ICT 2024 – 2 - Consultation
Framework for the Licensing of Satellite-Based Telecommunications Providers

Launch Date: 21 November 2024

Closing Date for comments: 23 December 2024

Contents

A. Introduction

1. The Utility Regulation and Competition Office (the '**Office**') is the independent regulator for the electricity, information and communications technology ('**ICT**'), water, wastewater and fuels sectors in the Cayman Islands. The Office also regulates the use of electromagnetic spectrum and manages the .ky Internet domain.

2. Different decisions by the Office will affect persons and organisations throughout the country in different ways. It is therefore important that the Office makes decisions with the appropriate input from persons with sufficient interest or who are likely to be affected by the outcome of such decisions. Consultation is an essential aspect of regulatory accountability and transparency and provides the formal mechanism for these persons to express their views in this manner. The requirement for the Office to consult is mandated in its enabling legislation.

3. The purpose of this consultation is to seek the views of affected stakeholders, the general public, and other interested parties, regarding the establishment of a framework for the licensing of satellite-based telecommunications service providers.

B. Background

4. Connecting to the Internet and making phone calls via satellite has been possible for several decades. Historically the equipment needed to make such a connection, together with the subscription prices, meant that it was cost prohibitive except for Governments or large corporate organisations who often used such connections for secure internal communication, and in emergency situations.

5. The section 23(2) notice published by the Office sets out a number of licence types which can be used to connect with satellite services. These are as set-out below.

Type	Description	Notes	Fee
E2	Satellite (incl VSAT) – International	Type E2 licences can only be issued to major ICT service providers	Application: CI$2500 Renewal: CI$1250

Type	Description	Notes	Fee
200	Permits a Class Licensee to put in place an international satellite Network and associated Services for the Licensee's exclusive use in emergency situations, so as to provide itself with fall-back international voice and communication services.	Only for situations in which the Licensee's normal communication service provider is unable to provide its services for a period which has a material impact on the client's normal business (e.g. as the result of a hurricane).	No fee applies.

6. The use of satellite terminals on certain Cayman Islands registered vessels and aircraft is also permitted based on the rules set out in the Authorization to operate Aeronautical and Maritime Earth Stations in Motion[1] published by the Office.

7. In addition to the type E2 licence above, any use of a satellite terminal would also require the licensee to have a Type S (Spectrum) licence to cover the use of the radio frequencies which they would be employing for the connection between the ground and the satellite.

8. This framework was put in place at a time when satellite connections were expensive, and professional installation of large dishes, or a costly hand-held 'sat phone' was required in order to provide two-way connectivity. In recent years the costs of both equipment and subscriptions have reduced as technology has developed bringing down the price of connections via satellite to consumer levels. At the same time, the services offered have improved to the level where they are now similar to those provided by terrestrial equivalents and are likely to improve as more satellites are launched and as technology further improves.

9. In addition to voice and internet connections, there is increasing interest in the provision of Internet of Things (IoT) services via satellite. IoT services provide the ability to send small amounts of data (akin to text messages) from small end-user devices and can be used for a variety of purposes such as asset tracking (internationally) as well as monitoring the condition of equipment which is located in places without terrestrial connectivity.

[1] https://www.ofreg.ky/viewPDF/documents/ship-radio/2023-08-02-01-03-16-2023-06-01-ESIM-Rules.pdf

C. Legal Framework

10. Section 6 of the Utility Regulation and Competition Act (the 'URC Act') requires OfReg, amongst other things:

> *(b) to promote appropriate effective and fair competition;*
> *(c) to protect the short and long term interests of consumers in relation to utility services;*
> *(d) to promote innovation and facilitate economic and national development;*

11. Section 62 specifically furnishes the Office with:

> *a duty to promote innovation within the sectors for which it has responsibility with a view to contributing to national economic competitiveness and development*

12. Further, Section 9(3) of the Information and Communication Technology Act (the 'ICT Act') states that among the principal functions of the Office are:

> *(a) to promote competition in the provision of ICT services ant ICT networks where it is reasonable or necessary to do so*

D. Scope of this Consultation

13. OfReg is keen to consider the establishment of a framework for the licensing of new and innovative satellite-based telecommunication services. This has to be done bearing in mind the need to ensure fair competition between satellite, fixed and mobile services all of which have an important part to play in providing connectivity to Caymanian consumers. In considering satellite services, the following topics need to be addressed:

- Licence types
- OfReg's Responsibilities and Powers
- ICT Service Licensing and Fees
- VSAT Dish Licensing
- Radio Interference
- Keeping Local Traffic Onshore

14. Each of these topics is discussed in more detail in this document and your views on these topics are being sought in order to assist the Office in determining how to proceed.

E. Discussion

E.1 Licence types

15. There is currently no specific licence type in the section 23(2) notice which is directly applicable to the provision of telecommunications (voice or internet) by satellite. In theory a Fixed Wireless Access (Type B) licence which is defined as being for: "*A wireless network (other than Mobile) providing access to ICT Service(s) to residential and/or business Subscribers*" could be deemed to include satellite-based connectivity.

16. Fixed Wireless Access (FWA), though not defined in legislation in the Cayman Islands, is usually considered to comprise connectivity from terrestrial base stations (rather than satellite) to consumer premises wirelessly. It is a replacement for a wired connection and in all other respects follows the same principles. Often it uses existing cellular technology or infrastructure to provide the network end of the connection.

17. Whilst in principle, an FWA licence could be applied to residential or business internet, and possibly to use for IoT via satellite, it would not apply to the provision of direct-to-handset connectivity and there is no current licence type which would cover this.

18. It would also be beneficial to be able to differentiate between terrestrial and satellite-based provision in the type of licence awarded to service providers in order that any specific licence provisions which may apply could more easily be tailored to the services involved and to form a distinction between terrestrial and satellite-based licensees.

19. There are therefore two approaches which OfReg could take to enable the licensing of retail satellite services:

    - Satellite services could be licensed using existing licence types, by shoe-horning services into the existing definitions; or
    - New licence types could be introduced to better reflect the different types of satellite service.

Question 1: Should OfReg introduce new licence types to facilitate the specific licensing of satellite-based services?

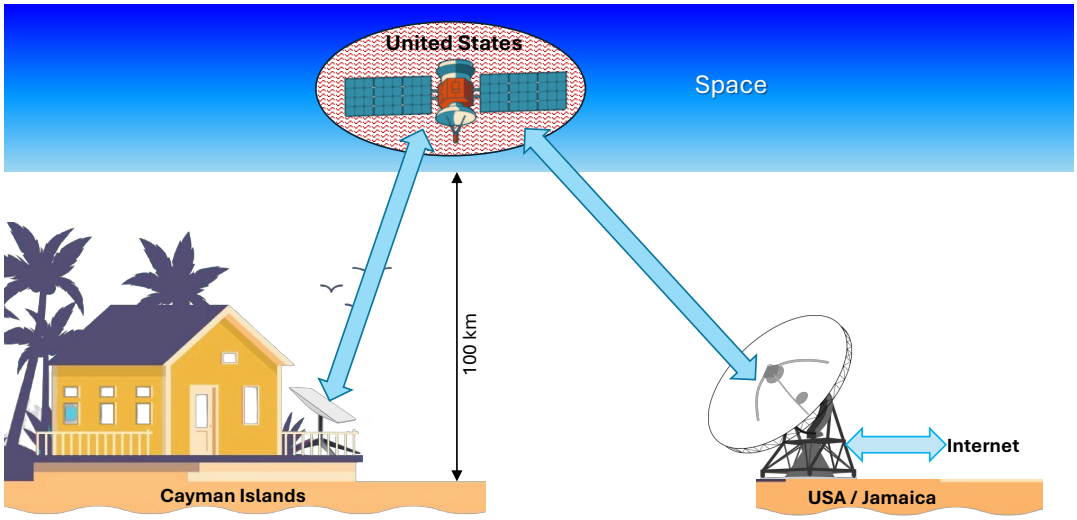
E.2 OfReg's Responsibilities and Powers

20. Unlike terrestrial ICT networks whose infrastructure can be wholly regulated in the jurisdiction where the service is provided, satellites themselves are regulated by the countries under whose state flag they have been launched. Each state must ensure that its own satellite operators follow the rules and conditions contained in the Radio Regulations published by the International Telecommunications Union (ITU), in the outcomes of relevant bilateral discussions, and in any specific domestic rules. A state is free to enact domestic rules, as long as those do not contradict the international commitments it has undertaken by signing the Radio Regulations.

21. As such, existing satellite networks are regulated outside the jurisdiction of OfReg. The only part of the satellite service that would be directly regulated by OfReg are those parts which are situated in the Cayman Islands, which constitutes only the satellite terminals needed by end-users to connect to the satellite service. The licensing of these terminals are discussed separately below.

22. The diagram below illustrates the situation (for a United States owned satellite).

    - Internet traffic from the Cayman Islands connects with the satellite which is regulated by the United States.
    - The satellite must then relay the traffic to a ground station (the nearest of which are in Jamaica or in the United States).
    - Even if the satellite is located immediately above the territory of the Cayman Islands, it is still not within our jurisdiction as it is classed as being in space, which is generally defined as anything over 100 km (62 miles) above ground level (satellite orbits begin around 250 km above ground).



23. OfReg would not therefore have the same level of regulatory control over a satellite service that it would have over a service provider whose operations and infrastructure were located wholly within the Cayman Islands.

24. This raises a number of areas where OfReg would have limited control in the provision of the service. For example, Section 9(3)(c) of the ICT Act, requires OfReg to:

> *investigate and resolve complaints from consumers and service providers concerning the provision of ICT services and ICT networks;*

25. As the majority of the service is provided outside of the jurisdiction of the Cayman Islands, OfReg would have limited recourse to raise and deal with complaints about the quality of service provision. In addition, there are a number of other areas where OfReg would have limited jurisdiction:

- **Outage notification**: OfReg would not necessarily be able to insist that the satellite service provided notifications to OfReg (and subscribers) in the event that there were any planned or unplanned outages of the service.
- **911 Service**: OfReg would have limited means to enforce the provision of a 911 data and service on a similar basis to that required of other operators.
- **Lawful Interception**: Current licensees have an obligation pursuant to the ICT (Interception of Telecommunications) Regulations to provide interception of messages upon the issue of a warrant by the Governor. Given that the network would be outside the jurisdiction of the Cayman Islands, ensuring compliance may prove difficult.

26. Users of the satellite-based internet services may therefore have to accept that their main recourse for complaints or fault rectification would be through the provider themselves, and would not be able to approach OfReg for assistance, to raise complaints or for other regulatory assurances.

27. There are a number of ways in which OfReg could approach these issues, for example:

    - Apply the necessary provisions which all terrestrial providers must adhere to, to the licences of any satellite services, with a requirement to ensure that they are met lest the licensee be subject to penalty.
    - Include the necessary provisions in the licences of any satellite services, with a requirement to make best efforts to ensure that they are met.
    - Recognise that there are certain issues which will fall outside the jurisdiction of OfReg and exclude the requirement to meet these from the licence of any satellite-based provider.

28. **Question 2: In what way should OfReg approach the issues associated with the fact that the provision of some parts of a satellite service occur outside its jurisdiction?**

E.3 ICT Service Licensing

29. The provision of retail internet or voice connections (e.g. to homes and businesses) is a regulated ICT service as set out in the section 23(2) notice published by the Office. The rules associated with becoming an ICT licensee require that all providers:

    - must be a registered company in the Cayman Islands; and
    - must have Caymanian participation (legal interest and local management control).

30. In addition to setting out the terms and conditions under which the licensee operates, they are also required to make a number of payments.

    - Firstly, a royalty fee (based on a percentage of gross revenues generated from business in the Cayman Islands) is paid to the Government.
    - Secondly, regulatory fees to cover the costs of regulating the sector concerned are paid to OfReg.
    - Finally, spectrum fees (for the use of radio frequencies) are paid to OfReg where radio spectrum resources are used, to cover the cost of managing those resources.

31. All ICT licensees are subject to these requirements. There are no regulatory reasons that any company that wishes to supply retail internet or voice services in competition with (or in conjunction with) existing providers should not be licensed on a similar basis. Not requiring the same from a satellite-based provider would potentially put them at an unfair advantage compared with terrestrial providers and OfReg is bound to ensure that competition between providers is fair.

32. There are, however, a number of ways in which this could be approached:

- Satellite operators could establish their own company based in the Cayman Islands and apply for an ICT licence in their own right;
- Satellite operators could partner with an existing ICT licensee, who would then provide the service under their own licence;
- A (new) local company could be established and apply for an ICT licence, and then act as a conduit for a number of satellite operators;
- OfReg could allow licence applications from operators with no local presence nor Caymanian participation.

33. **Question 3: What models of service licensing would be most appropriate for OfReg to consider?**

E.4 VSAT Licensing

34. Section 75(2)(f) of the ICT Act, allows the reception of any messages "*intended to be received by the public*". This permits the reception of broadcast services whether delivered by terrestrial radio or television transmitters, or by satellite. As such, no licence is required to receive satellite radio or television services (or other satellite services intended for public reception including GPS).

35. The provision of satellite voice and internet services requires a two-way connection, meaning that the ground-based equipment has to include a high-powered radio transmitter to carry a signal from the ground to space. All radio transmitters (with the exception of certain low-powered devices) require a licence from OfReg in order to operate.

36. Devices which allow two-way communication with satellites fall into two categories:

    - **Ground Stations:** These are large facilities which collect traffic from a complete satellite and provide outgoing connectivity from the satellite to the rest of the world. These typically comprise large dishes (which can be 30 feet or larger in diameter) and are strategically placed to connect with an operator's satellites.
    - **User Terminals:** These are much smaller pieces of equipment situated at a consumer's premises which provide a connection to individual customers.

37. User terminals for broadband internet-type services are usually known as Very Small Aperture Terminals (VSAT). European Telecommunications Standards Institute (ETSI) standards EN 301 459 or EN 301 428 state that apertures for VSATs should not exceed 3.8 m for the 14/11-12 GHz band and 1.8 m for the 30/20 GHz band. Historically larger sized dishes were needed to connect to satellites but with developments in technology, VSAT dish sizes can now be as small as 18 inches across and sizes are likely to reduce further as the technology develops.

38. User terminals for direct-to-handset and IoT type satellite services can be off-the-shelf mobile phones (such as the iPhone 14) or may be dedicated phones or devices sold specifically to connect to satellite services.

39. Under the current licence fee arrangement published by the Office, each VSAT terminal which connects internationally is subject to an application fee of CI$2500 and a renewal fee of CI$1250. These fees were established at a time when the use of VSAT was primarily for major corporate or emergency back-up connectivity rather than for retail connections. There are no categories for smaller hand-held or IoT type terminals and as such, under current rules, these would also have to be classed as VSAT terminals.

40. User terminals for licensed ICT service providers for other wireless services (such as mobile phones and fixed wireless access devices) are authorized as part of the respective service provider's licence. It is not necessary, for example, for each mobile phone to have its own radio licence despite the fact that it transmits on licensed radio frequencies. Instead, their usage is covered by the licence of the mobile operator.

41. Some countries go so far as to issue a class licence to all VSAT used for domestic (and small business) connections meaning that there are no restrictions on their use (subject to certain technical rules and ensuring that the service provider is suitably licensed).

42. There are therefore a number of options which OfReg could adopt to handle the licensing of satellite terminals:

    - Maintain the current arrangement in which each terminal would require an individual licence application with the associated fees;
    - Maintain the current licensing arrangement for satellite terminals but reduce the fees;
    - Include the terminals in the licence of a satellite operator to whose network they connect;
    - Issue a class licence meaning that certain types of user equipment would not require an individual licence to operate (larger dishes would still require a licence as per the current arrangements).

43. **Question 4: What approach should OfReg take to the licensing of VSAT terminals?**

E.5 Radio Interference from VSAT

44. VSAT contain high powered radio transmitters which are used to make a connection from the ground to a satellite. These devices operate in microwave frequency ranges that are shared with other services, specifically point-to-point links used by telecommunication providers to connect their sites together.

45. The frequency ranges used by VSAT for retail satellite services are as identified in the table below:

Frequency Range	Direction	Use in the Cayman Islands
10.7 – 12.75 GHz	Downlink	Fixed point-to-point links
12.75 – 13.25 GHz	Uplink	Fixed point-to-point links
14.0 – 14.5 GHz	Uplink	Not currently used
17.7 – 20.2 GHz	Downlink	Fixed point-to-point links
27.5 – 30.0 GHz	Uplink	Not currently used

46. There is therefore potential for interference both to and from VSAT terminals and fixed point-to-point links. As the beams used for satellites and for point-to-point links are narrow and directional, mechanisms are usually put in place to ensure that satellites do not point their beams in directions which could interfere with fixed links (e.g. they do not point towards the horizon). These mechanisms are enshrined within the international rules relating to satellite usage published in the Radio Regulations of the ITU and should be followed by all satellite services.

47. As such, there should be no significant interference problem between satellite services and fixed point-to-point links however the potential for such both underscores the need for satellite terminals to be operated in a regulated environment, and the need for OfReg to keep a close eye on usage to ensure that no interference is caused.

48. **Question 5: Do you have any comments on OfReg's assessment of the potential interference between satellite terminals and other services?**

E.6 Keeping Local Traffic Onshore

49. In 2020, the CI Government imposed a Directive[2] on OfReg to compel all internet service providers to 'peer' their networks.

50. At Section 2 of the Directive, Cabinet directs OfReg to:

> (c) take measures to ensure local internet communication remains onshore, including —
>
> (iii) safeguarding the ICT sector, by taking the necessary steps of inserting this issue as a condition for licensees to operate an ICT service in the Islands, if necessary;

51. In the case of satellite-based internet services, ensuring that local internet communication remains onshore is somewhat impractical. Such communication would leave the jurisdiction of the Cayman Islands when it connected with a foreign-flagged satellite.

52. Further, the traffic that is sent to space will travel from the satellite to a ground-station where it will connect with the Internet. The only way for that Internet traffic to continue its journey onshore would be for the satellite operator to install a ground-station in the Cayman Islands so that the traffic from the satellite could return to the country.

53. In the spirit of the intention of the ICT Directions 2020, OfReg could insist that any licensed satellite operator should place a ground-station in the Cayman Islands. This would at least ensure that traffic to a satellite could return directly to the Islands without first going to another country. Such ground stations are, however, expensive and it is unlikely to be economically effective to require a satellite operator to build one for a market the size of that in the Cayman Islands.

[2] https://www.ofreg.ky/viewPDF/documents/legislation-regulations/2024-11-20-07-16-50-URC-ICT-Directions-on-Local-Internet-Traffic-Onshore-2020.pdf

54. Satellite internet services can play a critical role in enhancing resilience and redundancy for island nations in the hurricane belt, where terrestrial infrastructure is particularly vulnerable to storm damage. Hurricanes often cause extensive destruction to ground-based infrastructure, such as fibre-optic cables, cell towers, and power lines, leading to prolonged communication outages. Satellite internet, by contrast, relies on space-based infrastructure that remains unaffected by terrestrial weather events. This makes it an ideal backup or even primary solution for maintaining connectivity during and after such disasters.

55. Unlike terrestrial systems, which require extensive physical networks, satellite systems can deliver connectivity directly to ground terminals, bypassing damaged infrastructure. This ensures that emergency response teams, government agencies, and critical services can maintain reliable communication, enabling better coordination and faster recovery efforts. Additionally, advancements in low-earth orbit (LEO) satellite technology, have improved latency and bandwidth, making satellite internet a viable solution for both emergency scenarios and everyday resilience planning. For island nations, investing in satellite internet can be a game-changer in mitigating the impact of natural disasters on communication and connectivity.

56. The Office has written to the government highlighting various considerations, inviting government to consider whether it wishes to amend the directive to take into account the realities of satellite service provision and practical considerations related to licensing.

57. There are therefore a number of positions which OfReg could take with respect to ensuring that local traffic remained onshore:

    - Include the requirement that operators ensure that local traffic remains onshore in their licence;
    - Require that operators make ‘all available efforts’ (or a similar term) to keep local traffic onshore;
    - Remove this obligation for satellite-based telecommunications service providers.

58. **Question 6: How should OfReg deal with the Government’s requirement to keep local traffic onshore?**

E.7 Impact Assessment

59. The following table sets out the prices associated with the most basic package provided by each of the internet service providers in the Cayman Islands together with an estimated price for a satellite equivalent. The satellite equivalent is based on the pricing of a currently available satellite-based solutions, however we note that the prices vary from country to country and thus these values should be taken as estimates only. The total cost of ownership over a 2 year period has also been shown.

Operator	Equipment Fee (CI)	Monthly Fee (CI)	Total for 2 years (CI)	Connection Speed (Up to…)
Flow	n/a	$90	$2160	300 Mbps
Digicel	n/a	$90	$2160	350 Mbps
Logic	n/a	$89	$2136	300 Mbps
C3[3]	n/a	$55	$1320	50 Mbps
Satellite A	$600	$120	$3480	300 Mbps
Satellite B	$400	$75	$2200	50 Mbps

60. Based on these calculations the estimated cost of ownership for a current satellite-based solution over a 2 year period is around 50% higher than that of the existing terrestrial providers for similar connection speeds.

61. Whilst satellite-based internet providers therefore offer competition to local services, we do not believe that at current price levels they would be taken up by a large enough number of subscribers to damage the ability of existing operators to continue to invest in their networks, or reduce their quality of service to a detrimental level which will materially impact the service they provide to consumers.

62. **Question 7: What are your views on the extent to which the introduction of satellite-based services will impact the businesses of existing suppliers and affect consumers?**

[3] Note that C3 have higher bandwidth packages available at higher prices.

F. Consultation Questions

63. Based on the above, the Office invites all interested parties to submit their comments, with supporting evidence, on the questions raised in this consultation. These are repeated below:

Question 1: Should OfReg introduce new licence types to facilitate the specific licensing of satellite-based services?

Question 2: How should OfReg approach the issues associated with the fact that the provision of some parts of a satellite service occur outside its jurisdiction?

Question 3: What models of service licensing would be most appropriate for OfReg to consider?

Question 4: What approach should OfReg take to the licensing of VSAT terminals?

Question 5: Do you concur with OfReg's assessment of the potential interference between satellite terminals and other services?

Question 6: How should OfReg deal with the Government's requirement to keep local traffic onshore?

Question 7: What are your views on the extent to which the introduction of satellite-based services will impact the businesses of existing suppliers and affect consumers?

G. How to Respond to This Consultation

64. This consultation is conducted in accordance with the Consultation Procedure Guidelines determined by the Office and found on the Office's website here: http://www.ofreg.ky/upimages/commonfiles/1507893545OF20171DeterminationandConsultationProcedureGuidelines.pdf

65. This consultation will be conducted over a period of **fourteen (14) days**.

66. All submissions on this consultation should be made in writing and must be received by the Office by **5 p.m. on 23 December 2024** at the latest to be considered.

67. The Office will post any comments received by **10 January 2025.**

68. Submissions may be filed as follows:

By e-mail to:
consultations@ofreg.ky

Or by post to:
Utility Regulation and Competition Office
P.O. Box 10189
Grand Cayman KY1- 1002
CAYMAN ISLANDS

Or by courier to:
Utility Regulation and Competition Office
3rd Floor, Monaco Towers II
11 Dr Roy's Drive
George Town
Grand Cayman
CAYMAN ISLANDS