



Report on

**Licensing and Interconnection Framework for the
NEPAD Broadband ICT Infrastructure Network
For Eastern and Southern Africa**

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For

NEPAD e-Africa Commission

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Licensing and Interconnection Framework for the NEPAD Broadband ICT Infrastructure Network for Eastern and Southern Africa

1 Introduction

This report represents the final deliverable of the Regional Backbone Infrastructure (RBI) project.

The document provides a draft licensing model and interconnection considerations for the terrestrial broadband ICT infrastructure. It has been developed in recognition of the Protocol on Policy and Regulatory Framework for NEPAD ICT Broadband Infrastructure Network for Eastern and Southern Africa, which has been adopted by twelve countries. The document is furthermore based on the report “NEPAD Broadband ICT Infrastructure Network for Eastern and Southern Africa”, which was submitted to the NEPAD e-Africa Commission at the end of March 2006.

Considerations pertaining to policy and regulatory issues of the terrestrial regional broadband infrastructure are elaborated in the study report. Therefore, we recommend also that those who are interested in details relating to policy and regulatory issues should read the report referred to above, which is available from the NEPAD e-Africa Commission.

This licensing framework consists of a draft licensing model (Annex 1) for the operation of the open access infrastructure network in each territory, including an evaluation of interconnection issues in relation to this licence model.

Details on interconnection arrangements and models between open access networks in the different territories are also dependent on the actual deployments and developments of the different types of networks. The interconnection section deals with the key conceptual issues as they relate to the interconnection between open access networks in different territories (cross border) and with other national networks and service providers.

1.1 Assumptions and pre-conditions

The following provides the assumptions and pre-conditions for drafting of the licensing and interconnection models.

- The terrestrial regional backbone infrastructure should be operated by a single entity¹.

¹ The advantages and disadvantages of a single versus multiple entities operating the terrestrial regional backbone infrastructure were elaborated on in the NEPAD Broadband ICT Infrastructure for Eastern and Southern Africa report. The report recommended the adoption of a single entity. Subsequently, the

- The open access principles, as stated in the Protocol, should apply in their entirety to the Licensee.
- The licensing model should apply to the single entity operating in different territories. However, the parties to the Protocol should harmonise their policy and regulatory frameworks to ensure consistency across the region and to ensure that licence provisions are made for other authorised service providers.
- The single operating entity may include a variety of different shareholders, but the proposed licensing model should be independent of the shareholders involved in the entity.
- The licensing model should be applicable to each territory, regardless of whether the prevailing legislation and regulatory frameworks currently provide for an “open access network wholesale provider”. Accordingly, the draft licence should be standardised in its structure and content. However, some amendments to the draft licence may be expected due to the prevailing jurisdictions in the different territories, pending the harmonisation of policy and regulatory frameworks.
- The Licensee should be granted transport infrastructure and wholesale service licences, which means that the operating entity should, based on stipulated rights and obligations in the licence, be allowed to provide any wholesale product and service to any authorised service providers in each territory using any network infrastructure, subject to the adherence to the open access principles.

2 Background

The following provides a brief background on the considerations which have a bearing on licensing and interconnection models in relation to the terrestrial OAN entity.

2.1 The undertakings of signatory parties

The general undertaking of the signatories to the Protocol is to contribute to the harmonious, balanced, equitable and sustainable development of the territories and the region by facilitating the speedy establishment of the regional ICT Broadband Infrastructure network on Open Access Principles and harmonization of policies and regulatory frameworks to achieve these objectives. In order to facilitate the

NEPAD e-Africa Commission confirmed and advised that the Inter-Governmental Working Committee approved the option of a single entity. As per the NEPAD e-Africa Commission, the signed Protocol provides for the possibility of two operating entities; one for the submarine cable and one for the terrestrial network. The NEPAD e-Africa Commission further advised that this option of two entities was adopted by the Ministerial meeting in Johannesburg in June 2006. Accordingly, the draft licensing and interconnection model is based on a single entity.

establishment of the regional network, signatories have undertaken that they will, where necessary, amend their existing policy and regulatory frameworks and/or promulgate new policy and regulatory frameworks to ensure that their policy and regulatory systems are harmonized and are aligned to the requirements for the establishment, ownership, maintenance and operation of the NEPAD ICT Broadband Infrastructure Network in accordance with the provisions of the Protocol. Furthermore, they have undertaken to harmonise their policy and regulatory frameworks with the objective of promoting the open access principles. The parties have agreed to ensure that their national policies, legislation are modified, adapted or amended to conform to the principles of the Protocol by March 31 2008.

In those jurisdictions where infrastructure for national, regional and or international telecommunications services is owned by one network operator in terms of national law, the parties have agreed to amend and/or introduce new legislative changes to facilitate the licensing of the Operating Entity as a Wholesale Service Provider or equivalent. Moreover, the parties have agreed to facilitate and ensure that the Operating Entity is licensed, permitted and/or otherwise authorized to operate in the territory regardless of whether the Government of the concerned country or any Service Provider from the country invests in the network or not.

2.2 New licences based on the three layers of the communications infrastructure

The licensing model is based on the classification of the communications systems into three layers to accommodate for an implementation of the open access principles:

The three layers are:

The Services Layer - The Services layer is used to deliver all kinds of electronic communications services to wholesale and retail consumers.

The Service (Access) Infrastructure Layer consists of infrastructure that is used to deliver retail services to customers. Examples of the Service Infrastructure would include cable network in the local loop, mobile network infrastructure, wireless local loop systems, local switching centres, etc. Therefore the Service Infrastructure Layer provides the interface between retail consumers and the electronic communications infrastructure.

The Transport Infrastructure Layer would consist of active transport network elements (optical terminal equipment, microwave transceivers, multiplex equipment, regional/international switching centres, etc.) and passive elements (fibre optic cables, cable ducts, microwave towers, antennas, etc). The transport layer aggregates the traffic from the Service Infrastructure Layer and provides the interface to the broadband ICT infrastructure. Thus the Transport Layer delivers wholesale services to service providers.

Therefore, communications operators and service providers would, in accordance with the above layer classification, be issued one or more of the following three types of licences depending on the layer they are operating in and the services they provide:

The Service Licence would authorize an operator to provide retail and or wholesale services. This licence would include all types of applications (e.g. voice, data, content, broadcasting, etc.).

The Service (Access) Infrastructure Licence would authorize an operator to own and operate electronic communications infrastructure for the purposes of providing retail communications services. Examples of applicable infrastructure would include cable network in the local loop, wireless local loop, local exchanges, local multipoint distribution systems, mobile network infrastructure, satellite distribution systems (e.g. satellite broadcasting, VSAT or Direct to Home), etc.

The Transport Infrastructure Licence would authorize an operator to own and operate infrastructure for purposes of carrying communications traffic between service infrastructure networks.

The focus of the above is on what services the infrastructure is intended to provide:

- An operator requires a Service Licence to provide any type of service;
- An operator needs a Service Infrastructure Licence to construct and own any type of infrastructure used to deliver retail services; and
- An operator needs a Transport Infrastructure Licence to construct and own any type of infrastructure used to deliver wholesale services.

In this case, the operating entity provides wholesale services to authorised service providers including other network operators.

The licensed OAN will have the following characteristics in each territory:

1. Consumers/end-users are free to choose any authorised service provider connected to the OAN; provided that the Service Provider is licenced in the territory.
2. Authorised service providers will be allowed to deliver services over the OAN;
3. Authorised service providers are allowed to add access points to the OAN, subject to technical feasibility and the service provider paying for the cost of establishing the access point;
4. Authorised service providers will be offered wholesale services at various levels depending on their requirements;
5. Authorised service providers will be offered wholesale services on fair and non-discriminatory terms and conditions;
6. The OAN operator will not compete with authorised service providers by offering retail services directly to end-users.

The fifth characteristic is related to the requirement for the OAN operator to be neutral by treating all the authorised service providers (i.e. in the Service Infrastructure Layer) in a fair and equitable manner. The last characteristic is required to ensure that the OAN operator does not become a barrier to market entry at the Service Layer by, for example, adopting anti-competitive pricing mechanisms for its services so as to deter other operators from entering the Service Layer and competing with it. This last requirement is also intended to ensure that the OAN operator and service providers in the Service Infrastructure Layer develop trust and a sense of common purpose rather

than behaving as competitors. The OAN operator acts as a facilitator of competition in the Service Layer.

As the OAN entity will operate at the Transport Infrastructure Layer, it may own and operate both the passive elements (cable ducts, fibre optic cables, towers, radio spectrum, antennas, etc.) and the active elements (optical terminals, WDM, radio transceivers, SDH Multiplex equipment and regional/international switching equipment). That is, in addition to leasing dark fibre to service operators that may wish to lease such dark fibre the OAN should be allowed to lease capacity for data transmission to service providers at any bandwidth they may wish for national, regional and international traffic. The OAN entity should be allowed to switch regional and international wholesale traffic from/to other operators in all countries where the entity operates.

As stated earlier, since existing licences are in most cases not tailored towards an open access model they may need to be modified. The licensing structures are often inappropriate for future IP based service networks, where the aim is to move the intelligence to the outer edges of the Service Layer where there will be full competition, while the Transport Layer will be playing a supportive role.

Hence, existing legislation and regulatory framework in each participating country would have to be modified to allow for an operator to be licensed to operate at the Transport Infrastructure Layer and licensed to providing Wholesale Services only.

It is likely that some Governments will want to participate in the OAN entity through their incumbent operators. Since the OAN should not compete with retail Authorised Service Providers, Governments could consider different options including making the incumbent's existing infrastructure available as contribution to the shareholding in the OAN, and structurally separate the wholesale business from the retail business of the incumbent. The wholesale business would then form part of the OAN, whereas the retail business would get access to the OAN on the same principles as other authorised service providers, in line with the conditions in the draft OAN licence. An alternative could be to make separate financial contributions for investment in the OAN without any reference to any of the incumbent operator's existing infrastructure. In this case then the OAN would be permitted to approach the existing incumbent operator and other infrastructure owners (e.g. power, water, railways, gas, oil and other utility companies) that might have fibre optic cables either to purchase or lease such infrastructure.

3 Considerations on the licence model

The following summarises the proposed content of the draft licence model and considerations on each issue.

Proposed content of draft licence model	Description and Comments
Definitions	<p>The licence definitions should be based on the protocol definitions. This ensures consistency in the application and implementation.</p> <p>The relevant definitions from the Protocol may be complemented by definitions specific to jurisdiction in each territory but such definitions must not be contradictory.</p>
Licence duration and fees	<p>Duration of licence should be 15 years as a standard.</p> <p>Licence fees should cover administration costs only (in accordance with the Protocol)</p>
Principles	<p>The open access principles, as defined in the Protocol, should also be included in the licence as they set the basis for the operation of the OAN entity.</p> <p>The OAN principles ensure that non-discrimination, transparency, objectivity and cost-orientation are included.</p>
Licensed system and services	<p>The OAN should be issued two licences in each country/territory:</p> <ol style="list-style-type: none"> 1. A Transport Infrastructure Licence; and 2. A Wholesale Service Licence <p>Transport Infrastructure is used for the provision of wholesale services which include active transport network elements (including but not limited to optical terminal equipment, microwave transceivers, multiplex equipment, regional/international switching centres) and passive elements (fibre optic cables, cable ducts, microwave towers, antennas);</p> <p>The Wholesale Service Licence will allow any national, regional and international wholesale service to be provided to any authorised service provider on non-discriminatory and transparent conditions</p> <p>As a principle, OAN entity should be allowed to use any technology to allow for maximum flexibility. However, it should be expected to be based on fibre optic and possibly micro wave infrastructure.</p>

Rights and obligations	<p>The rights and obligations, as defined in the Protocol, will form the basis for the Licence.</p> <p>These may be complemented by country specific rights and obligations, so long as such national licence conditions on the rights and obligations of the OAN entity do not compromise the underlying objectives and the open access principles.</p>
Technical and operational specifications	<p>Technical specifications should be specified by each national regulatory body in each country.</p> <p>At a minimum the OAN network should meet the requirements of each country in which the network segment is located to ensure interconnection with national operators and service providers.</p> <p>Operational specifications, where relevant and necessary, should be specified by each national regulatory body in each country.</p>
Interconnection with other operators and authorised service providers	<p>Interconnection should be possible at any technically feasible point.</p> <p>Any authorised service provider should be able to interconnect and get wholesale access.</p> <p>It should be required that collocation takes place subject to conditions imposed by the national regulator in each territory.</p>
Quality of Service	<p>Quality of Service should be in accordance with the national rules and regulations.</p> <p>A standard service level agreement should be established by the OAN operator and approved by the national regulator.</p>
Rights of way	<p>This should be part of the national regulator's responsibility when they licence the OAN.</p> <p>It should also be required in countries where the entity may not have stakeholders from the territory in question.</p>
Environmental	<p>This should be part of the national regulator's responsibility when they licence the OAN.</p>
Radio frequency and spectrum allocation	<p>The OAN should have access to the required spectrum where it requires it, subject to national regulations.</p>
Tariffs and charging principles for interconnection and wholesale services	<p>Tariffs should be in accordance with open access principles.</p> <p>There should be no transit charges over the regional OAN, and uniform charges should apply whenever feasible.</p>

	Termination rates for traffic into other operators' networks should, as a principle, be the same as the prevailing national rates.
Publication and reporting requirements	Standard periodic reporting to the national regulator should be included as a condition. An interconnection/wholesale reference offer should be published.
General Provisions	General provisions should be included as per the standard conditions in the draft licence model. There is a need to ensure that amendments to licence are harmonised with other licences in other territories.

4 Considerations on interconnection and wholesale arrangements

The draft licence model contains specific conditions with respect to interconnection and wholesale provision.

In essence, there are three important considerations with respect to the OAN entity:

1. Conditions for how other authorised retail service providers and operators, within each country/territory, should interconnect with the OAN in accordance with the open access principles.
2. Conditions for how the OAN should interconnect with other established national networks.
3. Conditions for how the OAN in one territory/country should interconnect with the OAN in the other territories outside the region;

The following sections elaborate on the above conditions as they are also incorporated in the draft licence model.

The licences issued to the OAN entity in each territory should ensure that the OAN entity can operate based on the agreed principles and can interconnect with other networks and service providers based on the same principles. The licences therefore have to stipulate rights and obligations in relation to interconnection and access to wholesale services and facilities.

With respect to the charging and pricing principles for the wholesale services there is, arguably, no best practice for the regional OAN entity per se, but it has to be recognised that capital and operating costs for the OAN entity need to be recovered over time.

Therefore, for the long term sustainability of the OAN, the pricing methods applied have to take into account relevant costs while recognising the principle of affordability and underlying objectives for establishing the OAN in the region.

The underlying principles that direct the wholesale conditions of the services provided by the regional terrestrial OAN are:

- Affordability;
- Non-discrimination; and
- Transparency.

Affordability, in the context of the OAN, means that charges for wholesale services offered by the OAN should be set as low as possible for all authorised service providers connected to the OAN in order to maximise the usage and benefits of the network, and to minimise the costs to the end-users.

The application of the principle would recognise relevant capital and operating costs for the OAN, which implies that the wholesale charges should effectively be cost-based including allowing for a reasonable return on capital.

This reasonable return on capital could be calculated based on the Weighted Average Cost of Capital (WACC) formula taking into account the composition of cost of debt and cost of equity respectively. Effectively, the affordability principle will imply a cost-based pricing methodology that takes into account the reasonable return on investment.

Transparency means that the terms and conditions for using the OAN, including charges, should be the same and publicly available for all authorised service providers connected to the OAN.

To ensure transparency, a reference wholesale offer model should be publicly available. The offer should be sufficiently unbundled to ensure that authorised service providers are not required to pay for facilities that are not necessary for the service they require.

Non-discrimination means that there shall be no preferential treatment of any service provider in the terms and conditions, including charges, for using the OAN, regardless of whether the service provider participates in the ownership of the OAN.

Development and harmonisation objectives for the region have to be taken into account in the implementation of the principles. This may imply that some direct costs/revenues incurred/accrued in/from a certain territory by the OAN could be shared between all territories, to ensure equitable access for all service providers in a regional. Otherwise countries that are far from the landing points of international (submarine) fibre optic cable systems could be at a disadvantage when the traffic transits through one or more countries to reach the cable landing cable points, if the charges were largely dependent on distance from the landing points and the number of transit points. In such a scenario, the charges could become unaffordable to many new potential service providers. For this reason, it has been recommended that there should be no transit charges over the OAN and that the pricing of the service should be independent of distance.

It needs to be noted that the need for a broadband regional OAN is largely motivated and driven by the anticipated increase in demand for bandwidth for data. Therefore, the emphasis is indeed on the future data bandwidth requirements, including internet. While traditional switched telephony arrangements will continue to take place for the foreseeable future, the most important interconnection aspects for the regional OAN is to establish conditions that govern interconnection between broadband fibre networks that carry data on IP based infrastructure.

A major movement from circuit switched to packet switched traffic (notably IP based networks) is taking place. Many large operators plan to carry all their traffic over IP based networks within the next few years. Even regional network operators have plans to migrate most or all of the traffic to IP based networks within a few years. In an IP based network environment, it is more appropriate to recognise voice as part of the total data transferred (in terms of Mbit/s) and the charging regime changed accordingly.

It may be appropriate to compare Internet interconnection arrangements with traditional telephony interconnection arrangements². The interconnection between Internet backbones has not been governed by industry-specific regulations, while the interconnection of traditional telephone carriers is currently regulated both domestically and internationally. Furthermore, unlike switched telephony traffic, there is often no difference between domestic and international Internet interconnection arrangements; backbones treat each other the same regardless of the country of origin or location of customer base.

An Internet transit is an arrangement where one service provider carries packets for another provider to or from the wider Internet. In the very early stages, the assumption was that all networks would provide transit for one another. However, in the commercial Internet, this is commercially unsustainable. Internet transit is almost always provided as a commercial service. A transit agreement is distinct from a peering arrangement, in which only traffic between the two ISPs' directly attached customers is exchanged over the peering connection, and neither ISP can see beyond the other's network to the wider Internet. Peering between internet backbone providers is similar to the practice of bill-and-keep or sender-keeps-all arrangements in switched telephony traffic. In a bill-and-keep or sender-keep-all arrangement, each carrier bills its own customers for the origination of traffic and does not pay the other carrier for terminating this traffic. In a settlement arrangement, on the other hand, the carrier on which the traffic originates pays the other carrier to terminate the traffic. If traffic flows between the two networks are balanced or close to balanced, the net settlement that each pays is (close to) zero, and therefore a bill-and-keep arrangement may be preferred because the networks do not have to incur costs to measure and track traffic or to develop billing systems.

Transit arrangements between Internet backbones are somewhat similar to resale arrangements between, for instance, long distance carriers; the Internet backbone providing transit service acts as the wholesaler, and the backbone buying transit acts as the reseller of Internet backbone services. Traditionally, there have been notable differences in the way Internet and telephony arrangements are regulated, however, the

² The Digital Handshake: Connecting Internet Backbones, FCC, Working Paper

basis for Internet transit and interconnection charges is often similar to those found in other parts of the telecommunications industry.

Charges are typically based on one or more of the following variables:

- traffic flow or usage, based on the increasing capacity of Internet routers and other equipment to measure traffic;
- imbalance of traffic flows between Internet service providers;
- distance or geographical coverage;
- number of points of interconnection;
- other cost-based interconnection charges.

The movement towards cost-based interconnection charges is consistent with the developments in other telecommunications services.

Already in 2000, ITU Study Group 3 adopted a recommendation on international Internet interconnections³: “Noting the rapid growth of Internet and Internet protocol-based international services: It is recommended that administrations involved in the provision of international Internet connection negotiate and agree bilateral commercial arrangements applying to direct international Internet connections where each administration will be compensated for the cost that it incurs in carrying traffic that is generated by the other administration.”

The OAN should however be one regional operating entity so, arguably, some of the implications on charges between different networks should fall away. In order to accomplish the objectives of the OAN, including to ensure affordability of its offerings to all authorised service providers, charges for wholesale capacity services (including leased line circuits) should be based on the required capacity, and, whenever relevant and feasible, independent of distance within the OAN.

The main customers of the OAN operator will be the retail service providers, however, the core objective for the establishment of the OAN is to ensure that end-users in participating countries benefit by way of greater competition amongst service providers and lower retail service charges.

Charges for wholesale services offered by the OAN operator to service providers should be based on capacity and independent of distance. There should be no transit charges for cross-border traffic, as long as the traffic is carried over the regional OAN. The principle of “no transit charges” over the single OAN should be feasible to accomplish taking into account the deployments and continuous developments of fibre optic cables and IP based infrastructure to be used primarily for internet/data capacity purposes.

The OAN entity should carry out periodic traffic demand forecasts, based on the bandwidth requirements in each territory, and estimate the total aggregated demand. There also needs to be a reconciliation of all transit traffic between the territories and the originating and terminating traffic from the territories of the OAN entity.

³ Telecommunications Regulation Handbook, Module 3 Interconnection, infodev

In order to apply uniform wholesale pricing throughout the regional network (i.e. implying uniform price for an identical service independent of distance or origination) subsidies may be required⁴. The implication is that there may be an embedded cross-subsidisation within the entire system (entity) so that some customers in some territories may cross-subsidise others (provided there is indeed a difference in the cost of supply or there is a direct subsidy to ensure uniform prices).

However, whether a uniform pricing structure is reasonable and appropriate in all traffic cases may need to be further evaluated. The issue should become clearer once the feasibility study for the terrestrial backbone has been concluded. In any event, it must be taken into account that the prescribed pricing of the wholesale services is already subject to regulated return on investment/capital.

Operators and authorised service providers that are connected to the OAN should be entitled to compensation for traffic that terminates into their respective networks, regardless of the origin of the traffic. The compensation should, as a principle, be identical to the prevailing standard national interconnect rates in each traffic termination case (for example fixed and mobile termination rates). Accordingly, termination charges for individual authorised service providers and operators' networks should be established in accordance with national interconnection regulations and guidelines.

⁴ The reason being that a wholesale pricing scheme based on uniform charges may imply cross-subsidies not only between the participating networks in the different territories being part of the single entity, but, also between different retail service providers in the different territories. As an example, if the (cost based) price of a wholesale service would be 50 in Country A and the cost based price of the same service would be 100 in Country B, then the "uniform" cost based price might be 75. Service Providers in Country B would presumably appreciate the uniform charging principle but Service Providers in Country A would most likely not. Hence, if there is a viable alternative, they may rather use an equivalent wholesale service (e.g. specific bandwidth) provided it is offered at a lower price than 75.

Annex 1: Draft licence model including interconnection conditions for the OAN

**OPEN ACCESS NETWORK
LICENCE**

GRANTED BY

XXX XXX XXX

TO

[XXX]

**UNDER SECTION(S) xx xx OF THE
XXX ACT, XXX
(No. XXX of XXXX),**

**Dated 20xx
XXX XXX XXX**

**NOTICE OF GRANT OF LICENCE UNDER SECTION(S) XXX OF XXX
ACT, xxxx**

Licence No. OAN []

[OPEN ACCESS NETWORK]
of []
(the "Licensee")

is hereby licensed under XXX XXX XXX to:

- (a) provide "Wholesale Services"; and
- (b) operate "Transport Infrastructure",

throughout "XXX territory" for a period of 15 (fifteen) years from the [], 20xx
on and subject to the Conditions attached in Licence.

Given under my hand and seal in xxx this [] day of xxx, 20xx

[Seal of xxx XXX]

**xxx
xxxx xxxx xxxx**

XXX XXX XXX

**OPEN ACCESS NETWORK LICENCE
CONDITIONS**

Imposed on the Licensee under Section XXX of the XXX Act, XXX,XXX

Part A: Definitions

1 Interpretation

1.1 All words and expressions used in this Licence which are defined in the Act shall have the same meanings as are ascribed to them under the Act. For the purposes of this Licence, and unless the context otherwise requires:

1.1.1. “**XXX**” means the XXX XXX Authority/Agency established in terms of the Act;

1.1.2. “**Act**” means the XXX Act, XXXX [No. XX of XXXX];

1.1.3. “**Affordability**” means that the wholesale charges for using the NEPAD ICT Broadband Infrastructure Network, whilst recognising relevant costs for investing in and operating the Licensee shall be set as low as possible for all authorised service providers making use of the network in

order to maximise the usage and benefits of the network and minimise the cost to End-Users.

1.1.4. “**Authorised Service Provider**” means any service provider (international gateway operators, ISPs, academic institutions, etc.) which is licensed, exempted and / or allowed by law, regulation, contract and / or in any lawful manner to make use of the Network to provide national, regional and / or international service to End Users.

1.1.5. “**Call**” means any communication or transmission by means of the Licensed System which is intended to impart a discrete communication, message or instruction of any kind to or from an End User;

1.1.6. “**Condition**” means a Condition of this Licence;

1.1.7. “**Electronic Communication Services**” means services which consist wholly or mainly of the transmission and routing of signals on communication networks, including telecommunications services and transmission services in networks used for broadcasting.

1.1.8. “**End Users**” means the consumers of the services provided by Authorised Service Providers who make use of the Transport Infrastructure.

- 1.1.9. **“Essential Facility”** means any circuit, switch, tower, duct or other facility owned or operated by the Licensee which Authorised Service Provider wishes to use and for which there is no feasible technical or economic substitute;
- 1.1.10. **“Harmonisation”** means the dynamic process of establishing mutually complimentary policies, legislation, rules, standards, practices or systems between High Contracting Parties on the basis of agreed minimum requirements for purposes of facilitating the realisation of the objectives of the Protocol.
- 1.1.11. **“High Contracting Party”** means a State which is a signatory to this Protocol.
- 1.1.12. **“Interconnection”** means the physical and logical linking of networks which allows users of one network to communicate with users of the same or other networks. Services may be provided by the parties involved in the interconnection or by other parties who have access to the network.
- 1.1.13. **“Interconnection Agreement”** means an agreement concluded between the Licensee and any Network Operator or Authorised Service Provider recording the commercial, technical and financial arrangements made between them in respect of the Interconnection of their respective networks;

- 1.1.14. “**ICTs**” means Information and Communication Technologies.
- 1.1.15. “**ITU**” means the International Telecommunication Union;
- 1.1.16. “**Landlocked State**” means a State which has no sea coast.
- 1.1.17. “**Leased Capacity**” means any dedicated point-to-point link, or any dedicated capacity on such a link, between two points provided by the Licensee to an Authorised Service Provider for the purpose of carrying Signals;
- 1.1.18. “**Licence**” means this Licence, including the Licence Notice and all the Conditions included as amended from time to time;
- 1.1.19. “**Licence Date**” means the date of issue of this Licence;
- 1.1.20. “**Licence Notice**” means the formal notice of Licence issued to the Licensee to which these Conditions are attached;
- 1.1.21. “**Licence Period**” means the period prescribed in Condition 2.1 and shall, where the context admits, include any extension awarded by the XXX;

- 1.1.22. “**Licensed Service**” means the provision of any national, regional and international wholesale services;
- 1.1.23. “**Licensed System**” means the Transport Infrastructure used for the provision of wholesale services which include active transport network elements (including but not limited to optical terminal equipment, microwave transceivers, multiplex equipment, regional/international switching centres) and passive elements (fibre optic cables, cable ducts, microwave towers, antennas);
- 1.1.24. “**NEPAD ICT Broadband Infrastructure Network**” means the ICT networks in Eastern and Southern Africa linking and / or connecting countries of the High Contracting Parties with each other and / or the rest of the world, and established in terms of the Protocol.
- 1.1.25. “**Non-discrimination**” means that there shall be no preferential treatment in the terms and conditions, including charges for using the network or networks owned by the operating entity, to any service provider whether it is an owner of the network or a third party, taking into account policy development and harmonisation objectives for the participating countries in the region.
- 1.1.26. “**Open Access**” means that any Authorised Service Provider shall have access to any network facility and any network service of the regional open access network on terms and conditions that are non-

discriminatory, transparent and affordable to all parties and that the Licensee shall not compete with Service Providers in provision of retail services.

1.1.27. **“Open Access Principles”** means the principles that the Licensee should comply with as set out in Condition 5.1.

1.1.28. **“Operating Entity”** means Special Purpose Vehicle, companies and / or organisations which shall be formed in terms of the Protocol specifically for the construction, ownership, maintenance and / or operation of the NEPAD ICT Broadband Infrastructure Network for Eastern and Southern Africa and / or any section thereof.

1.1.29. **“Radio Licence”** means a licence issued by the XXX to the Licensee under which the Licensee is assigned and authorised to use particular bands of radio frequency spectrum under Section(s) xxx of the Act;

1.1.30. **“Quality of Service Standards”** means the quality of service standards specified from time to time by the XXX, following a consultation with the Licensee and others, in relation to Licensed Services or to the availability or performance of any part of Licensed System;

- 1.1.31. **“Region”** means Eastern and Southern Africa composed of countries which have signed, ratified and / or acceded to the Protocol as may be applicable.
- 1.1.32. **“Regional Network”** means the NEPAD ICT Broadband Infrastructure Network for Eastern and Southern Africa.
- 1.1.33. **“Regulated Return on Investment”** means the overall determined measure of the profitability of the Regional Network expressed as a periodic percentage return and calculated as Income divided by Investment.
- 1.1.34. **“Retail Services”** means Services offered by Authorised Service Providers to End Users.
- 1.1.35. **“Rules”** means any rules or regulations issued by the XXX under Section(s) xxx of the Act, as amended;
- 1.1.36. **“Service”** means electronic communications services provided for remuneration which consist wholly or mainly of the transmission and routing of signals on communication networks, including telecommunications services and transmission services in networks used for broadcasting.

- 1.1.37. **“Services Layer”** means the layer of a communications system used to deliver any kind of Service.
- 1.1.38. **“Signal”** means any signs, sounds, text, images, information or data of any kind sent, or to be sent, for conveyance by means of a telecommunication system;
- 1.1.39. **“Transparency”** means that the terms and conditions, including all relevant charges, for using the Regional Network shall be publicly available. There shall be a reference offer which shall be sufficiently unbundled to ensure that Service Providers are not required to pay for facilities that are not necessary for the wholesale Service they require. A description shall be made available of relevant offerings broken down into components according to market needs, and associated terms and conditions including charges.
- 1.1.40. **“Transport Infrastructure Layer”** means all kinds of infrastructure used to carry national, regional and / or international electronic communications services.
- 1.1.41. **“Wholesale Services”** means all types of electronic communication services offered by the Licensee to Authorised Service Providers.

Part B: Licence Period and Fees

2 Licence Period

2.1 The Licence shall be valid for a period of 15 (fifteen) years, from the Licence Date, unless replaced or revoked by the XXX in accordance with the Conditions.

3 Licence Fees

3.1 The Licensee shall:

3.1.1 pay a one-off fee for the Transport Infrastructure and Service Licences of XXXX amount; calculated principally to cover administration costs incurred by XXX Authority.

3.1.2 be exempted from paying any other fees for the Licences

3.2 The amount due under Conditions 3.1.1 shall be paid on the Licence Date.

Part C: Rights and Obligations

4 Rights and Obligations

4.1 The Licensee shall, within the territory:

4.1.1 Provide a backbone infrastructure to support cross-border broadband communication services on a non-Discriminatory, open access basis, and at affordable prices.

4.1.2 Facilitate and/or participate in the building or construction of the regional NEPAD ICT Broadband Infrastructure Networks, and subject to the provisions of this Licence and the applicability of the Protocol, ensure access to landing points for all Authorised Service Providers on Open Access Principles generally and on Non-Discriminatory, fair and transparent basis in particular.

4.1.3 Negotiate, where applicable and commercially desirable, bulk capacity requirements for all Authorised Service Providers connected to the Regional Network and purchase the same in bulk from other international operators to meet the requirements of all Authorised Service Providers connected to the Regional Network provided that any individual Service Provider whether or not connected to the Licensee who wishes to negotiate their own capacity requirements with other regional and international operators and purchase the same would be free to do so without reference to the Licensee.

4.2 Condition 4.1.3 above shall not in any way affect the validity of existing contracts which Authorised Service Providers within the Contracting Parties' territories may currently have with any entity and / or entities for the carrying of international traffic.

4.3 The Licensee shall be entitled to:

4.3.1 Lease any type of infrastructure or capacity it might need for its operations from any entity, including but not limited to infrastructure and capacity available from power, water, railway, oil, gas and similar utility companies and or corporations.

4.3.2 Lease any of its infrastructure, including dark fibre, to Authorised Service Providers that may want to lease it.

4.3.3 Be a regional and international gateway operator for leased capacity and switched regional and international wholesale traffic.

4.3.4 Provide national leased capacity at any bandwidth to Authorised Service Providers provided this is done on the transport infrastructure set up for the carrying of cross-boarder traffic.

4.3.5 Provide any wholesale national, regional and international electronic communications services provided

4.4 The Licensee shall, independent of ownership and management structure, conduct business and / or businesses in accordance with the Conditions in this Licence.

Part D: Operating Principles of the Licensee

5 Operating Principles

5.1 The Licensee shall operate in accordance with the Open Access Principles which means that:

5.1.1 Authorised Service Providers shall be offered services by the Licensee on fair, transparent and non-discriminatory terms and conditions.

5.1.2 Authorised Service Providers shall be offered Transport Infrastructure Layer access to different capacities depending on their requirements.

5.1.3 End Users shall be free to choose any local Authorised Service Provider connected to the Licensee's Network.

5.1.4 The Licensee shall not compete with Authorised Service Providers by offering services at the Services Layer directly to End Users.

5.1.5 The Licensee shall operate in such a way as to facilitate competition and to foster innovation at the Services Layer, and where practical and commercially viable at all levels, with a view to maximizing usage of the network and benefits to the End Users.

Part E: Quality of Service

6 Quality of Service Standards

- 6.1 The Licensee shall comply with any Rules and any guidelines issued from time by the XXX in relation to Quality of Service Standards.
- 6.2 The Licensee shall provide a Service Level Agreement to any Authorised Service Provider making use of the Transport Infrastructure.

Part F: Technical and Operational Requirements

7 Technical Standards

- 7.1 The Licensee shall comply with any Rules and any directions issued by the XXX in relation to technical standards for telecommunications apparatus to be used within the Licensed System.

8 Operational Requirements

- 8.1 The Licensee shall comply with any Rules and directions issued by the XXX in relation to operational requirements to be used within the Licensed System and for Terminal Equipment.

Part G: Radio Frequencies

9 Radio Frequencies

- 9.1 The Licensee shall be entitled to use the radio frequencies assigned to it. Such use shall be for the respective periods, and on the terms and conditions, of the relevant Licences.
- 9.2 Any breach, contravention or non-compliance with a term or condition contained in a Radio Licence issued to the Licensee shall constitute a violation of this Licence.

Part H: International Obligations

10 International Obligations

- 10.1 The Licensee shall at all times observe the provisions of International Telecommunications and Electronic Communications / ICT-Related Conventions to which XXX is a party.

Part I: Interconnection and Access to Facilities

11 Interconnection

- 11.1 The purpose on interconnection is to achieve the interoperability of networks and to create the conditions for effective and sustainable service competition among authorised service providers in XXX.

11.2 The Licensee shall:

11.2.1 have the right to Interconnect the Licensed Network with the Licensed Network of any Authorised Service Providers and network operators, at any technically feasible point and on fair and reasonable terms, provided that the technical standards and specifications for interconnection have been complied with; and may request such network access services or facilities or arrangements from the Authorised Service Provider as the Licensee may require; and

11.2.2 on request, and as soon as practicable, permit and effect Interconnection, at any technically feasible point and on fair and reasonable terms, of the Licensed System to the Licensed Network of any Authorised Service Provider the licence for which authorizes such interconnection; and shall offer such network access services or facilities or arrangements in relation to the Licensed Network as the requesting party may require.

11.3 The Licensee shall make available to interested parties such technical standards and specifications as may be required to be observed in order to enable connection to the Licensed System. The XXX may issue a direction as to the information that must be provided.

11.4 The Licensee shall not be required to enter into an Interconnection Agreement or provide Interconnection or network access services, facilities or

arrangements if, but only if, that agreement, or the provision of those services, facilities or arrangements, would:

- 11.4.1 be technically infeasible or if it could reasonably be expected materially to impair the quality of any Licensed Service; or
- 11.4.2 threaten the integrity, security, or interoperability of the Licensed Network in a material way
- 11.5 The Licensee shall not allow the Licensed System to be interconnected with any unlicensed, unauthorised or any system whose licence does not permit the interconnection of that system with the Licensed System.
- 11.6 All Interconnection and wholesale services shall be offered on transparent and non-discriminatory terms and shall be sufficiently unbundled so that the requesting operator does not have to pay for system components it does not want.

12 Access to Wholesale Capacity

- 12.1 The Licensee shall offer to make wholesale leased capacity available to Authorised Service Providers, including on any circuit, fibre or cable link or satellite uplink it may own or control in and from XXX, and shall offer access to any Facility it may own or control within or outside of XXX in each case on terms in line with open access principles, provided that the technical standards and specifications for access have been complied with.

- 12.2 If agreement on wholesale terms cannot be reached between the Licensee and an Authorised Service Provider who wishes to offer a retail service similar to one that is offered by the Licensee within 30 days of the initial request, either party to the proposed agreement may refer the dispute to the XXX, or the XXX may require the dispute to be referred to it by issuing a notice to that effect to the parties.

Part J: Tariffs and Charging Principles

13 Tariffs and Charging Principles

13.1 Access charges, interconnection charges, usage charges and any other wholesale tariffs and/or charges that the Licensee may levy shall be established in accordance with Condition 5.1, and in addition be in conformity with the following:

13.1.1 Tariffs and charges for all wholesale bandwidth and switched services in the reference offer shall, in all applicable cases, be independent of distance and be based on the capacity provided.

13.1.2 Tariffs and charges shall, in all applicable cases, be uniformly established which shall mean that the charge for a defined wholesale service in the Licensee's territory shall be the same as the charge for the same service offered by the entity in another territory.

13.1.3 The Licensee shall adhere to the principle and mechanism that there shall be no internal settlement or transit charges paid or received for regional cross-border traffic, as long as the traffic is carried over the OAN.

- 13.2 Authorised Service Providers' networks that are connected to the Licensee's network shall be entitled to a compensation for traffic that terminates into their respective networks, regardless of the origin of the traffic, which shall be the same as the prevailing national interconnection rates in the respective networks.

Part K: Publication and Reporting Requirements

14 Publication of Reference Offers

- 14.1 The Licensee shall publish a Reference Wholesale and Interconnection Offer within 30 days of the coming into effect of the Licence which shall entail all relevant details on the available wholesale services according to market needs.

15 Records and Reporting

- 15.1 The Licensee shall keep written records in comprehensive detail relating to the Licensed Network and the Licensed Services, including:
- 15.1.1 identification of the name, type, location and specifications for all significant network elements, including switching centres, transmission points, interconnection points, network operations centers and customer care and support centers; and
 - 15.1.2 the performance of its Network (including performance against any Quality of Service standards established from time to time by the XXX).

- 15.2 The XXX shall have reasonable access to Licensee's records, personnel and property to enable the XXX to carry out effective supervision and enforcement of the Conditions, and may request additional information in writing from time to time from the Licensee.
- 15.3 All accounts and records of Licensee shall be kept in secure locations and secure formats designed to ensure their preservation. Network and performance related data shall be retained by Licensee for a minimum one (1) year period, and all financial records shall be retained by Licensee for a minimum of five (5) years.
- 15.4 Licensee shall submit a Financial and Operational Report ('Annual Report') to XXX within 120 days of the completion of each of its financial years which addresses key material developments for that year. The Annual Report shall be signed by an authorized representative of Licensee, who shall certify and attest to the completeness and accuracy of the information contained therein.
- 15.5 The Licensee shall provide a written report to XXX within 30 days of the occurrence of any material development affecting, or which would affect, ownership, control or management of the Licensee, including developments such as:

- 15.5.1 any proposed change in the control of Licensee, such as its prospective sale, disposition, bankruptcy, voluntary or involuntary insolvency, threat of insolvency, transfer of managerial or voting control;
- 15.5.2 any proposed assignment of any right or obligation established by this License Agreement;
- 15.5.3 any changes in key management personnel or members of the board of directors; or
- 15.5.4 the filing or prospective filing of significant legal claims against Licensee by third parties which may have a material impact on Licensee's ownership, control, management, or financial standing.

Part L: General Provisions and Enforcement

16 Force Majeure

- 16.1 The Licensee shall not be held in contravention of this Licence if and to the extent that the contravention arises from an event of Force Majeure. The Licensee's obligations shall, to the extent necessary, be suspended while the event of Force Majeure continues.
- 16.2 The Licensee shall advise the XXX as soon as reasonably practicable upon becoming aware of the existence of any Force Majeure event or circumstances likely to lead to such event. The Licensee shall have the onus of proving the existence of a Force Majeure event.

17 Enforcement and Penalties

- 17.1 The XXX shall monitor the Licensee's adherence to, and compliance with the Conditions, the Rules, and directions, decisions or guidelines issued by the XXX and the Law.
- 17.2 Subject to Section(s) xxx of the Act; the XXX may impose the penalty it deems fit in the event of breach of any of the Conditions.

18 Amendments to Licence

- 18.1 Subject to the provisions of section(s) xxx of the Act, the XXX may vary or amend any Condition, provided that the XXX shall, in these circumstances, provide the Licensee with reasonable notice of its intentions to do so and afford the Licensee a reasonable opportunity to make any representations in response.
- 18.2 However, amendments to the Licence shall only be made by XXX in harmonisation with amendments by other Regulatory Authorities in other territories to ensure consistency of Licence throughout the Region.

19 Assignment of Licence and Revocation

- 19.1 The Licensee may not assign, sub-license, transfer, cede or otherwise dispose of this Licence, or any rights derived under it, in favour of any third party without the prior written approval of the XXX.
- 19.2 Without limiting the general application of section(s) xx of the Act, the XXX may, on service of written notice on the Licensee, revoke this Licence if:

19.2.1 the Licensee fails to remedy any material breach of a Condition within thirty (30) days of having received written notice of the same; or

19.2.2 the Licensee is placed into liquidation or under a provisional or final judicial management order.

20 Miscellaneous Provisions

20.1 The Licensee shall observe and abide by all laws of XXX.

20.2 The Licensee shall at all times display this Licence Notice in a conspicuous place at the Licensee's registered offices.

20.3 All written notices to the XXX shall be marked for the attention of the XXX and shall be hand delivered to:

XXX XXX

xxx

xxx

XXX

or such other address, which the XXX may specify in writing to the Licensee.