

INTERCONNECTION CHARGING MODEL FOR INTERNET DIAL-UP TRAFFIC

Consultation Paper



4 February 2002

1 INTRODUCTION

1.1 Currently, the Internet dial-up traffic is being treated as call terminating traffic in interconnect terms i.e. when subscribers dial-up over the fixed telephone line to access their Internet Access Service Providers' (IASPs) services, the connection of such calls are treated the same as fixed network phone-to-phone local calls¹. In a single fixed network operator environment, where all the IASPs are connected to the same fixed network (see Figure 1), Internet dial-up calls are treated as intra-network calls, and no inter-operator interconnection payments would arise. Instead, the IASPs would simply pay the fixed network operator for connecting their modem pools to the fixed network, and collect only subscription charges from their dial-up service subscribers. The dial-up service subscribers will separately pay the fixed network operator time-based local telephone call charges. However, if the IASPs offer toll-free Internet dial-up services, the IASPs will pay for toll-free lines and their subscribers will not need to pay the time-based telephone call charges.

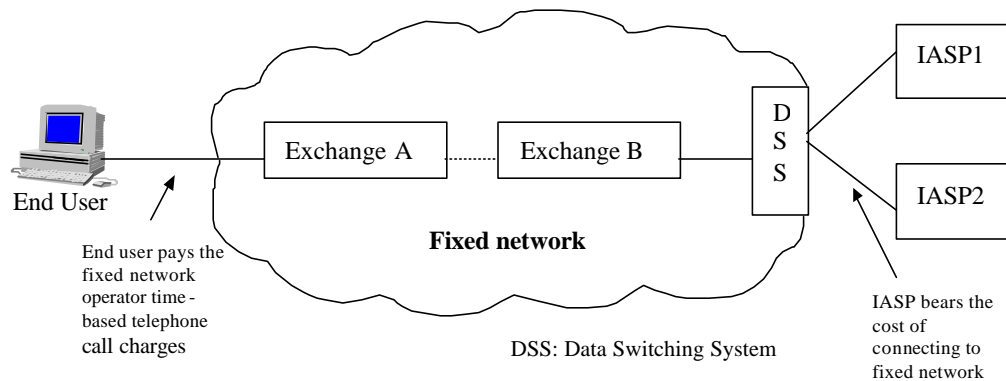


Figure 1: IASPs connected to a single fixed-network

1.2 In a multiple fixed network environment however, the IASPs may choose to be hosted by a fixed network different from that of their dial-up subscribers. In this case, inter-operator payment would arise between the two fixed network operators, for connecting the calls between the Internet dial-up service subscribers on one network and their IASP on another network. This is illustrated in Figure 2, where an Internet dial-up service subscriber connected to fixed network operator A dials into an IASP that is hosted by

¹ This is different from fixed-mobile phone network interconnection in view that mobile phone networks today operate on Mobile Party Pay retail charging system i.e. the terminating mobile phone operator charges its end users for incoming calls.

fixed network operator B. Fixed network operator A collects local telephone call charges from its end users, out of which it then pays fixed network operator B for “terminating” the call to the IASP. A also pays for the interconnect links to B.

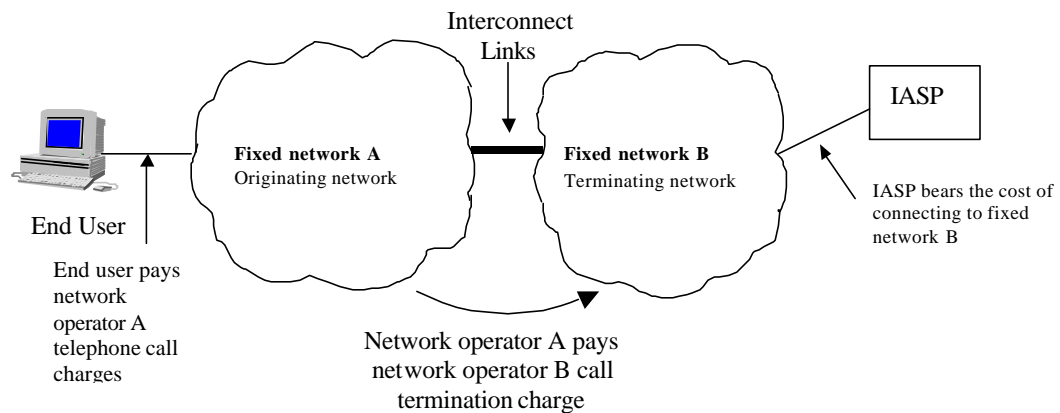


Figure 2: Interconnection charges in a multiple fixed-network environment

2 RATIONALE FOR REVIEW

2.1 Following the full liberalisation of the telecommunication market, it is timely to review whether the current arrangement of treating Internet dial-up call traffic as call terminating traffic is still appropriate in a multi-operator, multi-network competitive environment. IDA’s 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. Various considerations arise as outlined below:

Over-compensation to fixed network operators hosting IASPs

2.2 The network elements, and their associated costs, required to connect an Internet dial-up call to an IASP are actually fewer/lower than those required for a normal fixed-line phone-to-phone call. Therefore, the current inter-operator charge based on the call termination model (which is computed based on the network elements used for a fixed-line phone-to-phone call) for terminating Internet dial-up traffic, *over-compensates* the fixed network operators who host the IASPs. As a result of this arrangement, we consider that there is a potential for “arbitrage”, as fixed network operators could

offer incentives to IASPs to hub behind them by sharing with them the call termination revenue received from the originating fixed network operator. This is the basis for the interconnection revenue-sharing business model first seen in the UK, and it has led to the introduction of “free” Internet access services². Originating fixed network operators, to which the Internet dial-up subscribers are directly connected, would argue that they should not “over-compensate” the terminating fixed network operators hosting the IASPs³.

Non-alignment with Interconnection and Access Framework

- 2.3 The current Interconnection and Access Framework is based on the principle of cost causality. This requires a network operator to be responsible for bearing interconnection and access charges when its customers, directly connected to another network, use that latter network to access the services hosted on the former operator’s network. Internet dial-up calls can be considered to be calls made to access a service (in this case, Internet access service), in the same way as calls made to access International Direct Dial (IDD), 1800 toll-free or 1900 premium services, rather than fixed-line phone-to-phone local calls, which are treated as call terminating traffic. Under the Interconnection and Access Framework, calls made to access services such as IDD, 1800 toll-free and 1900 premium services are classified as **call originating traffic**. In a call origination scenario, fixed network operator B would pay fixed network operator A call origination charges for allowing the latter’s directly-connected customers (“access customers”) to access services hosted in the former’s network (see Figure 3). The responsibility of charges is derived from the principle of cost causality where fixed network operator B, who hosts the services, is deemed to have *caused* fixed network operator A to incur costs, to connect network operator A’s access customers to the services hosted by B.

² Free from Internet subscription, but users still have to pay the time-based telephone charges.

³ Notwithstanding the fact that they are collecting the full time-based local telephone charges for Internet dial-up calls by their fixed line subscribers.

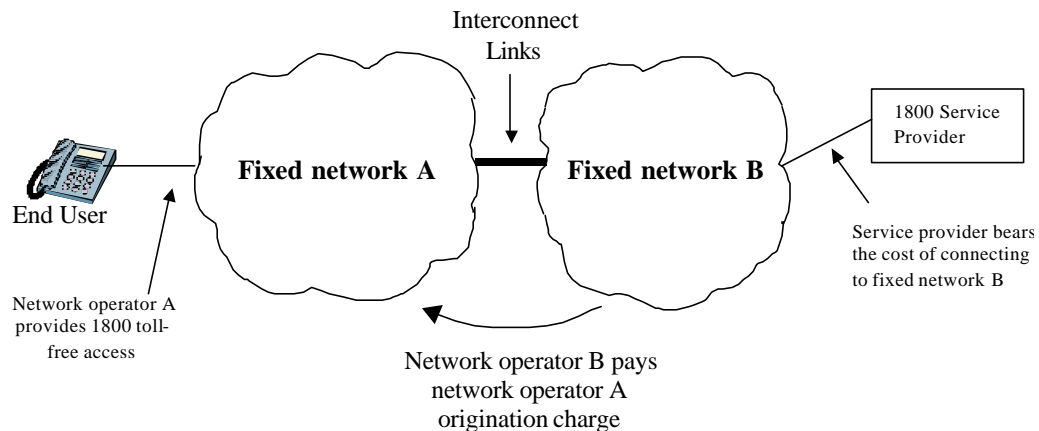


Figure 3: Interconnection charges payment for access to 1800 toll-free service under a call origination scenario

- 2.4 In addition, with the treatment of Internet dial-up traffic as call terminating traffic, the costs of the interconnect links between the fixed-networks to convey the dial-up traffic are fully borne by the originating network operator. This practice again deviates from the principle of cost causality since the party who provides the Internet services (thereby causing the incurrence of costs) does not bear the underlying costs of the interconnect links.

Question: *IDA welcomes comments on the need for a review of the current interconnection charging model for inter-network conveyance of Internet dial-up traffic. Is the current model still appropriate in the new multi-network, multi-operator competitive environment, and why? Are there other reasons why the current model should, or should not be changed? To what extent do we have to consider the advent of mobile Internet, i.e. should we consider a model that caters for IASPs hosted by a mobile network? Are there other issues that we should take note of?*

3 ASSESSMENT AND POSSIBLE APPROACHES

- 3.1 To address the existing situation and associated issues, IDA has considered 3 possible models:

Originating Access Model

- 3.2 Under this model, Internet dial-up traffic is considered to be call originating traffic, similar to other origination services such as IDD, 1800 toll-free and 1900 premium services (see paragraph 2.3). In this case, the fixed network B, where the service is hosted, is deemed to have caused the originating fixed network A to incur costs to connect its access customer to the service, and therefore has to be responsible for such costs. As illustrated in Figure 4 below, fixed network operator B should now compensate fixed network operator A for an Internet dial-up call instead.

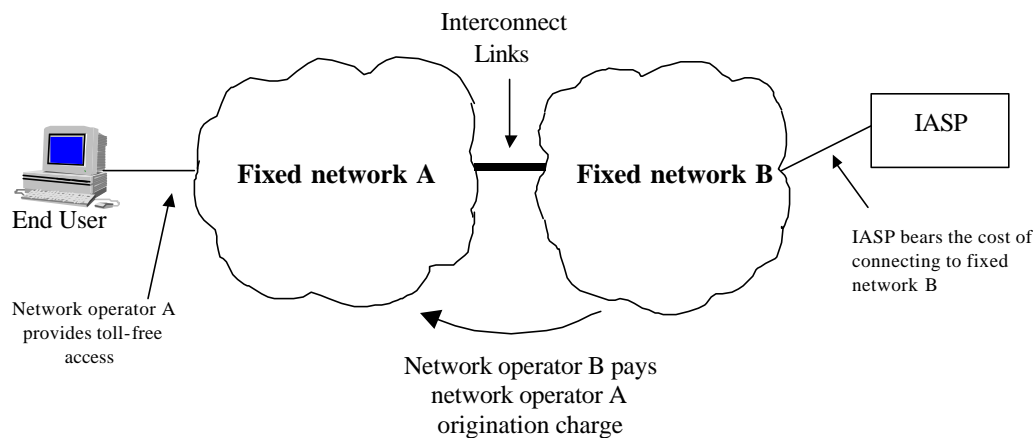


Figure 4: Interconnection charges payment for inter-network Internet dial-up traffic under a call origination scenario

- 3.3 The issues arising from adopting this model are:
- Inter-operator payments i.e. call origination charges, will reflect the underlying fixed networks costs incurred. This is because the fixed network elements used for originating Internet dial-up calls to an IASP's services are generally similar to those for originating voice calls to other services such as IDD, 1800 toll-free and 1900 premium services.
 - For end users, because the originating fixed network operator A would have been compensated by the terminating fixed network operator B for its origination costs, an implication would be that Internet dial-up calls (as with calls to 1800 toll-free/1900 premium services and IDD services) should be toll-free, otherwise there will then be over-compensation to the originating fixed network operator.

- c) With the flow of payment between the originating and terminating fixed network operators reversed under the Originating Access model, the terminating fixed network operator B may now have to bear 3 cost elements: *origination charges* to be paid to the originating fixed network operator; *network costs* to connect the call from originating fixed network operator to IASP (this may be deemed as transit costs); and the *cost of the interconnect links* between the two fixed networks (see Figure 5 below). As operator B is likely to pass on these costs to the IASPs whom it hosts, the operating costs of IASPs will likely be increased. The IASPs may also pass on the costs to its subscribers.

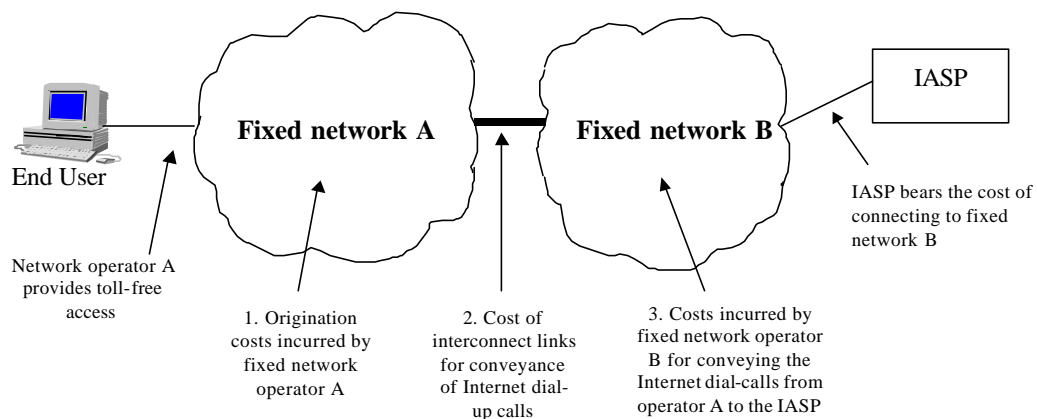


Figure 5: Cost elements under a call origination scenario

- d) End users may see an end to the “free” Internet access services offered by the IASPs. This is because there will be no call termination revenue for the terminating fixed network operator to share with the IASPs. This may not be a big concern today as a number of IASPs are already offering competitive unlimited access or flat pricing schemes.

Question: *IDA welcomes views and comments on the issues raised above. Are there other issues that should be considered? How should these be addressed under the Originating Access Model?*

Sender-Keeps-All (SKA) or Bill-and-Keep Model

- 3.4 This model allows the originating fixed network operator to keep the local telephone call charges paid by their access customers for inter-network Internet dial-up calls, without having to make a corresponding payment to the terminating fixed network operator. Similarly, the terminating fixed network operator does not need to pay call origination charges to the originating fixed network operator. It is expected that the cost of the interconnect links between the two fixed networks should then be borne equally between the two operators.
- 3.5 While this model seems relatively simple to administer, compared to the first model since there will be no inter-operator interconnection charges involved, the following issues that arise should be considered:
- a) It will only be feasible, and fair to either interconnecting party, when Internet dial-up traffic volumes between two interconnecting network operators are nearly balanced in both directions. This is not the case in the current telecommunication market where the incumbent operator dominates the market share of the local access market. Nevertheless, as the market further develops, it is possible for SKA arrangements to be achieved via commercial agreements between the players.
 - b) The model does not address the issue of network costs incurred by the terminating fixed network operator for connecting the Internet dial-up calls to the IASPs that it hosts. The terminating fixed network operator is likely to recover such costs from the IASPs, who may then decide to pass on the costs to its subscribers.
 - c) End users, as in the Originating Access model, may see an end to “free” Internet access services, given that the revenue-sharing arrangement between IASPs and fixed network operators will no longer be applicable.

Question: IDA welcomes views and comments on the issues raised above. Are there other issues that should be considered? How should these be addressed under the Sender-Keeps-All or Bill-and-Keep Model?

Transit Model

- 3.6 This model offers the least change from the existing arrangement. Under this model, the terminating fixed network operator is deemed to be a transit operator, since its function could be seen as one of merely conveying the Internet dial-up calls from one network to another, i.e. from the originating fixed network operator to the IASP. In view of the fact that fewer network elements are required to connect the Internet dial-up calls to an IASP, compared to those required to connect a phone-to-phone call, the associated transit charges are therefore better proxies of the network cost incurred by the terminating fixed network operator. Instead of paying the higher call termination charges, the originating fixed network operator will therefore pay the terminating fixed network operator the lower transit charges. This would therefore address the issue of over-compensation.
- 3.7 The issues arising under this approach are:
- a) A change to this model should provide minimal transition issues for the fixed network operators since payment flows between the fixed network operators remain unchanged.
 - b) Unlike the SKA model, it should address the transit network costs incurred by the terminating fixed network operators, while minimising any arbitraging potential by the terminating fixed network operators.
 - c) End users, as in the Originating Access and SKA models, may see an end to “free” Internet access services as the revenue-sharing arrangement between IASPs and terminating fixed network operators will no longer be applicable.

Question: *IDA welcomes views and comments on the issues raised above. Are there other issues that should be considered? How should these be addressed under the Transit Model?*

Question: *IDA seeks feedback on which of the above three models is the most preferred to replace the current interconnection charging model for inter-network conveyance of Internet dial-up traffic and why, and the implementation issues that*

should be considered. Are there other models that should be considered, and why?

4 INVITATION FOR COMMENTS

4.1 IDA would like to seek the views and comments of industry and the members of the public on the issues and approaches raised in this consultation paper. This will allow IDA to have a better understanding of the issues and the different needs and requirements of the various affected parties. It will also help IDA to assess, from a public interest perspective, the most appropriate interconnection model for inter-network conveyance of Internet dial-up traffic. The questions are summarized below:

- a) *IDA seeks views and comments on the need for a review of the current interconnection charging model for inter-network conveyance of Internet dial-up traffic. Is the current model still appropriate in the new multi-network, multi-operator competitive environment and why? Are there other reasons why the current model should or should not be changed? To what extent do we have to consider the advent of mobile Internet, i.e. should we consider a model that caters for IASPs hosted by a mobile network? Are there other issues that we should take note of?*
- b) *IDA seeks views and comments on the issues raised with regards to the Originating Access Model and whether there are other issues arising and how these may be addressed.*
- c) *IDA seeks views and comments on the issues raised with regards to the Sender-Keeps-All or Bill-and-Keep Model and whether there are other issues arising and how these may be addressed.*
- d) *IDA seeks views and comments on the issues raised with regards to the Transit Model and whether there are other issues arising and how these may be addressed.*
- e) *IDA seeks feedback on which of the above three models is the most preferred to replace the current interconnection charging model for inter-network conveyance of Internet dial-up traffic and why,*

***and the implementation issues arising that should be considered.
Are there other models that should be considered and why?***

- 4.2 Respondents are also invited to comment on any other issues not covered in this consultation paper but which are considered to be relevant in this review.
- 4.3 IDA will consider inputs submitted and make its policy decision thereafter. IDA will target to announce its policy decision by the second quarter of 2002.
- 4.4 All views and comments should be submitted in writing and in both hard and soft copy (Microsoft Word format), and should reach the IDA by **12 pm, 12 April 2002**. 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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- 4.5 IDA reserves the right to make public all or parts of any written submissions 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 when disclosing the information submitted.
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