



INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY OF SINGAPORE

PUBLIC CONSULTATION PAPER

**REVIEW OF DIRECT AND INDIRECT INTERCONNECTION ARRANGEMENTS
BETWEEN TELECOMMUNICATION LICENSEES**

3 November 2006

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REVIEW OF DIRECT AND INDIRECT INTERCONNECTION ARRANGMENTS BETWEEN TELECOMMUNICATION LICENSEES

3 November 2006

PART I: OBJECTIVE

1. IDA would like to seek comments on the current direct and/or indirect interconnection arrangements that are in place between telecommunication licensees. The comments received will assist IDA in its review of the existing interconnection arrangements, so as to ensure they remain robust and efficient, and cater to future market developments and needs. This is in line with IDA's policy goal to promote a level-playing field, effective and sustainable competition and growth in the infocomm sector.

PART II: INTRODUCTION

2. Interconnection between licensees' networks is critical, as it facilitates market entry and ensures seamless any-to-any communications throughout Singapore. Therefore, under the Telecom Competition Code (2005) ("**Code 2005**"), IDA has imposed a duty on licensees to interconnect with each other, and that Interconnection Agreements entered into between licensees must also fulfill the Minimum Interconnection Duties¹ set out in the same Code. However, IDA does not specify whether licensees should establish direct or indirect interconnection arrangements, as IDA understands that these arrangements may be driven by economic and technical considerations. Hence, IDA has generally left it to the licensees to commercially negotiate their interconnection arrangements with each other.
3. Where interconnection with a dominant licensee is involved, IDA has imposed more stringent interconnection requirements. In such a case, IDA has specified in the Code 2005 that the dominant licensee must offer interconnection services via: i) a Reference Interconnection Offer approved by IDA; ii) an existing Interconnection Agreement which the dominant licensee has entered into with a similarly situated licensee; and/or iii) an Individualised Interconnection Agreement to be negotiated between the licensee and the dominant licensee. More stringent requirements on interconnection involving a dominant licensee are necessary, as a dominant licensee typically lacks the commercial incentive to establish interconnection with other licensees.

PART III: CURRENT DIRECT AND INDIRECT INTERCONNECTION ARRANGEMENTS

¹ The Minimum Interconnection Duties are specified in Sub-sections 5.4 to 5.4.8 of the Code 2005.

4. In a direct interconnection arrangement as illustrated in the following Exhibit 1, for a call originating on the network of Operator A and terminating on the network of Operator B, Operator A would typically pay a termination charge to Operator B. However, if Operator B is a mobile network operator, no termination charge would be payable to Operator B as the current mobile interconnection framework is based on a Mobile-Party-Pays regime.

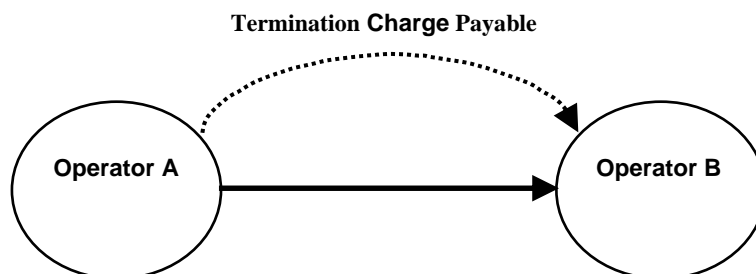


Exhibit 1: Direct Interconnection Between Operators

5. Conversely, in an indirect interconnection arrangement as illustrated in the following Exhibit 2, Operator A and Operator B are indirectly interconnected via Operator C. For a call originating on the network of Operator A and terminating on the network of Operator B, Operator A would typically pay Operator B and Operator C a termination and transit charge respectively. Again, given the application of the current mobile interconnection framework, no termination charge would be payable should Operator B happen to be a mobile network operator. However, a transit charge would still be payable by Operator A to Operator C.

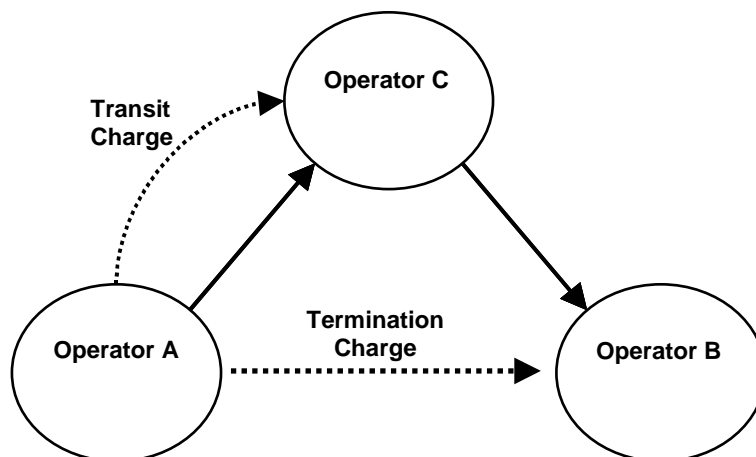


Exhibit.2: Indirect Interconnection Between Operators

6. In addition, under the general interconnection framework of the Code 2005, IDA has specified that unless agreed otherwise, licensees are typically responsible for the provision and costs of interconnection links on their side of the point of interconnection. Notwithstanding whether licensees have established direct or

indirect interconnection arrangements amongst themselves, IDA understands that there are also various arrangements currently in place relating to the licensees' sharing of the costs of interconnection links. For example, for the interconnection arrangements involving the mobile operators, the mobile operators would fully bear the costs of the interconnection links between their networks and the fixed line operators' networks.

PART IV: RECENT MARKET DEVELOPMENTS

7. IDA notes the telecommunication industry has been undergoing rapid developments, driven by advances in new technologies. For instance, IDA has issued licences and number levels to operators who wish to provide Internet Protocol ("IP") telephony service. To facilitate market entry, IDA issued an interim interconnection framework governing the interconnection and compensation arrangements between the IP telephony, fixed line and mobile operators. IDA has also issued Wireless Broadband Access ("WBA") Spectrum licenses to six licensees. IDA expects these WBA operators to provide further competitive services in the near future.

PART V: INVITATION TO COMMENT

8. Having regard to the current direct and indirect interconnection arrangements, together with recent market developments, IDA welcomes views and comments on the following:

Question 1

What are your views on the current direct and indirect interconnection arrangements? Do direct or indirect interconnection arrangements have any impact on technological and economic efficiencies? Please explain your views.

Question 2

What is the competitive impact of the current direct or indirect interconnection arrangements? Would the adoption of direct and/or indirect arrangements have an impact on the type of services you would offer to your customers now and in the future, and the prices charged for these services? For instance, whether direct and/or indirect interconnection arrangements would affect the quality of service, user experience, compatibility or signaling issues, risk of service outages, etc. In addition, would the impact be similar for all licensees and services?

Question 3

Would the current direct and/or indirect interconnection arrangements be appropriate for emerging players, services and industry trends, such as IP telephony, new mobile data offerings, etc? Please explain your views.

Question 4

What are the specific criteria that you will consider in deciding whether to establish direct or indirect interconnection arrangement with another licensee? Please explain each identified criterion in detail, and how the satisfaction/dissatisfaction of that criterion would affect the final decision to opt for direct or indirect interconnection arrangement.

Question 5

In your negotiation with other licensees for direct or indirect interconnection arrangements, were there difficulties encountered in reaching an agreement? If yes, please explain in detail what these difficulties were and how they were resolved. Would regulatory intervention have been necessary? If so, what should be the regulatory approach or solutions?

Question 6

Should IDA harmonise the requirement for all licensees to be responsible for the provision and costs of interconnection links on their side of the point of interconnection? Should IDA prescribe that all licensees, including mobile operators, either share the costs of interconnection links on a 50:50 basis, or fully bear the costs of interconnection links which only convey their own traffic? Please explain your views.

Question 7

Are there any other considerations relating to this review that IDA should consider, over and above those mentioned in the above questions?

9. All submissions must reach IDA before **12 noon on 1 December 2006**. A hardcopy and a softcopy, preferably in Microsoft Word format, must be provided. Respondents are required to include their personal or company particulars, correspondence address, contact number and email address in their submissions. IDA will make public all or parts of any written submissions made in response to this Consultation Paper and disclose the identity of the source. Any part of the submission that is considered commercially confidential must be clearly marked and placed as an annex to the comments raised. IDA will take this into account in its assessment.
10. All submissions must be addressed to:

**Mr Andrew Haire
Assistant Director-General (Telecoms)
Infocomm Development Authority of Singapore
8 Temasek Boulevard
#14-00 Suntec Tower Three
Singapore 038988**

Please submit your softcopy via email to **Liau_Chie_Kiong@ida.gov.sg**. You may submit the hardcopy to fax number: **(65) 6211-2116**.