Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID-AFRIKA

Vol. 552 Pretoria, 22 June Junie 2011 No. 34382

CONTENTS • INHOUD

GENERAL NOTICE

NOTICE 409 OF 2011

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

ICASA FRAMEWORK FOR INTRODUCING LOCAL LOOP UNBUNDLING

DISCUSSION PAPER FOR COMMENT

1. The Independent Communications Authority of South Africa (herein after referred to as "the Authority") hereby gives notice of its intention to embark on a section 4B inquiry process on local loop unbundling in terms of the Independent Communications Authority of South Africa Act, Act 13 of 2000 ("the ICASA Act").

2. The purpose of this discussion paper is to outline the Authority's initial views on the process to be followed to unbundle the "local loop".

3. Interested persons are invited to submit their written representations on the discussion paper by the 14th of September 2011 by post, hand delivery, facsimile transmission, or electronically for the attention of:

Mashukudu H. Molele
Project Leader
ICASA
Private Bag X10002
Sandton
2146

or

Block A
Pinmill Farm
164 Katherine Street
Sandton

Telephone: (011) 566 3687
Fax: (011) 566 3688

E-mail: MMolele@icasa.org.za
CC : PCokie@icasa.org.za

4. Licensees or interested parties may request a meeting with the Authority on a one-to-one basis to discuss any matter related to this discussion paper. The Authority intends to meet such interested parties between the period 15 August 2011 and 26 August 2011.

APPROVED BY

DR MARCIA SOCIKWA
ACTING CHAIRPERSON

DATE: 20/06/2011

ICASA Framework for introducing Local Loop Unbundling

Discussion paper for public comment

Table of Contents

Table of Figures

List of Abbreviations

Authority	The Independent Communications Authority of South Africa
ECA	Electronic Communications Act No. 36 of 2005
ECNS	Electronic Communications Network Service
ECS	Electronic Communications Service
ICASA	The Independent Communications Authority of South Africa
LLU	Local Loop Unbundling

1. Executive Summary

1. The Independent Communications Authority of South Africa (ICASA) seeks stakeholders' inputs on the manner in which to ensure access to the "local loop."
2. ICASA's view is that access to the local loop is mandated in terms of the obligation to lease facilities (Section 43(1)) of the Electronic Communications Act, no. 36 of 2005 (the "ECA"), and any facilities leasing agreement is governed by the Electronic Communications Facilities Leasing regulations as stipulated in Government Gazette 33252 of 31st May 2010
3. ICASA has identified four possible options for access to the local loop, namely:
    - Bitstream access
    - Shared loop unbundling
    - Full-loop unbundling
    - Sub-loop unbundling
4. ICASA seeks stakeholders' inputs on the following:
    - Is ICASA's proposed approach to unbundling the local loop through the implementation of the facilities leasing regulations reasonable, feasible and acceptable?
    - What form of local loop unbundling do stakeholders realistically favour in the South African market?
    - What other cost items should be included in each form of local loop unbundling (LLU)?
    - Should a standardised ordering and specifications system be developed?
    - In the event that an access line deficit is identified, would you be willing to contribute to an access line deficit recovery scheme?

2. Introduction

2.1 Purpose

5. The purpose of this discussion paper is to outline the Independent Communications Authority of South Africa's (ICASA) initial views on the process to be followed to unbundle the fixed line "local loop".

2.2 Background

1. The South African Government, through the Minister of Communications as well as ICASA has undertaken a number of initiatives over the past ten years to introduce local loop unbundling. This section provides a brief background to these initiatives and the legislative framework for the introduction of local loop unbundling.

2.2.1 The open-access approach to regulation of the electronic communications sector

1. The open-access approach to regulating electronic communications services may be summarised by the following points:
    - a technology-neutral framework that encourages innovative, low-cost delivery to users;
    - competition at all layers in the network, allowing a wide variety of physical networks and applications to interact in an open architecture
    - transparency to ensure fair trading within and between layers that allows clear, comparative information on market prices and services
    - the circumstances where everyone can connect to everyone else at the layer interface so that any size organization can enter the market and no one takes a position of dominant market power; and
    - devolved local solutions rather than centralized ones encouraging services that are closer to the user.
2. The South African Government adopted the open-access approach to regulating the electronic communications sector with the introduction of the Electronic Communications Act (ECA) in 2005.
3. The ECA aims to promote competition in the sector, not only through infrastructure competition (i.e. licensing a new vertically integrated participant), but through the introduction of service-based competition at different levels within the network where licensees are able to access components of existing network assets of another licensee to provide services.
4. This open access approach is espoused in Section 2 of the ECA, the Objects of the ECA. The Objects listed below have particular reference to unbundling the local loop:

    "(b) promote and facilitate the development of interoperable and interconnected electronic networks; the provision of the service contemplated in the Act and to create a technologically neutral licensing framework;

    (f) promote competition within the ICT sector;

    (g) promote an environment of open, fair and non-discriminatory access to broadcasting services, electronic communication networks and to electronic communications services;

(m) ensure the provision of a variety of quality electronic communications services at reasonable prices; and

(n) promote the interests of consumers with regard to the price, quality and the variety of electronic communications services."

5. Specific provisions in the ECA, namely the obligation to interconnect (Chapter 7) and the obligation to lease facilities (Chapter 8), seek to ensure the open-access model. A discussion of these obligations takes place in Section 3 of this discussion paper.

6. South Africa re-iterated its commitment to the open-access approach by signing the Kigali Protocol which supports an open access approach to national, regional and international network of networks in Eastern and Southern Africa.[1]

2.2.2 Policy directive from the Minister of Communications

1. The Minister of Communications has, in terms of section 3(2) of the ECA , discretionary powers to issue to ICASA policy directions consistent with the objects of the ECA and of the related Legislation in relation to-

   (a) "The undertaking of an inquiry in terms of section 4B of the ICASA Act on any matter within ICASA's jurisdiction and the submission of reports to the Minister in respect of such matter;

   (b) The determination of priorities for the development of electronic communications networks and electronic communications services or any other service contemplated in Chapter 3; and

   (c) The consideration of any matter within ICASA's jurisdiction reasonably placed before it by the Minister for urgent consideration".

2. Through these powers, the then Minister of Communications, the late Honourable Dr Ivy Matsepe-Cassaburi, issued a policy direction to ICASA to implement local loop unbundling based on the findings of the Local Loop Unbundling Committee. The policy direction is repeated below for reference:

   "I HAVE TAKEN THE POLICY DECISION that, given the complexity of (the) local loop unbundling process on the one hand and the urgency for South Africa to enable all operators appropriately licensed to have access to the local loop on the other hand, the unbundling process in South Africa should be urgently completed and implemented by 2011. In addition, ICASA should, as appropriate, take advantage of the report of the Local Loop Unbundling Committee and its recommendations on the proposed unbundling models". [2]

3. The current Minister, the Honourable Radhakrishna Padayachie, re-affirmed the policy direction to implement local loop unbundling in November 2010.

2.2.3 An outline of earlier steps to introduce local loop unbundling

1. In 2006 the then Minister of Communications (Minister) announced a committee headed by Professor Tshilidzi Marwala to recommend how incumbents' local loop networks could be unbundled.

[1] http://www.eafricacommission.org/projects/126/nepad-ict-broadband-infrastructure-network
[2] Government Gazette No. 30308 dated 17 September 2007

The overall task of the committee was to investigate possible Local Loop Unbundling (LLU) methods and to make appropriate recommendations in this regard.

2. In the report[3] presented to the Minister in 2007 the LLU committee recommended that:
   - a combination of three unbundling models would be appropriate;
   - any form of collocation of facilities for LLU must be allowed; and
   - any operator appropriately licensed by ICASA should have access to the local loop to deliver voice and/or broadband regardless of who owns it.
3. As a result of this report, it was proposed that a regulatory guideline be developed and overseen by ICASA to ensure that strategic issues such as the quality of the local loop, its maintenance and technical compatibility are optimised for regulation and service delivery. It would also be necessary to prescribe regulations that govern access pricing. It was also recommended that ICASA should implement carrier pre-selection regulations to support successful implementation of LLU.
4. The report further recommended that Telkom form a new facilities and services management entity on such terms and conditions as shall be agreed with ICASA. It was also emphasised that ICASA must be capacitated to physically inspect the incumbent's premises for issues that may be required for the implementation of the unbundling of local loop.
5. ICASA published a notice on 28 February 2008 to invite stakeholders to take part in the LLU process. The notice process was followed by an exploratory workshop on LLU on 23 September 2008.
6. However, access to the local loop represents a specific form of facilities leasing, which is governed by the principles in Chapter 8 of the ECA. ICASA chose to refrain from continuing work on local loop unbundling until the framework regulations for electronic communications facilities leasing agreements were finalised as required by Section 44 of the ECA.
7. ICASA published the electronic communications facilities leasing regulations, on 31 May 2010, which outline the required content of all facilities leasing agreements.
8. As part of fulfilling the recommendations made by the Local Loop Unbundling Committee (LLUC) and in line with Section 42 of the Act, ICASA further published regulations on carrier pre-selection, on 27 September 2010, as precursor regulations for the successful implementation of LLU.

2.2.4 Legislative Framework

1. Section 4B of the ICASA Act states that ICASA may conduct inquiries into any manner with regard to, amongst others:

   "4B(1)(a)The achievement of the objects of this Act or the underlying statutes;"
2. This inquiry into unbundling of the local loop is based on the objectives of the ECA being to introduce an open-access architecture to the interconnection to and use of existing electronic communications facilities, as defined in the ECA.
3. The factors around the open-access goal is discussed in more detail in the remaining sections of this discussion document

3. Open access, local loop unbundling and facilities leasing

[3] Department of Communications: Local Loop Unbundling: A way forward for South Africa.

3.1 Why unbundle the local loop?

1. The "local loop" is a physical circuit connecting the electronic communications network termination point at the subscriber's premises to the main distribution frame or equivalent facility in an electronic communications network and/or means the physical twisted metallic pair circuit connecting the electronic communications network point at the subscriber's premises to a connection point at the edge of the provider's network or a specified intermediate network.
2. Local loop unbundling is the process whereby a licensee is obliged to provide access to the local loop at a wholesale price so that other licensees may access end-users
3. Unbundling the local loop is similar to number portability. Number portability allows an end-user to switch service providers without having to change the number. Unbundling the local loop allows an end-user to utilise the same physical connection e.g. a traditional telephone line whilst having the choice of a service provider to access the services that are available over this physical connection.
4. With the introduction of number portability, licensees had to either reduce prices or enhance retail offerings in an effort to maintain their customers. Fostering consumer choice introduced a contestable market, thus increasing competition.
5. Unbundling the local loop is expected to have exactly the same effect where service providers will have to either reduce prices, enhance retail offerings or a combination of the two in order to remain competitive.

3.2 Providing access to the local loop

1. The current regulatory framework offers a range of tools to foster competition by unbundling the local loop. These tools have been and always will be hotly debated between licensees with a substantial presence in the market and new entrants/smaller players as well as ICASA.
2. Some argue that LLU promotes service-based competition and represents a barrier to investment and increased facilities-based competition. Others argue that the ladder of investment approach to regulating access to the local loop is one of the only tools to ensure that future investment takes place (Bourreau, M and Dogan, P (2003).
3. The matter of essential facilities, pro-competitive remedies and the obligation to lease electronic communications facilities are discussed in this section before concluding with ICASA's proposed approach to ensuring the provision of access to the local loop.

3.2.1 Defining the Local Loop as an essential facility as per s43(8) and undertaking a Market Review process for purposes of s67(4)

1. The requirement for a regulatory authority to prescribe a list of "essential facilities" is an outcome of the introduction of regulatory reform in the ICT sector in both the United States of America (USA) and Europe.

2. The principle for prescribing a list of "essential facilities" was to identify particular facilities which the regulatory authority deemed inefficient to duplicate (i.e. inefficient investment). This list of essential facilities was then used as an input to market review processes to identify whether any particular operator maintained control over an essential facility and if so, whether the conduct of the particular operator led to a lack of effective competition.

3. The ECA recognises this approach in Section 67(6)(b)(ii)(dd) by requiring a market review to consider whether any licensee has "control of essential facilities." Furthermore, the ECA states the following regarding a determination as to whether a licensee has significant market power:

"67(5) A licensee has significant market power with regard to the relevant market or market segment where the Authority finds that the particular individual licensee or class licensee—

(a) is dominant;

(b) has control of essential facilities; or

(c) has a vertical relationship that the Authority determines could harm competition in the market or market segments applicable to the particular category of licence."

4. Therefore, the ECA recognises the traditional role of a list of essential facilities in determining whether any particular licensee has significant market power, and such power warrants the introduction of particular access obligations as pro-competitive terms and conditions.

3.2.2 The adoption of the open access regime and the obligation to lease facilities

1. The ECA introduces an open access regime by introducing the obligation to interconnect (Section 37(1)) and to lease electronic communications facilities (Section 43(1)).

2. However, the open access regime that is specified in the ECA differs from open access regimes developed in other nations. The traditional open access regime has led to broad commitments, with certain access obligations being specified on specific licensees, such as OfTel's imposition of local loop unbundling obligations on British Telecom.

3. The ECA took the events of other jurisdictions a step further, by specifying that all electronic communications network service (ECNS) licensees are obliged to lease electronic communications facilities as defined in the ECA. The ECA defines these facilities as follows:

"electronic communications facility" includes but is not limited to any—

(a) wire;

(b) cable (including undersea and land-based fibre optic cables);

(c) antenna;

(d) mast;

(e) satellite transponder;

(f) circuit;

(g) cable landing station;

(h) international gateway;

(i) earth station; and

(j) radio apparatus or other thing, which can be used for, or in connection with, electronic communications, including where applicable—

(i) co-location space;

(ii) monitoring equipment;

(iii) space on or within poles, ducts, cable trays, manholes, hand holds and conduits; and

(iv) associated support systems, sub-systems and services, ancillary to such electronic communications facilities or otherwise necessary for controlling connectivity of the various electronic communications facilities for proper functionality, control, integration and utilisation of such electronic communications facilities;"

4. The obligation to lease the above facilities is mandatory under Section 37(1) of the ECA. It should be noted that this obligation does not only apply to identified firms, but rather to all those firms with an ECNS license.

5. The ECA implicitly considers the potential for firm-specific behaviour that may undermine transparency and therefore ensures that all electronic facilities leasing agreements are to abide by the principle of non-discrimination (Section 43(7) of the ECA).

6. The ECA further recognises that such an obligation, whilst it in principle aims to foster the efficient use of networks, may not always be possible in practice. For this reason the ECA allows for a dispute mechanism in Section 43(4):

"For purposes of subsection (1), a request is reasonable where the Authority determines that the requested lease of electronic communications facilities—

(a) is technically and financially feasible; and

(b) will promote the efficient use of electronic communication networks and services."

7. The open access regime as discussed above provides for a wide range of potential access points within an electronic communications network for any licensee which requests such access.

8. This obligation on electronic communications network service licensees effectively provides licensees with an opportunity to avoid the requirement to comply with onerous and specific obligations which ICASA may impose on specific licensees through a market review process.

9. Based on the obligation to lease electronic communications facilities, providing access to the local loop is already mandatory based on the obligation imposed under Section 43(1). It is important to note that this obligation affects all firms with an ECNS licence, unless exempted by ICASA in terms of section 44(5) of the ECA.

10. Furthermore, Regulation 9(3) of the Electronic Communications Facilities Leasing regulations (the "regulations") states the following:

"An electronic communications facilities provider must apply similar terms and conditions, including those relating to rates and charges, in similar circumstances to itself, affiliates and other electronic communications facilities seekers requiring similar services, unless otherwise requested by the electronic communications facilities seeker"

11. Regulation 10(3) states the following:

"Charges for electronic communications facilities must be sufficiently unbundled so that an electronic communications facilities seeker does not have to pay for anything it does not require for the requested electronic communications facility or facilities."

12. These requirements are tempered by the necessity of a request to lease the local loop to be "reasonable" as per Section 43(4).

13. Although Regulation 12 provides for exemptions based on whether a licensee has significant market power in the provision of a particular service, given that no ECNS licensee has been declared to have SMP, the requirements under Regulation 9(3) and 10(3) of the regulations apply to all ECNS licensees.

14. It is also important to note that Regulation 12 of the regulations cannot be used as a mechanism to exclude certain licensees from the requirement to provide services in a non-discriminatory manner, as this is a requirement under Section 43(7) of the ECA.

15. Another point is that the ECA is explicit in allowing the regulations to include "the manner in which unbundled electronic communications facilities are to be made available" (Section 44(3)(m)).

16. Although the current regulations do not explicitly prescribe the manner in which such unbundling should take place, the right for an ECNS licensee to request access to unbundled facilities is enshrined through the definition of electronic communications facilities in the ECA and the requirement under Regulation 10(3) of the regulations.

3.3 ICASA's view and proposal

3.3.1 ICASA's view on successful unbundling of the local loop

1. ICASA is of the view that, in the context of the South African regulatory framework, LLU is mandatory. Section 43(1) of the ECA provides that access to electronic communications facilities, including the local loop, must be provided by any ECNS licensee to any other ECS/ECNS licensee or exempted network operator who requests access, unless the request for access is unreasonable. ICASA has the power, in terms of Section 44(5) of the ECA, to exempt particular licensees from this requirement where the licensees do not have SMP in the relevant market or market segment. However, ICASA has not yet exercised its power to do so. As such, at the present time, all ECNS licensees are subject to this obligation.

2. However, in reality, in the absence of detailed regulatory rules regarding how such access must be provided, licensees may not easily be able to exercise their rights to obtain access to the local loop.

3. The relationship between the obligation to lease facilities (Section 43(1)) and the requirement to specify a list of essential facilities (Section 43(8)) needs to be unpacked. On the one hand section 43(1) provides that all ECNS licensees must grant access to facilities unless exempted by ICASA on the basis that they do not have significant market power (SMP) and, on the other hand, section 43(8) provides that ICASA must prepare a list of certain facilities which must be leased in terms of section 43(1). Regardless of this situation it is apparent that the local loop is definitely one of the types of electronic communications facilities that will always be subject to the leasing obligations in section 43(1) of the ECA.

4. The ECA includes, in section 43(7), a requirement that facilities must be leased on a non-discriminatory basis. Although this requirement has an influence on the pricing of leased facilities in that an operator cannot charge competing operators more to lease facilities to them than it charges either itself, its affiliates or other competing operators (unless there is an objectively justifiable basis on which the facilities leased to the different parties are not comparable), it is not the same as a price control. A price control is generally imposed on either wholesale or retail services to bring prices closer to cost-based levels. This is not necessarily the effect of the non-discrimination requirement which is imposed on ECNS licensees in terms of section 43(7) of the ECA in relation to their facilities-leasing activities.

5. The Facilities Leasing Regulations are required to be published by ICASA, in terms of section 44(1) of the ECA, to facilitate the conclusion of the facilities leasing agreements in terms of which access to the facilities of network operators will be given. These Facilities Leasing Regulations do not cover all the matters contemplated in section 44, but do include certain provisions which are similar to provisions which are already contained in the ECA itself. For example, regulation 9(3) provides that the terms and conditions on which ECNS licensees lease facilities, including access charges which are levied, must be similar regardless of the person to whom the facilities are being leased.

6. This provision has substantially the same effect as section 43(7) of the ECA. Regulation 12 of the Facilities Leasing Regulations provides that those ECNS licensees who are found not to have SMP will not be required to comply with regulation 9(3) or with regulation 10(3) which mandated that facilities leasing charges be unbundled. At present, given that no ECNS licensees have been declared to have SMP, the Facilities Leasing Regulations as well as Chapter 8 of the ECA are applicable to all ECNS licensees in their entirety.

7. Although ICASA has the power to exempt particular ECNS licensees from some or all of the obligation to lease facilities where those licensees do not have SMP in the relevant market or market segment, the effect of regulation 12 of the Facilities Leasing Regulations is only to exempt certain licensees (with effect from the time that a market review has been conducted) from the application of certain provisions of the Facilities Leasing Regulations.

8. Regulation 12 does not have the effect of exempting those ECNS licensees which do not have SMP in the relevant market from the same or similar provisions of the ECA itself e.g. the obligation to lease facilities on a non-discriminatory basis in terms of section 43(7). This is on the basis that the Facilities Leasing Regulations cannot replace or supersede the provisions of the empowering legislation.

9. To assist electronic communications network service and electronic communications service licensees in making electronic facilities leasing agreements with respect to the local loop, ICASA proposes to prescribe guidelines on leasing the local loop that will guide licensees. These guidelines will provide clarity on the issues of access to the network and efficient pricing and will follow the principles governing the leasing of electronic facilities contained in s43 (7) of the Act, namely non-discrimination and technical quality.

10. ICASA's intention in adopting this approach to local loop unbundling is to give effect to object 2 (b) of the Act – to provide for the regulation of electronic communications in the Republic in the public interest and for that purpose to `promote and facilitate the development of interoperable and interconnected electronic networks'.

11. As mentioned above, ICASA is of the view that access to the local loop is already available in terms of Chapter 8 of the Act and is to be effectively introduced on the basis of the Electronic Facilities Leasing regulations.

3.3.2 The benefits of ICASA's approach

1. According to the International Telecommunications Union (ITU), the main reason for the sharing of infrastructure is to lower the costs of building and deploying the electronic communications network infrastructure. Local loop unbundling is one of the important ways to promote the sharing of infrastructure, by granting new entrants access to existing networks

2. ICASA's proposed approach above focuses directly on the benefits of infrastructure sharing, whilst also introducing a form of competition among licensees in the provision of services to end-users.

3. Furthermore, the approach prevents inefficient investment through preventing duplication of access networks, thus artificially increasing network operating inefficiencies. The infrastructure sharing approach also reduces the disruption of streets and the environment due to construction of new access networks.

4. The proposed infrastructure sharing approach introduces two distinct benefits to a licensee with an access network:
    - Improved internal efficiencies: the licensee who faces a form of competition has an opportunity to focus on internal dynamics to improve efficiencies and therefore actually improve revenue generation. The improvement of efficiencies will not only retain customers in a competitive market but will also lead to the provision of new and improved services, thereby leading to an increased customer base.
    - Providing access to its network will generate wholesale revenues not seen as a revenue stream before. Although this may be viewed as a loss owing to customer switching behaviour, it should also be used as an opportunity to generate a revenue stream where other licensees actually incur the costs of attempting to attract customers to utilise either under-utilised network capacity, or capacity that is not utilised at all. Any form of infrastructure sharing product that generates some revenue from assets which previously have not been utilised should be viewed as on opportunity and not a threat.

3.4 Conclusion on open access, local loop unbundling and facilities leasing

1. This section concludes with the view that access to the "local loop" is mandated under Chapter 8 of the ECA and more specifically the Electronic Communications Facilities Leasing regulations. Furthermore, as a point of departure being that of infrastructure sharing, ICASA is of the view that a measure of competition in the use of the "local loop" will improve network utilisation and internal network efficiencies, with the potential for an overall net gain to those licensees with an access network.

4. Developing a guideline to introduce local loop unbundling: the way forward

1. ICASA has identified four options for unbundling the local loop, described below.

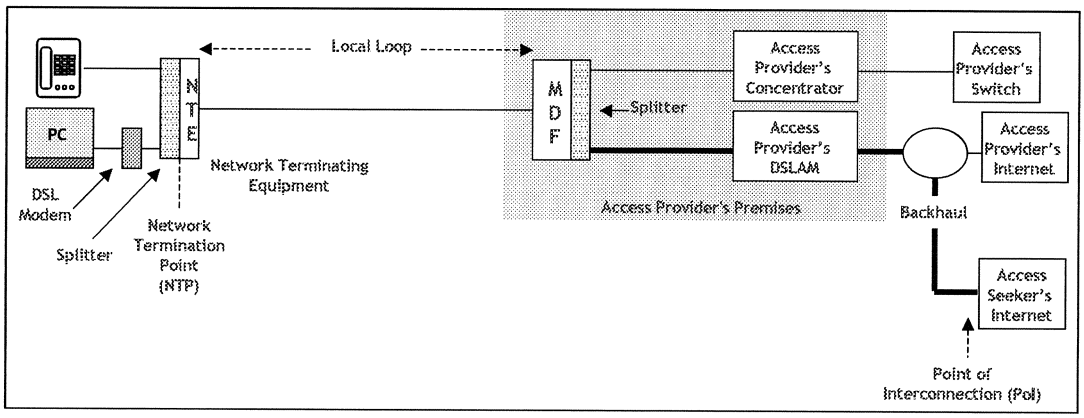
4.1 Option 1: Bitstream access- Wholesale access

1. Bitstream service may be defined as the provision of transmission capacity between an end-user connected to a telephone connection and a facilities seeker, where the point of interconnection available to the licensee that requests access to facilities is upstream of the network providers network edge broadband equipment (for example, upstream of a DSLAM)
2. In most cases Bitstream access depends in part on the PSTN or Electronic Communication Network (ECN) operator and may include other networks such as the ATM network.
3. It is important to note that direct resale offerings are not a substitute for Bitstream access because they do not allow facilities seekers to differentiate their services from those of the facilities provider
4. In providing a bitstream service, the facilities provider typically provides both the transmission medium (e.g. copper cables) and transmission system (e.g. xDSL transmission on copper cables). Technically, bitstream can be provided to any transmission system, since it requires reservation of a specified bandwidth, rather than dedicated use of a physical loop.
5. This option does not entail any unbundling of the copper pair, but employs the high frequencies of the copper loop as in the case of shared use of the copper pair, for example. A facilities seeker does not have access to the actual network infrastructure elements of the facilities provider but has access to the bit stream on the network side of the Digital Subscriber Line Access Multiplexer (DSLAM). In this case, the DSLAM is installed and operated by the facilities provider who sets up the speed and quality of service (QoS) of each user's DSL access link.
6. This type of service may be attractive to the facilities provider as it does not involve physical access to copper pairs.
7. In a situation where the facilities seeker would be able to distinguish their services, such as VoIP and email, from those of the facilities provider, the seeker must be granted access at a point where they can control certain technical characteristics of the service to the end-user and/or make full use of their own network or other network offerings. This would present facilities seekers with an opportunity to change the quality of services or other factors such as adjusting their offerings in terms of rates, contention ratio or other features.
8. The advantage with the bitstream access option is that it would not hinder any progressive modernisation of the local access network by replacing copper cables with optical fibre cables.
9. It should be noted that Bitstream is normally offered only for subscribers at locations where the incumbent already offers broadband. Therefore the capital costs of establishing a broadband capability will already be covered.
10. However, in providing a bitstream service, a facilities provider is likely to face upfront capital costs, including:
    - Specifying and establishing the ordering system and internal procedures
    - Establishing the backhaul
    - Establishing the testing arrangements
11. A facilities provider will also face certain variable costs, including:
    - The costs of the DSLAM
    - Per subscriber order costs
    - Per subscriber modem costs
    - Traffic volume costs of backhaul services

- On demand testing costs

12. Figure 1 below illustrates a simplified arrangement for bitstream access.

Figure 1: Bitstream Access- Wholesale Access



(Source: Horrocks, Horrocks Technology, 2009)

13. In evaluating the introduction of a bitstream service, certain quality of service parameters also have to be established. Below is a list of such parameters that have to be standardised:
    - Packet loss in the backhaul.
    - Maximum delay added by the backhaul
    - Maximum delay variation added by the backhaul.

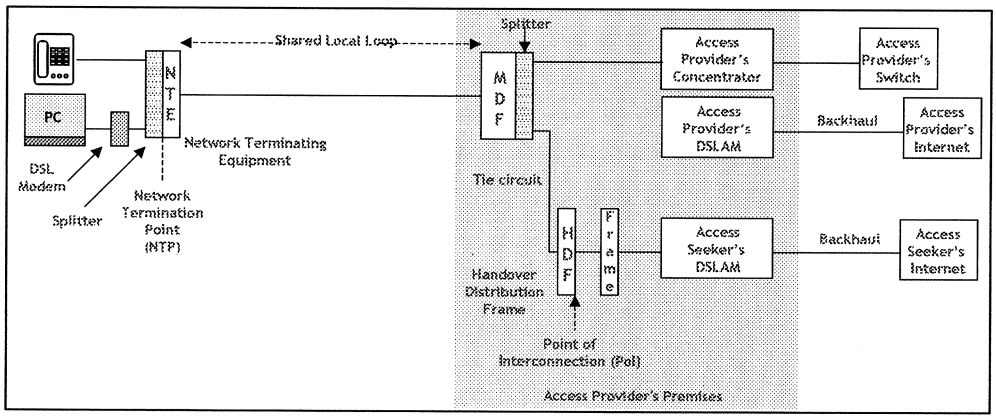
4.2 Option 2: Line Sharing (Shared Access to the Local Loop)

1. Line Sharing takes place when the facilities provider retains use of the loop for its baseband, PSTN services, but unbundles the higher frequency part of the spectrum for use by a facilities seeker. This model enables facilities seekers and providers to share the same line where both the facilities provider and the seeker provide different services such as voice and data on the same loop.
2. In this situation, consumers can acquire data services from facilities seekers while retaining the voice services of the facilities provider. Some facilities seekers may choose to offer data services only, so with line sharing consumers can retain their facilities provider service for voice calls while getting higher bandwidth services from another operator without needing to install a second line.
3. Technically, a splitter is connected to the wires in the Main Distribution Frame (MDF). The splitter separates the frequencies for voice telephony and those for higher bandwidth services. It is located between the MDF and the facilities provider's local switch – downstream of the network edge. It is connected to both the facilities provider's switch and to the DSLAM connected to the facilities provider's high-speed network. The local loop normally includes the splitter which remains a part of the facilities provider's network.
4. Furthermore, line-sharing allows the facilities seeker to provide the service of their choice by covering either low frequency bands or high frequency bands. For instances, when one frequency band is occupied by one operator the other frequency band can be occupied by another operator.
5. This option would broaden choices available to the end-user as it would allow them to retain the network operator as its provider for voice telephony services and at the same time choose the new entrant or any operator as the provider for broadband high-speed internet services over the same loop.

6. However, in providing a shared service, a facilities provider is likely to face upfront capital costs, including:
    - Specifying and establishing the ordering system and internal procedures
    - Establishing the testing arrangements
7. A facilities provider will also face certain variable costs, including:
    - The costs of the DSLAM
    - Per subscriber order costs
    - Per subscriber modem costs
    - On demand testing costs

8. Figure 2 illustrates a simplified arrangement for shared loop unbundling

Figure 2: Line Sharing or Shared loop unbundling



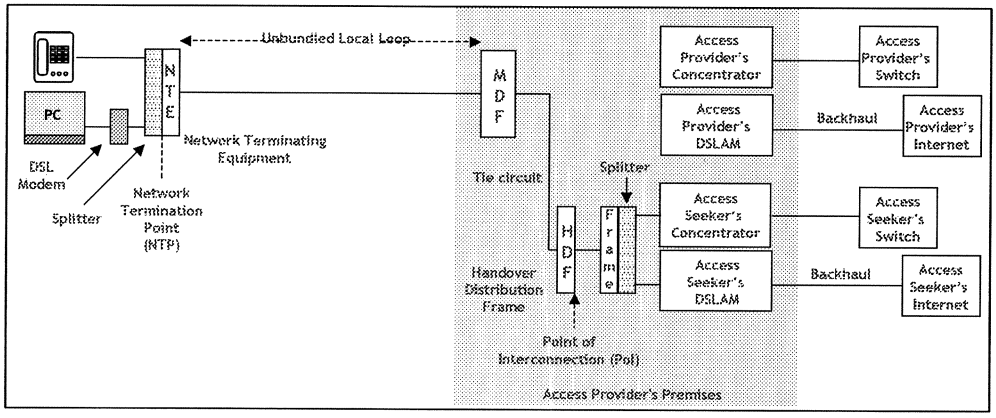
(Source: Horrocks, Horrocks Technology, 2009)

4.3 Option 3: Full Local Loop Unbundling (Full Access)

1. The Full Unbundling option assigns the entire copper local loop to the facilities seeker, which means that the facilities seeker gains access to the copper local loop and sub-loops or other format of loop (network). This option enables the facilities seeker to install its own broadband equipment and co-locate, i.e. the facilities seeker may place all required equipment inside or outside the facilities providers' premises, depending on which co-location model is most appropriate.
2. In this option, the facilities seeker takes over the full operation of the allocated local loop. It also means that it will have access to both low and high frequency. In some cases this option may mean that the facilities seeker has all loops dedicated to it. The capital costs incurred by the facilities provider are represented by:
    - Specifying and establishing the ordering system and internal procedures
    - Installing a handover frame
    - Co-location costs
    - Establishing the testing arrangements.
3. The variable costs to be faced by the facilities provider are the:
    - Per subscriber order costs
    - On demand testing costs.

4. Figure 3 below shows a simplified arrangement for full loop unbundling

Figure 3: Full loop unbundling



(Source: Horrocks, Horrocks Technology, 2009)

4.4 Option 4: Sub Loop Unbundling

1. Sub Loop Unbundling represents a situation where the facilities seeker accesses the network of the facilities provider at the primary connection point (PCP) within the network, at street level. This form of unbundling may be used for emerging technologies such as VDSL, which requires very high bandwidth and therefore a much shorter length of cable. In this situation the facilities seeker would provide its own network all the way to the PCP
2. In this situation the equipment that transfers the connection from the facilities provider to the facilities seeker is adjacent to the PCP, rather than in the exchange.
3. In all other respects, sub-loop unbundling is analogous to full-loop unbundling.
4. The capital cost incurred by the facilities provider is the cost of the link between the PCP and the facilities seeker's network. Variable costs, including maintenance of the line should be negotiated between the facilities seeker and provider.

5. Conclusion and stakeholder input

1. This discussion document represents ICASA's proposed approach to the introduction of local loop unbundling in South Africa. The approach may be summarised as follows:
    - Access to the local loop is mandated under the obligation to lease electronic communications facilities
    - All ECNS licensees face this obligation until otherwise exempted
    - The pricing of access to the specified facilities must be non-discriminatory at all times
    - There are four potential options for the introduction of access to the local loop, namely:
        - Bitstream
        - Shared loop unbundling

- Whole loop unbundling
- Sub-loop unbundling

- To ensure the introduction of a stable regime of gaining access to any ECNS licence holders' network it is crucial to standardise the format in which any request for access to facilities is governed by an industry-wide accepted standard.
- This standard, specified as a guideline from ICASA, is necessary so as to facilitate the actual conclusion of facilities leasing agreements

2. ICASA therefore seeks stakeholder input on the following:

- Is ICASA's proposed approach to unbundling the local loop through the implementation of the facilities leasing regulations reasonable, feasible and acceptable?
- What form of local loop unbundling do stakeholders realistically favour in the South African market?
- What other cost items should be included in each form of local loop unbundling?
- Should a standardised ordering and specifications system be developed?
- In the event that an access line deficit is identified, would you be willing to contribute to an access line deficit recovery scheme?

3. On the basis of stakeholder responses, ICASA seeks to establish two collaborative working groups. The first working group, the Access Working Group will address technical matters. The second working group, the Pricing working group, will address pricing and non-discrimination concerns.

6. References

Baranes, Edmond and Bourreau, Marc Communications and Strategies: 2005, An Economist's guide to Local Loop Unbundling

Bourreau, M. And Dogan, P. (2003): Service based vs. Facility-based Competition in Local Access Networks.

Department of Communications, The Local loop unbundling committee report, (2007): Local Loop Unbundling: A way forward for South Africa. DoC. SA.

Electronic Communications Act 36 of 2005

Horrocks, J. (2009) Horrocks Technology. Internal ICASA document

ICASA ACT 13 of 2000

ITU, (2008): Trends in Telecommunication Reform; Six degrees of sharing

Kiessling, T. & Blondeel, Y (1999): The impact of regulation on facility-based competition in telecommunications; A comparative analysis of recent developments in North America and the European Union

Kittl et al (2006): infrastructure based versus Service based: Competition in telecommunications

OECD, (2003): Working paper on Telecommunication and Information Services policies

Pio Baake and Brigette Preissl: (2006), Local Loop Unbundling and Bitstream Access: Regulatory Practice in Europe and the US

Reichl, W. and Ruhle, Ernst-Olav, (2008): Competition and Services in Next Generation Networks – the impact of convergence of services on value chains and markets

Sidharth Sinha, (2003): Local Loop Unbundling for Broadband Competition- Response to the TRAI consultation paper on accelerating growth of the internet and broadband penetration

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001
Publications: Tel: (012) 334-4508, 334-4509, 334-4510
Advertisements: Tel: (012) 334-4673, 334-4674, 334-4504
Subscriptions: Tel: (012) 334-4735, 334-4736, 334-4737
Cape Town Branch: Tel: (021) 465-7531

Gedruk deur en verkrygbaar by die Staatsdrukker, Bosmanstraat, Privaatsak X85, Pretoria, 0001
Publikasies: Tel: (012) 334-4508, 334-4509, 334-4510
Advertensies: Tel: (012) 334-4673, 334-4674, 334-4504
Subskripsies: Tel: (012) 334-4735, 334-4736, 334-4737
Kaapstad-tak: Tel: (021) 465-7531