

**Determination under
Section 36A of the Telecommunications Ordinance of the
Terms and Conditions of Interconnection for
International Call Forwarding Services**

Preliminary Analysis

29 August 2003

Introduction

In accordance with the “Procedures for Making Determination on the Terms and Conditions of Interconnection under Section 36A of the Telecommunications Ordinance” (the “Procedures”) issued by the Office of the Telecommunications Authority (“OFTA”) in October 1995 and revised on 27 September 2001 as well as the Notice of the Telecommunications Authority (“TA”) issued on 28 May 2003, the Interconnection Determination Committee (“IDC”) has considered all written submissions from the parties to this Determination. The TA now issues this Preliminary Analysis to set out the preliminary views of the IDC on the terms and conditions of interconnection, the reasons for the preliminary views, and how the Determination is to proceed.

The Request for Determination from 4 ETS Operators and the Telecommunications Authority’s Intention to Extend the Parties and Scope of the Determination

2. On 11 June 2002, the TA issued a Statement entitled *Charging Arrangements for International Call Forwarding Services* (“11 June Statement”) setting out his views on the interconnection charging arrangements for International Call Forwarding Services (“ICFS”). According to the 11 June Statement, an access charge should be paid by the External Telecommunications Service (“ETS”) operator to the Mobile Network Operator (“MNO”) for a call forwarded by the MNO to the ICFS. Likewise, an origination charge should be paid by the Fixed Telecommunications Network Services (“FTNS”) operator to the MNO for a call forwarded by the MNO to a Personal Number (“PN”) which is then forwarded to an overseas number for

the provision of ICFS.

3. On 12 July 2002, the TA issued a Notice (“12 July Notice”) stating his intention to initiate a determination pursuant to section 36A(2) of the Ordinance to determine the level of charges and other relevant terms and conditions in providing interconnection services necessary for the provision of ICFS. Among the representations received, a number of operators submitted that the TA has not allowed sufficient time for the concerned parties to conduct commercial negotiations. Having considered the representations received, the TA issued a Statement¹ on 8 August 2002 (“8 August Statement”) and allowed two more months for commercial negotiations starting from the issue date of the Statement. The TA stated that he might consider re-activating the determination process if there was insufficient progress in the commercial negotiations after this period of time.

4. In October 2002, the TA requested the MNOs, FTNS operators and ICFS providers to report the progress of commercial negotiations on ICFS. Based on the submissions, the TA noted that only a limited number of commercial negotiations have been conducted and no commercial agreement had been reached so far.

5. In the submissions, some issues in relation to the implementation of the charging arrangements had been raised. Many operators submitted that they would not be able to conclude any commercial agreements until these implementation issues were resolved. In light of the large number of concerned parties, some operators foresaw that it might not be possible to resolve these implementation issues through individual bilateral negotiations. In order to resolve these issues as soon as possible, the TA issued a technical proposal on 22 November 2002 to the concerned parties proposing solutions with a view to facilitating commercial negotiations. The concerned parties were invited to submit comments on the proposal. Having considered the submissions, the TA issued a Statement² on 25 January 2003 (“25 January Statement”) which set out his views on how to resolve the implementation issues of the charging arrangements of ICFS.

¹ The TA Statement entitled “Charging Arrangements for International Call Forwarding Services – Intention to Proceed with a Determination Pursuant to Section 36A(2) of the Telecommunications Ordinance”

² The TA Statement entitled “Implementation Issues on the Charging Arrangements of International Call Forwarding Services”

6. On 4 March 2003, 4 ETS operators, namely 3togo.com Limited, Asia Telecom Limited, ICare.com Limited and Zone 1511 Limited, submitted a request for determination to the TA. The 4 ETS operators informed the TA that they were unable to reach agreement with the MNOs. They requested the TA to make a determination on terms and conditions of interconnection between their ICFS and the MNOs.

7. If the request made by the 4 ETS operators was to be accepted, the parties and the scope of the determination would be limited to these 4 ETS operators and the interconnection arrangements pertinent to this request only. Furthermore, ETS operators other than the 4 requesting ETS operators would not be given an opportunity to make submissions to the TA since they were not parties to the determination. A determination based on the request made by the 4 requesting ETS operators would be confined in applicability and scope.

8. Given the public interests involved in the efficient provision of ICFS, the TA was minded to extend both the parties and the scope of the determination. In the expanded determination, the TA proposed to determine the terms and conditions applicable to the different interconnection arrangements as described in the 25 January Statement and such terms and conditions should bind the following parties which are involved in the delivery and provision of ICFS:

- ICFS providers (ETS operators and FTNS operators providing ICFS)
- MNOs or Mobile Virtual Network Operators (“MVNOs”)
- FTNS operators involved in the delivery of ICFS

Legal Basis on which the Determination is to be Made

9. The TA is empowered under the Telecommunications Ordinance to determine the terms and conditions of interconnection and to issue directions in relation to interconnection under sections 36A and 36B respectively.

10. The TA considers that the matters under disputes fall within the scope of section 36A of the Telecommunications Ordinance because the matters

relate to interconnection to and between telecommunications systems or services licensed under section 7 of the Telecommunications Ordinance.

11. The TA in deciding to proceed with the Determination has taken into account the following considerations:

(a) The Government's policy objectives for the telecommunications industry

ICFS allows customers to receive mobile incoming calls made to their Hong Kong mobile numbers while they are not in Hong Kong. As such, ICFS can be seen as an alternative choice of telecommunications services other than the mobile roaming services. Interconnection at reasonable costs is necessary for this alternative service to be provided at reasonable prices. As such, a determination on the terms and conditions of the interconnection necessary for ICFS is in line with one of the Government's policy objectives for the telecommunications industry, which is to provide the widest range of quality telecommunications services to the community at reasonable prices.

(b) Consumer interests

Consumers demand more choices of telecommunications services, and ICFS is considered by many consumers as an alternative to mobile roaming service. It is therefore in the interest of consumers to ensure that interconnection necessary for ICFS is provided at reasonable costs so that ICFS providers can provide an efficient and satisfactory service to the public at reasonable prices. As long as the terms and conditions of interconnection remain undecided, end-users will not be sure of the quality of ICFS they can expect and the charges of such services. It is doubtful whether consumers can fully enjoy the benefits of ICFS.

(c) The nature and extent of competition among the parties to the interconnection concerned and their respective abilities to compete with each other fairly

As long as the terms and conditions of interconnection remains undecided, some MNOs might make use of this as a reason for not providing efficient interconnection for ICFS traffic (albeit MNOs are under a licence obligation of providing satisfactory services). This will seriously affect the quality of ICFS, which makes ICFS unable to compete fairly with the mobile roaming services.

(d) Such other matters as the TA considers appropriate in the particular circumstances of the case such as:

♦ Public Interests

Taking into account the following factors, the TA considers that it is in the interest of the public to proceed with the Determination:

- The request for determination submitted by the 4 ETS operators confirmed the difficulties in concluding commercial agreements among the MNO/MVNOs, ETS operators and FTNS operators.
- MNOs, MVNOs, ETS operators and FTNS operators would be involved in the commercial negotiations. Numerous bilateral negotiations between operators would inevitably lead to duplication of resources and undue delay in the provision of a satisfactory ICFS. It is therefore in the interest of public to have one single determination setting out the interconnection arrangements and relevant terms and conditions associated with the interconnection for the provision of ICFS.
- Uncertainty surrounding the provision of ICFS impedes the provision of satisfactory and efficient ICFS and discourages new comers to join in the field. Furthermore, the end-users will not be sure of the quality of ICFS they can expect and the charges of such services. It is difficult

for customers to build up confidence in ICFS and this would have an undesirable impact on the entire industry.

- ♦ The efforts made by the operators to secure an agreement with each other within a reasonable time

Fourteen months have elapsed since the issue of the 11 June Statement but no commercial agreements have been concluded so far. The TA considers that the operators have made sufficient effort in trying to conclude an agreement.

- ♦ The chance for the parties to reach a commercial agreement within a reasonable time if the negotiations are to be continued

The positions of MNOs and ICFS providers are too far apart. The charge proposed by some MNOs is around 20 times higher than the charge proposed by some ETS operators. Therefore, the TA considers that the chance for the parties to reach commercial agreement is very slim.

Scope of Determination

12. Having considered the representations made by the parties on the TA's intention to proceed with the Determination, the TA defined the scope of the Determination as follows:

- The level of access charge and origination charge
- Relevant terms and conditions, including the technical and implementation arrangements for the provision of interconnection services necessary for ICFS

Submissions Received

13. The TA has received submissions from the following parties:

- Asia Telecom Limited ("Asia Telecom")

- CM Tel (HK) Limited (“CM Tel”)
- Consumer Council
- Hong Kong Broadband Network Limited (“HKBN”)
- Hong Kong CSL Limited (“HKCSL”)
- Hutchison Global Communications Limited (“HGC”)
- Hutchison Telephone Company Limited (“Hutchison”)
- New World PCS Limited (“NWPCS”)
- New World Telecommunications Limited (“NWT”)
- PCCW-HKT Telephone Limited (“PCCW-HKTC”)
- Peoples Telephone Company Limited (“Peoples”)
- SmarTone Mobile Communications Limited (“SmarTone”)
- SUNDAY o/b Mandarin Communications Limited (“Sunday”)
- Wharf T&T Limited (“WT&T”)

14. The Consumer Council is not a party to the Determination, but has written to the TA providing some views on the Determination. Under section 6A(3) of the Telecommunications Ordinance, the TA, in exercising powers under the Ordinance, must have regard to the relevant considerations. The views expressed by the Consumer Council have been considered in so far as they are relevant to the Determination.

Charging Arrangements for Interconnection Necessary for the Provision of ICFS

The Background Facts

15. On 9 February 2002, the OFTA issued a consultation paper entitled “Charging Arrangements for International Call Forwarding Services”. Having duly considered the submissions, the TA issued the 11 June Statement, according to which, an access charge should be paid by the ETS operator to the MNO for a call forwarded by the MNO to the ICFS and an origination charge should be paid by the FTNS operator to the MNO for a call forwarded by the MNO to a PN which is then forwarded to an overseas number for the provision of ICFS.

The Parties' Submissions

16. FTNS operators argued that MNO/MVNO should not be entitled to the access charge or origination charge for forwarding ICFS traffic due to the following reasons:

- There is practically no cost difference for MNO/MVNO in forwarding a call to a local or overseas destination.
- It is the MNOs' commercial decision to provide the call forwarding service to their mobile customers on a flat-rate basis. As such, MNOs have either been paid for the call forwarding service or decided to absorb the cost of call forwarding service as part of the operating costs of the mobile services.
- The Consumer Council queried the rationale for an ICFS user (who is also a mobile subscriber and has already paid for the normal call forwarding service) to pay for the access/origination charge.

17. HKCSL disagreed with FTNS operators and pointed out that an operator must pay for the costs it causes another operator to incur when providing an interconnection service.

The IDC's Views

18. The IDC considers that even though the MNOs have charged their customers (on a flat-rate basis or timed basis) for the call forwarding service, it does not automatically follow that that charge has covered the call forwarding service to all numbers. An analogy is found in the fixed telephone line service. Although the customer has paid a flat charge for the telephone line which covers the costs of an average number of calls per month made to numbers of other fixed line end-users, the flat charge does not cover calls to value-added service providers (e.g. Internet service providers), external telecommunications service ("ETS") providers and mobile customers. The costs of calls to the latter three categories of called parties are separately covered by the so-called "PNETS charge", "Local Access Charge ("LAC")" and fixed/mobile interconnection charge paid by the value-added service providers, ETS providers and MNOs to the fixed network operators respectively. In deciding whether it is fair for an interconnection charge to be

payable separate from the charges already levied on the customer for calls to ordinary numbers of end-users, regard should be made to the balance of the benefits between the interconnecting parties concerned in routing the calls. In general, the party deriving a benefit from the interconnecting service should pay the provider of the interconnecting service otherwise the provider would have no commercial incentive to provide the service.

19. The IDC is of the view that operators must pay for the costs they cause other operators to incur when interconnecting. Since ICFS providers rely on an interconnection service from MNO/MVNOs (in which the MNO/MVNOs forward the ICFS traffic from their mobile networks to the ICFS platform) in operating their services, ICFS providers must compensate MNO/MVNOs for the costs incurred. Furthermore, where interconnecting operators receive benefits from interconnection arrangements, the interconnecting operators should bear a reasonable share of the interconnections costs incurred in such arrangements. Since ICFS generates revenues to ICFS providers by making use of MNO/MVNOs' call forwarding service, ICFS providers should bear a reasonable share of the relevant costs incurred by MNO/MVNOs when interconnecting. This justifies the access/origination charge payable to MNO/MVNOs when the call is forwarded to the ICFS platform. Whether there is any cost difference in forwarding a call to local or overseas number is not a relevant argument. Further, it is not reasonable to discharge the ICFS providers' obligation to bear a reasonable share of the relevant interconnection costs incurred by MNO/MVNOs by simply saying that MNO/MVNOs have commercially decided to absorb the call forwarding costs since they charge on a flat-rate basis.

20. In fact, the ICFS users may not necessarily be double-charged for the call-forwarding service as mentioned by the Consumer Council, since the call forwarding charges they paid to the MNO/MVNOs have not covered the call forwarding service to ICFS. The mobile customers would not have been more "double-charged" for calls forwarded to ICFS than fixed line customers for calls to value-added service providers, ETS providers and mobile customers. Furthermore, it is the commercial decision of ICFS providers on whether to pass the access/origination charge to the ultimate users of ICFS. In view of the current market competition, the ICFS providers may choose to absorb the access/origination charge as the operating costs of ICFS or MNO/MVNOs may choose to further lower the charge of mobile call forwarding service to attract

new customers.

Calculation of the Access Charge and Origination Charge

The Background Facts

21. According to the 11 June Statement, “*the access charge or origination charge payable by the ICFS providers should be cost-based and preferably be determined by commercial negotiation. However, if the parties cannot agree on the level of charge, either party may request the TA for determination. The TA will determine the level of charge based on the net cost incurred by MNO in providing the call-forwarding service to the PN or ICFS.*”

22. To date, the parties have not been able to commercially agree on the charging principles, calculation methodology and the level of the access charge and origination charge.

Charging Principles

The Parties' Submissions

23. All the 6 MNOs advocated Fully Distributed Cost (“FDC”) as the charging principle for the determination of access charge and origination charge due to the following reasons:

- The fixed/mobile interconnections charges paid by MNOs when forwarding ICFS traffic are calculated with reference to FDC.
- Interconnection charges between FTNS operators and value-added service (“VAS”) providers are based on FDC.
- In view of the huge investment and operating costs incurred by MNOs in building and operating the mobile networks which provides the functionality of call forwarding to ICFS, it would be unfair if MNOs are not allowed to recover those costs on the basis of FDC from the ICFS providers.
- ICFS providers are in direct competition with MNOs on roaming services and it is therefore reasonable to compensate the MNOs

by interconnection charges based on FDC.

24. Taking a different view, HGC, NWT and WT&T supported Long Run Average Increment Cost (“LRAIC”) as the charging principle since the ICFS traffic only accounted for a small portion of the total mobile traffic and it does not involve arbitrary judgement of what kind of indirect costs should be included. PCCW-HKTC was also of the view that the interconnection charge should be based on incremental cost.

The IDC’s Views

25. Pursuant to section 36A(3B) of the Telecommunications Ordinance, the TA in determining the interconnection charges may select from among alternative costing methods what he considers to be a fair and reasonable costing method.

26. Under the current regulatory framework, Type I interconnection charges and Local Access Charge (“LAC”) are based on LRAIC with the inclusion of a proportionate share of common costs. As such, if LRAIC is to be adopted in this Determination, a proportionate share of relevant common costs should also be recovered in the access/origination charge.

27. FDC is typically adopted in circumstances where the interconnection service is provided to established competitors. The IDC subscribes to the MNOs’ view that since ICFS providers are in direct competition with MNOs on roaming services, it is fair and reasonable to compensate the MNOs by interconnection charges based on FDC. However, the IDC would like to emphasize that this Determination will only consider those costs which are relevant to the interconnection services necessary for the provision of ICFS.

| | |--------------------------| | Relevant Cost Components | |--------------------------|

The Parties’ Submissions

28. MNOs have provided a list of cost components they deem relevant for this Determination. The details of the cost components and MNOs’ substantiation will be given in the following paragraphs.

29. On the other hand, HKBN submitted that the access/origination charge should only consist of the cost of interconnection links and transiting costs. It objected any form of network costs proposed by the MNOs. PCCW-HKTC expressed a similar view that the relatively low volume of ICFS traffic would not increase the indirect costs of MNOs. As such, the access/origination charge should only include the mobile transit costs as well as the second leg of the fixed/mobile interconnection charge paid by the MNOs.

The IDC's Views

30. In accordance with section 36A(3B) of the Telecommunications Ordinance, the charges in a determination shall be based on the *relevant* reasonable costs attributable to interconnection. The IDC's preliminary view on the relevancy of the cost components submitted by MNOs will be given in the following paragraphs.

Cost of Capital

The Parties' Submissions

31. Based on MNOs' submissions, their cost of capital ranges from 18% to 40%.

32. PCCW-HKTC submitted that no cost of capital should be allowed since this would over-compensate the MNO/MVNOs and suffocate the ICFS business. WT&T expressed similar view that no cost of capital should be allowed since MNOs should have recovered their return on investments from their own customers through the mobile tariffs. Hutchison and SmarTone argued that cost of capital represents a reasonable return of investment and is generally accepted and adopted in all types of interconnection issues in Hong Kong.

The IDC's Views

33. The IDC agrees with Hutchison and SmarTone that cost of capital represents a reasonable return of investment and should be allowed in the calculation of the access/origination charge. As a matter of fact, cost of capital is allowed in all types of interconnection charges determined by the TA,

e.g. Type I interconnection charges, fixed/mobile interconnection charge, PNETS (public non-exclusive telecommunications service) charge and local access charge (“LAC”). The IDC will adopt a reasonable level of cost of capital to avoid over-compensation to MNO/MVNOs.

34. According to the 3G Information Memorandum, the TA is minded to allow a cost of capital of 20% in the determination of interconnection charges payable by MVNOs to 3G licensees. On the other hand, PCCW-HKTC as the fixed-line incumbent operator has been allowed a cost of capital of 15% in the determination of Type I interconnection charges, fixed/mobile interconnection charge and the PNETS charge. Since the business risk of 2G licensees is likely to be higher than that of the fixed-line incumbent operator but lower than that of 3G licensees, the IDC is of the view that the cost of capital to be adopted in the access/origination charge should be within the range of 15%-20%. The IDC therefore allows a cost of capital of 18%.

Costs of Mobile Switching Centre (“MSC”) and Home Location Register (“HLR”)

The Parties’ Submissions

35. All MNOs considered the depreciation of the capital costs, a return on capital employed and “associated network operating cost” of the MSC and HLR relevant. “Associated network operating cost” refers to the repair and maintenance costs directly related to the network components, staff costs of the engineering and technical operation departments supporting the network components in question, etc.

36. MNOs adopted different useful lives for depreciation of MSC and HLR. In the extreme case, one MNO considered that the net book value of the network equipment should be fully recovered in one year.

The IDC’s Views

37. The IDC considers it is logical to assume that the ICFS user would call forward his mobile number *in an unconditional mode* to his ICFS number when he wants to use the ICFS. Under the Call Forward Unconditional (“CFU”) scenario, an incoming call made to a mobile number will be first

delivered to the MSC and HLR. The HLR will then check the status of the mobile number (i.e. CFU in this scenario) and the number to which the call is to be forwarded (i.e. the ICFS number). The call will then be delivered from the HLR back to the MSC and finally to other networks via the outgoing trunks. As such, MSC and HLR should be considered relevant in the charge calculation.

38. The IDC annualizes the capital costs of MSC and HLR based on their useful lives and a cost of capital of 18% using the concept of annuity.

39. In assessing the asset lives for MSC and HLR, the IDC makes reference to the TA determination of Type I interconnection charges³, in which the switching equipment is depreciated over 10 years. The IDC considers that it is appropriate to depreciate MSC and HLR over the same time span in this Determination. In fact, two MNOs have adopted asset life of 10 years for MSC and HLR in their submissions.

40. Total costs of MSC and HLR, including the annualized capital costs and associated network operating costs, are divided by total MSC traffic to obtain the average network cost per minute. Since it would not be practical to determine different charge levels for different MNOs, the IDC having considered the range of the unit costs of the 6 MNOs proposes to use a weighted average cost of 4.6 cents per minute for all MNO/MVNOs in the determination of the costs of MSC and HLR.

Leased Line Rental between MNOs and FTNS operators

The Parties' Submissions

41. MNOs considered the costs relevant since the leased circuits are occupied when receiving and forwarding the call to ICFS number or PN. Most of the MNOs submitted that ICFS calls are carried by mixer trunks. In general, MNOs considered that the leased circuits between Radio Base Stations ("RBS") and the MSC, and those between MSC and FTNS operators, should be included in the access/origination charge calculation.

³ The TA Determination entitled "Determination under Section 36A of the Telecommunications Ordinance of the Terms and Conditions of Interconnection between PCCW-HKT Telephone Limited and Wharf T&T Limited" dated 27 February 2003.

The IDC's Views

42. The IDC agrees that the leased circuits between MSC and FTNS operators are relevant costs since the circuits are occupied when the call is forwarded from the mobile network to ICFS number or PN.

43. However, leased circuits between RBSs and MSC should not be considered. If a fixed line user (e.g. from FTNS(A) operator) makes a call to a mobile number (e.g. of MNO(B)), which has been forwarded to an ICFS number or PN, the call does not need to pass through the leased circuits between the RBSs of MNO(B). If a mobile user (e.g. from MNO(X)) makes a call to a mobile number (e.g. of MNO(Y)), which has been forwarded to an ICFS number or PN, the call also does not need to pass through the leased circuits between the RBSs of MNO(Y). However, MNO(X) may argue that the call has occupied the leased circuits between RBSs and MSC of its network before the call is delivered to MNO(Y). Since these costs are just part of the costs of MNO(X) to handle the call over the radio channels from the mobile user and have to be incurred by MNO(X) regardless of whether there will be any call forwarding function to be performed by MNO(Y), the IDC is of the view that these costs should not be considered as relevant in the charge calculation. In any case, the costs incurred by MNO(X) for originating the mobile call to MNO(Y) (where the call forwarding function is to be performed) has been recovered in the airtime charge paid by the mobile user of MNO(X).

44. In view of the fact that most of the ICFS traffic is carried by mixer trunks, the IDC considers it is more appropriate to calculate the average leased circuit cost per minute based on the total number of leased circuits linked to FTNS operators and the corresponding outgoing traffic. The IDC, having considered the range of the unit costs of the 6 MNOs, proposes to use a weighted average cost of 1.3 cents per minute in order to arrive at a single level of access/origination charge for the 6 MNOs.

Relevant Common Operating Costs

The Parties' Submissions

45. Five MNOs submitted that the access/origination charge should share

part of the costs of the common billing systems. They explained that the common billing systems would need to be utilized (after the enhancement and IT development work has been carried out on the existing billing systems) when they bill for the ICFS interconnection charges.

46. All MNOs considered the licence fee relevant for the charge determination. HKCSL explained the cost relevancy by saying that they would not be allowed to provide interconnection services if they had not paid the licence fees.

47. Five MNOs requested the TA to consider the costs of back-office support staff such as IT, finance and human resources, etc. HKCSL submitted that these resources are necessary to provide their basic services and it is therefore reasonable to allocate some of these resources to call forwarding service to ICFS numbers.

The IDC's Views

48. The IDC accepts the MNOs' arguments for supporting the relevancy of some of the common operating costs, namely the costs of the common billing systems, the licence fee and the costs of back office support staff. In line with the submissions from the majority of MNOs, the IDC would allocate the common operating costs to different network equipment based on the respective asset values. However, the access/origination charge will recover the share of common operating costs allocated to MSC and HLR only. The IDC, having considered the range of the unit costs of the 6 MNOs, proposes to use a weighted average cost of 0.9 cent per minute in order to arrive at a single charge level for the 6 MNOs.

Additional Costs for ICFS

The Parties' Submissions

49. Since the MNOs charge the mobile call forwarding service mostly on a flat-rate basis regardless of the number to which the call is forwarded and the call duration, the MNOs explained that their existing billing systems are not capable to bill the ICFS traffic on a per-minute basis. In order to capture the ICFS traffic out of the total call forwarding traffic and bill on a per-minute

basis, the MNOs submitted that additional costs including maintenance have to be incurred on IT infrastructure enhancement on server and storage as well as IT development cost for billing.

50. MNOs opined that manpower resources of 4-5 staff are required to support ICFS operation, billing and metering.

The IDC's Views

51. The IDC subscribes to the MNOs' submission that additional hardware enhancement and software development work is required for enabling the billing of ICFS traffic on a per-minute basis. However, only those development costs which are directly relevant and attributable to the billing of ICFS traffic should be considered in the charge calculation. In order to ascertain the relevancy of the additional costs submitted by MNOs, the IDC performed site visits to MNOs in late July and early August 2003.

52. The IDC noted that different MNOs adopt different approaches to capture ICFS data for billing purpose. Some MNOs make use of the ICFS individual call records, which cover the call destination and duration information and are available through the built-in capture function of the mobile switch. The individual call records for each call forwarded by the mobile switch are captured, and those calls forwarded to ICFS are singled out by subsequent data processing through an IT application. The total traffic forwarded to different ICFS number ranges is thereby compiled for generating the ICFS bills. Having evaluated all the different approaches adopted by the MNOs, the IDC considers that this is the most efficient approach to capture ICFS data for billing purpose and thus adopts the cost figures of this approach in order to estimate the level of the additional costs required. The IDC considers that 5 years are appropriate to amortize the capitalized IT costs. The capital costs of IT are annualized based on 5 years and cost of capital of 18%.

53. Based on the observation from the site visits, the IDC agrees that additional manpower resources are required to support ICFS operation, billing and metering, e.g. to transfer the call records from the exchange to the IT department server, to update the ICFS number ranges upon the receipt of change notification, to support and monitor the operation of the IT application

for ICFS billing (e.g. to retrieve the calls forwarded to ICFS numbers on a daily basis and to compile the ICFS traffic, etc.), to generate ICFS bills on a monthly basis, to handle bill enquiries and account management, etc. However, the IDC disagrees with the MNOs' claim that 4-5 staff are required. In fact, the manpower requirement should be expressed in terms of the "full-time-equivalent" concept, instead of the number of staff involved in the ICFS process. Since many of the aforementioned tasks are computerized and fully automatic, the IDC considers that 1 full-time equivalent is sufficient to monitor the operation of the computerized processes and handle billing enquiries and account management.

54. The IDC is of the view that the total additional costs for ICFS should be recovered from ICFS traffic only since these costs are incurred solely for ICFS purpose. The additional costs per ICFS minute is calculated at 3.5 cents per minute.

Outpayment of Fixed/Mobile Interconnection Charges

The Background Facts

55. Under different call scenarios, MNOs may need to incur different levels of outpayment of fixed/mobile interconnection charges. In order to determine the amount of outpayment of interconnection charges under different call scenarios, the TA has invited the parties to make submissions for the following call scenarios:

- (a) Call forwarding by MNO/MVNO to ICFS provided by ETS operators via "305-309" numbers
 - (i) if the MNO/MVNO is directly interconnected with the ETS operator
 - (ii) if the MNO/MVNO is indirectly interconnected with the ETS operator via one FTNS operator which hosts the ETS operator
 - (iii) if the MNO/MVNO is indirectly interconnected with the ETS operator via one FTNS operator which hosts the ETS operator and one transiting FTNS operator
- (b) Call forwarding by MNO/MVNO to level "8" PN provided by

- FTNS operators, which is then forwarded to an overseas number
- (i) if the MNO/MVNO is directly interconnected with the FTNS operator providing the PN
 - (ii) if the MNO/MVNO is indirectly interconnected with the FTNS operator providing the PN via one transiting FTNS operator

The Parties' Submissions

56. Since direct interconnection does not exist at this moment, HKCSL suggested that the scope of determination should not cover direct interconnection between MNOs and ETS operators.

57. Four MNOs were of the view that the access charge should include the component of two fixed/mobile interconnection charges (plus a transit charge in case of indirect interconnection via 2 FTNS operators), while the 2 MNOs opined that only one fixed/mobile interconnection charge (plus a transit charge in case of indirect interconnection via 2 FTNS operators) should be recovered through the access/origination charge. Some MNOs submitted that one more transit charge should be included if the call is originated from an FTNS operator which is not directly interconnected with the MNO, i.e. via another FTNS operator. Four MNOs proposed to include dipping charge as one of the cost components of the access/origination charge.

58. However, PCCW-HKTC objected to the inclusion of the costs incurred by MNO/MVNO for the connection path up to the MNO/MVNO's switch where the call forwarding is performed ("first leg"). The associated costs of the first leg have to be incurred by the MNO/MVNO regardless of whether there will be any call forwarding function to be performed by the MNO/MVNO. In any case, the associated costs of the first leg have already been recovered by the monthly mobile subscription fee. HKCSL and Hutchison disagreed and argued that the first leg is part of the interconnection service provided by MNOs. Without the first leg, the call forwarding function cannot be performed.

59. HKCSL, NWPCS, SmarTone and Sunday did not support different charge levels for the 5 call scenarios mentioned in the preceding paragraph due to implementation difficulties. HKCSL believed that the actual charge

differences (arising due to the different levels of outpayment of fixed/mobile interconnection charges) among the different call scenarios would be minimal and implementing multiple charges would actually become more costly.

The IDC's Views

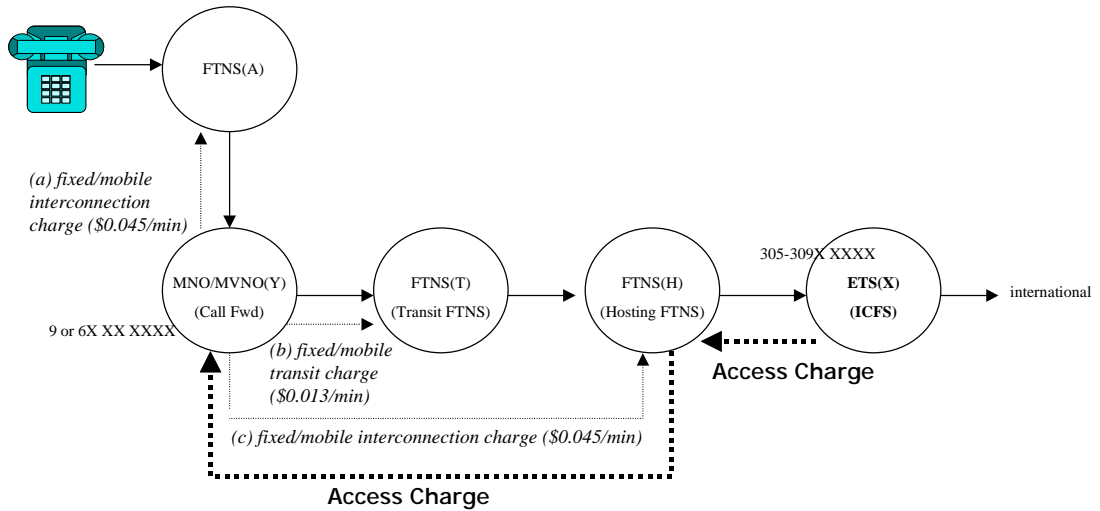
60. The IDC subscribes to PCCW-HKTC's arguments why the first leg fixed/mobile interconnection charge should not be recovered in the access/origination charge. Since the associated costs of the first leg interconnection have to be incurred regardless of whether there will be any call forwarding function to be performed by the MNO/MVNO, the associated costs including (i) the first leg fixed/mobile interconnection charge, (ii) the transit charge of the first leg (in case the call is originated from an FTNS operator which is not directly interconnected with the MNO), and (iii) the dipping charge of the first leg should not be considered as relevant to ICFS.

61. The IDC agrees with HKCSL that since direct interconnection between MNO and ETS operator does not exist at this moment, the scope of determination should not cover this call scenario. Based on the current interconnection arrangements among MNO/MVNOs, FTNS operators and ETS operators, it is more common to have 2 FTNS operators, rather than 1 FTNS operator, to exist between a MNO/MVNO and an ETS operator. Therefore, for call forwarding by MNO/MVNO to ICFS provided by ETS operators via "305-309" numbers, the scenario under paragraph 55(a)(iii) (i.e. indirect interconnection between MNO/MVNO and ETS operator via 1 FTNS operator which hosts the ETS operator and 1 transiting FTNS operator) should be taken as the representative case. For call forwarding by MNO/MVNO to level "8" PN provided by FTNS operator, which is then forwarded to an overseas number, the scenario under paragraph 55(b)(ii) (i.e. indirect interconnection between MNO/MVNO and the FTNS operator providing the PN via 1 transit FTNS operator) should be taken as the representative case. The directions of outpayment of fixed/mobile interconnection charges for the two representative cases are shown in the following diagrams.

Diagram 1

Representative Case for Call Forwarding by MNO/MVNO to ICFS provided by ETS operator via “305-309” numbers

*Indirect Interconnection between MNO/MVNO and ETS operator
via one FTNS operator which hosts the ETS operator and one transit FTNS operator*

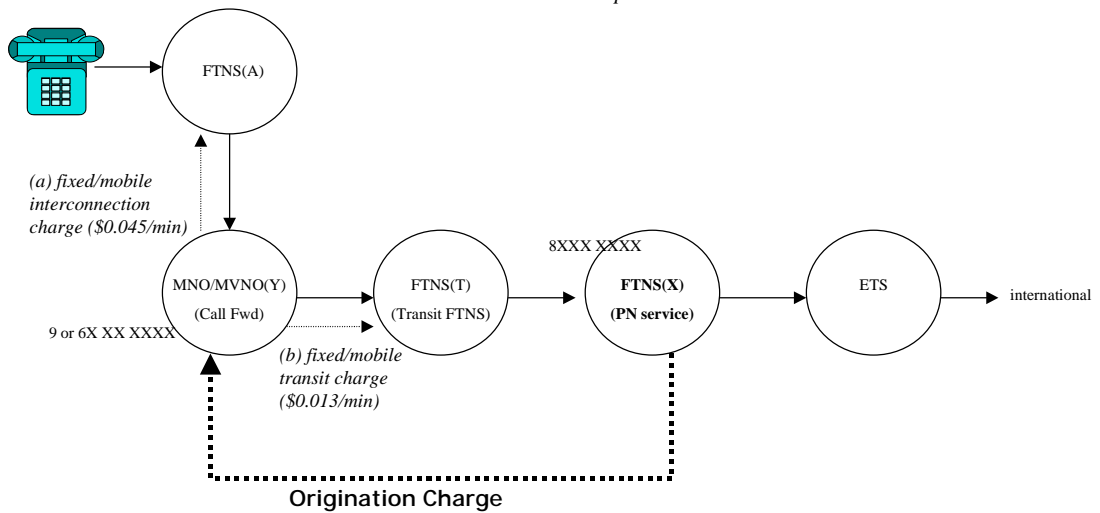


Note: Only (b) and (c) will be considered as relevant costs (\$0.045+0.013 = \$0.058/min) in the determination of the level of the Access Charge

Diagram 2

Representative Case for Call Forwarding by MNO/MVNO to Level “8” PN provided by FTNS operator, which is then forwarded to an overseas number

*Indirect Interconnection between MNO/MVNO and the FTNS operator providing the PN
via one transit FTNS operator*



Note: Only (b) will be considered as relevant cost (\$0.013/min) in the determination of the level of the Origination Charge

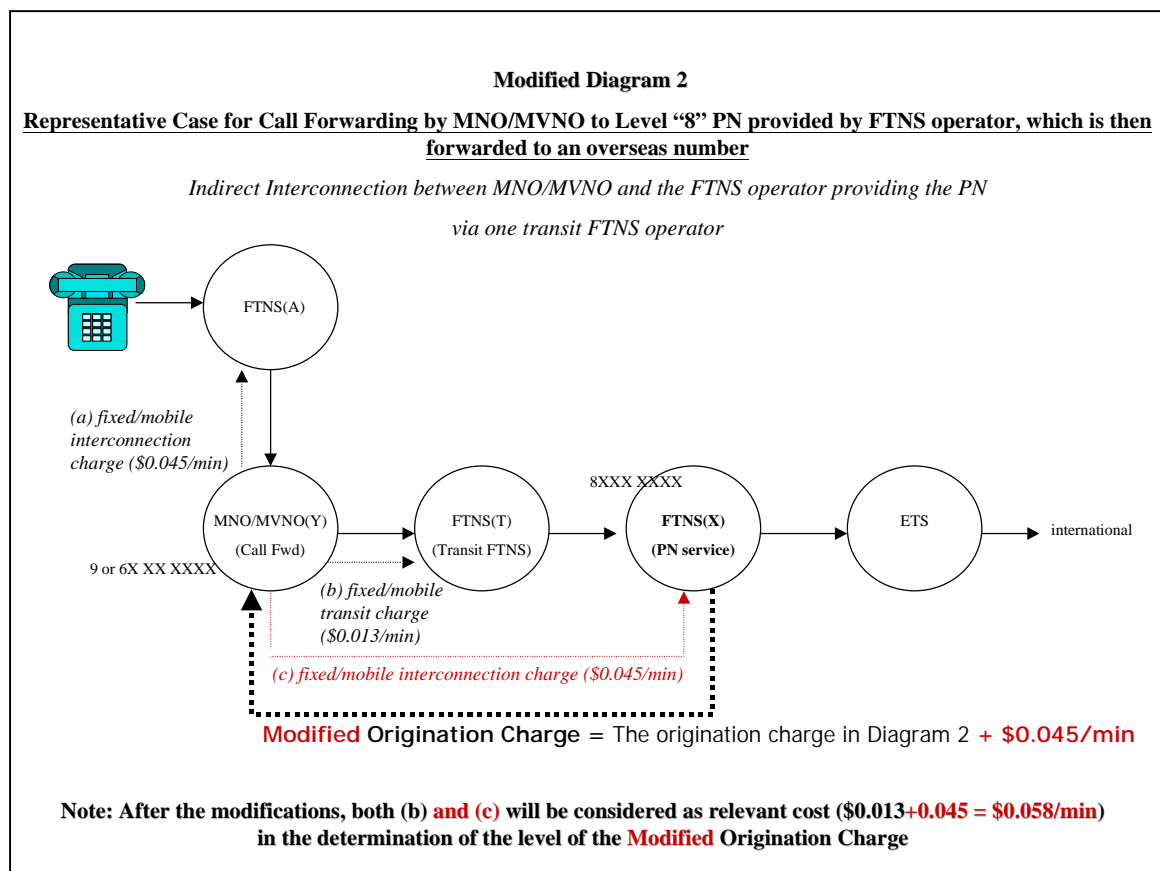
62. The difference in outpayment of interconnection charges in Diagrams 1 and 2 results in different levels of access charge and origination charge. The IDC agrees with HKCSL, NWPCS, SmarTone and Sunday that different levels of access charge and origination charge might create implementation difficulties. Furthermore, since the ICFS traffic is usually carried by mixer trunks, the FTNS operator interconnecting directly with the ETS operator might face difficulties in distinguishing between the calls forwarded to “305-309” numbers in Diagram 1 and the calls forwarded to level “8” PN in Diagram 2. FTNS operators might have concerns over this since:-

- in Diagram 1, when the call is forwarded to “305-309” numbers for ICFS, the FTNS operator interconnecting directly with the ETS operator (i.e. FTNS(H) operator) is entitled to receive a fixed/mobile interconnection charge of 4.5 cents/min from MNO/MVNO(Y), while
- in Diagram 2, when the call is forwarded to level “8” PN for ICFS, the FTNS operator interconnecting directly with the ETS operator (i.e. FTNS(X) operator) is not entitled to receive any interconnection charges from MNO/MVNO(Y).

63. In order to resolve the implementation difficulties arising from different levels of access charge and origination charge as well as the measurement difficulties encountered by the FTNS operator interconnecting directly with the ETS operator, the IDC proposes to modify Diagram 2 as follows.

- Modification 1 – MNO/MVNO(Y) in Diagram 2 is required to pay a fixed/mobile interconnection charge of 4.5 cents/min to FTNS(X) operator even the call is forwarded to level “8” PN for ICFS. (This means that normal interconnection charges between fixed and mobile networks would continue to apply for calls to PN.)
- Modification 2 – FTNS(X) operator in Diagram 2 is required to pay an origination charge plus the fixed/mobile interconnection charge of 4.5 cents/min to MNO/MVNO(Y).

The following diagram illustrates the two modifications made to Diagram 2.



64. In fact, the net effects on FTNS(X) operator and MNO/MVNO(Y) in both Diagram 2 and Modified Diagram 2 are actually the same. However, Modification 1 can help resolve the measurement difficulties encountered by FTNS(X) operator in distinguishing between the calls forwarded to “305-309” numbers and the calls forwarded to level “8” PN since FTNS(X) operator will be entitled to receive a fixed/mobile interconnection charge of 4.5 cents/min from MNO/MVNO(Y) regardless of whether the call is forwarded to “305-309” number or level “8” PN. Furthermore, the interconnection charge to be paid by FTNS(X) operator to MNO/MVNO(Y) in Modified Diagram 2 (i.e. the *modified* origination charge) would be of the same level as the access charge in Diagram 1 since both the fixed/mobile transit charge of 1.3 cents/min (denoted as (b) in the above Diagrams) and the fixed/mobile interconnection charge of 4.5 cents/min (denoted as (c) in the above Diagrams) would be considered as relevant costs of the access charge and the modified origination charge. This will resolve the implementation difficulties arising from the

different levels of access charge and origination charge.

65. With the two modifications made, the outpayment costs of fixed/mobile interconnection charges in both Diagram 1 (representative case for call forwarding to ICFS provided via “305-309” numbers) and Modified Diagram 2 (representative case for call forwarding to ICFS provided via level “8” PN) would be 5.8 cents per minute.

Other Network Elements (e.g. Radio Access Network, Visitor Location Register, Authentication Centre, Equipment Identity Register, etc)

The Parties' Submissions

66. HKCSL, Hutchison and SmarTone considered that the entire network is relevant to the delivery of ICFS traffic since the provision of ICFS would not be possible without the establishment of the basic network. As such, all network elements are relevant costs for the determination of access charge and origination charge.

67. However, HKBN submitted that the access/origination charge should only consist of the cost of interconnection links and transiting costs and objected any form of network costs. PCCW-HKTC expressed a similar view.

The IDC's Views

68. As explained in paragraph 37, under the CFU scenario, the incoming call will only pass through the MSC and HLR before it is routed to other networks via the outgoing trunks. As such, costs of other network elements should be not considered as relevant in the charge determination. These costs are more appropriately recovered through the charges for the mobile services.

69. MNOs may argue that the radio access network has to be utilized when the ICFS user activates and deactivates the mobile call forwarding service to his ICFS number. However, the IDC is of the view that such cost is incurred once when the ICFS user activates or deactivates the call forwarding function. The cost would be minimal when spread over the duration of the ICFS traffic delivered during the activation period. The cost is incurred to enable the mobile users to control the call forwarding function. As such, it

would not be fair for ICFS providers to bear the costs of activating and deactivating the mobile call forwarding service to an ICFS number. Instead, it is more appropriate for the MNOs to absorb these costs as their operating costs to enable mobile customers to enjoy the call forwarding service.

Costs of Sales & Marketing and Customer Services

The Parties' Submissions

70. Four MNOs included the costs of sales, marketing and customer services in the relevant cost components.

The IDC's View

71. Mobile call forwarding service is normally provided to the mobile customers as a free VAS or charged at a flat rate much lower than the monthly subscription fee. Generally speaking, mobile operators would not incur significant costs of sales & marketing and customer services *specifically* for the call forwarding service since this VAS is usually not considered as a source for generating considerable amount of revenues for the mobile business. As such, the IDC considers that the costs of sales, marketing and customer services should not be included in the charge determination.

Bad Debt

The Parties' Submissions

72. Hutchison and Peoples considered that the charge determination should take into account the bad debt component if the hosting FTNS operators do not bear the bad debt risks.

The IDC's Views

73. Paragraph 96 under "Settlement Arrangements" will elaborate in details that since FTNS operators have means to control the bad debt risks arising from the collection of the access/origination charge, it is more appropriate for the FTNS operators to bear the bad debt risks. As such, the IDC is of the view that there is no need to include the bad debt component in

the access/origination charge.

Occupancy Minutes vs. Conversation Minutes

The Parties' Submissions

74. Some MNOs submitted their preferred level of access/origination charge on a per-conversation-minute basis and some on a per-occupancy-minute basis.

75. To convert the charge level from a per-conversation-minute basis to a per-occupancy-minute basis and vice versa, MNOs have submitted that the charge per occupancy minute should be based on the charge per conversation minute divided by a conversion factor which ranges from 1.1 to 1.29. The MNOs estimated their conversion factor by dividing their total mobile occupancy minutes by the total mobile conversation minutes, without any regard to the traffic types (e.g. traffic forwarded from the mobile network, IDD traffic originated from the mobile network, traffic to and from other mobile networks, traffic to and from fixed networks, etc.). PCCW-HKTC also quoted a conversion factor of 1.1 by making reference specifically to IDD traffic.

The IDC's View

76. In considering the measurement basis for the ICFS traffic, the IDC notes that occupancy minutes have a stronger causal relationship with the network usage than conversation minutes. Adopting occupancy minutes as the basis for measurement for ICFS traffic is also in line with the current practice for Type I interconnection charges, fixed/mobile interconnection charge, PNETS charge and LAC. The IDC is therefore of the view that the access/origination charge for ICFS traffic should be based on occupancy minutes.

77. Given that ICFS traffic is of similar characteristics as IDD traffic, the IDC considers that the conversion factor submitted by PCCW-HKTC (which is based on IDD traffic) is more relevant than those submitted by MNOs (which are based on total mobile traffic). As such, the IDC is prepared to adopt 1.1 as the conversion factor for ICFS traffic, when there is a need to convert cost

figures from a per-conversation-minute basis to a per-occupancy-minute basis.

Preliminary Determined Level of Charges

The Parties' Submissions

78. The 6 MNOs proposed the following charges in their submissions.

	Call forwarding to ICFS provided by ETS operators via "305-309" numbers			Call forwarding to level "8" PN provided by FTNS operators, which is then forwarded to overseas numbers	
	Direct interconnection	Indirect interconnection via 1 FTNS operator	Indirect Interconnection via 2 FTNS operators	Direct interconnection	Indirect interconnection via 1 FTNS operator
HKCSL	\$0.70 (c)	\$0.70 (c)	\$0.70 (c)	\$0.70 (c)	\$0.70 (c)
Hutchison	\$1.00 (o)	\$1.00 (o)	\$1.00 (o)	\$1.00 (o)	\$1.00 (o)
NWPCS	\$0.82 (c)	\$0.82 (c)	\$0.82 (c)	\$0.82 (c)	\$0.82 (c)
Peoples	\$0.51 (o)	\$0.51(o)	\$0.53 (o)	\$0.51 (o)	\$0.53 (o)
SmarTone	\$1.50 (c)	\$1.58 (c)	\$1.58 (c)	\$1.58 (c)	\$1.58 (c)
Sunday	\$1.15 (c)	\$1.15 (c)	\$1.15 (c)	\$1.15 (c)	\$1.15 (c)

Note: (c) means per conversation minutes and (o) means per occupancy minutes

The IDC's Views

79. The IDC notes that the differences in the submitted charge level among the 5 call scenarios arise from the differences in the outpayment costs of fixed/mobile interconnection charges paid by the MNOs. Other incurred costs (e.g. mobile switching costs, leased line rental, common costs, additional costs for ICFS, etc.) remain the same under the 5 call scenarios. To keep the implementation arrangements simple, the IDC's preliminary view is to determine a single charge level for the access charge and origination charge under the 5 call scenarios by adopting same level of the outpayment costs of fixed/mobile interconnection charges (please see paragraphs 61-65).

80. Based on the calculation methodology described in preceding paragraphs, the IDC calculated the access/origination charge as follows:

MSC and HLR	4.6
Sharing of relevant leased line rental	1.3
Sharing of relevant common operating costs	0.9
Additional costs for ICFS	3.5
Outpayment of fixed/mobile interconnection charges for ICFS	5.8
TOTAL	16.1

Note 1: All costs in Hong Kong cents per occupancy minute

Note 2: The above access/origination charge is to be applied simultaneously with the normal fixed/mobile interconnection/transit charges depicted in Diagram 1 and Modified Diagram 2.

Retrospective Application of the Determined Charge

The Background Facts

81. According to the 11 June Statement, an access charge or origination charge has to be paid by ICFS providers to compensate MNOs for forwarding a call to ICFS. Such charging arrangements have been effective since 11 June 2002. As such, in addition to the charge level which will be effective from a commencement date to be defined in the Determination (“Commencement Date”), the TA will also determine the charge level which will be applied for the period starting from 11 June 2002 to the Commencement Date.

The Parties’ Submissions

82. MNOs submitted that the determined charges should be retrospectively applied as from 11 June 2002.

83. On the other hand, FTNS operators objected to the retrospective application of the determined charge since there has not been any significant network enhancement performed by MNO/MVNOs for the delivery of ICFS traffic from 11 June 2002. They maintained their view that the charge level which would be applied for the period starting from 11 June 2002 to the Commencement Date should be less than the level which would be effective from the Commencement Date.

84. Asia Telecom submitted that the charge level which would be applied for the period starting from 11 June 2002 to the Commencement Date should reflect the lack of service quality of MNOs.

The IDC's Views

85. Since the MNOs have been providing the interconnection service to the ICFS providers and some of them have already deployed additional resources for billing ICFS traffic, the IDC considers that it is fair to compensate the MNO/MVNOs for their costs incurred since 11 June 2002 with the same level of access/origination charge.

86. In fact, the billable ICFS traffic volume can already reflect the service quality of MNOs since the billable volume will decrease if there is traffic blockage by MNOs. As such, the IDC is of the view that there is no need to adopt a lower access/origination charge to address the issue of service quality before the Commencement Date.

Implementation Arrangements

The Background Facts

87. Since the issue of the 11 June Statement, a number of issues have been raised by operators in relation to the implementation of the charging arrangements, e.g. (i) how to identify the ICFS providers and the number ranges used for ICFS, (ii) how to distinguish between the traffic of ICFS and international calling card, (iii) how to reconcile the billing records maintained by MNOs and ICFS providers, (iv) how to collect the access charges from the ICFS providers, and (v) what if the numbers used for ICFS are ported among the networks of FTNS operators.

88. A technical proposal in relation to the implementation arrangements was issued on 22 November 2002 to invite comments from the industry. Having duly considered the operators' submissions, the TA issued the 25 January Statement and expressed his views that both direct and indirect interconnections between the MNOs and ICFS providers are feasible. In case

MNOs and ICFS providers choose to interconnect indirectly via FTNS operators, the aforementioned implementation issues could be resolved efficiently if the FTNS operators which host the ICFS providers are also involved in the billing and settlement process for the access charge applicable to ICFS traffic since the hosting FTNS operators have direct interconnection with both the MNOs and ICFS providers.

89. According to the 25 January Statement, when the FTNS operators assign “305-309” numbers to the ETS operators, the ETS operators are required to report to the FTNS operators, under the terms of the contracts between the ETS operators and the hosting FTNS operators, the type of IDD services they would operate (e.g. ICFS, international calling card services, etc.) and the number ranges to be used for the said services. ETS operators are required to update the FTNS operators whenever there are any changes. The FTNS operators will provide the up-to-date list to the MNOs. As such, the issue of identifying the ICFS providers as well as the number ranges can be solved. Furthermore, the hosting FTNS operator will have to pay the access charge to the MNO under the interconnection agreement between the two parties, and recover the charge under the commercial contract between the hosting FTNS operator and the ETS operator. Such arrangement, similar to the mechanism adopted in LAC, can resolve the billing and settlement issues. Since the FTNS operators have access to the operator number portability database, the porting issue can also be resolved.

Settlement Arrangements

The Parties’ Submissions

90. In case of indirect interconnection, all the 6 MNOs advocated the settlement arrangements in which the hosting FTNS operators would be involved in the billing and settlement process of the access charge. HKCSL explained that MNOs do not have contractual relationship with ETS operators and thus have difficulties in collecting the access charge and have no means to manage the bad debt risks. On the other hand, FTNS operators have contractual relationship with both the ETS operators and MNOs.

91. However, Asia Telecom, CM Tel, HKBN, HGC, NWT, PCCW-HKTC and WT&T strongly opposed to the aforementioned settlement

arrangement since (1) it would make FTNS operators incur substantial development and administration costs, (2) it would require a significant period of development time and (3) there are various practical and technical problems still remaining unresolved, e.g. how to distinguish ICFS traffic and identify the MNO/MVNO which forwards the call. Instead, they proposed the MNOs to collect the access/origination charge directly from their mobile customers. HKCSL and Hutchison objected to the proposal and argued that nothing in the current regulatory framework suggests any operators to recover their costs for providing interconnection service at the retail level.

92. As an alternative, HKBN, HGC and PCCW-HKTC suggested MNOs collect the access/origination charge directly from the ICFS providers. PCCW-HKTC also suggested direct interconnection between MNOs and ICFS providers. Asia Telecom suggested OFTA set up an ICFS charge reconciliation cell to receive, verify and reconcile ICFS minutes from each operator and decide the amount of charges payable by ICFS providers to MNO/MVNOs. However, HKCSL maintained its view that in practice direct interconnection is hardly the most economic way to deliver ICFS traffic in consideration of the ICFS traffic volume.

93. PCCW-HKTC submitted that if FTNS operators are to be mandated to collect the access/origination charges for MNO/MVNOs, what PCCW-HKTC can offer is only to collect the billing information passed from MNO/MVNOs, manually add them up and manually re-distribute to each of the ICFS providers residing on PCCW-HKTC's network. No network development or reconfiguration, IT development or support system enhancement will be performed by the FTNS operators. WT&T supported PCCW-HKTC's proposal. PCCW-HKTC requested the MNO/MVNOs to provide billable ICFS minutes down to at least hundred blocks or sufficient enough to identify the ICFS providers. FTNS operators will not bear any bad debt. Any traffic disputes will be settled between the MNO/MVNOs and ICFS providers. As such, MNO/MVNOs should provide the ICFS providers with a contact point for bill enquiries or dispute settlement. SmarTone has concerns over PCCW-HKTC's proposed arrangement since it would shift most of the billing and settlement to the MNOs, which would in turn increase the costs of MNOs.

94. PCCW-HKTC also submitted that they would charge the MNO/MVNOs for the administrative costs. However, HKCSL commented

that it should be the ICFS providers which request for the interconnection to pay for the administrative cost.

The IDC's Views

Settlement of Charges after the Commencement Date

95. ICFS providers are customers of the hosting FTNS operators which are providing the connection between ICFS providers and the local fixed networks and therefore there are commercial contracts between them. The hosting FTNS operators in turn have interconnection agreements with the MNOs and therefore would be able to settle interconnection charges over the interconnection circuits between them. The payment and settlement of access charge via the hosting FTNS operator can be considered as part of the interconnection service provided by the hosting FTNS operator to their customers, i.e. ETS operators providing ICFS.

96. Since MNO/MVNOs do not have contractual relationship or direct interconnection with ETS operators providing ICFS, it would be difficult for MNO/MVNOs to manage the risks of bad debt. On the other hand, under the contractual agreements with their ETS operators, hosting FTNS operators have means to manage the risk of bad debt, e.g. request for deposits or prepayment from their interconnecting ETS operators or other commercial arrangements they deem appropriate. As such, the IDC considers that it is practical and reasonable to settle the access/origination charges via the hosting FTNS operators starting from the Commencement Date.

97. Since the access/origination charge payable by the ICFS providers to the MNO/MVNOs is an interconnection charge, whether to adopt the billing arrangement of the MNOs collecting the interconnection charge from their mobile customers on behalf of the ICFS providers is a commercial decision of the operators. The TA has no power under section 36A of the Telecommunications Ordinance to determine the charges payable by mobile customers to MNOs or to mandate the arrangements of MNOs collecting interconnection charges on behalf of ICFS providers. Even if some of the MNOs agreed to adopt such arrangements, there would be practical difficulties for the ICFS providers to bill their customers for the ICFS because the ICFS providers would not be able to identify which calls have been routed through

MNOs which have adopted the arrangements (and therefore the interconnection charges should be excluded from the bills to the ICFS customers) and which calls have not been so routed. Since none of the MNOs agreed to adopt such settlement arrangements, the IDC will not consider this in the Determination.

98. The IDC also has doubts over the practicality of the other alternatives suggested by the FTNS operators and ETS operator. Since there is no contractual agreements or direct interconnection between the MNO/MVNOs and the ETS operators, the MNO/MVNOs would not be able to manage the risk of bad debt if the access/origination charge is to be collected directly by the MNO/MVNOs from the ETS operators providing ICFS. The establishment of an ICFS charge reconciliation cell in OFTA, as suggested by Asia Telecom, is still unable to address the issue of bad debt risk of MNO/MVNOs. Regarding direct interconnection as proposed by PCCW-HKTC, the IDC agrees with HKCSL that it may not be economical to deliver ICFS traffic in view of the traffic volume. In any case, it is a commercial decision for ICFS providers to make as to whether to interconnect directly with the MNO/MVNOs.

99. Among the various settlement arrangements proposed by the parties, the IDC is of the view that involving FTNS operators in the settlement arrangement is the only way to manage the bad debt risk effectively. However, the IDC is mindful that the substantial network enhancement and IT development costs to be incurred by FTNS operators for settling ICFS charges will increase the level of access charge significantly. As such, the IDC does not have any objection if the hosting FTNS operator collects the billing information from MNO/MVNOs and processes the information using the approach involving the minimum costs for network development or reconfiguration, IT development or support system enhancement, such as manually adding them up and manually re-distributing such costs to its interconnecting ETS operators as suggested by PCCW-HKTC. MNO/MVNOs must provide billable ICFS minutes down to at least 6 digits or sufficient enough to identify the ICFS providers. FTNS operators are not required to perform any network development or reconfiguration, IT development or support system enhancement specifically for the settlement of ICFS charges. The IDC believes that this approach can address the issues of development costs, time and technical problems raised by the FTNS operators.

100. However, the IDC does not subscribe to PCCW-HKTC's view that

traffic disputes should be settled between the MNO/MVNOs and ICFS providers directly since there is no direct contractual relationship between them. Given that MNO/MVNOs have all the Call Detail Record (“CDR”) of the ICFS traffic, the IDC considers that it is most efficient for the hosting FTNS operator to settle bill disputes with MNOs, with the assistance of the ETS operator providing ICFS, if necessary. As such, MNO/MVNOs must keep the CDRs of all ICFS traffic and provide the hosting FTNS operators with a contact point for bill enquiries or dispute settlement. In case there are any billing disputes, MNO/MVNOs are required to provide the CDRs and *audited* traffic reports to the hosting FTNS operators. Since the CDRs are readily available information, the IDC does not subscribe to SmarTone’s view that such approach would increase the costs of MNOs.

101. PCCW-HKTC submitted that they would charge for the administrative costs in performing the collection of the interconnection charges for ICFS. As described in preceding paragraphs, the hosting FTNS operators would only be responsible for collecting the billing information from the MNO/MVNOs and billing their interconnecting ETS operators based on MNO/MVNOs’ billing information. Since the hosting FTNS operators have to issue bills to their interconnecting ETS operators for LAC anyway regardless of whether there is any ICFS traffic, the IDC considers that the additional costs, if any, for the hosting FTNS operators to bill for the ICFS traffic is minimal. The additional costs, if any, should be reflected in the terms and conditions between hosting FTNS operators and the ICFS providers for the provision of the hosting service (similar to the arrangement for the provision of hosting services to VAS and ETS providers) since the payment and settlement of the ICFS access charge can be considered as part of the interconnection service provided by the hosting FTNS operator to their customers, i.e. ETS operators providing ICFS.

102. Based on the above considerations, the IDC is of the view that the access charge and origination charge should be settled by the following arrangements starting from the Commencement Date.

- (a) When a mobile number is forwarded to ICFS provided via “305-309” numbers by an ETS operator which is interconnected directly with a MNO/MVNO, the ETS operator is liable for paying the determined access charge to the MNO/MVNO

directly.

- (b) When a mobile number is forwarded to ICFS provided via “305-309” numbers by an ETS operator which is interconnected indirectly with a MNO/MVNO via a hosting FTNS operator, the hosting FTNS operator is liable for paying the determined access charge to the MNO/MVNO, and the hosting FTNS operator should recover the access charge from the ETS operator under the commercial contract between the two parties.
- (c) When a mobile number is forwarded to ICFS provided via “305-309” numbers by an ETS operator which is interconnected indirectly with a MNO/MVNO via a hosting FTNS operator and a transiting FTNS operator, the hosting FTNS operator is liable for paying the determined access charge to the MNO/MVNO, and the hosting FTNS operator should recover the access charge from the ETS operator under the commercial contract between the two parties. Since the transiting FTNS operator has already received a fixed/mobile transit interconnection charge from the MNO/MVNO for delivering the ICFS traffic to the hosting FTNS operator, there is no need for the hosting FTNS operator to pass any interconnection charges to the transiting FTNS operator with a view to avoiding double compensation to the transiting FTNS operator.
- (d) When a mobile number is first forwarded to a level “8” PN provided by an FTNS operator which is then forwarded to an overseas number, and the FTNS operator which provides the PN is directly interconnected with a MNO/MVNO, the FTNS operator which provides the PN is liable for paying the determined origination charge (i.e. the “modified origination charge” in Modified Diagram 2) directly to the MNO/MVNO.
- (e) When a mobile number is forwarded to a level “8” PN provided by an FTNS operator which is then forwarded to an overseas number, and the FTNS operator which provides the PN is indirectly interconnected with a MNO/MVNO via one transiting FTNS operator, the FTNS operator which provides the PN is

liable for paying the determined origination charge (i.e. the “modified origination charge” in Modified Diagram 2) directly to the MNO/MVNO. Since the transiting FTNS operator has already received a fixed/mobile transit interconnection charge from the MNO/MVNO for delivering the ICFS traffic to the FTNS operator which provides the PN, there is no need for the FTNS operator which provides the PN to pass any interconnection charges to the transiting FTNS operator with a view to avoiding double compensation to the transiting FTNS operator.

Settlement of Charges for the Period Starting from 11 June 2002 to the Commencement Date

103. However, the IDC does not consider that it is appropriate to adopt the aforementioned settlement arrangement for settling the access/origination charge for the period starting from 11 June 2002 to the Commencement Date. After the Commencement Date, the hosting FTNS operators may, by way of commercial agreements with their interconnecting ETS operators, make arrangements to manage the bad debt risks for collecting the access charge. However, the hosting FTNS operators may not currently have means to manage the bad debt risks arising from the collection of access charge which has been incurred *before* the Commencement Date. It would therefore be unfair to require the hosting FTNS operators to bear the bad debt risks. As such, the hosting FTNS operators should not bear any responsibility in settling the access charge incurred during the period starting from 11 June 2002 to the Commencement Date.

104. Instead, it should be made as a term of the Determination that the access/origination charge incurred during the period starting from 11 June 2002 to the Commencement Date should be due from the ICFS providers to the MNOs/MVNOs and be collected directly by the MNO/MVNOs from the ICFS providers. Any payment default should be settled through civil claims.

Exchange of ICFS Information

The Parties' Submissions

105. MNOs requested the FTNS operators to provide the following information:

- up-to-date records of “305-309” ICFS number ranges deployed by the ETS operators residing at the FTNS operator’s network
- up-to-date records of level “8” PN deployed by the FTNS operator for overseas call forwarding
- monthly ICFS traffic report and full call details record of the billable calls

The IDC’s View

106. To enable the MNO/MVNOs to bill for the ICFS traffic, all ETS operators which are providing ICFS must inform their hosting FTNS operators of their ICFS number ranges. The ICFS number ranges must be in multiples of 100 in view of the network resources required by MNO/MVNOs for deeper digit translation. FTNS operators must provide the MNO/MVNOs with the up-to-date records of “305-309” ICFS number ranges deployed by their interconnecting ETS operators and the up-to-date records of level “8” PN deployed by them for overseas call forwarding, if any.

107. The IDC cannot see the reason why the MNOs requested the FTNS operators to provide the monthly traffic report and full CDRs for the billable calls. As a matter of fact, MNO/MVNOs have all the CDRs of the ICFS traffic and the responsibility of providing traffic report and full CDRs of ICFS traffic should fall upon the MNO/MVNOs’ shoulders. As such, in case there are any billing disputes, MNO/MVNOs are required to provide *audited* CDRs to the ICFS providers.

Traffic Forecasts from Hosting FTNS Operators

The Parties’ Submissions

108. Hutchison and SmarTone requested the hosting FTNS operators to provide monthly traffic forecasts for dimensioning of mobile networks. To avoid capacity being idle and inefficient allocation of resources, they also submitted that FTNS operators shall (1) subscribe to a minimum amount of call traffic equivalent to a certain percentage of the traffic forecast and (2) be subject to a minimum of payment of HK\$50,000 regardless of the amount of

ICFS traffic.

109. However, PCCW-HKTC did not subscribe to MNOs' views since the ICFS traffic represents an insignificant portion of the mobile traffic and is within the normal daily mobile-fixed traffic fluctuations. CM Tel supported PCCW-HKTC's views.

The IDC's Views

110. To facilitate the dimensioning of MNO/MVNOs' network, the IDC agrees that the hosting FTNS operators must provide the MNO/MVNOs with a quarterly traffic forecasts over the coming 12 months.

111. However, the IDC did not accept MNOs' arguments for the minimum traffic commitment and minimum payment. According to the traffic information submitted by the 6 MNOs, ICFS traffic (recorded from June 2002 to May 2003) accounted for less than 1% of their total mobile traffic. In other words, the resources allocated by MNOs to ICFS traffic should be insignificant when compared to the total resources consumed by all mobile traffic. Furthermore, since MNO/MVNOs have the ICFS traffic history, they can discuss with the hosting FTNS operators if they notice any sudden significant upsurge in the traffic forecasts provided by the FTNS operators. As such, the IDC cannot see the justification of the minimum traffic commitment and the minimum payment.

Metering of Traffic to PNs which have been Forwarded to Overseas Numbers

The Parties' Submissions

112. NWPCS, Peoples and SmarTone pointed out that MNOs are not able to verify whether the PN is forwarded to local numbers or overseas numbers. Audit requirements and segregation of PN numbers were proposed to resolve the problem. SmarTone suggested the application of the origination charge to all PNs regardless of the call destinations.

113. Since MNOs do not have access to Operator Number Portability ("ONP") database, SmarTone suggested that the FTNS operators should update MNOs on any number portability of PN before porting.

The IDC's View

114. The IDC is of the view that, if the FTNS operators have segregated their PN for ICFS and non-ICFS use, those PN for non-ICFS use should not be subject to the origination charge. If the FTNS operators have not segregated their PN and they cannot submit valid proof to the MNO/MVNOs that the PN calls are forwarded to local numbers only, call forwarding to these PN has to be subject to the origination charge. However, the IDC considers that the chance for a local fixed or mobile number to be forwarded to a PN, which is then forwarded to another local number, is very slim.

115. All FTNS operators providing ICFS via PN must provide the MNO/MVNOs with the up-to-date records of level "8" PN deployed by them for overseas call forwarding. The up-to-date records provided by the FTNS operators should not include any PNs which have been ported out from their networks. As such, the MNO/MVNOs can bill the FTNS operators for the ICFS traffic based on the records of level "8" PN supplied by the FTNS operators and the porting of PN should not be an issue.

Size of ICFS Number Blocks

The Parties' Submissions

116. Hutchison and SmarTone suggested that ICFS number blocks must comprise consecutive numbers in multiples of 1000 in order to avoid additional loading on MNOs' system due to deeper digit translation. Since the normal assignment size for carriers is at least 1000, Hutchison argued that it is not justified to allow ICFS providers with smaller size of number blocks. Furthermore, Hutchison proposed an administrative fee chargeable by MNOs and a 30-day prior written notice from FTNS operators for all changes of ICFS number ranges. SmarTone also proposed a 4-week prior notice from FTNS operators.

The IDC's View

117. Hutchison's argument of the number assignment size for carriers is not relevant for ICFS traffic. The number assignment size for ETS operators

is specified in the *Code of Practice Relating to the Use of Numbers and Codes in the Hong Kong Numbering Plan*, in which FTNS operators are required to assign “305-309” number blocks to ETS operators in multiples of 300. In other words, MNOs are technically able to read the call number up to 6 digits and the IDC does not notice that the current practice has created any heavy process loading in the MNOs’ system. Furthermore, assigning number blocks in multiples of 300, instead of 1000, can help to reserve limited number resources.

118. The IDC does not agree that MNOs should charge for another administrative fee for changes of ICFS number ranges. The costs incurred by MNOs for updating the ICFS number ranges have been considered in the cost component of “additional costs for ICFS” in the calculation of access/origination charge.

119. The IDC agrees that a reasonable notice period should be given to the MNO/MVNOs for changes on ICFS number ranges. However, the IDC has doubts over the duration of 1 month as requested by Hutchison and SmarTone. Firstly, the work of updating the ICFS number ranges is to be performed by the MNO/MVNOs only. This does not require any configuration work of other network operators. As such, the IDC cannot see the justification for such a long period (1 month) of prior notice as requested by the 2 MNOs. Secondly, the ETS operators may have to pay the charges for the interconnection links with their hosting FTNS operators once they have been assigned the “305-309” numbers. If the 1-month prior notice is to be adopted, the ETS operators may still have to pay the charges for the interconnection links to the hosting FTNS operators for the first month even though the ICFS number ranges are not effective yet and no ICFS can be provided during the first month. This would impose a financial burden on ETS operators providing ICFS. Having considered the amount of work required for updating the ICFS number ranges, the IDC considers that a prior notice of 2 weeks is sufficient.

Grade of Service

The Parties’ Submissions

120. Hutchison proposed that if the actual ICFS traffic exceeds that

forecasted by the FTNS operator, Hutchison would not guarantee the usual Grade of Service (“GoS”) in respect of the excess traffic.

121. SmarTone submitted that any unreported number ranges should be treated as “not-in-use” and MNOs are therefore not obliged to forward calls to these number ranges.

The IDC’s View

122. Based on the information obtained during the site visits, most of the ICFS traffic are carried by mixer trunks. Therefore, the IDC is of the view that the GoS for call forwarding to ICFS numbers or PN should be at the same level as the normal call forwarding to level “2” fixed line numbers, provided that the traffic volume does not deviate from the traffic forecasts significantly.

123. Any “305-309” numbers or level “8” PN deployed for ICFS must be reported to the hosting FTNS operators who will provide the up-to-date number records to the MNO/MVNOs. Therefore, MNO/MVNOs will not be responsible for the GoS of call forwarding to any unreported numbers.

Commencement Date

124. To minimize the period from 11 June 2002 to the Commencement Date, the IDC considers that the Commencement Date should be the same as the date of the Determination.

How the Determination is to Proceed

125. The Procedures are designed to deal with determinations made on request by parties. Taking into account this Determination involves an expanded scope self-initiated by the TA and given the number of parties involved, it is considered to be impracticable to strictly adhere to the Procedures. In order to ensure that the Determination could be conducted in an effective manner, the parties have been requested to follow the procedures as promulgated in paragraphs 28 to 34 of the TA Notice issued on 28 May 2003.

126. In accordance with paragraph 33 of the 28 May Notice, all parties are invited to make representations to the TA in relation to this Preliminary Analysis. The representations should reach the TA in written form no later than **29 September 2003 (12:00 noon)** and should be addressed to:

Office of the Telecommunications Authority
29/F Wu Chung House
213 Queen's Road East
Wanchai
Hong Kong

Attn: Helen Lai, Regulatory Affairs Manager
Fax: 2803 5112

Office of the Telecommunications Authority
29 August 2003