

REVIEW OF INTERCONNECTION CHARGING MODEL FOR INTERNET DIAL-UP TRAFFIC

AIM

- 1 To announce IDA's decision on the interconnection charging model for inter-fixed network conveyance of Internet dial-up traffic.

BACKGROUND

- 2 Internet dial-up traffic is currently being treated as call terminating traffic. This means that when a subscriber of an Internet Access Service Provider (IASP) dials up over the fixed telephone line to access the Internet, the connection of such calls are treated like local fixed-line phone-to-phone calls.
- 3 The full liberalisation of the telecommunication market since 1 April 2000 makes it necessary for IDA to review whether the current interconnection charging model for Internet dial-up traffic is still appropriate in a multiple fixed-network environment. In particular, IDA considered whether the current model would over-compensate fixed network operators who were hosting IASPs. IDA's over-riding objectives are to ensure that there is a level playing field for all network operators and service providers, and that end-users will enjoy the widest choice and flexibility in choosing their Internet access services.
- 4 On 4 February 2002, IDA published a consultation paper that summarised IDA's assessment of the current interconnection charging model and proposed three alternative models for comments. IDA invited the public to submit their views on the issues. At the close of the consultation period on 30 April 2002, IDA received four responses. The respondents were: Singapore Telecommunications Ltd (SingTel); MobileOne (Asia) Pte Ltd (M1); StarHub Pte Ltd (StarHub); and Pacific Internet Ltd (Pacific Internet). Each respondent preferred a different model from the others.

IDA'S CONSIDERATION OF COMMENTS RECEIVED

- 5 The following are IDA's views on the key comments made by the respondents:

The current model does/does not over-compensate the terminating fixed network operator

- 6 StarHub disagreed that the network elements and their associated costs required to connect an Internet dial-up call would be lower than those required for a normal telephone call. SingTel, on the other hand, asserted that a terminating fixed network operator that delivers Internet dial-up traffic to an IASP would use at most a single switch, as there would be little or no transmission cost being incurred if the IASP is co-located with the fixed network operator. The best evidence to illustrate that the current model over-compensates terminating fixed network operators is that the latter are prepared to share their call termination revenue with IASPs. This is also demonstrated by fixed network operators in the US, New Zealand and UK.

IDA's views: If Internet dial-up traffic is routed efficiently, the network elements and associated costs required should be lower than those incurred to connect a usual telephone call. Therefore, the current model appears to allow the terminating fixed network operators to receive revenue in excess of the efficient cost of terminating traffic, thereby creating an opportunity for arbitrage.

A change to any of the other models will kill "free" Internet services and force IASPs to connect directly to SingTel

- 7 StarHub asserted that all the alternative models proposed by IDA would make it unviable for IASPs to offer "free" Internet services. This would lead to costlier Internet access plans for consumers, and thus does not serve consumers' interests. SingTel disagreed and argued that a change to an alternative model would not necessarily result in the abolition of "free" Internet access as IASPs may explore other business models to compete for subscribers (e.g. based on a desirable mix between advertising revenue and subscription fees). Pacific Internet viewed that a

move to any other model effectively forces the IASPs to connect directly to SingTel.

IDA's views: IDA's role is to ensure that there is a level playing field and that the interconnection in place is the most economically and technically efficient so that sustainable competition can flourish. Consequently, consumers will gain from a wider choice of services at competitive prices. Free Internet access service in itself is not an end goal for IDA. IDA's review therefore focuses on whether the current interconnection charging model is efficient and fair to all players.

Preference for the Sender-Keeps-All (SKA) model

- 8 Under a SKA model, the originating fixed network operators will not have to pay the terminating network operators call termination charges. There will also be no payment from the terminating fixed network operator to the originating fixed network operator. Each party will keep the revenue from their directly-connected end-users and IASPs respectively.
- 9 SingTel preferred the SKA model, as it felt that the model accurately reflects the responsibilities of the parties involved for the carriage of Internet dial-up calls. StarHub and Pacific Internet however, felt that with SingTel's dominance of the local access network, the traffic volumes for Internet dial-up calls would be acutely skewed, i.e. traffic flow would mostly be from SingTel to other terminating fixed network operators, such as StarHub. Therefore, the SKA model would not be feasible given that the basic premise of a SKA model is symmetry in traffic.

IDA's views: The adoption of a SKA model will not be fair, given Singapore's current imbalance in the amount of Internet dial-up traffic exchanged between the fixed network operators. Further, the SKA model will over-compensate the originating fixed network operators. This is because the originating fixed network operators will be collecting retail local telephone charges for Internet dial-up calls, and yet need not make a corresponding payment (i.e. a termination charge) to terminating fixed network operators to terminate such calls to IASPs. Thus, to address the over-compensation issue, there may be a need to differentiate the charges for data calls (such as Internet dial-up) from voice calls based on the

telephone numbers that end users dial. This is however not a viable long-term solution¹ especially with the convergence of voice/data type traffic.

Preference for the Transit Model, with modification

- 10 Under a Transit Model, Internet dial-up traffic continues to be treated as call terminating traffic. However, to address the issue of possible over-compensation to the terminating fixed network operators, the charges payable by originating fixed network operators will be based on transit charges, rather than the higher termination charges which are intended for end-to-end fixed network telephone calls. This is in view that fewer network elements will be required to connect an Internet dial-up call to an IASP, against those required for a fixed line phone-to-phone call. The role of the terminating fixed network operators will thus be deemed to be only limited to transiting traffic between originating fixed network operators and IASPs. As such, transit charges are better proxies of the costs of interconnection by accounting only for network elements utilised by the terminating fixed network operators for connecting Internet dial-up calls sent from the originating fixed network to the IASPs.

- 11 MobileOne was of the view that the Transit Model would be the most appropriate model. However, MobileOne suggested that the IASP should compensate the originating network operator for the transit charges incurred by the latter. While Pacific Internet did not reject the Transit Model, it wanted further details on how the transit charges would be computed before commenting further on the model. StarHub rejected the Transit Model as a “quick fix” solution that would result in the originating fixed network operator being over-compensated. SingTel supported the Transit Model but pointed out that the implementation issues would be more difficult than those under the SKA model.

IDA’s views: The advantage of the Transit Model is that it addresses the current arbitrage potential by reducing the inter-operator charges payable by the originating fixed network operator to the terminating fixed network operator for Internet dial-up calls. Here, the inter-operator charge payable will be a transit charge rate that could better reflect the actual cost incurred for terminating such calls. However, the originating

¹ Even if the operators’ current billing and interconnect systems could cater for such a functionality.

fixed network operator will stand to gain since it will still be collecting the full retail local call charges for these Internet dial-up calls from customers but pay only a lower inter-operator transit charge to the terminating fixed network operator.

Preference for the Originating Access Model (OAM)

- 12 Under an OAM, Internet dial-up traffic is considered as call originating traffic, i.e., similar to other origination services such as IDD, 1800 toll-free, 1900 premium and 15xx services. In other words, the originating fixed network operator will be paid originating charges by the terminating fixed network operator who will in turn, recover such charges from the IASPs it hosts. This is the arrangement today for other services such 1800 toll-free calls and IDD calls.
- 13 None of the respondents indicated support for the OAM model. Difficulties cited include the complexity and high costs involved in the implementation, and the need for IASPs to enter into individual commercial arrangements with originating and terminating fixed network operators.

IDA'S DECISION

- 14 IDA's assessment is that each of the four interconnection charging models (including the existing one) has its shortcomings and implementation difficulties. This is complicated by the uncertainty surrounding the market for narrowband Internet dial-up services versus that of broadband access services, i.e., whether it will be worthwhile making a costly migration if it is envisaged that the narrowband Internet dial-up services market will eventually be overtaken by broadband, which will be unaffected by the interconnection charging model adopted. The lack of a "best practice" solution is also evident internationally, as a variety of models, including our existing model, are adopted by other countries. IDA's task is therefore to select a solution where the cost of implementation will at least be commensurate with the likely benefits, and at the same time, imposes the least inconvenience to service providers and end users.

- 15 Having considered all the factors and comments received, IDA's decision is to **retain the existing interconnection charging model** for the conveyance of Internet dial-up traffic between fixed network operators for the following reasons:
- a) None of the other models offers substantial improvements or benefits over the current model. Although in IDA's opinion, the OAM is most consistent with our Interconnection and Access Framework, it is envisaged that the implementation costs of switching to such a model (such as changes to the billing system, public education, etc) will likely outweigh the associated benefits;
 - b) For consistency, the interconnection charging model will also need to be changed for other similarly situated services (e.g., corporate managed data networks). The confusions that could arise and the cost of the migration exercise, are likely to outweigh the benefits of making the changes; and
 - c) Maintaining the status quo will not place the originating network operators at a disadvantage. Although the terminating fixed network operators that hosts IASPs will receive revenue that is likely to exceed the efficient cost of terminating Internet dial-up traffic, IDA believes that the originating fixed network operators are sufficiently compensated by the retail local call charges it currently collects for Internet dial-up calls.
- 16 IDA thanks all respondents for their comments and will continue to monitor market developments in this area. All comments from the respondents to the consultation paper can be found on IDA's website at www.ida.gov.sg under the Policy & Regulation section.