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Ng Cher Keng (Ms)  
Director (Policy)  
8 Temasek Boulevard  
# 14-00 Suntec Tower 3  
Singapore 038988

**Attn: Ms Ng Cher Keng, Director (Policy)**

Dear Ms Ng,

The Infocomm Development Authority of Singapore (IDA) issued its consultation paper on "Proposed regulatory approach for 3G Mobile Virtual Network Operators (MVNOs)" to seek feedback from different players in the industry. Lucent Technologies is pleased to express our views on a number of the issues raised in the consultation paper. Commercial issues that we feel are more relevant to an operator are not included in our response.

***Section 3.1.1***

- ◆ Lucent Technologies applauds IDA's views that entry of MVNOs into the 3G market will raise the level of competition and ultimately benefit the end-users. Given the current situation in Singapore, where only three, rather than the originally expected four, 3G MNO licenses have been issued, introduction of MVNOs into the market will increase the number of 3G market players and be a positive way to encourage competition and protect the interests of end-users. Benefits brought by MVNOs not only include competitive price and a wider range of services to end-users, but also the speeding up of early mass adoption of data applications and optimizing the use of scarce radio spectrum.

- ◆ To ensure fair level of competition for all mobile operators, including MVNOs and MNOs, Lucent Technologies is of the view that a MNO should not be considered different from a MVNO other than the possession of 3G radio spectrum. Therefore, MVNOs should potentially be allowed to possess as much network equipment as MNOs could.
- ◆ The services that 3G MNOs could and should offer MVNOs should be based on the commercial agreement between the MNO and MVNO. We are of the view that IDA should remain neutral in this process. Theoretically, any services a MNO is able to deliver to end-users could also be offered by a MVNO.
- ◆ Regarding the scope of network access and services that 3G MNOs should offer MVNOs, our views on technical issues will be expressed in our response for section 3.7.

### ***Section 3.2.1***

- ◆ Lucent Technologies is of the view that it would not be meaningful to categorize MVNOs in terms of either network equipment architecture or services offered.
  1. The combination of network equipment and types of service offerings of MVNOs could be numerous and thus categorization would be practically difficult.
  2. A MVNO may wish to gradually include more network equipment to provide more specific and innovative services to end-users as its business grows. IDA should encourage MVNOs to flexibly upgrade its network in a route that most suits its business needs. Pre-defining MVNO types may not assist such a process.
- ◆ We are of the view that MVNOs should be issued with FBO licenses for two major reasons –
  1. MVNOs could and should be allowed to potentially own as many network facilities as any MNOs. Thus MVNOs should be issued with FBO licenses upfront and be able to enjoy equal status as MNOs in terms of the right and time allowed to possess network equipment.
  2. Even at the initial stage, it is highly likely that MVNOs will possess certain network equipment, however limited, in order to provide differentiated services and own details of customers. Therefore it makes perfect sense for IDA to issue MVNOs with FBO licenses upfront.

### ***Section 3.3.1***

- ◆ While we are of the view that a MNO and MVNO should see each other as partners rather than competitors, certain degree of competition between MNOs and MVNOs will exist to positively encourage healthy market growth. We understand that IDA

should wish to intervene in cases of “unduly restrictive or anti-competitive practices” to protect end-user interests, however, we are of the view that IDA should make the methodology by which market competitiveness is determined transparent to the industry before execution, to avoid any unnecessary confusion and dispute.

### ***Section 3.4.1***

- ◆ We agree with IDA that a mechanism should be put in place to arrive at the cost of providing network resources, in the absence of agreement between MNOs and MVNOs. As we consider this to be a purely commercial issue, we make no suggestion on what form such a mechanism could take.

### ***Section 3.5.1***

It is our view that IDA should not imposed a moratorium before MVNOs be allowed to enter the market, but rather leave such issue entirely to the commercial agreements between MNO and MVNO.

In the first place, we believe that it is not just the MNOs who will benefit from being the market early, but the MVNOs as well. As explained in the earlier responses, MVNOs and MNOs are encouraged to establish a win-win relationship through mutual commercial agreements. Also, the early entry of MVNO has been shown to benefit the market and consumers in our earlier comments.

Furthermore, for an MVNO to begin offering services, it would need to bear a minimum capital investment, for example, billing system and such like. Therefore, like the MNO, it would need to recoup its investments at the earliest possible time.

IDA should remain neutral and treat both an MNO and MVNO fairly and not mandate any delayed period for MVNO. By imposing a moratorium period, IDA is in fact adding an unnecessary obstacle on encouraging MVNO’s entry into the market.

### ***Section 3.6.1***

It is issues like these that make defining the scope of MVNO capability so important. In 3G, like 2G, the subscriber information resides in an HLR. For number portability the key association resides with the network hosting the HLR entry of a ported subscriber. Some MVNOs may not own the HLR that hosts their subscribers and they should not be required to own the facilities to enable number portability. On the other hand, some MVNOs will own their own HLR hosting their subscribers. In such cases, these operators should be required to support number portability.

### *Section 3.7.1*

Lucent Technologies is of the view that regulations to implement “open networks” for MVNO should take into account the following considerations.

#### Network Planning – Coverage & Capacity

For a network to be truly ‘open’ and ‘equally accessible’ to all MVNOs, it is important that MNOs carefully plan its network resources to support MVNOs’ requirements.

For this to happen, it is essential that all MVNOs provide MNOs forecasts of their expected usage in order to ensure adequate deployment/provisioning of network facilities. We suggest that any agreement for purchase of network capacity/resources by an MVNO needs to include a mechanism for provision of periodic forecasts of its anticipated usage by the MVNOs. These forecasts would need to be made available to the network operator by all MVNOs alike.

Apart from frequency and duration of use, there may also be a need for an MNO to monitor the size of applications that can be used on a network, especially given the up-link limitations of 3G networks. MVNOs may have to provide forecasts of the maximum bit rates that each of their applications will be requiring, in order for proper planning to be done to ensure that available network resources are accessible to as large a number of MVNOs and maintaining an acceptable QoS level for the end-users.

An MVNO’s future coverage and capacity requirements is clearly confidential data, revealing to a great extent, the MVNO’s strategy. The MNO should hold such data confidential. We suggest that this is an area that requires regulation and strict enforcement by IDA. The MNO unit responsible for dealing with MVNOs should be obliged to keep strictly confidential all planning and forecasting information relating to other MVNOs.

Ultimately, the regulations should allow each MVNO **equal and undifferentiated access** to networks to explore its market advantage to the fullest extent, limited only by end-users’ demand and not by regulations stipulating the maximum capacity, coverage or bandwidth that it is entitled to purchase.

#### Excessive Usage

The purpose of planning is to ensure that network facilities are available to all MVNOs where and when required.

The nature of forecasts is that they can be wrong. In this context, over usage by one MVNO is likely to negatively impact the MNO and other MVNOs using the same network.

Hence, an MNO could structure its pricing for usage of a network facilities/capacity in such a way as to encourage accurate forecasting by each MVNO.

Even though the pricing structure for network usage should be left entirely to commercial negotiation between MNO and MVNO, IDA needs to be aware that this could be a potential area of conflict. Where necessary, IDA could step in to provide arbitration for all parties involved.

#### Real Time Control is not Practical

Although capacity partitioning in real time is technically possible using UMTS defined information elements on the air interface, it is not technically practical. The processing requirements are immense in order to filter the information in a meaningful way prior to billing and measurement reporting. Forcing the operator or MVNO into added investment to monitor in real-time is not an efficient use of investment capital and will ultimately result in added expense for the consumer for minimal value.

Additionally because of the UMTS Iu-cs and Iu-ps interface restrictions, all traffic on the UTRAN will have to pass through the UMSC or SGSN before it can be routed to the customer owning party (operator or MVNO). Therefore the benefit for monitoring the UTRAN for the real-time separation of traffic is nullified.

Hence in real time, it will not be practical to assess or regulate the network capacity usage of an MVNO. The issue of monitoring must be fully defined and equitable in terms of reporting actual usage in near real-time while protecting the restricted information of both operator and MVNO.

For any clarification of this response, please do not hesitate to contact the undersigned at 2408192.

Thank you.

Yours sincerely,

Edward Low  
Business Development Manager