Draft EAC Interconnection Regs+Explanatory Note+ RIO



**East African Community**

**E****AC Regulations for Cross-border Interconnection**

[insert date]

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Preamble

**WHEREAS** The Republic of Burundi, the Republic of Kenya, the Republic of Rwanda, the Republic of South Sudan, the Republic of Uganda, and the United Republic of Tanzania (hereinafter referred to as “the Partner States’’), are Parties to the Treaty for the Establishment of the East African Community (hereinafter referred to as “the Treaty”);

**AND WHEREAS** in their Addis Ababa declaration on information and communication technologies in Africa, The Heads of State and Government of the African Union, meeting in the Fourteenth Ordinary Session of the African Union Assembly on 31st January 2010, undertook to strengthen national programs and regional cooperation for the development and interconnection of broadband infrastructures and the deployment of Regional Internet Exchange Points (RIXP);

**AND WHEREAS** the Ministers responsible for East African Community affairs of each Partner State (hereinafter referred to as “the Council”), signed and approved the East African Community Protocol on Information and Communications Technology Networks (hereinafter referred to as “the Protocol”) in Kigali, Rwanda on 23rd August 2013, with the objective of promoting the availability, affordability and quality of information and communications technology within the Community;

**AND WHEREAS** under the provisions of subparagraph 2(a) of Article 4 of the Protocol, the Partner States shall promote cross-border interconnection and interoperability of networks;

**AND WHEREAS** under the provisions of subparagraph (a) of Article 6 of the Protocol, in the implementation of this Protocol, the Partner States undertake to promote the achievement of universal access, especially the linking of islands and landlocked states;

**AND WHEREAS** under the provisions of subparagraph (b) of Article 6 of the Protocol, in the implementation of this Protocol, the Partner States undertake to ensure security and quality of communications;

**AND WHEREAS** under the provisions of Article 9 of the Protocol, the Council shall from time to time make regulations, issue directives and make decisions as may be necessary for the effective implementation of the Protocol;

**AND WHEREAS:**

1. under the provisions of subparagraph (b) of Article 99 of the Treaty, the Partner States shall improve and maintain inter-connectivity and modernize equipment to meet the common standards required for efficient telecommunications traffic within the Community;
2. under the provisions of subparagraph (c) of Article 99 of the Treaty, the Partner States shall harmonize and apply non-discriminatory tariffs among themselves and where possible, agree on preferential tariff treatment applicable within the Community;

**AND WHEREAS:**

1. under the provisions of paragraph 1 of Article 14 of the Treaty, the Council shall be the policy organ of the Community;
2. under the provisions of subparagraph 3(d) of Article 14 of the Treaty, for purposes of paragraph 1 of this Article, the Council shall make regulations, issue directives, take decisions, make recommendations and give opinions in accordance with the provisions of the Treaty;
3. under the provisions of Article 16 of the Treaty, subject to the provisions of the Treaty, the regulations, directives and decisions of the Council taken or given in pursuance of the provisions of the Treaty shall be binding on the Partner States, on all organs and institutions of the Community other than the Summit, the Court and the Assembly within their jurisdictions, and on those to whom they may under the Treaty be addressed;

**RECALLING** that the Program on Infrastructure Development in Africa (PIDA) has further highlighted in its priority action plan, the importance of establishing Internet Exchange Points (IXPs);

**NOTING** that service providers in the EAC region pay transit providers to exchange intra-regional traffic. This is both a costly and inefficient way of handling intra-regional Internet traffic;

**CONSIDERING** that the African Union Commission (AUC) signed an agreement with the Lead Financier (Luxembourg Agency For Development and Cooperation) for the implementation of the African Internet Exchange System project with funds from the EU- Africa Infrastructure Trust Fund and the Government of Luxembourg;

**CONSIDERING FURTHER** that the aim of AXIS Project is to support the establishment of National IXPs, RIXPs and Regional Internet Carriers (RICs) to promote the exchange of intra-Africa internet traffic within the continent;

**NOTING** that one of the planned activities of the project is the development of Regional Interconnection Policies and Regulations;

**CONSCIOUS** of their individual obligations and commitments under the Treaty and under other regional and international agreements;

**RECALLING** the objectives of the Community to develop policies and programs aimed at widening and deepening cooperation among the Partner States in the economic and social fields;

**AGREE AS FOLLOWS:**

Citation

1. **Citation**
   1. These Regulations may be cited as the East African Community Interconnections Regulations, 2017.
   2. These Regulations shall commence on a date to be appointed by the Council and different dates may be appointed for different parts of the Regulations.

Interpretation/Definitions

1. **Interpretation**

In these Regulations, unless the context otherwise requires—

**“Community”** means the East African Community established by Article 2 of the Treaty;

**“Council”** means the Council of Ministers of the Community established by Article 9 of the Treaty;

**“Cross-Border Broadband Interconnection”** means the Interconnection between broadband networks operators domiciled in two different Partner States;

**“Fiber Optic Networks”** means ICT Networks consisting of optical fiber links operated for the primary purpose of carrying packet-based traffic including Internet;

**“Information and Communications Technology (ICT) Networks”** has the meaning established in the Protocol;

**“Interconnect Service Provider”** means the Service Provider whose network is providing the Interconnection;

**“Interconnecting Service Provider”** means the Service Provider whose network is seeking or requesting to connect to the network of the Service Provider providing the Interconnection;

**“Interconnection”** means the physical and logical linking of ICT Networks used by different Parties in order to allow the users of one Party to communicate with users of another Party, or to access the facilities and/or services of another Party.

**“Reference Interconnection Offer (RIO)”** means a document setting out the terms on which an Interconnect Service Provider proposes to offer interconnection to an Interconnecting Service Provider;

**“Transit Provider”** means an Interconnect Service Provider who carries the traffic of the Interconnecting Service Provider to and/or from third parties;

**“National Communications Regulatory Authority (NCRA)”** means the regulatory authority in a Partner State responsible for oversight and approval of network interconnections;

**“Open Access”** has the meaning established in the Protocol;

**“Partner States”** means the Republic of Burundi, the Republic of Kenya, the Republic of Rwanda, the Republic of South Sudan, The United Republic of Tanzania, the Republic of Uganda, and any other country granted membership to the Community under Article 3 of the Treaty;

**“Peer”** means a network which exchanges Internet traffic with another through a peering arrangement.

**“Peering”** means exchanging Internet traffic with a peer network. It allows the peers to carry traffic from their respective customers, but does not involve carrying traffic to third parties. Peering could be settlement free or paid;

**“Protocol”** means the East African Community Protocol on Information and Communications Technology Networks signed on 23rd August 2013 in Kigali, Rwanda;

**“Requested Party”** means the Service Provider who is requested the Interconnection;

**“Requesting Party”** means the Service Provider requesting the Interconnection;

**“Service Provider”** means the provider of Information and Communications Technology services to the public or to other service providers;

**“Transit Service”** means a service where one network operator pays another for carrying its traffic and accessing the global Internet. It includes the obligation to carry traffic to third parties;

**“Treaty”** means the Treaty for the Establishment of the East African Community and any annexes and protocols thereto;

Objective and Scope

1. **Objective**

The objective of these Regulations is to provide National Communications Regulatory Authorities in Partner States a model policy and regulatory framework for Interconnection.

1. **Purpose of the Regulations**
   1. To ensure that all Service Providers are treated fairly and in a non-discriminatory manner with respect to the provision of Interconnection services;
   2. To ensure good practice with respect to Interconnection services between Service Providers and to promote the provision of high quality services in Partner States.
2. **Scope**
   1. These Regulations govern the provision of Interconnection services which may include but not be limited to:
   * Paid peering,
   * IP Transit;
   * Fiber optics digital transport services like PDH, SDH, Sonet, DWDM, OTN and cross-border connection;
   * Collocation services; and
   * Capacity Leasing.
   1. The Regulations also address the development and publication of an IP Reference Interconnection Offer (RIO) by Dominant Service Providers.
3. **Exclusions**
   1. Settlement free peering, whether public or private, is not included within the scope of these Regulations.
   2. These Regulations do not address the interconnection to submarine cable landing stations, either physical or virtual, which shall be treated in accordance to each Partner State’s laws and regulations.

Policy Framework for Interconnection

1. **Principles and Obligations Applicable to All Service Providers**
   1. All Service Providers, if so requested in writing by another Service Provider, whether domiciled in the same country or not, must enter into good faith negotiations to complete Interconnection agreements. They must meet all reasonable requests for interconnection services and adhere to non-discrimination between services they provide to themselves and those they provide to others.
   2. It is obligatory on every Service Provider to offer and receive interconnection services under reasonable terms and conditions and in a timely fashion.
   3. Interconnection procedures and arrangements shall be transparent, fair and non- discriminatory.
2. **Principles and Obligations Applicable to Service Providers (SPs)**

In addition, the following principles and obligations apply to Service Providers:

* 1. Interconnection service and setup charges shall be transparent, reasonable and cost-oriented.
  2. Standard terms and procedures for Interconnection services shall be published in a Reference Interconnection Offer (RIO).

1. **Confidentiality**
   1. A party to an Interconnection agreement may, before the filing of the agreement with the NCRA, mark provisions containing trade or operating secrets and the party shall additionally submit to the NCRA for review a modified version of the agreement which does not, in that party's view, disclose the trade or operating secrets.
   2. Where the NCRA considers the marking unjustified, it shall consult with the respective Service Provider prior to making a decision to allow third parties to inspect the agreements in whole or in part and may subsequently restrict inspection to the modified version of the Interconnection agreement.
2. **Non-discrimination and Transparency**

An interconnect Service Provider shall provide Interconnection on a non-discriminatory basis and ensure that–

* + 1. it provides facilities, services and information under the same conditions and in the same quality that it affords to itself, subsidiaries, affiliates, or other similarly situated Service Providers; and
    2. it avails to Interconnecting Service Providers all necessary information and specifications related to Interconnection.

1. **Quality of Service**

Quality of Service in cross-border interconnections shall be based on internationally accepted standards, with the exception of specific QoS levels for some types of traffic specified in the Interconnection agreement

Interconnection Procedure

1. **Procedures for Interconnection**
   1. A Requested Party after receiving a written request for Interconnection Services shall initiate good faith negotiations with the Requesting Party within a reasonable timeframe, and shall provide a written offer with the terms and conditions for the requested services within 30 days of receiving such written request.
   2. If parties fail to agree on terms of Interconnection within a reasonable period, a party may request the NCRA to determine the terms of interconnection in accordance with these regulations.
   3. A Requested Party in respect of any services for Interconnection must allow such services at any technically and economically feasible point within its network.
   4. All Service Providers must provide reasonable notice to its interconnected Service Providers of changes affecting the transmitting and routing of Internet traffic using its facilities or networks, as well as, of any other changes that affect the interoperability of those facilities and networks.
   5. All Service Providers in the relevant Interconnection services market, shall furnish a copy of all Interconnection service agreements to their respective NCRA:
      1. within 15 days from the date of commencement of these Regulations, in the case of agreements concluded before the commencement of these Regulations;
      2. within 15 days from the execution of such agreements, in the case of agreements executed after the commencement of these Regulations.
   6. If an agreement by a Service Provider in the Interconnection market, in the opinion of the NCRA, has the effect of impairing competition or the interoperability of the networks of different Service Providers, the NCRA may impose obligations on the Service Provider to remedy such impairment.

Reference Interconnection Offer

1. **Purpose of the Reference Interconnection Offer (RIO) [INSERTION]**

The purpose of the RIO is to provide the basis for negotiation of Interconnection agreements by defining a standard set of commercial, technical and operational conditions for the supply of Interconnection services.

1. **Requirement to provide a Reference Interconnection Offer**
   1. Upon request by the NCRA, a Service Provider shall furnish a copy of its RIO within 15 days of such request.
   2. At the request of any party requesting Interconnection, a Dominant Service Provider shall furnish a copy of an RIO as the basis for negotiations on the terms and conditions of Interconnection within 30 days of receiving a written request.
   3. The respective NCRA may make such RIO public through its website or any other means;
   4. Subject to a regulatory proceeding, including public consultation, the respective NCRA may require the non-compliant Service Provider to effect changes to its RIO.
2. **Amendment of RIO**

Where a decision arising from a dispute resolution process or a regulatory proceeding modifies the terms and conditions on which Interconnection shall be offered, a Service Provider shall within 30 days of notice from the NCRA, amend its RIO to comply with the decision and submit a copy of the amended RIO to the corresponding NCRA.

1. **Unbundling**

The RIO shall be sufficiently unbundled to ensure that the Interconnecting Service Providers do not pay for services or facilities which are not necessary and shall contain a description of the components of the offer, associated terms and conditions, including the structure and level of prices.

Operational Processes for Cross-Border Interconnections

1. **Provisioning Processes**
   1. The RIO shall fully specify the provisioning processes for the interconnection services to be provided to the other Service Providers including but not limited to–
      1. network planning;
      2. traffic forecasts;
      3. ordering of interconnection services and lead times;
      4. implementation.
2. **Network Planning** 
   1. A Service Provider shall specify the network planning process in a RIO including but not limited to–
      1. planning of new interconnection links;
      2. removal of interconnection links;
      3. interconnection capacity forecasts;
      4. transport network interconnection.
   2. Service Providers are required to exchange forecast information to ensure sufficient capacity is available when needed.
3. **Traffic Forecasts** 
   1. Service Providers requesting or using Interconnection services shall provide a rolling two-year forecast of traffic over each Interconnection link. The forecast shall be only related to the traffic the requesting Service Provider is responsible for. The rolling forecast shall be updated every six months.
   2. The RIO shall identify the detailed requirements for the provision of traffic forecasts.
4. **Ordering Procedures** 
   1. A RIO shall provide detailed procedures for the ordering of Interconnection services.
   2. A Service Provider shall respond within one calendar month to a request for Interconnection services indicating acceptance or rejection.
   3. Where the request is not accepted, a written response, indicating the reasons as well as an appropriate alternative proposal, shall be provided to the Service Provider making the request and a copy of the response provided to both NCRAs.
5. **Lead Times**

A Service Provider shall identify in its RIO the expected lead times associated with the ordering of cross-border Interconnection services.

1. **Service Level Agreement**

An RIO must include a Service Level Agreement which describes the characteristics of the Interconnection services, the service level obligations and compensation details for failure to meet these obligations.

* + 1. The Service Level Agreement shall include–
       1. service configuration and technical characteristics;
       2. operational and maintenance conditions and associated performance measures such as order lead time, network availability and service restoration time;
       3. Quality of Service indicators and grade of service measures when specified in the cross-border Interconnection agreement; Such indicators shall include, but are not limited to those specified in the regulations of the NCRA on quality of service; and
       4. charges and penalties for non-compliance with service level objectives.
    2. Both parties shall be responsible for measuring and monitoring the quality of service for the cross-border Interconnection services.

Interconnection Agreements

1. **Interconnection Agreements**
   1. Service Providers in the relevant cross-border Interconnection services shall negotiate the terms and conditions for Interconnection services based on its RIO.
   2. The Interconnection agreement shall comply with the following principles–
      1. fairness;
      2. transparency;
      3. non-discrimination;
      4. cost-based;
      5. access to cross-border interconnection information; and
      6. confidentiality.
   3. At the written request of the respective NCRA, Interconnect Service Providers shall furnish a copy of their executed cross-border Interconnection service agreements within 15 days of such request [INSERTION]
2. **Interconnection Agreement to be Consistent with RIO**

Service Providers shall ensure that provisions in their cross-border Interconnection agreements do not contradict provisions in its RIO.

1. **Interconnection Agreement to Stipulate Time for Interconnection**
   1. Every cross-border nInterconnection agreement shall stipulate a period not exceeding twenty-eight days within which cross-border Interconnection shall be effected.
   2. Notwithstanding subsection (1), the NCRA may, upon written application of a Service Provider, extend the period referred to in subsection (1).

Dispute Resolution

1. **Request for Consultation and Guidance**

Where a dispute arises between Service Providers with respect to cross-border Interconnection, the matter may be referred to both NCRAs for consultation and guidance, on the agreement of both parties, prior to either party submitting the matter to the NCRAs as a dispute.

1. **Referral of Dispute in Accordance with Dispute Resolution Procedures**

Save as provided in section 26, every dispute regarding cross-border Interconnection shall be submitted to the NCRA of the Requested Party’s country for resolution in accordance with the dispute resolution process established by said NCRA.

Standards, Interoperability and Network Changes

1. **Technical Standards and Interoperability**
   1. The International Telecommunications Union Technical Standards (ITU-T) and any other standards recognized by the NCRA are to be employed for the purposes of these Regulations.
   2. An Interconnect Service Provider shall ensure that a service passing through its network is delivered at the level of quality prescribed in the Interconnection agreement.
   3. In order to maintain interoperability, an Interconnect Service Provider shall inform Interconnecting Service Providers of any planned change in network capacity, technology, structure and configuration, and provide details relating to any change in the Interconnect Service Provider’s network, including traffic forecast within a reasonable timeframe before effecting such changes.

Sharing Infrastructure and Essential Facilities

1. **Access to Infrastructure and Essential Facilities**
   1. A Service Provider shall lease any infrastructure and Essential Facilities to the Requesting Party or must allow the Requesting Party install ICT equipment on such infrastructure or to otherwise utilize such infrastructure: Provided that the Service Provider may refuse to make such infrastructure available if–
      1. in all the circumstances, the making available of such infrastructure will impose an unreasonable burden upon the Service Provider; or
      2. the making available of such infrastructure is likely to affect the service of the Service Provider detrimentally.
   2. The terms of cross-border interconnection shall not discriminate between the Service Provider’s own operations and those of the Requesting Party’s.
   3. Charges for cross-border interconnection services shall be transparent, reasonable and cost-based.
   4. Standard terms and procedures for access services shall be published in a Reference Interconnection Offer or Reference Access Offer when directed by the respective NCRA.
   5. Information received from the Requesting Parties shall be used by the Service Provider only for the purposes for which it was supplied and not disclosed to other parties to whom the information could provide a competitive advantage.
   6. The NCRA, from time to time may determine which Essential Facilities are required for cross- border interconnection.
   7. Service Providers with existing ICT facilities shall allow other Service Providers to collocate their ICT transmission systems at their ICT facilities, where such colocation is economically feasible and no major additional construction work is required.
   8. The accommodation of equipment required for interconnection services at sites at which colocation for access purposes is already established shall be permitted where technically feasible.

Technical Aspects of Interconnection

1. **The Physical Form of Interconnection**
   1. The Point of Interconnection (POI) is the physical or virtual point at which Service Providers connect their systems through interconnection links.
   2. The RIO of a Service Provider shall include–
      1. a list of locations offered for interconnection including maps to enable other Service Providers to make efficient choices on the selection of POIs;
      2. all relevant technical specifications and standards for each POI, including ancillary services, to provide all necessary information for technical network planning;
      3. procedures for establishing, relocating or removing a POI, in a Service Provider’s network; and
   3. A Service Provider shall provide other Service Providers with advance notice of any expected changes and to seek to minimize any adverse effect of these changes on the services provided.

Interconnection Information

1. **Access to Interconnection Information**
   1. To ensure transparency, the corresponding NCRAs shall–
      1. publish in their websites the RIO framework and any other relevant Cross-Border interconnection informationRIO;
   2. RIORefusal to provide information on a timely basis or provision of erroneous or incomplete information shall be sanctioned in accordance to the laws of each Partner State.

Institutional Framework for Interconnection

1. **Institutional Framework**

The institutional framework for Cross-Border Interconnection in the Community is composed of the following entities–

* + 1. the Council;
    2. the National Communications Regulatory Authorities (NCRAs) of each Partner State; and
    3. The East African Court of Justice

1. **The Council**

The Council is the primary institution regarding policy-making for Interconnection matters. It shall also have an oversight role regarding the implementation of the Interconnection Regulations. Pursuant to the Treaty, the Council shall have the following functions regarding facilitating Interconnections across Partner States:

* 1. Issue directives;
  2. Issue guidelines;
  3. Take decisions;
  4. Make recommendations; and
  5. Give opinions.

1. **The NCRAs**

The National Communications Regulatory Authorities (NCRAs) of each Partner State shall–

* + 1. have the responsibility of implementing these Regulations for Interconnection within their respective jurisdictions;
    2. cooperate amongst themselves regarding specific cases of Cross-Border Interconnection requiring the intervention of NCRAs at both sides of the border separating the Partner States;
    3. exercise the functions and responsibilities set in accordance to these Regulations.

Miscellaneous Provisions

1. **Force of Law**

Subject to Article 16 of the Treaty and pursuant to the content of the East African Community Protocol on Information and Communications Technology Networks (the Protocol), these Regulations shall be binding on the Partner States and will take precedence over the local Law of Partner States.

1. **Settlement of Disputes**
   1. Any dispute between the Partner States arising from the interpretation or application of these Interconnection Regulations shall be settled in accordance with the provisions of the Treaty.
   2. In accordance with their Constitutions, national laws and administrative procedures and with the provisions of these Regulations, Partner States guarantee that:
      1. any person whose rights and liberties as recognized by these Regulations have been infringed upon, shall have the right to redress, even where this infringement has been committed by persons acting in their official capacities; and
      2. the competent judicial, administrative or legislative authority or any other competent authority, shall rule on the rights of the person who is seeking redress.
2. **Amendment of the Regulations**
   1. These Regulations may be amended by the Council in accordance with the provisions of Article 14 of the Treaty.
   2. Subject to the provisions of subsection (1), the Council may:
      1. review these Interconnection Regulations and make such modifications as it deems necessary;
      2. publish the amended Regulations in the Gazette for their entry into force.
3. **Entry into Force**

Pursuant to Article 14(5) of the Treaty, these Regulations shall come into force on the date of publication in the Gazette.

EAC Interconnection Regulations Explanatory Note

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**Ref: Contract** 07/EID/16



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June, 2017

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# 1. Introduction

This Explanatory Note accompanies the EAC Regulations for Cross-border Interconnection. It explains the rationale behind the regulations for Interconnection. In particular, it answers the following questions:

1. Why should there be cross border interconnections regulations in the EAC?
2. What are the broad policy issues that regulations seek to address?
3. Does the mandate to develop such regulations exist?
4. What are the principles, content and procedures for interconnection regulation?

# 2. The need for Interconnection Regulation

**Why should there be cross border interconnections regulations in the EAC?** In the EAC, even though market forces are expected to resolve issues of cross-border interconnections, the present legal/regulatory framework in partner States does not contemplate this type of interconnection. Hence, any problem that might surface regarding a cross-border interconnection issue (e.g. a small ISP in Rwanda trying to get transit cross-border interconnection from a large network in Tanzania but systematically being denied tariffs offered to Tanzanian ISPs) could not easily be resolved in sufficient time to avoid hurting financially the party requesting interconnection. The existence of a regulatory framework governing IP cross-border interconnection would entitle the NRAs to act timely and resolve issues swiftly without having to resource solely to good regulatory practices and criteria.

Interconnection is key to maintain healthy competition between service providers and lower the barriers to entry for new players. Traditionally, interconnection in telecommunications has been set at the telephone services level, with the establishment of links based on voice circuits and call termination. This scheme worked quite well for the telephony environment, but began to experience problems with the advent of new services and next generation networks that have different needs for interconnection. Internet interconnection has not been regulated (or has been lightly regulated) thus far. Most of Interconnections are agreed without regulatory intervention, and more than 99.9% are a little more than handshake agreements[[1]](#footnote-1).

There are startling differences between traditional PSTN and Internet Interconnection, as shown in Table 1. Interconnection in data networks is generally based on “peering” or transit agreements. PSTN interconnection is a physical circuit path connection, whereas Interconnection is a packet logical and functional interconnection. Problems experienced with interconnection in telecommunications such as refusal to interconnect, destination network monopoly and high interconnection charges are infrequent or rare in Internet interconnection.

Table Differences Between PSTN and Internet Interconnection  
*Source:* *Natalija Gelvanovska, John Alden, GSR Discussion Paper 2009*

| Feature | | PSTN-IC | Trends | Internet-IC |
| --- | --- | --- | --- | --- |
| Organizational and Regulatory Feature | | | | |
| Ex-ante regulation | prices/ interconnection obligations | | In PSTN: Consistent regulatory decisions leading to lower termination rates, and also a trend towards possible introduction of zero termination rates.  In the Internet: Spread of interconnection settlements based on Route Announcements. | None |
| Contractual relations | (Bill and Keep where applicable) Transit and Termination | | (Settlement free) peering, Transit |
| Charging principle | Principle of initiation (mutuality) | | In PSTN: In the long-term possible rejection of principle of initiation; | One pays all (one- sidedness) |
| Cost sharing principle for inter- connection capacity (PoI) | | In PSTN: Associated facilities tend to remain of critical importance. Cost sharing principle is remaining.  In the Internet: Consistent pressure toward possible introduction of cost sharing principle of IIC. Principle of one- sidedness may not be applicable in the future; |
| Main pricing factor | Distance | | In PSTN: change of pricing factor from distance to quality. | Quality |
| Main billing factor | Time | | In PSTN: Consistent trend towards change of billing factor from time-based to capacity-based. | Volume |
| Partners | Any-to-any Coequal | | Both types of relationships co-exist at the moment.  In PSTN: Some trends may be noted towards Hierarchical model (i.e. operators of international connectivity differentiate themselves, i.e. IPX providers) | Classes (tiers 1- 3); Hierarchical |
| Technical Features | | | | |
| QoS | | Fixed quality | In PSTN: more flexible QoS approach.  In the Internet: Internet Backbone providers implement QoS measures between their networks. Best effort and net neutrality to ensure quality. | QoS parameters at best |
| Standardization | | Physical (technology) | In PSTN: development of plain telephony networks is saturating main principles of IP-based networks. | Logical (protocols) |
| Conveyance | | Constant link | Packages |
| Routing | | Constant ways | Random |
| Levels | | Several network levels | One network level |
| Number of PoPs | | Depending on level | At least 1 |

We have been unable to identify any international example where cross-border Interconnection is subject to ex-ante regulation. In some domestic markets, rules have been adopted to prohibit or limit discrimination between operators through the use of technical traffic discrimination policies (known as “net neutrality”). Additionally, some countries have adopted rules that require domestic Internet services providers to peer at Internet exchange points (IXPs) to exchange domestic traffic. In the strictest examples, India and Kosovo adopted regulations that prohibit domestically bound Internet traffic from exiting the country.

In the EAC, the need for cross-border Interconnection arises when service providers in landlocked countries require access to submarine cable landing stations to access to the Internet backbone. As indicated in the baseline report, there is evidence that retail and wholesale prices in landlocked countries are higher than in coastal countries.[[2]](#footnote-2) If there is any operator with significant market power (i.e. dominant), then the regulations for Interconnection could be used to curtail or prevent any abuse of market power.

# 3. Policy Issues Addressed by the Regulations for Interconnection

**What are the broad policy issues that regulations seek to address?** The broad policy issues addressed by these Interconnection regulations are:

* Establishment of fair conditions between operators in different EAC states
* Securing reasonable terms and conditions for Internet service providers of landlocked states
* Minimize the effect of dominant operators in the supply chain
* Provide a framework for fair and reasonable conditions for Interconnection services:
  + Point-to-point leased capacity in Coastal-State
  + Colocation
  + IP Transit Service
* Lack of extra-territorial jurisdiction for a National Regulatory Agency

## Establishment of fair conditions between operators in different EAC states

One of the purposes of the regulations is to ensure that all Service Providers are treated fairly and in a non-discriminatory manner with respect to the provision of Interconnection services. As it was pointed out in the Baseline Report,[[3]](#footnote-3) a regulating country will not inherently have a policy interest in regulating in a manner that could impose additional costs on its own citizens for the benefit of non-citizens. The Interconnection regulations address this issue by providing a common regulatory framework for all EAC partner states. This by itself would prevent a regulator (National Communications Regulatory Authority or NCRA in the regulations) in a given country to act unfairly against a service provider of another EAC partner state. The uniform set of rules in the regulation should be conducive to a uniform and predictable behavior from regulators across the EAC partner states, preventing any occurrence of discrimination among service providers.

Another factor that serves to establish fair conditions between operators in different EAC partner states is the fact that all dominant service providers are required to submit a Reference Interconnection Offer (RIO) to the regulator, which will set the minimum conditions that it will be offering to interconnecting service providers, thus leveling the field for negotiations that will be conducted for interconnection agreements. The RIO is a public document by nature and it will help to eliminate the information asymmetry present in negotiations between a dominant service provider and an interconnection requesting party.

These regulations exclude the settlement-free peering agreements, which by their very nature are agreements between equals, with equal bargaining power on either side.

## Securing reasonable terms and conditions for Internet service providers of landlocked states

Operators in a country with access to submarine cable facilities have an inherent advantage over those service providers in landlocked countries. This, however, merits an assessment of market power for cross-border Interconnection services, which might not be a clear-cut situation taking into account all the variables involved in the relevant communications market, including: (a) market structure and the nature of competition in that, (b) barriers to entry and expansion; (c) countervailing power of buyers; and (d) the nature and effectiveness of economic regulation (if any).

For the avoidance of doubt, the regulations call for a finding of dominance which shall be undertaken by the NRA. The identification and determination of dominance in Interconnection is a precondition to imposing the development of a Reference Interconnection Offer. It is fair to indicate that the experience in identifying relevant markets spanning beyond one country’s border is not very vast, with the notable exception of the European Union, which considers broadband access across member countries as a single market.

## Minimize the effect of dominant operators in the supply chain

The diagram in Figure 1 represents in broad terms the services at issue for cross-border Interconnection between EAC member states. Starting from the left hand side, there is a point of presence (POP) of the Internet Service Provider (ISP) in the landlocked nation. This ISP will be a fixed or mobile network licensed in the landlocked nation or a service provider using the access of such a fixed or mobile network. The ISP self-provides or purchases domestic transit in-country to a point of interconnect (POI) with a network or networks in a coastal state, which transits the traffic from the subsea cable to and from the ISP. Although the regional Internet exchanges are growing in number and traffic volume, most Internet traffic is still (and will remain for the foreseeable future) directed to the Internet Backbone. Thus, the coastal state networks providing transit for Internet traffic will self-provide or purchase capacity on a subsea cable to route Internet traffic originating and terminating with the “landlocked” ISP. At the far-end, Internet traffic is exchanged within the Internet Backbone.

Figure Internet supply chain for an ISP in a landlocked nation



The specific actors and the services making up this supply chain vary from market to market and over time. For example, private operators are making efforts to form cross-border seamless broadband networks which would facilitate interconnection. However, for the foreseeable future the ISP in the landlocked nation must purchase a variety of transit service, subsea carriage and Internet access from one or more parties. By imposing a different set of obligations on dominant Interconnection providers, these regulations will impose constraints on the dominant operators to the benefit of the non-dominant ISPs, especially in landlocked countries.

## Provide a framework for fair and reasonable conditions for Interconnection services

These regulations provide a framework for fair, reasonable, transparent, non-discriminatory, and cost-based provision of Interconnection services. These services include but are not limited to:

1. Point-to-point leased capacity in Coastal-State: The purchase of point-to-point capacity in the network of a service provider licensed in a coastal state by a service provider licensed in landlocked country. This capacity may be purchased in the form of conditioned circuits or dark fiber products.
2. Colocation Service: The provision by lease of access to actual or virtual space located within a transit exchange or Submarine Cable Landing Station in a coastal country by a service provider licensed in a landlocked country. The Colocation Service product is necessary to operate telecommunications equipment for interconnection.
3. International IP Transit Service: The implementation, establishment and maintenance of a service whereby a service provider provides full connectivity to the Internet for upstream and downstream transmission of traffic on behalf of another service provider and end users including the obligation to carry traffic to third parties. It sells access to all destinations in its routing table. Transit is a wholesale product against a payment.

### Point-to-point leased capacity in Coastal-State

Point-to-point leased capacity service is defined as “a service whereby the Service Provider provides the Internet Connectivity to the Interconnecting Service Provider located in another State by establishing the connectivity to the international Internet hubs with which the Service Provider has operational/business agreements.” This is further subdivided into two subcategories, which are interconnection link services and Indefeasible Rights of Use or IRUs.

Interconnect Link Services differ from IRUs by the fact that capacity leasing is negotiated for relatively short terms (less than five years), whereas the latter are long-term commitments typically lasting 15 years or more. The regulations establish an obligation to reflect the conditions for interconnection provision in the Reference Interconnection Offer (RIO). In addition to the technical and operational characteristics of Interconnection service provisioning reflected in the regulations, pricing is also an important component of fair and reasonable service provisioning. The regulations establish the commercial terms for Interconnections, establishing amongst others that charges for Cross-Border Interconnection services provided by Dominant Service Providers shall be cost-based. The RIO will also provide for specific pricing for capacity and a discount structure that rewards long-term contracts with price reductions. Since this information is public, the requesting party entering into negotiations for Interconnection will have a prior knowledge of the price levels when negotiating with the requested party.

### Colocation

The regulations establish colocation as both an obligation that the requested party needs to fulfill and as a service provided to the requested party. By definition, colocation is a service where the provider holds a position of dominance and it requires explicit conditions in the RIO. A detailed definition of equipment colocation services for Interconnection is indicated as: “A service provided by a an Interconnect Service Provider offering equipment space and other facilities within a building suitable for hosting transmission equipment owned by the Interconnecting Service Provider for the sole purpose of Interconnection”.

Colocation is normally required in conjunction with other interconnection services, because the physical Point of Interconnection (PoI) is usually within the interconnect service provider premises. This means that peering interconnection services, even though they are excluded from the application of the regulations, would still resource to the sections applicable to colocation should it be required for the interconnection.

Pricing is also an important component of fair and reasonable service provisioning. Regarding Interconnection pricing, a RIO shall identify the tariff structure and level for all Cross-Border Interconnection services offered by a Dominant Service Provider. This section also establishes that charges shall be cost-based, non-discriminatory and might be calculated using long run incremental costing or benchmarking methods.

### IP Transit Service

The third type of Interconnection service is international IP transit service. Dominant operators are required to include the transit prices in their RIOs, which will identify the tariff structure and level for all Cross-Border Interconnection services offered by it. Transit prices are perhaps the most sensitive interconnection charges that could be applied by a transit service provider, due to the fact that most interconnecting service providers requiring transit services are small to medium ISPs (tiers 2 or 3) with little possibility of establishing peering agreements with the dominant operator.

## Lack of extra-territorial jurisdiction for a National Regulatory Agency

A regulator has national jurisdiction. It is legally restricted in the foregoing process to imposing restrictions on only those dominant operators licensed in that state. It does not have the extra-territorial jurisdiction to reach operators in other states. This, however, does not prevent the NCRA from regulating the most critical part of the cross-border Interconnection; mainly, the one closest to the submarine cable facilities, the interconnecting service provider through its NCRA will seek the participation of the NCRA of the interconnect service provide to instrument their interconnection.

Subject to the provisions of the Treaty for the Establishment of the EAC,[[4]](#footnote-4) by virtue of ARTICLE 16, the regulations, directives and decisions of the Council taken or given in pursuance of the provisions of the Treaty shall be binding on the Partner States. This is recognized by section 75, which states that the regulations “shall be binding on the Partner States and will take precedence over the local Law of Partner States.” Even though the lack of extra-territorial jurisdiction for a NCRA is not totally resolved by this prescription, the existence of a common legal/regulatory framework concerning Interconnection greatly facilitates the issue of contradicting points in local regulations among Partner States. In other words, all EAC member countries will share common practices, terminology and procedures contained in the same legal instruments. The move towards coherently simplifying and fostering the establishment of Interconnections in fair and equitable conditions for all service providers is attained by the adoption of the regulations.

Nonetheless, there is still an obstacle today for attaining a supranational legal/regulatory framework for Interconnections. The East African Community Protocol on Information and Communications Technology Networks has been signed by five member states but has not yet been ratified, as indicated in the next section of this explanatory note.

# 4. Existing Legal/Regulatory Framework

**Does the mandate to develop such regulations exist?** The EAC is ideally positioned to develop a common mandatory regulation for cross-border Interconnection that can be applied uniformly across the six member states (or five, should an exemption from its application be granted to South Sudan). The EAC treaty has already the mechanisms to make regulations enacted by the EAC Council legally binding to all Partner States. This will likely lead to far more effective and sustainable results than would be realized if the EAC were simply to issue a draft regulation on Interconnection requiring national administrations to adopt a rule developed on a regional basis but that will be interpreted applied separately by each Partner State.

Under Article 151 of the EAC Treaty, the member states may “conclude such Protocols as may be necessary in each area of cooperation which shall spell out the objectives and scope of, and institutional mechanisms for co-operation and integration.” Each Protocol shall be subject to signature and ratification by the parties. Once ratified, Annexes and Protocols are considered to form an integral part of the EAC Treaty. And, under Article 16 of the EAC Treaty, “the regulations, directives and decisions of the Council taken or given in pursuance of the provisions of this Treaty shall be binding on the Partner States, on all organs and institutions of the Community other than the Summit, the Court and the Assembly within their jurisdictions, and on those to whom they may under this Treaty be addressed.”

The pending protocol East African Community Protocol on Information and Communications Technology Networks (hereinafter referred to as “the Protocol”) was adopted by the member states under Articles 89, 99, and 151 of the EAC Treaty. It has been signed by five member states but has not yet been ratified. Once ratified, it would have sufficient legal authority, through the Council, to adopt a single binding regulation for Interconnection to apply across the EAC.

Under the provisions of subparagraph 2(a) of Article 4 of the Protocol, the Partner States shall promote cross-border interconnection and interoperability of networks. Under the provisions of subparagraph (a) of Article 6 of the Protocol, in the implementation of this Protocol, the Partner States undertake to promote the achievement of universal access, especially the linking of islands and landlocked states. Under the provisions of subparagraph (b) of Article 6 of the Protocol, in the implementation of this Protocol, the Partner States undertake to ensure security and quality of communications. Under the provisions of Article 9 of the Protocol, the Council shall from time to time make regulations, issue directives and make decisions as may be necessary for the effective implementation of the Protocol.

Should all five signatories within a reasonable timeframe not ratify the EAC Protocol on Information and Communications Technology Networks, an alternative exists: The EAC could issue a draft regulation on IP Internet interconnection requiring national administrations to adopt a rule developed on a regional basis, but that will be applied separately by each Partner State. Needless to say, the alternative is far less effective to achieve the desired results and its application would be subject to the local laws of the Partner States. However, a reasonable level of uniformity regarding the legal/regulatory framework for cross-border Interconnection could still be achieved that way, prompting regulators to align their procedures regarding approval of cross-border Interconnection agreements between service providers located in different countries.

# 5. Interconnection Regulations

**What are the principles, content and procedures for interconnection regulation?** The principles of the Interconnection Regulations are contained in the Policy Framework for Interconnection (sections 6 through 10 of the Interconnection Regulations). The content for interconnection regulation for EAC partner states is contained in the 60 sections that are contained in the proposed SADC Interconnection Regulations. The procedures for managing the interconnection regulations are in the Interconnection Procedure section (section (11)) with clear milestone dates on it.

A detailed explanation of the Interconnection Regulations follows:

## Preamble

The preamble expresses the rationale for developing the regulations making reference to the EAC legal framework sustaining them. The specific articles of the Treaty for the Establishment of the East African Community and the East African Community Protocol on Information and Communications Technology Networks are referenced in this preamble. The main purpose of this preamble is to make reference to the nature and support for the development of the regulations, which hinge upon the EAC Protocol on ICT Networks signed and approved in Kigali, Rwanda on 23rd August 2013, which is still pending ratification as indicated before. Another reference to the date of ratification by all the signatories might need to be added to make the preamble complete.

## Citation

This part briefly refers to the name to be used for the regulations, indicating also that its entry in form might be staggered by parts should the Council of Ministers of the Community decide to do so.

## Interpretation/Definitions

The nomenclature of the terms used throughout the regulations is defined in this section, some of them dating back to the Treaty and the Protocol. The terms defined here are used throughout the regulations and many of the definitions have been extracted from the ITU and from the standard terminology used in interconnection of ICT networks.

## Objective and Scope

The objective of these regulations is defined here, making a specific reference to the fact that interconnection is constrained to Fiber Optic Networks for Internet traffic. The purpose of the regulations is also stated, clearly expressing that all service providers are to be treated fairly and in a non-discriminatory manner.

The specific exclusions and focus of the regulations are stated in the scope section, specifying the subjects to be contained in them. It is important to recall that the focus of Interconnection in this case is that for optical fiber networks carrying Internet traffic. The underlying assumption is that other types of interconnection are already contained in other regulations (such as the local regulations of partner states) or do not require the development of a regulatory scheme such as the one developed for Internet traffic (cross-border or not). A specific exclusion is made for the case of submarine cable landing stations, which might present a direct conflict with local regulations if included within these regulations. Settlement-free Peering has also been excluded from the scope of these regulations, taking into account that imposing regulatory conditions (overregulating) it would have negative consequences in the market. This is an instance where opting out from regulating an aspect of interconnection might benefit the industry, taking into account that traditionally regulators around the world have refrained themselves from intervening in the process of peering agreement negotiations. Imposing regulatory conditions on peering agreements might be of little benefit, considering that parties engage voluntarily on them once they decide it is convenient to their interests. In other words, Internet peering is neither a right nor an obligation, it is a choice.

## Policy Framework for Interconnection

The policy framework for the regulations basically consist of the following parts:

* Principles and Obligations Applicable to All Service Providers
* Principles and Obligations Applicable to Dominant Service Providers (DSPs)
* Confidentiality
* Non-discrimination and Transparency
* Quality of Service

Every section details basic principles and policy that are applicable to the regulations. It is fair to state that most of the principles indicated here are standard for interconnection based on international best practices. The policy that stands out is that of Quality of Service (QoS), which states that connectivity shall be provided on best-effort, with the exception of specific QoS levels for some types of traffic specified in the Interconnection agreement. This specific characteristic of packet-based IP traffic has been taken into account here. However, the implication that different types of QoS levels for certain traffic might exist could present a problem with the Network Neutrality principles outlined in the regulations and should be treated with care.

## Interconnection Procedure

The interconnection procedure is described in detail in this section, outlining the steps and timeframes involved in setting-up an interconnection agreement for Internet interconnection. Even though the procedure might seem overly detailed and it might be argued that Interconnection establishment in ordinary situations is much simpler and less formal, Cross-Border Interconnection is not an ordinary situation. The fact that parties from different partner states are involved and jurisdictional problems that might arise from unclear procedures deserve close attention to detailed steps and timeframes.

## IP Reference Interconnection Offer

Under this title, the regulations describe the requirement to provide an IP Reference Interconnection Offer (IP-RIO), the submission process, its amendment and the requirement for publication. The IP-RIO is an important regulatory tool in that it provides publicity to the interconnection conditions offered by a dominant service provider and it constitutes the basis for the negotiation of an interconnection agreement. Small ISPs in partner states and new entrants are thus offered a level-playing field for interconnection negotiations. RIOs have traditionally been used in the telephony markets for decades, and its inclusion in the cross-border regulations is consistent with best international practices. A key element of its success is publicity, achieved in this case by the requirement that the regulator (NCRA) publish the IP RIOs on its website.

A reference to unbundling is made in this section to avoid the possibility of including in the interconnection agreement items such as network elements that are not necessary for the interconnection. To that effect, service description shall be readily available, including price levels.

## Interconnection Agreements

The Interconnection agreements characteristics are described in these sections. It starts by defining that Interconnection agreements shall be based on the IP-RIO. Inclusion of specific terms and conditions related to transparency, non-discrimination and network neutrality, amongst others, is compulsory. The timelines for submission of the interconnection agreement to the NCRA and its approval are included as well. It is noted, however, that most Interconnection and access agreements are normally materialized without many formalities and the introduction of detailed procedures might be considered burdensome and/or unnecessary by some service providers, particularly those holding a dominant position.

## Dispute Resolution

The dispute resolution process is handled by the NCRA, which would normally be the regulator of the requested party. Even though the jurisdictional problems mentioned in the previous sections of this explanatory note are still present and a local authority is still at charge of solving cross-border issues, the fact that a single common regulatory framework is used alleviates the situation. In reality, dispute resolution could be brought up to another level within the EAC such as the East African Court of Justice, it was not deemed necessary or useful to escalate cross-border Interconnection issues to that level. The dispute resolution procedure is fairly standard but it relies on the NCRA of the requested party to be fair and not inclined to favor any local operator in detriment of another located in a different partner state.

## Standards, Interoperability and Network Changes

A non-specific reference to applicable ITU standards is included, as well as any standards that might be imposed by the NCRA. It is acknowledged that placing a reference to local standards might be risky, particularly for the interconnecting operator across the border. However, optic fiber standards for network interconnection are well developed nowadays and the risk of placing the burden of standardization on the interconnecting operator is minimal. Network upgrading is also indicated in these regulations, making reference the obligation of providing the information to other operators well in advance.

## Sharing Infrastructure and Open Access

The rules for sharing infrastructure and facilities, based on the open access principles, are described in these sections in detail. Historically, one of the most complicated issues related to open access has been that of infrastructure sharing, particularly to incumbent operators who see this practice as an opportunity for others to obtain a “free ride”. The key to succeeding is to be able to set-up reasonable prices for the use of the infrastructure. The dominant players are required to share infrastructure and in some cases any service provider owning facilities which cannot be economically replicated. The terms for offering space sharing are indicated in the sections corresponding to colocation, as well as the pertinent part of the RIO.

Right of access to infrastructure for Interconnection is also addressed by means of a detailed description of the process required to obtain network access and facilities. It is up to the NCRA to facilitate and approve the particular conditions under which access is provided which will be up to the local open access policies implementation. An access agreement is mentioned separately in the regulations, which could be optionally be included as part of the interconnection agreement for approval purposes.

## Technical and Operational Terms for Interconnections

The technical and operational terms for Interconnections describe the categories of networks included in these regulations. It is restated that they cover just fiber optic networks for Internet traffic and not voice services. The distinction is important to avoid an unnecessary overlap with existing regulations for international voice services.

The list of services covered by the regulations is also included, which cover the following:

* 1. Point-to-point leased capacity–
     1. Interconnection link service;
     2. Indefeasible Rights of Use (IRUs)–
        1. Lit fiber;
        2. Dark fiber.
  2. Colocation;
  3. IP transit service.

The point-to-point leased capacity service is further subdivided into two categories, divided by the length of the lease. Short leases (less than 5 years) fall into the subcategory of link services, whereas long-term IRUs which might entail more commitment are included in another subcategory. It is noted that short leases for dark fiber are not included, due to the extreme difficulties in enforcing its implementation to fiber optic network owners. Nonetheless, the possibility of including them for short leases is still available. Colocation and IP transit services do not have subcategories specifically identified.

The procedures for additions or changes to the interconnection services provided are included to allow for upgrades and migration to more efficient technologies.

## Technical Aspects of Interconnection

The technical aspects of Interconnection are described to a great level of detail and provide the basis for the establishment of clear conditions into the Interconnection agreement. They are described in sections as follows:

* The Physical Form of Interconnection
* Route Capacity
* Route Dimensioning
* Route Diversity
* Synchronization
* Interface Standards and Interoperability
* Network Interoperability
* Addressing Elements

For the most part, the technical specifications are standard for interconnection of a packet-switched network. No specific references to technologies such as MPLS or Gigabit Ethernet are made, but it is assumed that operators will normally agree on technical aspects more easily than the commercial ones.

One aspect that should be highlighted as having a potential for difficulties regarding implementation of cross-border Interconnection is the physical site of the point of interconnection (PoI). The 3 possibilities mentioned in the regulations entail a PoI in either side of the border or one situated between both sites of the interconnecting parties. The issue of “no man’s land”[[5]](#footnote-5) surfaces in the third alternative, even though it has not been explicitly mentioned in the regulations. The solution to this issue is already addressed in the regulations by assigning total responsibility for overseeing the interconnection agreements to the NCRA of the interconnect party. By that token, jurisdictional issues should not affect the establishment of the interconnection at the physical level.

## Operational Processes for Interconnection

The operational process for Interconnection covers the procedural details for the establishment of such interconnections. The sections that compose them are:

* Provisioning Processes
* Network Planning
* Traffic Forecasts
* Colocation
* Ordering Procedures
* Lead Times
* Implementation
* Operations and Maintenance Processes
* Network Management
* Traffic Management
* Routing Management
* Fault Management
* Operational Testing
* Safety and System Protection
* Billing Processes
* Payment Process
* Billing Reconciliation

These operational processes are to be included in the IP-RIO according to the regulations. The level of detail in each particular section should be transcribed in the Interconnection agreement once it is negotiated between the parties. Often times the interconnection agreements for Internet traffic lack this level of detail, particularly those related to peering agreements. However, the complexity added by having the interconnection parties at both sides of the border, with one of them potentially having substantial market power, merits a detailed operational procedure, at least at an initial stage.

Another important aspect of the operational processes is the establishment of service level agreements, particularly for the escalation process in case of fault management. The regulations specify service level agreements explicitly including the essential parts of them. On the difficult issue of QoS for Internet traffic, the metrics for them will be defined based on factors such as outages, peak offered capacity and mean time to repair and network availability. They will be included in the Interconnection agreement including the penalties for non-compliance.

## Commercial Terms for Interconnection

Interconnection charges are usually the areas where operators spend most of the time negotiating an interconnection agreement. The principles for interconnection pricing are outlined under this title and the possibility of the regulator mandating the use of specific techniques such as long run incremental cost (LRIC) is included. The assumption is that the NCRAs in every partner country will already be familiar with pricing techniques and tariff determination, which holds true from our initial findings. However, the results might still differ from one NCRA to the next in the region, due to unavoidable conditions particular to every partner state or even to specific regions. One alternative would be to standardize the models used for tariff calculations as done by ECTEL for the Eastern Caribbean Countries, taking into account that the Council has the authority to prescribe guidelines on interconnection charging methodology. Cost studies are also mandatory for the establishment of Interconnection charges. This is important to avoid imposition of high interconnection charges by the dominant service provider, particularly for transit and colocation.

## Interconnection Information

One of the key elements for successful implementation of regulatory schemes for interconnection is publicity, which by itself ensures that all players will have a level-playing field regarding information. The regulations prescribe the need for making IP RIOs and interconnection agreements public and available to any interested party. Enforcement of these prescriptions will be left to the regulatory authorities of each partner state of the EAC.

## Declaration of Dominance

On the declaration of dominance issue, the regulations for Interconnection specify that it will be a responsibility of the NCRA in each partner state. Development of the methodology for determination of dominance in a particular market is already a responsibility of the regulator in most member countries and the NCRA is already familiar with the process. However, the issue of relevant market definition still represents a challenge when the Internet market is considered at a regional level. The European Community has already defined broadband as a single trans-European market, greatly simplifying the relevant market definition for cross-border Interconnection. Extending the geographic scope of the market to include other countries might prove quite challenging when the cross-border Internet market is analyzed.

## Institutional Framework for Interconnection

The institutional framework described in these sections take into account that the Council has already the power to approve and enact the regulations, which will hold true once the ratification process is finished. In the regulations the Council has the authorities conferred upon it by the Treaty, which are top-level responsibilities for the most part. The NCRAs of each partner state, on the other hand, are tasked with the implementation of these regulations for Interconnection within their respective jurisdictions. The obligation to cooperate amongst themselves is also stated, particularly in situations where the intervention of NCRAs at both sides of the border separating the Partner States might be required.

## Miscellaneous Provisions

The final provisions of these regulations allude to the force of law they have, subject to the content of the EAC Protocol on IT Networks. A standard formula for settlement of disputes within partner states of the EAC is also included, as well as the procedure for amendment of the regulations, which shall be carried out by the Council. The date of entrance into force is also included, which will be subject to the date of publication in the EAC Gazette.



**EAST AFRICAN COMMUNITY**

**CROSS-BORDER REFERENCE INTERCONNECTION OFFER**

**RIO**

**[insert date]**

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1. **FRAMEWORK**
   1. Pursuant to the East African Community Cross-Border Interconnections Regulations, 2017, (“the Regulations”) *{****Interconnect Service Provider Name****}* publishes this Reference Interconnection Offer (RIO) which provides a set of standard technical and commercial terms and conditions for Cross-Border Interconnection, and forms the basis for entering into an interconnection agreement between {***Interconnect Service Provider Name***} and any requesting Interconnecting Service Provider.
   2. {***Outline in detail the remaining legal/regulatory framework applicable to the Interconnection}***
2. **DEFINITIONS AND INTERPRETATION**
   1. In this RIO, except if the context requires otherwise, words and expressions are as defined in Annex A. Definitions and Glossary of Terms.
   2. Without prejudice to the rights of {***Interconnect Service Provider Name***}, in the event of conflict or ambiguity between the terms defined in the governing laws and regulations in respect of this RIO, the following order of precedence shall apply:
   3. The East African Community Protocol on Information and Communications Technology Networks
   4. The East African Community Regulations For Cross-Border Interconnection
   5. In the event of conflict or ambiguity between the provisions of the Regulations For Cross-border Interconnection, this RIO (including any attachments, appendices or annexes hereto) and any Interconnection Agreement entered into between {***Interconnect Service Provider Name***} and an Interconnecting Service Provider pursuant to negotiations based on this RIO, and subject to Clause 2.1 hereof, the following order of precedence shall apply:
3. The East African Community Regulations For Interconnection
4. This Reference Interconnection Offer
5. Any Interconnection Agreement pursuant to this RIO.
6. **NETWORK INTERCONNECTION**
   1. Interconnection between the {***Interconnect Service Provider Name***} Network and the Interconnecting Service Provider’s Network at each Point of Interconnection shall be achieved through one or more Interconnect Links. Each Interconnect Link shall create a connection between one of the {***Interconnect Service Provider Name***} Service Nodes and one of the Interconnecting Service Provider’s Service Nodes. Details of how this shall be achieved are set out in Annex C, Attachment 1. Distribution Frame Characteristics DDF and ODF. Interconnection is available at each of the Annex C Attachment 2. Points of Interconnection (POIs). The Interconnecting Service Provider may interconnect at any of these Interconnect Nodes subject to that Interconnect Link being bi-laterally agreed in the Network Plan. The technical standards supported by the {***Interconnect Service Provider Name***} Network for the purposes of Interconnection are set out in Annex C, Attachment 1. Distribution Frame Characteristics DDF and ODF as amended from time to time.
   2. On requesting Interconnection from {***Interconnect Service Provider Name***}, the {***Interconnecting Service Provider}*** shall:
      1. {***Include all relevant details of the network to be provided by the Requesting Party***}.
7. **INTERCONNECTION SERVICES AND TRAFFIC ENGINEERING**
   1. The Service Schedules (Annex G Service Scheduleshereto) provide details of the Interconnection Services offered by {***Interconnect Service Provider Name***}. These schedules include:
   2. A definition and description of each Interconnection Service offered by {***Interconnect Service Provider Name***}.
   3. A description of the terms and conditions under which the Interconnection Service is offered.
   4. Details of the charging structure and charging arrangements for each Interconnection Service.
8. **CHARGING FOR INTERCONNECTION SERVICES**
   1. The charging structure for each Interconnect Service is described in each service schedule as set out in Annex G Service Schedules hereto. The method of reviewing the charges given in the service schedules is described in Clause 21, Review, hereof.
   2. The charges for each Interconnection Service included in this RIO are set out in Annex F. Price List). {***Interconnect Service Provider Name***} may review and subject to the approval of {***NCRA Name***} amend the Price List from time to time.
   3. {***Describe other characteristics of cross-border interconnection charging, including frequencies for certain services***}
9. **TECHNICAL ASPECTS**
   1. Annex C Technical Information hereto contains information including the following:
   2. Technical recommendations that apply to cross-border interconnection
   3. Service configuration
   4. Technical characteristics
   5. Network interconnection links
   6. Transport network interconnection
   7. Interface standards
   8. Synchronization
   9. Safety standards
10. **OPERATIONAL ASPECTS**
    1. The operational aspects of Interconnection are contained within Annex H. Operations and Maintenance Manual) hereto. This includes information on the following:
    2. Transmission Management
    3. Interconnect Traffic Management
    4. Fault Management
    5. Interconnection operation and maintenance processes
    6. Site Access Procedure
    7. Network Planning
    8. Provisioning
11. **QUALITY OF SERVICE MEASURED**
    1. Consistent with the Regulations, {***Interconnect Service Provider Name***} shall provide Interconnect Services to another Service Provider at the same quality of service level as for similar services provided wholly within {***Interconnect Service Provider Name***}’s own Network.
    2. {***Interconnect Service Provider Name***} and the Interconnecting Service Provider shall use their reasonable endeavors to meet the target grade of service as specified in Annex I. Quality of Service Measures) hereto. For specific routes, and in accordance with the Regulations, the target grade of service for specific routes can be varied from the standard and agreed between {***Interconnect Service Provider Name***} and the Interconnecting Service Provider as set out in the Network Plan.
    3. Both {***Interconnect Service Provider Name***} and the Interconnecting Service Provider shall use reasonable endeavors to meet the targets set out in the Quality of Service Measures for all traffic carried on their networks.
12. **NETWORK DESIGN AND PLANNING**
    1. Network design and planning of the Interconnection shall be in accordance with the Network Plan as agreed between {***Interconnect Service Provider Name***} and the Interconnecting Service Provider. The Network Plan shall relate to the next two (2) years and be prepared jointly by both Parties.
    2. The Network Plan shall be reviewed and updated by {***Interconnect Service Provider Name***} and the Interconnecting Service Provider on a frequency to be agreed between both {***Interconnect Service Provider Name***} and the Interconnecting Service Provider by the Technical and Commercial review committee. In any case, the maximum period between reviews shall not exceed one (1) year and the revised plan agreed no later than the end of June of each year.
    3. In addition to the production of the Network Plan, {***Interconnect Service Provider Name***} and the Interconnecting Service Provider shall revise the forecasts for Interconnect Links as per the procedure set out in Annex E. Forecasting). The agreed forecast shall be considered as part of the Network Plan.
    4. The forecasts provided by {***Interconnect Service Provider Name***} and the Interconnecting Service Provider represent the good faith expectations of each party of the capacity requirements on the Interconnect Links.
    5. Both {***Interconnect Service Provider Name***} and the Interconnecting Service Provider reserve the right to recover, from the other party unavoidable costs incurred as a result of the shortfall in capacity ordered, according to the forecasting procedures set out in Annex E. Forecasting).
13. **NETWORK ALTERATION AND DATA MANAGEMENT AMENDMENTS**
    1. {***Describe the procedure for Network Alteration and Data Management Amendments.***}
14. **NEW SERVICES**
    1. {***Describe the procedure for addition of new services to the ones already provided.***}
15. **MANAGEMENT OF INTERCONNECTION**
    1. Interconnection will be managed through representatives from {***Interconnect Service Provider Name***} and the Interconnecting Service Provider.
    2. All planning activities will be coordinated in accordance with the procedures laid out in Annex D. Management of Interconnection.
    3. The commercial representatives will be responsible for the management and administration of all commercial aspects of Interconnection including but not limited to ordering processes and reconciliation of billing data in accordance with Clauses 7, Operational Aspects, and 13, Measurement of Traffic Volume, as well as Annex C (Technical Information).
16. **MEASUREMENTS OF TRAFFIC VOLUME**
    1. The responsibility for traffic volume measurements shall reside with the Billing Service Provider responsible for that particular Interconnect Service, and follow the best practices.
    2. Both {Interconnect Service Provider Name} and the Interconnecting Service Provider shall ensure that it records measurements of traffic volumes in sufficient detail to meet its obligations as outlined in Annex G Service Schedules attached hereto and Annex B. Billing Processes & Procedures.
17. **BILLING AND PAYMENT**
    1. {***Interconnect Service Provider Name***} and the Interconnecting Service Provider shall bill and reimburse the other in accordance with the procedures outlined in Annex B. Billing Processes & Procedures).
    2. {***Include details about billing and payment schedules.***}
18. **BANK GUARANTEE**
    1. {***Introduce details about the bank guarantee, if any.***}
19. **STAFF SAFETY AND NETWORK PROTECTION**
    1. Each Service Provider is responsible for the safe operation of its Network and shall take all reasonable and necessary steps in its operation and implementation of the Interconnection Agreement to ensure that its Network does not:
    2. Endanger the safety or health of employees, contractors, agents, customers of the other Service Provider or the general public, or
    3. Damage, interfere with or cause any deterioration in the operation of the other Service Provider’s Network.
    4. Neither {***Interconnect Service Provider Name***} nor the Interconnecting Service Provider shall connect or knowingly permit the connection to its Network of any equipment or device, including, but not limited to, any terminal equipment that is not approved by the {***NCRA Name***} in accordance with the Regulations.
20. **CONFIDENTIALITY AND DISCLOSURE**
    1. {***Outline the confidentiality and disclosure clauses in accordance to the local law.}***
21. **RESOLUTION OF DISPUTES**
    1. {***Describe the resolution of disputes procedure in accordance to the local law.***}
22. **BREACH, SUSPENSION AND TERMINATION**
    1. ***{Describe the breach, suspension and termination procedure in accordance to the local law.}***
23. **INTELLECTUAL PROPERTY RIGHTS**
    1. Except as expressly otherwise provided in the Interconnect Agreement, Intellectual Property Rights shall remain the property of the Service Provider creating or owning the same and nothing in this RIO or the Interconnect Agreement shall be deemed to confer any right or title whatsoever or license of the Intellectual Property Rights of one Service Provider to the other, and nothing in the Interconnect Agreement shall be deemed to restrict the rights of any Service Provider to own, use, enjoy, license, assign or transfer its own Intellectual Property.
24. **REVIEW**
    1. ***{Describe the conditions and the procedure to be followed for a review of the cross-border interconnection agreement in accordance to the local law.}***
25. **FORCE MAJEURE**
    1. ***{Describe the conditions under which force majeure might be invoked in accordance to the local law.}***
26. **LIMITATION OF LIABILITY**
    1. Subject to Clause 19, Breach, Suspension and Termination, if either Service Provider is in breach of any of its obligations under the Interconnection Agreement pursuant to this RIO (excluding obligations arising under this RIO to pay moneys), liability shall be limited to {***Partner State Currency Name and Amount***}) for any one event or series of connected events and {***Partner State Currency Name and Amount***} for all events (connected or unconnected) occurring in a Calendar Year.
27. **ASSIGNMENT OF RIGHTS AND OBLIGATIONS**
    1. Without prejudice to the License Agreement no rights, benefits or obligations made under the Interconnection Agreement may be assigned or transferred, in whole or in part, by a Service Provider without the prior written consent of the other Service Provider, such consent not to be unreasonably withheld.
28. **NOTICES**
    1. A notice shall be duly served if:
       1. delivered by hand, and exchanged for a signed receipt, at the time of actual delivery;
       2. sent by facsimile, upon its receipt being confirmed in the first instance by phone between nominated persons and followed in writing;
       3. sent by email {***In accordance with the provisions of the local law***};
       4. sent by recorded delivery service, two (2) business days after the day of dispatch.
    2. Except if otherwise specifically provided all notices and other communications relating to an acceptance of this RIO shall be in writing and shall be sent to the contact points and addresses as set out in the Interconnection Agreement.
29. **WAIVER**
    1. The waiver of any breach of, or failure to enforce, any term or condition resulting from an acceptance of this RIO shall not be construed as a waiver of any other term or condition of this RIO. No waiver shall be valid unless it is in writing and signed on behalf of the Service Provider making the waiver.
30. **SEVERABILITY**
    1. The invalidity, unenforceability of any provision in the Interconnect Agreement shall not affect the validity or enforceability of the remaining provisions.
31. **AMENDMENTS**
    1. Amendments and supplements to this RIO, including its Annexes, Appendices, Attachments and Service Schedules, shall be issued with not less than twenty eight (28) days notices subject to the approval of the {***NCRA Name***}.

1. **GOVERNING LAW**
   1. The interpretation, validity and performance of this RIO shall be governed in all respects by the East African Community Protocol on Information and Communications Technology Networks, the East African Community Regulations For Cross-border Interconnection, 2017, and the laws of the {***Partner State***} and {***Interconnect Service Provider Name***} and the Interconnecting Service Providers submit to the exclusive jurisdiction of the Courts of the {***Partner State***}.

Annex A. Definitions and Glossary of Terms

|  |  |
| --- | --- |
| Billing Information | Information provided by the Billing party, as set out in this Cross-Border RIO, in support of invoices issued by the Billing party to enable the billed party to validate the other’s invoice. |
| Billing Period | The stated interval at which billing takes place under this Cross-Border RIO |
| Cross-Border Interconnection | See Interconnection definition in Regulations. |
| Reference Interconnection Offer (RIO) | See definition in Regulations. |
| Data Management Amendment | Such data reconfiguration of the {***Interconnect Service Provider Name***} Network or the Interconnecting Service Provider Network as is necessary for the access, routing and charging. |
| Disclosing Service Provider | A Service provider disclosing information to the other Service Provider under the Cross-Border Interconnection Agreement. |
| Dispute | A disagreement between the two parties pursuant to the Cross-Border Interconnection Agreement (excluding breaches). |
| Dominant Service Provider | See definition in Regulations. |
| Due Date | The date which is (***insert number of calendar days***} after the Issue Date of an {***Interconnect Service Provider Name***} invoice, by which date payment is required. |
| Indefeasible Right of Use (IRU) | See definition in Regulations. |
| Interconnect Link | A link connecting a {***Interconnect Service Provider Name***} Interconnect node and another Party’s Interconnect Node passing through a Point of Interconnection. |
| Interconnect Node | A node where a router managing BGP allows the interconnection of the network. |
| Interconnect Path | The geographical/physical route and higher capacity systems used to provide the Interconnection Link(s) |
| Interconnect Usage Report | A report stating the actual level of utilization of the Interconnection Services provided under the Cross-Border Interconnection Agreement. |
| Interconnecting Service Provider | See definition in Regulations. |
| Interconnection Agreement | An agreement based on this RIO and entered into between {***Interconnect Service Provider Name***} and an Interconnecting Service Provider for the purposes of Interconnection. |
| Interconnection | See definition in Regulations. |
| Issue Date | The date on which an invoice is dated and dispatched by {***Interconnect Service Provider Name***} |
| IEEE | The Institute of Electric and Electronic Engineers which standardized Ethernet networks. |
| IETF | Internet Engineering task Force, open organization which defines for Internet standard operating protocols. |
| ITU-T | The Telecommunications Standards Bureau of the International Telecommunication Union. |
| National Communications Regulatory Authority (NCRA) | See definition in Regulations. |
| Network Alteration | A change (other than a Data Management Amendment) to a Party’s Network, which requires a change to be made to the other Party’s Network to allow the continuance of the conveyance of traffic across a Point of Interconnection pursuant to the Interconnection Agreement. |
| Network Plan | The specific agreement of the characteristics of reciprocal interconnection services between {***Interconnect Service Provider Name***} and an Interconnecting Service Provider including, but not limited to, target grade of service, traffic routing principles, capacity and traffic forecasts. |
| Network | The {***Interconnect Service Provider Name***} ICT Network or the Interconnecting Service Provider ICT Network as the case may be and/or indicated by the context. |
| Party | A party to the Cross-Border Interconnection Agreement. |
| Point of Interconnection (POI) | The physical point where the Interconnecting Service Provider connects to {***Interconnect Service Provider Name***} for the purpose of conveying traffic. |
| Requested Party | See definition in Regulations. |
| Requesting Party | See definition in Regulations. |
| Service Node | A primary node in the {***Interconnect Service Provider Name***} network which provides switching functions and produces records enabling billing functionality. |
| Service Provider | See definition in Regulations. |
| Technical Review Committee | The committee comprising technical and commercial representatives from {***Interconnect Service Provider Name***} and an Interconnecting Service Provider which will manage the interconnection arrangements. |
| Tier 1 Partner | Telecom company or internet service provider at the top level of the hierarchy of network providers, which connects to the rest of the internet though peering. |

Annex B. Billing Processes & Procedures

1. **CHARGEABLE SERVICES**
   1. **Definition of Services** 
      1. Chargeable services are those defined in Annex G *(Service Schedules)*.
      2. Delivered services, facilities and related services, installation and usage charges will be invoiced according to the principles and procedures defined in this Annex B. The value of charges raised will be calculated using the prevailing prices as defined in Annex F. Price Listand the formulae defined in this Annex B.
2. **BILLING**
   1. **Billing for non-usage based services**
      1. {***Interconnect Service Provider Name***} will invoice the Interconnecting Service Provider for non-usage based services including, but not limited to, Interconnection Link services, IRUs and Colocation and Infrastructure sharing as defined in the associated Services Schedules in Annex G.
   2. **Billing for Interconnection Link Services**
      1. {***Interconnect Service Provider Name***} will invoice the Interconnecting Service Provider for Interconnect Links and Transmission Links in accordance with the charging structure as outlined in Annex F. Price List).
      2. The commencement date of charging for rental of Interconnect Links and Transmission Links will be from the moment of handover for the services set out in Annex G, Schedule 1. Interconnection Link.
      3. {***Specify billing characteristics for link services***}
   3. **Billing for Indefeasible Rights of Use**
      1. {***Interconnect Service Provider Name***} will invoice the Interconnecting Service Provider for Indefeasible Rights of Use in accordance with the charging structure as outlined in Annex F. Price List.
      2. The commencement date of charging for rental of Indefeasible Rights of Use will be from the moment of handover for the services set out in Annex G, Schedule 2. Indefeasible Rights of Use (IRU).
      3. {***Specify billing characteristics for* Indefeasible Rights of Use**}
   4. **Billing for Colocation and Infrastructure Sharing**
      1. {***Interconnect Service Provider Name***} will invoice the Interconnecting Service Provider for Colocation and Infrastructure Sharing in accordance with the charging structure as outlined in Annex F. Price List.
      2. The commencement date of charging for rental of Colocation and Infrastructure Sharing will be from the moment of handover for the services set out in Annex G, Schedule 3. Interconnection Equipment Colocation Services.
      3. {***Specify billing characteristics for* Colocation and Infrastructure Sharing**}
   5. **Services Billing for Usage-Based Services**
      1. {***Interconnect Service Provider Name***} will invoice the Interconnecting Service Provider for usage-based services as defined in Annex G, Schedule 4. IP Transit according to the prices given in Annex F. Price List.
      2. Cancellation of any one-service instance will not affect continuation of accrual of charges for any other service(s).
   6. **{*Describe detailed billing information for usage based services, usage report and reconciliation procedure, and review of billing accuracy procedures*}**
3. **INVOICING** 
   1. **{*Describe billing period characteristics, invoice forms, payments and discrepancies procedures*}**
4. **DISPUTES** 
   * 1. Billing disputes between the Interconnecting Service Provider and {***Interconnect Service Provider Name***} will be resolved according to this Annex B in the first instance and in any event in accordance with Clause 18 of the Primary Document.
5. **INTERCONNECT REPORTS**

{Include sample tables for interconnect traffic report and measures}

Annex C, Attachment 1. Distribution Frame Characteristics DDF and ODF

1. DIGITAL DISTRIBUTION FRAME (DDF)
   1. {***Provide a general description of the digital distribution frame and technical requirements, including rack characteristics***}
2. OPTICAL DISTRIBUTION FRAME (ODF)
   1. {***Provide a general description of the optical distribution frame, arrangement and technical requirements including connector types***}

Annex C Attachment 2. Points of Interconnection (POIs)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| AS Identification No. | Location and Address | IGR | IPv4 IPv6 capable ? | Offered capacity | BGP |
|  |  |  |  | 100 Mbp/s  n10Gbit/s |  |

Cross Border Interconnection points (xBIP)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X Border ID | Location | Manhole /Shelter | Interconnection capacity | ODF | Colocation | With Country? |
| 1 |  |  | 1 Gbps  2.5 Gbps  10 Gbps |  |  |  |
| 2 |  |  |  |  |  |  |

Annex C, Attachment 3. Synchronization Scheme

1. GENERAL
   1. {***Insert the timing requirements and synchronization schemes used in the interconnection***}
2. DEFINITIONS & TERMINOLOGY

The following terms are used in this section to specify the requirements to network synchronization:

* 1. Network Synchronization

A generic concept that depicts the way of distributing a common time and/or frequency to all elements in a network.

* 1. Primary reference clock (PRC) for PDH, SDH transport.

A reference frequency standard that provides a timing signal of high long-term frequency stability complaint with Recommendation G.811 (stratum I) and with verification to Universal Time Coordinated (UTC), used for synchronization of transmission PDH and SDH.

Applicable recommendations are: G.812, G.813

* 1. Network Timing Protocol Stratum Clock 0

For synchronization of the servers of the Internet network, time synchronization “Network Time Protocol” will be provided by the Providing Internet Service to synchronize Provided Internet Service client, according RFC 1305 v3, v4 used.

* 1. Global Positioning System (GPS)

System using number of Satellites circling the earth, used to derive a highly accurate timing source of PRC quality.

1. SYNCHRONIZATION EQUIPMENT
   1. {***Specify characteristics of primary reference clock, stratum clock, standby and slave clocks***}
2. TIMING INTERFACE
   1. {***Provide details about the timing input interface***}
3. NETWORK REQUIREMENT
   1. {***Describe the interconnection for PDH, SDH equipment, timing mode and management system***}

Annex C, Attachment 4. Environmental & Power Requirements for Colocation

1. GENERAL
   1. {***Describe the standards and test procedures to be used for environmental and power requirements***}
2. CONSTRUCTION REQUIREMENTS
   1. {***Describe the chemical and biological constraints and protection of personnel requirements***}
3. ACOUSTIC NOISE
   1. {***Specify the acceptable noise levels***}
4. OPERATION IN PREMISES OF CONTROLLED CLIMATE
   1. {***Specify the environment, electrical protection, static electricity, and overcurrents and overvoltages requirements***}
5. ELECTROMAGNETIC INTERFERENCE
   1. {***Indicate the general EMI requirements, the electromagnetic radiation and the conducted interference levels***}
6. MECHANICAL DESIGN
   1. {***Provide details about the construction and physical protection the racks and frames of the equipment***}
7. MECHANICAL DIMENSIONS
   1. {***Provide general information about space allocations, distance between racks, cabling, marking and heat dissipation***}

Annex C, Attachment 5. Applicable Technical Standards Interconnection

PDH Based Transport Systems: ITU G.703, G.704, G.705

SDH Based Transport Systems: ITU G.707

OTN Based Transport Systems: ITU G.872

Ethernet Based Transport Systems: IEEE 802.3

Signaling IP Network: RFC 4271 – Border Gateway Protocol BGP-4

Synchronization: see section Annex C – Attachment 3

Annex D. Management of Interconnection

1. MANAGEMENT OF INTERCONNECTION

This Annex describes the manner in which the management of the interconnection will be performed and provides guidance on the necessary forms to be used.

* 1. {***Provide the details for account management, interconnection technical and commercial liaison, provision of network information, management of issues, dispute resolution and review and update***}

Annex E. Forecasting

This Annex describes the manner in which Interconnection Services are forecast and the relevant forms that will be used.

1. Forecasting of Interconnection Traffic and Links Requirements
   1. {***Indicate the forecast requirements, the advanced capacity order (ACO) forecasting restrictions, reactive capacity planning and planning of new points of interconnection***}
2. Forecast Agreement and Approval
   1. {***Indicate the forecast agreement and approval procedure***}
3. Forecast Review
   1. {***Indicate the forecast review procedure***}
4. Reciprocity of Forecasting
   1. {***Indicate that the procedures are required to be followed by both parties***} the forecasted need should provide a capacity match between both sides of the interconnection.

Annex F. Price List

1. INTERCONNECTION LINK SERVICES
   1. {***Insert the price schedules for cross-border interconnection link services using the formats in the tables***}
   2. The annual {Interconnect Service Provider Name} International Internet Connectivity pricing for one-year commitment is as follows:

|  |  |
| --- | --- |
| Capacity\* | ({***Partner State Currency Name***} per Year) |
| DS3 | {***Amount***} |
| STM-1 | {***Amount***} |
| STM-4 | {***Amount***} |
| STM-16 | {***Amount***} |
| Ethernet 1 Gbit/s | {***Amount***} |
| Ethernet 10 Gbit/s | {***Amount***} |
| Ethernet 100 Gbit/s | {***Amount***} |

* 1. The following discounts for long term commitments apply only on STM-ns, Ethernet Gbit/s, etc, purchased from {***Interconnect Service Provider Name***}, showing for STM-n for illustrative purposes:

|  |  |  |  |
| --- | --- | --- | --- |
| Number of STM-ns | 1 Year Commitment | 3 Years Commitment | 5 Years Commitment |
| 1 | {***Percentage***} | {***Percentage***} | {***Percentage***} |
| 2 to 4 | {***Percentage***} | {***Percentage***} | {***Percentage***} |
| 5 to 8 | {***Percentage***} | {***Percentage***} | {***Percentage***} |
| 9 to 15 | {***Percentage***} | {***Percentage***} | {***Percentage***} |
| 16 and above | {***Percentage***} | {***Percentage***} | {***Percentage***} |

1. INDEFEASIBLE RIGHTS OF USE
   1. {***Insert the price schedules for indefeasible rights for lit and dark fiber, indicating the commitment times***}
2. INTERCONNECTION EQUIPMENT COLOCATION SERVICES
   1. {***Insert the price schedules for equipment colocation and sharing, including the annual/monthly price for every element such as space, power, air conditioning and others***}
3. SHARING SERVICES
   1. {***Insert the price schedules for sharing, including the annual/monthly price for every utility such as ducts, posts and others***}
4. IP TRANSIT SERVICES (only illustrative)
   1. {***Insert the price schedules for IP transit services specifying the monthly prices for transmissions rates and the burst commitment rates***}

|  |  |  |
| --- | --- | --- |
| Committed Speed | Unit Price | Cost |
| 10 Mbps | $12 per Mbit/s | $120/month |
| 100 Mbps | $5 per Mbit/s | $500/month |
| 1 Gbit/s | $3.5 per Mbit/s | $3,500/month |
| 10 Gbit/s | $1.20 per Mbit/s | $12,000/month |
| 100 Gbit/s | $0.70per Mbit/s | $70,000/month |

Annex G, Schedule 1. Interconnection Link

1. General
   1. {***Insert the main characteristics of the interconnection link services***}
2. Service Definition
   1. {***State the service definition of the interconnection link services}***
3. Description of Service
   1. {***Provide a description of the technical characteristics of the interconnection link services***}
4. Service Provisioning - Initial Procedure
   1. {***Describe the*** ***initial procedure for requesting the interconnection link services including detailed timeframes and procedures}***
5. Charging
   1. {***Describe the*** ***method used for charging for the interconnection link services}***
6. Billing Information
   1. {***Indicate the information required for the billing process}***
7. Routing

The provision of the Interconnection Link Service shall be in accordance with the {***Interconnect Service Provider Name***} transmission principles specified in

Annex C, Attachment 1. Distribution Frame Characteristics DDF and ODF.

Annex G, Schedule 2. Indefeasible Rights of Use (IRU)

1. General
   1. {***Insert the main characteristics of the indefeasible rights of use including lit and dark fiber***}
2. Service Definition
   1. {***State the service definition of both types of indefeasible rights of use (lit and dark fiber)}***
3. Description of Service
   1. {***Provide a description of the technical characteristics of both types of indefeasible rights of use (lit and dark fiber)***}
4. Service Provisioning
   1. {***Describe the*** ***initial procedure for requesting the IRUs including detailed timeframes and procedures}***
5. Charging
   1. {***Describe the*** ***method used for charging both types of indefeasible rights of use (lit and dark fiber), including minimum commitment times}***

Annex G, Schedule 3. Interconnection Equipment Colocation Services

1. General
   1. {***Describe the general characteristics of the equipment colocation services***}
2. Service Definition
   1. {***State the service definition for colocation services for IP interconnection}***
3. Description of Service
   1. {***Describe in detail the service characteristics of the colocation and sharing services, including specifically what elements are covered within the facilities}***
4. Service Provisioning
   1. {***Describe the*** ***initial procedure for requesting colocation services and/or sharing, including detailed timeframes and procedures}***
5. Charging
   1. {***Describe the*** ***method used for charging both the different elements for colocation services and infrastructure sharing}***
6. One-off costs, which will include but not be limited to:

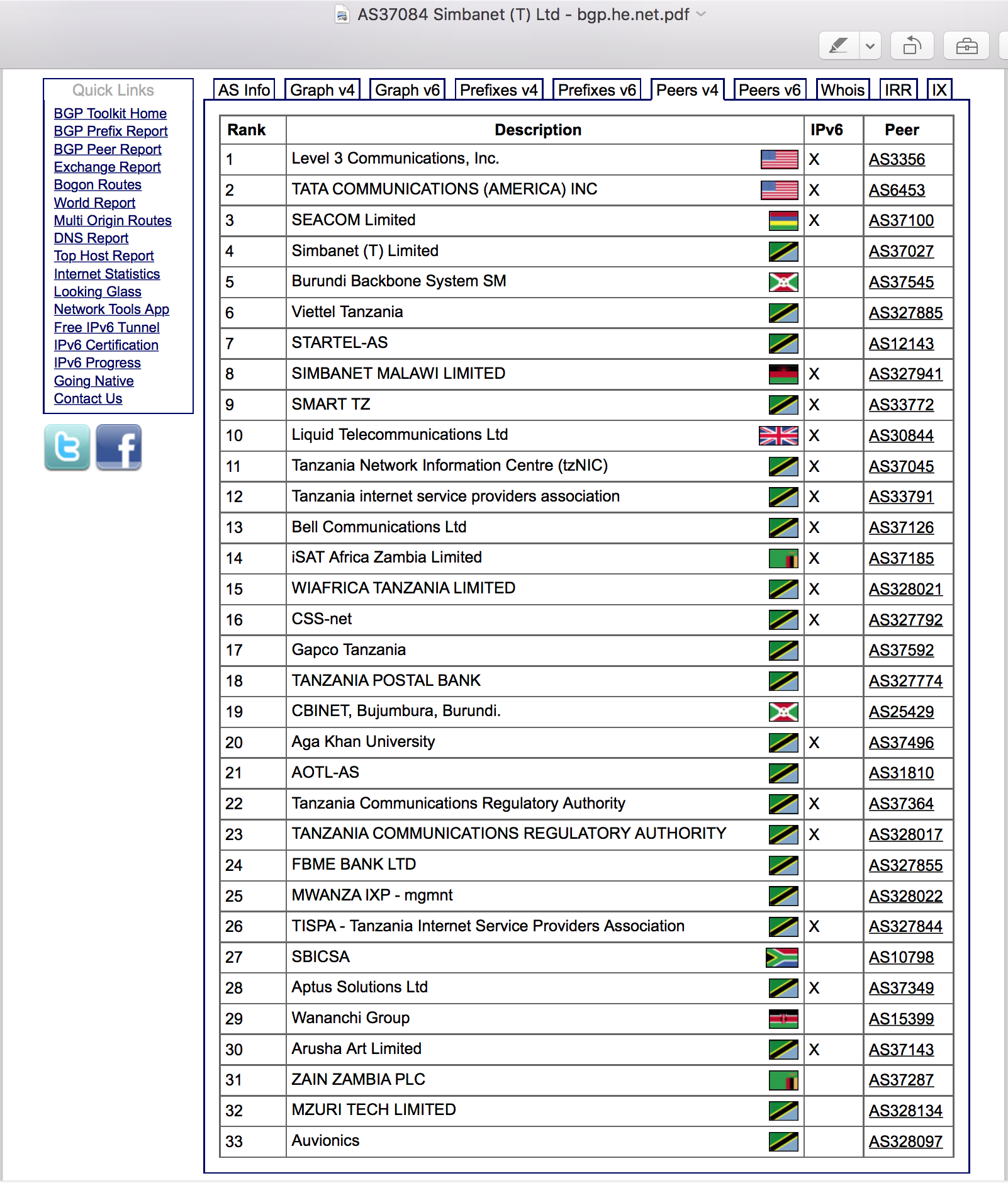
* A physical site survey of the specified building
* Production of work Schedule and bill of quantities
* Construction of dedicated colocation facility rooms
* Refurbishing unused equipment areas
* Installation of security systems
* Provision of standard and/or enhanced ancillary support systems
* Upgrading power supplies and engine sets, lighting, heating and ventilation systems
* Providing external duct, inspection chambers and cables
* Providing internal cables
* Development and/or upgrading OSS
* Product development
* Development of new processes, procedures and work practices

1. Recurring Costs, which will include but not be limited to;

* Rental for the colocation space used
* Maintenance of the colocation facilities and equipment areas
* Maintenance of ancillary support systems
* Power supplies, lighting, heating and ventilation systems
* Maintenance of internal cables
* Order management
* Security

Annex G, Schedule 4. IP Transit

1. General
   1. {***Describe the general characteristics of the international IP transit services***}
2. Service Definition
   1. {***State the service definition for the international IP transit services}***
3. Description of Service
   1. {***Describe in detail the service characteristics of the international IP transit services, including the speeds, committed rates, interconnecting Tiers, physical installation, technology and others}.*** For illustrative purposes the route advertisements of a transit provider is shown below:



The Table above shows the announcement of the routing Table that an IP transit provider can offer for IP transit.

1. Service Provisioning - Initial Procedure
   1. {***Describe the*** ***initial procedure for requesting international IP transit services, including detailed timeframes and procedures}***
2. Charging
   1. {***Describe the*** ***method used for charging international IP transit services and whether the 95% sampling period is used, filtering and other ancillary services to be utilized}***
3. Billing Information
   1. {***Indicate the type of billing information that will be provided and the method for collecting it, as well as the frequency and other billing characteristics***}
4. Routing

The provision of the IP Transit Service shall be in accordance with the {***Interconnect Service Provider Name***} transmission principles specified in

* 1. Annex C, Attachment 1. Distribution Frame Characteristics DDF and ODF.

Annex H. Operations and Maintenance Manual

This Annex to the Reference Interconnection Offer (RIO) sets out the processes and principles by which {***Interconnect Service Provider Name***} and the Interconnecting Service Provider will maintain and operate the Network Interconnection between their respective Networks.

1. PLANNING
   1. {***Indicate the provision of network information characteristics,*** ***including network plan, interconnection of new switching equipment,*** ***ordering of new or changed interconnect services, reservation of colocation space, order cancellation, provisioning and service handover***}
2. MONITORING & NETWORK TRAFFIC MANAGEMENT
   1. {***Include the monitoring and network traffic management procedural details, including reactive capacity planning, transmission management - quality of service testing and joint operational interconnection testing***}
3. FAULT MANAGEMENT
   1. {***State the fault management principles and expand the items below***}
   2. Fault Reporting Procedure
   3. Fault Escalation
      1. The Interconnect Agreement Parties will use the timescales shown in Table 2 as guidelines for the fault escalation process. The timescales will be used in deciding whether the restoration of a fault is being progressing satisfactorily. If the escalation time has expired and both parties are satisfied with the progress of the fault restoration, no immediate escalation is necessary.

Table   
Escalation Timescales

| *Fault type* | *Maximum Time before Escalation* | | |
| --- | --- | --- | --- |
| *First Level* | *Second Level* | *Third Level* |
| Service Affecting | Immediate  (within (10)  minutes) | Two (2) hours | Four (4) hours |
| Non-service Affecting | Immediate  (within (30)  minutes) | Eight (8) hours | Twenty-four (24) hours |

* + 1. All requests for escalation will be notified through each party's fault reporting point.
    2. The reporting levels are shown in Table 3 below:

Table   
Reporting Levels

|  |  |  |
| --- | --- | --- |
| *Escalation Level* | *{Interconnect Service Provider Name}* | *Interconnecting Service Provider* |
| First/Normal | Chief Section Supervisor | To be advised by the Other  Service Provider |
| Second | Operations and Maintenance  Manager | To be advised by the Other  Service Provider |
| Third | Management Centre Director | To be advised by the Other  Service Provider |

* + 1. Persistent faults or issues which cannot be resolved satisfactorily through the normal channels will be escalated to the second level to expedite the fault clearance process.
    2. The Interconnect Agreement Parties will notify their respective and appropriate officers stated in the table above when problems are encountered in the implementation or execution of the fault escalation procedures.
  1. Information Communication and Notification
  2. Traffic Controls

1. INTERCONNECTION MAINTENANCE PROCESSES
   1. {***Describe the interconnection maintenance process, including planned engineering work, safety of persons and equipment and integrity of networks***}
2. SITE ACCESS (COLOCATION SITES ONLY)
   1. {***Indicate for site access the Access Times and Authority, as well as the responsibility of personnel involved***}
3. REVIEW AND UPDATE
   1. The Operational and Maintenance procedures stated in this Annex H will be reviewed periodically by {***Interconnect Service Provider Name***} after consultation with the Interconnecting Service Providers and updated as appropriate subject to technical and operational capabilities.

Annex I. Quality of Service Measures

1. SERVICE LEVEL REQUIREMENTS
   1. {***Indicate the service level requirements that will be included in the service level agreement, including but not limited to targets on performance, speed, reliability, order lead time, network availability and service restoration time among others***}

1. DELIVERY LEAD TIMES

{***Interconnect Service Provider Name***}’s commitment to deliver within the lead times outlined below, will only apply to services ordered in accordance with the procedure for ordering and provisioning as set out in Annex H. Operations and Maintenance Manual,and within the forecast provided by the Interconnecting Service Provider under the procedure set out in Annex E. Forecasting*.*

* 1. Delivery of Colocation facilities
     1. {***Indicate delivery lead times for colocation and sharing***}

1. PERFORMANCE
   1. {***Indicate levels of performance for availability of interconnect links, availability of transmission links, overall availability, interconnect link fault repair and others***}
2. REPAIR TIMES
   1. {***Indicate the repair times established for each type of fault, with preference in tabular form***}
3. REVIEW AND UPDATE

The Quality of Service Measures will be reviewed after consultation with the Interconnecting Service Providers, based on technical and operational capabilities and updated as appropriate.

1. Packet Clearing House:”2016 Survey of Internet Carrier Interconnection Agreements”, Bill Woodcock, Nov. 2016 [↑](#footnote-ref-1)
2. EAC Baseline Report; Nathan Associates; April 7, 2017 [↑](#footnote-ref-2)
3. *ibidem* [↑](#footnote-ref-3)
4. “TREATY FOR THE ESTABLISHMENT OF THE EAST AFRICAN COMMUNITY”; (As amended on 14th December, 2006 and 20th August, 2007) [↑](#footnote-ref-4)
5. A situation or area of activity where there are no rules, or that no one understands or controls because it belongs neither to one type nor another. *(English Dictionary)* [↑](#footnote-ref-5)