

ISSUED ON 8 MAY 2008

**BACKGROUND LEADING TO THE FRAMEWORK GOVERNING  
INTERCONNECTION BETWEEN IP TELEPHONY OPERATORS AND  
EXISTING PUBLIC SWITCHED TELEPHONE NETWORK OPERATORS**

1. On 14 June 2005, IDA announced its policy framework for the provisioning of IP telephony services, specifically that it would issue licences and 8-digit level '3' numbers blocks to IP telephony operators ("**IPTO**"s) who wish to provide IP telephony services. Subsequent to the announcement, IDA issued a number of Services-Based Operator (Individual) licences for IP telephony services and 8-digit level '3' number blocks to the IPTOs.
2. However, as some IPTOs sought to interconnect with the existing fixed-line and mobile operators ("**FMO**"s) for the provision of IP telephony services using level '3' numbers, it became apparent to IDA in early 2006 that there were various points of disagreement between the IPTOs and the FMOs, which prevented the parties from concluding their necessary interconnection agreements. This resulted in a delay of the roll out of IP telephony services by these IPTOs in Singapore.
3. In light of the unsatisfactory situation and to avoid a further delay to the roll out of IP telephony services using level '3' numbers in Singapore, IDA decided that it was in the market and public's interest to intervene and commence a process to resolve the points of disagreement that were preventing the conclusion of interconnection agreements between IPTOs and FMOs.
4. On 26 May 2006, IDA issued a direction to the FMOs and IPTOs which had prior to that date kept IDA informed of their interconnection efforts with the FMOs. The direction set out an interim interconnection framework to ensure that calls can be made between the subscribers of the IPTOs and FMOs, while IDA conducts a resolution process that would eventually establish a final interconnection framework for IP telephony services.
5. Further to the direction, IDA understood that new IPTOs, which were not subject to this direction, had sought to interconnect with the FMOs. In addition, IDA noted that with the impending launch of the nationwide wireless broadband Internet access providers, these providers may also be potential IPTOs who would need to interconnect with the FMOs.
6. To facilitate market entry and promote competition, IDA was of the view that it would be fair, reasonable and in the market and public interests to allow all interested IPTOs to rely on an interim interconnection framework to establish their interconnection with the FMOs. IDA referred to this interim interconnection framework as the "**Extended Interim Framework**".

7. IDA was also of the view that all interested IPTOs and FMOs should be able to participate in the process to determine the final interconnection framework for IP telephony services. This approach would provide an opportunity for all interested parties to put forth their views on interconnection for IP telephony services.
8. As such, on 5 July 2007, IDA issued a public consultation on “Proposed Regulatory Framework for Telephony Services over Wireless Broadband Access Networks and Interconnection Framework for Telephony Services” (“**Consultation**”) to solicit feedback and input on the final interconnection framework for IP telephony services, among other issues.
9. The Consultation closed on 3 August 2007 and IDA received comments from five respondents. On 8 May 2008, IDA issues its decision and explanatory memorandum on the Consultation, setting out the final interconnection framework for IP telephony services (i.e. “**Framework**”), after careful and extensive considerations of the views received. The Framework replaces the Extended Interim Framework with immediate effect.

## FRAMEWORK GOVERNING INTERCONNECTION BETWEEN IP TELEPHONY OPERATORS AND EXISTING PUBLIC SWITCHED TELEPHONE NETWORK OPERATORS

### 1. SCOPE OF THIS DOCUMENT

- 1.1 This document aims to provide guidance on the positions that IDA will adopt should there be disagreement in interconnection between IP Telephony Operators who wish to provide IP telephony services with 8-digit level '3' numbers ("**IPTO**"s) and the operators of existing telecommunication networks, such as the fixed-line and mobile networks ("**FMO**"s).
- 1.2 This document does not prescribe the retail arrangement between IPTOs and their subscribers, and between FMOs and their subscribers. It also does not apply to the conveyance of calls between the subscribers of each IPTO. This will be left to the commercial arrangements between the IPTOs.

### 2. BACKGROUND

- 2.1 Under the Telecom Competition Code ("**Code**"), all Facilities-Based Operator and Services-Based Operator licensees have to comply with the Minimum Interconnection Duties to ensure seamless and any-to-any communication throughout Singapore. Notwithstanding, an IPTO can commercially decide to set up a "closed-user" network and not request for interconnection with existing public telecommunication networks.
- 2.2 However, if the IPTO chooses to interconnect with the FMOs, the FMOs have to comply with the requirements stipulated under the Code and allow interconnection. Similarly, if the FMOs request for interconnection with the IPTOs, the latter have to comply with the requirements stipulated under the Code and allow interconnection.

### 3. INTERCONNECTION WITH DOMINANT OPERATORS

- 3.1 IPTOs seeking interconnection with an operator who has been designated as dominant under the Code ("**Dominant Operator**") may commercially negotiate an individualised interconnection agreement with the Dominant Operator under Section 6.4 of the Code. If the Dominant Operator and an IPTO fail to voluntarily reach agreement within 90 days on the individualised interconnection agreement, either licensee may request IDA to resolve the dispute in accordance with Sections 6.4.3 and 11.3 of the Code.

- 3.2 Where the parties fail to agree on any issues, to the extent that an issue in dispute is addressed by the prices, terms and conditions of the Dominant Operator's approved Reference Interconnection Offer ("**RIO**"), IDA will apply those provisions in resolving the dispute. To the extent that an issue in dispute is not addressed by the RIO, IDA retains the full discretion to impose any solution that it deems appropriate.

#### **4. INTERCONNECTION WITH NON-DOMINANT OPERATORS**

- 4.1 IPTOs seeking interconnection with a non-dominant operator will have to commercially negotiate an interconnection agreement with the non-dominant operator. In negotiating such interconnection arrangements, the IPTOs and non-dominant operators must comply with the Minimum Interconnection Duties set out in the Code for establishing their interconnection agreements.
- 4.2 If the IPTOs and non-dominant operators fail to reach agreement, they may request IDA to provide conciliation or resolve the dispute.

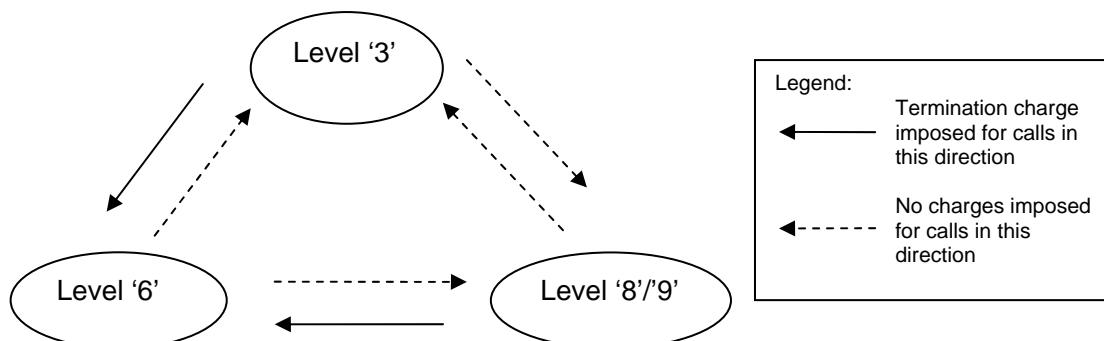
#### **5. INTERCONNECTION FRAMEWORK**

- 5.1 Licensees may enter into any mutually acceptable inter-operator compensation arrangement. In situations where IDA intervenes to resolve the dispute and the issues of disagreement fall into the under-mentioned categories, IDA will adopt the following principles when resolving the issues.
- 5.2 Where IPTOs opt to interconnect with FMOs, the following inter-operator compensation arrangement will apply:
- i. **For call origination from and termination into IPTOs' networks:** IPTOs need not be compensated for call origination and termination.
  - ii. **For call origination from and termination into network of the Dominant Operator using level '6' Numbers:** The Dominant Operator would be compensated and the origination and termination rates set out in its RIO would apply.
  - iii. **For call origination from and termination into network of a non-dominant operator using level '6' Numbers:** The non-dominant FMO would be compensated and its "Non Discriminatory Prevailing Rates" (i.e. the most favourable rates which the FMO has offered to or charged any person or entity for the FMO's services or for the termination or transit of voice calls in or through the FMO's network and which must be offered to all other parties on a non- discriminatory basis) shall apply.

- iv. **For call origination from and termination into network of FMOs using level ‘8’ and/or ‘9’ Numbers:** The existing inter-operator compensation regime would remain. In other words, the FMO would not be compensated for call origination and termination.
- v. In summary, the interconnection settlement regime is as follows:-

	Level ‘6’	Levels ‘3’, ‘8’ & ‘9’
Interconnection settlement regime	<p>‘Calling Party Pays’ (with network origination/transit/termination rates payable)*</p> <p>*includes any local, international and ISDN calls requiring PSTN for completing transmission</p>	No origination, transit or termination charges payable to operators providing telephony services based on these number levels

- vi. The following diagram illustrates the interconnection settlement between FMOs and IPTOs deploying service using the various number levels.



Direct versus Indirect Interconnection

5.3 On the issue of direct interconnection versus indirect interconnection and the cost responsibility of the interconnection links, the POI Interconnection Arrangement set out in the decision and explanatory memorandum on the “Regulatory Framework for Telephony Services over Wireless Broadband Access Networks and Interconnection Framework for Telephony Services” dated 8 May 2008 shall apply.

Interconnection through a Commercial Wholesale Service Offered by a FMO

5.4 The IPTOs may commercially negotiate a “wholesale” arrangement with an FMO (the hub operator) to hub behind the latter operator for all calls to and from the former. Under such arrangement, the hub operator offers to obtain interconnection, and receives or terminates

traffic from or onto other interconnecting licensees' networks, on behalf of the IPTOs based on commercially negotiated rates between the IPTOs and the hub operator. IDA thus views the hub operator no different from a transit operator.

- 5.5 IPTOs who enter into such wholesale agreements with a hub operator need not enter into separate agreements with the other interconnecting licensees. However, the hub operator, as the wholesale provider to these IPTOs, will need to be responsible for the implementation of interconnection and the interconnection contractual obligations through its interconnection agreements with other interconnecting licensees.
- 5.6 Based on the POI Interconnection Arrangement highlighted in the decision and explanatory memorandum on the "Regulatory Framework for Telephony Services over Wireless Broadband Access Networks and Interconnection Framework for Telephony Services" dated 8 May 2008, the point of interconnection in such an arrangement shall be taken as that between the hub operator and the other interconnecting licensees. There is no need for the other interconnecting licensees to compensate the hub operator (or the IPTO), for termination of calls to the IPTO. For calls from the IPTO to the other interconnecting licensees, the hub operator shall compensate the other interconnecting licensees a termination/transit charge, if applicable. The IPTO and hub operator would have to commercially agree how they would compensate each other under the wholesale agreement.

#### Cost of Opening of Number Levels

- 5.7 Operators may recover their costs of opening up new number levels in their networks to enable the exchange of traffic between them. IDA expects the processes to do so must be efficient and such charges can only be imposed on a cost-based basis. For Dominant Operators, the relevant RIO rates for opening up new number levels in their networks shall apply.

#### Interconnection Testing

- 5.8 The IPTO, FMOs, transit FMO (if applicable), and hub operator (if applicable) must carry out and complete all necessary testing as either the IPTOs, FMOs, transit FMO or hub operator may deem necessary to ensure the proper conveyance of calls between the IPTO's subscribers and the FMOs' subscribers, provided that each party shall bear its own cost of interconnection testing.

#### Traffic Forecast and Banker's Guarantee/Security Deposit

- 5.9 For the purpose of establishing interconnection arrangements pursuant to the Framework, the interconnecting parties shall supply to each other their reasonable traffic forecast. In addition, the interconnecting IPTO must provide, at its own cost, to the interconnecting FMO with a banker's guarantee or security deposit (at the IPTO's option) for 2.5 times the amount of the recurring charges that the IPTO would incur in a month. The requirement of a banker's guarantee or security deposit

is to secure the IPTO's payment of the recurring transit and termination charges (if any).

**6. GOING FORWARD**

- 6.1 The infocomm industry is undergoing rapid developments, particularly driven by several trends such as the Fixed Mobile Convergence and the emergence of IP technologies and IP-based NGNs. Such trends have raised questions on the impact to the current regulatory and business models. While IDA has consulted and issued this decision on the number allocation and interconnection regulatory frameworks, IDA will continue to closely monitor the industry developments and work with the industry to review the regulatory frameworks in future when necessary.