

ANNEX B

**SERVICE SCHEDULE – NON-RESIDENTIAL PER-END-USER
CONNECTION**

NUCLEUS CONNECT PTE. LTD.
INTERCONNECTION OFFER (ICO) AGREEMENT
SERVICE SCHEDULE – NON-RESIDENTIAL PER-END-USER CONNECTION

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1. INTRODUCTION

- 1.1 This Service Schedule sets out the terms and conditions under which Nucleus Connect will provide the service known as Non-Residential Per-End-User Connection (as defined below) to the Contracting QP.
- 1.2 This Service Schedule comprises the following:
- (a) the provisions herein;
 - (b) the General Service Terms and Conditions and the following Appendices:
 - (i) Appendix 1: Provisioning Timeframe;
 - (ii) Appendix 2: Service Level Guarantees; and
 - (c) Orders submitted by the Contracting QP in relation to this Service Schedule.
- 1.3 In the event of any inconsistency or conflict between the provisions herein, the General Service Terms and Conditions and Orders submitted by the Contracting QP in relation to this Service Schedule, the order of precedence shall be as follows:
- (a) the provisions herein;
 - (b) Orders submitted by the Contracting QP in relation to this Service Schedule; and
 - (c) the General Service Terms and Conditions.
- 1.4 The Master ICO Agreement, including the Annexes, shall apply unless and to the extent amended or supplemented by the provisions of this Service Schedule.
- 1.5 In this Service Schedule, a reference to a paragraph, unless stated otherwise, is to a paragraph of this Service Schedule.

2. DEFINITIONS AND INTERPRETATION

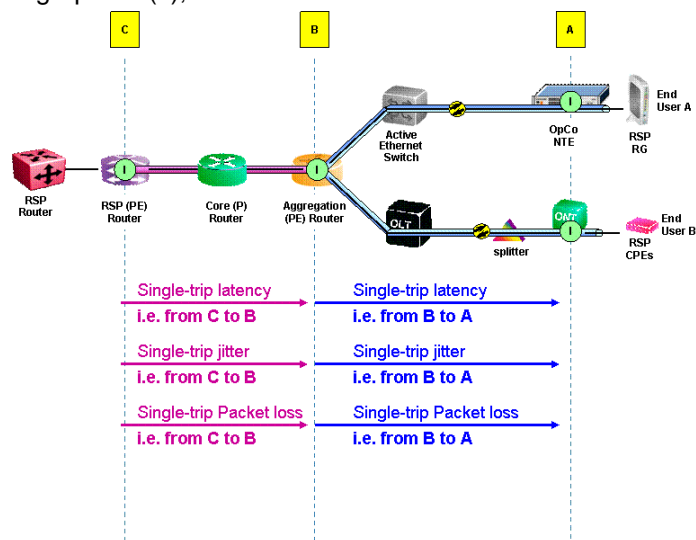
- 2.1 Unless otherwise defined herein this Service Schedule, all terms and expressions used herein will be construed to have the same meanings as found in the Master ICO Agreement and the General Service Terms and Conditions. Where a term or expression is defined specifically in this Service Schedule herein, the provisions herein shall prevail.
- 2.2 In this Service Schedule:

Class of Service or CoS	means any of the following class of service: <ul style="list-style-type: none">(a) Class A Real Time (Class A);(b) Class B Near Real Time (Class B); or(c) Class C Mission Critical (Class C), each of which is prescribed QoS parameters as set out in the table in paragraph 4.2(c);
Committed Information Rate (CIR)	means the minimum bandwidth that Nucleus Connect guarantees over the A-B segment of the diagram in the definition of “QoS”, for each Non-Residential Per-End-User Connection;
Downlink	means bandwidth in the downstream direction (from Aggregation Network to the End-User);
Non-Residential	means one connection from the Aggregation Layer to the Service Port(s) in Nucleus Connect’s NTE at the Non-

Per-End-User Connection Residential Premises specified by the Contracting QP in its Order, and **“Non-Residential Per-End-User Connections”** means more than one Non-Residential Per-End-User Connection;

Peak Information Rate (PIR) means the maximum bandwidth that each Non-Residential Per-End-User Connection can reach over the A-B segment of the diagram in the definition of “QoS” in the absence of any sort of traffic aggregation, congestion or multiplexing;

Quality of Service or (QoS) means the service levels committed for ensuring delivery of services over the A-B-A segment of the diagram below, measured by Latency and Packet Loss as set out in the table in paragraph 4.2(c);



Service Port means the physical port which the Contracting QP’s or End-User’s equipment shall interface to the Active Network for the purpose of receiving or using each Non-Residential Per-End-User Connection;

Symmetrical means equal bandwidth for Uplink and Downlink (between the End-User and the Aggregation Network); and

Uplink means bandwidth in the upstream direction (from the End-User to the Aggregation Network).

3. COMMENCEMENT

This Service Schedule shall commence with effect from the date that the Contracting QP first places Order(s) to take up Non-Residential Per-End-User Connection(s), in accordance with the General Service Terms and Conditions.

4. SERVICE REQUIREMENTS

4.1 The Contracting QP shall place one (1) Order for each Non-Residential Per-End-User Connection. For example, if the Contracting QP wishes to take up two (2) Non-Residential Per-End-User Connections, the Contracting QP shall submit two (2) separate Orders.

4.2 When placing an Order for a Non-Residential Per-End-User Connection, the Contracting QP shall be required to:

- (a) Choose one Service Port type which is either Fast Ethernet (“**FE Service Port**”) or Gigabit Ethernet (“**GE Service Port**”). In the same Order, the Contracting QP may choose up to two (2) additional Service Ports to be aggregated to the same Non-Residential Per-End-User Connection, provided that all the Service Ports are of the same type.

For FE Service Port(s), each Non-Residential Per-End-User Connection will have a Symmetrical PIR of 100Mbps.

For GE Service Port(s), each Non-Residential Per-End-User Connection will have a Symmetrical PIR of 1Gbps.

GPON is only applicable to FE Service Port, and AE is applicable to both FE Service Port and GE Service Port.

If pursuant to the Contracting QP's request, Nucleus Connect is not able to provide such Non-Residential Per-End-User Connection based on AE, Nucleus Connect shall be entitled to reject the Order for such Non-Residential Per-End-User Connection, but shall not impose any charges on the Contracting QP in respect of the rejection of such an Order.

If the Contracting QP chooses FE Service Port(s), the Contracting QP shall be required to further specify whether it requires the underlying access technology for such Non-residential Per-End-User Connection to be based on AE or GPON.

- (b) Choose any of the following Network Layers:
- (i) Option 1: Layer 2 VLAN (IEEE 802.1q and IEEE Q-in-Q). Where there is more than one Service Port sharing the same Non-Residential Per-End-User Connection, each Service Port shall have unique VLAN(s);
 - (ii) Option 2: Layer 3 IPv4;
 - (iii) Option 3: Layer 3 IPv6,

provided that the availability of Option 2 and Option 3 above are subject to the Contracting QP having taken up and completed the L3 Virtual Routing Domain Setup Service, which is an Ancillary Mandated Service provided by Nucleus Connect.

- (c) Subscribe to at least one Class of Service for such Non-Residential Per-End-User Connection and indicate the total Symmetrical CIR it wishes to purchase in blocks of 5Mbps, provided that:
- (i) the combined aggregate Symmetrical CIR for all subscribed Classes of Service shall be no more than 100Mbps for FE Service Port, and less than 1Gbps for GE Service Port; and
 - (ii) such Non-Residential Per-End-User Connection shall have at least one (1) Class of Service with:

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- (a) a minimum Symmetrical CIR of 25Mbps in the case where the Service Port(s) are FE Service Port(s); or
- (b) a minimum Symmetrical CIR of 250Mbps in the case where the Service Port(s) are GE Service Port(s).

The Contracting QP may subsequently from time to time, increase or decrease the Symmetrical CIR of each Class of Service subscribed for such Non-Residential Per-End-User Connection, in blocks of 5Mbps, provided that sub-paragraphs (i) to (ii) above is complied with. Such increase or decrease of Symmetrical CIR shall constitute a Modification for which the Contracting QP shall be required to submit an Order pursuant to and in accordance with the General Service Terms and Conditions.

The tables below set out the performance parameters of each Class of Service according to the Service Port type:

Class of Service (GPON)	Latency	Packet Loss
Class A Real Time	8ms	0.025%
Class B Near Real Time	16ms	0.050%
Class C Mission Critical	20ms	0.10%

Class of Service (AE)	Latency	Packet Loss
Class A Real Time	8ms	0.025%
Class B Near Real Time	16ms	0.050%
Class C Mission Critical	20ms	0.10%

- 4.3 If the Contracting QP injects traffic into any Non-Residential Per-End-User Connection which exceeds the Symmetrical CIR purchased for such Non-Residential Per-End-User Connection pursuant to paragraph 4.2(c), the Contracting QP acknowledges and agrees that notwithstanding that Nucleus Connect will endeavour to deliver such excess traffic, such delivery is not guaranteed. For the avoidance of doubt, the Contracting QP shall not be able to inject traffic into any Non-Residential Per-End-User Connection which exceeds the PIR as set out in paragraph 4.2(a).
- 4.4 The Contracting QP must adhere to Nucleus Connect’s QoS tagging scheme when sending or receiving data traffic through any Non-Residential Per-End-User Connection from the relevant Service Port(s). Such QoS tagging scheme requires the use of priority bit value 5 for Class A, priority bit value 4 for Class B and priority bit value 2 for Class C.
- 4.5 If the Contracting QP requires Nucleus Connect to perform QoS tagging on behalf of the Contracting QP, such tagging shall be on a one C-VLAN and one CoS per Service Port basis.
- 4.6 In relation to any Non-Residential Per-End-User Connection taken up by the Contracting QP, if the Contracting QP wishes to:
 - (a) (applicable only where the underlying access technology for such Non-Residential Per-End-User Connection is based on AE) change the then

existing Service Port type in respect of such Non-Residential Per-End-User Connection (from FE Service Port to GE Service Port or vice versa); and/or

- (b) add or reduce the number of Service Ports aggregated to such Non-Residential Per-End-User Connection, provided that the number of Service Ports sharing such Non-Residential Per-End-User Connection shall not exceed three (3) at all times,

each such event shall constitute a Modification for which the Contracting QP shall be required to submit an Order pursuant to and in accordance with the General Service Terms and Conditions.

4.7 In relation to any Non-Residential Per-End-User Connection taken up by the Contracting QP for which the underlying access technology is based on GPON, if the Contracting QP wishes to change the underlying access technology to AE, the Contracting QP shall:

- (a) place an Order for the Deactivation of such Non-Residential Per-End-User Connection, whereupon paragraph 8 of the General Service Terms and Conditions will apply; and
- (b) place an Order to take up a new Non-Residential Per-End-User Connection with an underlying access technology based on AE, whereupon paragraph 4 of the General Service Terms and Conditions will apply.

This paragraph 4.7 shall also apply mutatis mutandis where the Contracting QP wishes to change the underlying access technology of any Non-Residential Per-End-User Connection then taken up by it from AE to GPON.

4.8 If the Contracting QP indicates to Nucleus Connect in its Order to take up Non-Residential Per-End-User Connection, that it does not require OpenNet to provide the fibre and in-building cabling between the FTTB Node and the 1st TP for the relevant Non-Residential Building, the Contracting QP shall be responsible for the supply and maintenance of such fibre and in-building cabling. In such event, the Contracting QP acknowledges and agrees that:

- (a) the Contracting QP shall bear the following charges:
 - (i) ON Charges, except those ON Charges which would be subject to paragraph 4.8(a)(iii), which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, in connection therewith;
 - (ii) any Third Party Charges which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, in connection therewith; and
 - (iii) any other third party charges, OpenNet's charges and/or ON Charges agreed pursuant to paragraph 5.2 or 6.3 of the General Service Terms and Conditions which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, in connection therewith;
- (b) the Contracting QP shall provide fibre and in-building cabling from the FTTB Node and up to and including the 1st TP that is of a quality that is fit-for-purpose; and
- (c) the Contracting QP shall make such fibre and in-building cabling from the FTTB Node and up to and including the 1st TP, available and ready for

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Nucleus Connect's use at least three (3) Business Days before the RFS Date in respect of such Non-Residential Per-End-User Connection.

For the avoidance of doubt, if the Contracting QP fails to comply with sub-paragraphs (b) and (c) above and due to such failure, Nucleus Connect is not able to provision and activate such Non-Residential Per-End-User Connection by the scheduled RFS Date, the Contracting QP shall not be entitled to make any claim under Appendix 1 of the General Service Terms and Conditions, and Nucleus Connect shall be entitled to commence charging the Contracting QP the Monthly Recurring NC Charges set out in paragraph 5.1 on such scheduled RFS Date (and not the delayed date that such Non-Residential Per-End-User Connection is in fact activated).

5. CHARGES

The Charges set out in this paragraph 5 are the rates payable by the Contracting QP on a Non-Residential Per-End-User Connection basis.

5.1 Monthly Recurring NC Charges

Nucleus Connect will commence charging the Contracting QP the Monthly Recurring NC Charges specified below on the RFS Date.

Non-Residential Per-End-User Connection GPON (100Mbps Port)		Monthly Recurring NC Charge	
		First 25Mbps	Next 5Mbps (up to 100Mbps aggregate)
Class of Service	Real Time	\$95	\$8.00
	Near Real Time	\$89	\$6.80
	Mission Critical	\$81	\$5.20

Non-Residential Per-End-User Connection AE (100Mbps Port)		Monthly Recurring NC Charge	
		First 25Mbps	Next 5Mbps (up to 100Mbps aggregate)
Class of Service	Real Time	\$150	\$8.00
	Near Real Time	\$144	\$6.80
	Mission Critical	\$136	\$5.20

Non-Residential Per-End-User Connection AE (1Gbps Port)		Monthly Recurring NC Charge	
		First 250Mbps	Next 5Mbps
Class of Service	Real Time	\$1,060	\$8.00
	Near Real Time	\$1,000	\$6.80
	Mission Critical	\$920	\$5.20

If the Contracting QP requires an additional Service Port or additional two (2) Service Ports pursuant to paragraph 4.2(a), there will be an additional Monthly Recurring NC Charge of \$20 for each additional Service Port.

5.2 One-Time Charges

The Charges set out below are non-refundable once they are imposed on the Contracting QP by Nucleus Connect in the manner specified below. In addition, depending on when the relevant action is preferred by Contracting QP to be undertaken by Nucleus Connect, the following multiplier factor will be applied to the NC Charges set out below. For the avoidance of doubt, the multiplier factor to be applied shall be one (1) unless the Contracting QP requests that the relevant action be undertaken by Nucleus Connect on off-working hours during Business Day(s) or on non Business Day(s).

	Period	Time		Multiplier Factor
Business Day	Monday to Friday	Working Hours	9.00am to 5.00pm	1
	Monday to Friday	Off-working hours	Before 9am and after 5.00pm	1.5
Non-Business day	Saturday, Sundays and Public Holidays	Throughout		2

(a) Cancellation Charge

Upon any Cancellation of any Order relating to Non-Residential Per-End-User Connection, the following Charges shall be imposed on the Contracting QP:

- (i) an NC Charge of \$50 if Cancellation happens before Nucleus Connect's acknowledgement of its receipt of the Order or an NC Charge of an amount equal to the applicable NC Charges as set out in paragraph 5.2 if Cancellation happens after Nucleus Connect's acknowledgement of its receipt of the Order;
- (ii) ON Charges, except those ON Charges which would be subject to paragraph 5.2(a)(iv), which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such Cancellation;
- (iii) any Third Party Charges which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such Cancellation; and
- (iv) any other third party charges, OpenNet's charges and/or ON Charges agreed pursuant to paragraph 5.2 or 6.3 of the General Service Terms and Conditions which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such Cancellation.

(b) Installation Charge

- (i) Upon the installation of a Non-Residential Per-End-User Connection by Nucleus Connect, the following Charges shall be imposed on the Contracting QP:
 - (l) the following NC Charges (the following NC Charges shall be multiplied by 2 if Express SAP applies for the Non-Residential Per-End-User Connection):

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Description	NC Charges
Installation charge	\$350
Charge for installation of environmentally hardened NTE (at the request of the Contracting QP)	\$500

- (II) ON Charges, except those ON Charges which would be subject to paragraph 5.2(b)(i)(IV), which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such installation;
- (III) any Third Party Charges which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such installation; and
- (IV) any other third party charges, OpenNet’s charges and/or ON Charges agreed pursuant to paragraph 5.2 or 6.3 of the General Service Terms and Conditions which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such installation.

(ii) Patching Charge in the NC CO and Co-location Space

- (I) A Patching Charge in addition to the installation charge set out above will be imposed if Nucleus Connect is required to provide Patching Services. Nucleus Connect may be required to provide Patching Services where the installation address is located at the Co-location Space or the NC CO. This will be charged at \$40 per patch point.
- (II) This Patching Service will be provided by Nucleus Connect if required. The Contracting QP will be required to submit a separate Order for this Patching Service.

(c) Modification Charge

An NC Charge of \$100 shall be imposed on the Contracting QP upon the submission of a Modification Order by the Contracting QP.

(d) Maintenance or Repair

- (i) Nucleus Connect will charge for every onsite visit or joint investigation, according to the length of time spent by Nucleus Connect’s representative during such onsite visit or joint investigation respectively, if such onsite visit or joint investigation is requested by the Contracting QP or any Authorised MOE Personnel. There will be a minimum charge of \$400 per onsite visit or joint investigation (as the case may be) up to the first two hours. Subsequent hour blocks are charged at \$200 per hour.

However, if Nucleus Connect decides in its sole discretion that Nucleus Connect and/or its contractors (including OpenNet) need(s) to be onsite to assess the service impact and/or perform the necessary fault rectification, Nucleus Connect will charge a fixed charge of \$400 per onsite visit or joint investigation.

- (ii) The No Fault Found Charge referred to in the General Service Terms and Conditions is \$350 per Fault report.

(e) Disconnection

Upon a disconnection of a Non-Residential Per-End-User Connection by reason of suspension pursuant to the ICO Agreement, an NC Charge of \$150 shall be imposed on the Contracting QP.

(f) Deactivation

Upon the Deactivation of a Non-Residential Per-End-User Connection, the following Charges shall be imposed on the Contracting QP:

(i) the following NC Charges:

Description	Charges
Deactivation Charge	\$150
Early Termination Charge	100% of remaining contract value

(ii) ON Charges, except those ON Charges which would be subject to paragraph 5.2(f)(iv), which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such Deactivation;

(iii) any Third Party Charges which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such Deactivation; and

(iv) any other third party charges, OpenNet's charges and/or ON Charges agreed pursuant to paragraph 5.2 or 6.3 of the General Service Terms and Conditions which have been incurred by Nucleus Connect, or which Nucleus Connect has committed to incur, at the time of such Deactivation.

Application Form

Non-Residential Per-End-User Connection



ATTN: NUCLEUS CONNECT, ORDER DESK FACSIMILE NO. : (65) 6808 2820 EMAIL: orderdesk@nucleusconnect.com	
Type of Order	
<input type="checkbox"/> New Order <input type="checkbox"/> Modification <input type="checkbox"/> Deactivation <input type="checkbox"/> Others (Please specify): _____ Existing Service ID (Mandatory field unless New Order): _____	
Business Customer Information	
Company Details	Authorised Officer Particulars
Name of Firm/Company as in RCB:	Name of Authorised Officer as in NRIC/PASSPORT/FIN*. Please underline surname. (Dr/Mr/Miss/Mrs/Mdm):_
Registered Address as in RCB:	NRIC/PASSPORT/FIN* No. of Authorised Officer (Dr/Mr/Miss/Mrs/Mdm):
	E-mail of Authorized Officer:
Main Office Contact No.:	Designation:
Main Office Fax No.:	Contact No. (Office):_
Business Registration Number (BRN):	Contact No. (Fax):
Account Information (For New Accounts, please refer to www.nucleusconnect.com for instruction to sign up Nucleus Connect's Services)	<input type="checkbox"/> Account Number:
Customer Reference ID : (This ID is issued by customer for their internal reference of the service that is set out in this application form)	
Billing Details (If different from Business Customer Information)	
Company Name:	Billing Address :_
City & Postal Code:	Country:
Contact Person Name (Billing):	Customer Contact Number :
Customer Fax Number:	E-mail:

* Please select where appropriate

Customer Technical Contact	
Installation Contact (for service delivery)	Operations/Technical Contact (after service delivery)
Name:	Name:
Telephone (O):	Telephone (O):
Mobile:	Mobile:
Email:	Email:
Notification Mode: 24 Hours Daily <input type="checkbox"/> Office Hours (9am-5pm, Mon-Fri) <input type="checkbox"/>	Notification Mode: 24 Hours Daily <input type="checkbox"/> Office Hours (9am-5pm, Mon-Fri) <input type="checkbox"/>

Application Form

Non-Residential Per-End-User Connection



Customer Signature		
<p>We hereby agree to subscribe to the abovementioned services on the terms and subject to the conditions contained in the Master ICO Agreement and the Service Schedule for the abovementioned services, which terms and conditions shall apply upon Nucleus Connect's acceptance of this application. We certify that all information provided by us herein are true, correct and complete. Further, we agree that any cancellation of the abovementioned services may result in a charge to us at Nucleus Connect's prevailing rates.</p>		
<u>Signature of Authorised Officer</u>	<u>Date</u>	<u>Company Stamp</u>
For Nucleus Connect Use		
<input type="checkbox"/> Application Rejected:	Reason for rejection:	
<input type="checkbox"/> Application Accepted	Service ID/s:	Work Order No.:
No. of pages attached (Excluding application forms):	Approval code:	Processed by (Name, Contact, Signature and Date)