Product Description

Satellite Mobility (LCPA) Agreement

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Version	Description	Effective Date
1.0	Issued on 5 October 2017	Start Date
1.1	Increase the maximum orderable M-CVC from 800Mbps to 950Mbps	20 September 2022

Introduction

This Product Description describes the **nbn**™ Satellite Mobility Product. It forms part of the Product Module for the **nbn**™ Satellite Mobility Product.

Roadmap

A roadmap describing the structure of the Product Description for the **nbn**™ Satellite Mobility Product follows for the assistance of Customer.

Part A: The **nbn**™ Satellite Mobility Product

Part A describes the **nbn**™ Satellite Mobility Product.

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Part B: Required Product Components

Part B describes the four core Product Components of the **nbn**™ Satellite Mobility Product which Customer must order.

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Part C: General conditions of supply

Part D sets out general conditions which apply to the supply of **nbn**™ Satellite Mobility Product to Customer.

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Part A: The **nbn**™ Satellite Mobility Product

The **nbn**™ Satellite Mobility Product:

- is a network connection on the Satellite Network between:

    (i)   the Mobility Network-Network Interface (M-NNI) at the POI; and

    (ii)   the Mobility Beams Interface (MBI);

- enables Customer or its Downstream Customers to supply a network connection to a Mobile Terminal installed on a Supported Commercial Passenger Aircraft; and

- comprises four Product Components that Customer must acquire as part of the nbn™ Satellite Mobility Product:

Type	Product Component
Product Components	M-NNI; M-CVC; MB-VC; MBI

Part B: Required Product Components

Section 1 describes the M-NNI. Customer must order a single M-NNI. Customer connects its network to the Satellite Network at the POI where the M-NNI is located.

1.   Mobility Network-Network Interface (M-NNI)

1.1   M-NNI description

(a)   A **Mobility Network-Network Interface** or **M-NNI** is the interface at the POI where Customer traffic is handed over to the Satellite Network.

(b)   The M-NNI is the point of handover for all M-CVCs associated with that M-NNI.

(c)   The **M-NNI Bearer** is the physical interface between the Customer Network and the Satellite Network.

(d)   An M-NNI supplied in respect of the **nbn**™ Satellite Mobility Product will not be made available in respect of the supply of **nbn**™ Ethernet Bitstream Service**.**

1.2   M-NNI Bearer

The physical interface for the M-NNI Bearer is as follows:

M-NNI Bearer profile
1000BaseLX

(a)   Each M-NNI Bearer must be configured with either a logical single or diverse chassis redundancy mode.

(b)   If Customer selects single chassis as the redundancy mode for an M-NNI, the M-NNI will operate as a single, unprotected interface.

(c)   Each M-NNI Bearer where Customer selects diverse chassis as the redundancy mode will be connected across a pair of chassis.

Section 2 describes the M-CVC. Customer may order a M-CVC in any of the bandwidth profiles set out in section 2.2.

2.   Mobility Connectivity Virtual Circuit (M-CVC)

2.1   M-CVC description

(a)   A **Mobility Connectivity Virtual Circuit** or **M-CVC** is network capacity on the Satellite Network used to carry Customer traffic between one or more MB-VCs, on an aggregated basis, and the M-NNI associated with that M-CVC.

(b)   Customer may order an M-CVC in any of the bandwidth profiles set out in section 2.2.

2.2   M-CVC Bandwidth Profiles

(a)   Customer must select a bandwidth profile for the M-CVC.

(b)   The M-CVC bandwidth profiles available in respect of the **nbn**™ Satellite Mobility Product are:

Mobility CVC Bandwidth Profile
Symmetrical Mbps (CIR)
100 Mbps to 950 Mbps (in increments of 1 Mbps)

(c)   As described in Sections 9 and 10, the CIR applies at the M-NNI only. The actual data throughput experienced may be significantly less than the bandwidth profile of the corresponding M-CVC CIR.

Section 3 describes the Mobility Beams Virtual Circuit (MB-VC). Customer must order at least one MB-VC for each M-CVC.

3.   Mobility Beams Virtual Circuit (MB-VC)

3.1   MB-VC description

(a)   The **Mobility Beams Virtual Circuit (MB-VC)** is a virtual connection on the Satellite Network used to carry Customer traffic between the Mobility Beams Interface and the M-CVC associated with that MB-VC.

(b)   For each M-CVC it orders, Customer must order at least one MB-VC.

(c)   Customer must order access:

(i)   to the MB-VC for each Mobile Terminal associated with that MB-VC; and

(ii)   and must order access for at least one Mobile Terminal when ordering an MB-VC.

(d)   A Mobile Terminal can only be associated with one MB-VC.

Section 4 describes the Mobility Beams Interface (MBI).

4.   Mobility Beams Interface (MBI)

4.1   MBI description

(a)   The **Mobility Beams Interface (MBI)** is the air interface located at the outer surface of the Satellite-based Facility where Customer traffic for all Mobility Beams is handed over from the Satellite Network to the Customer Network.

(b)   **nbn** will supply a single MBI for all MB-VCs order by Customer.

(c)   Customer may access the **nbn**™ Satellite Mobility Product at the MBI using a Mobile Terminal which is:

(i)   located within the Coverage Area of a Mobility Beam; and

(ii)   operated by Customer in accordance with this Agreement.

Part C: General conditions of supply

*Sections 5, 6 and 7 set out some general obligations of **nbn** and Customer which apply in relation to the end-to-end supply of services to which **nbn**™ Satellite Mobility Product is an input.*

5. Conditions of Use

Customer must not, and must ensure that Downstream Customer does not, supply a Customer Product or Downstream Product that relies on **nbn**™ Satellite Mobility Product as an input unless it is to a Mobile Terminal installed on a Supported Commercial Passenger Aircraft accordance with the Operations Manual.

6. Mobile Terminals

(a)   A Mobile Terminal used by Customer to access the **nbn**™ Satellite Mobility Product at the MBI constitutes part of the Customer Network.

(b)   Customer must:

   (i)   arrange for the supply and installation of each Mobile Terminal;

   (ii)   obtain accreditation of each Mobile Terminal type in accordance with the Operations Manual;

   (iii)   ensure that each Mobile Terminal meets and continues to comply with the specifications set out in the Product Technical Specification;

   (iv)   ensure that each Mobile Terminal is installed and operated in accordance with the law and any lawful and binding direction or rule issued by a Regulator or Government Agency.

7. Interconnection and network supply chain

7.1 Interconnection and network supply chain

(a)   The diagram below depicts an example of the **nbn**™ Satellite Mobility Product as one part of the overall network supply chain:
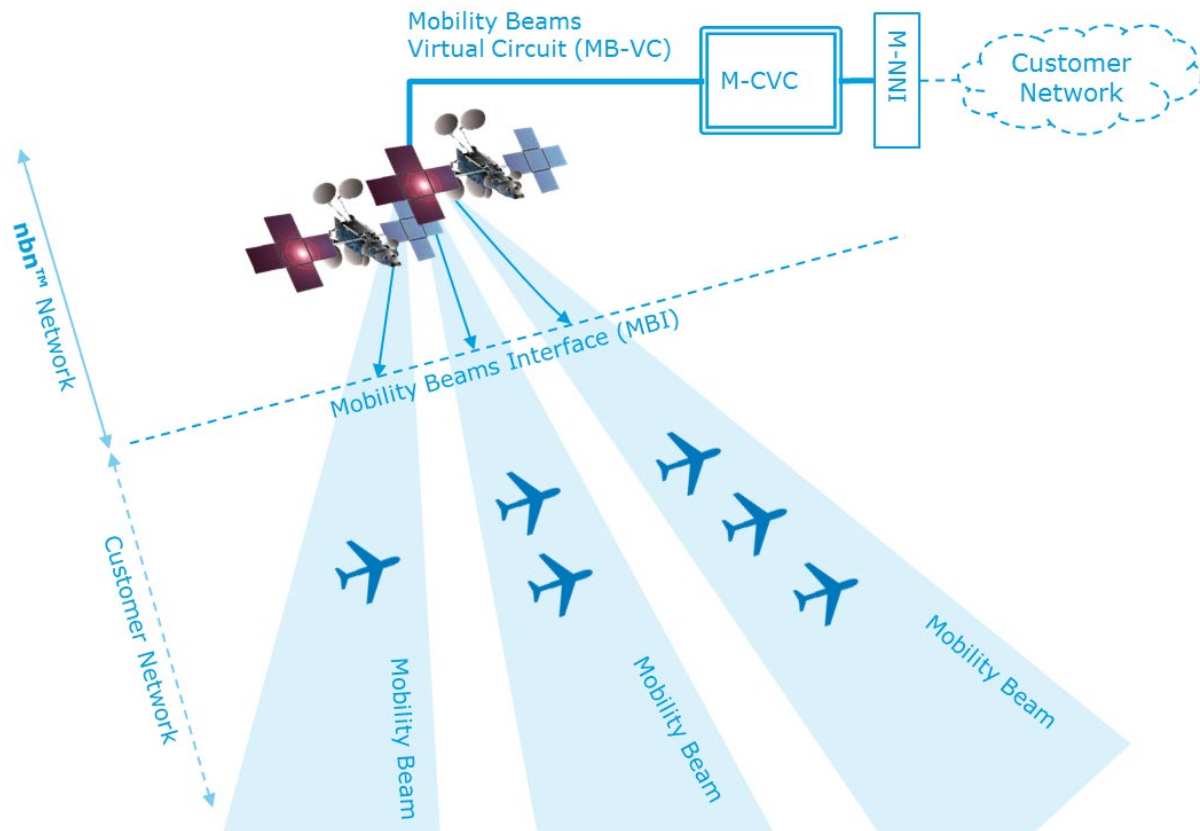
(b)   Customer is responsible for:

     (i)   ordering sufficient capacity on the M-CVC to meet its own capacity requirements in respect of the supply of Customer Products to its Downstream Service Providers and Contracted End Users; and

     (ii)   separately acquiring, operating and maintaining all connections made to the Customer-side of the M-NNI.

7.2   **nbn**™ Satellite Mobility Product Exclusions

The **nbn**™ Satellite Mobility Product does not include:

(a)   facilities access at the location of the POI;

(b)   any backhaul transmission, cross connections or cabling from the Customer-side of the M-NNI;

(c)   any content or applications, including IP transit, Internet gateway connection, any other Customer equipment, BGP routing, soft switching infrastructure and all international connectivity associated with the supply of the **nbn**™ Satellite Mobility Product;

(d)   Customer Equipment and End User Equipment (including Mobile Terminals);

(e)   access to layer 1 satellite capacity;

(f)   guaranteed satellite bandwidth;

(g)   any other end user equipment, such as modems, personal computers or network attached storage solutions; or

(h)   any network fault or performance monitoring probe or device supplied by **nbn** in relation to the **nbn™** Satellite Network.

*Section 8 describes the structure of the **nbn™** Satellite Network and the boundaries of the **nbn**™ Satellite Mobility Product.*

8.   Satellite Network architecture and the Satellite Mobility Product boundaries

8.1   Satellite Network architecture

(a)   In the Satellite Network:

   (i)   each Mobile Terminal in respect of which the **nbn**™ Satellite Mobility Product is available must be located within the Coverage Area of a Mobility Beam;

   (ii)   all Mobility Beams are located within a single Connectivity Serving Area (CSA);

   (iii)   the CSA is served by one Satellite POI; and

   (iv)   the Satellite POI may serve one or more CSAs.

8.2   Satellite Mobility Product boundaries

nbn™ Satellite Mobility Product carries traffic over the **nbn**™ Satellite Network between the following boundaries:

(a)   the Customer's side of the M-NNI; and

(b)   the MBI.

*Section 9 describes how **nbn** will de-prioritise traffic **nbn**™ Satellite Mobility Product traffic.*

9.   Satellite Mobility Product - Satellite Network Dimensioning

9.1   Satellite Mobility Product Performance Characteristics

The data throughput to or from the MBI and the speeds and performance of the **nbn**™ Satellite Mobility Product experienced by Customer, Downstream Service Providers, Contracted End Users and other End Users will vary depending on factors within the Satellite Network.

The **nbn**™ Satellite Mobility Product is designed for applications that can tolerate variable throughput and latency.

9.2   Priority given to **nbn**™ Ethernet Bitstream Service

(a)   The **nbn**™ Satellite Mobility Product operates in a shared bandwidth pool with **nbn**™ Ethernet (Satellite).

(b)   The actual data throughput at the MBI will, in respect of each Mobility Beam in which a Mobile Terminal is located, be adversely affected by nbn™ Ethernet (Satellite) traffic.

(c)   In circumstances of capacity contention or congestion of this kind, **nbn** will prioritise **nbn**™ Ethernet (Satellite) traffic over the **nbn**™ Satellite Mobility Product by allocating bandwidth on the Satellite Network in accordance with Weighted Fair Queuing.

9.3   Contention or Congestion between MTs

(a)   The Customer's **nbn**™ Satellite Mobility Product also operates in a shared bandwidth pool with **nbn**™ Satellite Mobility Products supplied to Other Customers.

(b)   The actual data throughput of an MB-VC available at the MBI will therefore be adversely affected by the number of, and capacity utilisation by, Mobile Terminals (including Mobile Terminals installed by Other Customers or their Downstream Customers) located within the same Mobility Beam.

*Section 10 describes the speeds, performance and availability of the **nbn™** Satellite Mobility Product via the Satellite Network.*

10.   Speeds, performance and availability

10.1   Speeds and performance of Ordered Products

(a)   References to download and upload speeds (CIR) only apply to the M-CVC in this Product Description and are references to the maximum data throughput that the Satellite Network is designed to make available for supply of the **nbn**™ Satellite Mobility Product to Customer at the M-NNI only. As described in Section 9, the actual data throughput of an MB-VC available at the MBI will be adversely affected by other Satellite Network traffic on the Mobility Beam in which the relevant MT is located and may be significantly less than the corresponding M-CVC CIR.

(b)   The access to and use of the **nbn™** Satellite Mobility Product will not be continuous or free of Faults and may be affected by Satellite Limitations.

(c)   The speeds and performance (including stability) of Ordered Products actually experienced by Customer, Downstream Service Providers, Contracted End Users and other End Users will vary and depend upon a number of factors pertaining to the Customer Network including:

   (i)   the equipment that is used Customer, Downstream Service Providers, Contracted End Users and other End Users (including the throughput limit of the Mobile Terminal);

   (ii)   interference caused by the equipment or network of any third party; and

   (iii)   the nature, quality and length of the connection to the relevant Mobile Terminal including signal reception, the position and/or orientation of the Supported Commercial Passenger Aircraft, line-of-sight interference, Satellite Limitations or prevailing radio conditions at or affecting the relevant Mobile Terminal.

10.2   Availability of supply of product

(a)   The supply of the **nbn**™ Satellite Mobility Product by **nbn** to Customer is subject to the availability of each of the Product Components and Product Features at the time at which Customer places an order.

(b)   Subject to clause 10.2(c), **nbn** may, at its absolute discretion, reject a Customer's Connect Order or Modify Order.

(c)   **nbn** must accept a:

   (i)   Connect Order that has been correctly submitted in accordance with the Operations Manual if that order:

> (A)   when considered with Customer's previous Activations and Modifications (if any), would not result in Customer breaching or exceeding its Approved Capacity Forecast; and
>
> (B)   is submitted within two years of the date that **nbn** approved the Approved Capacity Forecast referred to in section 10.2(c)(i)(A); and

(ii)   Modify Order that has been correctly submitted in accordance with the Operations Manual if that order:

> (A)   when considered with Customer's previous Activations and Modifications (if any), would not result in Customer breaching or exceeding its Accepted Capacity Forecast, provided that the order is submitted within two years of the date that **nbn** approved that Approved Capacity Forecast: or
>
> (B)   decreases:
>
> > (1)   the bandwidth profile of an M-CVC; or
> >
> > (2)   the number of Mobile Terminals associated with an MB-VC.