New World Mobility

Submission to the Hong Kong Telecommunications Authority

On

Open Network Regulatory Framework for Third Generation Public Mobile Radio Services in Hong Kong

22 January 2001
Hong Kong

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Response to OFTA consultation paper on 3G open network regulatory framework[1]

"Open Network Requirement"

4. OFTA includes non-affiliated resellers, full MVNOs and content providers as NSPs and indicates that all should have equal access to the mandated capacity under the open access requirement . New World PCS Limited ("NWM") contends that, with the exception of full MVNO, it is not clear how the non-affiliated resellers and content providers relate to the definition of MVNO in annex 1. Furthermore, it is not clear under what conditions the non-affiliated resellers and content providers qualify to lease capacity, under the terms of the open network requirement, from the 3G MNO.

Since the reseller does not add any innovation or value to the capacity purchased from the MNO, NWM believes that resellers should not have access to the mandated open network capacity under the same access regime as the enhanced service provider and the full MVNO. Nevertheless, the network capacity consumed by resellers should be considered as part of the overall open network percentage.

NWM seeks greater clarification on the scope of the non-affiliated resellers and content providers in particular how they satisfy the two policy objectives of the government and how leasing capacity from the MNO helps them achieve this goal.

"Open Network" Regulatory Framework

Preference for Commercial Agreements

Definition of Network Capacity and Percentage of "Open Network"

8. NWM is concerned about the implication of specifying an "Open Network Percentage" and believes the quantum of access should be left to market forces. The specification of an open network percentage will distort market forces and is technically very difficult to measure. NWM seeks clarification on the granularity to which this figure is applicable, i.e. where is the open network percentage measured, i.e. locally, regionally or nationally and how is the NSP occupancy related to the open network percentage..

NWM actively and vigorously discourages OFTA from specifying an "Open Network" percentage. Furthermore, NWM strongly feels that the level of 30 – 50 % is too high a risk exposure for the MNO to bear.

[1] Paragraph numbering herein refers to paragraph numbers in the TA's workshop discussion paper.

OFTA should indicate what constitutes a “reasonable period of time” to reach an agreement with a potential NSP, on what basis it would consider intervening and the rules to apply to such intervention.

9. As currently defined, the actual NSP traffic occupancy percentage does not consider the type of services offered by the NSP. If the NSP offers real time services with requirements for high bit rate, this could cause significant problems for the MNO on network grade of service and air interface interference levels, i.e. high rise above thermal.

The “short-term busy hour traffic capacity” is highly dependent on the services mix, the resulting traffic profile in terms of data rates, symmetry and the location. Therefore, the MNO will need to clearly define the underlying assumptions with regards to the services mix and the resulting traffic profile before the “short term busy hour traffic capacity” can be consistently and meaningfully established. The MVNO will have to adopt the MNO traffic assumptions when defining his services as this forms the basis of dimensioning the network to provide a defined level of service quality.

The definition of short-term busy hour traffic capacity arbitrarily accounts for capacity that has already been accounted for in network planning. The network rollout plan of any diligent operator has likely taken into account the short term solutions, such as adding cards, in its network planning. Taxing such reserve capacity could have adverse effects on the network. Furthermore, taking into account any “latent” capacity is unnecessary as upon “activation” of the capacity it will be taken into account in the calculation. Pre-empting its inclusion in the calculation is unfair and unduly taxes the MNO network-planning task.

10. OFTA’s preoccupation deals greatly with securing access for the NSPs but does very little case of the fact that the MNO has very little technical or regulatory way to ensure the NSPs do not exceed that mandated capacity access level. OFTA should indicate how the MNO can technically “cut off” an abusive NSP at the time of the abuse and what regulatory sanctions will be opposable to such deliquent NSP. Bearing in mind that “after the fact” sanction will have little impact on the MNOs and the other NSPs customers who suffered the degradation resulting from the abuse.

Non-discriminatory Treatment

14. NWM welcomes this approach and in the context of multi-service UMTS networks considers this to be more meaningful than the stipulation of an open network percentage.

Furthermore, in the spirit of non-discriminatory treatment, NWM will recommend that the MVNO is not allowed to seek capacity from multiple MNOs.

Measurement of Actual NSP Traffic Occupancy Percentage

Scope of Measurement

19. Unlike FDMA and TDMA systems where the capacity is bandwidth limited, the capacity of CDMA systems is interference limited. The implication of this is that as users are added to the system the level of interference increases. Therefore, in order to identify the primary source of interference, the adopted measurement method must take into account the air interface load generated by individual users of the different services and the resulting level of interference.

Furthermore, the measurement area should reflect the different morphological areas in the Hong Kong SAR as service usage is usually different in the different morphological areas.

Due to the absence of sufficient historical data on the behaviour of packet data services in mobile networks it is difficult to determine when the busy hour occurs and where it will occur. To this effect, it is expected that in the initial phase of network operation the measurement time will be on a daily basis over a 24-hour period.

20. NWM applauds the TA on identifying the need to strike a balance in defining the measurement area thus ensuring that in the situation of high-localised occupancy is identified. However, in the absence of sufficient historical data, it appears that the most reliable way to strike the balance is to define the measurement area on a cell-by-cell basis for different morphological areas and to review this as the level of knowledge about traffic pattern is further developed.

Based on the above comments, it is clear from the measurement scope that any detailed and accurate measurement proposal will be expensive and consume a high degree of resources.

At the present time, NWM wishes to express its reservations on the measurement method and the scope of measurement area and time. The loading limit is a function that varies depending on the services and the generated traffic. In the absence of sufficient historical data, NWM feels that this and other parameters adopted in OFTA's proposed detailed measurement method are not sufficiently well understood or defined in an unambiguous manner. Furthermore, NWM would like to have further discussions with vendors of network management systems to establish the level of functionality and performance of 3G NMS.

Overview of the Measurement Method

Detailed Measurement Method

28. The MNO should have full flexibility for establishing the loading limit at which the network will be operated, as this will need to be refined with the improvement in understanding the behaviour of 3G networks. It is not in the

MNOs interest to either over-estimate or under-estimate the loading limit as this will result in either poor network performance or excess idle capacity. The loading limit at which the network is operated should be a matter for the MNO to establish in its sole discretion and to be communicated to any NSP interested in being an MVNO.

The MNO and NSP are both likely to offer a combination of services consisting of speech, real time data and non real time data. The performance of the radio interface is subject to the number of active users, the services mix and consequential traffic profile. The dimensioning rules for speech are based on Erlang B and are very well understood. The same is not true for the data services, particularly the non real time data services.

Due to the differences in the dimensioning rules, it is clear that the different services do not exhibit similar traffic profiles as they consume air interface capacity and contribute to increase in the noise floor in very different ways. Therefore, it is totally inaccurate to simply aggregate the user data volume in order to determine the actual NSP occupancy and the total occupancy within the measurement area and over the measurement time because such an approach fails to consider the impact of the services offered on the air interface.

Annex 1 – Levels of MVNO implementation

Full MVNO

17. NWM welcomes the definitions of the Service Provider, the Enhanced Service Provider (ESP) and the Full MVNO. NWM is of the opinion in a regulatory environment the ESP must own an independent HLR and the necessary functionality to interrogate the HLR. With this modification, NWM urges OFTA to adopt this as a basis for going forward and to categorise both the ESP and the full MVNO as 3G MVNOs.

Annex 2 – Estimating available capacity in 3G networks

The CDMA network loading curves provides an estimation of the increase in noise floor as a function on air interface loading. It does not determine the capacity of the system. The capacity of the system is affected by a number of factors including the bandwidth, service bit rate, the background noise activity factor, etc. To attempt to determine even an estimate of the system capacity without considering these factors is totally inaccurate and completely misleading.

Proposed simplified measurement method

As discussed above, NWM is opposed to the imposition of any minimum open network percentage. Given NWM's objections to OFTA's proposed measurement method as noted above and should OFTA insist on such approach, NWM would like to put forward a calculation method for

calculating the level of openness of a network. NWM is aware of the potential interpretation problem that this solution might bring but claims that in an imperfect world, this method has the advantage of requiring very little resources to assess the compliance.

Premise:

To prevent degradation of network performance due to RAT exceeding network design threshold, the MNO must have the right and absolute prerogative to:

1. implement connection and access control mechanisms thus preventing users overloading the network; and

2. define and enforce traffic policing mechanisms thus ensuring that a single user does not consume a disproportionately large amount of resource within a cell(s).

This potential method of calculation has a number of limitations, not the least of which are:

1. It makes two extremely simplistic assumptions related to the determination of both carrier throughput and soft hand-off overhead

2. it does not look into the RF utilisation on any particular site

3. Total Network Capacity makes the assumption that the air interface is totally balanced on the uplink and the downlink

4. The determination of NSP commitment accounts for a certain service mix, subscriber base, real time usage that is all estimated/projected figures.

Suggested Method

(a.) Total RF capacity = carrier throughput Xno of deployed carriers X no of sectorsX no of nodeB

(b.) Soft handoff overhead = X% of Total RF capacity

(c.) Actual RF capacity= (a) – (b)

(d.) Open network limit: as defined by OFTA relative to (c)

(e.) NSP committed capacity = as contractually agreed with MNO

(f.) NSP Monthly usage = as determined from network usage stats

(g) Committed open network percentage = (e)/(c) X 100 (plus margin of error)

h NSP monthly usage = (f)/(c) X 100 (plus margin of error)

NWM does not in any manner whatsoever claim that this is an accurate manner to determine the open or consumed network percentage, however, it is a highly simplistic method that attempts to foster a spirit of co-operation and eliminate the burden of the currently proposed method.