

# **FIXED MOBILE NUMBER PORTABILITY**

## **Statement of the Telecommunications Authority**

**10 July 2009**

### **Executive Summary**

The Telecommunications Authority (“TA”)’s conclusions as a result of the consultation on the implementation of fixed mobile number portability (“FMNP”) in Hong Kong are summarized below:

S2. The TA decides that FMNP should be implemented on a voluntary basis. The voluntary FMNP scheme will not impose any unnecessary burden on the operators who do not wish to implement or support FMNP, but will allow interested operators the flexibility to provide cross-platform number portability service based on their own business decisions.

S3. Fixed Network Operators (FNOs), Mobile Network Operators (MNOs), Service-Based Operator (“SBO”) Class 1 licensees, Mobile Virtual Network Operators (“MVNOs”), and Unified Carrier licensees may participate in the voluntary FMNP scheme. Operators who wish to implement FMNP may collaborate with one another and negotiate the terms and conditions for collaboration on a commercial basis.

S4. To protect consumer interest and to ensure the orderly implementation of FMNP, interested operators should submit to the TA proposals that will address adequately and efficiently the pertinent concerns raised by the industry and the public during the consultation exercise. The proposal shall observe the guiding principles set out in Annex 1 to this Statement. If necessary, the TA will convene working groups to iron out the details before allowing interested parties to proceed with the actual implementation of FMNP.

## **BACKGROUND**

Number portability allows consumers to retain their telephone numbers when they change their service providers. This ensures freedom of choice and fair competition in the market. Hong Kong introduced fixed number portability (also known as operator number portability (“ONP”)) in 1995 and mobile number portability (MNP) in 1999. However, number portability between fixed and mobile networks, which is known as fixed mobile number portability (“FMNP”), is not yet available.

2. In December 2005, the Office of Telecommunications Authority (“OFTA”) commissioned an independent consultant, Ovum Limited, to conduct a study on fixed-mobile convergence (“FMC”). In its report, Ovum indicated that while there was no evidence to suggest that lack of FMNP was a significant barrier to development of FMC, the introduction of FMNP would give customers a greater choice to port their fixed numbers to any mobile network operators (“MNOs”) or their mobile numbers to any fixed network operators (“FNOs”). Drawing from the successful experience of ONP and MNP in Hong Kong, Ovum advised that FMNP should promote competition in the telecommunications market and provide a level playing field for all FNOs and MNOs offering services to customers.

3. However, there were contrary views that once FMNP was implemented, the clear demarcation between fixed numbers and mobile numbers would be lost because once a fixed number was ported to a mobile network, the fixed number would then become a mobile number, and vice versa. As such, there was no way for the called party to tell from the number of the calling party whether the call originated from a mobile or a fixed network. Similarly, there was no way for the calling party to tell from the number of the called party whether the call was directed to a mobile or a fixed network. Ovum recommended that the TA should carry out market research to ascertain the market demand for FMNP before deciding whether to introduce FMNP.

4. In his Statement entitled “Deregulation for Fixed and Mobile Convergence” (the “FMC Statement”) issued in April 2007, the TA

decided that he would conduct a market research to collect information on the market demand for FMNP before deciding whether to introduce FMNP. OFTA has accordingly appointed the Social Sciences Research Centre of the University of Hong Kong to conduct a market survey (the “Survey”) in order to understand the market demand for FMNP. The Survey was conducted in February 2008<sup>1</sup> and the result indicated that the overall demand for FMNP should not be high. In addition, OFTA conducted an in-house research on the overseas experiences in FMNP. It was found that only a few countries have implemented FMNP and the demands in those countries are not significant.

5. Taking into account the result of the Survey, relevant overseas experiences and government’s pro-consumer and pro-competition policy, the TA was of the preliminary view that there would be no sufficient justification to mandate the FMNP implementation at this stage. However, he believed that it would be in the public interest to allow individual operators to make their own business decisions to implement FMNP on a voluntary basis. In October 2008, the TA issued a consultation paper entitled “Fixed Mobile Number Portability” (“the Consultation Paper”)<sup>2</sup> to solicit views and comments from the industry and interested parties on his proposal of voluntary FMNP implementation.

## **SUBMISSIONS**

6. The consultation ended on 19 January 2009 and 13 written submissions from the following parties (listed in alphabetical order) were received:

- (1) A member of the public<sup>3</sup>
- (2) China Mobile Hong Kong Company Limited (“CMHK”)
- (3) CITIC 1616 Holdings Limited (“CITIC”)
- (4) CSL Limited (“CSL”)

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<sup>1</sup> The Survey report can be downloaded from OFTA’s website at <http://www.ofta.gov.hk/en/report-paper-guide/report/rp20081031.pdf>.

<sup>2</sup> The document can be downloaded at <http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/cp20081031.pdf>

<sup>3</sup> The identity is not disclosed at the request of the respondent.

- (5) David Li, a member of the public
- (6) Hong Kong Broadband Network Limited (“HKBN”)
- (7) Media Syndication Limited (“Media Syndication”)
- (8) Mobile Clusters Limited (“Mobile Cluster”)
- (9) New World Telecommunications Limited (“NWT”)
- (10) PCCW Limited (“PCCW”)
- (11) Saiwai Chan, a member of the public
- (12) Smartone Mobile Communications Limited (“Smartone”)
- (13) Wharf T&T Limited (“Wharf”).

These submissions (the “Submissions”) in this Statement are published on the OFTA’s website<sup>4</sup>.

7. The views of the operators can broadly be categorized into two camps. On the one hand, two MNOs and one mobile virtual network operator (“MVNO”) appealed for mandatory FMNP implementation. On the other hand, operators providing fixed telephone services objected to the implementation of FMNP irrespective of whether it was carried out on a mandatory or voluntary basis. The latter considered that the local demand for FMNP would be low and the proposed voluntary implementation would bring about industry chaos, public confusion and operational problems. There were also three submissions from members of the public. Two of them supported the FMNP implementation, while the other expressed the concern that the FMNP implementation would accelerate the decline of businesses of the FNOs and result in staff layoff in the telecommunications industry.

8. This Statement sets out the TA’s views and responses to the Submissions and his decisions on the subject matter.

## **LEGAL BASIS**

9. All operators providing fixed line or mobile phone service have duties under each of their licences to conform to a numbering plan approved by the TA. Pursuant to the respective licences, it is a

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<sup>4</sup> [http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/20090122/table\\_20090122.html](http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/20090122/table_20090122.html)

condition that the licensee shall where requested by the TA prepare and furnish to the TA proposals for developing the numbering plan. The licensees include FNOs, MNOs, SBO Class 1 licensees, MVNO, and Unified Carrier licensees.

10. As will be discussed and explained in the following paragraphs, to facilitate the operation of a voluntary FMNP scheme, a proposal from licensees would be required before the TA would consider changing the numbering plan to accommodate the implementation of a voluntary FMNP scheme.

## **CONSIDERATIONS FOR THE IMPLEMENTATION OF FMNP**

### **Policy Objectives**

11. In considering whether FMNP should be introduced, the TA is mindful of the following policy objectives:

- the widest range of quality services should be available to the community at reasonable cost;
- services should be provided in the most economically efficient manner possible; and
- Hong Kong should serve as the pre-eminent communications hub for the region.

The TA considers that the introduction of FMNP is in line with these policy objectives.

### ***Submissions***

12. CSL commented that FMNP is a true precursor to FMC and the TA should ensure the existence of a regulatory environment that is conducive to the development of FMC. While NWT and Wharf in general agreed that the implementation of FMNP would meet the above policy objectives, they were doubtful whether the voluntary

implementation of FMNP could attain those policy objectives.

### ***TA's Views and Responses***

13. There should be no dispute that the introduction of FMNP will enhance cross-platform competition and provide additional choice for consumers to meet their personal needs and hence meet the policy objectives. To protect consumer interest and ensure orderly implementation of FMNP, the TA will require operators who are interested in implementing FMNP on a voluntary basis to come forward with solutions that would adequately and efficiently address the various concerns as expressed by the industry and the public. If necessary, the TA would convene working groups to iron out the details before allowing interested parties to proceed with the actual implementation of FMNP.

### **Considerations on Potential Detriments**

14. In addition to the above government policy objectives, the TA also considers the potential detriments that may be brought about by FMNP, such as the loss of demarcation between the fixed and mobile services, financial burden imposed on operators who are not willing to implement FMNP and impact on these operators because of the increased cross-platform competition. The TA asked the following question on these issues in the Consultation Paper:

*Question (1): Do you have any further views and comments on the issues discussed [...]?*

### **Demarcation of Fixed and Mobile Services**

#### ***Submissions***

15. CITIC, CMHK, CSL and Media Syndication shared the TA's view that as technology continued to evolve towards FMC, there would no longer be any clear demarcation between fixed and mobile applications. They considered that the demarcation of fixed and mobile services should not be the obstacle for introducing FMNP. CSL and CMHK considered that the demarcation issue should not be the major

concern of the consumers. This was because, of the Survey respondents who indicated that they would not port their fixed line numbers to mobile network, only 10% of them considered that the demarcation issue was the key reason for not using FMNP. CSL further cited the use of leading digits of '5' and '8' as evidence that the loss of demarcation already happened. CSL also commented that the demarcation issue was not important from the costing perspective as the service costs of fixed and mobile services were relatively low in Hong Kong.

16. NWT, Wharf and PCCW considered that introducing FMNP would harm the consumers' interest since they could no longer distinguish the fixed and mobile services from the leading digits of a telephone number. PCCW further commented that (i) the aforementioned figure of 10% represents a significant portion of respondents in the Survey, (ii) the TA has no strong proof of the occurrence of FMC in Hong Kong that would further blur the boundary of the fixed and mobile services, (iii) as the personal number has been introduced since 1995, consumers are already well familiar with how the '8' prefixed telephone numbers are used and hence have no concern as to whether the called parties would pick up the call on their fixed line or mobile phones, and (iv) unlike call-forwarding, FMNP would deprive the caller's right to choose calling someone's fixed line or mobile phone. Smartone contended that the loss of the demarcation of fixed and mobile services would create regulatory uncertainty to the existing interconnection charge regime as the payment of the charge depends on the capability to differentiate fixed and mobile numbers.

17. Mobile Cluster considered that removal of the demarcation of fixed and mobile services would affect crime investigation. It submitted that the USA experience is not applicable to Hong Kong because the Federal Communications Commission of the USA has divided the country into 633 control areas and the population registered in each control area (with the same area code) is less than one million. Mobile Cluster considered that this arrangement helps the police to trace the caller within a much smaller area. Smartone asserted that more study and due consideration on the impact on existing regimes are required as once FMNP is implemented, the demarcation between fixed line and mobile numbers will be lost forever. Smartone also stated that the use

of voice over Internet Protocol (“VoIP”), personal number and call forwarding feature might not well represent the public perception on the demarcation issue as the use of these services is low.

### *TA’s Views and Responses*

18. The TA notes that there are diverse views on whether demarcation of fixed and mobile services is important to consumers. Submissions opposing FMNP considered that the 10% of the respondents who did not opt for FMNP due to the demarcation issue is a significant portion, while those supporting FMNP considered it to be insignificant. The TA considers that it is not meaningful to debate whether 10% was a significant figure or not. As indicated in section 4.1.11 of the Survey report, the demarcation issue is not the foremost or the only reason for respondents not opting for FMNP. Of those Survey respondents who indicated that they would not port their fixed numbers to mobile networks, 26.5% of them gave the reason that a fixed line was shared by all household members while a mobile phone tended to be personal, and this point took preponderance over all other considerations.

19. Some parties pointed out that the public was already well familiar with the use of ‘8’ prefixed telephone numbers, which has been in place since 1995, and hence when they made a call to a personal number, they did not have any concern of whether the called party answered with a fixed line phone or mobile phone. They then went on to argue that this could not however be used as a justification for removing the existing distinction between fixed and mobile phone numbers, presumably because the public might then get confused. However, the TA holds a different view. Based on the experience of personal numbers, a more logical conclusion is that the public should be able to get familiar with the change brought about by the FMNP quickly after a short transitional period.

20. Some respondents also argued that there was no strong proof about the occurrence of FMC in Hong Kong and hence there was no urgency in introducing FMNP. According to the Ovum’s Report, the development of FMC comprises four main stages, namely price bundling, service convergence, device convergence and network convergence. In

July 2006, at the time when Ovum’s Report was published, Hong Kong was considered to be at the second stage. In June 2009, with the increasing penetration of the Internet Protocol TV service, the emergence of smart phones and customer premises devices, and the increasing popularity of affordable high-speed fixed and mobile broadband services, Hong Kong has advanced to the third stage of the FMC. In a separate submission dated 8 May 2009 in response to another consultation paper<sup>5</sup> published by the TA, PCCW commented that with the current development of IP technologies, the restriction of VoIP services for users of mobile networks is both unnecessary and unenforceable. PCCW requested that mobility restriction on VoIP service currently being imposed under the fixed carrier licence (“FCL”) on FNOs should be lifted. In essence, PCCW argued in that submission for the removal of the mobility restriction in a FCL on the basis that the distinction between “mobile” and “fixed” customers is increasingly arbitrary in a convergence environment. The TA considers that these are clear indications of technologies and services moving towards FMC, and that the demarcation will be further blurred when the technologies and services continue to evolve.

21. As for the impact of FMNP on the capability of the law enforcement agencies (“LEAs”) to fight crime, the TA is confident that through the cooperation of the industry, LEAs will continue to be able to obtain the necessary information from operators for effective investigation of crime.

### **Financial Burden Imposed on Operators**

#### ***Submissions***

22. CSL questioned the TA’s comment on the implication of investment costs arising from the merging of the ONP and MNP databases for the implementation of FMNP as there was no cost information available. CSL considered that the TA should mandate the FMNP implementation if the benefits brought by FMNP outweighed the

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<sup>5</sup> The consultation paper entitled “Review of the Public Non-Exclusive Telecommunications Service and Service-Based Operators Licensing Regimes” (the “SBO Consultation Paper”) can be downloaded at <http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/20090311.pdf>.

required costs. CMHK advised that most operators' equipment should have been fully depreciated by this stage and it would be an appropriate time for those operators to build a new system across the entire market.

23. HKBN and PCCW opined that under the current economic downturn, it would not be appropriate to introduce FMNP. PCCW added that it would be costly if it was asked to facilitate the implementation of FMNP. According to PCCW's own calculation, each cross-platform number porting would cost the company on average close to HK\$600 and would be uneconomic as the predicted return would be low.

24. CITIC and Wharf argued that unnecessary burden should not be imposed on operators who would not support FMNP. Wharf advised that the financial burden on the non-FMNP operators should not be overlooked as non-FMNP operators would still need to devote substantial resources to support the voluntary implementation of FMNP. CITIC and HKBN stated that the costs involved in supporting FMNP should not be underestimated. CITIC suggested the TA should consider a mechanism allowing the non-FMNP operators to charge FMNP operators as compensation for the development costs incurred for the FMNP implementation.

### ***TA's Views and Responses***

25. To allow for the orderly implementation of a voluntary FMNP scheme, a set of Guiding Principles is given in Annex 1 to this Statement. Principle II stipulates that a FMNP operator shall bear all the costs that accompany the voluntary implementation of the FMNP. Any assistance or cooperation that is required from another operator would be arranged purely on a commercial basis. In other words, the implementation of FMNP should not require non-FMNP operators to undertake significant technical changes or incur additional cost unless commercial arrangements among the involved operators are reached.

26. As the TA will not mandate the implementation of FMNP and because of the criterion laid down in Principle II, FMNP operators may formulate their implementation schedule based on their own commercial

considerations. As such, the view that it would not be appropriate to introduce FMNP under the current economic climate is not a valid concern. Regarding the view that non-FMNP operators should be allowed to charge FMNP operators, Principle II already governs that any assistance or cooperation that is required from non-FMNP operators would be arranged on a commercial basis.

### **Cross-Platform Competition**

#### ***Submissions***

27. CITIC, CMHK and CSL shared the TA's view that FMNP would promote cross-platform competition. CITIC and CSL agreed that the duty of a regulator is to protect competition, but not the competitors. CSL added that (i) the implementation of FMNP goes some way to undo the myriad of historical asymmetrical advantages enjoyed by the FNOs and is one step closer to the provision of a regulatory environment that provides a level playing field, (ii) FNOs will not support FMNP if the TA does not mandate the implementation, and (iii) the tremendous success of ONP and MNP demonstrates that FMNP should promote competition and benefit consumers. The facilitation of FMNP is in line with the government's pro-competition and pro-consumer policies and the policy objectives set out in paragraph 11 of this Statement. CMHK opined that worries about cross-platform competition conflicts with the pro-competition and pro-consumer policies of the government.

28. NWT, Wharf and PCCW considered that the proposed voluntary implementation of FMNP would favour MNOs and would lead to market distortion and consumer confusion. PCCW stated that the current market environment is a level playing ground. FMNP is not required in Hong Kong in view of the existing competitive advantage of MNOs over FNOs as well as the high degree of fixed-mobile substitution in Hong Kong and around the world. A member of the public also opined that the introduction of FMNP would accelerate the fixed-mobile substitution, affect adversely the business of FNOs and ultimately result in staff layoff.

## ***TA's Views and Responses***

29. The TA shares the views that the proposed voluntary implementation of FMNP will create a more level playing field for the fixed and mobile services. He firmly believes that the voluntary scheme will promote cross-platform competition and promote consumer welfare. As stated in the Consultation Paper and supported by some respondents, the duty of a regulator is to protect competition, but not the competitors. A regulatory decision which aims to protect the interests of particular operators or a particular class of operators conflicts with the government policy objectives.

## **Other Issues**

30. In relation to the considerations for FMNP implementation, the TA asked the following question:

*Question (2): Are there any other issues that should be considered for the implementation of FMNP?*

## ***Submissions***

31. CITIC, NWT and Wharf submitted that the proposed voluntary implementation would lead to a number of consumer and technical issues. NWT commented that those issues might include public confusion, industry chaos, cost imposed on non-FMNP operators and operational problems among operators as both FMNP and non-FMNP operators co-exist in the market. It was also concerned about the mutual exclusiveness of the future unregulated FMIC charging mechanism as the implementation of FMNP would mix the fixed and mobile numbers and the FMIC deregulation in April 2009 would make it difficult to maintain a differential charging regime for various inter-network connections. NWT asserted that the industry needs a stable regulatory environment instead of an ever changing one.

32. Both CITIC and Wharf pointed out that there would be technical problems and operational issues for the implementation of FMNP. They considered that issues such as the impact on the existing number

portability environment, operational efficiency and the statistical information of existing ONP and MNP activities should be tackled. CITIC was concerned about how FMNP could be introduced in the most economically efficient manner and submitted that impact on core network, messaging, value-added services platform, customer care, and billing system should not be ignored. It requested for further consultation on the detailed implementation guidelines.

33. HKBN and PCCW opined that whether to implement FMNP should be determined by the demand of the general public. It further suggested that local customer issues as well as the industry practice should also be taken into consideration. PCCW stated that it would be unjustified to request operators to implement FMNP simply because it was technically possible and when the public demand was low<sup>6</sup>.

### ***TA's Views and Responses***

34. The TA is well aware that a number of detailed issues have to be settled before the voluntary FMNP may be implemented. However, pursuant to Guiding Principle I as set out in Annex 1, a FMNP operator has to achieve FMNP within its own service platform and at its own expense. This principle applies not only to the financial arrangement, but also to the technical arrangement. That is, the FMNP operator has to resolve the various issues arising from the implementation. To ensure that FMNP may be carried out in an orderly and efficient manner, the FMNP operators will be required to submit a proposal to the TA prior to the actual implementation. The proposal should set out practical solutions which will overcome any potential problems irrespective of whether these problems are related to financial, regulatory or technical aspects.

## **VOLUNTARY IMPLEMENTATION OF FMNP**

35. Taking into account the local demand, overseas experiences, and

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<sup>6</sup> The Survey result shows that if FMNP is available for free, around 25% of residential line users and 26% of business line users indicated that they would opt for porting their fixed numbers to mobile networks. The corresponding figures for porting mobile numbers to the fixed networks are much lower, at 9% for residential line users, 7% for business line users and 12% for mobile phone only users.

the fact that market force should yield the optimal market outcome, the TA considers that it would be in the public interest to allow individual operators to make their own business decisions to implement FMNP on a voluntary basis. To solicit the views of the industry and interested parties on the proposed voluntary implementation of FMNP, the TA asked the following question in the Consultation Paper:

*Question (3): Do you agree that voluntary implementation of FMNP is a positive response to the market need and should be allowed?*

### ***Submissions***

36. The views collected can broadly be divided into two groups. A group of operators (including CMHK and CSL) requested the TA to mandate the FMNP implementation while another group (including HKBN, NWT, PCCW, Smartone and Wharf) did not support the proposal. The latter were of the views that the implementation of FMNP would harm the consumer interest. Three members of the public expressed their views on the implementation of FMNP. Two of them supported the FMNP implementation whereas the other one opposed the proposal.

37. CSL commented that FMNP must be mandated as it is one of the fundamental cornerstones of convergence. Otherwise, it would restrict the choice of about one quarter of fixed line users who would opt for porting their fixed line numbers to mobile networks. It commented that FNOs will not support FMNP if the TA does not mandate the implementation. CSL also considered that the overseas experiences are not directly relevant to the situation in Hong Kong. Media Syndication considered that the proposed voluntary implementation of FMNP was consistent with the light handed regulatory approach as it allows sceptics or unwilling operators to opt out.

38. Of those opposing FMNP, HKBN, Smartone and Wharf stated that it would be unjustifiable to introduce the voluntary implementation of FMNP when the public demand is low. HKBN doubted about the level of participation if FMNP is implemented on a voluntary basis. PCCW considered that introducing FMNP in Hong Kong would have a significant negative impact on consumers and operators. It further

asserted that with the popularity of the call forwarding feature and the successful implementation of a quasi-FMNP service in the market, there is little value to introduce a more formal FMNP service at this point in time, particularly if this would have substantial negative effect. CSL and Smartone submitted that the proposed voluntary implementation of FMNP would create substantial consumer confusion due to the co-existence of both FMNP and non-FMNP operators in the market and the current call forwarding feature has already met the consumers' demand of using mobile numbers for fixed services, and vice versa.

39. CITIC requested for further clarification about the respective obligations of the FMNP and non-FMNP operators. It pointed out that under the existing operating environment, individual operator could hardly provide FMNP services on their own.

### *TA's Views and Responses*

40. The TA has explained in the Consultation Paper that given the low public demand for FMNP and other relevant considerations, it would be unjustified to mandate the implementation. The proposed voluntary implementation provides additional flexibility for operators, based on their own business decisions, to offer FMNP service to meet the market demand.

41. In response to the view that FMNP must be mandated as it is one of the fundamental cornerstones of convergence, the TA would like to clarify that the primary objective of introducing FMNP is not for the promotion of FMC. Ovum stated clearly in its report that there is no evidence to suggest that lack of FMNP will pose a significant barrier to the development of FMC. Instead, the objective of introducing FMNP is to provide a level playing field for all FNOs and MNOs, to promote cross-platform competition and to cater for the need of those users who see a need for the service.

42. Regarding the argument that a quasi-FMNP service already exists in the market and this therefore obviates the need for a formal FMNP service, the TA would like to point out that it is never the government's policy to suppress the introduction of new or innovative

services because alternatives are already available in the market. The existence of the quasi-FMNP service should not be used as the justification to bar the introduction of FMNP service. On the contrary, the introduction of commercial quasi-FMNP services does indicate that there is market demand for FMNP and that some operators already spot commercial opportunities in offering such services.

43. There are diverse views on whether the figure of 25% in footnote 6 represents a significant portion of users. Submissions supporting FMNP considered the figure was significant while those opposing FMNP said the figure was low. The TA notes that when PCCW commented on the perceived need for the demarcation of fixed and mobile services (see paragraph 16), it considered that the 10% of the residential line respondents who did not opt for fixed-to-mobile number portability would represent a significant number. However, when it commented on the local demand for FMNP, it then argued that the 25% of residential line respondents who opted for fixed-to-mobile number portability denoted very low demand.

44. As stated in the Consultation Paper, the TA was of the view that the 25% market demand could not justify the mandatory implementation of FMNP. However, the figure of 25% does represent a sizeable portion of the community who sees a need for FMNP. As market force is the best way to determine the market outcome, the TA considers that it would be in the public interest to allow individual operators to make their own business decisions to implement FMNP on a voluntary basis. As regards the view that the proposed voluntary implementation of FMNP would create substantial consumer confusion due to the co-existence of both FMNP and non-FMNP operators in the market, the TA is confident that with adequate public education and promotion campaigns, consumers should be able to get familiar with the new arrangement after a short transitional period.

45. To address the concerns that non-FMNP operators may need to modify their networks and service platforms and therefore incur expenditure in order to cope with the voluntary scheme, the TA has come up with two possible solutions in Annex 2. FMNP operators are welcome to come forward with other solutions that best meet their own

business plans. If necessary, the TA will convene working groups to iron out the details before allowing interested parties to proceed with the actual implementation of FMNP.

## **GUIDING PRINCIPLES FOR THE VOLUNTARY FMNP IMPLEMENTATION**

46. To allow for the orderly implementation of a voluntary FMNP arrangement, the TA has proposed certain basic guiding principles in the Consultation Paper and they were intended as the minimum necessary intervention to the market for the implementation of FMNP in an orderly manner. In this regard, the TA asked the following question in the Consultation Paper:

*Question (4): Do you agree that the proposed guiding principles are necessary and sufficient for the voluntary implementation of FMNP in an orderly manner?*

### ***Submissions***

47. In general, the majority of Submissions agreed that guidelines are required for the orderly implementation of FMNP. PCCW commented that the guiding principles as set out in the Consultation Paper were fairly sensible and should be adopted. HKBN stated that the proposed guiding principles had preliminarily addressed some of the concerns on FMNP. However, CITIC viewed that the proposed guiding principles were only a high level description. It requested the TA to conduct a serious review on the impact of the FMNP implementation on the existing number portability environment and to issue more detailed practical guidelines for further consultation. CMHK commented that it might not be possible to devise a set of well defined rules and technical specifications for the voluntary implementation of FMNP. Similarly, CSL and PCCW considered that detailed guidelines for practical implementation would be needed. Some respondents also asked the TA to provide further clarification on some of the proposed principles.

### ***TA's Views and Responses***

48. The TA notes that the respondents generally support that guidelines are required for the orderly implementation of FMNP and the TA's proposed guiding principles as set out in the Consultation Paper should be adopted. The TA therefore decides to adopt these guiding principles, and for ease of reference they are repeated in Annex 1 to this Statement. Moreover, in response to the requests of some respondents, the TA has provided further elaborations on Principles IV, VI and VII.

49. The guiding principles are initial and high level guidelines. If necessary, further refinements will be made and additional principles may be added after operational experience has been gained. The detailed implementation guidelines and technical specification, if any, will require further discussion among the relevant industry players. The TA, after receiving the interested party's proposal on FMNP implementation, will initiate on a need basis further consultation with a view to developing the detailed implementation guidance.

### **FMNP REQUIREMENTS FOR SBO LICENSEES**

50. The TA adopts a two-class licensing approach for IP telephony services. In summary, Class 1 services are those services that have all the attributes of the conventional telephone services and are required to fulfill the licensing conditions of FCL relevant to the provision of local voice telephony services. Class 2 services are those services that do not have all the attributes of the conventional telephone services and are only subject to minimal licensing conditions with the main purpose to protect consumer interests and safeguard fair competition. SBO licensees providing Class 1 service ("Class 1 Service Provider") are therefore required to support number portability function while SBO licensees providing Class 2 service ("Class 2 Service Provider") are not required to do so.

51. In principle, therefore, similar to their counterparts who offer conventional telephone services under the FCL, Class 1 Service Providers

should be allowed to implement FMNP on a voluntary basis. However, since the creation of the SBO licensing framework in January 2006, there is no commercial Class 1 service available in the market. It therefore seemed premature to consider whether Class 1 Service Providers should be allowed to implement FMNP on a voluntary basis when the first Class 1 Service Provider has yet to emerge. On this issue, the TA asked the following question in the Consultation Paper:

*Question (5): Do you agree that the proposed voluntary implementation of FMNP should not cover SBO licensee during the initial stage?*

### ***Submissions***

52. Most Submissions considered that the proposed voluntary implementation of FMNP should cover SBO licensees on the ground that similar services should be accorded similar regulatory treatments. However, CITIC advised that the implementation of number portability would become even more complicated if SBOs are involved.

### ***TA's Views and Responses***

53. Unified Carrier Licence ("UCL") is the replacement of the current fixed carrier licence and mobile carrier licence. Unified carrier licensees will continue to be required to facilitate ONP/MNP after they convert their licences to the respective UCLs. Unified carrier licensees who provide fixed and/or mobile services may also implement FMNP on a voluntary basis.

54. Although the TA acknowledges that the implementation of number portability will be more complicated if SBOs are involved, he agrees that it is fair for similar services to be regulated in a similar manner. The types of voice telephone services to be provided by Class 1 Service Providers are akin to the conventional telephone service provided by FNOs. They use the same numbering level (i.e. numbers with prefixes '2' and '3') and under the current licence condition, Class 1 Service Providers are directed by the TA to facilitate ONP. In this respect, the TA agrees that the proposed voluntary implementation of FMNP should cover Class 1 Service Providers.

55. As for Class 2 Service Providers, basically they are providing VoIP telephony service using different numbering levels i.e. numbers prefixed with '57' and '58'. Unlike their Class 1 counterparts, there is no licence obligation requiring them to facilitate ONP. The TA therefore considers that the proposed FMNP regime should not cover Class 2 Service Providers.

56. Under the licence condition, MVNOs are authorized to provide mobile virtual network service by leveraging the network infrastructure of MNOs. They are using the same number levels as those assigned to MNOs and subject to the MNP obligation under their licence. The proposed voluntary implementation of FMNP should therefore be applied to MVNOs as well.

## **SALIENT ISSUES FOR THE FMNP IMPLEMENTATION**

57. Currently, quite a few asymmetrical regulatory arrangements apply to FNOs and MNOs. In implementing FMNP on a voluntary basis, a FMNP operator will have to cope with these asymmetries and other implementation issues. Some of the salient issues are listed below:

- (a) Fixed-Mobile Interconnection Charge ("FMIC");
- (b) Dipping Charge;
- (c) Local Access Charge ("LAC");
- (d) Cost Recovery Principles for Number Portability;
- (e) International Call Forwarding Services ("ICFS");
- (f) FMNP Database; and
- (g) Geographical location information for Emergency Services.

58. The first asymmetry in respect of FMIC has been removed following the deregulation of FMIC on 27 April 2009. The second asymmetry in respect of dipping charges will be removed after the licences of the four fixed telecommunications network services and fixed carrier licences issued in June 1995 are replaced with UCL in June 2010. Other regulatory asymmetries between the fixed and mobile services

however remain to be tackled. To stimulate discussion on these issues, the TA asked the following question in the Consultation Paper:

*Question (6): Are there any other issues in addition to those listed above that should be considered in relation to the implementation of FMNP?*

### **Submissions**

59. While the Submissions provided differing views on the various regulatory asymmetries listed above, most of the respondents held the view that those issues should be dealt with separately and not to be bundled with FMNP.

### **FMIC**

60. PCCW stated that if FMNP were to be introduced, there should be a system in place to ensure that the correct interconnection charges are levied and collected. To fulfil this requirement, it is essential for the operator concerned to know the type of network (i.e. fixed line or mobile network) from/to which the call is conveyed. To this end, PCCW advised that the unique network number associated with each telephone number could be leveraged to serve the purpose. PCCW also viewed that as the FMIC regime is still unknown, it would be unnecessary to deal with this item in the current consultation. Smartone also stated that the implementation of FMNP would create regulatory uncertainty to the existing interconnection charges regime because payment of interconnection charges depends on the identification of fixed and mobile numbers. Wharf considered that the FMIC issue should have higher priority than the FMNP issue. It requested the TA to take immediate action to deal with the FMIC issue as the deregulation of FMIC would soon be effective. The lack of obvious progress in the commercial negotiation among operators might paralyze the telecommunications and threaten Hong Kong's position as the telecommunications hub in the region.

### **Dipping Charge**

61. CSL submitted that requiring MNOs to purchase ONP database

from FNOs was discriminatory to MNOs. But PCCW held the different view that the principle requiring MNOs to pay dipping charges should not be changed. PCCW asserted that it would be unnecessary to deal with this item in this current consultation as the dipping charge issue will be removed in June 2010. Wharf viewed that unless the implementation of voluntary FMNP holds off until June 2010, the TA should further consult the industry on the proper settlement of dipping charges that would require the upgrade of existing network systems and equipment as well as the establishment of a new number database for the entire industry.

## **LAC**

62. CSL commented that the fact that external telecommunications services (“ETS”) operators were allowed to make profit without paying LAC to the MNOs was not tolerable and must be resolved. It argued that the existing LAC determination and all its subsequent revisions should be withdrawn to facilitate the migration to a market-driven environment. However, PCCW viewed that the issue was irrelevant to FMNP as it would not alter the existing LAC arrangement. Wharf stated that prior industry consultation should be conducted for any change to existing LAC regime.

## **Cost Recovery Principles for Number Portability**

63. PCCW and Wharf opined that a review is needed to determine the cost recovery principles for FMNP. PCCW asserted that the existing cost recovery principles were restricted to fixed-to-fixed or mobile-to-mobile number portability and would not be suitable to FMNP. But it also stated that the issue could be left to the licensees who planned to implement the FMNP. Wharf pointed out that costs borne by non-FMNP operators for accommodating the implementation of voluntary FMNP were substantial and would vary with the legacies of individual networks.

## **ICFS**

64. As the deregulation of FMIC would come into effect on 27 April

2009, most Submissions viewed that a review on ICFS is required to reflect the latest regulatory change. CSL stated that the fundamental principle of compensating MNOs for providing interconnecting services to ICFS providers must be upheld after the implementation of FMNP. PCCW requested that the TA must ensure the collection of ICFS charges would not be affected if FMNP were introduced. HKBN asserted that the common cost component of ICFS and FMIC should be applied concurrently given the fact that the FMIC cost component in ICFS was actually a form of “rebate” of the FMIC payable by the MNO to the ICFS providers.

### **FMNP Database, Geographical Location Information for Emergency Services**

65. Respondents who provided comments on this issue commonly opined that a working group should be established to address the relevant technical and operational issues.

66. PCCW submitted that the obligation of providing location information pertaining to the Calling Line Address Database (“CLAD”) should not solely rest on PCCW. PCCW demanded that all FNOs should be required to provide location information pertaining to their telephone numbers to the CLAD and that a further detailed study is required to ensure fixed line numbers would be correctly recognized in the CLAD. Wharf commented that the numbers with existing mobile prefix, if used for fixed line services, should be included in the CLAD in a timely manner.

### **TA’s Views and Responses**

67. In response to the majority’s views, the TA agrees that the salient issues should be handled separately from the FMNP. His thoughts are given below.

### **FMIC and LAC**

68. The de-regulation of FMIC has duly taken effect from 27 April 2009 as scheduled. In the light of the latest developments, the TA has

made it known on 22 May 2009 that he will launch an industry consultation on LAC in the second half of 2009.

69. After the implementation of FMNP, there may well be technical issues for collecting the FMIC if the charging regime adopted is a scheme which continues to differentiate between mobile and fixed services. However, PCCW has already suggested in paragraph 60 a possible solution to overcome the difficulty in identifying the type of network to which a telephone number belongs. There may be other solutions. The TA considers that this issue is related to detailed implementation and it should be tackled after he receives proposals from operators who are interested in implementing FMNP. If necessary, the TA may convene industry working group to resolve the pertinent issues.

### **Dipping Charge**

70. The TA notes that the FNOs and MNOs hold different views on dipping charge. However, dipping charge should not in principle hinder the introduction of FMNP as it does not affect the implementation of ONP and MNP. Pursuant to Guiding Principle III as given in Annex 1, the implementation of FMNP shall not change the operator's original role as FNO or MNO. A FMNP operator has to continue to comply with the relevant regulatory regime that applies to FNOs and/or MNOs.

71. The TA would like to refer to the past experience in the implementation of ONP and MNP in Hong Kong. The TA announced the implementation of MNP in June 1998. To resolve the technical issues, to devise the cost recovery principle and to formulate the detailed implementation plan, it had taken the industry and the TA almost nine months to launch the MNP service in March 1999. The TA believes that a similar timeframe may be necessary for the implementation of FMNP. Therefore, by the time FMNP is launched, the dipping charge should become a non-issue as the licences of the four fixed telecommunications network services and fixed carrier licences issued in June 1995 should have been replaced by UCL.

## **ICFS**

72. Subsequent to the issuance of the Consultation Paper, the TA issued another consultation paper<sup>7</sup> on 19 March 2009 proposing a variation of the ICFS arrangement to cope with the changes consequential to the deregulation of FMIC from 27 April 2009. Having duly considered the submissions, the TA issued on 19 May 2009 a determination entitled “Determination under Section 36A of the Telecommunications Ordinance in respect of a Variation of the Terms and Conditions of Interconnection for International Call Forwarding Services”<sup>8</sup>, setting out the updated ICFS arrangement which shall be applied with effect from 27 April 2009. The TA will conduct a comprehensive review of the ICFS arrangement after the post-transition FMIC negotiations between FNOs and MNOs have been settled.

### **Cost Recovery Principles for Number Portability**

73. Guiding Principle VII in Annex 1 has laid down the basic principle for the cost recovery for FMNP. The existing cost recovery frameworks for ONP and MNP shall apply to FMNP. When a customer requests for FMNP from another FMNP operator, the Donor Network Operator (“DNO”) may not impose any charge on the porting customer. Nevertheless, the DNO may negotiate with the Recipient Network Operator (“RNO”) to recover the relevant costs, and the RNO may determine whether it will charge the customer for the cross-platform porting. Should there be any adjustment required to meet the specific requirement of FMNP, the TA will establish an industry working group to resolve the issues.

### **FMNP Database and Geographical Location Information for Emergency Services**

74. The TA may on a need basis set up industry working groups to

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<sup>7</sup> The consultation paper entitled “Variation of the Determination of the Terms and Conditions of Interconnection for International Call Forwarding Services” can be downloaded at <http://www.ofta.gov.hk/en/report-paper-guide/paper/consultation/20090319.pdf>.

<sup>8</sup> The document can be downloaded at <http://www.ofta.gov.hk/en/ta-determine/de20090519.pdf>.

address the pertinent technical and operational issues that may arise from the introduction of FMNP.

## **WAY FORWARD**

75. Taking into account the views and comments of the respondents, the TA decides to permit individual operators to implement FMNP on a voluntary basis.

76. To protect consumer interest and to ensure the orderly implementation of FMNP, the TA will require operators who are interested in implementing FMNP on a voluntary basis to submit proposals for his consideration. The proposals will identify and address the technical and operational issues associated with the implementation of FMNP. In preparing the proposal, the operator will observe the guiding principles as given in Annex 1. If necessary, the TA would convene working groups to iron out the details before allowing interested parties to proceed with the actual implementation of FMNP.

**Office of the Telecommunications Authority**  
**10 July 2009**

**Guiding Principles for the Voluntary Implementation of FMNP**

To allow for the orderly implementation of a voluntary FMNP arrangement, the TA has laid down the following basic guiding principles for FMNP operators to observe.

- (I) A FMNP operator has to achieve FMNP within its own service platform and at its own expense. Save for the need to follow Principle VII, any assistance or cooperation that is required from another operator would be arranged purely on a commercial basis.
- (II) A FMNP operator shall bear all the costs that accompany the voluntary implementation of the FMNP. In other words, they should not impose any cost on other non-FMNP operators due to the voluntary implementation of FMNP.
- (III) The implementation of FMNP shall not change the operator's original role as FNO or MNO. That is, a FMNP operator has to continue to comply with the relevant regulatory regimes that apply to FNOs and MNOs.
- (IV) A non-FMNP operator shall continue to comply with its regulatory obligation related to MNP and ONP without discrimination in respect of a FMNP operator. For example, in its capacity as the donor network operator ("DNO"), the non-FMNP operator shall observe the obligation to allow its customer porting out a number to the corresponding platform of a recipient network operator ("RNO"), irrespective of whether or not the latter is a FMNP operator. Likewise, in its capacity as the RNO, the non-FMNP operator shall observe its regulatory obligation in allowing a prospective customer porting in a number to its MNP or ONP platform from the corresponding platform of the DNO, irrespective of whether or not the latter is a FMNP

operator.

*Note 1*

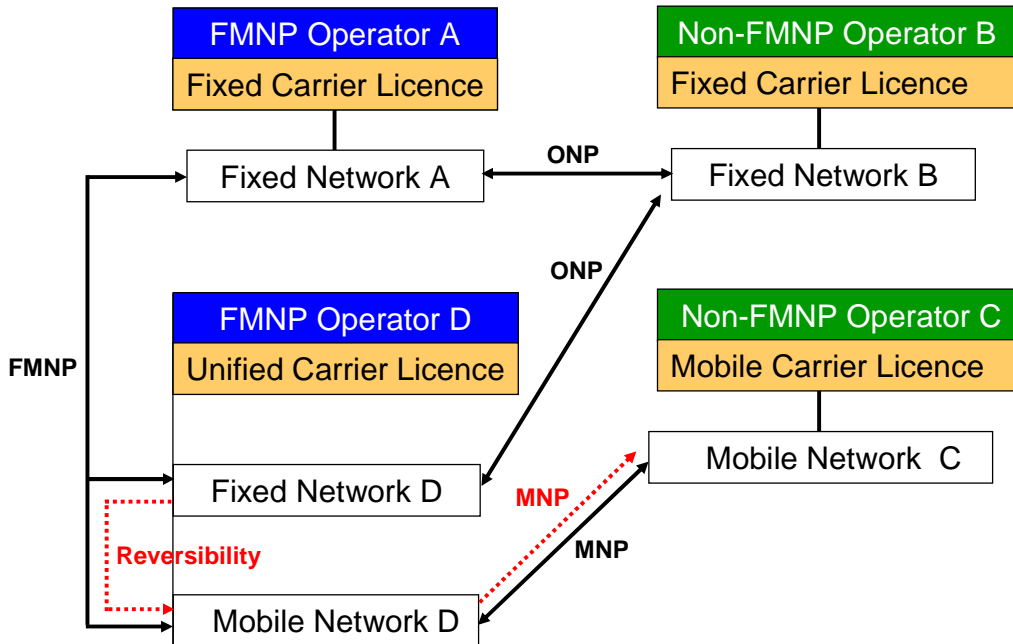
Under the current Hong Kong Numbering Plan, only numbers with prefixes ‘2’ and ‘3’ are considered as fixed line telephone numbers and will only be ported from one fixed network to another fixed network under the ONP regime. If FMNP is implemented, a number prefixed with ‘2’ or ‘3’ may be ported to a MNO and used for mobile service. According to Principle IV, MNOs who do not support FMNP are required to facilitate MNP only and they have no obligation to support any porting request of telephone numbers with prefix ‘2’ or ‘3’ which are being used for mobile service provided by a FMNP operator. In other words, non-FMNP operators do not need to support any FMNP porting request from FMNP operators.

- (V) Two FMNP operators shall open up their service platforms to each other. Except for the need to observe Principle VII, they should allow cross-porting between their networks under commercial arrangements.
- (VI) A FMNP operator shall commit that there is service reversibility i.e. it shall allow and facilitate its customers to port out their numbers free of any unreasonable encumbrance.

*Note 1*

As an illustration, FMNP Operator D operates both a mobile and a fixed network. A mobile customer of Operator D may therefore port his mobile phone number (e.g. with a prefix “9”) easily to the fixed network of the same Operator D through FMNP. According to this Principle VI and also Principle IV, the customer has the right to further port his number from the fixed network Operator D to the mobile network of non-FMNP Operator C. This requirement can be achieved through the arrangement depicted in the diagram below. That is, Operator D

has to port the prefix-9 number from its fixed network back to its mobile network first, and following the MNP mechanism further port the number to the mobile network of non-FMNP Operator C.



*Note 2*

FMNP Operator A only provides fixed line service. To provide FMNP and in order to support the reversibility requirement, it will have to work with another FMNP operator, such as Operator D, who provides both mobile and fixed services. As an example, a mobile customer of Operator D may have ported his mobile phone number (e.g. with a prefix “9”) previously to Operator A through FMNP. According to this Principle VI and also Principle IV, that customer has the right to port his number from Operator A to the mobile network of non-FMNP Operator C. This requirement can be achieved through the arrangement depicted in the diagram above. That is, Operator A has to port the prefix-9 number from its network back to the mobile network of Operator D first, and following the MNP mechanism Operator D will then further port the number to Operator C.

- (VII) The existing cost recovery frameworks for ONP and MNP shall also apply to FMNP. When a customer requests for FMNP from another FMNP operator, the DNO may not impose any charge on the porting customer. Nevertheless, the DNO may negotiate with the RNO to recover the relevant costs, and the RNO may determine whether it would charge the customer for the cross-platform porting.

*Note*

Porting of numbers between non-FMNP operators and FMNP operators are limited to the normal ONP and/or MNP only. As non-FMNP operators do not need to support any FMNP request from FMNP operators, this Principle VII is irrelevant to them.

## **Possible Solutions for Implementation of FMNP**

The voluntary implementation of FMNP will allow interested operators (“FMNP operators”) the flexibility to provide cross-platform number portability service based on their own business decisions. Yet, it should not impose any unnecessary burden on the operators (“non-FMNP operators”) who do not wish to implement or support FMNP. As laid down in the guiding principles in Annex 1, non-FMNP operators have no obligation to facilitate FMNP and any assistance or cooperation required from a FMNP operator would be arranged commercially. In this Annex, the TA sets out possible solutions to enable FMNP implementation which is transparent to non-FMNP operators. These solutions are applicable to routing of voice calls and short message service (“SMS”). Network operators are welcome to devise other appropriate solutions for any type of services they are offering (e.g. multimedia message service) and as necessary, further deliberation in working groups would be arranged.

### **Concern about Voice Call Routing**

2. Currently, two separate number portability platforms are used to facilitate MNP and ONP respectively. For a call originating from a MNO, the MNO will perform dipping for the called mobile numbers (e.g. 8-digit numbers currently with prefixes “51”, “53”, “6” and “9”) to facilitate MNP. For calls to fixed numbers (e.g. 8-digit numbers currently with prefixes “2” and “3”), MNOs will route them to FNOs who will be responsible for ONP dipping. The arrangement is depicted in Figure 1.

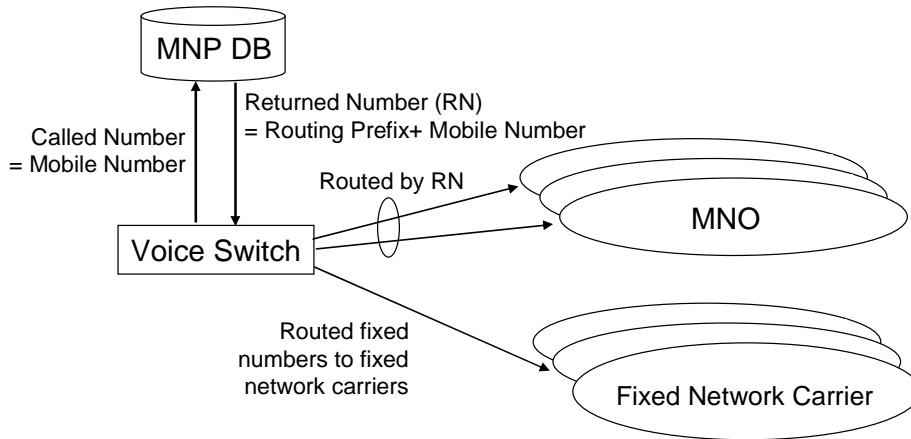


Figure 1

3. If FMNP is implemented, some respondents to the consultation ended on 19 January 2009 are concerned that the existing arrangements given in paragraph 2 for calls to different number levels may no longer be maintained. The originating MNO, no matter whether it has offered FMNP services or not, may need to perform dipping for all called numbers in order to identify whether the call should be routed to fixed or mobile networks. In other words, when there is FMNP implementation by a single operator, all operators may need to make fundamental changes to the existing number portability platforms to ensure correct call routing.

### **Possible Solutions for Voice Call Routing**

4. To address the above concern, two possible solutions are elaborated in the following paragraphs. It mainly illustrates the porting information available and call routing for non-FMNP operators. The FMNP procedure is not detailed here and is subject to the proposals of the network operators interested in the actual implementation of FMNP and further deliberation in the working groups as necessary.

#### ***Possible Solution 1***

##### Mobile Phone Numbers

5. This option requires a MNO and a FNO who implement FMNP

to partner with each other to form a FMNP group. Each FMNP group is self-contained to support the FMNP and the post-FMNP porting operation. Other networks outside the FMNP group will not be affected and their databases will remain intact.

6. As illustrated Figure 2, when a mobile phone number with prefix '9' is ported from MNO1 to MNO2 through MNP, all FNOs and MNOs will update their MNP database so that all calls made to the ported number will be routed to MNO2.

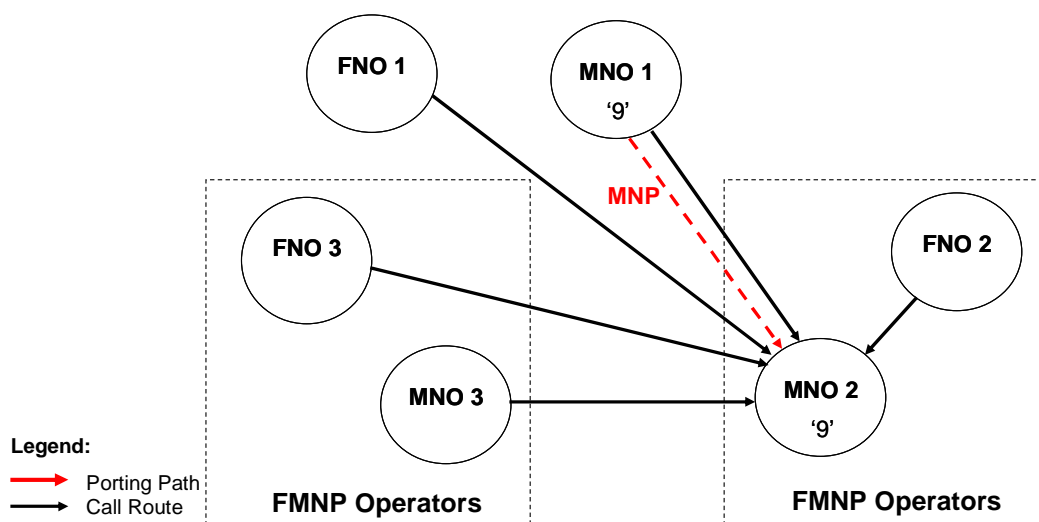


Figure 2

7. However, when the number is further ported to FNO2 through FMNP, other FNOs and MNOs outside the FMNP group will not be updated with the porting information. MNO2 who belongs to the same FMNP group as FNO2 will have the responsibility for routing all calls made to the ported number from other networks onwards to the correct destination. The arrangement is depicted in Figure 3.

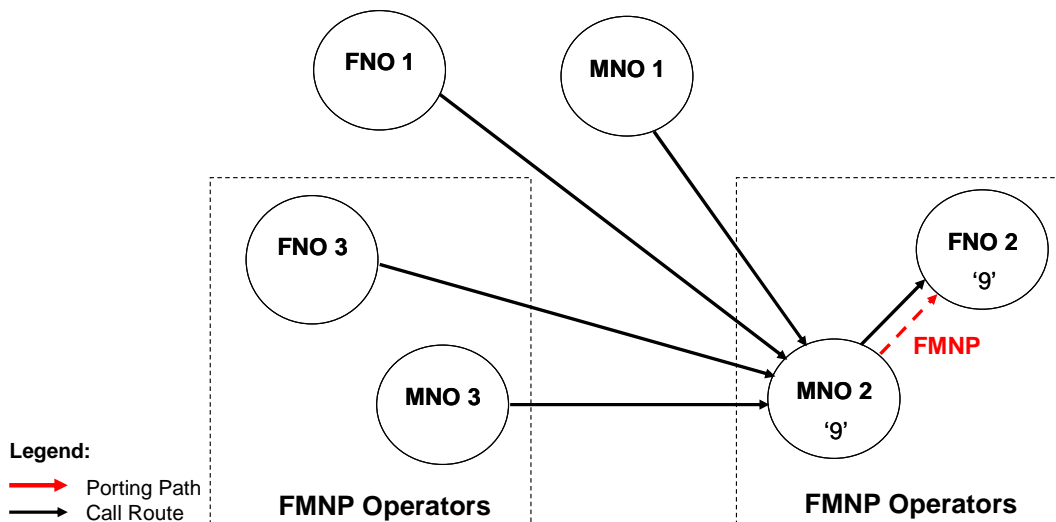


Figure 3

8. If the mobile phone number is further ported from FNO2 to FNO3, FNO2 has to initiate the FMNP mechanism to port the number back to MNO2 which will then port the number to MNO3 through MNP. After receiving the ported number, MNO3 ports the number to FNO3 through FMNP. As other network operators are only required to facilitate the existing MNP, their networks will only be updated with the MNP porting information. They will convey all the calls made to the ported number to MNO3. It is the responsibility of MNO3 who belongs to the same FMNP group as FNO3 to route the calls onwards to FNO3. Figure 4 shows the arrangement.

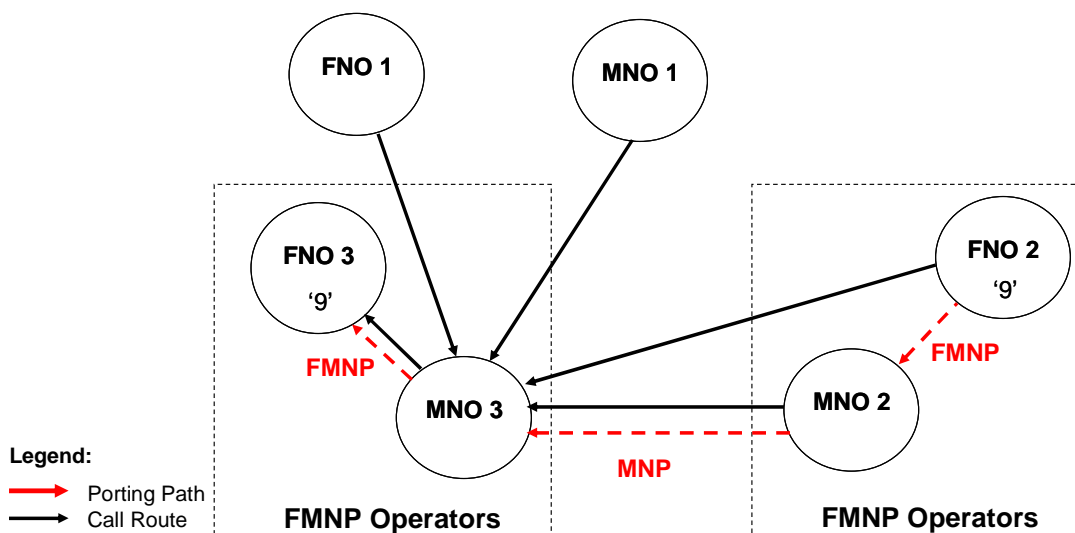


Figure 4

## Fixed Telephone Numbers

9. The FMNP mechanism for fixed telephone numbers is similar to that for mobile phone numbers. When a fixed telephone number with prefix '2' is ported from FNO1 to FNO2 through ONP, all FNOs will update their ONP database so that all calls made to the ported number will be routed to FNO2. As MNOs do not possess any ONP database, they will route the calls to a FNO and rely on the FNO to convey the call to the destined network. Figure 5 illustrates the scenario.

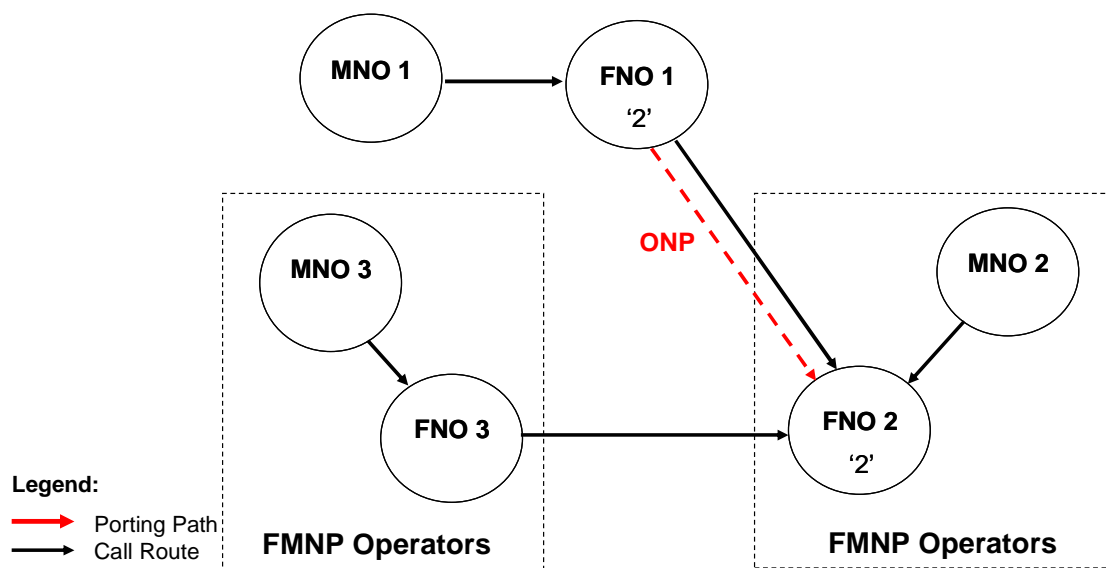


Figure 5

10. When the fixed telephone number is ported from FNO2 to MNO2, it is carried out through FMNP between FNO2 and MNO2. Other network operators will not be involved or provided with any porting information. From their perspective, FNO2's network is still the network serving the ported number. All calls made to the ported number will be conveyed to FNO2 who belongs to the same FMNP group as MNO2 and it will then forward the number onwards to MNO2. The arrangement is depicted in Figure 6.

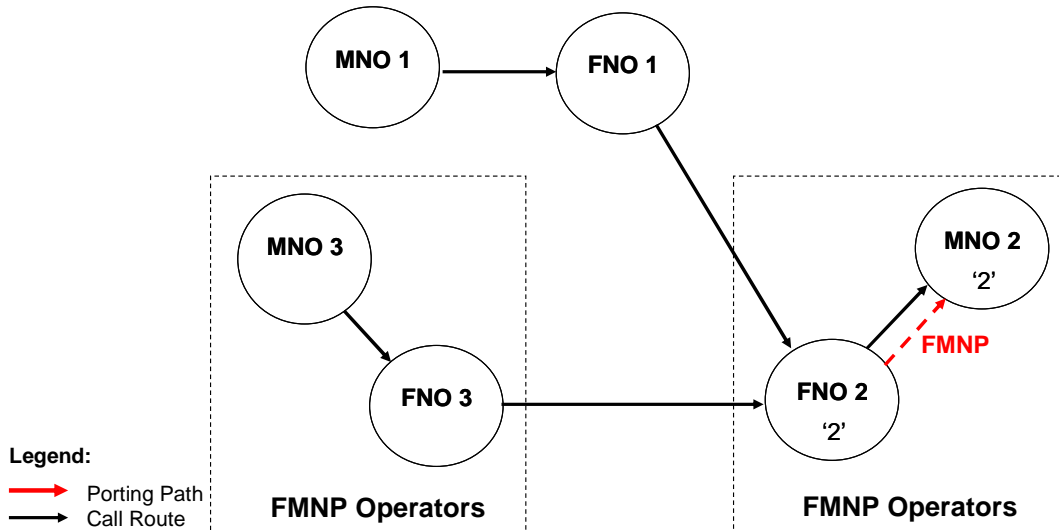


Figure 6

11. If the fixed telephone number continues to be ported from MNO2 to MNO3, MNO2 has to port the number through FMNP back to FNO2 which will then port the number to FNO3 through ONP. After FNO3 receives the ported number, it ports the number to MNO3 through FMNP. As other FNOs facilitate ONP, they will be updated with the ONP porting information. They will then convey all the calls made to the ported number to FNO3. Other MNOs will continue to rely on FNOs to deliver the calls to FNO3. It is the responsibility of FNO3 who belongs to the same FMNP group as MNO3 to route the calls to MNO3. The arrangement is depicted in Figure 7.

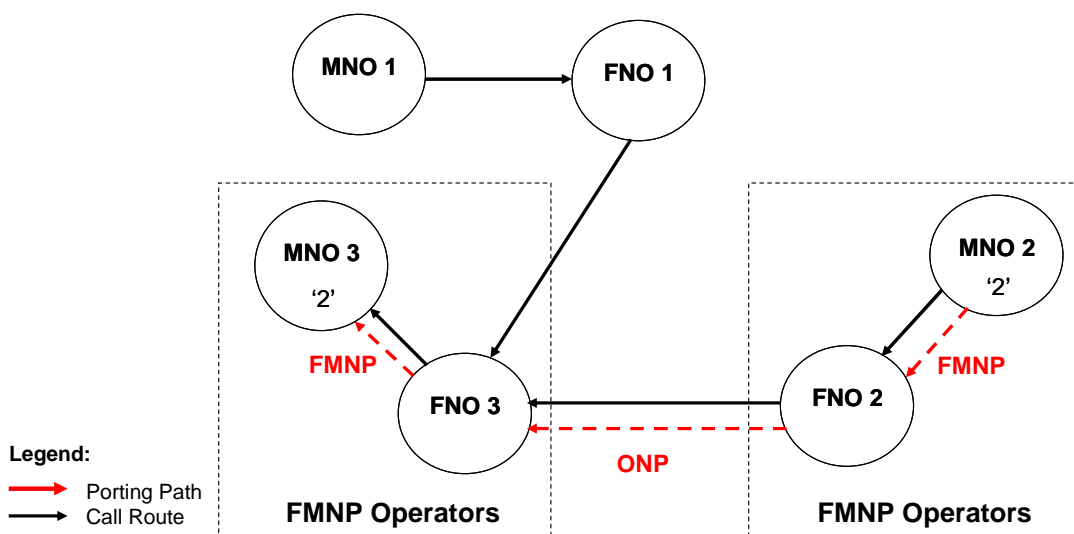


Figure 7

## ***Possible Solution II***

### Mobile Phone Numbers

12. This possible solution requires all FMNP operators to develop a common mechanism that enables FMNP operators to obtain the updated porting information to route the calls to the correct networks after mobile phone numbers are ported through FMNP.

13. When a number with prefix '9' is ported from MNO1 to MNO2, it is carried out through MNP and the ported number information will indicate MNO1 as the DNO and MNO2 as the RNO following the requirement set out in HKTA 2103. After the porting is completed, all network operators will route the calls made to the ported number to MNO2 direct. The situation is shown in Figure 8.

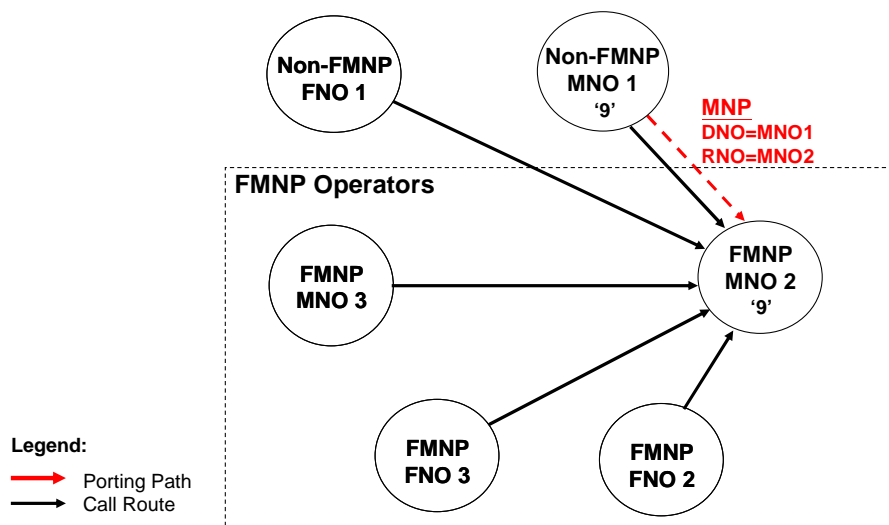


Figure 8

14. If the number is further ported from MNO2 to FNO2, FMNP operators need to update their own database so that they will be able to route all calls made to the ported number to FNO2 without transit via MNO2. Meanwhile, non-FMNP operators will not be affected by FMNP (Principle I). They are not required to update their database and will continue to convey the calls made to the ported number to MNO2. As MNO2 is the first FMNP DNO involved in FMNP for the ported number, it has to maintain the correct routing table for the post-FMNP

porting operation. The arrangement is depicted in Figure 9.

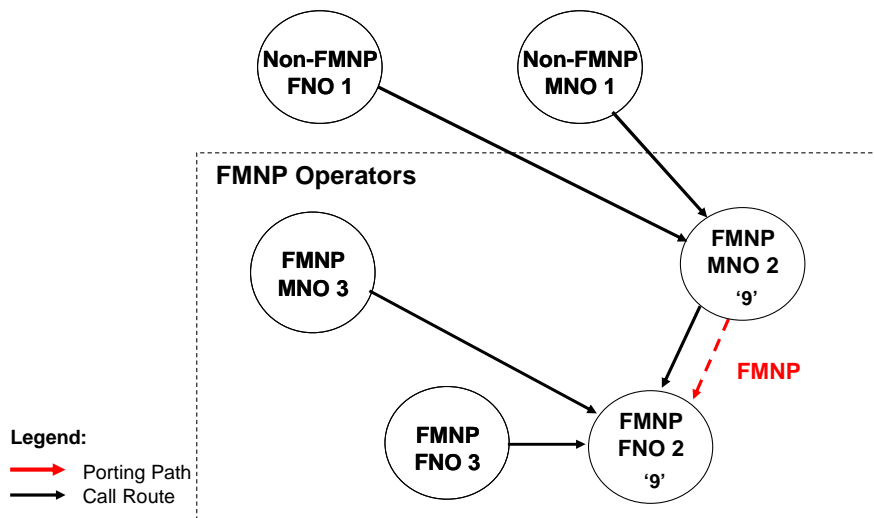


Figure 9

15. If the number is further ported from FNO2 to FNO3 through FMNP, FMNP operators should update their own database to ensure call routing of all calls made to the ported number to FNO3 directly. For the non-FMNP operators, MNO2's network continues to act as the destination network of the ported number. MNO2 has to route all calls sent from non-FMNP operators to FNO3. Figure 10 shows the arrangement.

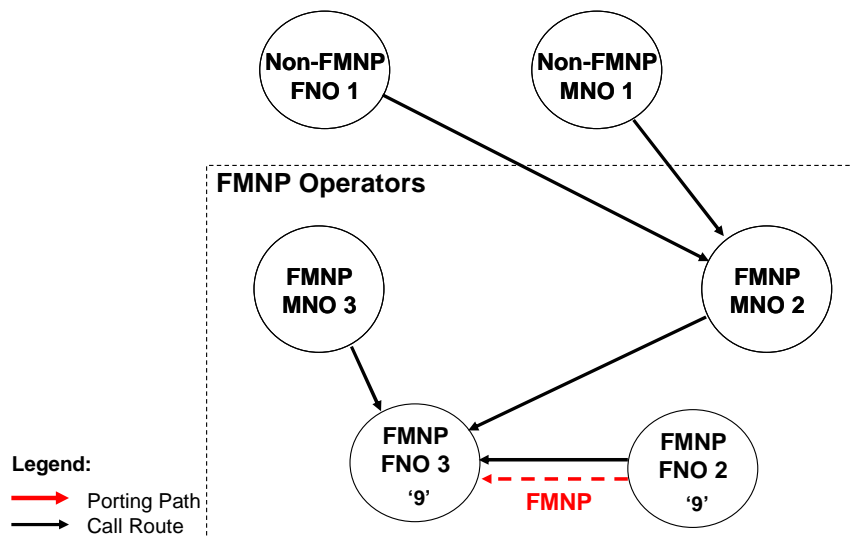


Figure 10

16. The routing responsibility upon MNO2 for calls from non-FMNP operators will be released when the number is further ported

to MNO3. For the number porting from FNO3 to MNO3, MNO3 sends out the ported number information to non-FMNP operators following the MNP mechanism even though the porting is actually carried out through FMNP. The ported number information will indicate that the DNO is MNO2 and the RNO is MNO3. It is depicted in Figure 11.

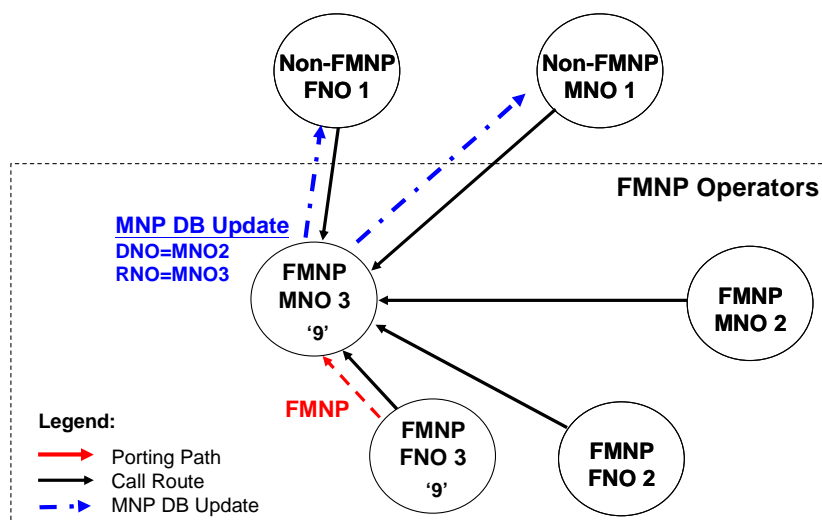


Figure 11

### Fixed Telephone Numbers

17. Under the current arrangement, a MNO will route all fixed number calls originated in its network to a FNO which will in turn convey the call to the destined FNO.

18. When the fixed telephone number with prefix '2' is ported from FNO1 to FNO2, FNO2 will send the ported number information which indicates FNO1 as the DNO and FNO2 as the RNO to other FNOs following the requirement set out in HKTA 2102. After the porting is completed, FNOs will route all calls made to the ported number to FNO2 direct as depicted in Figure 12.

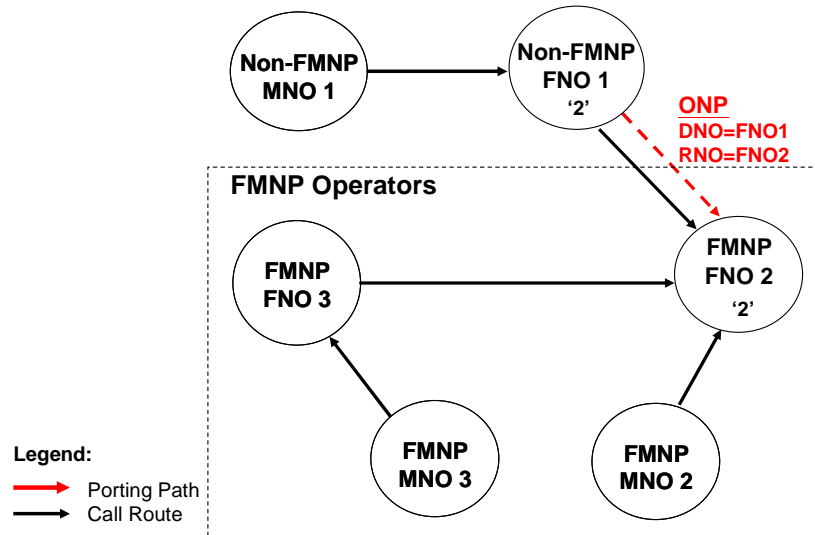


Figure 12

19. If the fixed number is further ported from FNO2 to MNO2, all FMNP operators will update their own databases so that all calls directed to the ported number can be routed to MNO2 directly. Same as the arrangement for porting mobile phone numbers, non-FMNP operators will not be affected by FMNP and will not need to update their databases for the FMNP activity. They will remain pointing to FNO2 for all calls made to the ported number. FNO2, being the first FMNP DNO involved in the FMNP for the ported number, has to maintain the correct routing table for the post-FMNP porting operation. The arrangement is depicted in Figure 13.

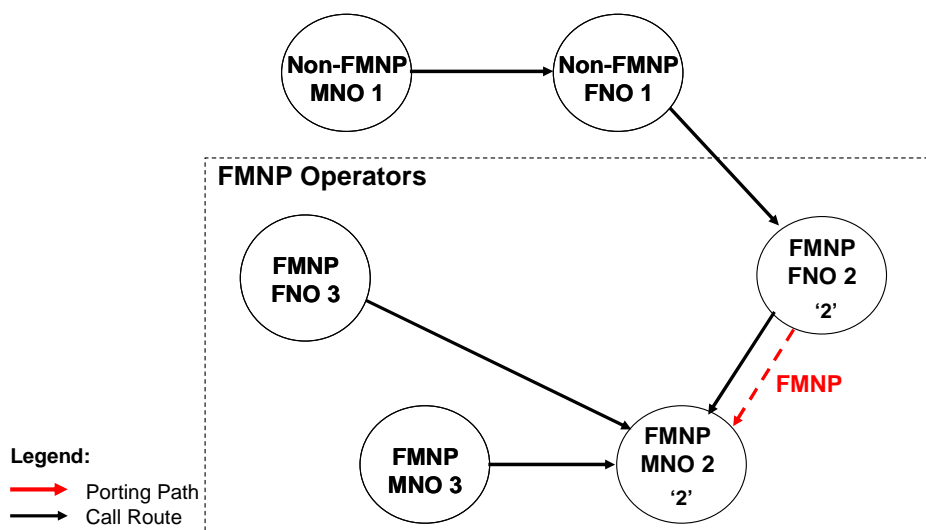


Figure 13

20. When the number is further ported from MNO2 to MNO3 through FMNP, non-FMNP operators will continue to convey the calls made to the ported number to FNO2 who has to route the calls onwards to the MNO3. All FMNP operators should instead route all calls directed to the ported number to MNO3 directly by updating their own databases directly. The arrangement is depicted in Figure 14.

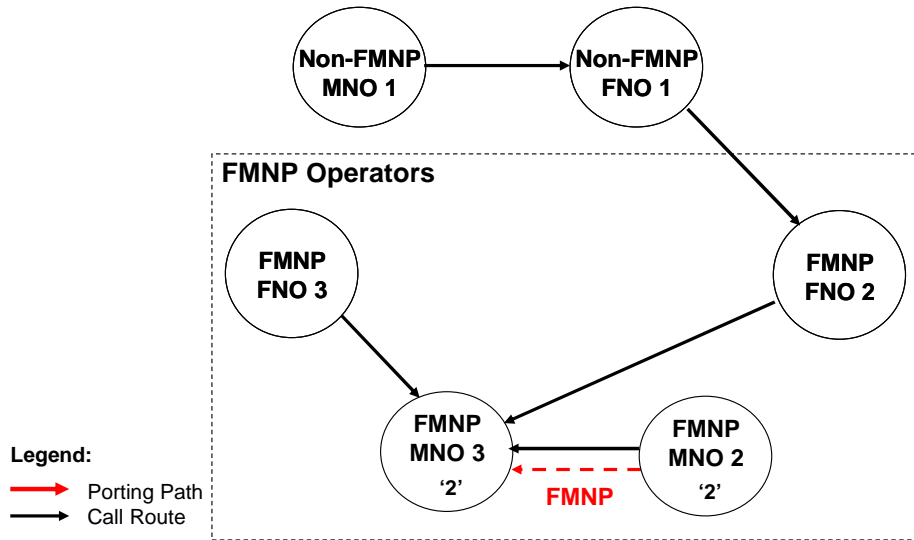


Figure 14

21. The routing responsibility upon FNO2 for calls from non-FMNP operators will be released when the number is further ported to FNO3. For the number porting from MNO3 to FNO3, FNO3 sends out the ported number information to non-FMNP fixed operators following the ONP mechanism even though the porting is in fact carried out under the FMNP arrangement. The ported number information should indicate that the DNO is FNO2 and RNO is FNO3. Figure 15 shows the arrangement.

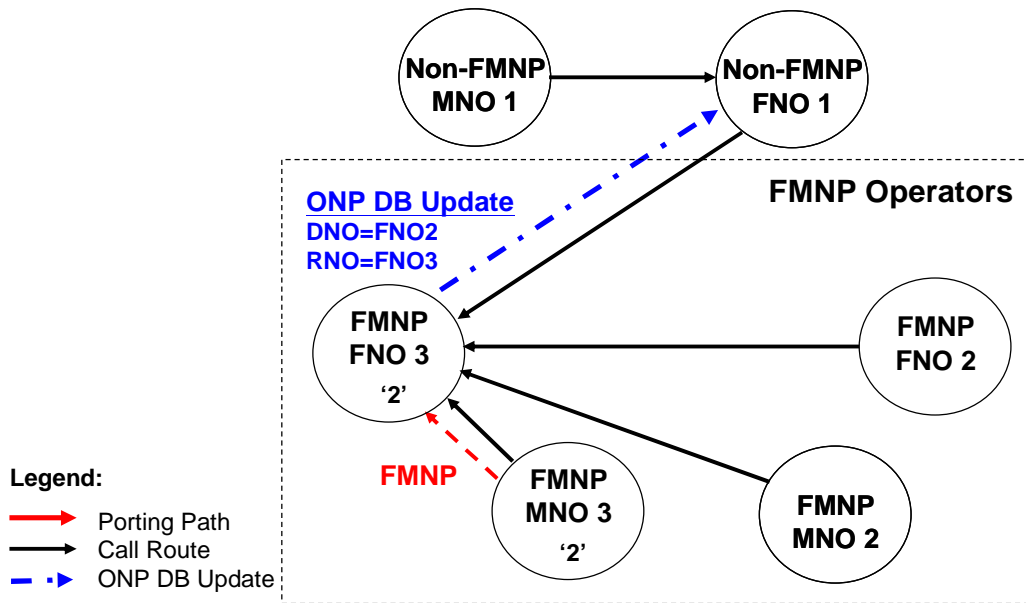


Figure 15

### Concern about SMS Routing

22. At present, only one FNO is offering SMS. A MNO can easily identify the FNO or other MNOs for call routing. For instance, a MNO performs dipping for SMS to mobile number and route only cross network SMS to any one of the Inter-Operator SMS (“IOSMS”) service providers. For SMS to fixed numbers, they do not need to perform dipping and route to the IOSMS service provider directly. The arrangement is shown in Figure 16.

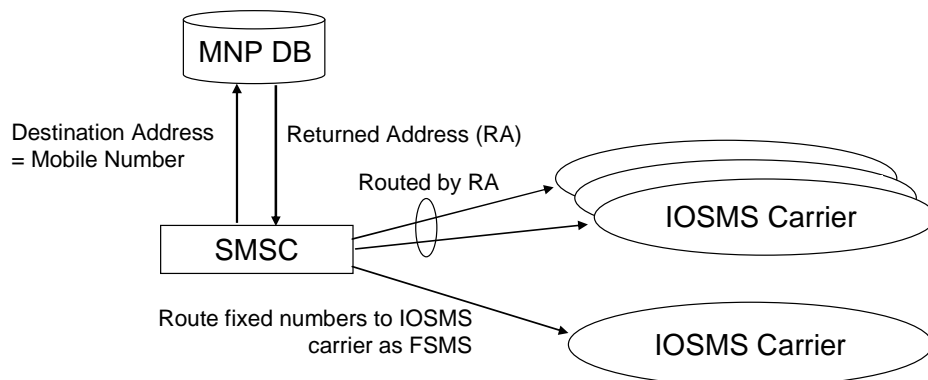


Figure 16

## **Possible Solution for SMS Routing**

23. After the implementation of FMNP, the routing of SMS messages could be handled in the same way as that for routing voice calls<sup>9</sup>. The first operator who conducts the FMNP for the ported number should be responsible for routing the SMS message to the destined network until the number is ported to an appropriate network (i.e. a fixed network for fixed numbers or a mobile network for mobile numbers).

24. Routing SMS messages to the FNO offering SMS will follow the existing practice. If that FNO opts to facilitate FMNP, it has the responsibility to route the SMS message correctly to the destined MNOs. It is clear that the current mechanism for routing SMS messages to fixed networks may no longer be applicable if an additional FNO decides to provide SMS, but this issue can be resolved by adopting the existing mechanism for routing SMS messages to the correct MNOs.

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<sup>9</sup> It is assumed that all FNOs and MNOs are IOSMS carriers.