

OUR NETWORK



Our network

NBN Co will design, build and operate a wholesale-only, super fast broadband network that aims to enable speeds of up to 100 Megabits per second¹ to 90% of Australian premises and up to 12 Megabits per second to the remaining 10%. These speeds are of course dependent on factors such as the retail package that is chosen from the retail service provider and the chosen hardware and premises connection.

For most premises, NBN Co will use either Gigabit Passive Optical Network² (GPON) or Ethernet Point to Point fibre and will link some premises by wireless³ or satellite⁴, depending on location and geography.

NBN Co plans to offer a wholesale-only Layer 2 bitstream⁵ product in order to occupy as small a footprint as possible in the overall chain. This means leaving retail service providers⁶ (RSPs) with significant ability to innovate and develop new services across the higher levels of the value chain.

The location of Point of Interconnection⁷ (Pols) will be optimised to support healthy competition among RSPs and align with contestable backhaul⁸. For more densely populated areas, such as urban and regional centres a 'local' Point of Interconnection (Pol) will be established for each Fibre Serving Area⁹ (FSA).

For less densely populated areas, a 'district' Pol (which aggregates two or more FSAs together), will be established. If competitive backhaul is not available from a Pol, supplementary provision of backhaul may be required for a limited period of time to permit the emergence of competitive backhaul on these routes.

NBN Co plans to offer its standard wholesale Layer 2 bitstream service in product bundles:

- Local Ethernet Bitstream¹⁰ (LEB) will provide our wholesale customers with a Layer 2 access service between the Optical Network Termination¹¹ (ONT) at an end-user premises and a 'local' Pol, located at the Fibre Access Node¹² (FAN) for the relevant FSA. The LEB product is likely to be offered in capital cities and regional centres. It is envisaged that the LEB product will be made available in respect of the significant proportion of FSAs in Australia.
- Aggregated Ethernet Bitstream¹³ (AEB) is likely to be offered in rural areas where there are no competitive backhaul services below the Pol. The AEB product enables aggregated access to one or more FSAs via locations where the AEB product is made available.

Both the LEB and AEB product offers will be based on an Ethernet¹⁴ platform, utilising Gigabit Passive Optical Network (GPON) as the physical access technology. The technology will deliver a range of active service features including security and Quality of Service¹⁵ (QoS) as well as IP multicast.

As well as GPON based services NBN Co also plans to provide point to point solutions that will assist RSPs to deliver solutions for the business market.

Our wholesale products will support access by multiple RSPs, a range of customer premises equipment¹⁶ (CPE) and will include an interface for analogue telephony.

Some of the terminology regarding broadband can be complex. Overleaf is a glossary that will make understanding it a little easier.



Glossary of terms

1 Megabits per second (Mbps)

A megabit per second (Mbit/s or Mb/s or Mbps) is a unit of data transfer rate equal to 1,000,000 bits per second. A 'bit' is a basic unit of information in computing, essentially a '1' or '0'. Bits per second (bps) is a common measure for data transmission speed.

2 Gigabit Passive Optical Networking (GPON)

An optical-access system based on Internet Protocol (IP) that lets multiple homes or businesses in a neighbourhood share fibre from a service provider's central office.

3 Wireless

While the specific technology used to provide wireless broadband services varies, each service provider uses radio frequencies to transmit and receive data between their customers and local transmission point. Normally, this requires a number of base stations, similar to mobile phone towers, which transmit to customers who have a small transmitter/receiver connected to their computers or other digital devices.

4 Satellite

Common in rural and remote areas, broadband satellite uses a home radio link and radio dish to bounce a signal off a satellite and down to an earth station. It's used for fast Internet access and sometimes phone calls. One-way satellite connections utilise a satellite link to download data to the broadband user and a standard telephone connection for uploading data back to the Internet. Two-way satellite connections use the satellite link to both upload and download information.

5 Bitstream

A generic term often used to describe low-complexity data transmission products.

6 Retail Service Providers (RSPs)

The retail network service providers and application/content service providers are those that provide services to end users and have a direct customer relationship with the end users. Wholesale service providers do not have this relationship.

7 Point of Interconnect (PoI)

The connection point that allows Retail and Wholesale Services Providers (RSP, WSP) to connect to the NBN Co access capability.

8 Backhaul

Backhaul typically refers to the mid-to-long distance transport of data from a series of disparate locations back to a more centralised location. This transport may involve some level of concentration (also referred to as aggregation).

9 Fibre Servicing Area (FSA)

The area served by a Fibre Access Node (FAN) site, which for the regional areas will be a cluster of FDAs and for the 16 city metro locations it will be a cluster of FSA Modules. The FDAs and FSA Modules will be connected via Distribution Fibre.

10 Local Ethernet Bitstream (LEB)

One of two Layer 2 bitstream products to be offered by NBN Co (the other being AEB – Aggregated Ethernet Bitstream)

11 Optical Network Terminal (ONT)

The NBN Co termination point on each premise, for residential service providing (typically) 4 ethernet, 1 telephone and 1 co-axial interface.

12 Fibre Access Node (FAN)

A facility that houses the active equipment providing services to a Fibre Serving Area. Note that Urban FANs will also provide a Point of Interconnect to RSPs/WSPs.

13 Aggregated Ethernet Bitstream (AEB)

One of two Layer 2 bitstream products to be offered by NBN Co (the other being LEB – Local Ethernet Bitstream). The AEB product enables aggregated access to one or more Fibre Serving Areas (FSAs) via an aggregated link. The LEB product will not be available in locations where the AEB product is made available.

14 Ethernet

A common method of networking computers in a local area network (LAN) using a variety of forms of cabling. Ethernet supports retail service provider (RSP) service differentiation as a result of a ubiquitous interface. It facilitates competition and choice as is able to support multiple services and RSPs on the same physical interface, when necessary. It offers flexibility and substantial bandwidth. It supports security and grades of QoS.



15 Quality of Service (QoS)

QoS refers to a wide range of networking technologies and techniques. The goal of QoS is to provide guarantees on the ability of a network to deliver predictable results. Network performance within the scope of QoS can include availability, bandwidth, latency and error rate.

16 Customer Premises Equipment (CPE)

The computer, modem and wiring at a customer's premises.

17 Wholesale Service Providers (WSPs)

Wholesale service providers do not have a direct customer relationship with the end user. The retail network service providers and application/content service providers are those that provide services to end users.

NBN reference diagram definitions

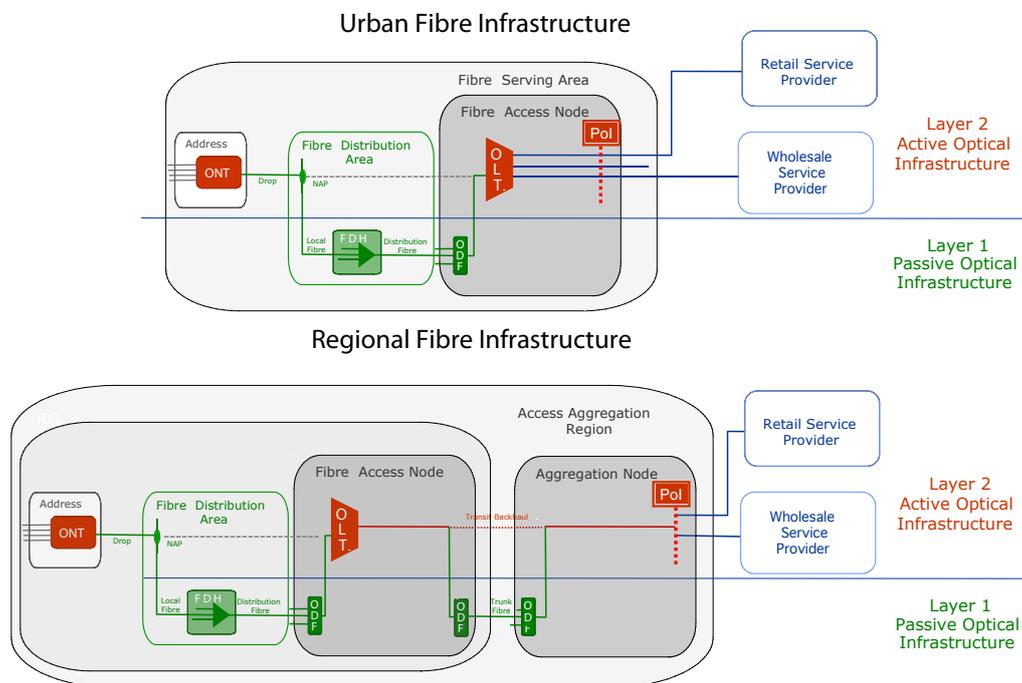
These levels of fibre connectivity correspond to the interconnection between specific fibre collection areas. The hierarchy of fibre collection areas is shown and described below.

Access Aggregation Region (AAR)

The area served by a Point on Interconnect (PoI) located in an Aggregation Node (AN) and connected via Trunk Fibre to regional Fibre Access Node (FAN) sites. The backhaul from the regional FAN to the AN is termed Transit Backhaul.

Fibre Distribution Area (FDA)

The area served via a single Fibre Distribution Hub (FDH) which connects addresses to the serving FAN sites(s) via Local Fibre.



Aggregation Node (AN)

A facility that provides a Point of Interconnect to RSPs/WSPs for an Access Aggregation Region, comprising a number of regional FAN sites. Note that an AN will also have a co-located FAN site for its local area.

Optical Line Terminal (OLT)

The terminal equipment to provide the Gigabit Passive Optical Network (GPON) signals to each of the FDAs.

Ethernet Aggregation Switch (EAS)

The equipment that provides connectivity to the OLT for each RSP/WSP.

Ethernet Fanout Switch (EFS)

The equipment that provides connectivity between the OTP and the OLT for each RSP/WSP.

Optical Transport Platform (OTP)

The optical transmission equipment providing data transport between FAN sites.

Trunk Fibre

Connection between Points of Interconnect (Pols) in the Aggregation Nodes where the Retail Service Providers connect to the NBN, and the regional based Trunk FANs. Trunk Fibre can also provide connectivity for the Metro FANs to Pols if required.

Distribution Fibre

Connection between the Fibre Distribution Hub (FDH) and the FAN, for both Regional FANs and the Metro FANs, as well as the connectivity between the non adjacent Fibre Serving Area.

Physical Infrastructure Representation

