

## **APPENDIX 5**

### **DIRECTED MODIFICATIONS TO SCHEDULE 2C**

**SCHEDULE 2C**

**CALL TRANSIT SERVICE**

**NOTE: UNLESS OTHERWISE SPECIFIED BY IMDA, IMDA CONDITIONALLY APPROVES THE PROPOSED CHANGES BY SINGTEL IN THIS DOCUMENT.**

## **SCHEDULE 2C**

### **CALL TRANSIT SERVICE**

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## **SCHEDULE 2C**

### **CALL TRANSIT SERVICE**

#### **1. GENERAL**

**1.1** The Supplier will supply the Call Transit Service from the Acquirer's Network through the Supplier's Network in accordance with clause 11.1 of the main body of the RIO Agreement:

- (a) in respect of the Call Types for which the process in clause 3 has been followed; and
- (b) to the Third Party Networks in respect of which the process in clause 3 has been followed and as listed in Annex 2C-5,

**(Transit Interconnected VoIP Calls).**

**1.2** Notwithstanding the Interconnection of the SingTel Network and the Requesting Licensee's Network:

- (a) the Supplier shall not be obliged to accept Calls other than Transit Interconnected VoIP Calls under this Schedule;
- (b) the Acquirer will not hand over to the Supplier Calls other than Transit Interconnected VoIP Calls under this Schedule; and
- (c) the Supplier shall have no obligation to provide Call Transit Services in respect of Calls to Third Party Networks, other than Transit Interconnected VoIP Calls.

**1.3** The Supplier will only be required to provide the Call Transit Service to the Acquirer to the extent that the Acquirer has complied with Schedule 1 and this Schedule 2C.

**1.4** The Supplier shall only provide Call Transit Services under this Schedule:

- (a) to the Acquirer; and
- (b) in respect of Third Party Networks,

which are Interconnected to the Supplier's Network.

**1.5** The Acquirer acknowledges that it is its sole responsibility to agree on Call Origination and Termination arrangements with Third Party Network Operators (including settlement for origination or termination) to whose Network the Call Transit Service is being provided to the Acquirer under this Schedule 2C. The Supplier will not be liable to pay the Third Party Network Operator an amount for origination or termination of the Transit Interconnected VoIP Calls on Third Party Networks.

**1.6** The Acquirer shall provide and maintain the Interconnection Links between the Acquirer's Network and the Supplier's Network for the conveyance of Transit Interconnected VoIP Calls. In the event that the Acquirer no longer provides and maintains Interconnection Links between the Acquirer's Network and the Supplier's Network for the conveyance of Transit Interconnected VoIP Calls, the Supplier shall cease to supply the Call Transit Service for all Call Type(s) implemented pursuant to this Schedule. The Acquirer shall be liable for the costs incurred by the Supplier for the cessation in accordance with the Charges as specified in Schedule 9 for ceasing the supply of the Call Transit Service.

**2. NOT USED**

**3. CALL TYPES**

**3.1** This clause applies where the Acquirer wishes to extend the use of the Call Transit Service provided by the Supplier:

- (a) to a Call Type in respect of which the process in this clause 3.1 has not already been undertaken; or
- (b) to a Third Party Network in respect of which the process in this clause 3.1 has not already been undertaken or has not been specified in Annex 2C-5;
- (c) where a particular Call Type to a particular Third Party Network has been established, to change the amount of Interconnection Bandwidth required by the Acquirer between the Supplier Network and the Third Party Network.

**3.2** The Acquirer shall notify the Supplier by means of the request form set out in Annex 2C-1A of its request:

- (a) to extend the use of the Call Transit Service to a particular Call Type; or

- (b) to extend the provision of the Call Transit Service to a particular Third Party Network.
- 3.3** The Acquirer shall notify the Supplier by means of the request form set out in Annex 2C-1B of its request, where a particular Call Type to a particular Third Party Network has been established, to change the amount of Interconnection Bandwidth required by the Acquirer between the Supplier Network and the Third Party Network.
- 3.4** In the request under clause 3.2, the Acquirer must specify:
- (a) whether the Acquirer requires the Supplier to provide Interconnection Bandwidth between the Supplier Network and the Third Party Network; and
  - (b) the amount of Interconnection Bandwidth referred to in clause 3.4(a) (**Requested Bandwidth**).
- 3.5** The Acquirer acknowledges any request under clauses 3.2 and 3.3 is subject to clauses 3.7 to 3.9.
- 3.6** Following receipt of a request form under clauses 3.2 or 3.3, the Supplier shall assess that request and notify the Acquirer within five (5) Business Days that one of the following paragraphs applies:
- (a) the implementation of the request in respect of the requested Call Type or the particular Third Party Network involves only Network Conditioning in the Supplier's Network, in which case the Negotiation Period shall be fifteen (15) Business Days; or
  - (b) the implementation of the request in respect of the requested Call Type involves work in addition to or as an alternative to Network Conditioning in the Supplier's Network, in which case the Negotiation Period shall be sixty (60) Business Days; or
  - (c) the implementation of the request in respect of the requested Call Type involves the installation of Interconnection Links between the Supplier Network and the Third Party Network, in which case the Negotiation Period shall be sixty (60) Business Days, excluding such time necessary to establish the Interconnection Links with the Third Party Network.

- 3.7** Where the Acquirer requests the Supplier to provide Interconnection Bandwidth under clause 3.4, the Acquirer must interconnect at the Supplier Interconnect Gateway Switches at which the Third Party Network Operator is interconnected.
- 3.8** The Supplier will reject all requests to provide Interconnection Bandwidth under clause 3.4 if the Supplier's interconnection agreement with the Third Party Network Operator does not permit the Supplier to provide Interconnection Bandwidth for the purpose under this Schedule. The Supplier is not obligated under this Schedule to initiate interconnection or negotiate interconnection for new Call Type with any Third Party.
- 3.9** Where the Acquirer requests the Supplier to provide Interconnection Bandwidth between the Supplier Network and the Third Party Network under clause 3.4, subject to clauses 3.7 and 3.8 the Supplier will provide the Requested Bandwidth subject to the necessary redundancy and diversity requirements for Interconnection between the Supplier Network and the Third Party Network. Where the Supplier has established different Interconnection configurations with the Third Party Network, the Supplier will inform the Acquirer the different configurations in which the Interconnection Bandwidth between the Supplier Network and the Third Party Network may be established. Where the choice of different configurations is available, the Acquirer may request a specific configuration, subject to the Acquirer assuming full responsibility for the service quality of calls delivered pursuant to this Schedule using its requested configuration and indemnifying SingTel from technical harm and any penalties that may be imposed by the Authority arising from the delivery of calls using its requested configuration.
- 3.10** The Parties shall negotiate in good faith the requirements, implementation Charges and timetable for extending the use of the Call Transit Service provided by the Supplier in accordance with the Acquirer's request under clause 3.2 or 3.3 for the Negotiation Period notified in clause 3.6, failing which either Party may commence the Dispute Resolution Procedure in accordance with Schedule 11.
- 3.11** Where the Parties have reached an agreement in accordance with clause 3.10, the Supplier will commence implementation in accordance with the agreed timetable.
- 3.12** The Acquirer shall be liable for the costs incurred by the Supplier in processing and implementing the Acquirer's request in accordance with the applicable Charges set out under Schedule 9:
- (a) to extend the use of the Call Transit Service to a particular Call Type;

- (b) to extend the provision of the Call Transit Service to a particular Third Party Network; and
- (c) where requested, to install and allocate Interconnection Bandwidth between the Supplier Network and the Third Party Network in accordance with clause 3.9. For the avoidance of doubt, the Acquirer shall pay the Supplier the one-time Charges for the installation of any new and necessary Interconnection Links, irrespective whether the Acquirer's Requested Bandwidth is less than the total bandwidth of the new Interconnection Links. Subject to clause 3.9, the Supplier shall not over-provision the Interconnection Links between the Supplier Network and the Third Party Network.

**3.13** If the Supplier reasonably believes that, in performing the Acquirer's request in accordance with clause 3.12 any work, operation or use by the Acquirer in relation to the extension of use of the Call Transit Service to a particular Call Type or extension of the provisioning of the Call Transit Service to a particular Third Party Network will cause the Supplier to incur additional costs beyond those costs incurred in the normal provisioning of the Call Transit Service (**Additional Costs**), the Supplier shall notify the Acquirer of the Additional Costs, consisting of reasonable costs associated with the Supplier's:

- (i) additional processing and implementation of the Acquirer's request;
- (ii) extension of the use of the Call Transit Services to a particular Call Type or extension of the provisioning of the Call Transit Service to a particular Third Party Network or termination of the Call Transit Service in respect of a Call Type;
- (iii) additional Project Study costs;
- (iv) additional labour costs;
- (v) additional equipment and software (including information system and software modification) costs; and
- (vi) additional software and hardware testing costs.

**3.14** The Supplier's notification under clause 3.13 shall only be valid for a period of five (5) Business Days from the date of receipt by the Acquirer.



**3.15** Within five (5) Business Days of receipt of the notification under clause 3.13, the Acquirer shall provide its agreement to proceed with the Acquirer's request and pay the Additional Costs to be incurred by the Supplier in implementing the Acquirer's request to extend the use of the Call Transit Service to a particular Call Type or to extend the provisioning of the Call Transit Service to a particular Third Party Network. If the Acquirer does not respond within this period or informs the Supplier that it is unwilling to incur the Additional Costs or informs the Supplier of its intention to withdraw the request, the Supplier shall not be obliged to proceed with the implementation of the Acquirer's request nor to incur any of the Additional Costs set out in clause 3.13 and the Acquirer's request to extend the use of the Call Transit Service to a particular Call Type or to extend the provisioning of the Call Transit Service to a particular Third Party Network will be deemed to be withdrawn. The Acquirer shall be liable for any Additional Costs that the Supplier has incurred in connection with implementing the Acquirer's request until the date of withdrawal of the request. Any dispute in respect of determining the Additional Costs set out in the Supplier's notice shall be resolved in accordance with Schedule 11 of the RIO Agreement and the Acquirer's request shall be considered suspended until resolved.

**3.16** Nothing in this clause 3 requires the Supplier to perform any changes in its Network or to commence the supply of Call Transit Services for a Call Type to a Third Party Network until the Parties have completed the Change Process for that Call Type or Third Party Network and all Network Conditioning Charges have been agreed to by the Acquirer.

**3.17** The Acquirer may, at any time, request the Supplier to cease to supply the Call Transit Service in respect of a Call Type, in which case the Supplier shall cease to supply the Call Transit Service in respect of that Call Type as soon as reasonably practicable or at such later time as specified by the Acquirer. The Acquirer shall pay the Supplier the Charges as specified in Schedule 9 for ceasing the supply of the Call Transit Service in respect of that Call Type.

#### **4. CHARGING PRINCIPLES**

**4.1** The Acquirer must pay Call Transit Charges for all Transit Interconnected VoIP Calls that originate on its Network regardless of the payment by the Acquirer to the Third Party Network Operator.

**4.2** The Supplier shall, for those Transit Interconnected VoIP Calls for which it is providing a Call Transit Service, collect a Call record for each individual Transit

Interconnected VoIP Call on a CDR basis and process such records in accordance with clause 5.

- 4.3** The Call records collected by the Supplier in accordance with this clause 4 shall be the source of the data used by the Supplier to invoice for the Call Transit Service it provides under this RIO Agreement.
- 4.4** Where the Acquirer requests the Supplier to provide Interconnection Bandwidth between the Supplier Network and the Third Party Network under clause 3.3 or 3.4, and no Interconnection Links have been installed for any other Requesting Licensees, the Supplier will install Interconnection Links between the Supplier Network and the Third Party Network in accordance with clause 3.9. The Acquirer shall pay the one-time and recurring Charges for such Interconnection Links.
- 4.5** Where the Acquirer requests the Supplier to provide Interconnection Bandwidth between the Supplier Network and the Third Party Network under clause 3.3 or 3.4, and the Supplier determines that the Acquirer can share a portion of one or more Interconnection Links that have been installed for one or more Requesting Licensees, the Supplier shall not install new Interconnection Links, the Supplier shall configure the existing Interconnection Links to allow sharing and the Acquirer shall share a portion of the recurring Charges of the shared Interconnection Links based on the proportion of the Acquirer's Requested Bandwidth relative to the bandwidth used by other Requesting Licensees.
- 4.6** Where the Acquirer requests the Supplier to provide Interconnection Bandwidth between the Supplier Network and the Third Party Network under clause 3.3 or 3.4, and the Acquirer's Requested Bandwidth exceeds the spare bandwidth on the existing Interconnection Links that have been installed for one or more Requesting Licensees,
- (i) the Supplier shall configure the existing Interconnection Links to allow sharing of all available spare bandwidth and the Acquirer shall share a portion of the recurring Charges of the shared Interconnection Links based on the proportion of the Acquirer's use relative to the bandwidth used by other Requesting Licensees; and
  - (ii) for the remaining Requested Bandwidth in excess of the available spare bandwidth, the Supplier shall install additional Interconnection Links between the Supplier Network and the Third Party Network in accordance with clause 3.9, and the Acquirer shall pay the one-time and recurring Charges for such Interconnection Links.

- 4.7** Any installed Interconnection Link (under clause 4.4 or 4.6) shall be made available for sharing by other Requesting Licensees on terms equivalent or similar to the relevant terms of this Schedule 2C. If an Interconnection Link is installed under clause 4.4 or 4.6 and subsequently shared with other Requesting Licensees, the Acquirer's liability for recurring Charges will be proportionally reduced or increased to reflect the Acquirer's Requested Bandwidth relative to the bandwidth used by other Requesting Licensees.
- 4.8** For the avoidance of doubt, where the Acquirer shares current Interconnection Links with other Requesting Licensee(s):
- (a) one-time Charges already paid by the first Requesting Licensee(s) for the installation of the shared Interconnection Links will not be adjusted; and
  - (b) the Acquirer shall be liable for, and must pay the Supplier, a one-time Charge for the implementation of changes required to provide its Requested Bandwidth.
- 4.9** The one-time Charges and recurring Charges for the Interconnection Links shall be determined on a case by case basis in accordance with the pricing principles in Appendix 1 of the Code.
- 4.10** For clarity, the Charges for Interconnection Bandwidth will exclude the Transit Charges and the Acquirer will continue to be liable to pay Transit Charges to the Supplier in accordance with this Schedule 2C.
- 4.11** The calculation of Charges for Call Transit Service will be based on the number of Call Durations recorded on the basis of the applicable Billing Unit, and in accordance with the applicable rates set out in Schedule 9.

***CLAUSE 4.12 – MODIFICATION REQUIRED***

- 4.12** Calls shall be charged for the duration of use of the Data Link for the Call. Duration of use of the Data Link shall start at the time the Data Link first transmits any data related to the Call and shall end at the time the Data Link ceases entirely to transmit any data related to the same Call. All calls, regardless of whether successful or unsuccessful, are chargeable. The Charges shall be accounted in per second block.

***IMDA Directed Modifications:*** *One respondent to the public consultation enquired how to define the start and end time of the Data Link utilisation related to a Call. For clarity, IMDA directs Singtel to propose modifications to clause 4.12 herein to specify the Session Initiation Protocol ("SIP") request methods which would signal the start and end time of a Call, as well as to make reference to Call Duration as defined under Schedule 12 Dictionary.*

- 4.13** The Parties shall agree that if a Chargeable Call Duration extends over two (2) or more charge rate periods, the Call shall be recorded as a single Call in the Charge rate period which applies at the commencement of the Call and the Chargeable Call Duration will be determined by adopting the applicable rate set out in Schedule 9 for the applicable charging period in which the Call is answered.
- 4.14** The Parties shall agree that for Calls that cross over to the next Billing Period, the Calls shall be billed in the Billing Period in which those Calls end.

**5. BILLING VERIFICATION INFORMATION**

- 5.1** The Supplier shall use its reasonable endeavours to provide Billing Verification Information for the Call Transit Service in accordance with the format set out in Annex 2C-2 within fourteen (14) Calendar Days from the end of each Billing Period, together with the invoice for the Call Transit Service to be issued in accordance with Schedule 9.
- 5.2** In addition to the obligation in clause 5.1 when there is a dispute in relation to invoices issued for the Call Transit Service, the Parties shall exchange the Detailed Billing Verification Information set out in Annex 2C-3.
- 5.3** In the event that the Supplier cannot record Billing Verification Information for the Call Transit Service due to a system error or other fault, upon the request of the Supplier, the Acquirer will provide Billing Verification Information to the Supplier.
- 5.4** Where the Billing Verification Information collected by the Acquirer is not available under clause 5.3, the Parties will negotiate in good faith alternative Billing arrangements, such as an estimation based on the previous three (3) months' Billing Verification Information, that are appropriate in the circumstances.

**6. CESSATION OF ARRANGEMENTS WITH THIRD PARTY NETWORK OPERATORS**

- 6.1** If the Supplier proposes to disconnect its Network from a Third Party Network, then the Supplier will provide the Acquirer with no less than six (6) months notice of the proposed disconnection from the Third Party Network and the Supplier may cease to provide the Call Transit Service to the Third Party Network upon the expiry of the notice save for situations where six (6) months notice is not reasonably practicable. In such situations the Supplier shall provide as much notice as is reasonably practical and may cease to provide the Call Transit Services at such time as specified in the notice.

- 6.2** If a Third Party Network Operator disconnects or proposes to disconnect its Network from the Supplier's Network, the Supplier shall notify the Acquirer of the disconnection or proposed disconnection as soon as practicable, subject to confidentiality restrictions, after receiving notice from the Third Party Network Operator of the disconnection or proposed disconnection and the Supplier may cease to provide the Call Transit Service to the Third Party Network at such time as the notice from the Supplier to the Acquirer indicates. The Acquirer shall pay the Supplier the Charges as specified in Schedule 9 for ceasing to provide the Call Transit Service to the Third Party Network.

## **ANNEX 2C.1A: REQUEST FORM FOR INTRODUCING CALL TYPE (CALL TRANSIT SERVICE)**

### **1. GENERAL**

#### **1.1 Transit Call Request Name and Description**

*The Acquirer is to provide a general description of Call Type and the Third Party Networks to which the Call Transit Service is sought (eg Acquirer PSTN to XYZ 00X etc).*

#### **1.2 Date to be Introduced (Proposal)**

*The Acquirer is to indicate the preferred implementation date for access to be available.*

#### **1.3 Number Related Information**

*The Acquirer is to specify the service code or number range used for the Call Type as well as the number length.*

### **2. CALL ORIGINS AND DESTINATIONS**

*The Acquirer is to indicate which origins the Call Type is required from (eg Acquirer international incoming to XYZ 00X; Acquirer to XYZ 00X etc) and destinations (eg Third Party Networks) the Call Type is required to.*

### **3. NETWORK CONFIGURATION**

#### **3.1 Network Configuration/Routing Information**

*The Acquirer is to indicate the network configuration (with a diagram) through which the Call Type is to be conveyed.*

#### **3.2 Trunk Group (SIP Trunk Configuration)**

*The Acquirer is to indicate how traffic to the Call Type will be routed, as well as which trunk groups are to be used at the Interconnect Gateway Switches/SGS.*

#### **3.3 Interconnect Bandwidth Required between the Supplier Network and the Third Party Network**

*The Acquirer is to specify:*

- (a) *whether the Acquirer requires the Supplier to provide Interconnection Bandwidth between the Supplier Network and the Third Party Network; and*
- (b) *the amount of Interconnection Bandwidth.*

**3.4 Not Used**

**3.5 PROTOCOL HANDSHAKING**

*Regardless of the Call Type, the Acquirer shall comply with the Internet Engineering Task Force SIP standards.*

**4. BILLING AND CHARGING REQUIREMENT**

**4.1 Operator Billing**

*The Acquirer is to indicate how inter-operator Billing and settlement is to occur.*

## **ANNEX 2C.1B: REQUEST FORM FOR CHANGE IN AMOUNT OF INTERCONNECTION BANDWIDTH**

### **1. GENERAL**

#### **1.1 Transit Call Request Name and Description**

*The Acquirer is to provide a general description of Call Type and the Third Party Networks to which the change in amount of Interconnection Bandwidth is sought (eg Acquirer PSTN to XYZ 00X etc).*

#### **1.2 Change in Interconnect Bandwidth Required between the Supplier Network and the Third Party Network**

*The Acquirer is to:*

- (a) specify the requested change in Interconnection Bandwidth between the Supplier Network and the Third Party Network; and*
- (b) indicate on a network configuration diagram the revised Interconnection Bandwidth.*

#### **1.3 Date to be Introduced (Proposal)**

*The Acquirer is to indicate the preferred implementation date for the change in Interconnection Bandwidth.*



**ANNEX 2C.2: BILLING VERIFICATION INFORMATION FOR CALL TRANSIT SERVICE****BILLING INFORMATION FOR THE SUPPLIER**

Call Description	Time Zone	Call duration (in secs)	Call charges (in S\$)
Originating Call from the Acquirer's Network via the Supplier's Network (Transit Charge)	Peak	xxx	\$xxx.xx
	Off Peak	xxx	\$xxx.xx
Total		xxxx	\$xxx.xx

**ANNEX 2C.3: DETAILED BILLING VERIFICATION INFORMATION**

**1. Billing Verification for Supplier IGS**

				Originating From the Acquirer's Network	
				(Transit via the Supplier's Network)	
				X-Charge payable by the Acquirer	
S/N	ExchID	System	Time Zone	Attempts	Duration (in secs)
1	IGS1	FBO001	Peak	xxx	xxx
			Off Peak	xxx	xxx
2	IGS1	FBO002	Peak	xxx	xxx
			Off Peak	xxx	xxx
3	IGS2	FBO001	Peak	xxx	xxx
			Off Peak	xxx	xxx
4	IGS2	FBO002	Peak	xxx	xxx
			Off Peak	xxx	xxx

## 2. Billing Verification for Supplier SGS

				Originating From the Acquirer's Network	
				(Transit via the Supplier's Network)	
				X-Charge payable by the Acquirer	
S/N	ExchID	System	Time Zone	Attempts	Duration (in secs)
1	SGS1	SBO001	Peak	xxx	xxx
			Off Peak	xxx	xxx
2	SGS1	SBO002	Peak	xxx	xxx
			Off Peak	xxx	xxx
3	SGS2	SBO001	Peak	xxx	xxx
			Off Peak	xxx	xxx
4	SGS2	SBO002	Peak	xxx	xxx
			Off Peak	xxx	xxx

**ANNEX 2C.4: NOT USED**

SUBJECT TO CHANGE

## **ANNEX 2C.5: THIRD PARTY NETWORKS**

To be provided at a later time.

SUBJECT TO CHANGE