



Barbados Voice over Internet Protocol (VoIP) Policy

Policy in accordance with sections 4 (2)(b) and 4 (2)(f) of the Telecommunications Act Cap 282B.

This policy describes the terms and outlines the techniques involved in Voice over Internet Protocol (VoIP) technologies. The conditions for use in Barbados as set by The Telecommunications Unit in The Ministry of Economics Affairs and Development are also clearly defined. As this is a rapidly changing technology, it will be kept under constant review and is this policy is subject to change from time to time.

1 INTRODUCTION

- 1.1 Voice over Internet Protocol (VoIP) is generic term, generally describing a multitude of standards which enable smart devices and computer networks to carry multiple forms of multimedia, including two-way voice, videoconferencing, text and documents.
- 1.2 Common terms related to VoIP are Internet Telephony, IP Telephony, Broadband Telephony and Voice over Broadband. These terms each refer to how VoIP is being used, and should be considered referring to VoIP technologies, rather than being synonymous with VoIP.
- 1.3 VoIP is, by definition, designed to carry two-way voice over an Internet Protocol (IP) network, and is thus packet based. VoIP based Customer Premise Equipment (CPE) will digitize the user's voice into small chunks, placing the data into small "packets" which are sent over the network to the receiver. All modern networks, including the Internet, are based on TCP/IP.
- 1.4 VoIP is a departure from the traditional Public Switched Telephone Network (PSTN), owned and operated by local and international carriers (the Traditional Telecoms). The legacy PSTN is based on circuit switched,

Time Division Multiplexed (TDM) connections, offering what is sometimes called Plain Old Telephone Service (POTS).

- 1.5 The PSTN creates a Private Virtual Circuit (PVC) for each telephone call (normally two-way voice only). Each PVC remains open for the entire duration of the call, consuming 100% of its allotted bandwidth (normally 64 kb/s). This means that Quality of Service (QoS) issues related to network performance metrics such as delay, “Jitter” and drop outs (congestion) can be closely managed, but results in wasted network capacity (bandwidth).
- 1.6 Unlike the PSTN, VoIP connections are routed by the underlying IP network using the best means possible at that particular moment. It is therefore possible to experience lower quality of service if and when network congestion or unreliability is encountered. Thus, the quality of the call will be a function of the quality of the underlying network. For example, VoIP calls made over a low-bandwidth, consumer grade, “Best Efforts” Internet connection will be of poorer quality than those made over an organization's LAN and/or WAN.
- 1.7 As it is possible to connect VoIP networks to the Barbados PSTN, which is a regulated network, VoIP services themselves must be regulated with regards to these interconnections. This is to prevent illegal bypass of International Carriers into the Barbados PSTN by unlicensed carriers, and ensure quality of service for customers.

2 REGULATORY FRAMEWORK

- 2.1 It is incumbent on regulators and policy makers to ensure that there is a market place which provides the greatest consumer choice, quality and protection, while at the same time ensuring the opportunity for operators, small or large, to work in a fair competitive environment and have the opportunity to achieve a reasonable rate of return on investments, innovations and efficiencies.
- 2.2 The regulatory framework takes a technology neutral position, encouraging service and equipment providers to innovate, using the best technologies available as they evolve.
- 2.3 This framework aims to be “light-handed”, and will be reviewed as required as VoIP technologies and services, and the marketplace, evolve over time.

3 THE VoIP PROTOCOLS

- 3.1 There are enumerable VoIP protocols which are used to provide VoIP Services. Some common examples include, but is by no means limited to:

- ITU-T Recommendation H.323
- Session Initiation Protocol (SIP) – IETF RFC 3261
- Media Gateway Control Protocol (MGCP) – IETF RFC 3435
- Skype (Proprietary)

- 3.2 Being Technology Neutral, this policy is not defined as a function of the Protocols used, but instead on the Services offered.

4 VoIP SERVICE CLASSES

4.1 Class 1: Primary Line VoIP Services

Service offerings providing telephony services appropriate for use as a consumer's sole, or primary, means of access to the PSTN. The service provider controls network end-to-end. Class 1 is considered a Telecommunications Service, and includes "any-to-any" dialing to and from Barbados PSTN numbers.

Class 1 VoIP Service Providers have the following rights and obligations, and are an option for Universal Service fulfillment:

- Interconnection to Barbados PSTN
- Quality of Service Standards
- Last Mile Transport – Service Provider Supplies
- Disclosure to Customers
- FAX and Modem Support
- Core Network Usable During Power-failures
- Barbados PSTN Numbering
- Public Emergency Call Services
- Directory Inquiry Services
- Number Portability
- Universal Service
- Indirect / Equal Access

4.2 Class 2: Secondary Line VoIP Services

Class 2 VoIP Services are Barbados facilities based, but without the Service Provider delivering the customer-end of the transport. The customer may "bring their own bandwidth". Thus, this class of service is not appropriate as a customer's primary phone connection.

Class 2 is considered an information service, and may, but does not have to, include “any-to-any” dialing to and from Barbados PSTN numbers.

Class 2 VoIP Service Providers have the following rights and obligations:

- Interconnection to Barbados PSTN and Internet
- Last Mile Transport – Customer Provided
- Quality of Service Standards
- Disclosure to Customers
- Barbados PSTN Numbering
- Indirect / Equal Access

4 . 3 Class 3: Internet Telephony VOIP Services

Class 3 VoIP Services are may or may not be Barbados-facilities based, and covers all domestic providers and resellers of VoIP Telephony Services not using Barbados Numbering, and without local Interconnection to the Barbados PSTN. Class 3 is considered an information service, and does not include “any-to-any” dialing to and from Barbados PSTN numbers.

This class of service is not appropriate as a customer's primary phone connection.

Class 3 VoIP Services Providers specifically may not interconnect with the Barbados PSTN, but may interconnect with the Barbados Internet. Class 3 VoIP Services Providers have the following rights and obligation:

- Disclosure to Customers

4 . 4 Class 4: Peer-2-Peer (P2P) VoIP Services

P2P VoIP Services involve connections between two or more devices entirely over one or more networks, possibly including the Internet, and thus are entirely independent of the Barbados PSTN. P2P is completely unregulated.

This class of service is not appropriate as a customer's primary phone connection.

5 VoIP SERVICE PROVIDER LICENSES

- 5.1 Class 1 and Class 2 VoIP Services may be offered only by companies registered and licensed in Barbados. This will ensure that service providers comply with local consumer protection legislation.
- 5.2 Class 1 VoIP service providers will need to be licensed as either a domestic and/or international operator. They should be on the same level playing field as all the other market operators.
- 5.3 Class 1 and Class 2 VoIP service providers will require PSTN Interconnection with one or more Barbados domestic PSTN operators, and TCP/IP Interconnection with one or more Barbados Internet Service Providers.
- 5.4 Class 3 VoIP Services may only be offered or resold by companies registered in Barbados, and who hold a valid Value Added Service licence.
- 5.5 All classes of VoIP Equipment may only be sold by companies registered in Barbados, and hold a valid Sellers and Dealers licence. End users may import VoIP Equipment for their own uses without a licence.

6 VoIP CONSUMERS' RIGHTS AND OBLIGATIONS

- 6.1 All classes of VoIP Equipment may only be sold by companies registered in Barbados, and hold a valid Sellers and Dealers licence. End users may import VoIP Equipment for their own uses without a licence.
- 6.2 Consumers, individuals as well as corporate, (End Users) have the right to use VoIP equipment and services as they choose for their own uses, so long as they are purchasing such equipment and services from appropriately licensed suppliers, including the networking services
- 6.3 Consumers may connect equipment to the local PSTN that is VoIP enabled, but only when it is done in a manner such that illegal International bypass to third parties is not possible.
- 6.4 It is recognized that consumers here in Barbados may enter service agreements with providers outside of Barbados, who advertise only using the Internet (for example, Skype). So long as the financial transactions are settled outside Barbados, and the supplier does not advertise in Barbados, is activity is permitted.
- 6.5 End Users may import VoIP equipment for their own uses.

- 6.6 Consumers have the right to full disclosure as to Quality of Service (QoS) offered by each supplier before purchase, as detailed in the QoS section below.
- 6.7 Specifically and explicitly, Commercial Call Centres, Cyber Cafes, Community Centres and Churches may use VoIP services for their business and uses.
- 6.8 Peer-2-Peer (P2P) usage is also explicitly allowed. P2P services involves calls made between two computers or other compatible device connected via the Internet, using IP-enabled voice communications services that do not connect to the PSTN and do not generally use (North American Numbering Plan) NANP-conforming telephone numbers. P2P Services are not considered as telecommunication services as no numbers are used.

7 BARBADOS PSTN AND INTERNET INTERCONNECTION

- 7.1 Class 1 and Class 2 VoIP Service Licenses permit and obligate the licensee to negotiate and purchase PSTN and Internet interconnections with existing providers. PSTN Interconnections are regulated by the Barbados Fair Trading Commission (FTC).
- 7.2 All carriers and service providers are required to negotiate these interconnections in good faith. There shall be no contractual limitation against retail nor wholesale resale of these services.

8 QUALITY OF SERVICE (QoS) STANDARDS

- 8.1 The Minister reserves the right to establish minimum quality of service standards for the Services provided by the Licensee with which the Licensee shall comply.
- 8.2 Class 1 Service includes the requirement for the telephony core network to be available during power failures.

9 LAST MILE TRANSPORT

- 9.1 Class 1 Service providers are required to own and provide end-to-end connectivity used in the provisioning of the VoIP Service.

- 9.2 Class 2 Service providers may supply the customer's network connectivity, or the customer may “bring their own bandwidth”.
- 9.3 Class 3 Service provider's customer's always supply their own bandwidth.

10 DISCLOSURE TO CUSTOMERS

- 10.1 Licensees are required to give a complete and clear description of the services on Offer, including any and all limitations of the Service compared to a traditional PSTN service offering.

- 10.2 This includes:

- Service Availability during power failures
- IP and PSTN networks used, and ownership of same
- Average and worst-case latency and jitter metrics
- Compression “CODECS” used
- Availability of Emergency Services
- Availability of Directory Assistance
- Availability of Operator Assistance
- Appropriateness for FAX machines and computer modems

- 10.3 The Minister reserves the right to establish additional service metrics which a Licensee is obligated to disclose, with which the Licensee shall comply

11 FAX AND MODEM SUPPORT

- 11.1 Class 1 Service providers must provide FAX and Modem support upon request of any their customers.
- 11.2 Class 2 and Class 3 providers may provide FAX and Modem support, but are not obligated to do so.

12 USAGE DURING POWER FAILURES

- 12.1 Class 1, Class 2 and Class 3 providers must inform their customers that the service will not operate without customer provided power backup equipment.

13 BARBADOS PSTN NUMBERING

- 13.1 The Ministry proposes to implement the ITU-T.E 164 numbering regulation for Class 1 and Class 2 VoIP Services.
- 13.2 Class 1 and Class 2 VoIP Service providers may apply for and be issued numbers Central Office Codes (AKA NXX numbers) 310 – 319, 320 – 329, 330 – 339, and 340 – 349, 270 – 274, inclusive, for geographical number usage (caller location determinable).
- 13.3 350 – 359 are reserved for nomadic uses, where the service origin location may change without notice.
- 13.4 ITU-T E-164 numbers which are not in the Barbados Numbering range may be used for VoIP services in Class 3 and 4 only.

14 PUBLIC EMERGENCY CALL SERVICES

- 14.1 Class 1 Service providers must provide access to the emergency services such as the police (211), the fire service (311), and ambulance service (511) and any other national emergency service that the minister may from time to time designate for the purpose of notifying such services of any emergency.
- 14.2 Class 2 and Class 3 providers must inform their customers if emergency services are not available.
- 14.3 The Licensee shall not charge its customers for any use of the services to contact the emergency services referred to in 14.1 of this document.

15 DIRECTORY INQUIRY SERVICES

- 15.1 Class 1 VoIP service providers will be require to provide directory inquiry services upon request to any person to whom the Licensee provides the Services.
- 15.2 Class 1 VoIP service providers will be required to provide access to directory inquiries of their customers to subscribers of other licensees.

16 UNIVERSAL SERVICE

- 16.1 The Minister may require VoIP Service providers to contribute to the USF.

17 LICENSE FEES

17.1 The Minister reserves the right to set the License fees.

18 NATIONAL SECURITY

18.1 The Minister reserves the right to require the Licensee to comply with additional safety and security safeguards to enhance security measures for public and national safety

19 ACKNOWLEDGEMENTS

The Minister acknowledges responses to the first Consultative Document on VoIP and other IP services in Barbados, and would like to thank the contributions of the Telecommunications Act Revision Committee.

The Policy will be reviewed on a regular basis as the technology advances.

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