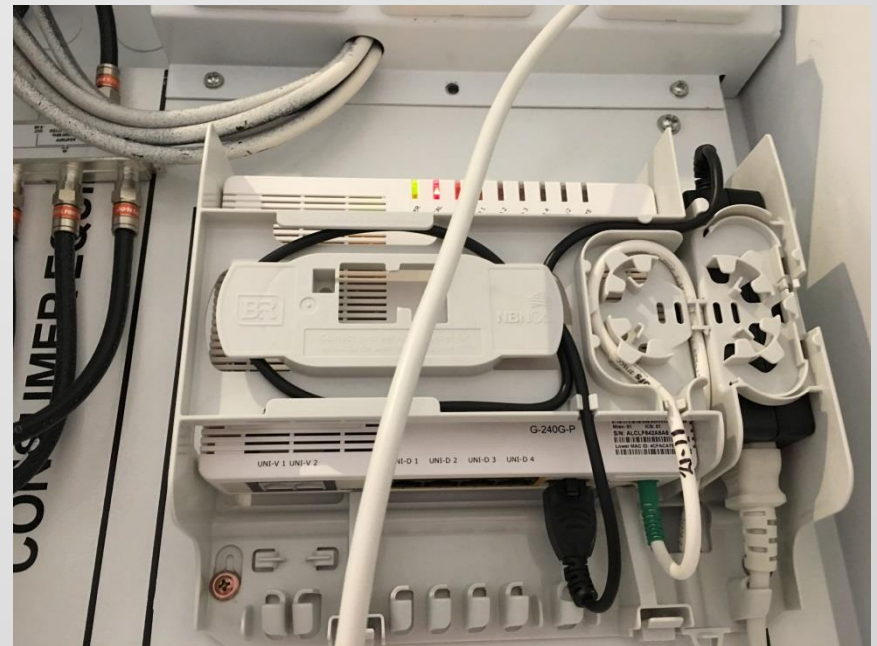
Multi Technology Mix (MTM).

FTTP (Fibre to the Premises)

Multi-Dwelling FTTN Installation



NBN Connection Box



NBN Connection Box with Cover Removed

Multi Technology Mix (MTM).

FTTP (Fibre to the Premises)

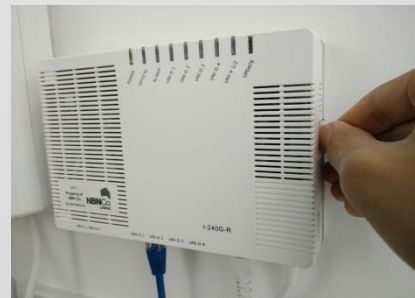
Suitable Routers

Broadband

Vigor2120
Vigor2132
Vigor2832
Vigor2860
Vigor2925
Vigor2952
Vigor2960
Vigor3220
Vigor3900

XDSL

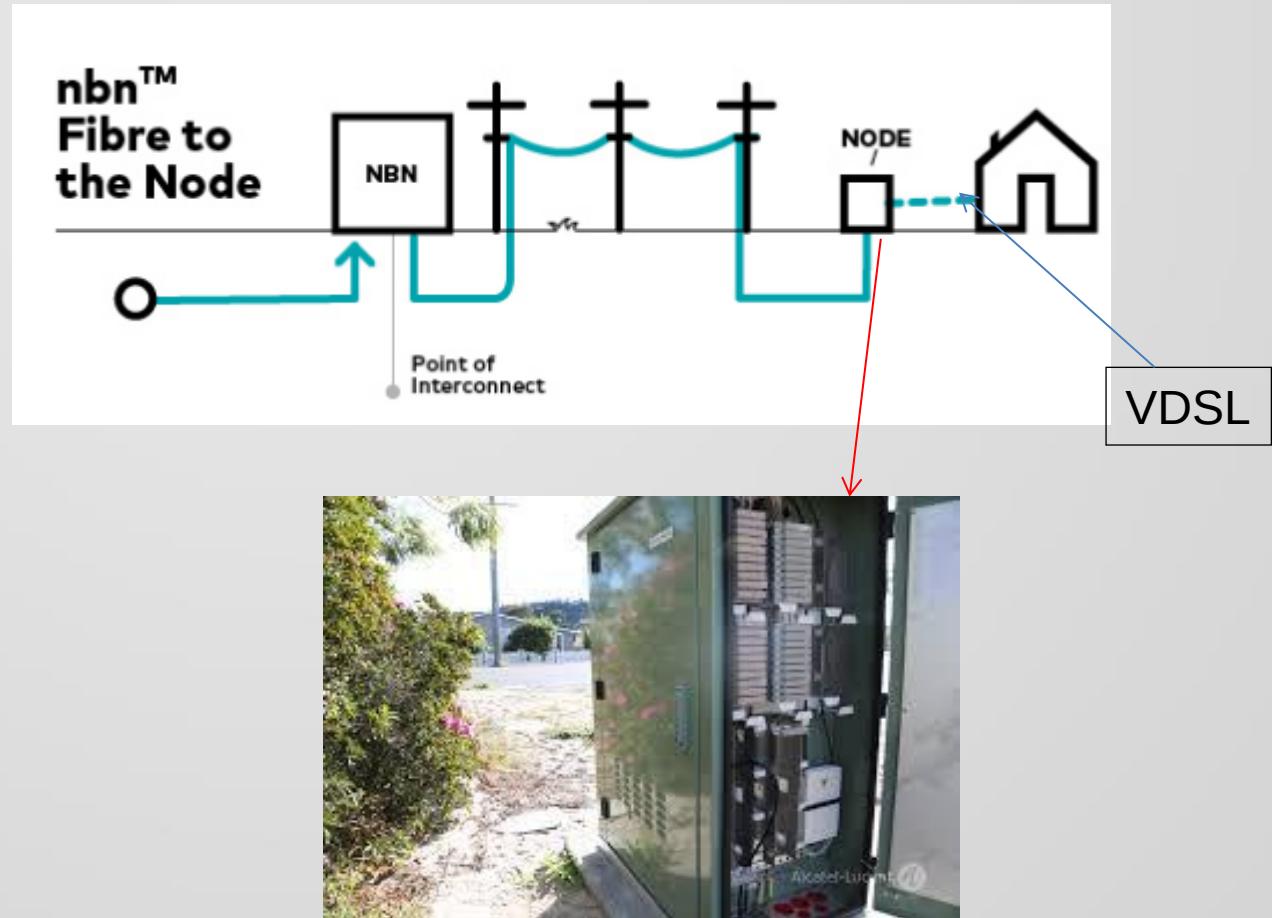
Vigor2760 (LAN Port 4 configured for Ethernet WAN)
Vigor2860 (WAN 2)



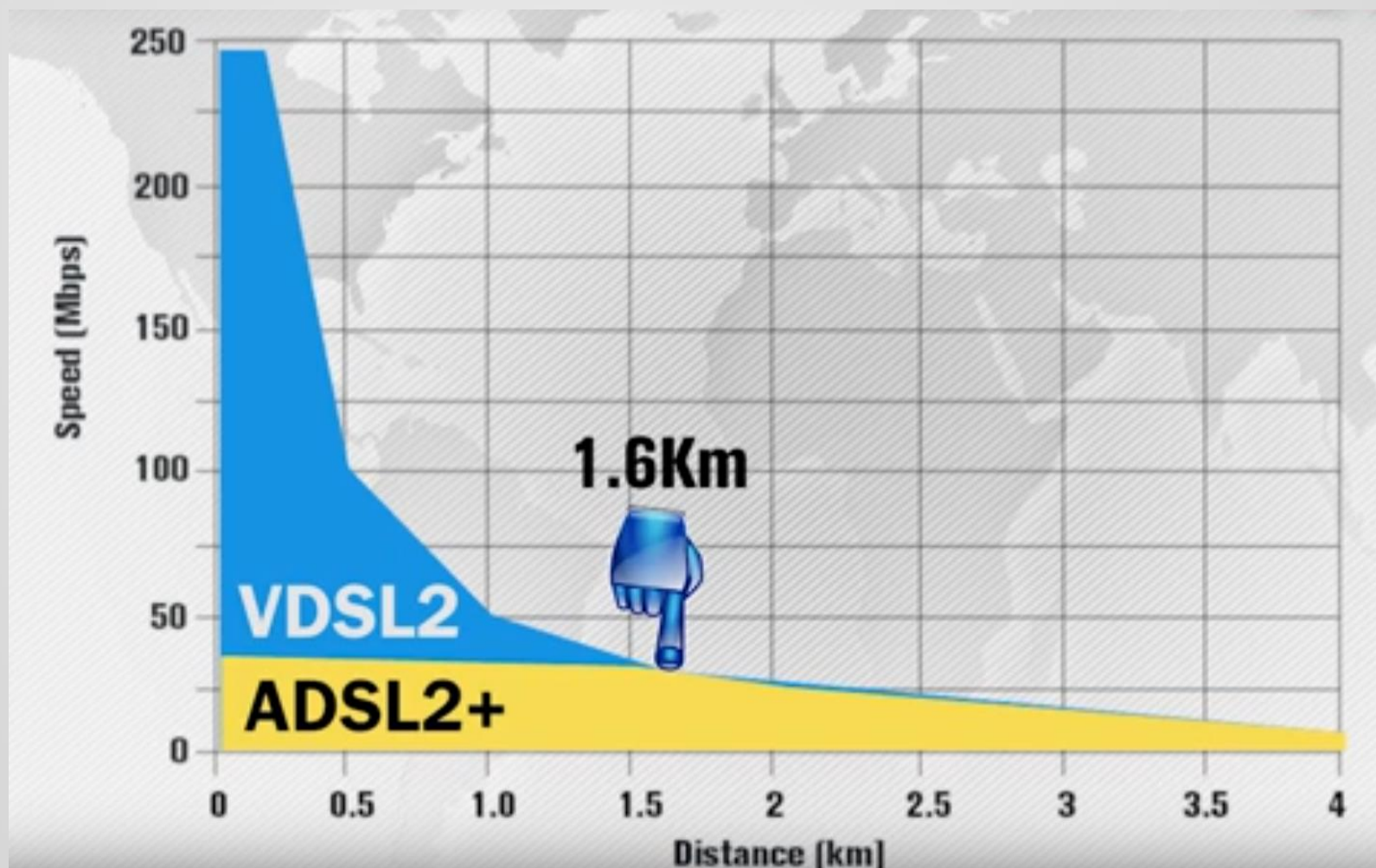
← Ethernet WAN socket

Multi Technology Mix (MTM).

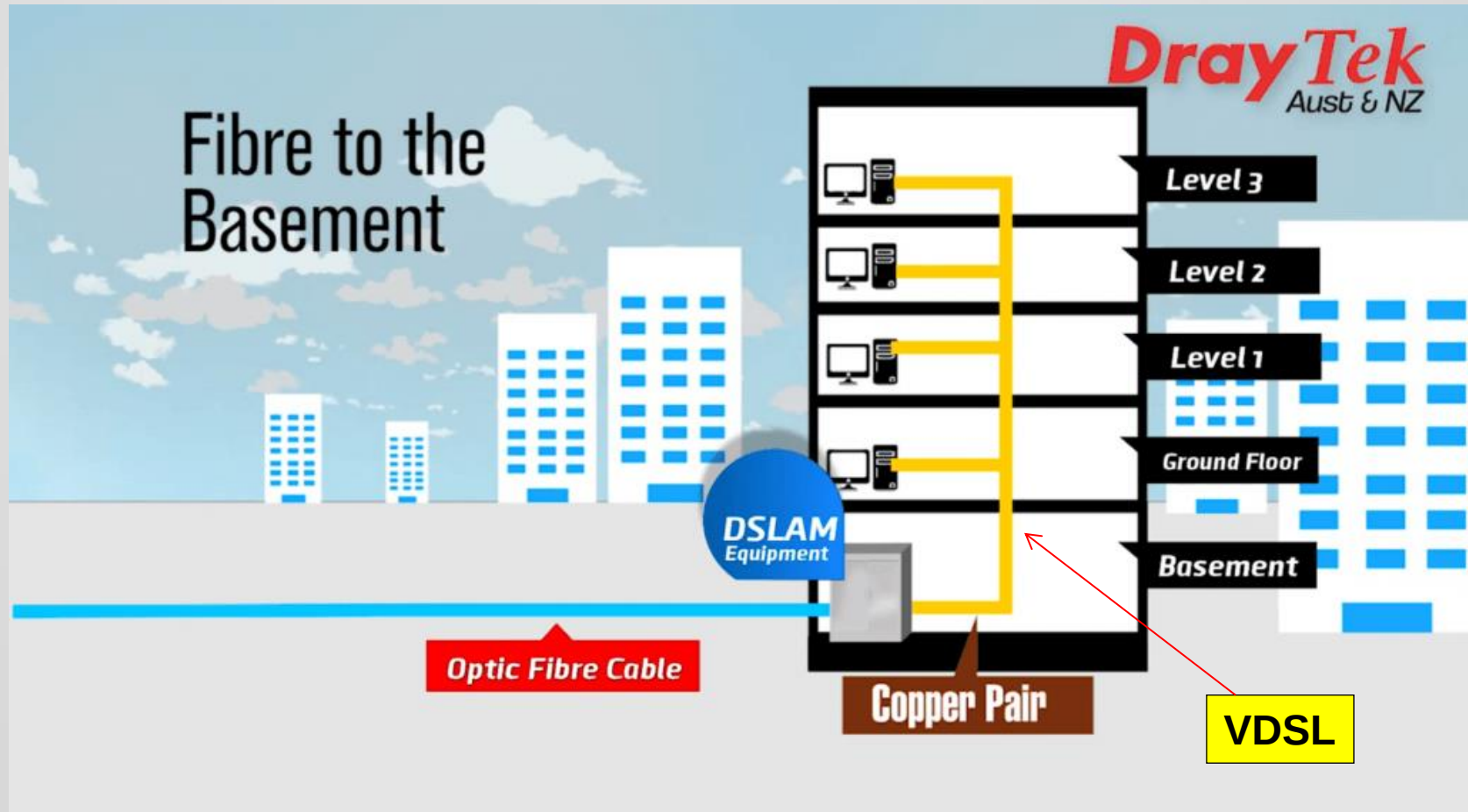
Fibre to the Node
FTTN



Multi Technology Mix (MTM).



Multi Technology Mix (MTM).



Multi Technology Mix (MTM).

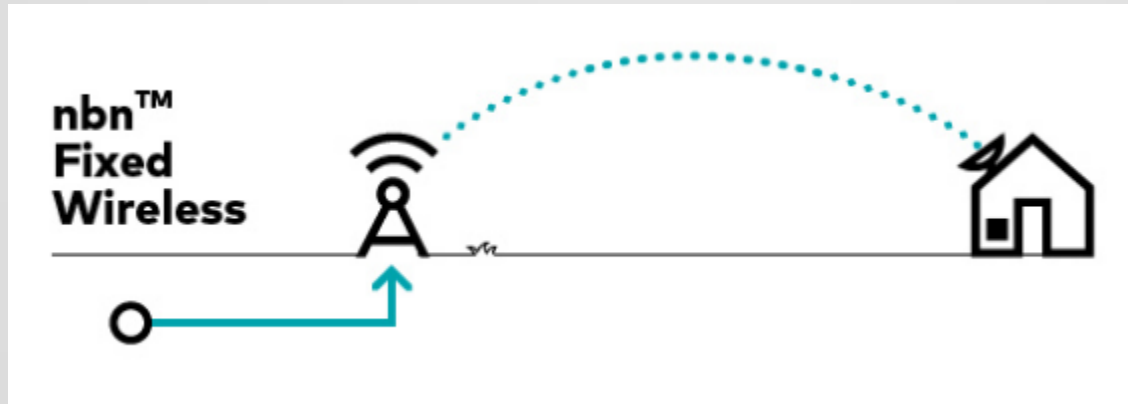
NBN uses FTTN and FTTB to speed up the deployment, with Fibre to cabinets on road sides or in the basements, and with copper cables for the last legs (up to ~1km). This covers up to 40% of all premises.

FTTN/FTTB Network utilises VDSL DSLAM to extend the signal from the cabinet to the home. The cabinet can house a line card for 384 circuits, with up to 4 line cards to cover 1536 homes.



Multi Technology Mix (MTM).

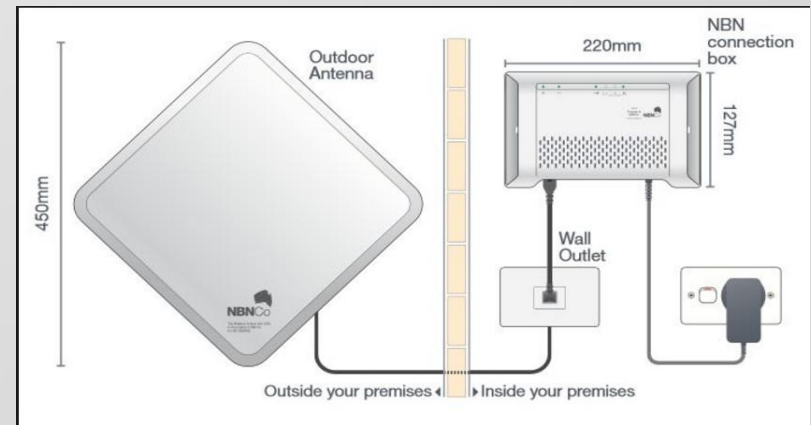
Fixed Wireless



← Ethernet WAN socket

4G LTE Wireless Spectrum Used

- Band 40 (2.3 GHz)
- Band 42 (3.4 GHz)



Multi Technology Mix (MTM).

Fixed Wireless



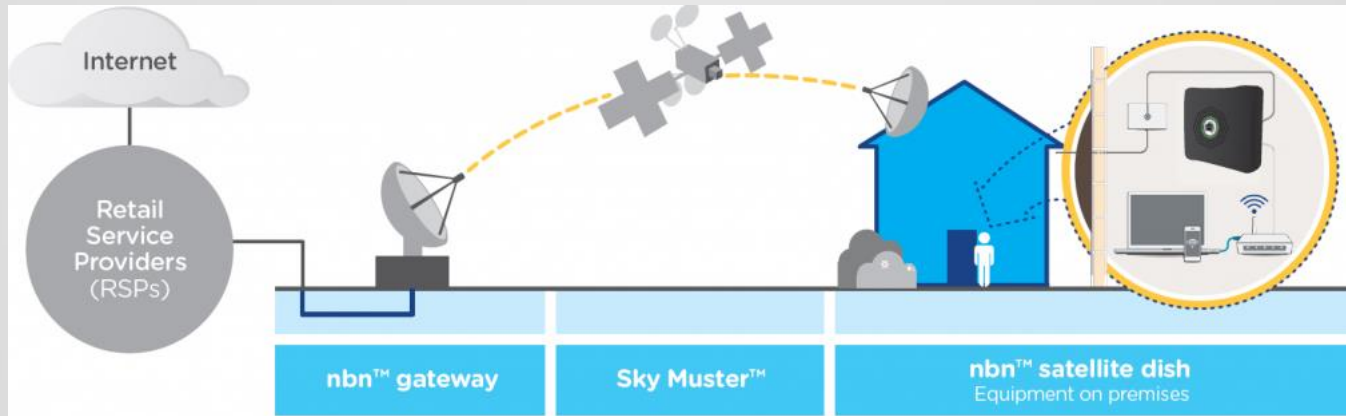
Outdoor Antenna

Network Termination Unit



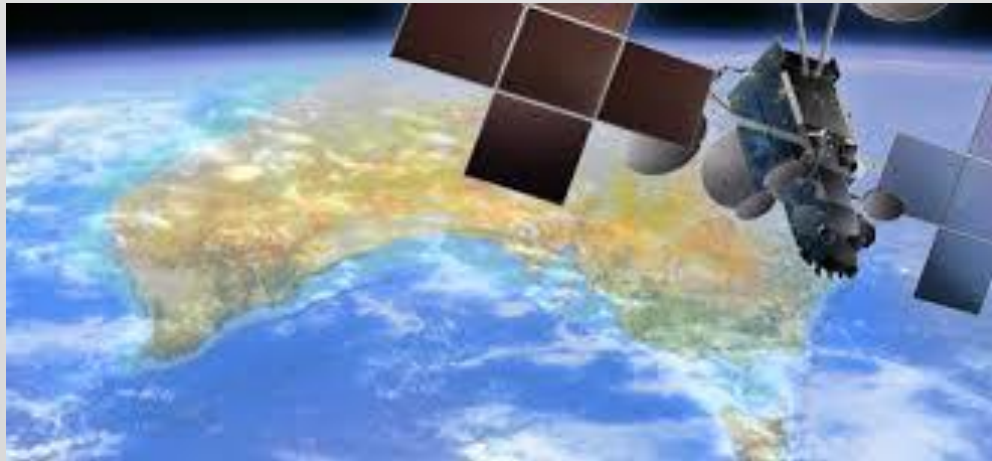
Multi Technology Mix (MTM).

Satellite (Sky Muster)



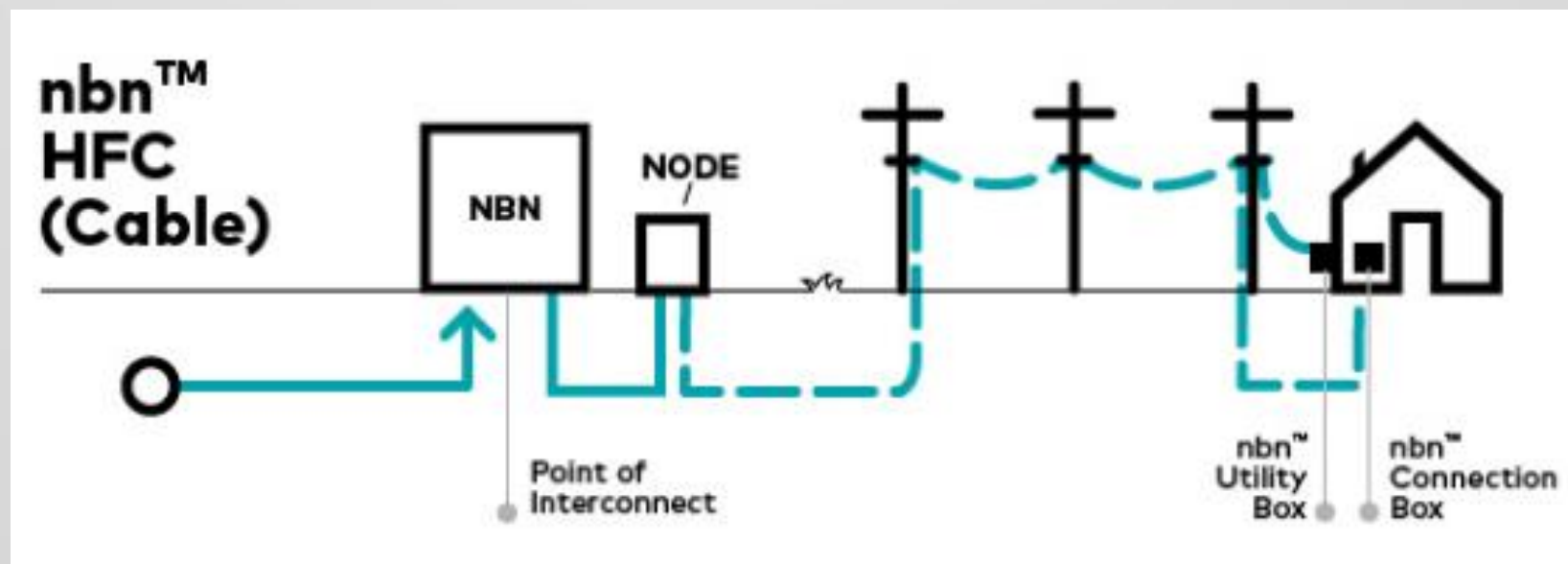
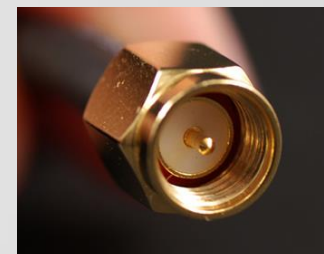
Multi Technology Mix (MTM).

Satellite



Multi Technology Mix (MTM)

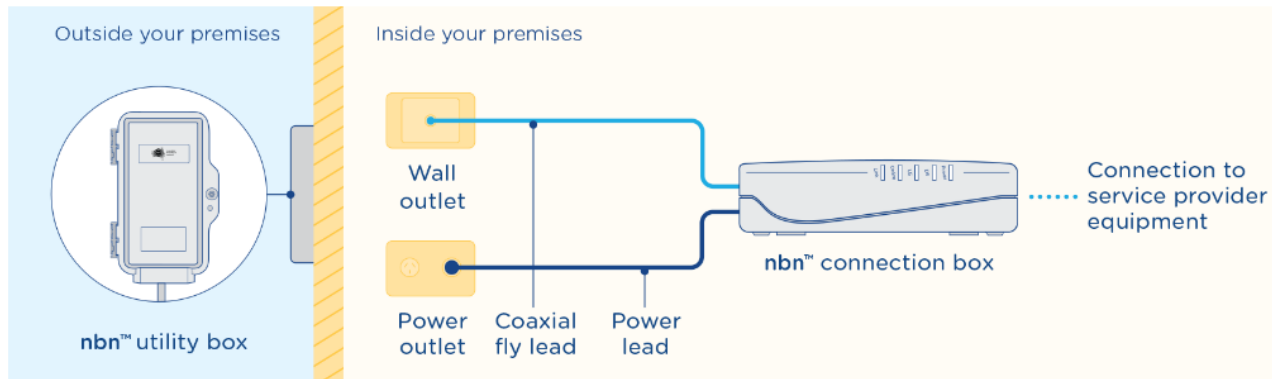
HFC – Hybrid Fibre Coax (Cable)



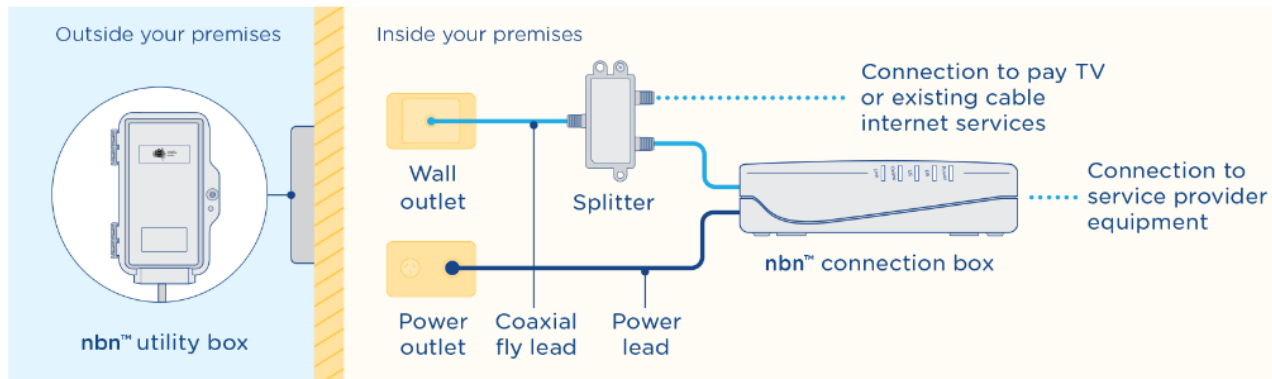
Multi Technology Mix (MTM)

HFC – Hybrid Fibre Coax (Cable)

Installation without pay TV service:



Installation with existing pay TV or cable internet service:



Multi Technology Mix (MTM)

HFC – Hybrid Fibre Coax (Cable Modem)



HFC – Hybrid Fibre Coax (Cable)

Wholesale HFC service offering

- 100/40Mbps
- 50/20Mbps
- 25/5Mbps
- 12/1Mbps

Same speed tiers available for
Fibre-to-the-Premises (FTTP) technology.

2. Multi-Technology Mix – Power Issues

Power Issues with NBN and Data Disruption

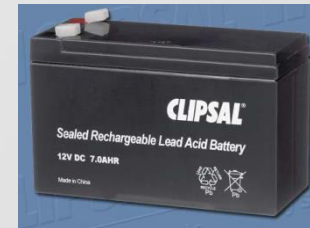
Equipment connected over the NBN network will not work during a power blackout.

Telephone services are no longer powered from the exchange so need to consider battery backup for NBN VOIP service or use mobile phones as a backup.

Multi Technology Mix (MTM)

Power issues with NBN and Data Disruption

Fibre to The Premises (FTTP)



Replace Sealed Lead Acid Battery
when required

Optional Battery Backup
Provides up to 5 hrs runtime

Power issues with NBN and Data Disruption

Fibre to The Node (FTTN)



Still require backup power
for phone and network equipment
in the premises

Battery Backup
Provides up to 8 hrs runtime

Power issues with NBN and Data Disruption

- **HFC (cable)**
- **Fixed Wireless**
- **Satellite**

- Landline phones and internet services won't operate during a power outage.
- Consider installing a UPS to power equipment.
- Keep a charged mobile phone for emergency phone needs.

3. DrayTek NBN Ready Routers

DrayTek NBN Ready Routers

NBN Compatible Broadband Routers



Vigor3900



Vigor3220



Vigor2960



Vigor2952



Vigor2925 Series



Vigor2120 Series



Vigor2912 Series

DrayTek NBN Ready Routers

NBN Compatible VDSL2 Routers



TAIWAN
EXCELLENCE
2016



Vigor2860 Series



VigorBX 2000 Series



Vigor2760 Series



Vigor130

DrayTek NBN Ready Routers

How to configure DrayTek routers?

ISPs use different configurations on the network:

- VLAN tagging
- MAC address binding
- PPPoE account
- DHCP

Application notes to configure DrayTek routers for different ISPs:

<http://www.i-helpdesk.com.au/index.php?/Knowledgebase/List/Index/49/nbn>

Multi Technology Mix (MTM).

Video – DrayTek VDSL Solutions



<https://youtu.be/o8S-haGsRPg>

4. NBN's FTTN/FTTB Network

NBN's FTTN/FTTB Network

Product Technical Specification

NBN Co Ethernet Bitstream Service - FTTB/FTTN

Wholesale Broadband Agreement



This document forms part of NBN Co's Wholesale Broadband Agreement, which is a Standard Form of Access Agreement for the purposes of Part XIC of the Competition and Consumer Act 2010.

Technical Specification for
FTTB/FTTN Service

Lists technical requirements for
attached equipment

Statement of Compliance for DrayTek VDSL routers to NBN Co FTTB and FTTN Network

5 January 2017

This statement is to certify that DrayTek VDSL routers meet the requirements for connection to the NBN Co FTTB and FTTN network. The DrayTek router models meeting the requirements are the **Vigor130; Vigor2760 series and Vigor2860 series routers**. The requirements are outlined in the attachment at the end of this document being section 7.2.2 from the NBN Co document released in September 2016 titled:

Product Technical Specification
NBN Co Ethernet Bitstream Service - FTTB/FTTN
Wholesale Broadband Agreement

i-LAN Technology certifies that the DrayTek router models referred to in this document conform to items 1 to 26 from section 7.2.2 of the attached specification document.

Exclusions

1. As at the current date, Item 27 is being addressed by DrayTek and the chipset manufacture (Lantiq/Intel) by way of a firmware update to conform to the requirements. This requirement refers to the Upstream Shaping of traffic required for QOS compliance.
2. For Item 28, it is our understanding that this requirement is intended for future proofing only and that currently is not supported by any CPE vendors in the market. We are seeking exemption for this requirement for the current release of DrayTek routers.

DrayTek VDSL routers meet NBN requirements

NBN's FTTN/FTTB Network

- NBN adopts ALU (Alcatel-Lucent) DSLAM which uses Broadcom chipset
- Tested Netcomm VDSL routers (Broadcom chipset)
- Since i-LAN has been promoting “NBN Solution – Broadband & VDSL2” NBN Test Engineers chose Vigor2760 to test. (Intel/Lantiq chipset)
- The max. line rate was confirmed to be 108Mbps - conforming to NBN specifications

4. Latest Developments

NBN's FTTN/FTTB Network

DrayTek VDSL2 products (Vigor2860, Vigor2760, Vigor130) now conform to NBN specifications,

i-LAN is talking to key RSP (NBN's Retail Service Providers)

DrayTek VDSL routers are now shipped with VDSL2 Vectoring firmware as standard to reduce any support issues with customers connecting to VDSL2.

Takeaway Messages

- NBN is Australia's broadband building program
- MTM approach is adopted to speed up the implementation
- NBN FTTN/B (ie. VDSL) is about 40% of the NBN
- Firmware Improvements for Vigor2760/2860/130 ensure NBN standards are met

Questions & Answers?

More Information

Web: www.draytek.com.au

Email: sales@draytek.com.au

Phone: 02 9838 8899

Thank You

Please complete the questionnaire
Your feedback is valuable