



CONSULTATION PAPER:

HANDOVER OF TAIL LOCAL LEASED CIRCUITS UNDER
SCHEDULE 7B OF SINGAPORE TELECOMMUNICATIONS
LIMITED'S REFERENCE INTERCONNECTION OFFER

INFOCOMM DEVELOPMENT AUTHORITY OF SINGAPORE

4 JULY 2005

Handover of Tail Local Leased Circuits under Schedule 7B of Singapore Telecommunications Limited's Reference Interconnection Offer

INTRODUCTION

1. As a Dominant Licensee, Singapore Telecommunications Limited (**SingTel**) is required under Section 8 of the Schedule of Interconnection Related Services and Mandated Wholesale Services (**IRS/MWS Schedule**) to the Code of Practice for Competition in the Provision of Telecommunication Services 2005 (**Code 2005**), to offer local leased circuits (**LLC**) as a mandated wholesale service (**MWS**) to Requesting Facilities-based Licensees (**FBOs**).
2. The underlying policy behind IDA's decision to designate SingTel's LLC as an MWS during the interim period¹ is set out in the decision paper titled "Designation of SingTel's Local Leased Circuits as Mandated Wholesale Service" dated 16 December 2003 (**LLC Decision**). IDA recognised that it would not be economically feasible for new entrants to duplicate the extensive reach of SingTel's LLC network, especially for the last-mile access to end users. Therefore, with the LLC Decision, IDA seeks to enhance competition in Singapore's LLCs markets, lower LLC market entry barriers, encourage operators to build trunk side infrastructure, and bring about lower telecom costs to businesses and end users in Singapore.
3. The terms and conditions under which SingTel offers to provide wholesale LLC to any FBO are set out in Schedules 7A and 7B of SingTel's Reference Interconnection Offer (**RIO**)².

PURPOSE OF THIS CONSULTATION

4. Schedule 7B of the RIO currently provides that where an FBO obtains tail LLCs of speeds from 64 kbps to 1536 kbps (**n x 64kbps circuits**) from SingTel, SingTel will hand over the n x 64kbps circuits to the FBO's co-located equipment in SingTel's exchange buildings based on a default interface standard of V.35³. Although IDA has conducted a public consultation on the amendments to SingTel's RIO to offer LLCs as an MWS, and approved

¹ LLCs are designated as an MWS for a period of 18 months to 24 months for those circuits terminating at CBD and non-CBD areas respectively. Thereafter, only tail LLCs will be designated as an Interconnection Related Service to be offered by SingTel under the RIO at cost-based prices.

² Schedules 7A and 7B of the RIO set out the terms and conditions under which SingTel offers full and tail LLCs respectively.

³ The V.35 interface standard is an International Telecommunication Union (ITU) standard for high-speed synchronous data exchange. In 1989, the ITU recommended that the interface was obsolete and replaced it with the V.10/V.11 standard. The V.35 interface is typically found on Data Terminal Equipment and Data Communication Equipment interfacing to high speed digital carrier services.

the incorporation of Schedule 7B into SingTel's RIO on 15 October 2004, IDA has since received further feedback highlighting difficulties arising from the implementation of Schedule 7B of the RIO. In particular, it has been highlighted that the use of V.35 interface standard for the handover of n x 64kbps circuits is ineffective and inefficient, and therefore would be unsuitable for carrier-to-carrier connections. IDA therefore seeks views on the feasibility of an approach that IDA believes would place SingTel and competing operators on equivalent footing and would address the implementation difficulties associated with the existing interface standard for n x 64kbps circuits.

ISSUES ASSOCIATED WITH EXISTING HANDOVER CONFIGURATION

Existing Handover Configuration

- Under the existing terms of the RIO, SingTel hands over each n x 64 kbps circuit to the FBO's co-located equipment using the V.35 interface standard. An intermediary network termination unit (**NTU**) is thus required to be installed by the FBO for each n x 64 kbps circuit so that the network interface point for the handover would be the specified 34-pin Winchester type connector. For tail LLCs with speeds at 1536 kbps and above, SingTel would hand over these circuits using the G.703 interface standard. The handover configuration for tail LLCs is illustrated in Figure 1.

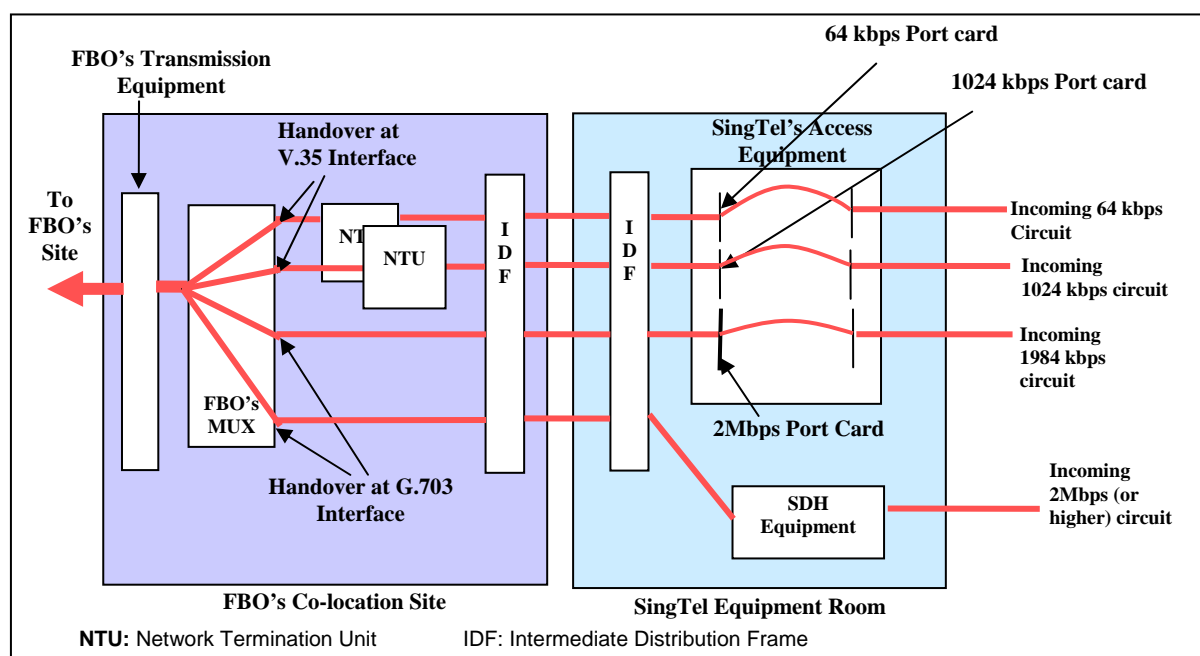


Figure 1: Existing Handover Configuration for Tail LLC Circuits

IDA's View on the Existing Handover Configuration

6. IDA believes that the existing handover configuration for n x 64 kbps circuits under SingTel's RIO is economically and technically inefficient for the following reasons:
- (a) **Imposition of Unnecessary and Unjustified Costs on the Requesting Licensee** – The V.35 interface standard requires the use of an NTU for each n x 64 kbps circuit. The need for an intermediary equipment results in FBOs incurring additional costs to access tail LLCs. An FBO would need to incur (i) the cost of an NTU for each n x 64 kbps circuit that it obtains; and (ii) additional auxiliary costs for equipment racks, co-location space and power requirements.
 - (b) **Inefficient Use of Co-location Space at SingTel's Exchange Buildings** – Under the Code 2005, SingTel is required to lease up to 10 square metres of equipment footprint space in each of SingTel's exchange building to other FBOs. As co-location space is a limited resource that FBOs require to access tail LLCs and all other interconnection related services obtained under the RIO, it should be used in the most efficient manner. However, the existing handover configuration does not make efficient use of the co-location space as FBOs are required to use an NTU for each n X 64 kbps circuit that they obtain from SingTel. Furthermore, FBOs may face operational difficulties as they are restricted by the limited space to co-locate the NTUs, in addition to other equipment such as multiplexers (**MUX**) and transmission equipment.
 - (c) **Technical Deficiency of the V.35 Interface Standard for Carrier-to-Carrier Connection** – By introducing an additional network element (i.e. the NTU) between SingTel's and the FBO's networks, additional equipment compatibility testing may be necessary prior to the handover and activation of circuits. Further, additional network elements may result in more potential points for network failure. This in turn requires more complex fault identification and restoration work in the event of circuit failures.
7. For the reasons set out above, IDA is of the view that FBOs, who intend to acquire n x 64 kbps circuits and roll-out their own LLC trunk networks, may be constrained from doing so. This would defeat the underlying key objective behind IDA's Decision, which is to encourage facilities-based competition by facilitating competing operators to roll-out LLC trunk networks and enhance competition in the provision of LLC services to bring about more competitive LLC prices to end users in Singapore.

IDA'S PROPOSED APPROACH

8. To address IDA's concerns on the implementation difficulties associated with the existing handover configuration for $n \times 64$ kbps circuits under Schedule 7B of the RIO, IDA is considering requiring SingTel to provide FBOs with the option for direct handover of tail LLCs by SingTel to the FBOs' co-located equipment via 2-pair copper wires, without the need for a separate intermediary NTU (**Direct Handover Configuration**) (see Figure 2 below).

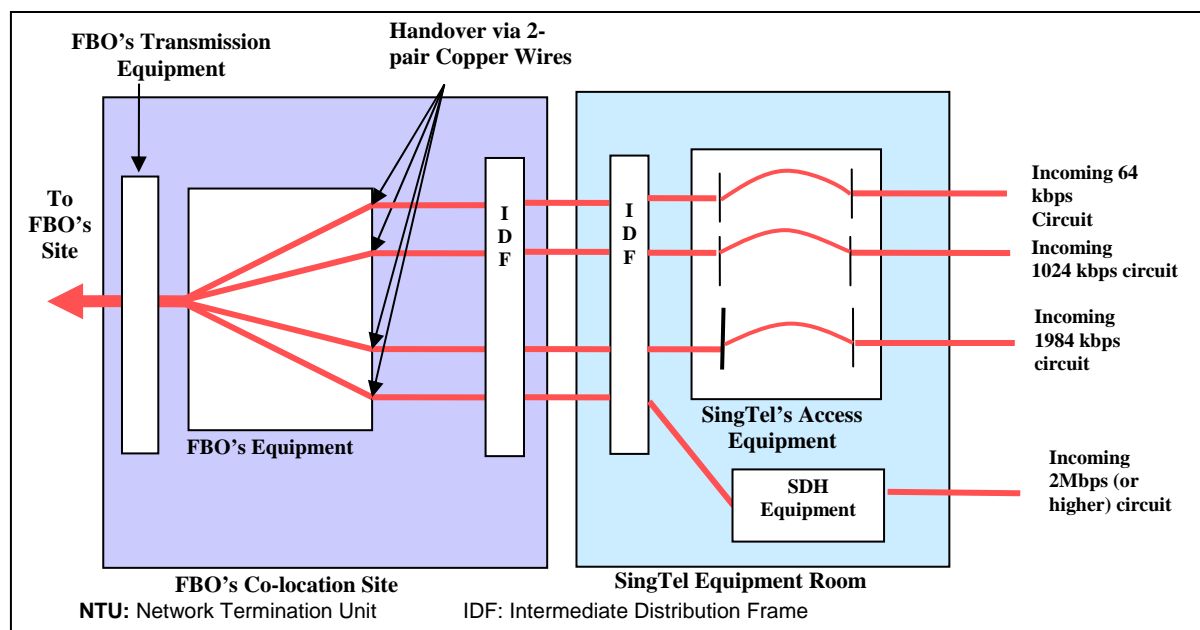


Figure 2: Direct Handover Configuration

9. IDA believes that the Direct Handover Configuration, if feasible, would address inefficiency problems associated with the existing handover configuration for the following reasons:
- (a) The Direct Handover Configuration is no different from how SingTel will receive its own $n \times 64$ kbps circuits in SingTel's exchange buildings to serve its own customers. Therefore, FBOs would not need to incur additional costs associated with intermediary equipment such as NTUs and co-location space. As such, the FBOs would not be placed at a competitive disadvantage against SingTel when accessing tail LLCs for the provisioning of LLCs to end users. In other words, this configuration would place SingTel and FBOs on equal footing in provisioning $n \times 64$ kbps circuits to their respective customers.
 - (b) Without the additional network element of the NTU, there will be fewer potential points of failure and complications in identifying and restoring faults in circuits.

10. However, IDA understands that SingTel currently uses Tellabs ® 8100 equipment to provide LLC services, and FBOs may have to install Tellabs ® 8100 node and the relevant Tellabs proprietary interface to enable SingTel to handover tail LLCs to the FBOs under the Direct Handover Configuration.

IDA welcomes views and comments on the Direct Handover Configuration. Do you believe that the proposed approach adequately addresses the concern with respect to the inefficiencies associated with the existing handover configuration? Are there additional issues to be considered in relation to the implementation of the Direct Handover Configuration? If so, how should they be addressed?

REQUEST FOR COMMENTS

11. IDA would like to seek the views and comments from the industry on the issues and proposal raised in this consultation paper. This will allow the IDA to have a better understanding of the issues and the different requirements of the various affected parties.
12. All views and comments should be submitted in writing, in both hard and soft copy (preferably in Microsoft Word format), and should reach IDA by **12 noon, 25 July 2005**. Respondents are required to include their personal/company particulars as well as the correspondence address in their submissions to this consultation paper. Comments and views should be addressed to:

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Fax: (65) 6211-2116

and softcopy emailed to : Lynette_Lim@ida.gov.sg

13. IDA reserves the right to make public all or parts of any written submission made in response to this Consultation Paper and to disclose the identity of the source. Any part of the submission, which is considered by respondents to be commercially confidential, should be clearly marked and placed as an annex. IDA will take this into account regarding disclosure of the information submitted.