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19 December 2011

Mr. David Archbold
Managing Director
Information and Communication Technology Authority
3rd Floor Alissta Towers
P.O. Box 2502GT
Grand Cayman
KY1-1104

Dear Mr. Archbold,

Re: LIME Response to LNP – SMS Protocol

Cable and Wireless (Cayman Islands) Limited, trading as LIME ("**LIME**") is pleased to have this opportunity to respond to the Authority's 6 December 2011 letter to LIME and to Digicel Cayman Ltd ("**Digicel**") entitled "LNP – SMS Protocol". LIME's comments are set out below.

Please note that some of the information in this submission, principally the highlighted traffic and cost information, is commercially sensitive information, and LIME requests that the Authority designate it as confidential pursuant to the *Information and Communications Technology Authority (Confidentiality) Regulations*. Disclosure of this information to the public would provide potential competitors with specific and direct information about the volume of traffic between LIME and Digicel, information which is consistently not disclosed to the public, and the disclosure of which could reasonably be expected to cause LIME and Digicel financial harm.

All information for which confidence is requested is, of course, available to Digicel, and Digicel will not be prejudiced by this request. A redacted version, with all confidential information replaced by "###" will be prepared for the public record.

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1. SMS Interworking

It is LIME's understanding that, generally speaking, there are two ways in which mobile operators can exchange text messages ("**SMS**"): via the SS7 signaling network or via a Short Message Peer-to-Peer ("**SMPP**") connection.

1.1 SS7

Under the 3GPP standard, SMSs would be exchanged via the same links as SS7 signaling messages. An advantage of this solution is that it uses the existing SS7 infrastructure. However, that signaling network would have to be scaled up to accommodate the additional traffic, and the specific number of links that would be required depends on the volume of traffic between the two networks. Under this methodology, messages are sent directly from the originating Short Message Service Centre ("**SMSC**") directly to the mobile switch serving the terminating handset. This means any services offered through the terminating network's SMSC cannot be provided.

1.2 SMPP

An SMPP connection is essentially a VPN between two SMSCs established over the Internet. Apart from representing an efficient and cost-effective method of transmitting data, SMPP also facilitates applications that wish to communicate with their customers via SMS. An example is the provision of information upon receipt of a text message.

1.3 Current arrangements

LIME's understanding is that most mobile operators who exchange text messages between domestic networks do so via an SMPP connection. This is because the VPN that is used to do this is inexpensive, flexible and scalable. In terms of countries that have implemented an All Call Query number portability solution, LIME understands that operators in Panama, Ghana and Kenya, for example, use SMPP connections to exchange SMS's.

LIME and Digicel have successfully connected their two regional SMS networks via an SMPP connection in Jamaica since 1 June 2005 without issues. This VPN connection currently carries over ### messages from LIME to Digicel and another ### from Digicel to LIME each year.

2. LIME's LNP Solution

The Authority issued its mandate in December 2008 to implement fixed and mobile number portability, and the LNP Consortium (including Digicel) conducted its initial work during the course of 2009. Following this, LIME engaged vendors, reviewed options and proposals, and designed its LNP solution in the spring of 2010.

It was at that time that we selected a solution involving an upgrade to our STPs and to our SMSC to accommodate LNP routing tables. In the case of the SMSC, this consisted up upgrading the software, and introducing a routing table that would maps MSISDNs to networks if the telephone number had been ported out of the "Donor Network". Significant

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considerations underlying the decision to adopt this solution include (1) the need to launch fixed and mobile number portability at the same time, (2) cost (the alternative solution would have cost several million more) and (3) ease of integration and implementation. A material factor was also the fact that the selected solution was compatible with, and did not require a change to, the existing connection between LIME's and Digicel's SMSCs.

3. Digicel's Request

Through its involvement in the LNP Consortium, Digicel was aware that LIME had done considerable work towards implementing fixed and mobile number portability since early 2010. However, it was only in October 2011 that Digicel first enquired about SMS interworking via an SS7 connection. Unfortunately, Digicel has been less than transparent and helpful. Digicel's 18 October 2011 request is reproduced verbatim below:

"Hi Derrick,

As discussed we would like to migrate our existing SMS interworking via SMPP to SS7. Can you please confirm how/when this can be accommodated? We would like to move forward with this as soon as possible.

Thanks for the usual urgent attention.

Regards,"

On 31 October 2011, LIME's Carrier Services asked Digicel "the reason for the shift just now", noting that this had never been raised during a quarterly service review between the two companies before now. Digicel's 1 November 2011 response is reproduced verbatim below:

"Courtney,

Apologies for the delay in responding – it is a prerequisite for LNP. Do you have any feedback for us as yet?

Regards,"

To date, this is the full explanation given by Digicel to LIME for the requested change. No further information has been provided in response to LIME Carrier Services follow-up request on 1 November for a detailed explanation of why Digicel was requesting the change. No technical information or proposals have been provided to LIME for consideration, even though Digicel must have some idea of what it is proposing to do. Despite repeated attempts by LIME Carrier Services to convene a meeting where relevant persons from both groups could discuss the matter, the meeting has been repeatedly deferred.

LIME submits that Digicel's behaviour is inconsistent with that of an operator with a real interest in implementing number portability in a timely manner in the Cayman Islands.

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4. Ability to Implement Number Portability with an SMPP Connection

In its sparse communication with LIME, Digicel has alleged that changing from an SMPP to an SS7 connection for the exchange of text messages is a prerequisite for LNP. LIME disputes this statement.

First, it is obvious from LIME's own implementation plans that it is not impossible to implement number portability and accommodate SMPP. LIME has known of this solution for almost two years.

Second, Digicel's sister company, Digicel (Panama) S.A., has successfully implemented number portability in Panama on 29 November 2011, using an SMPP connection with the SMSCs of the other mobile operators in that country, including Cable & Wireless Panama S.A. The Autoridad Nacional de los Servicios Publicos examined the question of whether to change the SMS interconnection methodology from SMPP to SS7 back in 2010. Noting that a number of companies, including Digicel (Panama), S.A., supported the proposal to use SMPP, and noting that this was the technology currently in use, the regulator ordered on 15 October 2010 that the operators maintain the use of SMPP for the exchange of text messages following implementation of number portability.

LIME submits that it is clear that number portability can be implemented while maintaining an SMPP connection between SMSCs. LIME, C&W Panama and Digicel Panama have all been working on this type of solution for more than a year. While it is not clear what Digicel Cayman may have been doing over this same period, Digicel's statement that a switch to SS7 "is a prerequisite for LNP" is certainly not credible.

5. Problems Caused by Switching to an SS7 Connection

LIME has done a high level review of the implications of switching to an SS7-based connection for the exchange of SMSs, and considers it to be sub-optimal.

A significant problem with an SS7 connection is that text messages from third-party networks (like Digicel's) would no longer be filtered through the LIME SMSC. Rather, they would be conveyed directly from the third-party SMSC to the LIME STP, and from there directly to the LIME MSC and the customer's handset. A number of problems would flow from this:

First, there would be no means to filter spam text messages, without significant investment in a new firewall. With no spam filtering, LIME's access network could face a significant unplanned increase in traffic. This would consume network resources and make it more difficult for customers to use the network for legitimate voice and SMS calls. It would also reduce the quality of service experienced by consumers, as they begin to receive increased numbers of spam messages. This will no doubt increase the number of complaints registered at LIME's call centres and with the Authority, and increase all parties' costs.

Second, it is not clear whether LIME would be able to charge Digicel for termination of text messages originating on Digicel's SMSC (and vice versa), as traffic is measured through the

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SMSC. This would mean SMS termination would effectively be free of charge. LIME notes that that SMS traffic between LIME and Digicel is not unreasonably imbalanced today. However, without a charge for SMS termination, there would be no incentive to control the origination of spam messages on a network (thereby exacerbating the problem mentioned above) and no incentive to control or block bypass traffic originating on overseas networks.

Third, LIME and its sister companies offer to third-party content and other service providers an SMSC-based platform for the provision of value-added services to consumers. For example, a number of banks offer SMS-based banking services. These are provided through features in the SMSC. However, if LIME were to switch to an SS7-based connection with Digicel, the banks' customers' text messages would bypass the SMSC and the banks would no longer be able to provide these services to their customers on the Digicel network.

It also needs to be stated that LIME has expended considerable time and resources designing its LNP solution over the last couple of years, and has gone to great pains to minimize the impact on existing operators' systems and interconnections. A change to the protocol used to exchange text messages will necessarily require a significant revision to LIME's design, which will greatly increase LIME's costs and significantly delay the commercial launch of number portability.

Finally, LIME and Digicel currently exchange text messages over an efficient SMPP link. Switching to an SS7-based connection would mean both LIME and Digicel would have to double their existing signaling links and associated circuits in order to accommodate the additional (and unplanned) traffic load. This would involve the procurement of at least ### additional STP signalling cards to provide the needed links and associated circuits. Further, a period of twelve (12) weeks would be needed to procure, install, test and implement the new firewall that would be required to mitigate some of the problems listed above. LIME's conservative estimate of the cost of switching to SS7 is approximately ###. Even if LIME were prepared to switch to an SS7-based SMS connection with Digicel, LIME will not incur these costs.

6. Conclusion

LIME recommends in the strongest possible terms that no change be made to the way in which LIME and Digicel exchange SMSs. The current arrangement is cost-effective and flexible, and supports the development of value-added information and other services. A change to an SS7-based connection would affect not just the Cayman Islands, and would involve considerable risk and cost that LIME will not assume.

LIME has done everything necessary in its network to implement number portability services in the Cayman Islands without imposing unnecessary and costly changes on other operators, whether here or overseas, and has begun to test those new number portability services. We see no reason to turn back the clock and undo the work of the last two years in order to accommodate Digicel's last minute preparations.

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Yours faithfully,
Cable & Wireless (Cayman Islands) Ltd.

'Signed'

Anthony Ritch
General Manager (Cayman), LIME

c.c. Victor Corcoran, Chief Executive Office, Digicel Cayman Ltd.

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