

**VoIP – A REGULATORY CONUNDRUM UNDER THE TELECOMMUNICATIONS
ACT 2000.***

I.	ABSTRACT.....	2
II.	THE LEGISLATIVE FRAMEWORK.....	2
A.	INTERNATIONAL SERVICES.....	2
B.	LICENCES.....	3
1.	FACILITIES BASED COMPETITION	4
2.	LEASED AND HYBRID FACILITIES.....	5
III.	VoIP – WHAT KIND OF LICENCE?.....	5
A.	AN INTERNATIONAL VOICE SERVICE	5
B.	A HYBRID FACILITY.....	6
IV.	THE CONUNDRUM.....	9
A.	THE SERVICE PROVIDER LICENCES	9
a)	RESELLING INTERNATIONAL SWITCHED MINUTES OF THE <i>EXISTING TELECOMMUNICATIONS PROVIDER</i>	10
b)	RESELLING INTERNATIONAL SWITCHED MINUTES	11
B.	THE CARRIER LICENCES	11
1.	DOMESTIC SERVICES.....	11
2.	INTERNATIONAL SERVICES	13
C.	UNFAIR COMPETITION	14
V.	THE WAY FORWARD	16

* M. Georgia Gibson-Henlin (LLM – Innovation and Policy Law U of Toronto 2002), Attorney-at-Law Nunes, Scholefield, Deleon & Co. Jamaica West Indies, Member Ontario Bar.

I. ABSTRACT

The purpose of this paper is to discuss the regulatory treatment of Voice over Internet Protocol (VoIP) and Voice over the Internet (VoI) (hereinafter VoIP) as an alternative to traditional circuit switched international telephony in Jamaica. As an alternative it offers opportunities for arbitrage and *bypass* in the international call market if it is not properly regulated. It therefore assumes importance to the regulator, the incumbent or any international telecommunications carrier because it flies in the face of the legislative objectives for offering international services under the Telecommunications Act 2000.

*Bypass*¹ is illegal under the Telecommunications Act 2000, as *was* the offering of (VoIP). However, whereas there is an absolute restriction on *bypass* the same does not hold true for VoIP. VoIP, defined, as a voice service² in the Act is *ostensibly* legal as of March 1, 2003, the commencement of full liberalisation of the telecommunications market in Jamaica. Herein lies the conundrum. VoIP invariably enables bypass. What kind of licence allows for a VoIP offering? Are there opportunities for unfair competition? What is the way forward?

II. THE LEGISLATIVE FRAMEWORK

A. INTERNATIONAL SERVICES

The legislative framework for the provision of International Services³ is set out in Part VIII of the Act. The Office of Utilities Regulation (OUR) is authorized

¹ Section 9(d)

² Section 2 *s. v.* voice service.

³ International service is defined in the Act as a transit service or a specified service between points

to make rules, “subject to affirmative resolution”⁴ to prohibit or regulate conduct “that is likely to result in the avoidance or distortion of the process of international settlements.”⁵ This provision is intended to protect the contributions to the universal service fund and control the regulation of competition so as to prevent harm to consumers.

Carriers and service providers are afforded some protection under this part where there is a reasonable ground for believing that any person to whom a facility or specified services are provided “is engaging in bypass operations or in conduct in respect of international services that is prohibited or regulated by the international service rules.”⁶ They can apply to the OUR for permission “to discontinue the provision of specified services to any person or disconnect any facility”⁷ from its facility or other facility that is used to provide that service.

This legislative framework, geared as it is towards maintaining the international settlement process and protecting the revenues of licensed international carriers, comes into direct conflict with the offering of VoIP as an alternative call mechanism.

B. LICENCES

Every carrier or service provider under the Act⁸ requires a licence to operate facilities or offer services prescribed under the Act. A person who wishes to offer a voice service requires a minimum of one licence. A provider can participate in

in Jamaica and points outside Jamaica...; A transit service is defined as a service that is provided to any international carrier or service provider for use as a means of transit of international traffic through Jamaica.

⁴ Section 50

⁵ *Ibid*

⁶ Section 51

⁷ Section 51 (a)(b)

⁸ Section 9(1)(a)(b); Section 9(2)

the market by either setting up his own facilities, leasing facilities from the incumbent or another competitive exchange carrier or a combination of both. In this paper these three methods will be referred to as facilities based, leased facilities or hybrid facilities competition.

1. FACILITIES BASED COMPETITION

The setting up of facilities independent of and parallel to that of the incumbent is known as facilities based competition. Facilities refer to the physical components “of the telecommunications network (other than customer equipment).”⁹ The physical components include wires, lines, poles, towers and “apparatus using the radio spectrum.”¹⁰ They also include “submarine cables and *other tangible resources used in the provision of a specified service.*”¹¹

A person who sets up his own facilities is known as a carrier. He therefore requires a carrier licence. This category has been further broken down depending on the market segment in which the person wishes to compete either domestic or international. The Act does not specifically make this distinction but following on international practice carriers can either be domestic carriers or international carriers or both. In any case the carrier requires a domestic carrier licence (DC) or an international carrier licence (IC). In order to provide services, the facility owner requires a service provider licence. A facilities based service provider requires two licences, a carrier licence and a service provider licence.

⁹ Section 2s. v. “facility”.

¹⁰ *Ibid* s. 2(a)

¹¹ *Ibid* s. 2(b)

2. LEASED AND HYBRID FACILITIES

Leased based competition as the name suggests involves the leasing of facilities from a licensed carrier. Offering voice services with leased based facilities does not require a carrier's licence since as the name suggests all the facilities are leased. The prospective provider therefore requires the relevant service provider licence depending on the market segment in which it wants to compete, that is, either a Domestic Voice Service Provider Licence or an International Voice Service Provider Licence.

Hybrid facilities exist where the competitor operates by combining its facilities with facilities leased from a licensed carrier. A person who wishes to compete in the provision of services using hybrid facilities would require *either or* both types of carrier's licence *and* a service provider licence.

III.VoIP – WHAT KIND OF LICENCE?

A. AN INTERNATIONAL VOICE SERVICE

Voice over IP is the transmission of voice as data over an IP network. Although it is transmitted as data it retains its character as a voice service. The distinct character is differentiated by protocols. In terms of service there is no difficulty in classification under the Act. It is clearly defined as a voice service. A voice service is a specified service.¹² It means that a service provider licence is required as prescribed under the Act.¹³ This would be an international voice service provider licence.

¹² Section 2(1) s. v. Voice service and specified service.

¹³ Section 9(2)

B. A HYBRID FACILITY

Competitive entry by any VoIP provider requires hybrid facilities. In the technical setting the first and last point of entry of an international call over an IP network is a VoIP gateway. The call is then transported to the end user via the Public Switched Telephone Network (PSTN). The connection to the PSTN and the IP network is done by VoIP gateways. The IP voice service therefore makes use of three types of facilities. It uses:

- i) The *local* circuit switched facility (The PSTN) of the traditional telephone network – the last mile. *This has to be purchased;* and
- ii) The packet switched facility of the *IP network* – the domestic/international facility. *A part of this is owned by the provider and part by the backbone carrier network operator;* and
- iii) The *VoIP gateways* to the PSTN of the end users at either end of the call – the *international facility*. *The provider usually owns this.*

The functional equivalent of the switches of the PSTN in the IP network are IP routers. *VoIP gateways are the functional equivalent of the international switch.* The call *bypasses* the international switch.

It follows that a *facilities based* entrant into the VoIP services market would require an international carrier licence, a domestic carrier licence and a service provider licence. The domestic carrier licence is required to carry the call from the local VoIP gateway over the *last mile to the end user*.

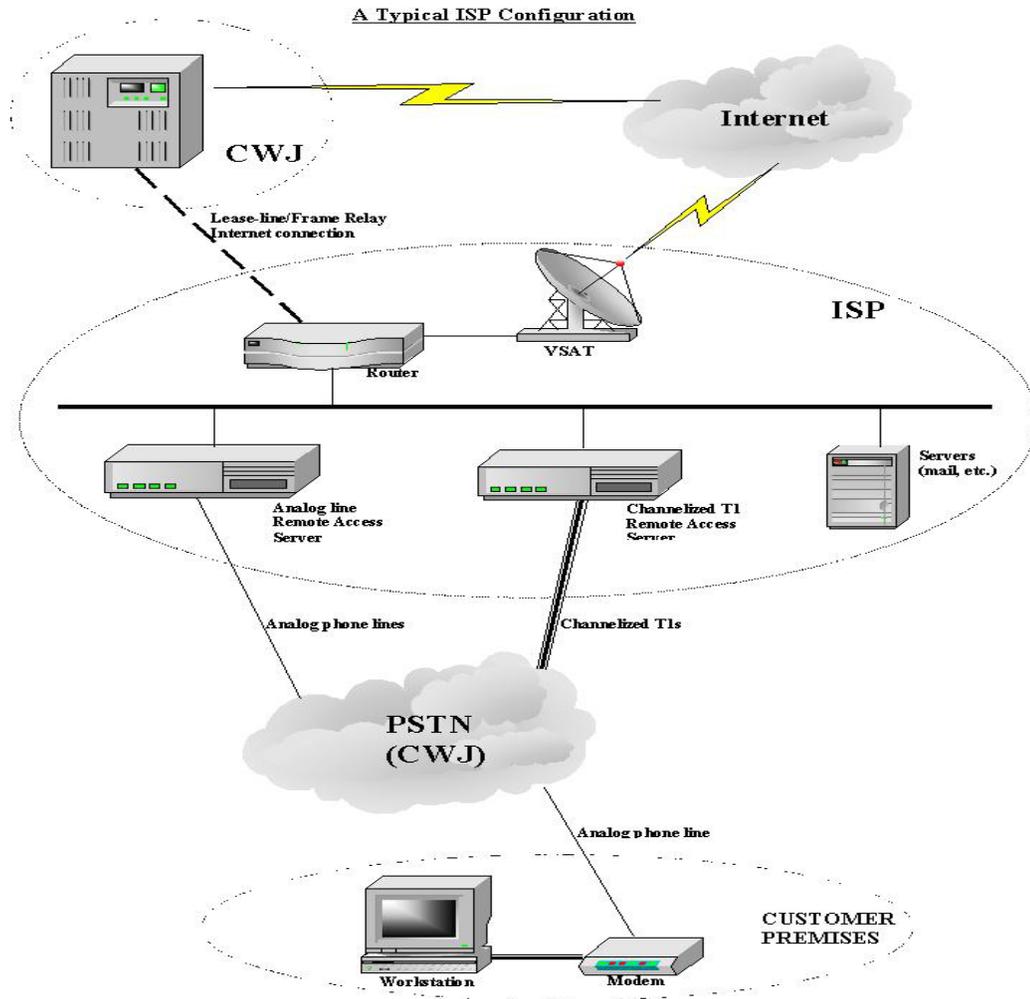
A *hybrid entrant* can set up its own facilities in relation to the international portion of the call such as analog line remote access servers, channelized T1 remote access servers, Very Small Aperture Terminals (VSAT) or routers to connect

to the another competitive entrant facilities including mail servers. The analog lines to the PSTN are *rented* from the local exchange carrier, the incumbent Cable and Wireless Jamaica Limited. This is because, the incumbent is the only provider of wired last mile facilities whereas there at least two providers¹⁴ of wireless last mile facilities. *It is necessary to connect to the facilities of these providers in order to get to the end user.* There are currently “few totally VoIP networks in the world today. It is necessary to connect to the PSTN to place calls to PSTN users.”¹⁵

Currently, VoIP as a commercial offering is not a stand-alone facility or offering but offered as an enhanced service by Internet Service Providers (ISP). ISP facilities are an example of local facilities that provide a gateway between the PSTN and the Internet gateway. In Jamaica, an ISP is the best model of the facilities that are required for the commercial offering of VoIP services. As can be seen from the foregoing analysis, an ISP must use hybrid facilities to offer Internet services and VoIP. The configuration is one of two scenarios. The connection to the Internet backbone is either by satellite that is owned by the ISP or a leased frame relay line from the incumbent Cable and Wireless Jamaica Limited. These are incorporated in figure 1.

¹⁴ Cable and Wireless Jamaica Limited and GoTel

¹⁵ John Q. Walker & Jeffrey T. Hicks, *The Essential Guide to VoIP Implementation and Management*, at page 19 (2002)



An Internet Service Provider Licence is required because their primary offering is the reselling of Internet services such as email access and web browsing.

To the extent that they can provide connectivity to the VoIP gateway and in some cases themselves act as gateways an international carrier's licence is required. In other words the ISP facilities enable the provisioning of international services. Offering VoIP *in our current environment* therefore requires at least three types of licences:

- i) An Internet Service Provider Licence;
- ii) An International Carrier's Licence – especially where the VSAT facilities are used to gain access to the Internet;

- iii) A Domestic Carrier Licence – if the service provider sets up its own facilities to cover the *last mile*;
- iv) An International Voice Service Provider Licence.

IV. THE CONUNDRUM.

The conundrum lies in the inability to clearly identify the types of licences that are required to offer VoIP services or the regulatory paradigm that best suits this offering.

A. THE SERVICE PROVIDER LICENCES

In the immediate aftermath of the commencement of phase III the licences were restricted as follows:

- i) The International Voice Service Provider licences are restricted to *reselling* international switched *minutes* of the “existing telecommunications carrier”.
- ii) The Domestic Voice Service Provider licences are restricted to *reselling* domestic switched *minutes* of the “existing telecommunications carrier”.
- iii) The Internet Service Provider Licence had a restriction that excluded the offering of voice services.

The licences with these restrictions were issued under phase II of the liberalisation process. The Act provides under Section 78(6) that “the Minister shall on application by a licensee, remove a licence condition that would not be required to be imposed if that licence were issued in that phase.” Since under Phase III voice service is fully liberalised, the Minister on application is required to grant a licence without restriction on voice to new providers or remove all of three conditions:

- i) *Reselling* international switched minutes;

ii) Reselling international switched minutes of the *existing telecommunications provider*

iii) The restriction on voice.

The statutory edict is clear. However, there is no structured policy for the removal of these conditions in a structured way or at all:

i) Providers have been told that they are still required to apply for new licences notwithstanding the existence of licences with these restrictions. The benefit to the regulator is the \$60, 000.00 in licence fees.

ii) Providers have also been told that a Domestic Carrier Licence and an International Voice Service Provider Licence are enough to offer VoIP services. How does one reconcile this with the fact that for the most part VoIP, as a commercial offering, is an international voice service?

The current approach to the removal of these conditions is unsatisfactory and contributes to the puzzle.

a) RESELLING INTERNATIONAL SWITCHED MINUTES OF THE *EXISTING TELECOMMUNICATIONS PROVIDER*

The offering of voice services has been liberalised. The purchasing of minutes from the existing telecommunications provider is therefore the most obvious restriction that has to be removed. This has been accepted by the regulator and is reflected in the current policy so that most of the licences contained a provision that the restriction would not apply after the commencement of phase III. This provision can be interpreted to mean that the Minister created a contingent and future right to the removal as required by

section 78(6). This interpretation makes sense because the Minister does not in any event have discretion to refuse to remove the restriction. The provision is mandatory.

b) RESELLING INTERNATIONAL SWITCHED MINUTES

It is less clear however, that the regulator has addressed its mind to VoIP as a wholesale offering in its own right. The International Voice Service Provider Licence should therefore do more than remove the restriction that *regulates* by determining from whom the minutes are to be purchased.

It should recognise that IP networks can originate and terminate calls in their own right. Mechanisms for dealing with settlements have been determined between providers as distinct from between country pairs as is customary under the accounting rate system that characterized the traditional global switched telephony.

B. THE CARRIER LICENCES

Two things are worthy of note. First, there is no domestic *IP facility* to enable connection to the *last mile* that is, from the PSTN to the end user. Second, there is *no international switch* (tandem switch) to route the call from the international caller to the PSTN. This is an important issue in the context of competition. The issue is how is the VoIP provider to access the end user or how can the end user access VoIP services.

1. DOMESTIC SERVICES

Domestic connectivity to the end user is a problem for incoming international calls. This is the *last mile* problem. How does the VoIP provider

access the end user? Generally speaking *last mile connectivity* can only be purchased from the incumbent or other carriers who are able to provide connectivity to the *last mile* unless the participant is able to set up its own facilities. Currently, there are no regulations for providing *last mile* connectivity between the *gateways* and end users. The incumbent is relying on this lack of regulation to refuse to provide products or services, which will allow VoIP. For example, it has refused to remove the restriction on voice in contracts that were entered into prior to liberalisation on the basis that it would be allowing a form of *indirect access*.¹⁶ It does not provide a wholesale inbound toll-free voice product. Competitive providers are therefore forced to purchase dial up access lines with restrictions on voice and the fear of shut down in the event of failure to comply with the restrictive terms of use. In fact the post 1998 contracts restrict the dial – up access lines (channelised T1’s) to inbound only calls. This means that calls are only allowed to the ISP but the ISP’s cannot terminate calls to end user. This puts a serious *spoke* in the wheels of offering or delivering VoIP termination services. The removal of the restriction on voice of course has nothing to do with indirect access except to the extent that it will eventually impact on the nature and the amount of the market share of the incumbent. The incumbent is being allowed to conflate facilities (network) and services.

Effective regulation and competition calls for immediate unbundling of facilities and services. The OUR¹⁷ has made it clear that the incumbent is required to provide access to its network to persons requiring access for terminating

¹⁶ *Indirect access* is defined in section 36(2) of the Act as “the method whereby customers are able to select the services of any service provider who uses a public voice carrier’s network to provide specified services.

¹⁷ The Office of Utilities Regulation homepage <<http://our.org.jm/pubpress.shtml?5-9-1#5-9-1>> (last accessed: 18 May 2003)

international minutes on its network using toll free numbers. This was specifically as it relates to pre-paid calling card services. However, a number of pre-paid call card service providers provide this service over an IP network.

2. INTERNATIONAL SERVICES

The International services model under the Act does not address the unique nature of this service offering. It is modeled off the traditional global switched telephony with its reliance on the process of International settlements. The international settlement process does not figure into the VoIP offering at all. The international settlement process was easy to manage. It had its historical origins in monopoly provider markets at the originating and terminating end of the calls.

VoIP on the other hand has its genesis in a more competitive market setting it means that several providers are available which offer termination and originating services with their own agreements among themselves as to how the rates are to be settled. It is therefore inappropriate to think of settlements in the context of *country pairs*. It is in this context that it can be said that this model at once embraces and condemns VoIP as an alternative or substitute voice service. The Act embraces VoIP as a voice service but condemns it by creating an international services model that is the antithesis of VoIP:

1. By ***bypassing*** the process of international settlements it *distorts it*. It therefore conflicts with this objective of the model.
2. It can divert funds from any Universal Service contribution regime because it is no longer a bi-lateral arrangement

between *country pairs* hence involving only one telephony provider. It is therefore more difficult to monitor.

3. *It violates the current international service rules because it operates outside of them.* VoIP as an international offering is more localized. It represents a shift away from two world monopolists in each *country pair* to small clearinghouses and bi-lateral agreements between providers agreeing on how to *settle* among them.

C. UNFAIR COMPETITION

Unfair competition can arise in several different contexts:

1. It is unclear which types of licences are required for the offering of VoIP services. A licensee has a duty to ensure that it is dealing with licensed providers under the Act since a failure to do so may result in civil liability.¹⁸ In the absence of clear guidelines, a carrier can determine that it will not sell facilities to a proposed entrant by deciding what licences the proposed entrant should have prior to selling or leasing its facilities to that entrant.
2. The incumbent can keep the price of facilities high or insist on unfavourable conditions for the leasing of facilities that provide access to the Internet gateway. The market cries out for regulation in this area. There is a great need for the incumbent to un-bundle its network. Currently, it is the only provider of terrestrial Internet bandwidth. It is a monopoly provider of high quality, high speed Internet bandwidth. This creates a problem because this makes Internet connectivity into the island a

¹⁸ S. 67 – Telecommunications Act 2000

bottleneck facility. *They have been in a position to limit and are limiting what customers can do with the Internet service that they provide.* This is important, when it is remembered that the Internet is built on IP technology that enables a multiplicity of applications provided there is the available bandwidth. Their refusal to remove the restriction on voice in the contracts that were entered into prior to liberalization is an example of this. *Clearly, this enables them to do with the Internet an open system, what they have done with telephony over the years that is creating a closed and proprietary system.* This will have a negative impact on technological advancement clearly limits growth in the communications infrastructure as well as the benefits to consumers and business interests. The Internet is more than just email services and web browsing. It enables information, communications and entertainment on the same network.

3. The pricing issue is cause for serious concern. The incumbent, being the only provider of terrestrial Internet not only limits the applications that can be placed on the network but they also control pricing. Jamaicans are arguably paying the highest rate in the world for Internet access.
4. For instance, in the United States of America, a full T1 of Internet Bandwidth, including Local Loop runs about US\$600.¹⁹ In Jamaica, it costs US\$8,800 for the same bandwidth. Clearly, this high cost of Internet access limits growth and advancement. Internet bandwidth is now a worldwide business necessity and the high cost limits access to the world. Jamaica will be placed in a disadvantageous

¹⁹ In some cases businesses in North America can purchase T1 for as low as US\$350.00 e. g. from Qwest.

- position if the incumbent is allowed to bundle Internet services and keep prices high.
5. There is currently no hurry to remove the restriction on voice contained in contracts with ISP's prior to the commencement of phase III. There are no provisions and hence no sanctions under the Telecommunications Act 2000 to prevent this type of conduct.
 6. The next issue is whether the incumbent can insist on terms other than those that existed prior to the commencement of phase III for the leasing of facilities when the competitive entrant is already paying a high price for such facilities as it may require. How a provider chooses to use leased facilities as long as their offering is in keeping with the provisions of the Act should not be an issue. The hesitation of the incumbent in moving forward with the removal of the voice restriction while the new entrant suffers waiting on its next move or jump out at the deep end provides an unsatisfactory environment in which to invest.

V. THE WAY FORWARD

The way forward requires certainty in the licensing and regulatory regime for IP telephony. It requires recognition that IP telephony has a lot to offer to the market and the consumers. Competition is the best way to protect consumer interests. IP telephony provides easy competitive entry, as it is less expensive to set up than traditional circuit switched telephony.

Clear guidelines on *Internet* connectivity for service providers in this area can remove foot-dragging by the incumbent provider. The incumbent provider

would lose the opportunity to hide behind the provisions of the Act to delay removal of contractual restrictions on voice that are now otiose. They should be forced to unbundle their network. In fact unbundling should have been a part of the pre- liberalisation preparation so that by the time of full liberalisation the market would have been well underway.

The bilateral arrangements between providers is cumbersome for providers and difficult to monitor for those countries such as Jamaica that remain interested in Universal Service as the best method of providing access to underserved areas. Clearinghouses on the other hand, can handle global termination and/or originating of calls. This method simplifies operations and result in cost savings to consumers, regulators and operators. It means lower prices to consumers, lower costs of monitoring to the regulator and lower management costs to the business operators. It is therefore incumbent on the regulator to understand the offering, determine what they want from it and if necessary encourage the setting up of clearing houses. Clearinghouses remove the opportunities for arbitrage as they can engage in the provisioning of enhanced services such as unified messaging, global roaming, web-based conference calling, number portability and billing provisioning.

The benefits of this new offering are endless. They will be lost in the regulatory monopolistic quagmire of the former paradigm unless active steps are taken to understand and regulate the offering. IP technology is not restricted to voice telephony; it enables information, communications (fax, voice and data) and entertainment over one network. It is a simple network that is simple and cost effective to set up and handle when compared with the traditional switched telephone network.