Value Every Moment

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08 February 2014

Mr. Mark Connors
Head of Economics and Regulation
Information and Communications Technology Authority
PO Box 2502
3rd Floor Alissta Towers
Grand Cayman, KY1-1104

Dear Mr. Connors,

Re: Public Consultation on FTR and Transit Rate (CD2012-1) Disclosure of Information provided to the Authority

Cable and Wireless (Cayman Islands) Limited, trading as LIME ("**LIME**") is submitting the information requested by the Authority in its 23 January 2014 disclosure determination. This information is presented below, with references, where applicable to attached documents.

ICTA Request #1
For the '900-DOMESTIC TRANSIT' service (row 11), LIME reported 22,046,397 calls (cell X11) and 24,343,486 minutes (cell Z11). LIME should provide the proportions of calls and minutes for this service that correspond to total traffic received by LIME from Digicel as 'Mobile to Other Fixed' and 'Mobile to Mobile'.

LIME Response to Request #1
The proportion of calls and minutes for 900-DOMSTIC TRANSIT service that correspond to total traffic received by LIME from Digicel as "Mobile to Other Fixed" is 1%; and the proportion of calls and minutes for 900-DOMSTIC TRANSIT service that correspond to total traffic received by LIME from Digicel as "Mobile to Mobile" is 40% and 32%, respectively.

ICTA Request #2
For the '900-FIXED CALL TO OTHER MOBILE' service (row 15), LIME reported 1,789,105 calls (cell X15) and 3,432,864 minutes (cell Z15). LIME should provide the

proportions of calls and minutes for this service that correspond to total traffic received by Digicel from LIME as 'LIME Fixed to Mobile' and 'Other Fixed to Mobile'.

LIME Response to Request #2

The proportion of calls and minutes for 900-FIXED CALL TO OTHER MOBILE service that correspond to total traffic received by Digicel from LIME as "LIME Fixed to Mobile" is 92% and 89%, respectively. There is no traffic for 900-FIXED CALL TO OTHER MOBILE service attributed to "Other Fixed to Mobile."

ICTA Request #3

For the '900-PSTN TERMINATION' service (row 32), LIME reported 9,872,817 calls (cell X32) and 16,206,142 minutes (cell Z32). LIME should provide the proportions of calls and minutes for this service that correspond to traffic received by Digicel from LIME as 'Mobile to LIME Fixed'.

LIME Response to Request #3

The proportion of calls and minutes for 900-PSTN TERMINATION service that correspond to total traffic received by LIME from Digicel as "Mobile to LIME Fixed" is 18% and 14%, respectively.

ICTA Request #4

For the '900-INTERNATIONAL TRANSIT to OLO' service (row 35), LIME reported 2,570,208 calls (cell X35) and 4,178,199 minutes (cell Z35). LIME should provide the proportions of calls and minutes for this service that correspond to traffic received by Digicel from LIME as 'Incoming Int'l to Mobile'.

LIME Response to Request #4

The proportion of calls and minutes for 900-INTERNATIONAL TRANSIT to OLO service that correspond to total traffic received by Digicel from LIME as "Incoming Int'l to Mobile" is 88% and 79%, respectively.

ICTA Request re: Other Information – Transit Charge discount

The Authority notes that the effective discount on Transit Charges identified in Interrogatory 6 is already public information, identified in the redacted 17 May 2012 amended interconnection agreement between LIME and Digicel, and thus should be put on the public record in this proceeding.

LIME Response to Transit Charge discount

Please see the attached file "2013 03 28 LIME responses to ICTA interrogatories_Public_v2.doc" for a revised copy of LIME's 28 March 2013 interrogatory responses that identifies the Transit Charge discount.

ICTA Request re: Other Information – duty fees
The Authority notes that the % duty fees identified in Interrogatory 21 are already public information, identified in the Customs Tariff Law (2011 Revision), and thus should be put on the public record in this proceeding.

LIME Response to Transit Charge discount
Please see the attached file "2013 03 28 LIME responses to ICTA interrogatories_Public_v2.doc" for a revised copy of LIME's 28 March 2013 interrogatory responses that identifies the % duty fees.

ICTA Request re: Other Information – routing diagrams
The Authority notes that the routing diagrams provided in response to ICTA interrogatories 7-9, 11, 13 and 15, given their high-level nature, do not disclose to competitors information about LIME's revenues and costs, and thus should be put on the public record in this proceeding.

LIME Response to Transit Charge discount
Please see the attached file "Attachment - response to ICTA Interrogs 7-9 11 13 15 (network diagrams) PUBLIC.ppt" for a public copy of LIME's routing diagrams provided in response to ICTA interrogatories 7-9, 11, 13 and 15.

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

_____
David E. Burnstein
Regulatory Finance Manager, LIME

c.c. Frans Vandendries, VP Legal and Regulatory Affairs, LIME
Rod Kirwan, Group General Counsel, LIME
Bill McCabe, Chief Executive Officer, LIME
CD2012-1 Distribution List

LIME Response to ICTA Interrogatories

1. In the 'Technical Assumptions' sheet of the file named '2013 01 15 CYM fixed – Conf.xls' (the "Fixed Module"), LIME indicates that the number of core NGN sites in the module should be 2 (cell C17). The source for this assumption is given as "C&W - Obtained from C&W's design Engineers and shown in Appendix XVII - NGN Diagram". Provide a detailed explanation for the continued optimality of having two core NGN sites given the development in technology since the referenced design was made and the size and subscriber numbers of the Cayman Islands.

LIME response: LIME maintains and plans to maintain two core NGN sites for the time being. For the current network diagram, please see the attached confidential diagram "Attachment - response to ICTA Interrog 1 (PSTN network diagram) CONFIDENTIAL.pdf."

The fixed line telephone network, prior to the implementation of the two NGN switches, consisted of two local switches (providing dial tone) and one international gateway switch. The rationale for employing two NGN switches only was to provide some level of resiliency, both for domestic calling as well as international calling, in the event that one NGN switch had a major failure.

In the future, there will still be a requirement to have full redundancy in the switching core/fabric with duplicate power and processing capability.

2. In November 2012, LIME's license was amended to include Television Services. Please provide a detailed explanation of how the Fixed Module accounts for any increased traffic that may result from this service. If the Fixed Module does not account for any increased traffic, provide a revised module that does so along with a list of the specific changes made to accommodate the new service and detailed rationale and documentation supporting those changes.

LIME response: The Fixed Module assumed the same linear growth in bandwidth demand as was witnessed between 2008 and 2012. It does not explicitly account for any increased traffic that may result from this IPTV. To be conservative (in the sense of including erring on the side of higher bandwidth demand), we have added an additional element for IPTV related bandwidth upgrades. As the IPTV service is provided via residential broadband lines we have modified the ADSL demand volumes in the revised version of the module. The peak traffic associated with the service will be a ## Mbps download flow. We assume that the entire base of current residential ADSL subscribers will eventually take the IPTV service. The residential ADSL subscriber base is

composed of those with 1 Mbps, 2 Mbps, 4 Mbps and 8 Mbps services. We assume that those subscribers taking the IPTV services will upgrade their service as follows:

- Those that were taking the 1 Mbps service will upgrade to the 4Mpbs service;
- Those that were taking the 2Mbps service will upgrade to the 8Mbps service;
- Those that were taking the 4Mbps service will upgrade to the 8Mbps service; and
- Those that were taking the 8Mbps service will not upgrade.

Bandwidth requirements are derived as with the original subscriber numbers (see response to Interrogatory 60c file and "Attachment - response to ICTA Interrog 60c (broadband detail) CONFIDENTIAL.xlsx." The IPTV calculations are provided in cells AK77 to AR97.

Note that we have retained previous linear growth figures, which are found in cells P2 and Q2 of "Volume Input for TD" sheet.

3. In its 2 October 2012 letter, LIME proposed an FTR of CI$0.022 per minute and a Transit Rate of CI$0.0175 per minute.

    a. Provide a detailed rationale for why the proposed FTR is rounded to three places after the decimal and the proposed Transit Rate is rounded to four places after the decimal.

    b. Provide LIME's views on the rounding of both per minute rates to four places after the decimal.

LIME response: LIME does not have an express preference for rounding FTR and Transit Rate to three or four places after the decimal. Accordingly, LIME would not object to rounding both of these rates to four decimal places.

4. The interconnection agreements between LIME and the other licensees make references to "PSTN Termination Part" rates for various "Part 2 - Termination Services". Using the LIME/Digicel March 2011 agreement as an example, the "PSTN Termination Part" rates are listed under "PSTN Terminating Access Service" and "Incoming International Call Termination to PSTN Service".

a. Identify whether or not the LIME proposed FTR will apply to both of these services. If not, provide a detailed rationale of why the proposed rate would not apply to both of these services.

LIME response: LIME confirms that the proposed FTR would apply to both PSTN Terminating Access Service and Incoming International Call Termination to PSTN Service.

b. Identify whether LIME intends to apply the FTR to any services other then the two identified above. If so, please provide the documents where the use of the FTR is specified.

LIME response: LIME expects that the FTR would apply to all voice call termination services involving a fixed network, irrespective of technology applied (e.g. fixed wireless).

5. The interconnection agreements between LIME and the other licensees make references to "Transit Part" rates for various "Part 2 - Termination Services" and transit "Usage Charges" for various "Part 4 - PSTN Transit Services". Using the LIME/Digicel March 2011 agreement as an example, transit rates are listed under "PSTN Terminating Access Service", " PLMN Terminating Access Service", " Incoming International Call Termination to PSTN Service", "Incoming International Call Termination to PLMN Service", " PSTN Transit Service", " PLMN Transit Service", and " Volume Discount (Transit Charges only)".

a. Identify whether or not the LIME proposed transit rate will apply to each of the above listed services. If not, please provide a detailed rationale of why the proposed rate would not apply to a specific service.

LIME response: LIME confirms that the proposed transit rate would apply to each of the following services: "PSTN Terminating Access Service," "PLMN Terminating Access Service," "Incoming International Call Termination to PSTN Service," "Incoming International Call Termination to PLMN Service," "PSTN Transit Service," "PLMN Transit Service," and "Volume Discount (Transit Charges only)."

b. Identify whether LIME intends to apply the transit rate to any service other than those listed above. If so, please provide the documents where the use of the transit rate is specified.

LIME response: The transit rate would apply in all cases where a call passes through one switch or network before reaching the switch or network on which

the call is to be terminated. LIME is not aware at this time of any services to which the transit rate would apply other than those identified in LIME's response to part a, above.

6. The March 2011 LIME/Digicel interconnection agreement provides for an effective discount of ~~##~~65% on Transit Charges in the event that a party meets a Minimum Qualifying Volume of calls subject to Transit Charges (including any calls subject to "Transit Part" charges under "Part 2 – Termination Services").

    a. Please indicate whether or not the discounted rates are reflective of any underlying cost differential that occurs because of an operator reaching the stated volume.

LIME response: The discounted rates were established by negotiation at the senior levels of the companies involved. They were not established in reference to any specific discussion or information relating to costs.

    b. If the discounted rates do reflect an underlying cost differential, provide a detailed explanation of the change in costs associated with meeting the specified volume and provide the cell reference and details of the mechanism for how the underlying cost differential is reflected in the Fixed Module.

LIME response: N/A

    c. If the discounted rates do not reflect any underlying cost differential, provide a detailed explanation of the basis on which the discounted rates were determined.

LIME response: See LIME response to part a. above.

7. The interconnection agreements, among other things, refer to the "PSTN Termination Part" of the "PSTN Terminating Access Service". Provide a network diagram for the "PSTN Termination Part" functionality showing the network components (or elements) and route for terminating traffic used for that service component. In addition provide a detailed description of the function that is performed by each of the network components as it relates to the "PSTN Termination Part" functionality.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

8. Indicate whether or not there are any differences in the routing of the "PSTN Termination Part" of a call under the "PSTN Terminating Access

Service" and the "Incoming International Call Termination to PSTN Service". If there are any differences in the routing to the "PSTN Termination Part", provide a detailed explanation along with a network diagram and a detailed description of the functions performed by the network components.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

9. For the "Transit Part" of the "PLMN Terminating Access Service", provide a network diagram showing the network components and route for traffic from another local operator's network to LIME's mobile network. In addition provide a detailed description of the function that is performed by each of the network components as it relates to the "Transit Part" functionality.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

10. Indicate whether or not there is any difference in the routing of the "Transit Part" of a call under the "PSTN Terminating Access Service" and the "PLMN Terminating Access Service", the "Incoming International Call Termination to PSTN Service", or the "Incoming International Call Termination to PLMN Service". If there are any differences in the routing to the "PSTN Termination Part", provide a detailed explanation along with a network diagram and a detailed description of the functions performed by the network components.

LIME response: In all cases, the "Transit Part" reflects the fact that a call is routed via a switch or network before reaching the switch or network on which it is to be terminated. LIME does not believe that there is a material if any difference between any of these "Transit Parts", which is why the interconnection agreements apply the same price in all cases.

11. For traffic that originates on LIME's fixed network and is routed via that network to LIME's mobile network, provide a diagram showing the network components and routing of such traffic. In addition, provide a detailed description of the function that is performed by each of the network components as it relates to the routing of this traffic. Separately identify the network components that are used for the "origination" part of the call and separately identify the network components involved in transporting the call from the fixed network to the mobile network.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

12. Identify whether LIME incurs costs for the functions covered by the "Transit Part" charges for calls from its own fixed network to its own mobile network. If LIME does incur such costs, provide a detailed explanation of how the costs are accounted for in the Fixed Module. If LIME does not incur such costs, provide a detailed explanation of the network connection arrangements it has between its fixed and mobile networks which allow it to avoid such costs including an explanation of how those arrangements differ from the arrangements LIME uses when it applies the transit charges to the traffic of other operators.

LIME response: LIME does not incur costs for the functions covered by the "Transit Part" for calls from its own fixed network to its own mobile network because those two networks are connected directly one to the other. Similarly LIME does not incur costs for the function covered by the "Transit Part" for calls from its own fixed network to Digicel's mobile network because those two networks are connected directly one to the other. We believe that ICTA is misinterpreting the "Transit Part" of the "PLMN Terminating Access Service". This Transit Part would only come into play if another network (the fixed network) were to intermediate the connection between two other networks (e.g. two mobile networks). Direct interconnection of the type that ICTA describes in Interrogatory 12 would not involve a transit service.

13. For traffic that originates on LIME's mobile network and is routed via LIME's fixed network to the network of another local operator, provide a network diagram showing the network components and route of such traffic. In addition, provide a detailed description of the function that is performed by each of the network components as it relates to routing of this traffic.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

14. Identify where the demand data/quantities for traffic that originates on LIME's mobile network and is routed via LIME's fixed network to the network of another local operator are included in the Fixed Module. If the traffic volumes are not included, please provide a detailed explanation for such an exclusion.

LIME response: In sheet "Volume Input for TD", cells X11 and Z11 contain domestic transit of non-LIME fixed network operators (calls and minutes respectively). In terms of actual volumes in 2011/12, traffic from LIME's mobile network routed across LIME's fixed network to the network of another local operator was about ## million minutes. The volumes from other operators routed across the fixed network to LIME's mobile network or another operator's network were about ## million minutes.

15. For traffic that originates on LIME's mobile network and is routed via LIME's fixed network to an international carrier, provide a network diagram showing the network components and route of such traffic. In addition, provide a detailed description of the function that is performed by each of the network components as it relates to routing of this traffic.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

16. Identify where the demand data/quantities for traffic that originates on LIME's mobile network and is routed via LIME's fixed network to an international carrier is included in the Fixed Module. If the traffic volumes are not included, please provide a detailed explanation for such an exclusion.

LIME response: The volume that corresponds to traffic originating from LIME's mobile network and is routed via LIME's fixed network to an international carrier is found in international transit from OLO in cells X34 and Z34.

17. For the "PSTN Transit Service", provide a network diagram showing the network components and route for traffic. In addition provide a detailed description of the function that is performed by each of the network components as it relates to the transit service.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

18. Identify whether or not the routing of traffic under the "PSTN Transit Service" is different from the routing of traffic under the "PLMN Transit Service". If there are any differences in the routing, please provide a detailed explanation along with a network diagram and a detailed description of the functions performed by the network components.

LIME response: LIME does not actually provide a "PLMN Transit Service" but rather takes a "PLMN Transit Service" from Digicel. LIME understands that the principal difference between a "PSTN Transit Service" and a "PLMN Transit Service" is that in the first case the switch used to provide the transit service is a fixed switch and in the second case the switch used to provide the transit service is a mobile switch. As a transit service does not use any of the specifically "mobile" features of a mobile switch (e.g. wireless spectrum, call hand off between cells, etc.), LIME does not believe there is a material if any difference between the two services or their costs.

19. In its letter of 2 October 2012, LIME stated with respect to the "Duct Unit Costs" section, that an update has been made to the capital costs. In

particular LIME submitted that "*The costs of the ducts (equipment and installation labour) in cell C6:C78 and F6:F78 were introduced to the model in 2009. We have added a cost adjustment factor in E6 reflecting an annual cost increase of 2.5% a year for 3 years*". Provide an explanation for how the introduction date of the cost to the Fixed Module is related to the year from which the cost estimated is sourced (i.e. the vintage of the asset). Confirm for each cost input that is subject to cost change in the 'Cost Assumptions' sheet the year from which it is sourced and provide detailed documentation to support that information.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

20. In Table 1 of its letter of 2 October 2012, LIME provided benchmarks of equipment price trends in fixed LRIC models. The Authority notes that LIME in its the 3 July 2007 Virtual Office service filing, identified that the total "Virtual Office Equipment Costs" was **##** and in its 11 March 2011 imputation test showed a significant reduction in total "Virtual Office Equipment Costs" cost to **##**. In LIME's 31 March 2011 interrogatory response it explained there were several reasons for the decline in cost, including that IP equipment costs had declined, as the adoption of IP technology had increased and the technology improved significantly. Provide a detailed justification of the adequacy of the benchmarked prices given the developments observable in the Virtual Office service filing.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

21. In a 24 May 2011 response to an Authority interrogatory concerning freight, insurance, customs, etc. costs related to certain network equipment identified in it 2011 Virtual Office service filing, in addition to identifying costs related to the ~~**##**~~22% duty fees, LIME also indicated that it incurred freight costs of **##**% and warehousing costs of **##**%. Please indicate whether the freight and warehousing costs are typically incurred when LIME purchases network equipment and, if such costs are not typically incurred, please provide a detailed rationale of how such costs are avoided. If the costs are typically incurred, identify with specific cell references how such costs are included in the Fixed Module.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

22. In the "Duct Unit Costs" section of the 'Cost Assumptions' sheet of the Fixed Module various costs of duct and installation are provided in cells C19:C78 and F19:F78. A heading to that section in cell A15 indicates that the source is "C&W carrier services" and "Cayman" is listed in column J. Provide detailed documentation for these cost inputs, for example an invoice or bill of materials. The Authority notes that in paragraph 301 of ICT Decision 2008-2 it directed LIME to provide information explaining in detail the source all assumptions marked as "C&W", "Benchmark" or "Cayman". While LIME in its 8 April 2009 response (ATTACHMENT A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02, submitted by LIME in CD 2009-01, #72) indicated that this direction had been adhered to, the Authority has been unable to find detailed documentation to substantiate that statement.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

23. The jointing box costs for both the equipment category and installation category for 3-4-bore (C47:C49 and F47:F49 respectively) in the "Duct Unit Costs" section of the 'Cost Assumptions' sheet in the Fixed Module are only a small fraction of similar costs for 5-6 bore (C59:C61 and F59:F61). Confirm the accuracy of these inputs.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

24. In its 2 October 2012 letter, LIME submitted that no changes were made to the "Access Network Assumptions" section of the 'Cost Assumptions' sheet in the Fixed Module as it relates to the access network, and access assumptions are assumed to be unchanged for this proceeding. The Authority notes that the cost of fixed termination and transit are influenced by assumptions made for access through the allocations in the overhead expense factors. Provide a detailed explanation for why the cost inputs in

the access network assumptions should not be adjusted similar to the other cost inputs (i.e. using a price trend) updated by LIME.

LIME response: We agree that a cost adjustment should be added to the access network. We believe that the duct/trench price change benchmarks presented in Table 1 of our submission of 2 October 2012 is suitable for this purpose. We have therefore introduced an adjustment equivalent to 2.5% per annum cost increase, i.e. and overall increase of 8%.

25. In the "Access Network Assumptions" section of the 'Cost Assumptions' sheet in the Fixed Module various equipment and installation costs are provided in cells C87:C181, F87:F181. A heading to the section in cell A82 indicates that the source is "C&W" and "Cayman" is listed in column I. Provide detailed documentation for these cost inputs, for example an invoice or bill of materials (excluding the total pole rental per month in the 'Cost Assumptions' sheet cell F132 that has been confirmed in first round interrogatories in CD2009-1). The Authority notes that in paragraph 301 of ICT Decision 2008-2 it directed LIME to provide information explaining in detail the source all assumptions marked as "C&W", "Benchmark" or "Cayman". While LIME in its 8 April 2009 response (ATTACHMENT A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02, Submitted by LIME in CD 2009-01, #72) indicated that this direction had been adhered to, the Authority has been unable to find detailed documentation to substantiate that statement.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

26. In the "Transmission Direct Capex Assumptions" section of the 'Cost Assumptions' sheet in the Fixed Module various equipment and installation costs are provided in cells C192:C205, F192:F205. A heading to the section in cell C188 indicates that the source is "C&W" and "Cayman" is listed in column I. Provide detailed documentation for these cost inputs, for example an invoice or bill of materials. The Authority notes that in paragraph 301 of ICT Decision 2008-2 it directed LIME to provide information explaining in detail the source all assumptions marked as "C&W", "Benchmark" or "Cayman". While LIME in its 8 April 2009 response (ATTACHMENT A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02, Submitted by LIME in CD 2009-01, #72) indicated

that this direction had been adhered to, the Authority has been unable to find detailed documentation to substantiate that statement.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

27. In the "Transmission Equipment Direct Capex Assumptions" section of the 'Cost Assumptions' sheet in the Fixed Module various equipment and installation costs are provided in cells C212:C226, F212:F226. In column I the source is indicated as "Benchmark". Provide detailed documentation for these cost inputs, for example other model(s) from where these values are sourced. Further, confirm that the equipment purchase prices contain installation costs. The Authority notes that in paragraph 301 of ICT Decision 2008-2 it directed LIME to provide information explaining in detail the source all assumptions marked as "C&W", "Benchmark" or "Cayman". While LIME in its 8 April 2009 response (ATTACHMENT A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02, Submitted by LIME in CD 2009-01, #72) indicated that this direction had been adhered to, the Authority has been unable to find detailed documentation to substantiate that statement.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

28. Rows 203 and 204 of the 'Cost Assumptions' sheet in the Fixed Module contain "Cable (24-Fibre) laying cost including sub-duct- underground" costs and "Cable (48-Fibre) laying cost including sub-duct- underground" respectively. These cost inputs are referenced in the 'Core Fibre Calculations' sheet, but would otherwise not appear to be used in the module. Explain the purpose of these inputs.

LIME response: These appear to be legacy inputs that are no longer necessary. They have been removed in the revised version of the model.

29. Network Management hardware and Network Management software costs of USD **##** (excluding price trend correction) are provided in the 'Cost

Assumptions' sheet cells C238 and C239, respectively of the Fixed Module. Provide detailed documentation for these cost inputs, for example an invoice or bill of materials.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

30. Network Management hardware cost in KYD are calculated in the 'Cost Assumptions' sheet cell D238 of the Fixed Module using the following formula:

    '=(C238*$B$7*(1+$B$11)+B238+C238*$G$9*$B$7)*(1-SUM(C$256:C$269)/SUM(B$256:C$269))',

    where the various cell references denote:

    - C238 = the price of Network Management hardware in USD
    - $B$7 = USD to KYD currency conversion
    - $B$11 = planning cost (as a percentage of CAPEX)
    - B238 = duty on Network Management hardware in KYD
    - $G$9 = level of spares (as a percentage of CAPEX)
    - SUM(C$256:C$269) = sum of installation related materials for a sample of MGW in USD
    - SUM(B$256:C$269) = sum of installation related materials and equipment costs for a sample of MGW in USD.

    The total formula '(C238*$B$7*(1+$B$11)+B238+C238*$G$9*$B$7)' is therefore the cost of network management hardware in KYD including costs related to planning spares and duty, while the formula SUM(C$256:C$269)/SUM(B$256:C$269 is the installation costs share of the total cost.

    Provide an explanation for why the cost of network management hardware should be multiplied by 1 minus the installation cost factor and not 1 plus the installation cost factor. It is noted that the factor '1-SUM(C$256:C$269)/SUM(B$256:C$269' is applied to cells D238:D240, D244:D251, D212:D215, D218:D219 and D222:D226.

LIME response: The formula should indeed read "1+" rather than "1-." This is corrected in the revised model.

31. When calculating the cost of spares in the section "Transmission Equipment Direct Capex Assumptions" in the 'Cost Assumptions' sheet cells D212:D226 of the Fixed Module the factor '1-SUM(C$256:C$269)/SUM(B$256:C$269' is multiplied by the price (cells C212:C226) suggesting that equipment related to installation costs needs to be accounted for in the calculation of spares. Confirm this is correct given that the factor '1-SUM(C$256:C$269)/SUM(B$256:C$269' is not multiplied by the price (cells C212:C226).

LIME response: The formula for spares should indeed be modified so that it is simply the equipment purchase price multiplied by the spare % (in cell G8). The installation costs (with the corrected formula as discussed in response to interrogatory 30) should be introduced in H212:H226. This is corrected in the revised module.

32. When calculating the cost of spares for "MSE: Numbers from original contract" in the 'Cost Assumptions' sheet cells D244:D251 of the fixed Module the factor '1-SUM(C$256:C$269)/SUM(B$256:C$269' is multiplied by the price (cells C244:C251) suggesting that equipment related to installation costs needs to be accounted for in the calculation of spares. Confirm this is correct given that the factor '1-SUM(C$256:C$269)/SUM(B$256:C$269' is not multiplied by the price (cells C244:C251).

LIME response: The formula for spares should indeed be modified so that it is a simply the equipment purchase price multiplied by the spare % (in cell G9). The installation costs (with the corrected formula as discussed in response to interrogatory 30) should be introduced in F244:F251. This is corrected in the revised module.

33. Provide detailed documentation for all the cost elements quoted in the block "MSE: Numbers from original contract" in the 'Cost Assumptions' sheet of the Fixed Module. This should be provided for each of a) CS-2K Compact (2) ETSI Hardware, b) CS-2K Compact (2) ETSI Software, c) Gateway Controller, d) UAS, e) USP, f) PP-8600, g) PP-15K and h) IMS (now called MCS5200). For each cost element provide a detailed description of its function, a justification of it being a modern equivalent asset, i.e. an asset that would be installed where the network to be built today, and a documented cost (for example an invoice or bill of materials).

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network

equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

34. In the 'Cost Assumptions' sheet of the Fixed Module, the cost of DSLAM Equipment, Broadband Access Server, Core Ethernet Switch, Core Juniper Router, Other Servers & Software and Software items is shown in cells D283:D290. In column I the source is indicated as "C&W". Provide detailed documentation for these cost inputs, for example an invoice or bill of materials. The Authority notes that in paragraph 301 of ICT Decision 2008-2 it directed LIME to provide information explaining in detail the source of all assumptions marked as "C&W", "Benchmark" or "Cayman". While LIME in its 8 April 2009 response (ATTACHMENT A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02, Submitted by LIME in CD 2009-01, #72) indicated that this direction had been adhered to, the Authority has been unable to find detailed documentation to substantiate that statement.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

35. In the 'Cost Assumptions' sheet of the Fixed Module, the cost of Data Network is shown in cell C292. Provide detailed documentation for this cost input, for example an invoice or bill of materials. In addition, explain why no correction using price trends has been made.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

36. In the 'Cost Assumptions' sheet of the Fixed Module, the cost of the interconnect billing platform is shown in cell E294 and an adjustment to that cost is shown in cell E295. In cell F294 the source of the cost input is indicated as "C&W estimate" and in cell F295 the source for the adjustment is shown as "C&W". Provide detailed documentation for the cost input in cell E294 and the adjustment in Cell E295, for example an invoice or bill of

materials for the cost input and supporting calculations and documentation for the adjustment. In addition, explain why no correction using price trends has been made to the cost input.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

37. The 'Cost Assumptions' sheet cells B306:B308 of the Fixed Module contains various costs related to VoIP including 'Terminal Adaptor Cost (before shipping and duty) per Customer', 'Shipping and duty cost on terminal adapter - per Customer' and 'Subscriber Port Cost per year'. Provide detailed documentation for these cost inputs, for example an invoice or bill of materials. It is noted that the 'Subscriber Port Cost per year' is added to the other costs and subject to annualisation in the 'Other Costs' sheet. Confirm that this is an accurate treatment of this cost item.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

38. The 'Demand Assumptions' sheet of the Fixed Module cell D10 contains an estimate of the annual growth rate for lines of 3.0% based on C&W Planning Engineers (Appendix XIV - Cabinet forecast 2008). As the estimate is from 2008, confirm the continued adequacy of this forecast given the historical developments in Cayman since 2008 and expectations for the future.

LIME response: LIME has revised the estimate of the annual growth rate for fixed access lines from +3% to +1.3%, based upon an analysis of fixed access lines submitted by LIME to the Authority in the Quarterly Monitoring Data ("QMD") reports. See attached file "Attachment - response to ICTA Interrog 38 (fixed line growth) CONFIDENTIAL.xls."

39. When calculating the efficiency factor, as detailed in its 2 October 2012 letter, to adjust the fixed operating expenses and overheads in the FAC Inputs sheet of the Fixed Module, LIME has included depreciation. Provide

a detailed rationale for the inclusion of depreciation in the efficiency assessment.

LIME response: LIME agrees that depreciation and amortization should not be included in calculating the efficiency factor. The factor has been recalculated excluding depreciation and amoritization. Doing so raising the efficiency reduction from 14.50% to 23.22%.

40. In the 'FAC Inputs' sheet of the Fixed Module, LIME has not applied any efficiency adjustments to the Fixed Network Capital Cost of Support Assets (which include: 100-Freehold Technical Infrastructure - Fixed Network, 100-Furniture and Fittings - Fixed Network, 100-Computers - Fixed Network, 100-Building Infrastructure - Fixed Network and 100-Vehicles - Fixed Network). The Authority notes that these costs are annualised capital costs and not operating costs and possibly may be subject to a different efficiency adjustment than that suggested by LIME's analysis of operating costs. Provide a detailed rationale for lack of efficiency adjustment of these costs.

LIME response: LIME has not applied any efficiency adjustments to the Fixed Network Capital Cost of Support Assets because it is not clear that there is an overall efficiency gain from this set of assets. We note that the asset class Computers is subject to price reduction, which is discussed in our response to Interrogatory 64.

41. LIME has not applied the efficiency factor to retail costs in the FAC Input sheet of the Fixed Module. Provide a detailed rationale for lack of adjustment to these costs.

LIME response: LIME agrees that the efficiency factor should be applied to retail costs. This adjustment is reflected in the revised module.

42. In its 2 October 2012 letter, LIME stated that the routing factor of .25 in cells F4, F5 and F8 in the 'Routing Factors Input' sheet of the Fixed Module reflects the share of the Capex of the PSTN Host Switch duration sensitive element. The Authority has reviewed the MSE costs and notes that the PSTN Host Switch duration sensitive elements share of total MSE cost is 72% (calculated as E35/sum(D35:E35 in the NGN Costs sheet). Confirm how LIME has calculated the 25%.

LIME response: In our 2 October letter, LIME stated that the routing factor of .25 in cells F4, F5 and F8 in the "Routing Factors" sheet reflects the share of the capex that are not associated with specifically voice-related components of the PSTN Host Switch. Thus, the 25% was derived by summing the values in cells

C249 and C250 (capex for (PP-8600 and PK-15K) and dividing by total MSE capex C244 to C251).

43. In its 2 October 2012 letter, LIME stated that some of the MSE costs are not voice-specific, but have IP functionality as well and that this should be accounted for. Specifically LIME submitted that the PP15K and PP8600 have IP functions and the cost should be allocated to those service that make use of this functionality. LIME stated that there are *"…two ways one could implement this in the model. One is to break out the components of the PSTN Host Switch duration sensitive element that are voice specific from those that are not. In the interest of time and simplicity we have instead taken the share of the capex of the PSTN Host Switch duration sensitive element, 25%, and used that for the routing factor for the ADSL and Direct Connect IP services."* Explain the adequacy of the approach given that the final allocation to services will reflect a combination of the routing factor of 0.25 and demand (converted to minutes) of the Direct Connect and ADSL services.

LIME response: While LIME would agree that one of the two approaches that LIME proposed in its 2 October 2012 letter, the more accurate would be to split out the non-voice specific MSE costs, we do not believe that simplified approach introduces material distortion.

44. In its 2 October 2012 letter, LIME stated that the billing platform is only utilized once per call minute for the transit service. For this service LIME has previously submitted (Appendix VIII RF Analysis - updated 10_09_01 Conf) that two sets of records must be carried one for either interconnecting parties and that this implies a routing factor of 2. Provide for each service that uses the billing platform a detailed rationale for how that service uses the billing platform.

LIME response: Please find a below a description of how each call uses the billing platform.

- **PSTN Terminating Access Service**
    1. Lime International to other local operator (OLO) PSTN – single billing record – OLO rated for **PSTN Terminating** (rated per call and per minute)

    2. OLO1 International to OLO2 PSTN – two billing records – OLO1 rated for **PSTN Transit** (rated per call and per minute) **and PSTN Terminating** (rated per call and per minute) **-** OLO2 rated for **PSTN Terminating** (rated per call and per minute)

3. OLO1 International to Lime PSTN – single billing record – OLO rated for **PSTN Terminating** (rated per call and per minute)

4. Lime PSTN to OLO PSTN – single billing record - OLO rated for **PSTN Terminating** (rated per call and per minute)

5. Lime PLMN to OLO PSTN – two billing records – Lime rated for **PSTN Transit** (rated per call and per minute) **and PSTN Terminating** (rated per call and per minute) **-** OLO rated for **PSTN Terminating** (rated per call and per minute)

6. OLO1 PLMN to OLO2 PSTN – two billing records – OLO1 rated for **PSTN Transit** (rated per call and per minute) **and PSTN Terminating** (rated per call and per minute) **-**OLO2 rated for **PSTN Terminating** (rated per call and per minute)

7. OLO1 PSTN to OLO2 PSTN – two billing records – OLO1 rated for **PSTN Transit** (rated per call and per minute) **and PSTN Terminating** (rated per call and per minute) **-** OLO2 rated for **PSTN Terminating** (rated per call and per minute)

- **PLMN Terminating Access Service**

1. OLO PSTN to Lime PLMN – two billing records – OLO rated for **PSTN Transit** (rated per call and per minute) and **PLMN Terminating** (rated per minute) - Lime rated for **PLMN Terminating** (rated per minute)

2. Lime PSTN to OLO PLMN – single billing record - OLO rated for **PLMN Terminating** (rated per minute)

3. Lime PLMN to OLO PLMN – two billing records – Lime rated for **PSTN Transit** (rated per call and per minute) and **PLMN Terminating** (rated per minute) – OLO rated for **PLMN Terminating** (rated per minute)

4. OLO1 PLMN to OLO2 PLMN – two billing records – OLO1 rated for **PSTN Transit** (rated per call and per minute) and **PLMN Terminating** (rated per minute) - OLO2 rated for **PLMN Terminating** (rated per minute)

5. OLO1 PSTN to OLO2 PLMN – two billing records – OLO1 rated for **PSTN Transit** (rated per call and per minute) and **PLMN Terminating** (rated per minute) - OLO2 rated for **PLMN Terminating** (rated per minute)

6. OLO PLMN to Lime PLMN – two billing records – OLO rated for **PSTN Transit** (rated per call and per minute) and **PLMN Terminating** (rated per minute) - Lime rated for **PLMN Terminating** (rated per minute).

- **Incoming International Call Termination to PLMN**

1. Lime International to other local operator (OLO) PLMN – single billing record – OLO rated for ***International Call Termination to PLMN*** (rated per minute)

2. OLO1 International to OLO2 PLMN – two billing records – OLO1 rated for **PSTN Transit** (rated per call and per minute) **and** ***International Call Termination to PLMN*** (rated per minute) **-** OLO2 rated for ***International Call Termination to PLMN*** (rated per minute)

3. OLO International to Lime PLMN – two billing records – OLO rated for **PSTN Transit** (rated per call and per minute) **and** ***International Call Termination to PLMN*** (rated per minute) **-** Lime rated for ***International Call Termination to PLMN*** (rated per minute)

- **Emergency Services Access Service**

1. Lime PLMN to Emergency Services – Single billing record – Lime rated for **Emergency Access / Termination** (rated per call and per minute)

2. OLO PLMN to Emergency Services – Single billing record – OLO rated for **Emergency Access / Termination** (rated per call and per minute)

3. OLO PSTN to Emergency Services – Single billing record – OLO rated for **Emergency Access / Termination** (rated per call and per minute)

- **National DQ Services**

1. Lime PLMN to National DQ Services – Single billing record – Lime rated for **National DQ Access / Termination** (rated per call and per minute)

2. OLO PLMN to National DQ Services – Single billing record – OLO rated for **National DQ Access / Termination** (rated per call and per minute)

3. OLO PSTN to National DQ Services – Single billing record – OLO rated for **National DQ Access / Termination** (rated per call and per minute)

- **International DQ Services**

1. Lime PLMN to International DQ Services – Single billing record – Lime rated for **International DQ Access / Termination** (rated per call and per minute)

2. OLO PLMN to International DQ Services – Single billing record – OLO rated for **International DQ Access / Termination** (rated per call and per minute)

3. OLO PSTN to International DQ Services – Single billing record – OLO rated for **International DQ Access / Termination** (rated per call and per minute)

45. In the 'Core Fibre Dimensions' sheet of the Fixed Module, fibre lengths of different cable type are shown. Provide a detailed explanation of how the various fibre lengths where derived, their optimality and maps showing where they run.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

46. Fibre category "UBFO12/SM-LFM" in the 'Core Fibre Dimensions' sheet of the Fixed Module is not assigned a fibre pair category (see cell E15). Accordingly this length of fibre is excluded from calculations in the 'Core Fibre Calculations' sheet. Provide a detailed explanation for the exclusion of this fibre category.

LIME response: This length should have been assigned a fibre pair of 12. The model has been adjusted accordingly.

47. In the Authority's 2005 Phase I decision on the FLLRIC Principles and Guidelines, ICT Decision 2005-4, guideline 3 states:

    The FLLRIC study shall be based upon the locations of, and planned locational changes to, the existing central office and facilities configuration. "Facilities" shall be interpreted to include feeder routes, central offices, drop wire, network interface devices, and other specific items that make up the facilities of a telecommunications company. This is referred to as the "scorched node" approach. The adoption of this approach does not imply that the modelled equipment located at the network nodes is of the same type or function as the equipment currently situated at those locations; however, the locations themselves are retained.

    The "MG Dimensions" sheet contains a list of MG locations. Confirm that the placement of equipment has been optimized within the scorched node approach as defined in guideline 3. For example, confirm the optimality of having two MGs at Ugland House.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

48. The source of the duct quantities (in km by type) in the Duct Dimensions Sheet of the Fixed Module is stated as being C&W Cayman GIS System. Provide a detailed explanation of how the duct quantities where derived using the GIS system and provide maps where available.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

49. Explain in detail how the number of STM1 ADMs and STM16 ADMs in the Fixed Module's 'Tx Equipment Dimensions' sheet, cells J40:K44 have been derived.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

50. Row 24 of the 'MG Calculations' sheet in the Fixed Module contains cost and volume information for "George Town 0". The volume of subscribers at "George Town 0" is nearly **##** times higher than that of the location with the second highest volume. Provide a detailed explanation for the adequacy of the output of the regression analysis in the "Cost assumptions" sheet used to determine fixed and variable cost of the MG units given that this is based on a sample of MGs with a much lower volume than that located at "George Town 0".

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

51. LIME has updated network management, voicemail and MSE-related costs of the "NGN Direct Capex" section in the 'International Transmission TX Costs' sheet of the Fixed Module by multiplying by 69% (cell E6). According to LIME this value is based on a benchmark value of -6% per annum.

    Using the formula:

    $$Equipment\ price(t) \times (1+p)^{(n-t)},$$

    where p is the annual price trend, t is the year the equipment price is from, and n is the current year, would suggest a correction factor of (1-6%)^3 = 83.06%. Confirm the accuracy of the cost adjustment factor used.

LIME response: LIME agrees that the adjustment factor should be 83% corresponding to an annual decrease of 6% as proposed in its Table 1. Equipment price trends in recent fixed LRIC models, annual growth, for submarine cable. The revision has been made in the model.

52. Provide a detailed justification for the use of the formula "='TX Equipment Dimensions'!J44/2" to derive the STM1 demand in the "International Tx Costs" sheet of the of Fixed Module.

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

53. The values in cells G25:G26 of the 'International Tx Costs' sheet of the Fixed Module would not appear to be used. Provide an explanation for the use of these values or in the event they are not used delete them.

LIME response: The values in cells G25 and G26 are not used and are removed in the revised module.

54. The Authority notes that the annualised jointing costs in the 'Access Costs' sheet of the of Fixed Module accounts for approximately 60% of the total annualized access costs in that sheet (shown in cells C139:C144). Confirm that jointing costs (incl. splicing) should account for such a large share of access costs.

LIME response: We regret that we cannot provide the information requested. The original invoice information used as a source for the fixed network equipment prices came from procurement documents that can no longer be located post-Ivan. We are attempting to gather current invoice information as an alternative, and can update this answer as and when the information becomes available.

55. In cell F11 of the 'Core Fibre Costs' sheet of the Fixed Module reference is made to the 'Access Dimensions' sheet cell C108 which reflects the average separation of fibre splices for underground cable. Confirm the accuracy of this value given it would appear, from inspection of cell F8, to belong to aerial fibre and not underground fibre.

LIME response: We agree and have replaced the cell reference "Access Dimensions" sheet C108 with "Cost Assumptions" sheet H123 in the module.

56. In the 'NGN Costs' sheet cells D35:D36 of the Fixed Module, LIME splits the total MSE cost into a call and minute related element. In particular it is only the CS2K that is allocated to calls while the remaining MSE costs are assumed to be minute related. Provide a detailed rationale and explanation for why the other elements of the MSE are only duration related. For example, why is the USP driven by minutes rather than calls or a combination of both?

LIME response: LIME anticipates being able to provide a response in second tranche of responses within a couple of weeks.

57. The costs in row 36 of the 'NGN Costs' sheet of the Fixed Module are used to spread the cost of the management system. Provide a source for these costs and explain why they should not be the cut and pasted values from row 35 of the 'NGN Costs' sheet.

LIME response: LIME agrees that these values should be the cut-and-paste of the values from row 35 and has done so in the revised module.

58. In the 'Cost Summary & Mapping' sheet of the Fixed Module total duct costs are split into access related and core related using the sum of underground core fibre pair kilometers for various fibre cable sizes ('Core Fibre Costs'!O9) and the sum of underground copper pair kilometers for various copper cable sizes ('Access Dimensions'!C135). Provide a detailed rationale for this allocation of duct costs. It is noted that the same allocation is used for manholes.

LIME response: The use of the proportion of route kilometers of transmission to split the ducting cost is a simplifying assumption. The rationale is that duct costs are primarily driven by distance. Therefore, the relative aggregate route length of the access network vs. the core network makes for a reasonable simplifying assumption.

59. In the 'Cost Summary & Mapping' sheet of the Fixed Module total manhole costs in the core network are split into host-host related and RSU-host. The allocation key is simply one quarter host-host and three quarters RSU-host. Provide a detailed rationale for use of this allocation key.

LIME response: This is a simplifying assumption that uses a proportion that roughly corresponds to the same split for core duct length. To be more consistent we propose to use the same approach used to split Duct Core between Host-Host and Host-Remote, i.e., the relative share of annual fibre transmission costs found in cells D21 and E21 in the "Cost Summary & Mapping" sheet. We have revised the model accordingly.

60. In the X2:AB37 cell range of the 'Volume Input for TD' sheet of the Fixed Module inputs for the volumes by service are provided. In its 2 October 2012 letter, LIME indicated that many of the volumes have been updated "based on actual 2011/12 volumes". The Authority has compared the demand data provided in that cell range to the information that has been submitted by LIME in the Quarterly Monitoring Data ("QMD") reports and the LIME interconnection services invoices issued to other local

operators in support of the quarterly Analysis of Turnover and Deductions reports. The Authority has been unable to reconcile the 'Volume Input for TD" data with the data available from either the QMD or the invoices.

a. Please identify the specific months that were used for the "2011/12" period.

LIME response: The specific months used for the "2011/12" period are April 2011 through March 2012, i.e., LIME Cayman's fiscal year ending 31 March 2012.

b. The demand values for four of the services listed in cells V2:V35 are identified with the note that "These volumes were retained from the previous version of the model." These four services are "900-INTERNATIONAL DQ RETAIL", "900-INTERNATIONAL DQ WHOLESALE", "900-INTERNATIONAL TRANSIT from OLO", and "900-INTERNATIONAL TRANSIT to OLO". Provide a revised module using the "actual 2011/2012" volumes for these four services from the same period used for the other services or provide a detailed explanation for why the "actual 2011/2012" volumes are not available for these four services.

LIME response: Demand volumes for International DQ Retail are included within the volumes for Domestic DQ Retail. LIME proposes to allocate the volumes for DQ Retail between international and domestic based upon their share of outgoing volumes identified in rows 17 (Fixed International Outgoing), 31 (Fixed Call to OLO), and 33 (National Call Retail).

LIME has determined that there were no demand volumes for International DQ Wholesale during fiscal year ending 31 March 2012.

Demand volumes for fiscal year ending 31 March 2012 for International Transit from OLO and International Transit to OLO have been acquired and are presented in the attached fixed module, along with revised demand volumes for Domestic DQ Retail and International DQ Retail, based on the methodology articulated above.

c. For each service listed in cells V2:V35 indicate the row, if any, in which volumes for that service are included in the QMD reports and, for such rows, provide a detailed reconciliation by quarter between the volumes in the 'Volume Input for TD' sheet and those provided by LIME in the QMD reports.

LIME response: Demand volumes for the following services rely on the QMD report: ADSL Retail, Dial-Up Internet Usage, Domestic Transit, Fixed International Outgoing, PSTN Access Bus, and PSTN Access Res. A detailed

reconciliation of the volumes for these services between the 'Volume Input for TD' sheet and QMD report is presented in the attached file "Attachment - response to ICTA Interrog 60c (Volumes to QMD reconcile) CONFIDENTIAL.xls."

d. Identify all services in cells V2:V35 to which transit rates apply (either as the "Transit Part" of the PSTN or PLMN termination services or as "Usage Charges" under the PSTN or PLMN Transit Service tariff section of the interconnection agreements).

LIME response: Services to which transit rates apply are Domestic Transit (row 11), International Transit from OLO (row 34), and International Transit to OLO (row 35).

e. Provide a monthly reconciliation between the volumes for the services identified in d) above with the volumes for the various transit services that are charged by LIME on its monthly interconnection services invoices to other local operators (which are provided by LIME in support of its quarterly Analysis of Turnover and Deductions reports.) The reconciliation should be done by an "other local operator" basis using the sub-category service descriptions LIME uses on those invoices, such as "Int'l to Other Fixed – In", "INT'L TO OTHER FIXED – IN (Inpayment)", "International to Mobile – In", "INTERNATIONAL TO MOBILE – IN (Inpayment)", "OTHER FIXED TO MOBILE – IN (Inpayment", "OTHER FIXED TO OTHER FIXED – IN (Inp)", etc.

LIME response: Reconciliation is presented in the attached file "Attachment - response to ICTA Interrog 60e 60g 60i (interconnection minutes reconciliation)_CONFIDENTIAL.xlsx."

f. Identify all services in cells V2:V35 to which fixed termination rates apply.

LIME response: The service to which fixed termination rates apply are PSTN Termination (row 32).

g. Provide a monthly reconciliation between the volumes for the services identified in f) above with the volumes for the various fixed termination services that are charged by LIME on its monthly interconnection services invoices to other local operators (which are provided by LIME in support of its quarterly Analysis of Turnover and Deductions reports.) The reconciliation should be done by an "other local operator" basis using the sub-category service descriptions LIME uses on those

invoices, such as "Int'l to Other Fixed – In", "INT'L TO OTHER FIXED – IN (Inpayment)", "OTHER FIXED TO OTHER FIXED – IN (Inp)", etc.

LIME response: Reconciliation is presented in the attached file "Attachment - response to ICTA Interrog 60e 60g 60i (interconnection minutes reconciliation)_CONFIDENTIAL.xlsx."

h. For each of the sub-category service descriptions for transit and fixed termination services LIME uses on the invoices for monthly interconnection services, please identify the specific section from the interconnection agreements from which those rates are referenced. For example, the interconnection agreements references transit rates for various "Part 2 - Termination Services" and transit "Usage Charges" for various "Part 4 - PSTN Transit Services". Using the LIME/Digicel March 2011 agreement as an example, transit rates are listed under "PSTN Terminating Access Service", "PLMN Terminating Access Service", "Incoming International Call Termination to PSTN Service", "Incoming International Call Termination to PLMN Service", "PSTN Transit Service", and "PLMN Transit Service".

LIME response: See table below.

Description on Bill	**Description in Agreement**
Other Int'l to LIME Fixed - In	Part 2: Termination Services- Incoming Int'l Call Termination to PSTN
Int'l to Other Fixed - In	Part 2: Termination Services- Incoming Int'l Call Termination to PSTN
TRAN	Part 4: PSTN Transit Services – • PSTN Transit Service or • PLMN Transit Service
Int'l to Mobile - In	Part 2: Termination Services- Incoming Int'l Call Termination to PLMN
Mobile to Other Fixed - In	Part 2: Termination Services - PSTN

	Terminating Access Service
Mobile National Directory Enquiry	Part 3: Special Access Service – National DQ Services
Emergency Services	Part 3: Special Access Service – Emergency Services Access Service
Mobile to LIME Fixed	Part 2: Termination Services - PSTN Terminating Access Service
Mobile to Mobile	Part 2: Termination Services - PLMN Terminating Access Service
Other Fixed to National Directory Element	Part 3: Special Access Service – National DQ Services
Other Fixed to Emergency	Part 3: Special Access Service – Emergency Services Access Service
Other Fixed to LIME Fixed	Part 2: Termination Services - PSTN Terminating Access Service
Other Fixed to Mobile	Part 2: Termination Services - PLMN Terminating Access Service
Other Fixed to Other Fixed	Part 2: Termination Services - PSTN Terminating Access Service

i. For each of the sub-category service descriptions for transit and fixed termination services LIME uses on the invoices for monthly interconnection services, please identify the specific cell in the 'Volume Input for TD' sheet where the demand is included.

LIME response: The specific cell in the "Volume Input for TD" sheet with the relevant demand volumes are identified in the attached file "Attachment - response to ICTA Interrog 60e 60g 60i (interconnection minutes reconciliation)_CONFIDENTIAL.xlsx," see column S.

61. In the 'Volume Input for TD' sheet of the Fixed Module, among other things, LIME uses the line volumes of the ADSL and Direct Connect services to estimate an assumed usage in terms of minutes. In order to help the Authority to evaluate the assumed usage volume and any recent trends in the Cayman market, provide, by month for each of the last 36 months:

    a. the number of active LIME provided permanent broadband internet connections in service,

LIME response: See attached file "Attachment - response to ICTA Interrog 61 (broadband usage) CONFIDENTIAL.xlsx."

    b. the average monthly download usage in Gbytes per in-service LIME provided connection, and

LIME response: The most current and only available data on average monthly broadband usage per active connection are from January 2013. See attached file "Attachment - response to ICTA Interrog 61 (broadband usage) CONFIDENTIAL.xlsx." Data for other months are not maintained by LIME and are thus N/A.

    c. the average monthly upload usage in Gbytes per in-service LIME provided connection.

LIME response: The most current and only available data on average monthly broadband usage per active connection are from January 2013. See attached file "Attachment - response to ICTA Interrog 61 (broadband usage) CONFIDENTIAL.xlsx." Data for other months are not maintained by LIME and are thus N/A.

62. In the 'Volume Input for TD' sheet of the Fixed Module LIME convert line volumes of the services 900-ADSL RETAIL, 900-ADSL WHOLESALE, 900-DIRECT CONNECT, 900-DOMESTIC LEASED CIRCUITS RETAIL, 900-DOMESTIC LEASED CIRCUITS WHOLESALE, 900-MPLS IP-VPN QoS RETAIL, 900-MPLS IP-VPN QoS WHOLESALE, 900-INTERNATIONAL LEASED CIRCUITS RETAIL, 900-INTERNATIONAL LEASED CIRCUITS WHOLESALE to minutes equivalent.

    a. For each of the services listed above, identify whether or not LIME provides the service on a guaranteed transmission speed availability basis (that is, a customer has a specified capacity always available regardless of whether or the customer actually uses that capacity.)

LIME response: Each of the services listed above are provided on a guaranteed transmission speed basis, with the exception of retail and wholesale ADSL services, which are provided on a best-efforts basis.

b. The formula used to convert 2Mbps line equivalents to minutes (i.e. a conversion from a data service to a voice service) is found in the Demand Calculations sheet cell C4 and uses information on 1) the % of traffic in busy hour, 2) a conversion factor for minutes to erlangs and 3) the number of 64kbps channels in a 2 Mbps link. Provide a detailed explanation for the reasonableness of this conversion factor given that the resultant converted minutes is used to allocate the costs of certain network elements that share data and voice services where the demand for voice services is measured in total annual minutes and given that some of the data transport services are sold as capacity that is available at all times regardless of any actual traffic.

LIME response: The formula used to convert 2Mbps line equivalents to minutes found in the Demand Calculations sheet is intended to establish a common metric usage with voice services in order that capacity costs can be reasonably shared between voice and data services.

In bottom-up modeling, voice and data volumes are used both to dimension the network and then used to derive unit costs of network elements.

BH data traffic could be converted to BH minute equivalents in one of two ways in the model. First, one could sum the peak speeds of the relevant products in the service categories (in the model this is done in 2 Mbps equivalents), then convert that BH traffic into required channels, erlangs and then minutes. In this case, there is no need to multiply by an additional BH traffic factor as we began with a BH data volume. Alternatively, one could begin with total yearly traffic (in 2Mbps units), then convert this traffic into required channels, erlangs and minutes. The result would be the equivalence of total annual minutes, so in this case, the BH minute equivalent would have to be derived.

We believe that the conversion factor currently in the model will have to be modified as the data traffic used in the volume inputs is effectively busy hour traffic and not total annual traffic and yet a BH factor is used in the formula.

Alternatively, as we understand it, interrogatory 61 is intended to inform on average and total annual data traffic. Thus, the model could be modified along either one of the approaches outlined above.

c. LIME's data transport services (such a DPLC's and IPLC's) are typically provided on a circuit basis with each circuit set at a specific capacity ranging from 56 Kbps to 1000 Mbps. Provide a breakdown of the column Y "Volume - Lines" data for each of the above listed data transport services by the specific tariff item (or service offering name where tariff item is not available) and specific circuit data speed. For example, the breakdown of the data for circuits counted in the "900-DOMESTIC LEASED CIRCUITS RETIAL" would likely identify some quantity of circuits as being provided under Tariff Item 502 and for those, separately for each speed, the data transport speed at which they are provided (one of the 64 Kbps, 512 Kbps, 1024 Kbps, 1.5 Mbps, etc. as listed in the tariff.)

LIME response: A detailed breakdown on the type of lines for each of the above listed data transport services is provided in the attached file "Attachment - response to ICTA Interrog 62c (broadband detail) CONFIDENTIAL.xlsx."

d. Provide a detailed description of the methodology used to develop the Column Z "Volume - Minutes" values for the data transport services considering that the lines are provided at various speeds. The Authority notes that the Column Z "Volume - Minutes" values for these services are calculated based on values in Column AA, but those Column AA values are input value and don't appear to use the values in Column Y "Volume - Lines".

LIME response: The methodology used to develop Volume-Minutes is as follows. The current number of ADSL subscribers is broken down by download speed of the ADSL product purchased. The sum product of the subscriber numbers and the download speed is determined. This figure is divided by 2Mbps to give the aggregate required capacity to serve ADSL customers found in cell AA2. The conversion factor found in 'Demand Calculations' $C$4 is then applied to derive the equivalent minute value.

63. In its 2 October 2012 letter, LIME indicated that the Fixed Termination Rate ("FTR") was taken from cell F44 of the 'Fixed Service Costs' sheet and that the transit rate was taken from cell H44 of that sheet. However, F51 and H51 of that sheet also lists service unit costs for those two service and are different from the rates stated in LIME's letter as the reflect a bad debt adjustment. Confirm that LIME is proposing to use the rates from cells F44 and H44 for the FTR and transit rates respectively. In addition, please provide a detailed rational for excluding those bad debt costs from the calculation of the FTR and transit rates.

LIME response: LIME confirms that it is proposing to use the network unit costs, before bad debt, from cells F44 and H44 for the FTR and transit rates, respectively. First, the inclusion of bad debt does not significantly change FTR, and if estimated to the third decimal place the FTR without bad debt is the same as the FTR with bad debt. Second, with regard to the transit rate, bad debt largely arises from international transit, not domestic transit. As a simplifying assumption, LIME chose to propose the transit before bad debt. However, if the Authority objects to the exclusion of this cost item, LIME would agree to adopt the after-bad debt network unit costs, from cells F51 and H51, for the FTR and transit rates, respectively.

64. In the Asset Expense Factors sheet of 'Appendix IV-FAC-TD Values 10_09_01_rev2 – Conf.xls', LIME provides various Gross Book Values (GBV) of Freehold Technical Infrastructure, Furniture and Fittings, Computers, Customer Apparatus, Building Infrastructure, Vehicles. These asset values are annualised and allocated as Support Assets in the Fixed Module.

    a. Confirm the appropriateness of the GBV values used given Principle 3 determined by the Authority in ICT Decision 2005-4 states: "*The forward-looking long-run incremental costs of services or network elements are to be based upon those costs assumed to be incurred by an efficient carrier operating in the Cayman Islands for the first time. A carrier is deemed to be efficient where the total capital and operating expenditures are those that are necessary and sufficient in order to meet the required demand at a particular grade of service.*"

LIME response: The GBV values for Freehold Technical Infrastructure, Furniture and Fittings, Computers, Customer Apparatus, Building Infrastructure and Vehicles currently in the model are unadjusted. To bring these values to a current costing, we believe they should be adjusted on the basis of the following price trends.

Asset Classes	**Proposed annual change in price**	**Basis of price trend proposal**
Freehold Technical Infrastructure - Fixed Network	+2%	Benchmark: PTS Hybrid Model v7.0 (+2%); ITST Revised Hybrid Model (0%)
Furniture and Fittings - Fixed Network	+1.2%	Current inflation (increase in CPI for calendar year 2012).
Computers - Fixed Network	-5%	PTS Hybrid Model v7.0 (-5%); Analysys –various models (-

		6%)
Customer Apparatus - Fixed Network	-5%	No benchmark available; use comparable reduction as proposed for NGN kit in our 2 October 2012 submission.
Building Infrastructure - Fixed Network	+2%	Benchmark: PTS Hybrid Model v7.0 (+2%); ITST Revised Hybrid Model (0%)
Vehicles - Fixed Network	+1.2%	Current inflation (increase in CPI for calendar year 2012).

These adjustments have been introduced into the Appendix IV.

b. The GBV's are annualised assuming the following asset lives: Freehold Technical Infrastructure 40 years, Furniture and Fittings 10 years, Computers 5 years, Customer Apparatus 5 years, Building Infrastructure 7 years and Vehicles 4 years. These asset classes differ from those used in the Fixed Module in the 'Asset Lives' sheet. Explain how the assumed asset lives for the above asset classes are consistent with those used in the Fixed Module.

LIME response: These asset classes were not included in the list of asset classes in the Asset Lives sheet. Nor were they addressed in the ICTA decision 2008-2. However, as the asset lives determined in that decision were based largely on benchmarks, we have applied the following benchmarks to these classes. We include a reference to the source of these benchmarks.

Asset Classes	**Proposed Asset lives (years)**	**Basis of life proposal**
Freehold Technical Infrastructure - Fixed Network	40	LIME accounting life; benchmark—PTS Hybrid Model v7.0 (40); ITST Revised Hybrid Model (30); Analysys –various models (50)
Furniture and Fittings - Fixed Network	10	LIME accounting life; No recent benchmark found
Computers - Fixed Network	5	LIME accounting life; PTS Hybrid Model v7.0 (5); ITST Revised Hybrid Model (6);

		Analysys –various models (3)
Customer Apparatus - Fixed Network	5	LIME accounting life; No recent benchmark found
Building Infrastructure - Fixed Network	40	Benchmark—PTS Hybrid Model v7.0 (40); ITST Revised Hybrid Model (30); Analysys –various models (50)
Vehicles - Fixed Network	4	LIME accounting life; No recent benchmark found

Thus, the only change necessary in Appendix IV is in regard to Building Infrastructure. This change has been made in the revised Appendix IV at D7 in the "Asset Expense Factor" sheet.

Interrog. 7: “PSTN Termination Part” functionality

a. Call terminating to Access Node served by OTS NGN switch

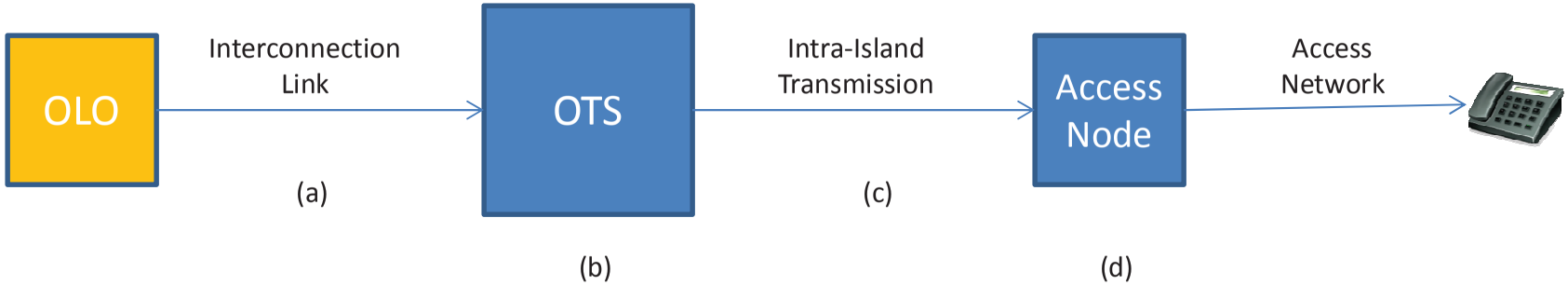

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(d) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, test of line conditions, etc.

Interrog. 7: “PSTN Termination Part” functionality

b. Call terminating to Access Node served by HRK NGN switch

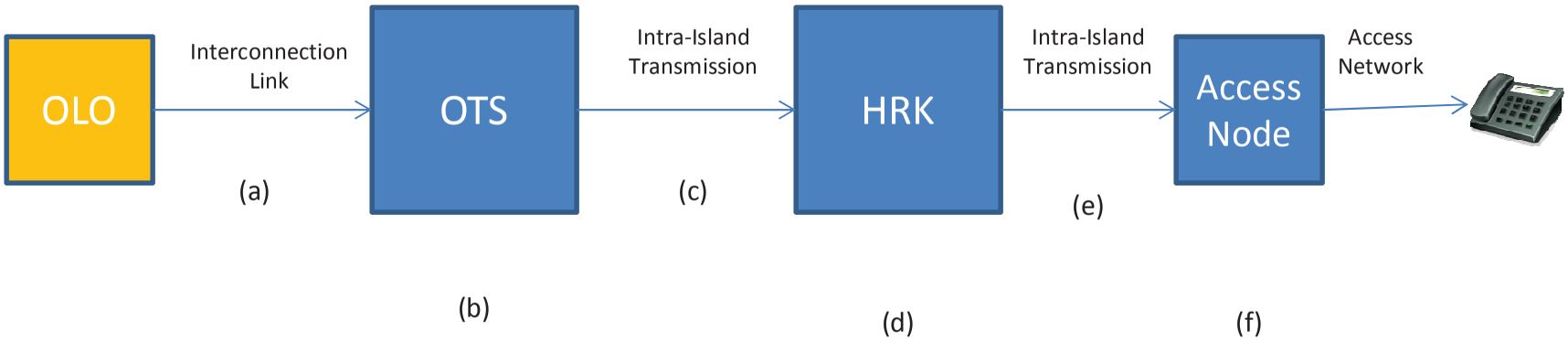

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes , and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(d) Performs the same functions as OTS however, for this call case it will not perform an LNP database dip. It will produce it’s own call record.

(e) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(f) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, test of line conditions etc.

Interrog. 7: “PSTN Termination Part” functionality

c. Call terminating to Access Node served by BTN AXE, but located in Cayman Brac/Little Cayman

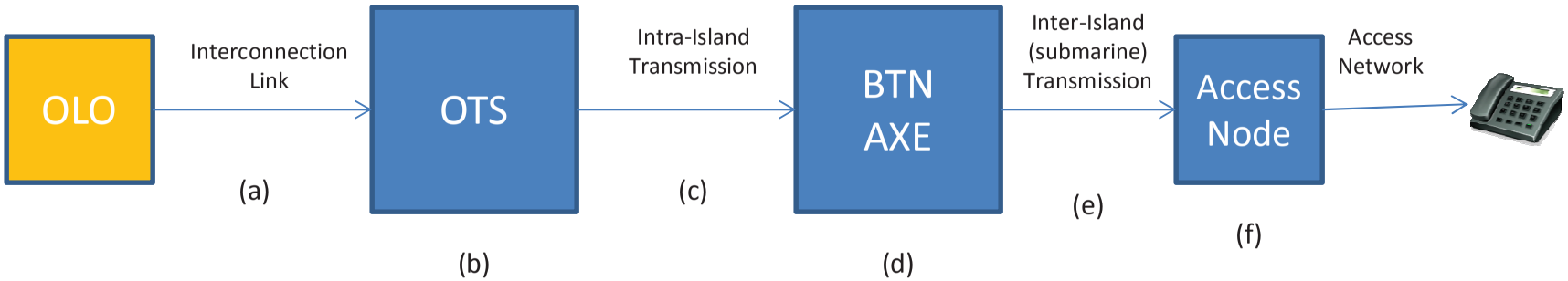

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(d) Performs the same functions as OTS however, it will not perform an LNP database dip. It will produce it’s own call record.

(e) Physical connection between switch & access node in the form of multiple E1s on an SDH network using undersea fibre.

(f) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, test of line conditions etc.

PLEASE NOTE THAT THE NUMBER OF HOST SWITCHES IN THE MODEL HAVE BE OPTIMIZED FROM THREE TO TWO, SO THE ROUTING IN THE MODEL GOES FROM OTS DIRECTLY TO ACCESS NODE.

Interrog. 8: “Incoming International Call Termination to PSTN Service” functionality

a. "Incoming International Call Termination to PSTN Service,“ terminating at OTS.

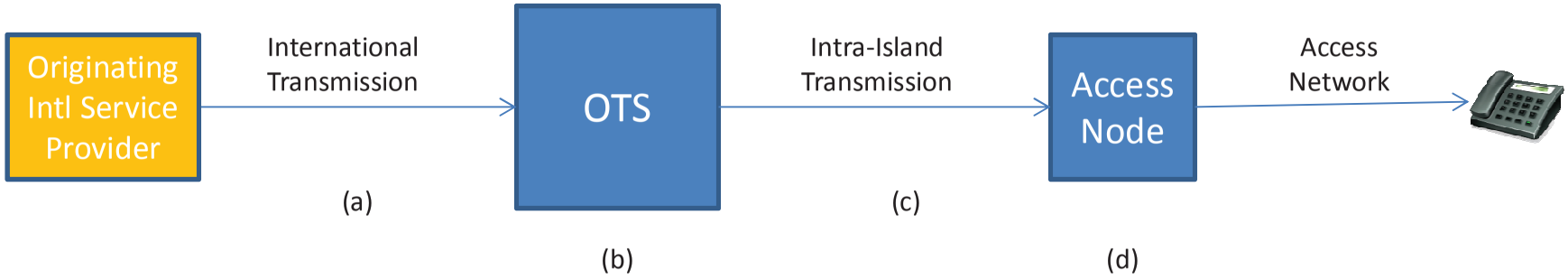

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network (with undersea fibre) using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(d) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, test of line conditions etc.

Interrog. 8: “Incoming International Call Termination to PSTN Service” functionality

b. "Incoming International Call Termination to PSTN Service,“ terminating at HRK.

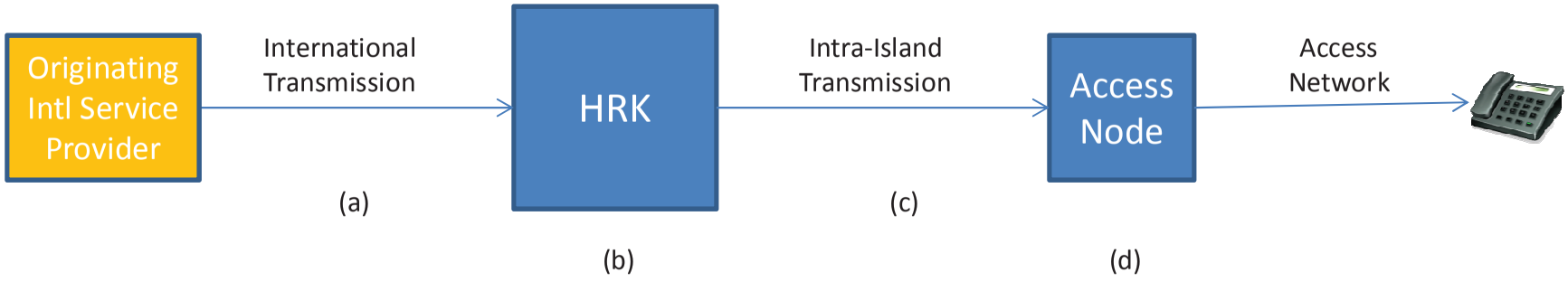

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network (with undersea fibre) using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(d) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, test of line conditions etc.

Interrog. 9: "Transit Part" functionality under "PLMN Terminating Access Service"

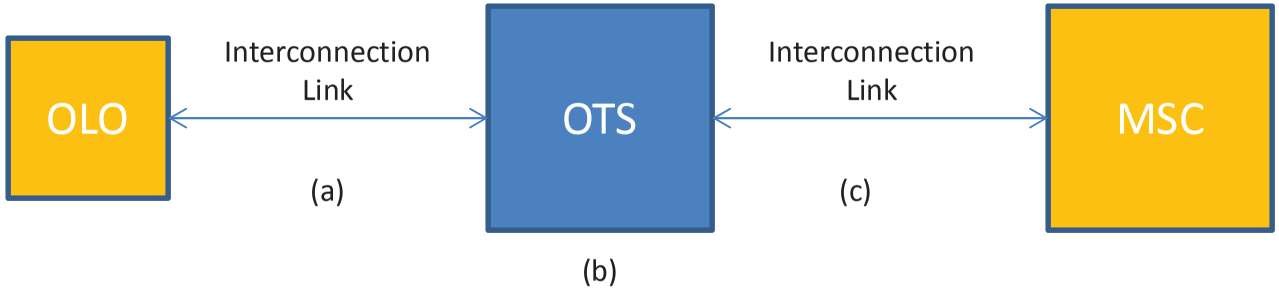

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

Interrog. 10: "Transit Part" functionality under different service scenarios

a. "Transit Part" functionality under "PSTN Terminating Access Service"

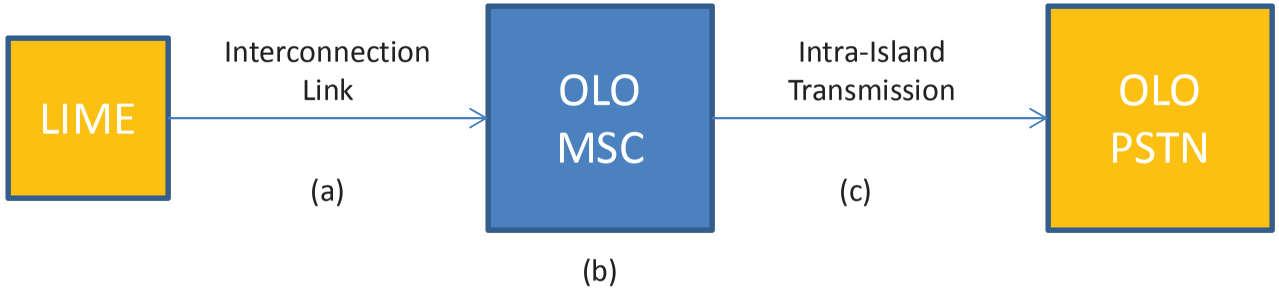

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network using C7 common channel signaling.

(b) Provides the interface between the mobile network and the PSTN. Controls the connection to the mobile subscriber including authentication, authorization, locating the mobile sub, establishing and managing a connection through the radio network and producing charging information. Controls the production of a billing record (or CDR), which is passed to a billing platform for billing.

(c) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

Interrog. 10: "Transit Part" functionality under different service scenarios

b. "Transit Part" functionality under "PLMN Terminating Access Service"

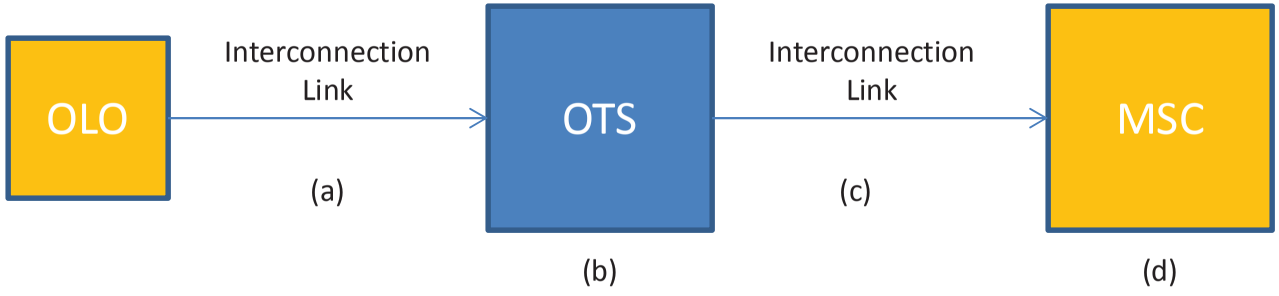

Diagram description:
See diagram description to ICTA interrogatory #9 (slide 6).

Interrog. 10: "Transit Part" functionality under different service scenarios

c. "Transit Part" functionality under "Incoming International Call Termination to PSTN Service"

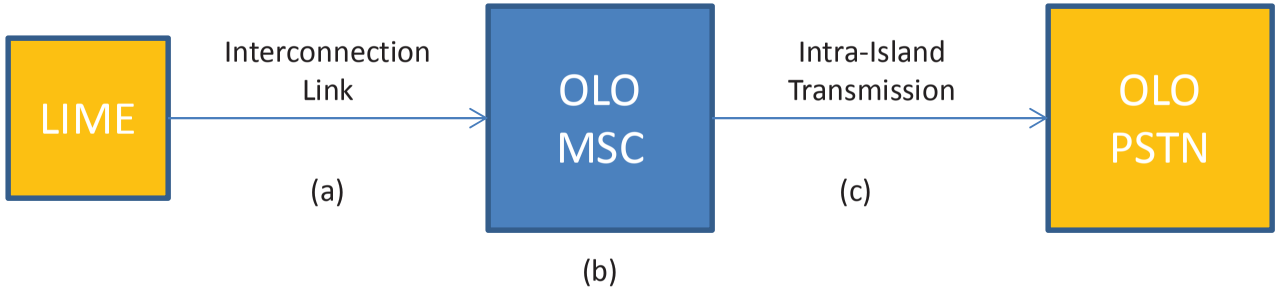

Diagram description:
See diagram description to ICTA interrogatory #10 (slide 7).

Interrog. 10: "Transit Part" functionality under different service scenarios

d. "Transit Part" functionality under "Incoming International Call Termination to PLMN Service"

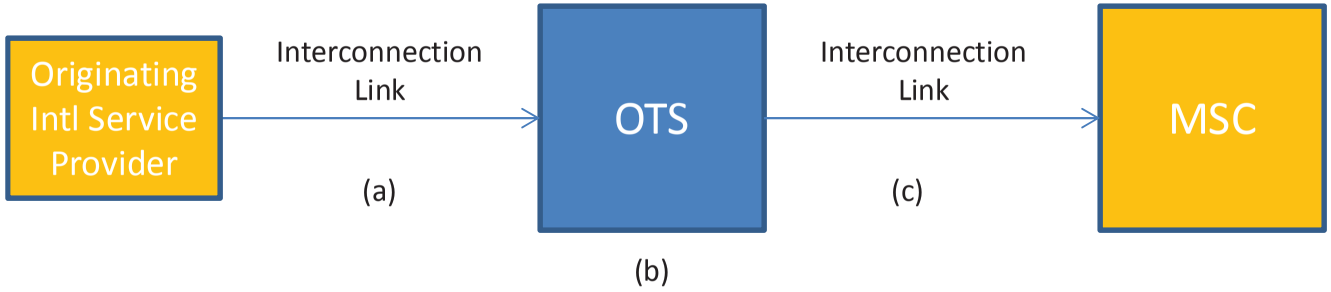

Diagram description:

(a) Physical connection between networks, usually in the form of multiple E1s on an SDH network (with undersea fibre) using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

Interrog. 11: LIME fixed to LIME mobile

a. Call originating from Grand Cayman Access Node served by OTS NGN switch, and terminating to Grand Cayman radio base station

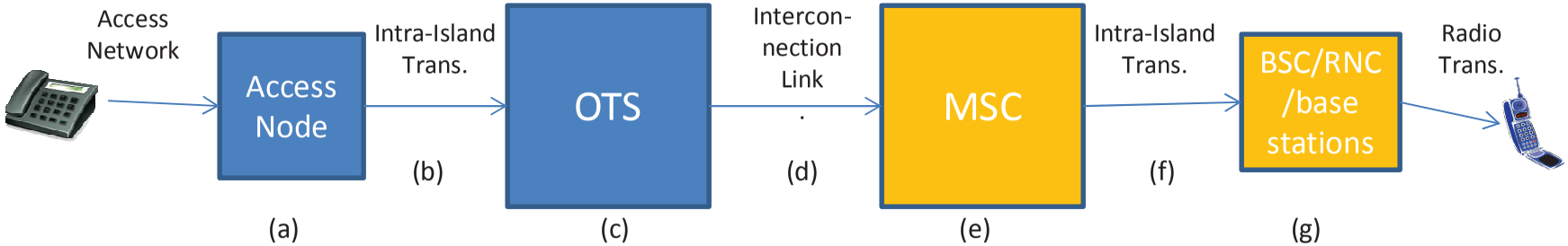

Diagram description:

(a) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, dial tone, test of line conditions etc.

(b) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(c) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(d) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

TRANSPORT WITHIN MOBILE NETWORK (NOT COSTED IN FIXED NETWORK):

(e) Provides the interface between the mobile network and the PSTN and controls the connection to the mobile subscriber including authentication, authorization, locating the mobile sub, establishing and managing a connection through the radio network and producing charging information.

(f) Optical gigabit Ethernet link.

(g) BSC (for 2G network, RNC (for 3G network); transmission to RAN; base station provides the radio transceivers for communication with the mobile handset. Provides information to the mobile network to assist with power settings, channel allocation etc.

Interrog. 11: LIME fixed to LIME mobile

b. Call originating from Grand Cayman Access Node served by OTS NGN switch, and terminating to Cayman Brac/Little Cayman radio base station

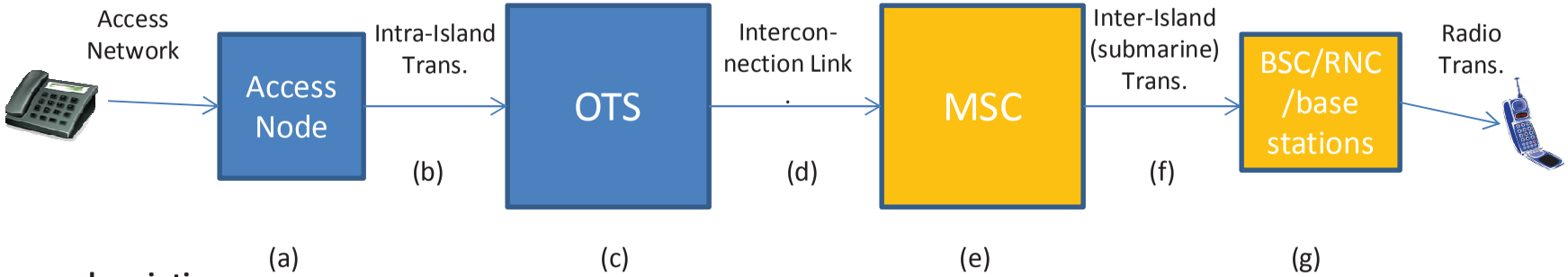

Diagram description:

(a) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, dial tone, test of line conditions etc.

(b) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(c) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(d) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

TRANSPORT WITHIN MOBILE NETWORK (NOT COSTED IN FIXED NETWORK):

(e) BSC (for 2G network, RNC (for 3G network); transmission to RAN; base station provides the interface between the mobile network and the PSTN and controls the connection to the mobile subscriber including authentication, authorization, locating the mobile sub, establishing and managing a connection through the radio network and producing charging information.

(f) Optical gigabit Ethernet link.

(g) Provides the radio transceivers for communication with the mobile handset. Provides information to the mobile network to assist with power settings, channel allocation etc.

Interrog. 11: LIME fixed to LIME mobile

c. Call originating from Cayman Brac/Little Cayman Access Node served by BTN AXE switch, and terminating to Cayman Brac/Little Cayman radio base station

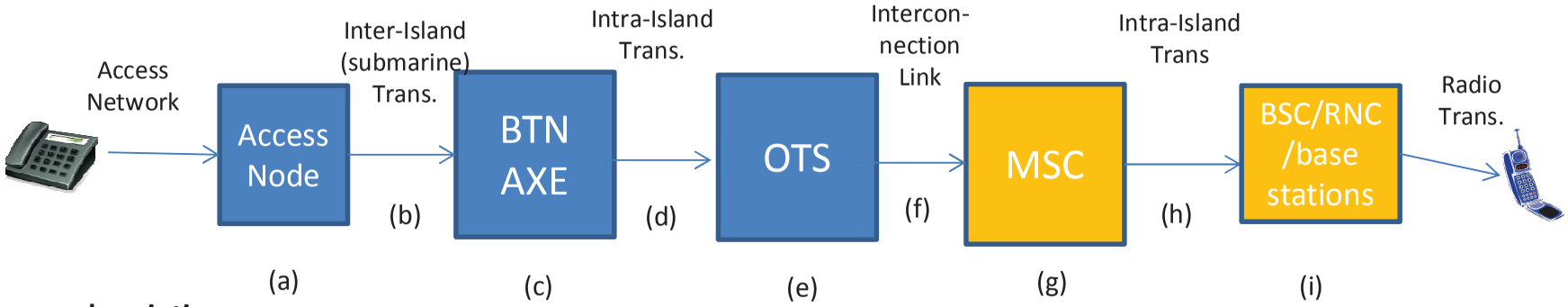

Diagram description:

(a) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, dial tone, test of line conditions etc.

(b) Physical connection between switch & access node in the form of multiple E1s on an SDH network using undersea fibre.

(c) Central office that will route call based on digits. The central office will also monitor the duration of the call for charging purposes.

(d) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(e) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(f) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(Diagram description continued on next slide.)

PLEASE NOTE THAT THE NUMBER OF HOST SWITCHES IN THE MODEL HAVE BE OPTIMIZED FROM THREE TO TWO, SO THE ROUTING IN THE MODEL GOES FROM ACCESS NODE DIRECTLY TO OTS.

Diagram description (cont.):

TRANSPORT WITHIN MOBILE NETWORK (NOT COSTED IN FIXED NETWORK):

(g) BSC (for 2G network, RNC (for 3G network); transmission to RAN; base station provides the interface between the mobile network and the PSTN and controls the connection to the mobile subscriber including authentication, authorization, locating the mobile sub, establishing and managing a connection through the radio network and producing charging information.

(h) Optical gigabit Ethernet link.

(i) Provides the radio transceivers for communication with the mobile handset. Provides information to the mobile network to assist with power settings, channel allocation etc.

Interrog. 11: LIME fixed to LIME mobile

d. Call originating from Cayman Brac/Little Cayman Access Node served by BTN AXE switch, and terminating to Grand Cayman radio base station

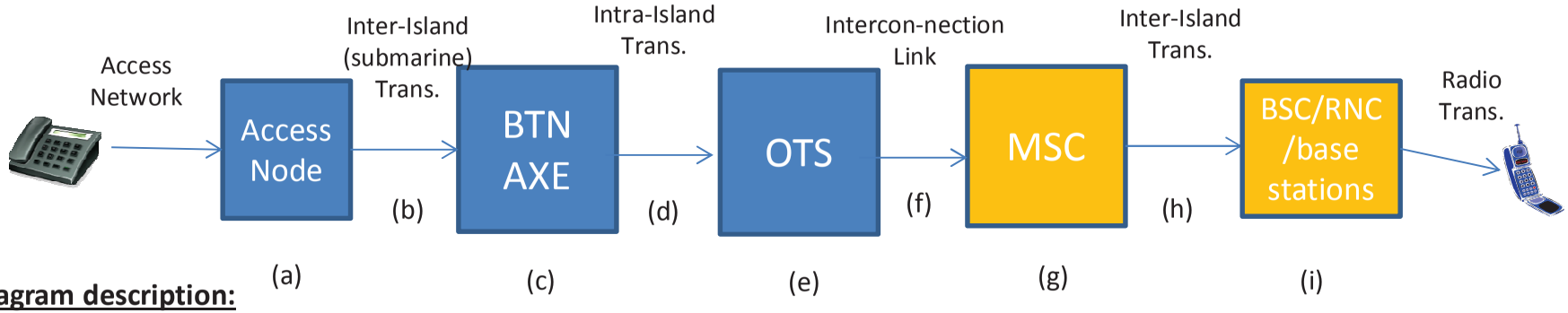

Diagram description:

(a) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, dial tone, test of line conditions etc.

(b) Physical connection between switch & access node in the form of multiple E1s on an SDH network using undersea fibre.

(c) Central office that will route call based on digits. The central office will also monitor the duration of the call for charging purposes.

(d) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(e) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(f) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(Diagram description continued on next slide.)

PLEASE NOTE THAT THE NUMBER OF HOST SWITCHES IN THE MODEL HAVE BE OPTIMIZED FROM THREE TO TWO, SO THE ROUTING IN THE MODEL GOES FROM ACCESS NODE DIRECTLY TO OTS.

Diagram description (cont.):

TRANSPORT WITHIN MOBILE NETWORK (NOT COSTED IN FIXED NETWORK):

(g) BSC (for 2G network, RNC (for 3G network); transmission to RAN; base station provides the interface between the mobile network and the PSTN and controls the connection to the mobile subscriber including authentication, authorization, locating the mobile sub, establishing and managing a connection through the radio network and producing charging information.

(h) Optical gigabit Ethernet link.

(i) Provides the radio transceivers for communication with the mobile handset. Provides information to the mobile network to assist with power settings, channel allocation etc.

Interrog. 11: LIME fixed to LIME mobile

e. Call originating from Grand Cayman Access Node served by HRK NGN switch, and terminating to Grand Cayman radio base station

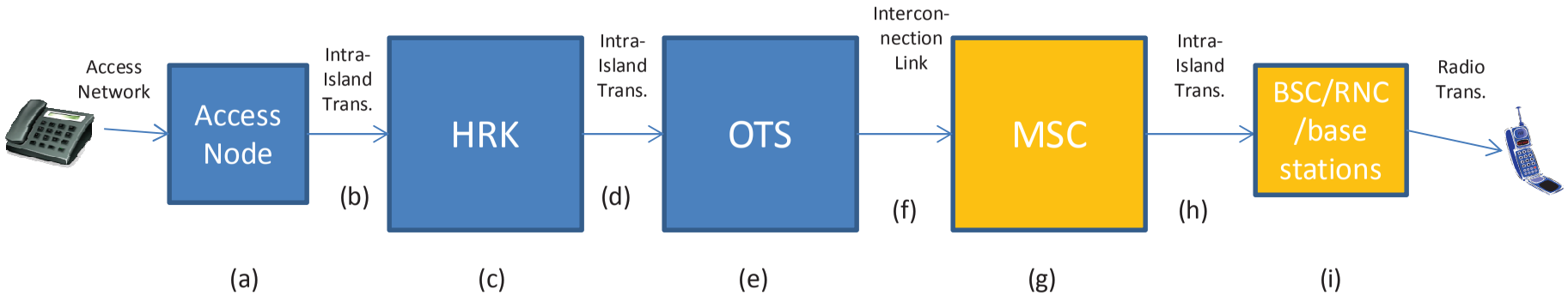

Diagram description:

(a) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, dial tone, test of line conditions etc.

(b) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(c) Central office that will route call based on digits dialed including (if necessary) an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes.

(d) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(e) Central office that will route call based on digits received from HRK. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(f) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(Diagram description continued on next slide.)

Diagram description (cont.):

TRANSPORT WITHIN MOBILE NETWORK (NOT COSTED IN FIXED NETWORK):

(g) BSC (for 2G network, RNC (for 3G network); transmission to RAN; base station provides the interface between the mobile network and the PSTN and controls the connection to the mobile subscriber including authentication, authorization, locating the mobile sub, establishing and managing a connection through the radio network and producing charging information.

(h) Optical gigabit Ethernet link.

(i) Provides the radio transceivers for communication with the mobile handset. Provides information to the mobile network to assist with power settings, channel allocation etc.

Interrog. 11: LIME fixed to LIME mobile

f. Call originating from Grand Cayman Access Node served by HRK NGN switch, and terminating to Cayman Brac/Little Cayman radio base station

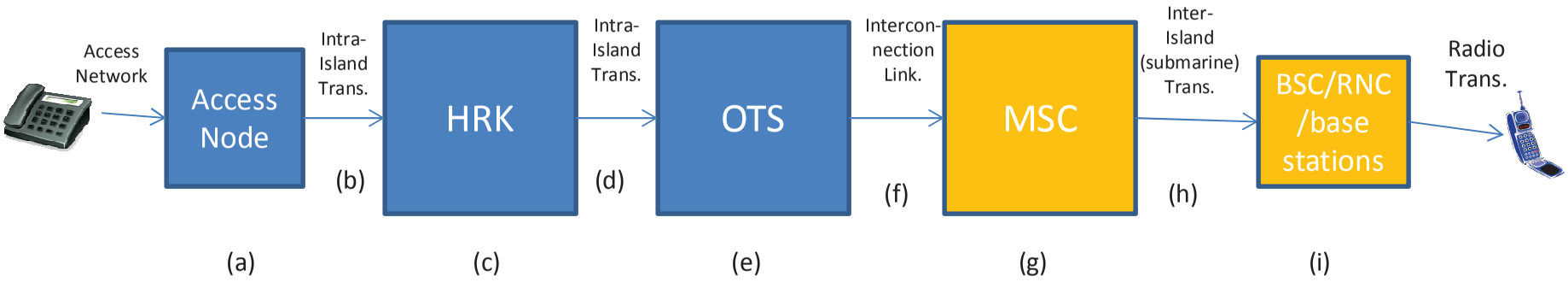

Diagram description:

(a) Provides the analogue interface to the subscriber, supplies line voltage, ringing voltage, dial tone, test of line conditions etc.

(b) An ATM link riding on an SDH STM-1 (or, in some cases, an optical gigabit Ethernet link).

(c) Central office that will route call based on digits dialed including an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes.

(d) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(e) Central office that will route call based on digits received from HRK. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(f) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(Diagram description continued on next slide.)

Diagram description (cont.):

TRANSPORT WITHIN MOBILE NETWORK (NOT COSTED IN FIXED NETWORK):

(g) BSC (for 2G network, RNC (for 3G network); transmission to RAN; base station provides the interface between the mobile network and the PSTN and controls the connection to the mobile subscriber including authentication, authorization, locating the mobile sub, establishing and managing a connection through the radio network and producing charging information.

(h) Optical gigabit Ethernet link.

(i) Provides the radio transceivers for communication with the mobile handset. Provides information to the mobile network to assist with power settings, channel allocation etc.

Interrog. 13: LIME mobile to OLO

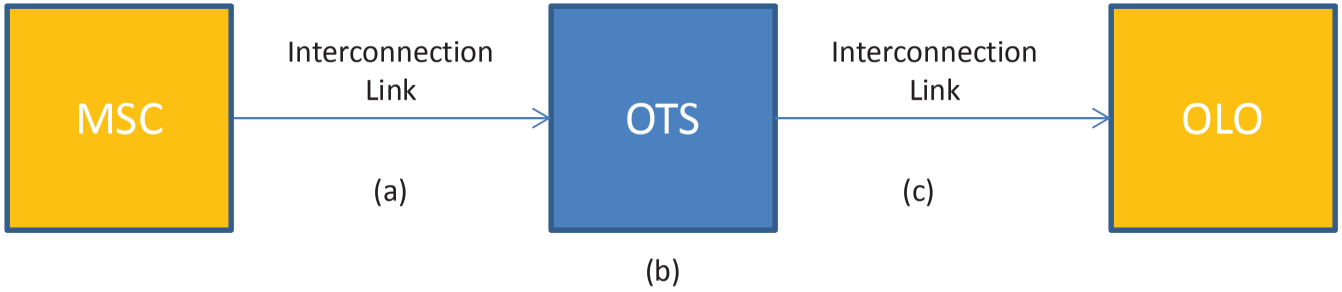

Diagram description:

(a) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(b) Central office that will route call based on digits dialed including an LNP database dip in the STP. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

Interrog. 15: LIME mobile to International

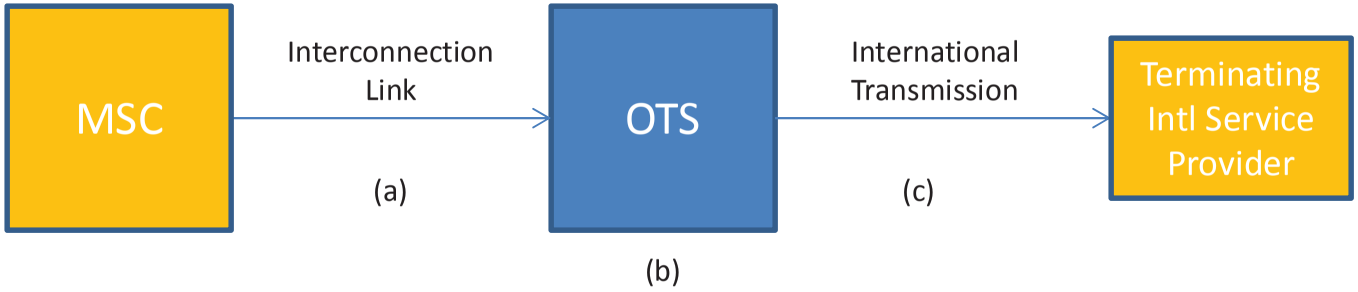

Diagram description:

(a) Physical connection between switches in the form of multiple E1s on an SDH network using C7 common channel signaling.

(b) Central office that will route call based on digits dialed. The central office will also monitor the duration of the call for charging purposes, and produce a billing record (or CDR), which is passed to the billing platform for billing and a Carrier Services platform for inter-admin accounting.

(c) Physical connection between networks, usually in the form of multiple E1s on an SDH network (with undersea fibre) using C7 common channel signaling.