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Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers

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1 INTRODUCTION

1.1 Rationale

This draft Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers, otherwise known as the Indicative Reference Interconnection Offer or “IRIO”, supports the intention of the Telecommunications Authority of Trinidad and Tobago, hereinafter referred to as “the Authority”, to provide a world-class competitive Telecommunications Infrastructure which is vital to the economic development of Trinidad and Tobago.

Sections 25 and 78 (f) of the Telecommunications Chap 47:31 hereinafter referred to “the Act”, empowers the Authority to manage Interconnection through

(i) ensuring compliance to guidelines and standards established by the Authority; and

(ii) the enactment and enforcement of the Telecommunications (Interconnection) Regulations, 2006, hereinafter referred to as the “Interconnection Regulations”.

The Regulations referenced above established the Authority’s function to review, assess and approve Reference Interconnection Offers (RIOs) developed by the domestic public voice concessionaires prior to their publication. The Authority may also, with reasons, require the concessionaires to effect changes to their RIO prior to the Authority’s grant of approval of same. This requirement is constrained only, that the changes shall not be in respect of any matter which the concessionaire is entitled to negotiate or determine under Section 25 of the Act.

It is proposed that the effectiveness of this function has been limited without the further elaboration of particular areas of technical requirements of the interconnection service, which has in effect left the determination of such matters to the cut and thrust of commercial negotiations between carriers. While this “soft-touch” or “hands-off” approach may have been sufficient in facilitating physical interconnection between the relatively larger participants in the sector, this approach has not had the same result with respect to other interconnection services such as, inter alia, “indirect access.”

This draft IRIO constitutes the establishment of the “standards and guidelines” referenced above, and thus represents a significant part of the framework which will guide the establishment of the interconnections agreements between concessionaires so as to ensure the orderly management and development of the sector. It outlines minimum requirements for interconnection to be met by concessionaires, requirements which must further be reflected in the contents of the RIOs of the interconnection service providers. These minimum requirements aim to:
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(i) provide entrants with an adequate platform to facilitate the timely implementation of interconnection;

(ii) ensure that sufficient information about the interconnection provider’s network is made available to allow for decision-making by the requesting party; and

(iii) define a baseline to accommodate the negotiation of an Interconnection Agreement.

The requirement for a RIO also has the advantage of promoting proactive thinking on the concessionaire’s part in terms of providing interconnection, encouraging proactive planning, thus reducing unnecessary delays in the process when an interconnection request is made. This will ensure that the concessionaire has all the necessary internal mechanisms in place so as to efficiently manage interconnection arrangements with other concessionaires in a timely and effective manner.

In accordance with Regulation 19 of the Interconnection Regulations, the interconnection provider is required to provide, publish and maintain a RIO substantially in the form prescribed by the Authority. The publication of a RIO significantly lowers the possibility of the interconnection provider discriminating between applicants for interconnection. Indeed, the concessionaire providing the interconnecting service must ensure that the terms, conditions and quality of service offered to applicant concessionaires are no less favorable than that provided to its own business, or associated or subsidiary businesses.

Any changes whenever deemed necessary in the Regulatory Framework may result in relevant amendments in this Draft Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers.

1.2. Objectives

The objectives of the Draft Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers are as follows:

- To define the Authority’s minimum requirements for the technical and commercial aspects of interconnection;

- To provide guidelines for the preparation of a RIO, so that there is predictability in the Authority’s assessments of a RIO submitted pursuant to the Regulations;

- To lower the ability of the interconnecting concessionaire to discriminate between applicants for interconnection;
To ensure that the concessionaire has all the necessary internal mechanisms in place so as to efficiently manage interconnection arrangements with other concessionaires in an effective manner;

To ensure that Section 25 of the Telecommunications Act, Chap 47:31 is effected.

To ensure that the Telecommunications (Interconnection) Regulations, 2006, is effected.

To ensure that the framework is in accordance with International Best Practices.

1.3. Regulatory Framework

The following Section the Act provides statutory imperative, in accordance with the Authority’s mandate, to publish Standards and Guidelines for Interconnection:

- **Section 25 (2) (a)** of the Act provides that in respect of a concessionaire’s obligations, the Authority shall require a concessionaire to:

  “…comply with guidelines and standards established by the Authority to facilitate interconnection”.

Further,

- **Section 25 (2) (d)** of the Act states that:

  “In respect of a concessionaire’s obligations pursuant to subsection (1), the Authority shall require a concessionaire to provide the elements of interconnection, to other concessionaires of public telecommunications networks and public telecommunications services, in a manner that is at least equal in both quality and rates to that provided by the concessionaire to a subsidiary, affiliate or any other party to which the concessionaire provides interconnection.”

It is proposed that these Standards and Guidelines are also reflected in the Reference Interconnection Offers of interconnection service providers as a mechanism to ensure compliance. The following Regulations provide the regulatory obligations of concessionaires with respect to interconnection:

- **Regulation 13** of the Interconnection Regulations mandates a concessionaire to complete negotiations for an interconnection agreement in a timely manner:
“A concessionaire shall use its best endeavours to conclude an interconnection agreement as soon as possible following its receipt of an interconnection request, but in any event shall conclude the agreement no later than—

(a) six weeks after its receipt of the request from an interconnecting concessionaire, where either the interconnection provider or interconnecting concessionaire has published a RIO…”

- **Regulation 19** of the Interconnection Regulations mandates a concessionaire requested by the Authority to:
  
  “…prepare, publish and maintain a RIO substantially in the form published by the Authority on its website or in such other manner as the Authority may determine”.

- **Regulation 24** of the Interconnection Regulations mandates the timely execution of interconnection agreements once finalized:
  
  “Every interconnection agreement shall stipulate a period not exceeding twenty-eight days within which interconnection shall be effected.”

Further, in these Draft Standards and Guidelines for the Development of Reference Interconnection Offers, the Authority has made provided for the consideration of operator and directory enquiry services as a particular type of interconnection service to be provided. Similarly, the standards and guidelines provides general overarching obligations on concessionaires to undertake network modifications to facilitate other key interconnection services identified in the Act, such as Number Portability and Indirect Access. The detailed approaches for the implementation of these functions are the subject of separate papers of the Authority. However, as far as these functions require the implementation of interconnection related services as precursors to their implementation, such obligations are established in these Standards and Guidelines pursuant to Section 25 of the Act.

The following subsections of the Act provides the statutory imperative for concessionaires to adhere to guidelines of the Authority to facilitate these types of interconnection services:

- **Section 25 (2) (l)** of the Act states that:

  “In respect of a concessionaire’s obligations pursuant to subsection (1), the Authority shall require a concessionaire to permit other concessionaires of public telecommunications networks and public telecommunications services to have equal access to telephone numbers, operator services, directory assistance and directory listing without unreasonable delay, in accordance with requirements prescribed by the Authority”
• **Section 25 (2) (j)** of the Act clearly states that:

  “In respect of a concessionaire’s obligations pursuant to subsection (1), the Authority shall require a concessionaire to provide, to the extent technically feasible, number portability when required to do so and in accordance with the requirements prescribed, by the Authority.”

In these Draft Standards and Guidelines, the Authority seeks to establish a framework through which interconnection prices are regulated. The Authority does recognize that the Interconnection Agreement are to be subject to the negotiation of the parties, and as such, does not propose the imposition of specific interconnection rates *ex ante* for implementation by all concessionaires. Instead, the Authority will seek to establish a range of acceptable interconnection rates for particular services in accordance with its price control powers under the Act. While the detailed discussion of the applicability of these Sections of the Act to interconnection and the regulation prices can be found in Section 6 below, the relevant Sections of the Act guiding the Authority’s functions in this regard are outlined below:

• **Section 29 (2)** states as follows:

  “The Authority may establish price regulation regimes, which may include setting, reviewing and approving prices, in any case where –

  (a) there is only one concessionaire operating a public telecommunications network or providing a public telecommunications service, or where one concessionaire has a dominant position in the relevant market;

• **Section 29 (6)** states as follows:

  “For any public telecommunications service provided on a non-exclusive basis, the Authority may introduce a method for regulating the prices of a dominant provider of such telecommunications service by establishing caps and floors on such prices, or by such other method as it may deem appropriate”.

In these Draft Standards and Guidelines, the Authority will oblige concessionaires, in the legal framework of their RIO, to recognize the jurisdiction of the Authority’s Dispute Resolution Procedures. The relevant Section of the Act, guiding the Authority’s function in this regard are outlined below:

• **Section 82** of the Act states that
“the Authority shall establish a dispute resolution process to be utilized in the event of a complaint or dispute arising between parties in respect of any matter to which section...25(2)(h) applies, or where a negotiated settlement, as required under section 26, cannot be achieved, or in respect of any other matter that the Authority considers appropriate for dispute resolution.”

1.4. Scope of document

These Draft Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers serve as a regulatory tool to specify the minimum requirements to which concessionaires shall prepare their networks for interconnection and that which shall be included in their RIO. These Requirements are based on relevant provisions in the Authority’s Regulatory Framework in effect at the time which include but not limited to:

- The Telecommunications Act, Chap 47:31
- The Telecommunications (Interconnection) Regulations, 2006;
- The Telecommunications (Access to facilities) Regulations, 2006;
- The Authorisation Framework
- Draft Network Quality of Service Regulations

Some requirements are also based on international best practices while others are included to codify past regulatory decisions taken by the Arbitration Panel which still are in effect.

While the Authority acknowledges that the Panel’s decisions are not law, certainly it is worthy to note that best international practices, in particular those regulatory decisions of the European Commission (EC), have been influential in determining those decisions. Having considered the aforementioned, the Authority has deemed it worthwhile to base further requirements in this draft IRIO from the decisions of the Arbitration Panel.

In this context, it is noteworthy to recall that the RIO is an offer document, proposed by one concessionaire to another, setting out matters relating to the technical specifications, price and other terms and conditions of contract under which the proposing carrier will permit interconnection to its public voice and data network. Consequently, the IRIO touches upon minimum requirements in
each of these aspects of offer framework providing transparency and predictability to the Authority consideration of a submitted RIO.

1.5 Consultation Process

The consultation process adopted by the Authority in this Draft Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers is in accordance with the Authority’s *Procedure for Consultation in the Telecommunications Sector of Trinidad and Tobago.*

1.6 Review cycle

As the country’s telecommunications industry matures, the need will arise to revise and update this *Draft Standards and Guidelines for the Development of Reference Interconnection Offers.*

As such, the Authority shall review and revise same as it deems appropriate.
2 MAIN ELEMENTS OF THE RIO

The Interconnection Regulations make provisions for the Authority to request from concessionaires who are operating a domestic public telecommunications network, the preparation and, subject to the Authority’s approval, publication of Reference Interconnection Offers (RIOs) at their own cost. The Regulations also outline key conditions to be considered by the Authority in identifying concessionaires. It is thus expected that concessionaires operating a domestic public telecommunications network to whom a request is made shall refer to these standards and guidelines and thereafter prepare their networks to satisfy, at a minimum, all the requirements outlined herein.

The RIO produced by the concessionaire provides a dual function; first it provides a transparent mechanism by which standard conditions of service are made available to other parties, and secondly, it provides a tool through which the Authority can ensure compliance to the standards and guidelines.

It is thus imperative that the main elements of a RIO facilitate the achievement of both these goals. RIO’s established by requested concessionaires should provide sufficient information to guide both prospective interconnecting parties and the Authority to satisfy their business and regulatory needs, respectively, while maintaining commercially sensitive information confidential as necessary.

The RIO should set out, among other things, all tariffs and charges, responsibilities of parties and terms and conditions with respect to the provision and operation of different the Interconnection services to be provided.

The main elements of the RIO shall include:

1) The Legal Framework,
2) The specification of all minimum Interconnection services;
3) The technical specification requirements;
4) The proposed Interconnection charges for services outlined in (2) above.
3. LEGAL FRAMEWORK

3.1 General Terms and Conditions

The Legal Framework should contain the default contractual terms and conditions which the interconnection service provider is making available to requesting concessionaires. These terms and conditions must be non-discriminatory between those terms offered to that interconnection service providers own subsidiaries or associated businesses.

It is expected that, during the negotiations between parties, details relating to these terms and conditions may be subject to adjustment and modification based on preferences of the parties. Notwithstanding same, the legal framework should provide a sufficient foundation for robust discussions on these matters.

The Legal Framework should include, at a minimum, terms relating to the administration of the contract including provisions relating to:

(a) the person to be notified to initiate an interconnection request;

(b) the term of the contract:

(i) such term not to exceed five (5) years;

(c) the responsibilities of both parties in effecting the Agreement:

(i) such terms should not materially alter the obligations of the interconnecting service provider as established in the Act, the Regulations and the Authority’s standards and guidelines;

(ii) non-use of commercially sensitive information for any purpose other than facilitating interconnection.

(d) transitional and interim arrangements in relation to the coming into force or maturation of the Agreement;

(e) the termination of the Agreement by either party:

(i) such terms should include, at a minimum, notification to the Authority of such termination thirty days before it is to take effect;

(f) effecting payments between parties pursuant to the provision of interconnection services;

(g) liabilities and indemnifications for actions or lack thereof
(h) confidentiality of information shared in the conduct of negotiations, and associated limitation of use of such information;

(i) resolution of disputes:-

(ii) such terms to reflect the jurisdiction of the Authority and its Dispute Resolution process established in accordance Section 82 of the Act;

While a concessionaire has a general obligation to provide interconnection at any technically feasible point of interconnection (PoI) on its network, the concessionaire is only obliged to provide a limited number of identified and purpose-established, generally available POI at which provision of some basic suite of interconnection services is made available to the interconnecting concessionaire such that the interconnecting party is only required to purchase its own facilities and systems to effect interconnection. The interconnection provider may charge an “access charge” for the interconnection service, but that charge should not exceed the appropriate administrative charges associated with the provision of service, as determined in accordance with the Costing Methodology. In conjunction with the matters identified above, the Legal Framework should outline:

(a) the general requirements and costs to access the interconnection service at the established, generally offered points of interconnection

(b) the elements of the interconnection services and their constituent unbundled elements, including signalling;

(c) provisions, or references thereto, for co-location, facility and/or infrastructure sharing that the interconnection provider may provide for the purpose of interconnection.

(d) terms and conditions for the upgrade of any interconnection services and equipment for which the interconnecting concessionaire is responsible within the term of an Agreement

(e) other commercial terms and conditions applicable to the offering of the elements of the interconnection service; and

where applicable, the, terms and conditions additional charges liable to the interconnecting concessionaire for interconnection at points other than those generally offered;
3.2 Definitions and Interpretations for the RIO

The minimum requirements when defining terms in the RIO are as follows:

- Any terms already defined in relevant Telecommunications governing laws including but not limited to Regulations published by the Authority shall, when defined in the RIO due to their use throughout said RIO, maintain the definitions ascribed to them in the relevant legislation and their definitions must refer specifically to the respective legislation.

- Any terms defined with reference to any Clause, Schedule, Annex or other Attachment shall be a reference to a Clause of, or Schedule, Annex or Attachment to the RIO and any reference to the RIO shall include any such Schedule, Annex or Attachment.
4. MINIMUM INTERCONNECTION SERVICES REQUIREMENTS

All interconnection services on offer must be specified followed by a description of such in the RIO. That description should include at a minimum the definition of the Type of Service offered, the Network to which the service is being provided and necessary information related to the interface requirements necessary to effect physical and functional interconnection.

4.1 Types of Interconnection Services

For purposes of clarity, as provided for in the Interconnection and Access Policy Framework (2005), interconnection services can be grouped into the following three types;

(a) Joining, data and/or voice services
(b) Support Services; and
(c) Enhanced Services

Each of these services, and examples of same, is discussed in turn in the sections that follow.

4.1.1 Type 1: Joining, Data and/or Voice Services

These are those interconnection services that are based on the connection of physical networks. It also includes all services related to the routing of traffic necessary to functionally effect interconnection. These services include Traffic Termination and Transit Traffic services for both voice and data.

The following minimum services are considered Type 1 Interconnection Services:

- Interconnection Links and Joining Services;
- PSTN Terminating Access Service;
- PLMN Terminating Access Service;
- Emergency Services Access Service;
- National Toll-Free Access Services;
- International Toll-Free Access Service;
- International Toll-Free Access Services (on a wholesale basis);
- Value added Services from third parties including 900 services;
- Data Services (including video, but excluding Internet services);
• Calling Line Identification carriage;
• SMS carriage;

4.1.2 **Type 2: Support Services**

Support Services are customer-oriented services which are associated with value-added content provided by the Interconnection provider. These include:

• National Directory Enquiry Services;
• International Directory Enquiry Services;
• Operator Assistance Services;

4.1.3 **Type 3: Enhanced Services**

These services are those services which are indirectly related to Type 1 Interconnection Services, but require, through its implementation, either network modifications apart from that at the designated points of interconnection or interaction with a third party. The provision of Type 3 Interconnection Services is dependent upon the readiness of the Interconnection provider’s network to facilitate the provision of these services to the interconnecting party. The Interconnection Service Provider shall maintain a record, in the form prescribed by the Authority, to show continued functionality of these services.

These services include Carrier Pre-Selection, Carrier Pre-Selection-with-override and Number Portability.

• **Carrier Selection and Carrier Pre-selection**

  Adherence to relevant Regulations of the Interconnection Regulations which treats with facilitating indirect access shall be clearly stipulated in the RIO. The RIO shall include in its technical requirements sections information to guide the requesting party as to:

  (a) what messaging protocols,
  (b) pre-translation numbering ranges, or
  (c) other systems
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have been implemented to effect these functions. There should also be information as to loading characteristics the implementation of these systems may have traffic and/or signaling links to afford appropriate link scoping and planning by the new entrant.

- **Number Portability**

Adherence to relevant regulations (Interconnection) and Rules which treat with facilitating number portability shall be clearly stipulated in the RIO. The RIO shall include in its technical requirements sections particulars with respect to:

(a) the implementation of the service;

(b) the requirements of a network to facilitate interface with the interconnection provider’s network for the provision of service;

(c) the relevant points of contact to the intermediary service provider

(d) extranet specifications, if any, to facilitate interaction with Operational Support Systems;

(e) other such administrative requirements necessary to facilitate establishment of the service between the service providers.

4.2 **Type of Network**

An Interconnection Service Provider is agreeing to accept traffic onto its network. The type of network onto which service is accepted has an impact on the technical and commercial aspects of the Agreement. Accordingly, the Authority is of the view that each RIO should specify the network unto which the interconnecting service provider is proposing to accept traffic.

The Authorisation Framework for Telecommunications Networks and Telecommunications and Broadcasting Services outlined three distinct network types in the regulatory framework of Trinidad and Tobago. Consequently, the type of network that the service is based on shall be defined in accordance with the Authority’s Authorization Framework, and thus reflect the interconnection service provider’s concession of operation of a telecommunications network. These networks include:

(i) Fixed Telecommunications Network;

(ii) Mobile Telecommunications Network; and
(iii) International Telecommunications Network.

It should be noted that, where an interconnection service provider is a concessionaire for the operation of more than one such network types, each network is seen as distinct for the case of interconnection. Accordingly, in conformance to Section 25 (2)(d) of the Act, a interconnection service provider’s RIO must reflect parity in terms, conditions, tariffs and PoI’s as the concessionaire offers to its own associated or subsidiary networks, unless the Authority grants a written waiver of same in accordance with the Regulations.

4.3 Description of Service

The description of the Interconnection service shall include details specified in the Draft Standards and Guidelines. These requirements include:

- Responsibility of the party for the provision, management, maintenance, monitoring Quality of Service, and fault reporting of the Interconnection service;
- Specifications, protocols and standards supported of equipment and components used for facilitation of the Interconnection service;
- Responsibility of applicable charges for the implementation of the service including one off charges.
- Supply conditions must be stated as part of the service description and all technical specifications as well as operations and maintenance particulars must be detailed.
5. **MINIMUM NETWORK TECHNICAL SPECIFICATIONS REQUIREMENTS**

Interconnection between the Interconnection Provider’s fixed or mobile network and the Interconnecting Concessionaire’s network(s) will be achieved through one or more Interconnect Links. The actual Point of Interconnection shall be the location at which the network of the Interconnection service provider connects with the interconnecting concessionaire's network and shall be a physical point where the connection can be disconnected in order to conduct testing.

5.1 **Interconnection Links**

Other than ensuring that there is physical connection between networks and the effective routing of calls (and sessions) from one network to another, it is key that any interconnection service is of such call quality, in terms of call clarity, limited jitter and delay, to ensure that the end-to-end user experience is not compromised. In short, the quality of the interconnection service may prejudice the quality of the downstream service enjoyed by the end user.

Recognising this, the Authority has developed technical network quality of service standards with which wholesale services (including Interconnection services) should conform. These quality standards are outlined in detail in the Network Quality of Service Framework and draft Regulations.

The RIO should include the interconnection service provider’s assurances with respect to the quality of the service that is to be provided to the interconnecting party. These assurances should at least meet the minimum standard as defined in the above referenced Regulations.

5.2 **Points of Interconnection (PoIs)**

The Interconnection Provider must ensure, in addition to any general service schedules already provided, that:

(i) the physical locations of all Interconnect Switch Locations (ISLs); and

(ii) the physical location of all PoIs;

are clearly specified in the RIO. The Authority shall ensure that the physical addresses of the PoIs will remain confidential due to concerns about the security of infrastructure assets, and stakeholders shall contact the Interconnection provider directly if the specific physical addresses of the PoIs are so required.
Further, in accordance with Section 25 (2) (d) of the Act, concessionaires are required to provide elements of interconnection in such a manner so as to ensure that equal rates and quality are offered to all stakeholders who may wish to interconnect, and further, that such should be equivalent to the quality offered itself. A key design philosophy which underpins the standard of service of telecommunications networks is the use of redundancy in topology design to minimize the impact of any single point of failure on the overall service. The Authority believes that this philosophy should also be reflected in the overall design of an interconnection service provider’s solution to provide service to requesting parties.

In this regard, the Authority requires there to be at least two (2) distinct and separate points of interconnection which must be made available to the requesting concessionaire. These two (2) PoI’s shall be made readily available to all requesting parties, through identification in the RIO, and shall be established at the interconnection service provider’s own costs. While the Authority will not go so far at this time as requiring each POI to have the same installed capacity (referring to the transmission equipment and bandwidth available to provide the carriage of traffic) the interconnecting service provider is obliged to ensure that network failure at any one PoI does not significantly impact the quality of the interconnection service offered to requesting parties. Indeed, the interconnection service provider will be obliged to ensure that the net quality of service meets those standards defined by the Authority in its Network Quality of Service Regulations.

Further to Regulations 13 and 24 of the Interconnection Regulations, interconnection providers shall ensure that between these two (2) PoIs that there shall at any time be sufficient spare ports and capacity, equal to no less than 20% of its total installed and in use capacity, which is to be made available to facilitate timely interconnection to requesting parties. However, where a requesting party requires any capacity in excess of this amount, the interconnecting service provider may request that that cost for the purchase and installation of such additional capacity be borne by the requesting party, unless other agreements are made between the parties.

### 5.3 Provisioning, Testing and Commissioning of Interconnection Facilities

The draft Standard outlines the key service indicators as outlined in the Network Quality of Service Regulations which will be applicable for inclusion in the RIOs prepared by concessionaires.

All minimum requirements specified in the relevant section of the draft standards and guidelines shall be stated for the provisioning, testing and commissioning of facilities used for Interconnection purposes.
5.4 Network and Transmission Parameter Requirements for Interconnection

It is the responsibility of every Interconnection provider to ensure that its customer enjoys end-to-end Quality of Service irrespective of who he interconnects with. The interconnection provider therefore needs to negotiate acceptable performance levels needed to support end-to-end quality delivery of the service with his interconnecting partner.

It shall be the responsibility of each interconnecting party to ensure that his side of the interconnect point is operated in such a way as to maintain this minimum stipulated quality of service within the Authority’s Network Quality of Service Regulations, as well as, ensuring that their networks are configured such that Call Line Identification (CLI) information in its entirety is properly transmitted along with voice traffic between interconnecting parties.

5.5 Network Changes and Data amendments

In Interconnection, network changes may be required by one concessionaire that will consequently affect the other concessionaire. This includes changes to the network structure or operation as well as:

- Closing, replacing or relocating a switch in respect of which an interconnection link is connected;
- Modification of software configuration for components used in Interconnection such as the generally offered PoI;
- Decommissioning an interconnection link;
- Closing a PoI;
- Closing shared sites or facilities;
- De-activating Services.

Network changes may be:

1. Required by the Interconnection provider as part of Network development; or
2. Requested by the Interconnecting concessionaire.

Provisions shall be clearly stipulated in the Framework to reflect the above in terms of recoverable costs of modification, in accordance with Regulation 27 of the Interconnection Regulations.
6.  INTERCONNECTION CHARGES

The Interconnection provider shall ensure that the appropriate terms and conditions for Interconnection tariffs and are applied when providing interconnection for its own services or those of its affiliates, subsidiaries or partners as outlined in the RIO. All charges specified in the RIO shall be sufficiently unbundled to ensure that the Interconnecting concessionaire is not required to pay for services not related to the service requested. All Interconnection rates specified in the RIO shall be based on cost in accordance with a methodology defined by the Authority.

6.1  Why Cost-based?

International best practice is clear that interconnection charges should be cost-based. This principle is reflected in the domestic regulatory framework in the form of Interconnection Regulation 15, which requires that concessionaires set interconnection rates in accordance with the Authority’s ‘Costing Methodologies, models or formulae at the Authority may from time to time establish for the Telecommunications Sector’. Given the delay in the implementation of the LRAIC model, all interconnection charges outlined in the RIO should be derived in accordance with the Authority’s Costing Methodology. Furthermore, concessionaires must be able to demonstrate compliance with this requirement, particularly when asked to do so by the Authority pursuant to a request under Interconnection Regulation 15(3).

In this regard, the Authority does not intend to provide any guidance on the principle of symmetry or asymmetry in rates between interconnecting parties, as this should be subject to commercial negotiations.

6.2  Statutory Basis for oversight by the Authority

Notwithstanding the above, it may be necessary depending on prevailing market conditions, the Authority may need to intervene with price controls in interconnection markets. Such intervention would be based on Section 29(2) of the Act, which allow for the Authority to implement price regulation regimes where a concessionaire has a dominant position in the relevant market. The proposed mechanism for such intervention would be a combination of price caps and floors, which together form a regulated range for termination rates, in accordance with Section 29 (6) of the Act.
This approach is to be adopted under the premise that although interconnection services may be supplied on a non-exclusive basis in the relevant markets, each concessionaire is dominant in relation to the interconnection termination service on its own domestic network. This dominance is derived from the fact termination on one operator’s network is not an economic substitute for termination on another operator’s network.

In terms of the history of interconnection in the domestic market, the principle of presumed interconnection dominance was an important premise for the intervention by the Arbitration Panel convened to resolve the interconnection dispute between the then entrant Digicel and incumbent operator TSTT in 2006. The relevant excerpt from the Arbitration Panel’s decision is as follows:

“Considering mobile termination as a monopoly market, the panel interprets the approach to cost-based charging in the Act and the Concessions as originating from the expectation that there is likely to be such a lack of competitive effects on interconnection charges that it is necessary to mandate by law and regulation that they be based on costs, set pursuant to methodologies prescribed by the regulator. Indeed, unlike the approach to price regulation in section 29 of the Act, there is no reference to “dominance” when it comes to interconnection, presumably because both operators are expected to be effectively dominant in the termination market. Thus, both the incumbent TSTT’s Concession and the Concessions of the new entrants including Digicel contain the same section 14. The panel does not discount the possibility that a competitive wholesale market in interconnection may develop over time as new wholesalers enter the market. This may in time permit the manner in which interconnection charges are set to take into account the presence of competitive effects that go some way towards achieving the statutory requirement.

- Pg 21- 22 of Decision No. 2/2006 (16 August 2006), TATT 4/7/06/1

Furthermore, this principle is also reflected in the Authority’s Costing Methodology which states that “a concessionaire that provides interconnection service shall be considered dominant in providing termination services on its network” (pg 22, The Costing Methodology for the Telecommunications Sector, TATT 2/3/15).

The Authority’s intervention with price regulation regimes shall be limited in application to Type 1 Interconnection Services.
6.3 Proposed approach of the Authority

Concessionaires must hence ensure that interconnection charges, both as proposed in the RIO and as set out in any executed Interconnection Agreement, are based on cost and are compliant with the Authority’s Costing Methodology. However, despite recognizing its critical role in ensuring that interconnection charges do not reflect market inefficiencies and distortion, the Authority also acknowledges the principle that the final tariffs enshrined in the Agreement should, like most other considerations within the Interconnection Agreement, be subject to the deliberations of the parties during negotiations.

As such, the Authority proposes to, within these Draft Standards and Guidelines, propose a range of prices for interconnection services based on the application of the approved costing methodology. Once the proposed prices for these services are within these ranges, the Authority would defer objection or further investigation into the offered rates. Similarly, once the agreed rate within an Interconnection Agreement is within the range, the Authority shall not offer any objection or query on the tariffs within the Agreement and shall not initiate investigations into same.
7. Overview of the Standards and Guidelines.

Draft

Standards and Guidelines for the Development of Reference Interconnection Offers

Version 0.2

These Draft Standards and Guidelines for the Development of Reference Interconnection Offers are intended to serve as the standards and guidelines pursuant to Section 25 (2) (a) of the Telecommunications Act 2001, chap 47:31.
7.1 LEGAL FRAMEWORK FOR THE INTERCONNECTION AGREEMENT

The Concessionaire intending to prepare a Reference Interconnection Offer (RIO) shall ensure that the content of same is in conformance with all provisions in any future Interconnection Agreements made subsequent to an acceptance of an Interconnection request.

All other general terms and conditions shall be included in the Legal Framework of any future Interconnection Agreements and shall consist of but may not be limited to:

- Identification of contact person responsible for interconnection services;
- Provisions for review, duration and termination of Interconnection Agreements;
  - includes provisions for due notification of the Authority;
- Provisions for responsibilities of the parties;
  - includes non-use of commercially sensitive information for any purpose other than facilitating interconnection.
- Provisions for amendments to Interconnection Agreements
  - includes provisions for prior notification of the Authority;
- Provisions for Dispute Resolution;
  - reflects the jurisdiction of the Authority in Dispute Resolution;
- Provisions ensuring that all terms and conditions are non-discriminatory.
7.2 MINIMUM INTERCONNECTION SERVICES REQUIREMENTS

7.2.1 Interconnection Services Overview

Characteristics and basic principles for each Type of service to be offered for Interconnection shall be described in the RIO and must include as a minimum, details outlining:

1. General Service Information including but not limited to;
   (a) Name and Type of Interconnection Service

   1. Type 1 - Joining, Data and/or Voice Traffic Interconnection Service
   2. Type 2 – Support Services
   3. Type 3 – Enhanced Services*

   (b) Description of the service;

2. Type of network (Fixed, mobile or international) that the Interconnection service is to be provided on;

3. Functional schematic representing an overview of how the Interconnection will be achieved, including in said schematic the geographical location of all:
   (a) Interconnect Switch Locations (ISLs);
   (b) Points of Interconnection (POIs);
   (c) Specifications of all essential equipment, signaling protocols and standards supported which are to be used for interconnection of the service in question.
   (d) Network Link Capacity.

5. Assignment of responsibilities of both Interconnection provider and Interconnecting concessionaire with respect to the
   a) planning,
   b) providing,
   c) operating,
   d) optimizing; and
   e) maintenance

   of the main joining service;
6. Assignment of responsibility of BOTH Interconnection provider and Interconnecting concessionaire for the
   a. metering,
   b. billing,
   c. QoS monitoring,
   d. maintainability and
   e. management
   of the service described in (1).

*On Type 3 Services.*

As part of its obligations to be compliant to the Act and the Interconnection Regulation, the Interconnection Service Provider’s network shall be appropriately engineered to facilitate the following services:

- Carrier Selection and Pre-Selection; and
- Number Portability services.

Further, the Interconnection Service Provider’s RIO shall provide the following information on its own network to facilitate third party ready implementation of Type 3 Interconnection Services.

1. A description of the configuration of the switches and routers to enable Carrier Pre selection;
2. A description of how the relevant Interconnection Links shall be configured to facilitate the Number Portability Service;
3. A description of the Extranet Requirements, if any, to facilitate OSS interaction to support administrative implementation of Number Portability;
4. Customer Service Support Systems for Number Portability and appropriate protocols to efficiently operate same;

Adherence to Regulations 8 and 9 of the *Interconnection) Regulations, 2006* which treats with Facilitating Indirect Access and Number Portability, respectively, shall be clearly stipulated in the Legal Framework.
Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers

7.3 MINIMUM TECHNICAL NETWORK REQUIREMENTS

7.3.1 Interconnection Links

(a) The RIO shall, for each Interconnect Link, identify the type of connections to be established between the Interconnection Provider’s PoI and requesting party’s node. Details of how this shall be achieved shall also be provided;

(b) The RIO shall specify Interconnect Mode and Paths using either Customer Sited Interconnect or In-Span Interconnect.

7.3.2 Points of Interconnection (POIs)

(a) All PoIs shall be clearly defined in the RIO and the minimum requirements to be clearly stipulated in such, and shall include but is not limited to;

1. The Interconnection provider shall establish and identify at least two (2) PoIs which will be used for interconnection purposes;

2. The trunk and signaling capacity available at the PoIs specified in (1) to facilitate a new interconnection request including evidence that at least 20% of the total equipped POI capacity is shared between both PoIs at any given time;

3. The party responsible for establishing and maintaining the PoIs - its name and address;

4. The number of all PoIs, whether generally offered or otherwise, available or in use, as well as the number of ISLs of the Interconnection service provider shall be identified;

5. The geographical locations of all PoIs shall be stated;

6. The physical address of every PoI to be used in the interconnection with a requesting parties;

7. A list of any equipment that is necessary for effecting operation at the point of interconnection (PoI)

8. The number of spare, unused ports available and available trunking capacity;

9. The description of the physical interconnection facility employed at each PoI including:
Standards and Guidelines for Interconnection and the Development of Reference Interconnection Offers

- cable (type, gauge, etc),
- channel interface equipment (type, make, etc),
- air interface equipment (type, make, size).

(b) The complete description of all classes of POIs including transmission definitions, signaling type and direction of traffic across the PoI, Quality of Service and other significant parameters shall also be indicated in the RIO;

(c) The RIO shall be updated annually as well as when there is a material change and provisions for this shall be included in the Legal Framework;

7.3.3 Provisioning, Testing and Commissioning of Interconnection Facilities

The following minimum requirements are to be met:

(a) The RIO shall identify a main contact person who has been established for purposes of overseeing the entire Interconnection process;

(b) The RIO shall state the basis for which circuit provision shall be made and how long after commencement of the service the traffic measurement testing shall be taken;

(c) The RIO shall state:
   1) the transmission links and interface equipment proposed to be deployed,
   2) the desired quality of service across the PoI,
   3) ancillary services requirements, and
   4) technical information such as
      i. location of the PoIs,
      ii. type of signaling, and
      iii. any other technical information required to facilitate implementation of interconnection;

(d) The RIO shall include the provisions to be made for the request and if part or none of the requests can be facilitated, it must be justified by the Interconnection provider in the RIO;
7.3.4 Responsibility of Parties

The RIO shall contain information regarding:

(a) Contact details for the party responsible for providing, installing, testing, making operational and maintaining a given interconnection facility;

(b) Contact details for the party responsible for the operation and maintenance of all the standard PoIs;

(c) Mechanisms put in place by the responsible party, to ensure that network surveillance and monitoring is utilized to minimise any conditions from adversely affecting the interconnected networks and hence contribute to the integrity of the Interconnection link;

(d) The ordering periods for new Interconnect Links, Paths and PoIs;

(e) All electrical and functional characteristics of the Network Link shall be detailed and in accordance with relevant ITU-T Recommendations (ITU-T G.703);

(f) All operations and maintenance details of the Network Link shall be stated in the RIO which includes but are not limited to;

1. Operations and maintenance personnel contact details;

2. Indicative results from testing to ensure that the Network Link meets QoS levels as specified in the RIO and meets as a minimum, the ITU-T Recommendations relevant to same;

3. Evidence that mechanisms are put in place to ensure Health and Safety measures with regards to all testing, operations and maintenance are in accordance with the OSH Act 2004.

7.3.5 Network and Transmission Parameter Requirements for Interconnection

The RIO shall include the Service Provider’s offered quality of service with regard to the following key performance indicators, at a minimum:

a) Interconnect Link Availability

b) Interconnect Link Call Drop Rate;

c) Interconnect Link Answer Bid Ratio (ABR)- Peak;
d) Interconnect Grade of Service (GOS);
e) Interconnect Link Short Message Service (SMS) GOS;
f) Interconnection Link Restoration Time.

The quality of service offered with respect to the above indicators, or any others proposed by the Service Provider, shall at least meet the requirements for same as outlined in the draft Network Quality of Service Regulations. Where proposed service quality standards are not outlined in the Quality of Service Regulations, the Service Provider shall seek to, at a minimum meet the requirements for equivalent carrier services as recommended by the ITU-T.

Concessionaires should also ensure that their networks are so configured at the Point of Interconnection such that Call Line Identification (CLI) information is properly transmitted along with voice traffic between interconnecting parties.

7.3.6 Operations and Maintenance

a) All operations and maintenance activities shall be undertaken by the parties in accordance with an Operations Manual which shall be developed and submitted as part of the RIO;

b) The parties shall meet as frequently as may be necessary, to update the Operations Manual for the continued provision of services under the Interconnection Agreement;

c) The parties shall conduct their maintenance activities in respect of services in accordance with those specified in the submitted RIO;

d) The Operations Manual shall set out, among other issues:
   - Joint Network Planning;
   - Network monitoring and Management;
   - Fault management processes;
   - Maintenance Processes;
   - Equipment, circuit and systems testing procedures;
   - Interconnection traffic management
   - Forecasting;
   - Procedures for staff access to co-location sites and shared sites and facilities; and
   - Forms and other procedures necessary to support efficient operation between parties.
7.4 INTERCONNECTION CHARGES

(a) The RIO shall include all relevant charges that will be due from the requesting party including:
   
   o The Initial Access charges for interconnection at the established PoI’s; and
   
   o The Tariff Structure of usage charges for each interconnection service offered.

(b) The Initial Access charges shall include appropriate administrative charges associated with the provision of service, determined in accordance with the Authority’s Costing Methodology. These services should include at a minimum

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<tr>
<th>Interconnection Service</th>
<th>Tariff(^1) Ceiling</th>
<th>Tariff(^1) Floor</th>
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<tbody>
<tr>
<td><strong>Initial Access Services</strong></td>
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<td>1. Interconnection Links (defined bandwidth/ capacity)</td>
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<td>2. Joining Services</td>
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The Initial Access Charge shall not include the cost of additional equipment to be installed for the interconnection service provider, where the request is within the capacity available at the generally available PoIs.

(c) The Tariff structure shall specify tariff levels for all the services offered and shall be included in the RIO;

(d) Such a structure as specified in (c) shall be in accordance with current interconnection tariffs. The tariffs identified in the RIO shall relate to the year that the RIO was published.

All usage charges shall be provided in the RIO for Type 1 Interconnection Services which include but are not limited to;
### Interconnection Service

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<tr>
<th>Interconnection Service</th>
<th>Tariff Ceiling</th>
<th>Tariff Floor</th>
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<tr>
<td><strong>PSTN Terminating Service</strong></td>
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<tr>
<td>1. Domestic fixed line termination</td>
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<td>2. International call termination</td>
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<td>3. Transit between domestic operators</td>
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<td>6. 900 services</td>
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<td>7. National Toll-free Access Services</td>
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<td>8. International Toll-free Access services</td>
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<tr>
<td><strong>PLMN Terminating Access Service</strong></td>
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<tr>
<td>1. Domestic Mobile call termination</td>
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<td>2. International Mobile termination</td>
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<tr>
<td><strong>SMS Termination</strong></td>
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1. The Authority shall derive the tariff ceilings and floors above in accordance with its Costing Methodology for the Telecommunications Sector.

(e) All **usage charges** shall be provided in the RIO for **Support Services** which include but are not limited to:

- *Directory Enquiry Services, both national and international*
- *Emergency numbers*
- *Operator Assistance Services*

(f) All **usage charges** shall be provided in the RIO for **Enhanced Services** which include:

- *Carrier Selection and Carrier Pre-selection*
- *Number Portability*
1. Telecommunications Authority of Trinidad and Tobago (TATT). “Telecommunications Act, Chap 47:31, Laws of Trinidad and Tobago.” tatt.org.tt. 


3. Telecommunications Authority of Trinidad and Tobago (TATT). “Draft Network Quality of Service Policy, Indicators and Guidelines, 2009.” tatt.org.tt. 


5. Telecommunications Authority of Trinidad and Tobago (TATT). “Draft Implementation Plan on Number Portability for the Republic of Trinidad & Tobago.” tatt.org.tt. 


