

Product Description

nbn[™] Enterprise Ethernet Product Module

Wholesale Broadband Agreement





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Version	Description	Effective Date
4.0	First issued version of WBA 4	1 December 2020
4.x	Introduction of new 2-10Gbps nbn™ Enterprise Ethernet bandwidth profiles	30 June 2022

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Environment

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Introduction

This **nbn**TM Enterprise Ethernet Product Description describes the **nbn**TM Enterprise Ethernet Product. It forms part of the **nbn**TM Enterprise Ethernet Product Module.

Roadmap

A roadmap describing the structure of this **nbn**TM Enterprise Ethernet Product Description follows for the assistance of RSP.

Part A: The **nbn**TM Enterprise Ethernet Product

Part A describes what the **nbn**TM Enterprise Ethernet Product is.

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Part B: Required Product Components

Part B describes the core Product Components of **nbn**TM Enterprise Ethernet which RSP must order.

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Part C: Optional Product Features

Part C describes the optional Product Features of **nbn**TM Enterprise Ethernet which RSP may elect to order.

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Part D: General conditions of supply

Part D sets out general conditions which apply to the supply of **nbn**TM Enterprise Ethernet to RSP.

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Part A: The **nbn**TM Enterprise Ethernet Product

The **nbn**TM Enterprise Ethernet Product:

- is an Ethernet-based Layer 2 virtual connection that carries traffic between a UNI used to serve a Premises and a POI;
- is supplied by means of the Enterprise Ethernet Network;
- enables RSP or its Downstream Service Providers to supply a Carriage Service or Content Service to a Premises;
- is MEF Carrier Ethernet 2.0 compliant; and
- comprises 3 Product Components, which RSP must acquire as part of **nbn**TM Enterprise Ethernet, and optional Product Features, which RSP may elect to acquire.

Type	Product Component / Product Feature
Product Components (required)	NNI; OVC; UNI
Product Features (optional)	Premium Assurance Service; Route Aggregation; NNI Link

Part B: Required Product Components

*Section 1 describes the NNI. RSP must acquire an NNI for each POI where **nbn** supplies **nbn**[™] Enterprise Ethernet to RSP. RSP connects its network to the **nbn**[™] Network at the POI where the NNI is located.*

1. Network-Network Interface (NNI)

1.1 NNI description

- (a) A **Network-Network Interface** or **NNI** is the interface at a POI where RSP traffic is handed over to the **nbn**[™] Network.
- (b) The NNI is the point of handover for all OVCs associated with that NNI.
- (c) A reference to a Network-Network interface or NNI includes a V-NNI when RSP has configured a V-NNI with an Upstream NNI Link, as applicable.
- (d) An NNI supplied in respect of:
 - (i) **nbn**[™] Enterprise Ethernet may be made available in respect of **nbn**[™] Ethernet supplied by means of any access technology other than the Satellite Network; and
 - (ii) **nbn**[™] Ethernet supplied by means of any access technology other than the Satellite Network may be made available in respect of **nbn**[™] Enterprise Ethernet.

1.2 NNI Bearer

- (a) The **NNI Bearer** is the physical interface between the RSP switch and the **nbn**[™] Network.
- (b) An NNI Bearer must be configured as a member of an NNI Group which is a logical interface comprising one or more NNI Bearers supplied by **nbn** to RSP.
- (c) The physical interface options for the NNI Bearer are:

NNI Bearer profile
1000BaseLX
10GBaseLR
100GBaseLR4
1000BaseEX
10GBaseER
100GBaseER4

Note: *The performance of the service may be limited if RSP selects an NNI Bearer profile which is less than the bandwidth profile (for example, selecting a 1000BaseLX NNI Bearer profile with a bandwidth profile that is greater than 1000Mbps).*

1.3 NNI Group

- (a) An NNI Bearer can only be configured as a member of an NNI Group if its interface rate is the same as the interface rate of the NNI Group.
- (b) Each NNI Bearer must be configured with a logical single or diverse chassis redundancy mode, together forming an NNI Group.

- (c) Single chassis is the only redundancy mode available for an NNI Group comprised of a single NNI Bearer.
- (d) If RSP selects single chassis as the redundancy mode for an NNI Group:
 - (i) each NNI Bearer in that NNI Group will be connected to the same chassis; and
 - (ii) the NNI will operate as a single, unprotected interface.
- (e) Each NNI Bearer in an NNI Group where RSP selects diverse chassis as the redundancy mode will be connected across a pair of chassis.
- (f) Once an NNI Group is activated, the redundancy mode of that NNI Group cannot be reconfigured.

1.4 V-NNI

- (a) A V-NNI must be configured with an Upstream NNI Link.
- (b) The Upstream NNI Link Parameters will be applied to the V-NNI.
- (c) RSP must associate OVCs and UNIs with a V-NNI in the same way as an NNI.

Section 2 describes the UNI which must be ordered for each Premises where **nbn** supplies **nbn**TM Enterprise Ethernet to RSP.

2. User Network Interface (UNI)

2.1 UNI description

- (a) The **User Network Interface** or **UNI** is a physical port to which **nbn** supplies **nbn**TM Enterprise Ethernet in respect of a Premises.
- (b) RSP must order at least one UNI for each Premises to which **nbn**TM Enterprise Ethernet will be supplied.
- (c) **nbn** will make the following types of UNI available in respect of a Premises served by the Enterprise Ethernet Network:

Type of UNI	Port	Number of available ports on B-NTD	Location of UNI port	nbn TM Downstream Network Boundary
UNI-E	Ethernet	3 ¹	<u>1Gbps</u> B-NTD	UNI
<u>UNI-E</u>	<u>Ethernet</u>	<u>4</u> ²	<u>10Gbps B-NTD</u>	<u>UNI</u>

Note-¹ Although the B-NTD is physically equipped with 5 ports, only 3 UNI-E ports will be available for use by RSP.

² Although the B-NTD is physically equipped with 12 ports, only 4 UNI-E ports will be available for use by RSP.

2.2 UNI-E

- (a) Each UNI-E may be provisioned to only one RSP for the purposes of **nbn**TM Enterprise Ethernet.
- (b) Of the 3x 1Gbps UNI-E ports on a 1Gps B-NTD to be made available for use by RSP:

- (i) 1x 1Gbps UNI-E port can be made available with either an optical interface (SFP) or an electrical interface (RJ-45); and
 - (ii) 2x 1Gbps UNI-E ports have an electrical interface (RJ-45) and will not be made available with an optical interface.
- (c) Of the 1x 10Gbps and 3x 1Gbps UNI-E ports on a 10Gbps B-NTD to be made available for use by RSP:
- (i) 1x 10Gbps UNI-E port can be made available with an optical interface (SFP);
 - (ii) 1x 1Gbps UNI-E ports can be made available with an optical interface (SFP); and
 - ~~(ii)~~(iii) 2x 1Gbps UNI-E ports have an electrical interface (RJ-45) and will not be made available with an optical interface.
- ~~(e)~~(d) It is a condition of supply of a UNI-E Product Component of **nbm**[™] Enterprise Ethernet that RSP also acquires at least one associated OVC.
- ~~(e)~~(e) Each UNI-E is located within a UNI Zone. Details of the UNI Zone for a particular UNI-E are determined by **nbm** depending on the Statistical Area Level 1 in which the relevant Premises is located and are available to RSP in accordance with section 9.1(d).

*Section 3 describes the OVC which must be ordered for each Premises where **nbm** supplies **nbm**[™] Enterprise Ethernet to RSP.*

3. Operator Virtual Connection (OVC)

3.1 OVC description

- (a) An **Operator Virtual Connection** or **OVC** is an Ethernet-based Layer 2 virtual connection on the Enterprise Ethernet Network that carries RSP traffic to and from a UNI-E used to serve a Premises.
- (b) Subject to sections 3.1(e) and 3.2, RSP may elect to partition the OVC to carry data in the classes of service CoS-L, CoS-M, CoS-H, or, subject to sections 3.1(c) and 3.1(d), any combination of them.
- (c) Subject to section 3.1(e), RSP may order any of the bandwidth profiles set out in section 3.2, provided that the total combination of bandwidth profiles for the OVC is not zero.
- (d) Subject to section 3.1(e):
 - (i) RSP may request that **nbm** map up to:
 - (A) three different Classes of Service to one OVC; and
 - (B) eight OVCs to one UNI-E; and
 - (ii) RSP must not request **nbm** to map more than one of each Class of Service to one OVC.
- (e) In respect of each UNI-E used to serve the relevant Premises, the aggregate CIR bandwidth existing on all OVCs must not exceed the limits set out in section 4.1.2 of the [nbm[™] Enterprise Ethernet Product Technical Specification](#).

3.2 Classes of Service

- (a) The bandwidth profiles for **nbm**[™] Enterprise Ethernet available in respect of:

Part B: Required Product Components

(i) CoS-L are:

Symmetrical Mbps (EIR)	In symmetrical Mbps EIR increments of
10-100	10
100-500	50
500-1000	100
<u>1000-10000</u>	<u>1000</u>

(ii) CoS-M are:

Symmetrical Mbps (CIR and EIR at a 1:3 ratio)	In symmetrical Mbps (CIR and EIR at a 1:3 ratio) increments of
10-100	10
100-500	50
500-1000	100
<u>1000-10000</u>	<u>1000</u>

(iii) CoS-H are:

Symmetrical Mbps (CIR)	In symmetrical Mbps (CIR) increments of
10-100	10
100-500	50
500-1000	100
<u>1000-10000</u>	<u>1000</u>

Part C: Optional Product Features

*Section 4 describes the optional Premium Assurance Service available for **nbn**TM Enterprise Ethernet.*

4. Premium Assurance Service

- (a) The Premium Assurance Service is available as an optional Product Feature of **nbn**TM Enterprise Ethernet which provides RSP with enhanced Service Levels for the rectification of Enterprise Ethernet Faults which affect an **nbn**TM Enterprise Ethernet Ordered Product.
- (b) RSP may order the Premium Assurance Service in respect of any UNI-E, and that Premium Assurance Service will apply in relation to each **nbn**TM Enterprise Ethernet Ordered Product which includes the relevant UNI-E as a Product Component (including in relation to each associated OVC).
- (c) **nbn** offers the following Premium Assurance Service options:

Option
Premium - 4 (24/7)
Premium - 6 (24/7)
Premium - 8 (24/7)

- (d) Full details of these Premium Assurance Service options are set out at section 2 of the [nbnTM Enterprise Ethernet Service Levels Schedule](#).
- (e) If RSP does not select any of the Premium Assurance Service options in section 4(c) in respect of a specific **nbn**TM Enterprise Ethernet Ordered Product, **nbn** will perform fault rectification activities in respect of that **nbn**TM Enterprise Ethernet Ordered Product in accordance with the Premium – 12 (24/7) Premium Assurance Service.
- (f) Full details of the Premium – 12 (24/7) Premium Assurance Service are set out at section 2 of the [nbnTM Enterprise Ethernet Service Levels Schedule](#).

*Section 5 describes the optional Route Aggregation feature of **nbn**TM Enterprise Ethernet Ordered Products with a bandwidth profile of 1000Mbps or less.*

5. Route Aggregation

5.1 Description

- (a) **Route Aggregation** is an optional Product Feature of an OVC which allows RSP to interface with the Enterprise Ethernet Network at an NNI located in a State Aggregation POI instead of a Local POI.
- (b) If RSP acquires Route Aggregation in respect of an OVC, **nbn** will transfer OVC data between the associated UNI and a nominated NNI at the State Aggregation POI instead of at the Local POI.
- (c) Each Route Aggregation Product Feature will have:
 - (i) a Route Type determined by **nbn**, depending on the mapping of the Local POI to the State Aggregation POI, and available to RSP on request; and
 - (ii) a bandwidth profile which is equivalent to the aggregate of all bandwidth profiles for all Classes of Service of the corresponding OVC.

(d) Each Local POI is mapped to a State Aggregation POI. The State Aggregation POI for a particular Local POI is determined by **nbn** depending on the location of the Local POI.

(e) RSP cannot order the Route Aggregation Product Feature in respect of an Ordered Product with bandwidth profile of more than 1000Mbps.

~~(e)~~(f) RSP must not place, and **nbn** may decline, a Route Aggregation order if it would result in **nbn** supplying to RSP Route Aggregation Product Features between a Local POI and a State Aggregation POI with an aggregated bandwidth profile of more than 1 Gbps.

*Section 6 describes the optional NNI Link feature of **nbn**™ Enterprise Ethernet.*

6. NNI Link

(a) Each NNI Link must be configured with:

- (i) an NNI (excluding a V-NNI) that RSP has designated as one which it is acquiring for itself and as agent for one or more Other RSPs; and
- (ii) a Downstream V-NNI.

(b) One or more NNI Links may be acquired in respect of the same Linked NNI.

(c) Only one Downstream V-NNI can be associated with an NNI Link.

(d) The bandwidth profiles available in respect of an NNI Link are available in increments of:

- (i) 100Mbps for NNI Link bandwidths up to and including 10Gbps; and
- (ii) 1Gbps for NNI Link bandwidths above 10Gbps.

(e) When ordering an NNI Link, RSP must select the S-TAG pool allocated to that NNI Link.

(f) The selected bandwidth capacity of, and the S-TAG pool allocated to, that NNI Link (**NNI Link Parameters**) must not exceed the available bandwidth capacity of, and available S-TAG pool allocated to, the Linked NNI.

(g) On and from Activation of an NNI Link, the available bandwidth capacity of, and S-TAG pool allocated to, the Linked NNI will be reduced by the bandwidth capacity of, and S-TAG pool allocated to, that NNI Link.

Part D: General conditions of supply

Section 7 sets out obligations of RSP in relation to downstream supply of services to which **nbn**TM Enterprise Ethernet is an input.

7. Downstream supply

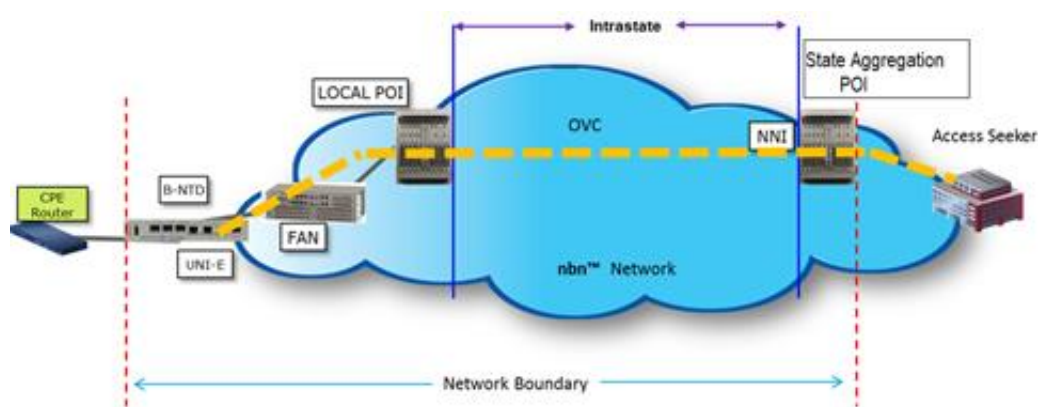
- (a) RSP is responsible for supplying and installing all End User Equipment required for the supply of **nbn**TM Enterprise Ethernet.
- (b) RSP must not use **nbn**TM Enterprise Ethernet as an input into the supply of:
 - (i) a Downstream Priority Assistance Service; or
 - (ii) a Downstream CSG Service.

Section 8 sets out some general obligations of **nbn** and RSP which apply in relation to the end-to-end supply of services to which **nbn**TM Enterprise Ethernet is an input.

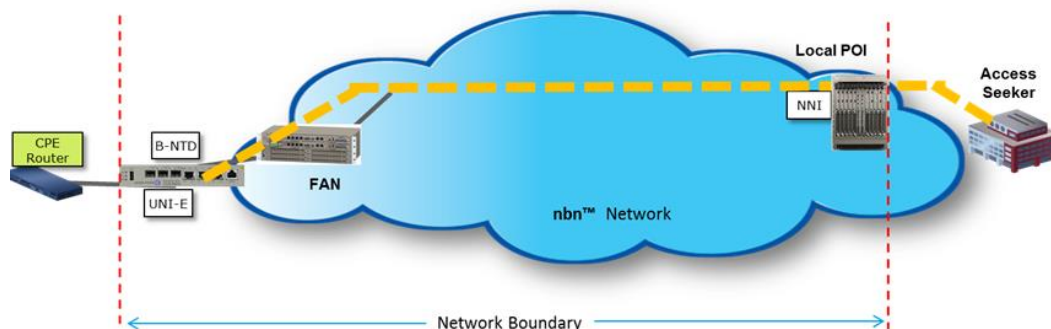
8. Interconnection and network supply chain

8.1 Interconnection and network supply chain

- (a) The diagram below depicts an example of **nbn**TM Enterprise Ethernet as one part of the overall network supply chain where RSP acquires Route Aggregation:



- (b) The diagram below depicts an example of **nbn**TM Enterprise Ethernet as one part of the overall network supply chain where RSP does not acquire Route Aggregation:



Part D: General conditions of supply

- (c) RSP is responsible for:
 - (i) ordering sufficient capacity across the relevant Product Components and Product Features of **nbn**TM Enterprise Ethernet to meet its own capacity requirements in respect of the supply of RSP Products to its Downstream Service Providers and Contracted End Users; and
 - (ii) separately acquiring, operating and maintaining all connections made to the RSP-side of the NNI.

8.2 **nbn**TM Enterprise Ethernet exclusions

nbnTM Enterprise Ethernet does not include:

- (a) facilities access;
- (b) any backhaul transmission (other than Route Aggregation where supplied), Cross Connections or cabling from the RSP-side of the NNI;
- (c) any content or applications, including IP transit, Internet gateway connection, BGP routing, soft switching infrastructure and all international connectivity associated with the supply of **nbn**TM Enterprise Ethernet;
- (d) RSP Equipment and End User Equipment (including cabling from the B-NTD to the RSP or End User Equipment); or
- (e) any other end user equipment, such as modems, personal computers, network attached storage solutions, central splitters, in-line splitters, power extension cables or power outlets.

*Section 9 describes the structure of the Enterprise Ethernet Network architecture and the boundaries of **nbn**TM Enterprise Ethernet.*

9. Enterprise Ethernet Network architecture and **nbn**TM Enterprise Ethernet boundaries

9.1 Enterprise Ethernet Network architecture

- (a) In the Enterprise Ethernet Network each:
 - (i) Premises at which **nbn**TM Enterprise Ethernet is available is located within an Access Distribution Area (or ADA);
 - (ii) ADA is located within a Serving Area Module (or SAM);
 - (iii) SAM is located in a Fixed-Line Serving Area (or FSA);
 - (iv) FSA is located within a Connectivity Serving Area (or CSA);
 - (v) CSA is served by one POI; and
 - (vi) POI may serve one or more CSAs.
- (b) If RSP does not acquire Route Aggregation for an OVC, the Premises at which **nbn** supplies the OVC will be served by the Local POI.
- (c) If RSP acquires Route Aggregation for an OVC, the Premises at which **nbn** supplies the OVC will be served by the State Aggregation POI.

Part D: General conditions of supply

- (d) Details of the ADA, SAM, FSA, CSA, UNI Zone, Route Type, Local POI and State Aggregation POI serving, or available to serve, a Premises are available to RSP on request.

9.2 nbn™ Enterprise Ethernet boundaries

nbn™ Enterprise Ethernet carries traffic in respect of a Premises over the Enterprise Ethernet Network between the following boundaries:

- (a) the UNI-E used to serve that Premises; and
(b) the NNI that serves the Premises.

Note: If RSP does not acquire Route Aggregation for an OVC, the NNI serving the relevant Premises will be at the Local POI. If RSP acquires Route Aggregation for an OVC, the NNI serving the relevant Premises will be at the State Aggregation POI.

9.3 Power Outages

nbn may not be able to supply an **nbn™** Enterprise Ethernet Ordered Product in the event of a Power Outage affecting a B-NTD or any other **nbn™** Equipment located at a Premises served by the Enterprise Ethernet Network.

*Section 10 describes the factors that are relevant to the speed, performance and availability of **nbn™** Enterprise Ethernet.*

10. Speeds, performance and availability

10.1 Speeds and performance of Ordered Products

- (a) References to download and upload speeds (EIR and CIR) in this **nbn™** Enterprise Ethernet Product Description are to Layer 2 speeds and are references to the maximum data throughput that the Enterprise Ethernet Network is designed to make available to RSP at the UNI-E used to serve the relevant Premises, not the minimum data throughput.
- (b) The speeds and performance (including stability) of **nbn™** Enterprise Ethernet Ordered Products actually experienced by RSP, Downstream Service Providers, Contracted End Users and other End Users will vary and depend upon a number of factors including:
- (i) the equipment that is used by RSP, Downstream Service Providers, Contracted End Users and other End Users (which can also affect the speeds experienced at the UNI-E used to serve the relevant Premises in respect of products supplied to End Users and end users of Other RSPs);
 - (ii) the nature and quality of the RSP Product or Downstream Product acquired by Downstream Service Providers and Contracted End Users;
 - (iii) in the case of EIR only, the number of simultaneous end users being served by the Enterprise Ethernet Network over the same B-NTD;
 - (iv) interference caused by the equipment or network of any third party; ~~and~~
 - (v) the nature, quality and length of the connection to, and signal reception (including any interference with in building cabling) at or affecting, the relevant Premises; ~~and~~
and
 - (vi) notwithstanding section 10.1(a), for **nbn™** Enterprise Ethernet Ordered Products with an OVC bandwidth profile that is the same as the maximum aggregate throughput of the relevant UNI-E, the speed of that Ordered Product will not

exceed the maximum information rate specified in Appendix A of the **nbn**TM Enterprise Ethernet Product Technical Specification.

10.2 B-NTD Throughput Limits

- (a) If the aggregate bandwidth profiles of all OVCs supplied by **nbn** to RSP and all Other RSPs to the same B-NTD exceeds the B-NTD maximum aggregate throughput set out in section 10.2(b), the Ordered Products supplied to that B-NTD may not achieve maximum throughput simultaneously.
- (b) The maximum aggregate Layer 1 throughput for a B-NTD in respect of all UNI-Es on that B-NTD are:

<u>B-NTD</u>	Downstream (Mbps)	Upstream (Mbps)
<u>1Gbps</u>	1000	1000
<u>10Gbps</u>	<u>10,000</u>	<u>10,000</u>

- (c) RSP must ensure that End Users are aware of the potential for the maximum aggregate throughput of B-NTDs to affect the ability of multiple Ordered Products supplied using the same B-NTD to achieve maximum throughput simultaneously.

Note: The maximum aggregate B-NTD throughputs set out in this section 10.2 apply in respect of all Ordered Products supplied by **nbn** to RSP and all Other RSPs.

10.3 Availability of supply of Product

Notwithstanding anything else in this **nbn**TM Enterprise Ethernet Product Description, the supply of **nbn**TM Enterprise Ethernet by **nbn** to RSP is subject to the availability of each of the **nbn**TM Enterprise Ethernet Product Components and Product Features at the time at which RSP places an order or modifies an existing order.

10.4 Temporary interruption of **nbn**TM Enterprise Ethernet

- (a) The supply of an **nbn**TM Enterprise Ethernet Ordered Product to a Premises may experience a temporary interruption during the performance of any work required in relation to installation, activation, relocation of, and any activities reasonably incidental to installation, activation and relocation of another Ordered Product including any Enterprise Ethernet Installation Activities or any other service-affecting activities by **nbn** (or any of its Personnel or other persons authorised by **nbn**) supplied using the same **nbn**TM Infrastructure that supplies the Premises as the Ordered Product.
- (b) RSP acknowledges that the activities contemplated in section 10.4(a) may involve **nbn** (or any of its Personnel or other persons authorised by **nbn**) adding, removing or relocating **nbn**TM Equipment.
- (c) **nbn** will use reasonable endeavours where practicable to minimise any interruption to the supply of **nbn**TM Enterprise Ethernet caused by the activities contemplated in section 10.4(a).