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Our ref: GRCR/ 15.26

January 11, 2012

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: Use of Routing Numbers (RN) to Route Calls in LNP Environment

Cable and Wireless (Cayman Islands) Limited, trading as LIME ("**LIME**") is filing a determination request with the Authority, pursuant to section 5 of the *Information and Communications Technology Authority (Dispute Resolution) Regulations* ("**Dispute Resolution Regulations**"). The prescribed fee is attached to this letter.

Because of the urgency of the matter, LIME submits that its letter of 2 December 2011 can be considered a notice of grievance, and its letter of 13 December 2011 as well as the letters from Digicel Cayman Limited ("**Digicel**") dated 2 December 2011 and 23 December 2011, along with the discussion at the meeting of the LNP Consortium of 10 January 2011, and the discussions at various other LNP Consortium meetings since January 2011, represent good faith and reasonable efforts to resolve the dispute, pursuant to section 4 of the Dispute Resolution Regulations. LIME's two previous letters on this matter, dated 2 December 2011 and 13 December 2011 and titled *'Routing of*

Voice Calls in an LNP Environment', are attached for the Authority's consideration in this matter and form a part of this submission.

The Issue

The exchange of RNs is a basic and necessary feature of an ACQ ("**All Call Query**" or "**ACQ**") environment such as will be implemented in the Cayman Islands following the introduction of Local Number Portability ("**LNP**") in the Cayman Islands. Digicel has indicated, most clearly in its 23 December 2011 letter, that it will NOT include the RN in its signaling messages with other Operators, and that it CANNOT process signaling messages receiving from other Operators that include the RN. Based on call routing tests conducted by WestTel Limited, dba Logic ("**Logic**"), prior to 10 January 2011 and reported to other members of the LNP Consortium on 10 January 2011, this approach will result in failed calls.

Background

As LIME has stated in its 2 December 2011 letter to the four voice telephony operators currently active in the market (the "**Operators**"), it is important to appreciate that, once LNP is implemented, the Central Office Code or "NXX" of a telephone number is no longer sufficient information in order to determine where a call ought to be terminated. The solution is to create a new set of digits to identify networks, in this case the "Routing Prefix" or "Routing Number" ("**RN**"). The LNP databases attached to each Operator's networks associate an RN with each telephone number so that the Operator knows where to route a call. In fact, reduced to its most fundamental expression, the porting process consists of associating a new RN with a given telephone number. It ought to be evident from the foregoing that, if an Operator does not know the RN associated with a given telephone number, it cannot be sure that it could successfully route a call to the terminating network.

Another key fact that must be understood is that the Operators have agreed that the most appropriate form of LNP for implementation in the Cayman Islands is a form that

involves an "electronic query of all calls".[1] In an All Call Query solution, all Operators originating calls must "query" a database to determine the network to which a given telephone number is associated. LIME notes that all Operators agreed to this when they signed the 9 September 2011 Number Portability Services Agreement ("**CRD Contract**") with Porting Access BV. This agreement that the originating Operator does the "query" makes sense, from a policy and logic perspective, as it ensures the party responsible for starting call is also responsible for making sure it gets to its final destination.

However, a necessary consequence of the originating Operator doing the query is that the originating Operator must include in its signaling messages exchanged with other Operators the RN that it determined from the query. If it does not do this, all Operators between the Originating Operator and the terminating Operator must do their own queries. This would be a duplication of efforts and a waste of Operator resources.

LIME's Position

Having reviewed the foregoing practical and policy considerations, and the terms of the CRD Contract, LIME issued its first letter, dated 2 December 2011 and addressed to all Operators in the LNP Consortium, which stated:

> *Please be advised, therefore, that, following the commercial launch of number portability services in the Cayman Islands, LIME will send all calls to other Operators in the Cayman Islands with the "nature of address indicator" set to 8, and with the three-digit Routing Number placed at the front of the Called Party Number. LIME will also expect to receive from calls from other Operators with the "nature of address indicator" set to 8, and with the three-digit Routing Number placed at the front of the Called Party Number.*

> *If another Operator sends a voice call to LIME, whether for termination on a LIME network or for transit via LIME to another Operator, without the*

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[1]   This was the agreement of the LNP Consortium prior to ICT Decision 2008-5, "*Decision and Further Process on Local Number Portability*", 18 December 2008. See for example paragraph 4 of that Decision. The Operators have continued to discuss the implementation of an ACQ solution, to the exclusion of all others.

"nature of address indicator" set to 8,or without a valid Routing Number placed at the front of the Called Party Number, LIME reserves the right not to convey or terminate the call. Of course, if the other Operator in question has contracted with LIME to do the Routing Number look-up, LIME will perform the look-up, set "nature of address indicator" to 8, insert the appropriate Routing Number in front of the Called Party Number, and convey or terminate the voice call accordingly.

This position is consistent with and based on the various agreements of the Operators to date. If an Operator has an obligation to ensure it does not send a call to a Donor Operator when the number has been ported, the only way of doing so is if it has done a "query" first. Further, the only way of communicating to the other Operator(s) involved in conveying and terminating the call is to include in the signaling message a "flag" that a "query" has been performed and to include the RN. As LIME noted in its 13 December 2011 letter:

As the obligation to route calls correctly clearly and properly falls upon the originating operator, transit and terminating operators ought not to be required to determine whether any given call is properly routed. It follows that the originating operator has an obligation to let the transit and terminating operators know that the call has been properly routed. The only way this can be demonstrated is if the originating operator has done the "dip" and modified the signaling message accordingly, or if the originating operator buys a "dipping" service from another party. In LIME's view, this remains that case whether or not networks are directly interconnected or interconnect via a transit operator.

If either the flag or the RN are not included, the other Operators cannot know that a "query" has been performed, and must therefore perform another "query". This, as noted above, is duplicative and wastes resources.

Digicel's Position

Digicel responded to LIME's first letter by way of letter also dated 2 December 2011, and to LIME's 13 December 2011 letter by way of letter dated 23 December 2011. Digicel claims that its objection to the use of RN is rooted in the inability of its mobile switches to handle the additional digit string and insists that direct interconnection is the solution to routing calls.

Actions by the Other Operators

In the meeting of the Consortium dated 10 January 2012, LIME repeated the statement, from its 2 December 2011 letter, indicating that it would be using RNs to route calls in the LNP environment. In response, Telecayman advised that it would be purchasing a "query" service from another Operator for calls to ported numbers and that, in the absence of the "query" service, it would have no difficulty in using an RN for calls to ported fixed numbers. Logic confirmed that it has configured its network to send and receive RNs.

In other words, Telecayman and Logic implicitly or explicitly acknowledge that the exchange of RNs in signaling messages, in an ACQ environment, is the most sensible approach to ensuring calls are conveyed and terminated efficiently and effectively. There is, therefore, clearly a consensus in the Consortium to use RNs in the LNP environment and, in accordance with the procedures set out in ICT Decision 2010-9, titled 'Decision in Determination Request related to Allocation of Votes in the Number Portability Consortium', LIME is of the view that a decision has been arrived at by the Consortium. In LIME's view, consensus on the use of RNs is a sufficient basis, in itself, to proceed with the use of RNs in the LNP environment. Unfortunately, Digicel continues to refuse to use RNs despite consensus in the Consortium.

LIME's Response to Digicel's Position

LIME challenges Digicel's assertion, that its switches are not set up to process the additional digit string required by RN. The insertion or deletion of digits in the called

party number field is deemed standard practice for proper routing in a number of scenarios.

LIME also submits that, given that Digicel asserts that it will comply with its obligation to ensure it does not send calls to ported numbers to the Donor network, Digicel must necessarily determine the appropriate terminating network for all calls that are not on-net. For example, Digicel is aware that calls to LIME's fixed network must be delivered over the "termination" trunk on the Joining Service, while calls to other fixed networks must be delivered over the "transit" trunk, and that failure to do this could result in breach of the Interconnection Agreement and call failure. If a LIME fixed number has been ported to another fixed network, for example, Telecayman's, Digicel cannot rely on the NXX to know the trunk over which it must deliver the call.

In addition, ITU recommendations allow a maximum of 15 numbers to be used. However, the most that Digicel is likely to be using in a national context like the Cayman Islands is 10^2 –three for the area code, three for the central office code, and four for the subscriber number (although it is far more likely that they use only 7). In other words, there is room in the standard called party number fields in the signaling messages for Digicel to insert a three-digit RN.

Finally, Digicel is operating an Ericsson network. Because LIME and its affiliates also operate Ericsson mobile switches in a number of countries, LIME has some knowledge of the "Flexible Number Registry" ("**FNR**") FNR functionality which forms the basis for the Ericsson number portability solution. In particular, LIME is aware that the FNR is capable of allowing RNs to be processed and conveyed in signaling messages. In these circumstances, an Operator's FNR will "tell" the MSS where to route the call by sending the appropriate RN to the MSS. For example, LIME's and Digicel's sister companies in Panama are both required to exchange RNs in the signaling message (by inserting it at the front of the called party number, as would be done here).[3] Both those companies in

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[2]   See ITU Recommendation E.164.
[3]   The requirement to use RNs and the specifications for RNs and their use are set out in section 22 of the "Reglamento de Portabilitdad Numérica", enacted by the Autoridad Nacional de los Servicios Públicos on 11 November 2009 by Resolution AN No. 3064-Telco. While the Regulations were amended on 5 October 2011, section 22 was not.

Panama operate Ericsson switches,[4] and LIME has been advised that its sister company does so using the Ericsson FNR functionality.

Digicel's position, if adopted, would also have a number of other negative consequences. The first is that direct interconnection would replace indirect interconnection via transit services. In and of itself, this is not an issue, and is an option currently available to all Operators. However, the Digicel solution to the RN question would make direct connection between each and every Operator mandatory. Operators would no longer have the ability to choose whether to interconnect directly or indirectly. This would have a chilling effect on competition. While a new entrant into the market today can choose to access all other Operators instantly through established transit agreements, Digicel's "solution" would have them interconnect directly with every provider in the market before launching commercial services (because they would have a substandard offering if their customers could not reach all other customers). Not only would this force each new entrant to invest in an even larger number of direct interconnections, "delay" in establishing just one interconnection would force a delay in that new entrant's launch. It is LIME's considered view that any directive from the Authority mandating direct interconnection to the exclusion of indirect interconnection will limit the choices available to new operators for structuring their business and effectively impact their ability to compete. This would be unacceptable.

The second is that it would be administratively far more difficult to bill for calls that have no RN in the associated CDRs. Today, it is possible to determine the appropriate wholesale or retail on-net or off-net rate to be applied to a given call by looking at the NXXs of the calling and called party telephone numbers. Once LNP is launched, that will no longer be possible, as the NXX will no longer be associated with a given network. Without an RN in the CDR, it will be extremely difficult to determine the network serving a given telephone number at any given time, making the job of rating calls extremely difficult. It is also not clear how traffic data in data warehouses could be reliably analysed if the CDRs stored in them do not include an RN For example, if a CDR from the day before a number was ported looks for all intents and purposes like a CDR from

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[4] Press Release, "Ericsson deploys GSM/EDGE network for Digicel in Panama," Oct 2, 2008, available at http://www.ericsson.com/news/1256414.

the day after the number was ported, determining whether a call was on-net versus off-net, the carrier to which termination payments ought to be made, etc., will be very difficult if not impossible to determine or to audit. LIME submits that the industry does not need this kind of disruption at this time.

Determination Requested

Based on the foregoing, LIME submits that call routing would be more efficient and effective, competition and new entrants will be favoured, and billing and data analysis facilitated, if the Operators exchange RNs in the their signaling messages. Three of the four Operators in the Cayman Islands have already agreed to do so, and have set up their networks and systems to do so. All evidence available to LIME suggests that Digicel's chosen technology supplier can readily accommodate the requirement to use and exchange RNs in signaling messages, and that Digicel's sister company in Panama (using the same technology supplier) is doing so.

LIME is mindful that LNP is scheduled to be implemented in the Cayman Islands on 31 January 2012. LIME is keen to resolve any issue which could jeopardize this timeline. LIME's experience suggests that a ruling of the Authority on contentious matters is effective in commanding compliance. Accordingly LIME requests that the Authority rule in favour of the requirement to use and exchange RNs in the LNP environment.

Yours faithfully,

Cable and Wireless (Cayman Islands) Limited, trading as LIME

'Signed'

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Anthony Ritch
General Manager

c.c.   Victor Corcoran, CEO, Digicel Cayman Ltd
       Mike Edenholm, President, WestTel Ltd, t/a Logic
       Greg Swann, President, Telecayman Ltd.
       Bob Kanner, COO, Telecayman Ltd.
       Frans Vandendries, Vice President Legal Regulatory and Corporate Affairs