GUIDE TO INTERCONNECTION WITH DOMINANT LICENSEE

1 SCOPE OF THIS DOCUMENT

This document aims to provide guidance on some possible options that IP Telephony service providers issued with E.164 telephone numbers from IDA can connect to the Dominant Licensee. For the purposes of this document "**IP Telephony Providers**" are service providers who provide IP Telephony services to the public, and who are either Facilities-based licensees ("**FBOs**") or Services-based licensees ("**SBOs**") issued with E.164 telephone numbers from IDA.

2 BACKGROUND

The Telecom Competition Code 2005 ("**Code**") specifies the rights and duties of telecommunication licensees with respect to interconnection and access. Under section 5.2 of the Code, FBOs and SBOs are required to interconnect with each other. The interconnection framework specified in the Code generally deals with traditional circuit-switched telephone ("**CST**") networks.

As IDA recognises that IP Telephony is a new and evolving technology, and IP Telephony Providers may employ various possible interconnection configurations[1], it would not be appropriate for IDA to dictate the specific interconnection configurations that must be adopted at this stage. IDA will therefore allow IP Telephony Providers to pursue the most appropriate method of connection with the Dominant Licensee and/or other service providers.

[1] IDA notes that several interconnection models could arise. These include (i) direct interconnection between IP Telephony networks; (ii) interconnection between an IP Telephony network and a CST network or Public Switched Telephone Network ("PSTN"); and (iii) interconnection between IP Telephony network providers via a CST network. IDA also notes that different methods exist for interconnection between an IP Telephony network and a CST network. These include the use of media translation gateways by IP Telephony Providers for conversion of IP Telephony traffic to CST traffic and vice versa, and interconnection using the H.323 or SIP protocol.

3 OPTIONS AVAILABLE FOR INTERCONNECTION WITH DOMINANT LICENSEE

Option 1: ISDN Connection to Dominant Licensee's CST Network

At the simplest level, IP Telephony Providers may obtain commercial ISDN products to connect to the Dominant Licensee's CST network.

Typically, using the ISDN product to connect to the Dominant Licensee's CST, the IP Telephony provider would be able to enable calls to be made between customers of the IP Telephony network and the CST network using a media gateway. The media gateway, typically operated by the IP Telephony Provider as part of its network, enables calls between the IP Telephony network and the CST network by translating the different signaling coding protocol, communication procedures and transmission format used on the 2 networks.

Currently, ISDN products are readily available from various service providers such as Singapore Telecommunications Limited ("**SingTel**") or StarHub Limited.

Option 2: Reference Interconnection Offer

IP Telephony Providers, who are FBOs using 8-digit numbers starting with level "3" or "6" issued by IDA, may want to enable their customers to make and receive calls to and from customers connected to other networks, and provide their customers calling line identification (CLI) or emergency services, where applicable.

If IP Telephony Providers have their own access networks or last mile connections to their End Users ("**IP Telephony FBOs**"), they may choose to interconnect with the Dominant Licensee, SingTel, on terms specified in its Reference Interconnection Offer ("**RIO**"). A copy of SingTel's RIO can be downloaded from IDA's website at www.ida.gov.sg.

Option 3: Commercially Negotiated Interconnection Agreement

IP Telephony Providers, whether SBOs or FBOs, seeking interconnection with the Dominant Licensee may commercially negotiate an individualised interconnection agreement with the Dominant Licensee under section 6.4 of the Code.

If the Dominant Licensee and IP Telephony Providers 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.

For example, for an IP Telephony Provider licensed as an SBO, who does not desire to connect to the Dominant Licensee's CST network using ISDN product and at the same time is not eligible to interconnect under the RIO, may commercially negotiate an individualised interconnection agreement with the Dominant Licensee. The individualised interconnection agreement must still comply with the minimum duties for interconnection agreements specified in Sub-sections 5.4 through 5.4.8 of the Code.

Where the parties fail to agree on any issues, to the extent that an issue in dispute is addressed by the price, terms and conditions of the Dominant License's approved RIO; IDA will apply those provisions in resolving the dispute. For example, if the matter in dispute relates to the IP Telephony Provider's settlement arrangement for terminating an IP Telephony call on the Dominant Licensee's CST or PSTN network, if similar network elements are used, IDA would treat this as a termination call and apply the relevant RIO price, terms and conditions for settlement of such calls. To the extent that an issue in dispute is not addressed by the RIO, IDA retains full discretion to impose any solution that it deems appropriate. For example, if the matter in dispute relates to the Dominant Licensee's settlement arrangement with the IP Telephony Provider to terminate a CST or PSTN call on the IP Telephony network and as this is not covered under the RIO, IDA will need to examine the IP Telephony Provider's network configuration and determine the dispute on a case-by-case basis. IDA may use a Forward Looking Economic Cost methodology to determine the relevant interconnection costs, where these are payable.

4 GOING FORWARD

In the long term, there are likely to be other possible interconnection configurations that IP Telephony Providers may deploy. As IP Telephony services continue to proliferate, direct interconnection between IP Telephony networks may become the dominant method of interconnection as opposed to interconnection with traditional CST networks. IDA will continue to monitor technological and market developments and consult the industry when it fine-tunes and further develops the interconnection and access framework going forward.