

**APPENDIX 16**

**REQUIRED MODIFICATIONS TO SCHEDULE 14**

**SCHEDULE 14**

**OSS/BSS CONNECTION & PROFESSIONAL SERVICE**

## SCHEDULE 14

### OSS/BSS CONNECTION & PROFESSIONAL SERVICE

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## SCHEDULE 14

### OSS/BSS CONNECTION & PROFESSIONAL SERVICE

#### SCHEDULE 14 – MODIFICATION REQUIRED

***IDA Directed Modifications: To ensure clarity and consistency among the provisions of the ICO, IDA directs OpenNet to ensure consistency in its usage of defined terms. Without limitation to the foregoing, IDA notes that “Cost-Oriented Basis” is a defined term in Schedule 18, whereas there are references to “cost-oriented basis” and “cost-oriented” in this Schedule 14. Where applicable, OpenNet should ensure consistent usage of the term “Cost-Oriented Basis”. JON 28 Mar 12 : Amended as per IDA’s Direction.***

#### 1. GENERAL

1.1 This Schedule sets out the terms and conditions under which OpenNet will provide the Requesting Licensee with OSS/BSS Connection Services (“**OSS/BSS Connection & Professional Service**”) for Requesting Licensee to connect and access to the OpenNet Platform. The services also allow Requesting Licensee to integrate and interface its Routers, switches, Firewalls, Servers, etc (“**OSS/BSS Connection Equipment**”) with OpenNet’s OSS/BSS through a set of OpenNet Platform APIs offered by the OpenNet Platform. The OSS/BSS functions available to the Requesting Licensee include network coverage check, order management and fault management.

1.2 Except as provided in this Schedule, the Requesting Licensee shall, at its own cost, provide all hardware, software and manpower needed to connect and access to the OpenNet Platform. Where any work or services are to be carried out by OpenNet under this Schedule, and the quantum of the Charge is not defined under Schedule 15 (Charges), the Requesting Licensee must pay all the reasonable costs incurred by OpenNet in provisioning OSS/BSS Connection & Professional Service, subject to the following conditions:

- (a) the costs incurred by OpenNet will relate to the work that OpenNet needs to perform in order to provision the OSS/BSS Connection & Professional Services for Requesting Licensee to connect and access to the OpenNet Platform;
- (b) before incurring the costs, OpenNet will provide Requesting Licensee with prior reasonable notice that the Requesting Licensee’s request requires

OpenNet to undertake such work and such notice shall clearly and with sufficient detail set out the following:

- (i) the reasonable costs which OpenNet seeks to recover from the Requesting Licensee; and
  - (ii) based on the information set out in paragraph (i) above, a binding quote to the Requesting Licensee in respect of the work to be undertaken by OpenNet which shall be valid for a period of ten (10) Business Days (or such other time as may be agreed between the Parties) from the date they are notified to the Requesting Licensee by OpenNet;
- (c) OpenNet shall obtain the prior approval of the Requesting Licensee to the costs noted in the notice within the time period under paragraph (b)(ii). For the avoidance of doubt, the Requesting Licensee shall not be liable to bear any costs incurred by OpenNet under Clause 1.2 unless the Requesting Licensee has given its prior approval under this Clause 1.2(c), and OpenNet shall not be obliged to perform any work or service until the Requesting Licensee has agreed to such costs; and
- (d) any dispute in respect of determining the reasonable costs set out in the notice shall be resolved in accordance with Schedule 17 of the ICO Agreement.

1.3 The OpenNet Platform consists of:

- (a) Service Portal with contents and functionalities for Requesting Licensee to conduct business transactions with OpenNet; and
- (b) OpenNet Platform APIs exposed to Requesting Licensee's systems allowing electronic flow through business transactions.

[Additionally, applications for Mandated Services can be done through the OpenNet Platform.](#)

To facilitate the Requesting Licensee connecting to the OpenNet Platform, two types of access methods are allowed (at Requesting Licensee's cost):

- (i) Internet via secure VPN
- (ii) Dedicated Leased Connection

The Internet via secure VPN connection or Dedicated Leased Connection may be unavailable for reasons out of OpenNet's control. In the event that the Internet via secure VPN or Dedicated Leased Connection is unavailable and OpenNet is aware of such unavailability, OpenNet will inform the Requesting Licensee, via voice calls, email or fax, whichever is more convenient, of the unavailability without undue delay. OpenNet will provide such support and assistance as may be necessary to the Requesting Licensee in re-establishing the connection if requested by the Requesting Licensee. For the avoidance of doubt, if the Internet via secure VPN or Dedicated Leased Connection is not available, the parties shall follow the procedures set out in Clause 9 of this Schedule.

- 1.4 If the Requesting Licensee wishes to obtain a copy of the relevant OpenNet Platform APIs in relation to the associated schedules of the ICO that it has signed up to, the Requesting Licensee may raise its request to OpenNet in writing and OpenNet shall provide the relevant OpenNet Platform API documentation within 3 Business Days of such request. OpenNet shall ensure that the OpenNet Platform API documentation provided will be sufficiently clear and comprehensive to enable the Requesting Licensee to develop the necessary interface programmes for the Requesting Licensee's system to connect to the OpenNet Platform. For the purpose of subscribing to B2B Web Service Interface, the Requesting Licensee shall adhere to all specifications (including OpenNet Platform APIs) provided by OpenNet.
- 1.5 OpenNet shall not be liable for any claims, damages or liabilities which may arise from OpenNet's provision of the OSS/BSS Connection & Professional Services other than to the extent that it is the result of a negligent, wilful or reckless breach of this Schedule 14 by OpenNet.

## **2. MODE OF CONNECTION**

- 2.1 OpenNet offers the following modes for connectivity to the OpenNet Platform ("**Connection Modes**"):
- (a) Service Portal GUI, via
    - (i) Public Internet secured VPN client software; or
  - (b) B2B Web Services Interface, via
    - (i) Public Internet secured VPN ; or
    - (ii) Dedicated Leased Connection (refer to Section II of Annex 14B)

- 2.2 Clauses 3 and 4 detail the steps that the Requesting Licensee needs to perform to set up connectivity to the OpenNet Platform. If the Requesting Licensee requests Standard Services – Connectivity via B2B Web Services Interface as set out in Clause 4, the Requesting Licensee will need to put in a request for OSS/BSS Professional Services as detailed in Clause 6.1.
- 2.3 The following table (which is not exhaustive) lists the forms in the various Annexes that the Requesting Licensee will need to use to request the OSS/BSS Professional Services:

	<b>Mode of Request</b>	<b>Request Forms Required and Sections to indicate</b>
a.	Use of Service Portal GUI	<ul style="list-style-type: none"> <li>i. Annex 14A-1 Section A.1.</li> <li>ii. Annex 14A-2 as required.</li> </ul>
b.	Use of B2B Web Services Interface	<ul style="list-style-type: none"> <li>i. Annex 14A-1 Section A.2 and Section B.1 (Section B.2 is optional).</li> <li>ii. Annex 14A-2 for B2B user account.</li> </ul>
c.	Customisation of OpenNet Platform API	<ul style="list-style-type: none"> <li>i. Annex 14A-1 Section B.3 and Section B.1 Section (Section B.2 is optional). The detailed scope will be covered by the Project Study.</li> </ul>

### **3. STANDARD SERVICES – CONNECTIVITY VIA SERVICE PORTAL GUI**

3.1 OpenNet will provide user account(s) and the required password(s) for access to the Service Portal in accordance to the order request in Annex 14A, subject to the Requesting Licensee requesting for connectivity via Service Portal GUI and paying the Per User Account Charge as specified in Clause 14 of Schedule 15 (Charges) for each user account created.

3.2 The Service Portal will provide the standard functionality of Account Management, Network Coverage Check, Order Management and Fault Management. A brief description of the various modules is as follows:

- (a) Account management include features like account password change, user account details change, viewing of billing reports.

Through the Service Portal, the Requesting Licensee’s administrator will be able to reset passwords, and manage user information. The Requesting Licensee will also be able to use self-help function to change its own password.

- (b) Network coverage check includes features like checking of rollout status (e.g. Homes Passed and Homes Reached), dwelling type, network rollout time schedule.
- (c) Order management includes features like order submission, appointment booking, status enquiry and order cancellation.

For ordering of Schedule 1 services, the Requesting Licensee is able to determine if a Residential Premise is covered (Home Passed or Home Reached), as well as schedule installation appointments. The Requesting Licensee is also able to determine the status of the order as well as Transmission Tie Cable information.

- (d) Fault management includes features like fault reporting and tracking of resolution process, incident management.

The Requesting Licensee is able to submit Trouble Tickets via the Service Portal. The Requesting Licensee is also able to enquire regarding the Trouble Ticket's status and update the Trouble Ticket with Residential End-User appointment times, should the fault rectification involve liaising with the Residential End-User. The Service Portal also supports features like cancellation and closing a ticket. Joint investigation with OpenNet may also be initiated via the Service Portal.

3.3 Requesting Licensee shall access the Service Portal using the following connection option:

- (a) Requesting Licensee shall access the Service Portal GUI via Public Internet secured VPN client application. Requesting Licensee shall configure its own firewall settings and allow the VPN connection. Requesting Licensee is required to inform OpenNet of its IP address and port connection setting. Requesting Licensee shall ensure the client setup is according to the specifications indicated in order to be granted the access. For avoidance of doubt, the Requesting Licensee shall provide at its own cost the necessary equipment and facilities such as web browser and Internet connection, and install the VPN client application software provided by OpenNet to connect and access to the Service Portal. The Requesting Licensee shall pay to OpenNet the Charges for provisioning the user account and connectivity setup for client-based Public Internet secured VPN access as provided in Schedule 15 (Charges).

3.4 Requesting Licensee will not be able to use the same user account to login to the Service Portal simultaneously.



#### **4. STANDARD SERVICES – CONNECTIVITY VIA B2B WEB SERVICES**

- 4.1 OpenNet will provide the standard functionality of the OSS/BSS interface which includes network coverage check, order management and fault management. A brief description of the various modules can be found in Clause 3.2 above.
- 4.2 OpenNet will provide consultation for system integration and interfacing to OpenNet Platform APIs as a value-added service under OSS/BSS Professional Services. The Requesting Licensee must pay the Charge(s) as defined in Schedule 15 (Charges). For the avoidance of doubt, OpenNet shall be entitled to charge OSS/BSS Professional Services Charge as defined in Schedule 15 (Charges) for such consultation. Where there is a need for the parties to engage a Subject Matter Expert, this shall be mutually agreed and the Subject Matter Expert Charge as defined in Schedule 15 (Charges) shall apply.
- 4.3 The Requesting Licensee will be charged for setup, support and use of OpenNet's testing environment upon request, under OSS/BSS Professional Services. Such Charges are defined in Schedule 15 (Charges). OpenNet shall provide the Requesting Licensee with the relevant Charges in accordance with Clause 7.10 following OpenNet's completion of the Project Study or the provision of the Implementation Schedule, as the case may be.

#### ***CLAUSE 4.4 – MODIFICATION REQUIRED***

- 4.4 Requesting Licensee shall connect to the OpenNet Platform via host-to-host interface from Requesting Licensee's system to the OpenNet Platform to implement flow-through business transactions with OpenNet using the following connection options for the OpenNet Platform API:
- (a) Requesting Licensee shall connect via the secured VPN. Requesting Licensee is required to inform OpenNet its IP address and port connection settings. Requesting Licensee shall ensure the VPN setup is according to the specifications in Annex 14B in order to be granted the access. The Requesting Licensee shall pay to OpenNet the Charges for provisioning the user account and connectivity setup for Public Internet secured VPN access as provided in Schedule 15 (Charges).
  - (b) Requesting Licensee shall connect via Dedicated Leased Connection. Requesting Licensee is required to inform OpenNet its IP address and port connection setting. Requesting Licensee shall ensure the setup is according to the specifications indicated in order to be granted the access.

The Requesting Licensee shall pay to OpenNet the Charges for provisioning the user account, the port required for connection to firewall, and the connectivity setup for Dedicated Leased Connection, as provided in Schedule 15 (Charges).

For the avoidance of doubt, the Requesting Licensee shall indicate in its request whether the connectivity is to its test platform and/or its production platform, and the Requesting Licensee shall only be liable for one set of Charges as provided in Schedule 15 (Charges) if the details of its test and production platform are provided within the same request and reside on the same site. Where Requesting Licensees subscribes to both secured VPN connection and dedicated leased line or multiples of each, OpenNet will support all the active connections. The Requesting Licensee will inform OpenNet on the unique connection that they intend to carry their traffic to OpenNet. For clarity, the OpenNet Platform will return the notification to the Requesting Licensee's dedicated site gateway.

***IDA Directed Modifications: Comment was received that when Requesting Licensee subscribes to both secured VPN connection and dedicated lease line or multiple of each, OpenNet should support all the active connections (i.e., the subscribed secured VPN connection and dedicated lease line). IDA understands that OpenNet's current arrangement is in-line with the above. In other words, OpenNet will transact with the Requesting Licensee using any of the active connections established with OpenNet that are in working condition. Notwithstanding, IDA agrees that for purpose of clarity, there is merit for OpenNet to make clear the above. Accordingly, IDA directs OpenNet to propose, for IDA's approval, modifications to clause 4.4 to make clear the above. [ON 28 Mar 12 : Amended as per IDA's Direction.]***

4.5 Requesting Licensee will be required to have a separate account for B2B Web Services Interface and for Service Portal GUI to access the respective services. For the avoidance of doubt, the Requesting Licensee can only use the B2B Web Services Interface account to interact with the OpenNet Platform API concurrently.

## **5. ORDERING AND PROVISIONING PROCEDURE FOR STANDARD SERVICES**

5.1 OpenNet shall process all requests for OSS/BSS Connection (“OSS/BSS Connection Requests”) on a ‘first come, first served’ basis.

- 5.2 The Requesting Licensee shall use either of the Connection Modes specified in Clause 2 to access the functionality and services in the OpenNet Platform.
- 5.3 OpenNet will be responsible to setup and configure OpenNet's firewall to allow the Requesting Licensee to connect and access to the OpenNet Platform using either Internet via secure VPN or Dedicated Leased Connection or both methods.
- 5.4 Requesting Licensee shall be responsible to liaise with OpenNet to set up and configure its own firewall to facilitate connection and access between its users/systems and the OpenNet Platform.
- 5.5 If Requesting Licensee chooses to set up the Dedicated Leased Connection to the OpenNet Platform, the firewall port and the connectivity setup Charges as stated in Schedule 15 (Charges) will be applicable.
- 5.6 The Requesting Licensee shall provide the transmission link to implement the Dedicated Leased Connection in accordance with Annex 14B at its own cost.
- 5.7 To avoid firewall incompatibility and inter-operation issues, the Requesting Licensee shall agree to install and use only firewall and communication software certified by OpenNet or OpenNet appointed supplier(s) to interconnect with OpenNet Platform. Please refer to Annex 14B.
- 5.8 The Requesting Licensee will appoint a single point of contact ("SPOC") to liaise with OpenNet to provide the necessary network information, agree on schedule, resolve interconnection problems, testing, commission and other related activities using the:
- (a) Service Portal GUI via Public Internet secured VPN. In this regard, OpenNet does not envisage that the Requesting Licensee would require OSS/BSS Professional Services. Where the Requesting Licensee faces difficulties in establishing connectivity to or accessing the OpenNet Platform, OpenNet shall work with the Requesting Licensee to resolve the difficulties. This may involve OpenNet and the Requesting Licensee performing the Network Connectivity Tests which shall be conducted in accordance with Appendix 1-A. For the avoidance of doubt, the above shall be considered as work to be undertaken under the setup for client-based Public Internet secured VPN; or
  - (b) B2B Web Services Interface. In this regard, the Requesting Licensee shall acquire from OpenNet the OSS/BSS Professional Service for the setup, support and use of OpenNet's test environment. To ensure that the

Requesting Licensee integrates successfully to the OpenNet Platform, it is necessary for OpenNet and Requesting Licensee to perform the Network Connectivity Tests, Handshake Testing and end to end testing. The Network Connectivity Tests and Handshake Testing shall be conducted in accordance with Appendix 1-A and Appendix 1-B respectively. The Requesting Licensee may discuss with OpenNet on the necessary end to end testing. Alternatively, the Requesting Licensee may choose to adopt the end to end testing to be proposed by OpenNet which shall be conducted in accordance with Appendix 1-C (“**End to End Testing**”). For the avoidance of doubt, the work related to Network Connectivity Tests shall be considered as work to be undertaken under the connectivity setup for client-based Public Internet secured VPN or connectivity setup for Dedicated Leased Connection , as the case may be.

- 5.9 The Requesting Licensee shall appoint a user administrator to maintain the Requesting Licensee’s user accounts & access rights. The Requesting Licensee administrator will manage the Requesting Licensee user accounts subscribed by the Requesting Licensee using the administrative functions in the Service Portal by a privileged user for each Requesting Licensee.
- 5.10 For the purpose of establishing connectivity so as to access the OpenNet Platform using the B2B Web Services Interface, OpenNet will provide and expose sets of OpenNet Platform APIs for the Requesting Licensee to integrate and interface with the OpenNet Platform via B2B Web Services Interface to support the Requesting Licensee’s flow-through of business transactions and related operations. OpenNet will support the Requesting Licensee to setup and test its system interfaces with the OpenNet Platform APIs offered by the OpenNet Platform pursuant to the terms and conditions of OSS/BSS Professional Services.
- 5.11 Save for any act or omission by OpenNet which causes the Requesting Licensee to experience any issues, OpenNet shall not be responsible for any issues that may arise from Requesting Licensee’s software which interfaces with OpenNet Platform APIs. The Requesting Licensee may request OpenNet to assist in investigating its software problems pursuant to the terms and conditions of OSS/BSS Professional Services, and the man-day(s) effort incurred shall be chargeable as per estimated Charges pursuant to Clause 7.10.
- 5.12 The Requesting Licensee shall submit its **OSS/BSS Connection Request** using the **OSS/BSS Connection Request** Form in the form of Annex 14A containing but not limited to the following information:

- (a) Required mode of Access
- (b) the Requesting Licensee's contact details.
- (c) the services that the Requesting Licensee wishes to undertake.
- (d) any other useful information which the Requesting Licensee believes would be useful to OpenNet in assessing the Requesting Licensee's request.
- (e) Within five (5) Business Days from the OSS/BSS Connection Request Date, OpenNet will notify Requesting Licensee with a unique reference number (or a similar form of identification in the notification) if its OSS/BSS Connection Request is accepted.

5.13 Within five (5) Business Days from the OSS/BSS Connection Request Date, OpenNet must notify the Requesting Licensee (and shall provide the Requesting Licensee with a unique reference number or a similar form of identification in the notification) if its OSS/BSS Connection Request is rejected, for any one of the following reasons:

- (a) the **OSS/BSS Connection Request** is not in the prescribed form;
- (b) the **OSS/BSS Connection Request** does not contain the required information or the information provided is inaccurate or misleading;
- (c) the hardware resources are not available;
- (d) the provision of connectivity to the OpenNet Platform ("**OSS/BSS Connection**") will give rise to significant technical or engineering issues;
- (e) the Requesting Licensee has committed a material breach of the ICO Agreement or this Schedule.

Where OpenNet rejects the OSS/BSS Connection Request, OpenNet must provide reasons explaining the basis for rejection. Where a Requesting Licensee's OSS/BSS Connection Request, which does not contain any customisation to the OpenNet Platform API and which complies with OpenNet's specifications for OSS/BSS Connections, is rejected due to Clause 5.13(c) or Clause 5.13(d), OpenNet shall continue to accept requests for Mandated Services from the Requesting Licensee via a dedicated email address and fax number. OpenNet will accord a higher priority to requests that are submitted via the OpenNet Platform.

- 5.14 Where OpenNet is unable to offer the **OSS/BSS Connection** due to hardware resources unavailability under Clause 5.13(c), OpenNet shall take all reasonable measures to cater for additional resources where possible. The Requesting Licensee will be informed of the delivery date within three (3) Business Days of the rejection.
- 5.15 OpenNet will use its best endeavours to assist the Requesting Licensee to set up the **OSS/BSS Connection**. If the provision of the OSS/BSS Connection will give rise to significant technical or engineering issues, OpenNet shall propose alternative or interim solutions. Furthermore, OpenNet shall periodically update Annex 14B to include relevant information as mentioned in Clause 5.7.
- 5.16 In the event that the Requesting Licensee decides to cancel its OSS/BSS Connection Request before the work is completed, the Requesting Licensee shall be liable for Cancellation Charges which shall include the work completed so far and any other incidental costs and/or expenses which are reasonably incurred by OpenNet in connection with the cancelled OSS/BSS Connection Request (to be recovered on a ~~e~~Cost-~~O~~riented ~~B~~basis) in accordance with Clause 14.2 of Schedule 15 (Charges).

## 6. **VALUE-ADDED SERVICE: OSS/BSS PROFESSIONAL SERVICES (OBPS)**

- 6.1 Depending on the Requesting Licensee's requirements, OpenNet shall provide OSS/BSS Professional Services to the Requesting Licensee to help integrate and interface the Requesting Licensee's systems with the OpenNet Platform. The OSS/BSS Professional Services that could be ordered by the Requesting Licensee shall include the following services:
- (a) Setup, support and use of OpenNet's test environment. OpenNet shall configure a testing environment for testing the interface or customised interface (where applicable) to support the Requesting Licensee's systems, if it has requested for Standard Services – Connectivity via B2B Web Services Interface.
  - (b) Consultation for system integration and interfacing using OpenNet Platform APIs.
  - (c) Customisation of OpenNet Platform APIs for system integration and interfacing. OpenNet shall provide the basic support for the customisation on the interface. OpenNet shall also provide assistance for troubleshooting on the customised interface in the OpenNet Platform. The changes for

customisation of OpenNet Platform APIs are subject to the change management process under Clause 14.

- 6.2 In order to allow the Requesting Licensee to integrate successfully with the OpenNet Platform via B2B Web Services Interface, OpenNet requires two (2) phases of testing to be conducted under OpenNet OSS/BSS Professional Service. Phase 1 (Handshake Testing) is driven by OpenNet, and covers a suite of test cases for OpenNet Platform API validation on pre-defined data determined reasonably by OpenNet. Phase 1 (Handshake Testing) shall be conducted in accordance with Appendix 1-B. Phase 2 (end to end testing, which commences after successful testing of phase 1) is driven by the Requesting Licensee. The Requesting Licensee will need to discuss with OpenNet the details of its test cases before commencement of the testing. Notwithstanding the above, the Requesting Licensee may choose to adopt the End to End Testing to be proposed by OpenNet which shall be conducted in accordance with Appendix 1-C. The Requesting Licensee may submit a request to OpenNet in writing for the details in relation to the Handshake Testing and End to End Testing (including the detailed test cases). OpenNet shall provide such details within three (3) Business Days of receiving such a request.
- 6.3 OpenNet will also provide consultancy services to advise the Requesting Licensees on how the Requesting Licensee may connect its system to the OpenNet Platform, which will be evaluated on a case-by-case basis via the Project Study.
- 6.4 The Requesting Licensee may request some customisation of OpenNet Platform API(s) or additional API(s) to cater to its unique business requirements. Such customisation requests are outside of the standard services (i.e. connectivity via Service Portal GUI and connectivity via B2B Web Services Interface) offered by OpenNet. Requesting Licensee shall provide OpenNet with detailed technical specification of its requirements.
- 6.5 OpenNet shall evaluate the Requesting Licensee's request(s) on a case-by-case basis. For the avoidance of doubt, OpenNet shall be entitled to reject the Requesting Licensee's request for any services which are not conforming to Clause 6.1.
- 6.6 Where the Requesting Licensee requests to test any new or enhanced system functionalities, OpenNet will setup a platform test environment at Requesting Licensee's costs, which both OpenNet and the Requesting Licensee shall test before they are promoted into the OpenNet and Requesting Licensee production environment. This shall be a standard operation procedure to be followed by the Requesting Licensee to minimise the risks of deficient software functions causing disruptions to the NBN supply chain operation. For the avoidance of doubt, any new

or enhanced system functionalities or APIs to be introduced by the Requesting Licensee to the OpenNet Platform are subject to the change management process under Clause 14 of this Schedule 14.

## **7. ORDERING OF OSS/BSS PROFESSIONAL SERVICES**

### **(a) Ordering of OBPS**

7.1 The Requesting Licensee shall submit its **OSS/BSS Professional Service Request** using **OSS/BSS Professional Service Request Form** in the form of Annex 14A including the detail document of the technical requirement. The Request Form and technical requirement document must be sent to an email account designated by OpenNet.

7.2 Within five (5) Business Days of the date on which OpenNet receives the OSS/BSS Professional Service Request (“**Service Request Date**”) and subject to Clauses 5.1 and 5.2, OpenNet must notify the Requesting Licensee (and shall provide the Requesting Licensee with a unique reference number or a similar form of identification in the notification) if its Request is rejected, for any one of the following reasons:

- (a) the OSS/BSS Professional Service Request is not in the prescribed form;
- (b) the Requesting Licensee has committed a material breach of the ICO Agreement or this Schedule.

7.3 Within fifteen (15) Business Days from the Service Request Date and subject to Clauses 5.1 and 5.2, OpenNet must notify the Requesting Licensee (and shall provide the Requesting Licensee with a unique reference number or a similar form of identification in the notification) if its Request is rejected, for any one of the following reasons:

- (a) the Requesting Licensee has not taken up the standard services for Connectivity via B2B Web Services Interface;
- (b) the OSS/BSS Professional Service Request does not contain the sufficient information or the information provided is inaccurate or misleading;
- (c) the hardware resources are not available;



- (d) the provision of the OSS/BSS Professional Service will give rise to significant technical or engineering issues;

Where the OSS/BSS Professional Request, which does not contain any customisation to the OpenNet Platform API and which complies with OpenNet's specifications for OSS/BSS Connections, is rejected due to the reasons in Clause 7.3(c) or Clause 7.3(d), OpenNet shall continue to accept requests for Mandated Services from the Requesting Licensee via a dedicated email address and fax number. OpenNet will accord a higher priority to requests that are submitted via the OpenNet Platform. Where OpenNet is unable to offer the OSS/BSS Professional Services due to hardware unavailability, OpenNet shall take all reasonable measures to cater for additional resources where possible. OpenNet shall inform the Requesting Licensee of the indicative delivery date within three (3) Business Days of the rejection. OpenNet shall use its best endeavours to provide OSS/BSS Professional Services to assist the Requesting Licensee to set up the OSS/BSS Connection. If the provision of the OSS/BSS Professional Services will give rise to significant technical or engineering issues, OpenNet shall propose alternative or interim solutions.

(b) **Project Study or Implementation Schedule**

- 7.4 OpenNet will provide a Project Study quotation within fifteen (15) Business Days upon receiving the Requesting Licensee's OSS/BSS Professional Service Request and the associated technical specification and requirement, subject to Clause 14.16. A pre-Project Study assessment will be conducted to evaluate the Requesting Licensee's requirements and the lead-time required for the Project Study. OpenNet will provide the Requesting Licensee with the schedule and fee (which shall be computed based on the number of man-day(s) required to perform the Project Study using the per man-day Charge under Clause 14.3.1 of Schedule 15 (Charges)) for the Project Study, as a result of the pre-Project Study. Where the Requesting Licensee orders OSS/BSS Professional Services for setup, support and use of OpenNet's test environment only (without any customisation of the existing OpenNet Platform APIs) for the purpose of establishing connectivity to the OpenNet Platform via B2B Web Service Interface and chooses to conduct End to End Testing in accordance with Appendix 1-C (including the acceptance of OpenNet's predefined list of test cases), OpenNet shall provide an implementation schedule for the said OSS/BSS Professional Service ("**Implementation Schedule**") within fifteen (15) Business Days upon receiving the Requesting Licensee's OSS/BSS Professional Service Request without a need for a pre-Project Study and Project Study. For the avoidance of doubt, OpenNet shall not impose any charge in relation to the provision of the Implementation Schedule and shall provide details of the Implementation Schedule in accordance with the

requirements under Clause 7.10. In addition, where OpenNet provides such an Implementation Schedule to the Requesting Licensee, Clause 7.5 to Clause 7.9 (inclusive) shall not be applicable to the Requesting Licensee.

- 7.5 Within fifteen (15) Business Days (or such other time as may be agreed between the Parties) from the date of notification of the result of the pre-Project Study assessment under Clause 7.4, the Requesting Licensee shall confirm in writing whether it wishes to proceed with OSS/BSS Professional Service and whether it agrees to pay the Project Study Fee.
- 7.6 Except where OpenNet has rejected an OSS/BSS Professional Service Request under Clauses 7.2 and 7.3, and the Requesting Licensee has chosen to only acquire Service Portal GUI access, OpenNet will commence on a Project Study. The Requesting Licensee must pay the Project Study Fee specified in the Project Study quotation under Clause 7.4. If the Requesting Licensee does not accept the quotation, or if the Requesting Licensee does not (for any reason whatsoever) inform OpenNet in writing of its acceptance of the quotation within ten (10) Business Days from the date of the quotation, the quotation and the OSS/BSS Connection Request shall be deemed cancelled.

#### **CLAUSE 7.7 – MODIFICATION REQUIRED**

- 7.7 In the event that the Requesting Licensee cancels the Request before the Project Study is completed, the Requesting Licensee shall be liable to Cancellation Charges which shall be based on the amount of work done and any other incidental costs and/or expenses which are reasonably incurred by OpenNet in connection with the evaluation of the cancelled Request, ~~(to which shall~~ be recovered on a ~~Cost-Oriented Basis)~~ not exceeding the Project Study Fee in accordance with Clause 14.3.1 of Schedule 15 (Charges).

***IDA Directed Modifications: Comments were received that clause 7.7 should expressly state, for the avoidance of doubt, that the Cancellation Charges shall not be greater than the Project Study Fee. IDA considers that in cases where the Requesting Licensee cancels its Request before the Project Study is completed, the costs or expenses reasonably incurred by OpenNet cannot be more than if the Project Study had been completed. If that should be the case, then such costs and expenses should not exceed the Project Study Fee. Accordingly, to avoid any dispute and for clarity, IDA directs OpenNet to propose, for IDA's approval, modifications to clause 7.7 to clarify that the Cancellation***

**Charges cannot exceed the Project Study Fee. JON 28 Mar 12 : Amended as per IDA's Direction.**

- 7.8 The Project Study will define the project scope of work (“SOW”) including deliverables, acceptance and timeline schedule, assess software, hardware and subject matter expert requirements.
- 7.9 OpenNet and the Requesting Licensee shall jointly define the SOW and the terms and conditions (“T&Cs”) which shall include, but not be limited to, the following:
- (a) Key project assumptions.
  - (b) OpenNet responsibilities.
  - (c) Requesting Licensee responsibilities.
  - (d) OpenNet deliverables.
  - (e) Acceptance of deliverables.
  - (f) Change requests management
  - (g) Project schedule
  - (h) Payment terms
- 7.10 Following completion of the Project Study, OpenNet shall provide the Requesting Licensee with the following information ascertained as a result of the Project Study:
- (a) Scope of Work
  - (b) T &C
  - (c) Functional specification of the enhanced interface (where applicable);
  - (d) Implementation plan;
  - (e) the estimated Charges for the OSS/BSS Professional Services (including a breakdown of the major components of the Charges) and an outline of the

major elements of the OSS/BSS Professional Services to be undertaken by OpenNet;

- (f) provide an estimation of project man-day(s) required to complete the OSS/BSS Professional Services; and
- (g) maintenance and support agreement (where applicable)

OpenNet shall be entitled to levy and receive the Project Study Fee provided in Schedule 15 (Charges) irrespective of whether the Requesting Licensee proceeds with the OSS/BSS Professional Request immediately after completion of the Project Study. For the Implementation Schedule, OpenNet shall minimally provide the information in Clause 7.10(d) to Clause 7.10(f) (inclusive). For the avoidance of doubt, the estimated Charges associated with the Implementation Schedule shall be computed based on the number of man-day(s) required to perform the Handshake Testing and End to End Testing using the per man-day Charge under Clause 14.3.1 of Schedule 15(Charges).

## **8. IMPLEMENTATION OF OSS/BSS PROFESSIONAL SERVICES**

- 8.1 Within fifteen (15) Business Days (or such other time as may be agreed between the Parties) from the date of notification of the result of the Project Study or from the provision of information under the Implementation Schedule under Clause 7.10, the Requesting Licensee shall confirm in writing whether it wishes to proceed with OSS/BSS Professional Service and whether it agrees to pay the estimated Charges for the OSS/BSS Professional Services work.
- 8.2 OpenNet shall use its reasonable endeavours to provide OSS/BSS Professional Services within the estimated Charges and timeframe and in accordance to the agreed project SOW and T&Cs or within the estimated Charges and timeframe in accordance with the Implementation Schedule, as the case may be.
- 8.3 OpenNet shall use its reasonable endeavours to complete the OSS/BSS Professional Services work within the estimated Charges. If OpenNet's costs increase above OpenNet's estimate set out in the Project Study under Clause 7.10 (as may be varied from time to time under this Clause 8.3), OpenNet shall provide the Requesting Licensee with a revised price estimate. OpenNet must obtain the prior approval of the Requesting Licensee to the revised price estimate and if the Requesting Licensee does not provide its approval, then, OpenNet may suspend the OSS/BSS Professional Services work until the Requesting Licensee agrees to the revised price estimate. For

the purpose of testing conducted under the Implementation Schedule, the following (where applicable) shall apply:

- (a) Requesting Licensee will be charged for the actual number of man-day(s) required where the actual man-day(s) required is less than the estimated number of man-day(s) required;
- (b) Where testing takes more man-day(s) than estimated under the Implementation Schedule, OpenNet shall be entitled to recover additional cost of the man-day(s) required from the Requesting Licensee where the extension is not attributable to any default on the part of OpenNet;
- (c) Where testing under the Implementation Schedule has to be suspended due to any default on the part of OpenNet, OpenNet shall not be entitled to impose any charges;
- (d) Where testing under the Implementation Schedule has to be suspended due to any default on the part of the Requesting Licensee, OpenNet shall be entitled to impose Charges according to Schedule 15 (Charges); or
- (e) In situations where testing under the Implementation Schedule takes more man-day(s) than estimated or has to be suspended and these are not due to the default of OpenNet or the Requesting Licensee, OpenNet should bear the cost of its own manpower (which it would incur ordinarily in any case with or without the Requesting Licensee's OSS/BSS Professional Service Request).

8.4 OpenNet shall complete any implementation within a timeframe stated in the Project Study or Implementation Schedule under Clause 7.10, as the case may be. Subject to delays that may result from suspension of the work under Clause 8.3, if OpenNet is not able to complete the work within the timeframe under this Clause 8.4, OpenNet shall inform the Requesting Licensee of when the work will be completed.

8.5 Prior to the commencement of testing under the Project Study, the Requesting Licensee must submit a detailed schedule with testing plans, testing timetables and the actual date of deployment to production no less than fifteen (15) Business Days before commencement of works for OpenNet's approval (or such other time as may be agreed between the Parties). The Requesting Licensee shall not commence testing until it has received OpenNet's approval in writing, provided always that OpenNet's approval of the Requesting Licensee's testing plans and timetables shall not be unreasonably withheld. For the purpose of testing under

the Implementation Schedule, the parties shall follow the implementation plan and schedule in the Implementation Schedule.

- 8.6 OpenNet shall assist in conducting the testing with the Requesting Licensee according to the agreed schedule.
- 8.7 Within three (3) Business Days after the completion of the OSS/BSS Professional Services, OpenNet will notify the Requesting Licensee and request the Requesting Licensee for a final acceptance of the OSS/BSS Professional Services.
- 8.8 Where the Requesting Licensee has ordered OSS/BSS Professional Services as set out in Clause 6.1(c). OpenNet will provide the support for OSS/BSS Professional Services for a period of three (3) months from the date of final acceptance.
- 8.9 In the event that the Requesting Licensee decides to cancel its Request before the work is completed but after its acceptance of the agreement to pay the Professional Service Charge, the Requesting Licensee shall be liable to Cancellation Charges which shall include the work completed so far and any other incidental costs and/or expenses which are reasonably incurred by OpenNet in connection with the cancelled Request (to be recovered on a Ceost-Oeroriented Bbasis) in accordance with Clause 14.3.1 of Schedule 15 (Charges).
- 8.10 The Requesting Licensee shall pay for all software, hardware and subject matter experts and any other costs incurred for the project as stated in the project Scope of Work and T&Cs in Clause 7.10 or the Charges stated in the Implementation Schedule in Clause 7.10, as the case may be.

## **9. FAULT REPORTING AND CLEARING**

- 9.1 The Requesting Licensee acknowledges that it is technically impracticable to provide fault free access to and use of the OpenNet Platform and OpenNet does not undertake to do so. The Requesting Licensee acknowledges that it may experience, and OpenNet shall not be liable for, disruption to the OpenNet Platform. The Requesting Licensee shall resubmit to OpenNet service requests affected by any system downtime of the OpenNet Platform. Notwithstanding the above, OpenNet shall be liable for disruption to the OpenNet Platform only if such disruption is caused solely by OpenNet or its appointed supplier(s).
- 9.2 The Requesting Licensee shall call, email or fax to OpenNet to report problem related to OpenNet Platform with details including the Requesting Licensee's name, contact, nature of problems, problem description, application function etc. OpenNet shall

respond by issuing an incident reference number to the Requesting Licensee for follow up.

- 9.3 It is the Requesting Licensee's responsibility to determine the source of the fault at its own cost and to ensure that the fault does not lie within its own OSS/BSS Connection Equipment before reporting the fault to OpenNet.
- 9.4 Upon receipt of a fault report from the Requesting Licensee under Clause 9.2, OpenNet shall investigate the cause of the fault experienced by the Requesting Licensee in a diligent and responsible manner as would be expected of a competent service provider. OpenNet shall update the Requesting Licensee as and when there is a change in status of the fault investigation/rectification work.
- 9.5 If, following investigation, OpenNet determines that the fault is within the OpenNet Platform, OpenNet shall rectify the fault.

#### **CLAUSE 9.6 – MODIFICATION REQUIRED**

9.6 If, following investigation, OpenNet determines that no fault is found or the fault is not due to the OpenNet Network or equipment, then OpenNet shall charge the Requesting Licensee a No Fault Found Charge for the fault report in accordance with Schedule 15 (Charges).

The process for fault investigation shall be as follows:

- a. OpenNet will do a network test and submit a test transaction(s) on the OSS/BSS Connection.
- b. If the network test and submission of the test transaction(s) is successful, then a finding of "No Fault Found" will be recorded, otherwise the following steps shall be carried out:
  - Checking if the link from OpenNet Platform to Requesting Licensee's network is available.
  - Checking of OpenNet's firewall logs for incoming and outgoing traffic from the Requesting Licensee's network equipment and for any hardware failure.

- Checking if the Requesting Licensee's Internet Protocol (IP) address and port is accessible from the OpenNet Platform. (subject to Requesting Licensee's cooperation)
- Temporarily disconnecting the Requesting Licensee's connection to OpenNet's Network to confirm that there is no hardware failure.
- Checking of the application servers' logs for any errors.
- Submission of test transactions between the various application servers.

***IDA Directed Modifications: A comment was made that the No Fault Found (NFF) Charge should be deleted. Following careful consideration, IDA recognises that it may be a legitimate source of concern to Requesting Licensees that the determination of NFF status and, correspondingly, the imposition of an NFF Charge, are at the discretion of OpenNet. To address this concern, IDA considers that it would be fair and reasonable to require OpenNet to propose and state the objective criteria by which it determines NFF status.***

***Accordingly, IDA directs OpenNet to propose, for IDA's approval, modifications to clause 9.6 and/or other parts of this Schedule 14 to incorporate the above requirement. JON 28 Mar 12 : Amended as per IDA's Direction.***

9.69.7 If OpenNet is unable to identify any fault, OpenNet will call for a fault identification coordination meeting between OpenNet and the Requesting Licensee to identify the fault. The Requesting Licensee shall provide all reasonable assistance requested by OpenNet. Each Party is to bear its own cost for attending such fault identification coordination meeting as well as any testing or trouble-shooting activities required as a result of such a meeting.

### **CLAUSE 9.8 – MODIFICATION REQUIRED**

9.79.8 The OSS/BSS Connection is deemed to be restored when OpenNet has tested and confirmed that the fault has been rectified and the OSS/BSS Connection has been restored and OpenNet provides written notification to the Requesting Licensee that



the OSS/BSS Connection has been restored within 60 minutes when the OSS/BSS Connection is restored.

***IDA Directed Modifications: Comments were made that OpenNet should provide written notification to the Requesting Licensee, within 30 minutes of the OSS/BSS Connection being restored. After careful consideration, to ensure an efficient implementation of the ICO, IDA agrees that it would be reasonable to require OpenNet to notify the Requesting Licensee when the OSS/BSS Connection is restored within a certain reasonable period.***

***Accordingly, IDA directs OpenNet to propose, for IDA's approval, modifications to clause 9.8 to include the proposed the timeframe, which must be reasonable, which it would notify the Requesting Licensees when the OSS/BSS Connection has been restored. [ON 28 Mar 12 : Amended as per IDA's Direction.]***

#### **CLAUSE 9.9 – MODIFICATION REQUIRED**

~~9.89.9~~ The Requesting Licensee acknowledges that OpenNet may temporarily disconnect the Requesting Licensee's OSS/BSS Connection to perform reasonable fault analysis and line testing on the OSS/BSS Connection. OpenNet shall conduct such disconnection only as it reasonably considers necessary. OpenNet shall notify the Requesting Licensee at least thirty (30) minutes before the temporary disconnection, ~~and~~ provide its reasons for the temporary disconnection and an estimated duration for the disconnection.

***IDA Directed Modifications: Comments were made that the duration of the temporary disconnection should be clearly defined to prevent instances of abuse by OpenNet.***

***After careful consideration, IDA considers that a reasonable measure would be to require OpenNet to provide to the Requesting Licensee, in each case of temporary disconnection, an estimate of the length of downtime.***

***Accordingly, IDA directs OpenNet to propose, for IDA's approval, modifications to clause 9.9 in accordance with IDA's requirement above. [ON 28 Mar 12 : Amended as per IDA's Direction.]***

~~9.99.10~~ Each Party shall maintain and store its own records of faults and repairs.

~~9.109.11~~ Where the fault lies within the OpenNet Platform, OpenNet shall evaluate the severity level of the problem reported and respond accordingly. See “Timeframe” section below for response times.

~~9.119.12~~ OpenNet shall resolve the reported problem based on a mutually agreed timeline between OpenNet and the Requesting Licensee.

~~9.129.13~~ In the event the Requesting Licensee and OpenNet connection(s) at the Requesting Licensee’s end is faulty, the Requesting Licensee may request OpenNet to setup and configure Express Firewall Setup (for Emergency Public Internet secured VPN access) from its alternative Firewall at different location. Such request shall be subject to following terms and conditions:

- (a) The Requesting Licensee shall pay the Express Firewall Setup Charge as stated in Schedule 15 (Charges).
- (b) The Requesting Licensee shall provide its own internet connection from its alternative firewall premises or work site at its own cost.
- (c) The Requesting Licensee shall liaise with OpenNet to set up and configure OpenNet firewall to allow the emergency Public Internet secured VPN access from the Requesting Licensee’s alternative access sites.
- (d) The Requesting Licensee shall inform and liaise with OpenNet to cease the emergency Public Internet secured VPN access when the alternative access to OpenNet Platform is no longer required.

~~9.139.14~~ Save as otherwise provided for in Clause 14 of this Schedule 14, OpenNet retains the right to suspend, modify, remove and/or to add to the OpenNet Platform in its sole discretion with immediate effect and without notice.

### **CLAUSE 9.15 – MODIFICATION REQUIRED**

~~9.149.15~~ Access to the OpenNet Platform may be suspended temporarily and without **prior** notice in circumstances of system failure, urgent system maintenance/repair (e.g. for rectification of severe bugs) or for reasons beyond the control of OpenNet. For scheduled maintenance/repair, OpenNet shall notify Requesting Licensees according to Clause 10.4.

**IDA Directed Modifications: Clause 9.16 provides that OpenNet shall provide notice to Requesting Licensees when the OpenNet Platform is unavailable. IDA considers that this is a reasonable requirement, as it is within OpenNet’s responsibility to monitor and ensure that its Platform remains in good order. However, the first line of clause 9.15 appears to suggest that access to the OpenNet Platform may be suspended without notice at all, which would be inconsistent with clause 9.16.**

**Accordingly, IDA directs OpenNet to propose, for IDA’s approval, modifications to clause 9.15 to ensure consistency with clause 9.16. For example, to fulfil this requirement, OpenNet may insert the word “prior” immediately before “notice in” in the first line of clause 9.15. JON 28 Mar 12 : Amended as per IDA’s Direction.**

~~9.15~~<sup>9.16</sup> Where the OpenNet Platform is unavailable, OpenNet shall notify the Requesting Licensee without undue delay and accept requests for Mandated Services from the Requesting Licensee via a dedicated email address and fax number. For the avoidance of doubt, OpenNet shall continue to accept requests for Mandated Services from the Requesting Licensee via a dedicated email address and fax number unless otherwise advised by OpenNet. OpenNet will accord a higher priority to requests that are submitted via the OpenNet Platform.

~~9.17~~<sup>9.18</sup> Service level guarantees are not provided under this Schedule.

~~9.18~~<sup>9.19</sup> OpenNet shall use its reasonable endeavours to respond to the Requesting Licensee in respect of the following:

Timeframe	Severity Level	Response Time
	Severity Level 1 – System and users are unable to do production works or critical business processes (in crisis mode).	Immediate.
	Severity Level 2 – A key system function is not usable but the system is able to continue operation.	Within 2 hours.
	Severity Level 3 – A feature or function is faulty but does not seriously impact operation.	Within 24 hours.
	Severity Level 4 – A feature or function	Within 2 days or as

	<p>having a minor fault (e.g. Cosmetic problems) but does not impact operation or others issues that do not require immediate action.</p>	<p>agreed.</p>

**10. OTHER TERMS & CONDITIONS**

- 10.1 All new, modified or upgraded Requesting Licensee software system interfaces must be tested in the OpenNet Platform test environment before being promoted to the live production environment. In the event the Requesting Licensee does not comply with such procedure and such untested software system causes any interruption or damage to the OpenNet Platform, the Requesting Licensee shall be liable to pay OSS/BSS Professional Services Charges for man-day(s) effort incurred to recover system and data to resume normal operation.
- 10.2 The Requesting Licensee shall, in accordance with Clause 14 of this Schedule 14, work with OpenNet to support testing of OpenNet-initiated OpenNet Platform API software changes including but not limited to implementation of new, modified and upgraded API(s).
- 10.3 The OpenNet Platform will be available daily from 8am to 11pm with the exception of fault reporting functionalities, which will be operational 24 hours daily excluding specific scheduled maintenance periods. The daily maintenance of the OpenNet Platform shall be between 11pm and 8am of the next day, unless otherwise agreed.
- 10.4 For scheduled maintenance activity and subject to Clause 9.15 and 10.3, OpenNet shall inform the Requesting Licensee at least one (1) month in advance with the date and time of the scheduled maintenance as well as the functions/modules affected.
- 10.5 OpenNet retains the right to terminate or suspend the Requesting Licensee’s named user accounts and take whatever action it considers appropriate in the event the Requesting Licensee commits a material breach of any terms of this Schedule or any part of the ICO Agreement or to protect the integrity of the OpenNet Platform arising from the conduct of the Requesting Licensee.
- 10.6 All Charges are for work done by OpenNet on Business Days unless stated otherwise.

## 11. TERM OF LICENCE

11.1 The term of an OSS/BSS Connection licence granted under this Schedule shall commence on the date of completion of the **OSS/BSS Professional Services (“Commencement Date”)** and continues for the term of either one (1) year (**“Term”**), or until the earlier occurrence of any of the following events:

- (a) either Party terminates the OSS/BSS Connection Service in accordance with Clause 13 of this Schedule;
- (b) the OpenNet ICO is revoked by the Authority under Clause 12.8 of the ICO Agreement; or
- (c) the Authority removes the requirement for OpenNet to provide OSS/BSS Connection Service under the OpenNet ICO or exempts OpenNet from providing OSS/BSS Connection Service under Clause 12.9 of the ICO Agreement.

## 12. SUSPENSION OF LICENCE

12.1 OpenNet may suspend the Requesting Licensee’s OSS/BSS Connection Service licence at any time until further notice to the Requesting Licensee if the **OSS/BSS Connection** causes or is likely to cause physical or technical harm to any telecommunications network, system or services (whether of OpenNet or any other person) including but not limited to causing damage, interfering with or causing deterioration in the operation of OpenNet’s Network.

12.2 Without limiting the exclusions or limitations of liability in this ICO Agreement, OpenNet shall not be liable to the Requesting Licensee for any Loss resulting from, or in connection with, suspension of access to **OSS/BSS Connection** under this Clause 12.

## 13. TERMINATION OF LICENCE

13.1 The minimum contract term shall be for one year and automatically renewed yearly (**“Term”**), unless terminated pursuant to the prevailing agreement.

13.2 If any of the user accounts is inactive for more than six (6) months, OpenNet shall be entitled to recover the inactive user account upon giving the Requesting Licensee ten

- (10) Business Days prior notice, and the Requesting Licensee does not dispute such written notice by OpenNet.
- 13.3 At any time after the minimum contract term, OpenNet or the Requesting Licensee may terminate the OSS/BSS Connection Service by giving the other party not less than one month prior notice.
- 13.4 If the Requesting Licensee desires to terminate the OSS/BSS Connection Service before the end of a Term, the Requesting Licensee shall (i) give OpenNet at least one (1) month's prior written notice.
- 13.5 OpenNet may terminate the licence of OSS/BSS Connection Service at any time with immediate effect by giving notice to the Requesting Licensee if the Requesting Licensee fails to complete the connection of its OSS/BSS platform in accordance with Clauses 8.5 and 8.6. If the Requesting Licensee's failure to complete installation is attributable to circumstances beyond the Requesting Licensee's reasonable control, OpenNet may grant a reasonable extension of time for installation to the Requesting Licensee at the Requesting Licensee's request. The Requesting Licensee's request under this clause must describe the circumstances beyond the Requesting Licensee's control and such request must be received prior to the expiry of the aforementioned period. OpenNet shall respond to the Requesting Licensee's request under this Clause 13.5 within two (2) Business Days from the date of receipt of such request.
- 13.6 Either Party (**Terminating Party**) may terminate the licence of the OSS/BSS Connection Service:
- (a) if the other Party is in breach of this Schedule other than failure to pay any sum for which the Requesting Licensee has been invoiced, and such breach remains un-remedied for a period of sixty (60) Calendar Days after receiving notice from the Terminating Party; or
  - (b) if the Requesting Licensee is in breach of this Schedule by its failure to pay any sum for which the Requesting Licensee has been invoiced, and such breach remains un-remedied for a period of fourteen (14) Calendar Days after receiving notice from the Terminating Party. For the avoidance of doubt, this sub-clause shall not apply pending the resolution of any Billing Dispute in accordance with the provisions of Schedule 16 (Billing).
- 13.7 OpenNet may immediately terminate a licence of OSS/BSS Connection Service if:

- (a) in OpenNet's reasonable opinion, the Requesting Licensee is using the OSS/BSS Connection Service in contravention of any applicable law, licence, code, regulation or direction and OpenNet has the necessary confirmation from the relevant Governmental Agencies that the Requesting Licensee is in contravention of the applicable law, licence, code, regulation or direction;
- (b) the Requesting Licensee's OSS/BSS Connection Service licence has been suspended pursuant to Clause 12.1 of this Schedule, and the Requesting Licensee fails to rectify the fault resulting in the suspension within a period of sixty (60) Calendar Days from the date of suspension;
- (c) the OSS/BSS Connection Service is used for a purpose other than for connecting to the OpenNet Platform to order services and report faults;
- (d) the OSS/BSS Connection Service has become unsafe or unfit for its purpose due to (but not limited to) the creation and/or sending of internet viruses, worms, Trojan horses, pinging, flooding, mail bombing, or denial of service attacks; or due to any activities that disrupt the use of or interfere with the ability of others to effectively use or access the OpenNet Platform; or when the Requesting Licensee's system is found to be behaving abnormally with reference to the results of the Handshake Testing, end to end testing or End to End Testing and day to day operations;

13.8 OpenNet may terminate the licence of OSS/BSS Connection Service on five (5) Business Days prior written notice, if the Requesting Licensee removes or abandons its OSS/BSS Connection Service as detected by OpenNet due to inactivity or otherwise, and the Requesting Licensee does not dispute such written notice by OpenNet.

13.9 If a Requesting Licensee's licence of an OSS/BSS Connection Service is to be terminated at any time during the Term because of the closure of an OpenNet OSS/BSS data centre, OpenNet must give the Requesting Licensee prior written notice at least three (3) months before the scheduled closure of such OpenNet OSS/BSS Data Centre. In the event of a closure of such OSS/BSS data centre, OpenNet must take reasonable measures to minimise disruptions to the Requesting Licensee in the provision of its services to the RSPs or End Users. The Requesting Licensee shall bear its own costs associated with the closure of the OSS/BSS data centre. However, in the event of downtime of the OSS/BSS Connection Service due to system migration or relocation, OpenNet shall give the Requesting Licensee three (3) months' written notice before such system migration or relocation. In the event that the Requesting Licensee requests assistance from OpenNet within thirty (30)

Business Days after receiving a notice under this Clause to provide an alternative solution to the OSS/BSS data centre which is being terminated, OpenNet will use its reasonable endeavours in providing such assistance. The Requesting Licensee shall remain solely responsible for making any alternative arrangements as may be necessary to continue to provide its services to its customers and shall remove its OSS/BSS Connection prior to the closure of the OSS/BSS data centre.

13.10 Upon expiry or termination of the licence of OSS/BSS Connection Service:

- (a) the Requesting Licensee must discontinue the use of its OSS/BSS Connection Services and remove its OSS/BSS Connection from OpenNet's OSS/BSS data centre without undue delay;
- (b) OpenNet shall reinstate the OpenNet Platform and recover/reinstate all firewall settings and recover the reasonable cost of such reinstatement (other than the cost of removing the user accounts) from the Requesting Licensee in accordance with the Termination Charge stated in Schedule 15 (Charges), other than in circumstances where the Requesting Licensee's discontinuation of the use of the OpenNet Platform is a direct result of OpenNet's decommissioning of the OpenNet OSS/BSS data centre under this Schedule 14, or where the termination occurs as a result of OpenNet's fault; and
- (c) the Requesting Licensee shall pay OpenNet the Charges (where applicable) stated in Schedule 15 (Charges) for the OSS/BSS Connection Service for the remainder of the Term of the OSS/BSS Connection Service licence if the termination is the result of the Requesting Licensee's fault

13.11 If the Requesting Licensee fails to discontinue the use of OpenNet Platform and remove its OSS/BSS Connection under Clause 13.10, OpenNet may at its sole discretion remove and/or dispose of the Requesting Licensee's OSS/BSS Connection and reinstate the OSS/BSS Connection to its original condition. The Requesting Licensee shall pay to OpenNet all reasonable costs associated with the work undertaken by OpenNet including the cost of disposing the OSS/BSS Connection. In such event, the Requesting Licensee shall have no claim whatsoever against OpenNet related to or in connection with the work undertaken by OpenNet pursuant to this Clause 13.10.



#### 14. CHANGE MANAGEMENT PROCESS FOR OPENNET PLATFORM APIS

- 14.1 OpenNet shall collate and maintain an OpenNet Platform APIs Change Management Register as per Annex 14C. OpenNet shall publish the OpenNet Platform API Register on its Service Portal.
- 14.2 Proposed changes (“**Industry Affecting Changes**”) to the OpenNet Platform APIs are to be raised by Requesting Licensees to OpenNet by using the Change Proposal Form as per Annex 14D.
- 14.3 OpenNet shall evaluate the validity of the Industry Affecting Changes using the following set of criteria:
- (a) The proposed changes are related to the OpenNet Platform APIs;
  - (b) The proposed changes are consistent with the intended purpose of the OpenNet Platform; and
  - (c) The proposed changes do not cause a drastic adverse impact to the performance and stability of OpenNet Platform
- 14.4 If OpenNet rejects the proposed changes, OpenNet shall provide the reason for rejection to the Requesting Licensee. If OpenNet agrees to study the change by the Requesting Licensee, a unique change request number will be assigned to the submitted Change Proposal Form (“**Change Proposal**”) and the OpenNet Platform APIs Change Management Register will be updated accordingly by OpenNet.
- 14.5 The Change Management Review Committee (“**Review Committee**”) shall comprise OpenNet and Requesting Licensees that have signed on to OpenNet’s Schedule 14 to the ICO Agreement. The Review Committee shall meet every three (3) months to discuss and evaluate change requests. OpenNet shall provide secretarial support for the Review Committee and will chair the Review Committee meetings.
- 14.6 For the avoidance of doubt, when OpenNet needs to modify the OpenNet Platform APIs, OpenNet shall follow the process described in this Clause 14, except for emergency cases or exceptional situations where:
- (a) OpenNet needs to take immediate actions where the integrity of the OpenNet Platform is at risk;
  - (b) There are imminent threats to life or property; or

(c) To comply with legal or regulatory obligations.

14.7 All participants at such Review Committee meetings will discuss the objective of the Change Proposals, how the change would affect the Requesting Licensees' platforms and the OpenNet Platform, timeframes and cost of implementation. These will be taken into consideration before OpenNet determines the action to be taken and determine appropriate implementation timeframes.

14.8 If OpenNet initiates any changes to the existing OpenNet Platform APIs, OpenNet shall bear the costs of such changes and only those changes that are consequently necessary for the Requesting Licensee to continue to provide the Mandated Services in substantially the same manner as before the changes are made to the system in the absence of any direction to the contrary by the Authority.

14.9 If the Requesting Licensee initiates any changes to the existing OpenNet Platform APIs, the Requesting Licensee shall bear the costs of such changes and only those changes that are consequently necessary for OpenNet and/or other affected Requesting Licensees to continue to provide the Mandated Services in substantially the same manner as before the changes are made to the system in the absence of any direction to the contrary by the Authority.

**(a) Submission of Change Proposals**

14.10 Proposals to change the OpenNet Platform APIs Register may only be submitted by OpenNet or a Requesting Licensee that has signed onto Schedule 14 to the OpenNet ICO Agreement and which has submitted live orders via the OpenNet Platform. The initiator of the Change Proposal is required to provide the details at the Review Committee meeting.

14.11 These proposals should be submitted using a standard OpenNet Platform APIs Change Proposal Form as per Annex 14D that sets out:

- (a) Name of the proposer;
- (b) A description of the proposed change(s);
- (c) Justification/reasons for the change(s);
- (d) Preferred schedule for implementing the change(s); and
- (e) Any other relevant information.

14.12 In order to minimize the Review Committee efforts and encourage work efficiency, the initiator of the Change Proposal shall make every reasonable effort to include all amendments in a single proposal, rather than submit multiple separate proposals. Where a Change Proposal is rejected by OpenNet, the proposing party may resubmit the proposal only after fully responding to the reasons for rejection as given by OpenNet, and using a new Change Proposal Form.

**(b) Consideration of Proposed Amendments**

14.13 Subject to Clause 14.3, proposed amendments of the OpenNet Platform API Register will be considered by OpenNet, in consultation with the Review Committee, under an agenda item at Review Committee meeting(s).

14.14 OpenNet shall circulate the Change Proposal to all Review Committee members for comment, within three (3) Business Days of its receipt of such a Change Proposal, and at least ten (10) Business Days prior to the Review Committee meeting. The Review Committee members will conduct a high level impact assessment based on the Change Proposal. All comments should then be submitted to OpenNet at least ten (10) Business Days before the next Review Committee meeting date.

14.15 The high level impact assessment (to be conducted by each Review Committee member) shall include, but shall not be limited to the following:

- (a) Evaluation of business benefits for the Change Proposal;
- (b) Possible implementation solution(s) within the systems of OpenNet and/or the Requesting Licensees; and their impact(s) based on the Change Proposal; and
- (c) Provide order of magnitude cost estimate and estimated time for implementation.

**(c) Decisions on Proposed Amendments**

14.16 OpenNet shall make a decision to accept or reject each Change Proposal submitted for consideration in consultation with the Review Committee. The Requesting Licensee who does not agree with the decision can raise its objection and provide the reasons and justifications for its objection. Where the parties are not able to resolve the disagreement, the matter shall be referred to the dispute resolution provided in the Main Body of the ICO Agreement.

14.17 Following OpenNet's acceptance of the Change Proposal, the Project Study will be conducted by OpenNet in consultation with the Requesting Licensee.

14.18 Upon completion of the Project Study, OpenNet shall release the tentative delivery schedule to the Review Committee. Within five (5) Business Days (or such other time as may be decided by OpenNet in consultation with the Review Committee), the Requesting Licensee shall notify OpenNet in writing if it cannot meet or does not agree with the change implementation schedule. OpenNet, in consultation with the Review Committee, shall propose the final change implementation schedule. The Requesting Licensee shall support the final change implementation schedule accordingly. If the parties cannot resolve the disagreement over the final change implementation schedule, then the matter shall be referred for dispute resolution in accordance with the Main Body of the ICO Agreement.

14.19 The decision (acceptance or rejection) of OpenNet in respect of each Change Proposal will be documented, and shall set out:

(a) The submitted Change Proposal Form and any supporting information;

(b) A concise summary of the reasons both for and against the proposed change; and

(c) A concise summary describing the final decision of OpenNet.

**(d) Register Update & Version Control**

14.20 Upon a decision by OpenNet and confirmation of the change implementation schedule by the Requesting Licensee, OpenNet shall request the initiator of the Change Proposal to provide an updated version of the OpenNet Platform API Register, based on the current release provided on the OpenNet Platform.

14.21 The initiator of the Change Proposal shall undertake verification of the updated OpenNet Platform API Register against the Change Proposal prior to implementation. In the event of any error/discrepancy, the initiator of the Change Proposal shall refer the matter(s) to OpenNet for appropriate action.

14.22 Upon successful verification of the updated OpenNet Platform APIs Register, OpenNet and the initiator of the Change Proposal shall implement the updated OpenNet Platform APIs Register in their relevant systems. This step should occur prior to implementation by any other party.

14.23 OpenNet shall implement the revised OpenNet Platform APIs Register, including any necessary testing efforts, within the change implementation schedule. OpenNet shall

thereafter formally advise the Requesting Licensee that the updated OpenNet Platform APIs Register is available for implementation, and the Requesting Licensee shall implement the revised Register in accordance with the change implementation schedule.

**ANNEX 14A-1**  
**OSS/BSS CONNECTION & PROFESSIONAL SERVICE**

<b>REQUEST FOR OSS/BSS CONNECTION &amp; PROFESSIONAL SERVICE</b>	
Date of Application : _____	Application Reference Number : _____
<b>ORDERING OF STANDARD SERVICES</b>	
a. Request for OSS/BSS Mode of Access is sought for either or both connection : <ol style="list-style-type: none"> <li>1. Service Portal GUI:               <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> Public Internet secured VPN client software</li> </ol> </li> <li>2. B2B Web Services Interface through OpenNet Platform API:               <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> Public Internet via secured VPN</li> <li>b. <input type="checkbox"/> Dedicated Leased Connection</li> </ol> </li> </ol>	
<b>ORDERING OF PROFESSIONAL SERVICES</b>	
B. Request for OSS/BSS Professional Services <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Setup, support and use of OpenNet's test environment</li> <li>2. <input type="checkbox"/> Consultation for system integration and interfacing using OpenNet Platform APIs</li> <li>3. <input type="checkbox"/> Customisation of OpenNet Platform APIs for system integration and interfaces</li> </ol>	
No of Attachment(s) : _____	
Name : _____ Designation : _____ Contact Number : _____ Fax Number : _____ Signature : _____	Name of Requesting License : _____ [Company Name] Company Stamp: _____
OpenNet <input type="checkbox"/> Not Approved <input type="checkbox"/> Approved	
Reason for Rejection : _____ OpenNet Reference Number: _____	
OpenNet Sign : _____ Name: _____	Contact Number : _____ Fax Number : _____
OpenNet Endorsement Received Date : _____ Queue Status : _____ Processed Date: _____	

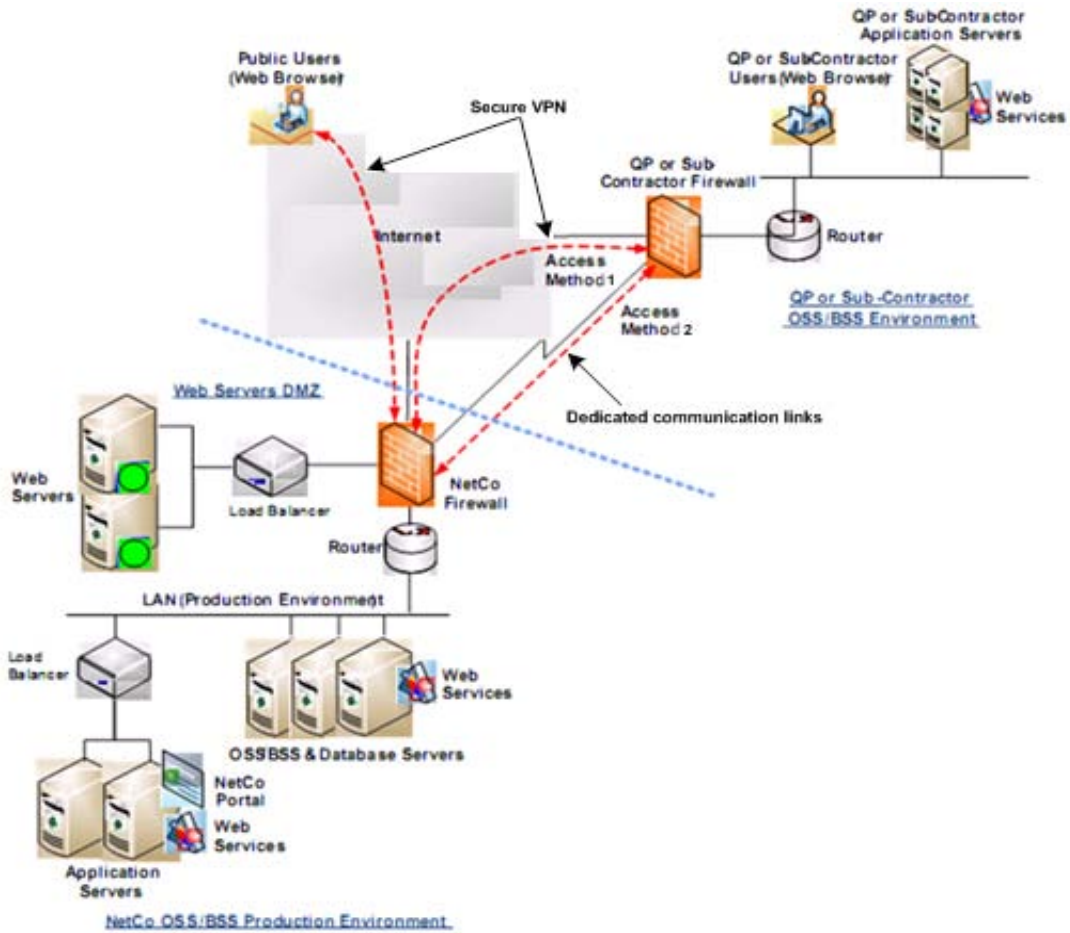
## Annex 14A-2

REQUEST FOR USER ACCOUNT	
Date of Application : _____	Application Reference Number : _____
Requesting Licensee Information : (select either one of option) Organisation: _____ <input type="checkbox"/> 1 <sup>st</sup> New User Account (ICO Registration No: _____) <input type="checkbox"/> New User Account <input type="checkbox"/> Change Password <input type="checkbox"/> Remove User Account	
<b>1<sup>st</sup> User Account Information:</b> Name: _____ Designation: _____ Contact Number: _____ Email: _____	
<b>Subsequent User Account Information:</b> Name: _____ Designation: _____ Contact Number: _____ Email: _____	
<b>Subsequent User Account Information:</b> Name: _____ Designation: _____ Contact Number: _____ Email: _____	
<b>Subsequent User Account Information:</b> Name: _____ Designation: _____ Contact Number: _____ Email: _____	
<b>Subsequent User Account Information:</b> Name: _____ Designation: _____ Contact Number: _____ Email: _____	
Name : _____ Name of Requesting License : _____ Designation : _____ [Company Name] Contact Number : _____ Fax Number : _____ Company Stamp: _____ Signature : _____	
<input type="checkbox"/> Application returned – incomplete/illegible <input type="checkbox"/> Not Approved      Reason for Rejection: _____ <input type="checkbox"/> Approved      OpenNet Approval Code: _____	
<b>OpenNet</b> Received Date: _____ Queue Status: _____ Processed Date: _____	
<b>OpenNet Endorsement</b> Name: _____ Signature: _____ Date: _____	

# ANNEX 14B

## TECHNICAL SPECIFICATIONS

### I. CONNECTIVITY DIAGRAM





## II. TYPES OF COMMUNICATION LINKS & SPECIFICATIONS

Specification	OpenNet end	NetCo QP end
<b>Type of Links</b>	1) Dedicated, Secured VPN link – preferably fibre optic WAN link	1) Dedicated, Secured VPN link – preferably fibre optic WAN link
	2) Secured VPN via Internet links	2) Secured VPN via Internet links
<b>Bandwidth</b>	10 Mbps or higher	10 Mbps or higher
<b>Physical Connection</b>	RJ45	
<b>Termination Details</b>	Connect to NetCo QP or S/P Firewall	Connect to OpenNet Firewall
<b>Protocol Support at WAN Links</b>	Must Support TCP/IP	Must Support TCP/IP
<b>Security details</b>	Must support VPNs, Support of 3DES, IPSEC , ACL	Must support VPNs, Support of 3DES, IPSEC , ACL
<b>Application Access Control</b>	User authentication, authorisation, access control,  OpenNet will govern the web services that could be consumed by segmenting user grouping and access list	User authentication, access control, Audit trail

*Table 4: Types of Communication Links and Specifications*

### **III. LIST OF SUPPORTED FIREWALL AND VPN**

This firewall supports both IPsec and Secure Socket Layer (SSL) VPN. Below are a list of firewalls which are interoperability with OpenNet's firewall.

- ZyXEL ZyWALL
- SonicWall
- WatchGuard Firebox II
- Netscreen-204
- Microsoft ISA 2004
- Checkpoint NGX
- Linksys BEFVP41
- Cisco PIX
- Juniper SSG
- YAMAHA RTX1200

**ANNEX 14C**

**OPENNET PLATFORM APIs  
CHANGE MANAGEMENT REGISTER (SAMPLE)**

<b>CHANGE REQUEST NUMBER</b>	<b>CHANGE REQUEST DESCRIPTION</b>	<b>DELIVERY RELEASE</b>	<b>RAISED BY</b>
XXX001		Dec 2011	Requesting Licensee

**ANNEX 14D**  
**CHANGE MANAGEMENT FORM**

<b>OPENNET PLATFORM API REGISTER CHANGE PROPOSAL</b>	
Date of Application : _____	Application Reference Number : _____
Title of Proposed Change:	
Description of Proposed Change:	
Justification/Reason for Change:	
Proposed Change Schedule (ie. requested date of implementation):	
Name : _____	Name of Requesting License : _____
Designation : _____	[Company Name]
Contact Number : _____	
Fax Number : _____	Company Stamp: _____
Signature : _____	
OpenNet <input type="checkbox"/> Not Approved	Reason for Rejection : _____
<input type="checkbox"/> Approved	OpenNet Reference Number: - _____
OpenNet	
Sign : _____	Contact Number : _____
Name: _____	Fax Number : _____
OpenNet Endorsement	
Received Date : _____ Queue Status : _____ Processed Date: _____	

**APPENDIX 1-A NETWORK CONNECTIVITY TESTS**

Type of Test	Test Items	Purpose	Acceptance Criteria	Estimated Man Days
Network Connectivity (Mandatory)	Test environment connectivity test	To ensure that the server can reach each other at the assigned IP address and port number.	Network Connection between Requesting Licensee and OpenNet can be established using the ports and services assigned for use.	1 (this is part of Standard Services - Connectivity)
	Production environment connectivity test	To ensure that the server can reach each other at the assigned IP address and port number.	Network Connection between Requesting Licensee and OpenNet can be established using the ports and services assigned for use.	1 (this is part of Standard Services - Connectivity)

**APPENDIX 1-B HANDSHAKE TESTING**

<b>Type of Test</b>	<b>Test Items</b>	<b>Purpose</b>	<b>Acceptance Criteria</b>	<b>Estimated Man Days</b>
Residential End-User Connection (Mandatory) *Building MDF Room to Residential Premise Connection follows a similar suite to this	Feasibility check	To test that the Requesting Licensee is able to send and process the correct messages for: i) Home Passed ii) Home Reached iii) In Service iv) Not able to provide service	Able to send message and process response as per interface specifications.	5
	Advance Coverage check* * This API is optional	To test that the Requesting Licensee is able to send and process the correct messages for CO & Serving Cabinet Information	Able to send message and process response as per interface specifications.	
	Check Timeslot	To test the Requesting Licensee is able to send and process the correct messages for getting appointment timeslots.	Able to send message and process response as per interface specifications.	
	Create new order for Home Passed Building Types (GPON, OE, 1:1)	To test that the Requesting Licensee is able to support the flow through provisioning of a new order.	Able to send message and process response as per interface specifications.	
	Create new order for Home Reached Building Types (GPON, OE, 1:1)	To test that the Requesting Licensee is able to support the flow through provisioning of a new order.	Able to send message and process response as per interface specifications.	

	Cancellation Order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.	
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.	
	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders. i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.	
	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.	
Non-Residential End-User Connection (Mandatory) *Building MDF Room to Non-Residential Premise Connection	Feasibility check	To test that the Requesting Licensee is able to send and process the correct messages for: i) Building Reached ii) Not able to provide service	Able to send message and process response as per interface specifications.	5

follows a similar suite to this	Advanced Coverage check* * This API is optional	To test that the Requesting Licensee is able to send and retrieve CO & Serving Cabinet Information	Able to send message and process response as per interface specifications.
	Check Timeslot	To test that the Requesting Licensee is able to send and process the correct messages for getting appointment timeslots.	Able to send message and process response as per interface specifications.
	Create new order for Non-Residential Building Types (GPON, OE, 1:1)	To test that the Requesting Licensee is able to support the flow through provisioning of a new order.	Able to send message and process response as per interface specifications.
	Cancellation order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.
	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.



	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.	
NBAP Connection (Mandatory) *CO to NBAP DP Connection, NBAP DP to NBAP TP Connection follows a similar suite to this	Feasibility check	To test that the Requesting Licensee is able to send and process the correct messages for: i) Covered ii) Not able to provide service	Able to send message and process response as per interface specifications.	6
	Quotation Notification/Acceptance	To test that the Requesting Licensee is able to retrieve and accept the quotation provided by OpenNet	Able to send message and process response as per interface specifications.	
	Check Timeslot	To test that the Requesting Licensee is able to send and process the correct messages for getting site survey appointments.	Able to send message and process response as per interface specifications.	
	Create new order (GPON, OE)	To test that the Requesting Licensee is able to support the flow through provisioning of a new order.	Able to send message and process response as per interface specifications.	
	Cancellation order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.	
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.	

	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.	
	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.	
CO to CO Connection (Mandatory)	Check Timeslot	To test that the Requesting Licensee is able to send and process the correct messages for getting site survey appointments.	Able to send message and process response as per interface specifications.	
	Create new order	To test that the Requesting Licensee is able to support the flow through provisioning of a new order.	Able to send message and process response as per interface specifications.	
	Cancellation order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.	
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.	

	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.	
	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.	
CO to Building MDF Room Connection (Mandatory) *Building MDF Room to FTTB Node Connection, FTTB Node to DP Connection follows a similar suite to this	Advanced Coverage check	To test that the Requesting Licensee is able to send and retrieve CO & Serving Cabinet Information	Able to send message and process response as per interface specifications.	
	Check Timeslot	To test that the Requesting Licensee is able to send and process the correct messages for getting site survey appointments.	Able to send message and process response as per interface specifications.	
	Create new order	To test that the Requesting Licensee is able to support the flow through provisioning of a new order.	Able to send message and process response as per interface specifications.	
	Cancellation order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.	
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.	

		Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.	
		Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.	
Trouble (Mandatory)	Ticket	Update Trouble Ticket	To test that the Requesting Licensee is able to update an open Trouble ticket.	Able to send message and process response as per interface specifications.	3
		Receive Ticket Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing Trouble ticket.	Able to send message and process response as per interface specifications.	
		Close Trouble Ticket	To test that the Requesting Licensee is able to close an open Trouble ticket.	Able to send message and process response as per interface specifications.	
		Create Trouble Ticket	To test that the Requesting Licensee is able to create a new Trouble Ticket	Able to send message and process response as per interface specifications.	
		Trouble Ticket Query	To test that the Requesting Licensee is able to query for a Trouble Ticket using OpenNet's Ticket ID	Able to send message and process response as per interface specifications.	

Trouble Ticket Search	To test that the Requesting Licensee is able to search for a Trouble Ticket using OpenNet's Ticket ID or Requesting Licensee's Ticket ID or ORI	Able to send message and process response as per interface specifications.	
Trouble Ticket Cancellation	To test that the Requesting Licensee is able to cancel an open Trouble Ticket	Able to send message and process response as per interface specifications.	

The number of man-days required are indicative and will be discussed with the Requesting Licensee and shall be reflected in the approved project schedule or Implementation Schedule prior to actual testing. The Requesting Licensee shall only be charged for the actual number of man-days required for completion of the testing.

**APPENDIX 1-C END TO END TESTING**

This section details **ALL** the scenarios that Requesting Licensee must undertake if they wish to adopt the End to End testing as specified by OpenNet.

<b>Type of Test</b>	<b>Test Items</b>	<b>Purpose</b>	<b>Acceptance Criteria</b>	<b>Estimated Man Days</b>
Residential End-User Connection (Mandatory) *Building MDF Room to Residential Premise Connection follows a similar suite to this	Creation of Order	To test that the Requesting Licensee is able to send an end to end testing using the following sequence of API: <ul style="list-style-type: none"> <li>• Feasibility check</li> <li>• Advance Coverage check*</li> <li>• Check Timeslot</li> <li>• Create new order</li> </ul> Requesting Licensee should include tests with various permutations of the following: <ul style="list-style-type: none"> <li>• Address Building Types</li> <li>• Timeslots</li> <li>• Split Ratio</li> <li>• Technology</li> <li>• Redundancy Options</li> <li>• Exceptional scenarios</li> </ul> * This API is optional	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	27

	Cancellation Order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested
	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders. i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.  Results to comply with the scenario tested
	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested

<p>Non-Residential End-User Connection (Mandatory)</p> <p>*Building MDF Room to Non-Residential Premise Connection follows a similar suite to this</p>	<p>Creation of Order</p>	<p>To test that the Requesting Licensee is able to send an end to end testing using the following sequence of API:</p> <ul style="list-style-type: none"> <li>• Feasibility check</li> <li>• Advance Coverage check*</li> <li>• Check Timeslot</li> <li>• Create new order</li> </ul> <p>Requesting Licensees should include tests with various permutations of the following:</p> <ul style="list-style-type: none"> <li>• Address Building Types</li> <li>• Timeslots</li> <li>• Split Ratio</li> <li>• Technology</li> <li>• Redundancy Options</li> <li>• Exceptional scenarios</li> </ul> <p>* This API is optional</p>	<p>Able to send message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	<p>27</p>
	<p>Cancellation order</p>	<p>To test that the Requesting Licensee is able to support cancellation of an open order.</p>	<p>Able to send message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	



	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	
	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.  Results to comply with the scenario tested	
	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	
NBAP Connection (Mandatory)  *CO to NBAP DP Connection, NBAP DP to NBAP TP Connection follows a similar suite to this	Creation of Order	To test that the Requesting Licensee is able to send an end to end testing using the following sequence of API:  <ul style="list-style-type: none"> <li>• Feasibility check</li> <li>• Advance Coverage check*</li> <li>• Check Timeslot</li> </ul>	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	27

		<ul style="list-style-type: none"> <li>• Create new order</li> <li>• Exceptional scenarios</li> </ul> <p>Requesting Licensees should include tests with various permutations of the following:</p> <ul style="list-style-type: none"> <li>• GPS co-ordinates</li> <li>• Timeslots</li> <li>• Technology</li> <li>• Redundancy Options</li> </ul> <p>* This API is optional</p>		
	Cancellation order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.	Results to comply with the scenario tested
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.	Results to comply with the scenario tested

	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.  Results to comply with the scenario tested	
	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	
CO to CO Connection (Mandatory)	Creation of Order	To test that the Requesting Licensee is able to send an end to end testing using the following sequence of API:  <ul style="list-style-type: none"> <li>• Check Timeslot</li> <li>• Create new order</li> </ul> Requesting Licensees should include tests with various permutations of the following: <ul style="list-style-type: none"> <li>• CO to CO</li> <li>• Timeslots</li> <li>• Redundancy Options</li> </ul>	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	10

		<ul style="list-style-type: none"> <li>Exceptional scenarios</li> </ul>		
	Cancellation order	To test that the Requesting Licensee is able to support cancellation of an open order.	<p>Able to send message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	<p>Able to send message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	
	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders <ul style="list-style-type: none"> <li>i) Acceptance Update</li> <li>ii) Order Update</li> <li>iii) Order Completion</li> </ul>	<p>Able to receive message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	

	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	
CO to Building MDF Room Connection (Mandatory)  *Building MDF Room to FTTB Node Connection, FTTB Node to DP Connection follows a similar suite to this	Creation of Order	To test that the Requesting Licensee is able to send an end to end testing using the following sequence of API: <ul style="list-style-type: none"> <li>• Feasibility check</li> <li>• Advance Coverage check*</li> <li>• Check Timeslot</li> <li>• Create new order</li> <li>• Exceptional scenarios</li> </ul> <p>Requesting Licensees should include tests with various permutations of the following:</p> <ul style="list-style-type: none"> <li>• Address Building Types</li> <li>• Timeslots</li> <li>• Split Ratio</li> <li>• Technology</li> <li>• Redundancy Options</li> <li>• Exceptional scenarios</li> </ul> <p>* This API is optional</p>	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested	15

	Cancellation order	To test that the Requesting Licensee is able to support cancellation of an open order.	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested
	Termination Order	To test that the Requesting Licensee is able to support termination of a completed order.	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested
	Receive Order Update	To test that the Requesting Licensee is able to receive updates from OpenNet's system for existing orders i) Acceptance Update ii) Order Update iii) Order Completion	Able to receive message and process response as per interface specifications.  Results to comply with the scenario tested
	Check Order Status	To test that the Requesting Licensee is able to support checking of order status	Able to send message and process response as per interface specifications.  Results to comply with the scenario tested

<p>Trouble Ticketing -</p> <p>[End to End Testing]</p> <p>(Mandatory)</p>	<p>QP report a Fault</p>	<p>To test that the Requesting Licensee is able to create and use a Trouble Ticket throughout the ticket life cycle using the below API.</p> <ul style="list-style-type: none"> <li>• Trouble Ticket Creation</li> <li>• Trouble Ticket Query</li> <li>• Trouble Ticket Search</li> <li>• Trouble Ticket Cancellation</li> <li>• Trouble Ticket Update</li> <li>• Receive Ticket Update</li> <li>• Trouble Ticket Close</li> <li>• Exceptional scenarios</li> </ul> <p>Requesting Licensee should include tests with various permutations of the following:</p> <ul style="list-style-type: none"> <li>• Fibre Fault-Maintenance</li> <li>• Fibre Fault-Provisioning</li> <li>• 1 Hour Activation</li> <li>• OSS/BSS</li> <li>• CO-LOC Fault</li> <li>• Exceptional scenarios</li> </ul>	<p>Able to send message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	<p>20</p>
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	<p>QP requesting for Joint Investigation</p>	<p>To test that the Requesting Licensee is able to create and use a Trouble Ticket throughout the ticket life cycle using the below API.</p> <ul style="list-style-type: none"> <li>• Trouble Ticket Creation (JI)</li> <li>• Trouble Ticket Query</li> <li>• Trouble Ticket Search</li> <li>• Trouble Ticket Cancellation</li> <li>• Trouble Ticket Update</li> <li>• Receive Ticket Update</li> <li>• Trouble Ticket Close</li> <li>• Exceptional scenarios</li> </ul> <p>Requesting Licensee should include tests with various permutations of the following:</p> <ul style="list-style-type: none"> <li>• Fibre Fault-Maintenance</li> <li>• Fibre Fault-Provisioning</li> <li>• OSS/BSS</li> <li>• CO-LOC Fault</li> <li>• Exceptional scenarios</li> </ul>	<p>Able to send message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	
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	<p>ON requesting for Fault Identification</p>	<p>To test that the Requesting Licensee is able to create and use a Trouble Ticket throughout the ticket life cycle using the below API.</p> <ul style="list-style-type: none"> <li>• Trouble Ticket Creation</li> <li>• Trouble Ticket Query</li> <li>• Trouble Ticket Search</li> <li>• Trouble Ticket Cancellation</li> <li>• Trouble Ticket Update</li> <li>• Receive Ticket Update (FI)</li> <li>• Trouble Ticket Close</li> </ul> <p>Requesting Licensee should include tests with various permutations of the following:</p> <ul style="list-style-type: none"> <li>• Fibre Fault-Maintenance</li> <li>• Fibre Fault-Provisioning</li> <li>• 1 Hour Activation</li> <li>• OSS/BSS</li> <li>• CO-LOC Fault</li> <li>• Exceptional scenarios</li> </ul>	<p>Able to send message and process response as per interface specifications.</p> <p>Results to comply with the scenario tested</p>	
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The number of man-days required is only indicative and shall be reflected in the approved project schedule or Implementation Schedule prior to actual testing after discussion with the Requesting Licensee. The Requesting Licensee shall only be charged for the actual number of man-days required for completion of the testing.