



**Australian  
Competition &  
Consumer  
Commission**

# **Unconditioned Local Loop Service**

**ACCC inquiry into possible variation of the service  
declaration for the unconditioned local loop service**

**Position Paper**

**December 2007**



© Commonwealth of Australia 2007

This work is copyright. Apart from any use permitted by the *Copyright Act 1968*, no part may be reproduced without permission of the Australian Competition and Consumer Commission. Requests and inquiries concerning reproduction and rights should be addressed to the Director Publishing, Australian Competition and Consumer Commission, PO Box 1199, Dickson ACT 2602.

# Contents

<b>1. Introduction</b> .....	<b>2</b>
1.1 G9’s variation request .....	1
1.2 Inquiry process .....	2
1.3 Previous discussion paper .....	4
1.4 Structure of this paper .....	5
<b>2. Access to the sub-loop</b> .....	<b>7</b>
2.1 The current ULLS declaration .....	7
2.2 Scenarios where a variation may be required .....	8
<b>3. Is a variation required in the absence of a fibre network rollout?</b> .....	<b>17</b>
<b>4. Conclusion</b> .....	<b>20</b>
<b>Appendix A – G9’s proposed variation to the ULLS declaration</b> .....	<b>21</b>
<b>Appendix B - International research</b> .....	<b>22</b>
B1. Sub-loop regulation in overseas jurisdictions .....	22
B2. Issues with accessing the sub-loop in overseas jurisdictions .....	24
<b>Appendix C - Proposed draft variation to the ULLS service description</b> .....	<b>27</b>

## Executive Summary

This paper sets out the Australian Competition and Consumer Commission's (ACCC) views as part of its inquiry into the possible variation of the service declaration for the unconditioned local loop service (ULLS).

The ACCC's view is that there is no need at this point in time to vary the current ULLS declaration for the purpose of access at the sub-loop level.

The ACCC's analysis indicates that the current ULLS declaration would enable access to the sub-loop in the case where Telstra was to deploy a fibre to the node (FTTN) network. The current ULLS declaration may need to be amended to allow for interconnection at the sub-loop level in the event that a FTTN network deployment by the G9 or another third party was imminent. However, the G9 has emphasised that 100 per cent cutover of all copper lines is crucial to its business case for deploying a FTTN network and that a legislative change is required to enable this. In addition, there appear to be a number of technical impediments that, in the absence of 100 per cent cutover, may compromise the ability of parties to efficiently deploy a FTTN network capable of providing high quality wholesale and retail services.

Any variation to the current ULLS declaration in the absence of legislative amendments to enable 100 per cent cutover would likely have no material effect on the ability of non-incumbent operators, such as the G9, to deploy a FTTN network. As the G9 is currently seeking a legislative amendment to allow for 100 per cent cutover of all copper lines, any decision to vary the ULLS declaration should follow any decision on this proposed legislative amendment.

Regardless of FTTN developments, the ACCC is mindful that the ULLS declaration may need to be varied to ensure technical and functional neutrality in the event of IP core upgrades. While there is a degree of uncertainty around when this will be required, the ACCC considers that there is merit in it considering variation to the current ULLS declaration to make it sufficiently robust to future IP developments.

In this regard, the ACCC as part of the next stage of its inquiry process is seeking the views of interested parties on the proposed draft variation to the ULLS service description as contained in Appendix C to this paper.

# 1. Introduction

## 1.1 G9's variation request

On 15 March 2007, Optus on behalf of the G9 wrote to the ACCC formally requesting an amendment to the current ULLS declaration. Optus submitted that the amendment was necessary to ensure that:

1. carriers other than Telstra wishing to deploy a FTTN network will have certainty regarding rights to interconnect to the communications wire at a point near its new nodes and remote from the location of any Customer Access Module (CAM) currently provided by Telstra
2. access to the existing ULLS is unaffected by the variation (that is, access seekers would still be able to interconnect at Telstra's exchanges in the interim period before a mass-scale FTTN deployment by any party) and
3. any cessation of use of 'CAMs,' such as in the case of a transition to an IP core network, would not mean that Telstra is no longer obligated to provide access to communications wires in the customer access network (CAN).<sup>1</sup>

The G9's proposed variation to the ULLS declaration is provided in Appendix A.

## 1.2 Inquiry process

Following the request from the G9, the ACCC commenced a public inquiry under subsection 152AL of the *Trade Practices Act 1974* (the Act) to determine whether it should vary its service declaration for the ULLS. The ACCC noted that the focus of the inquiry is on whether to vary the service description so that a 'potential point of interconnection' need not be 'located at or associated with a CAM'. The ACCC also noted that the inquiry would consider whether the definition of communications wire in the ULLS service declaration should be amended to include copper and other metallic based wires used in local loops.

### **Unconditioned local loop service**

Access to the ULLS involves access to unconditioned cable such as twisted copper pairs in the CAN. It is a service for the use of the full frequency spectrum over the (copper-based) communications wire between the boundary of a telecommunications network (on the customer side) and a point where the copper terminates.

With this service, there is no prescribed bandwidth because the access seeker receives the use of the twisted copper pair without conditioning or specific carriage technology. This enables the access seeker to add its own carriage technology in order to supply, for

---

<sup>1</sup> Optus, *Request for amendment to the ULLS service description*, 15 March 2007, p. 1.

example, high-speed data carriage services to end-users or, alternatively, multiple telephony services to medium and large corporate customers or a combination of voice and data services.

The declaration means that a carrier supplying the ULLS to itself or another person must also supply the service, upon request, to an access seeker. Declaration ensures service providers have access to the inputs they need to supply competitive communications services to end-users in accordance with the standard access obligations in s. 152AR of the Act. The terms and conditions of supply can be agreed through commercial negotiations. If the access provider or access seeker cannot agree on the terms and conditions of supply, either party can seek ACCC arbitration of the terms and conditions for supply of the (regulated) service. Where a relevant access undertaking (approved by the ACCC) exists, an arbitration determination made by the ACCC must not be inconsistent with that undertaking.

### **Possible scenarios under which the unconditioned local loop service declaration may require variation**

The ACCC is required by s. 152AL(3)(d) of the Act to be satisfied that a possible variation of the ULLS declaration will promote the long-term interests of end-users (LTIE) of carriage services or of services provided by means of carriage services.

The current ULLS service description involves access to unconditioned communications wire in the CAN between the boundary of a telecommunications network (on the customer side) and a point where the communications wire terminates. Currently, the communications wire generally terminates at the local exchange. In contrast, access to the sub-loop involves access at a new point between the customer and the local exchange along the communications wire. That is, access at the sub-loop level would enable an access seeker to gain access to a smaller part of the local copper loop (rather than the full local loop).

The current ULLS declaration may need to be varied to allow for access to the sub-loop when either a FTTN network has been deployed by the incumbent or in order to enable a non-incumbent operator to deploy its own FTTN network. Under these two scenarios, access to the sub-loop may take two different forms: ‘sub-loop unbundling’ and ‘sub-loop access’.

In the situation where the incumbent operator has deployed a FTTN network, access to the sub-loop may be a necessary input for quasi-facilities-based competitors to compete in downstream broadband and voice markets. Access seekers would install their own DSLAM (or Multiple Service Access Node (MSAN)) and switching equipment at the node and use the sub-loop infrastructure to provide voice and data services to end-users.

Access to the sub-loop under this scenario may be referred to as sub-loop unbundling (SLU). SLU refers to access to the unconditioned communications wire in the CAN between the boundary of a telecommunications network (on the customers’ side) and a node which is closer to the customer than the local exchange. Specifically, SLU involves access on a *line-by-line* basis in the case where a FTTN network has been deployed.

Access to the sub-loop infrastructure may also be a necessary input for a non-incumbent operator to deploy its own FTTN network. While a non-incumbent operator may seek access to the sub-loop on a line-by-line basis in order to deploy its own FTTN network, there are likely to be commercial and technical advantages to it having access to 100 per cent of the copper lines at the node in a particular distribution area (which is referred to below as ‘100 per cent cutover’). Access to the sub-loop under this under this scenario may be referred to as sub-loop access (SLA). SLA refers to access to *all of the* unconditioned communications wire in the CAN of a telecommunications network (on the customer side) and a node.

In addition to the above types of FTTN developments, the current ULLS declaration may need to be varied to accommodate the move by Telstra to an IP-based core network. At present, the ULLS declaration may not be technically or functionally neutral. In particular, the ability to interconnect with the communications wire at a sub-loop level is tied to the description of a device—the CAM—that may be redundant in the event of the deployment of an IP core network.

### **1.3 Previous discussion paper**

The ACCC released a discussion paper on the ULLS variation inquiry in May 2007.<sup>2</sup> The discussion paper sought comment from interested parties on the key issues associated with a possible variation to the current ULLS declaration.

In particular, the discussion paper sought interested parties’ views on:

- whether the current ULLS declaration requires access to be provided to the communications wire at a point that is not located and/or associated with a CAM, such as a node or other device
- the extent of demand (including anticipated demand) for access to the communications wire at locations not currently ‘located at or associated with’ a CAM
- the extent to which the deployment of a fibre-based network would affect the ability of access seekers to compete in downstream markets
- whether the varied ULLS is currently being supplied (either pursuant to the current ULLS declaration or under commercial arrangements) or would be technically capable of being supplied should it be declared and
- the nature and extent to which the proposed variation would affect the legitimate commercial interests of an access provider

---

<sup>2</sup> ACCC Discussion Paper, *ULLS Possible Variation of Service Declaration*, May 2007, available at [www.accc.gov.au](http://www.accc.gov.au).

The ACCC noted that interested parties should also have regard to the legislative criteria in s. 152AB of the Act when responding to the discussion paper.

The ACCC received 8 submissions in response to the discussion paper. Public submissions are available on the ACCC's website.

The ACCC has considered the issues raised in those submissions in addition to international research in making its decision in this paper.

## **1.4 Structure of this paper**

This paper outlines the ACCC's reasons for its view as part of the inquiry into the possible variation of the ULLS service declaration.

This paper is set out as follows:

- **Section 2** discusses the possible scenarios where a variation to the ULLS declaration may be required to allow for access to the sub-loop.
- **Section 3** outlines other situations where a variation to the ULLS declaration may be required, even in the absence of demand for access to the sub-loop.
- **Section 4** sets out the conclusions.
- **Appendix A** specifies the G9's proposed amendment to the current ULLS declaration.
- **Appendix B** provides background material on overseas experience with access at the sub-loop level.
- **Appendix C** provides a draft variation to the ULLS service description for the comment of interested parties.

## **1.5 Making submissions to the public inquiry**

The ACCC seeks comment from all industry participants, other stakeholders and from the public more generally. It encourages parties to consider the matters set out in this paper, and make submissions to the ACCC to assist it in determining whether to vary the ULLS declaration. Submission from interested parties are due 22 February 2008.

To foster an informed and robust consultative process, the ACCC proposes to treat all submissions as non-confidential, unless the submissions indicate otherwise.<sup>3</sup>

Submissions can be addressed to:

Richard Home  
General Manager  
Strategic Analysis and Development Branch  
Communications Group  
Australian Competition and Consumer Commission  
richard.home@acc.gov.au

The ACCC asks that any electronic submission is also copied to:

Arek Gulbenkoglul  
Strategic Analysis and Development Branch  
Communications Group  
Australian Competition and Consumer Commission  
[arek.gulbenkoglul@acc.gov.au](mailto:arek.gulbenkoglul@acc.gov.au)

Any questions about this paper should firstly be directed to Arek Gulbenkoglul at arek.gulbenkoglul@acc.gov.au or 03 9290 1892.

---

<sup>3</sup> Unless the author requests that a submission be kept confidential, written submissions given to the Commission will be made available to interested parties upon request and will be published on the Commission's website at [www.accc.gov.au](http://www.accc.gov.au). If submissions contain confidential information, the author should provide the Commission with a 'confidential' and 'public' version. Only the 'public' version will be placed on the Commission's website.

## 2. Access to the sub-loop

This section outlines the current ULLS declaration and examines the possible scenarios under which a variation to the ULLS declaration may be required to allow for access at the sub-loop level.

### 2.1 The current ULLS declaration

The current ULLS declaration involves access to unconditioned communications wire in the CAN between the boundary of a telecommunications network (on the customers' side) and a point where the communications wire terminates (see box 1 for the full service description).

#### Box 1 The current unconditioned local loop service declaration

##### The current ULLS service description

The unconditioned local loop service is the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user's premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with a customer access module and located on the end-user side of the customer access module.

##### Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

**boundary of a telecommunications network** is the point ascertained in accordance with section 22 of the *Telecommunications Act 1997*.

**communications wire** is a copper based wire forming part of a public switched telephone network.

**customer access module** is a device that provides ring tone, ring current and battery feed to customers' equipment. Examples are Remote Subscriber Stages, Remote Subscriber Units, Integrated Remote Integrated Multiplexers, Non-integrated Remote Integrated Multiplexers and the customer line module of a Local Switch.

**public switched telephone network** is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies.

Notably, the point of interconnection under the current ULLS declaration is at a point 'located at or associated with a customer access module'. A CAM is defined as a device that provides ring tone, ring current and battery feed to customer equipment.

The G9 noted:

Currently ULLS interconnection is generally requested and provided at the location of Telstra's CAM, which is generally located at the Telstra exchange building.<sup>4</sup>

---

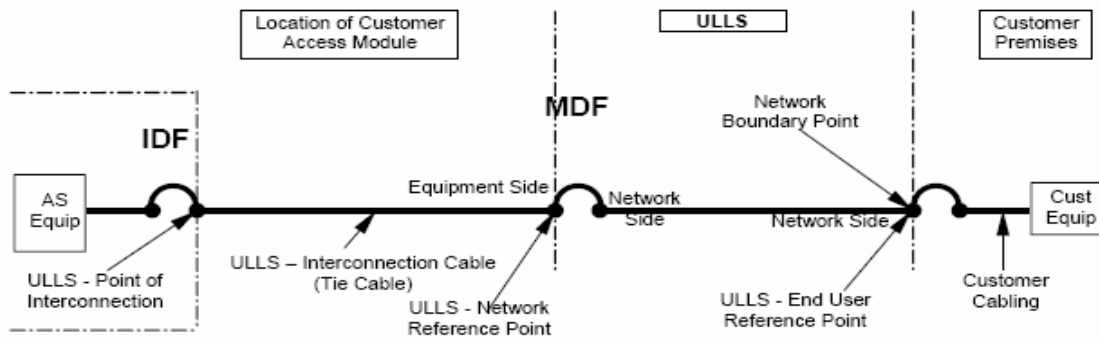
<sup>4</sup> Optus, *Request for amendment to the ULLS service description*, 15 March 2007, p. 1.

As shown in **figure 1**, ULLS interconnection is typically on the customer side of the intermediate distribution frame (IDF) in a Telstra local exchange. In other words, access seekers generally install their own interconnection equipment—typically a DSLAM—in an exchange which is ‘associated with’ a Telstra CAM.<sup>5</sup>

Importantly, the right of access under the existing ULLS declaration is not limited to the exchange. The current ULLS declaration also applies to remote access units, such as street cabinets, where a CAM has been deployed.

Access seekers that take up the ULLS can provide higher quality and a more diverse range of broadband services compared with those access seekers that resell Telstra’s ADSL service. The ULLS can also be used by access seekers to supply voice calls, however this requires significant investment in, or access to, a range of switching and other network equipment.

**Figure 1 Schematic diagram of the ULLS network architecture**



<sup>a</sup> The MDF is within the exchange building. The section labelled ‘ULLS’ is the cable between the exchange building and the customer’s premises.

Source: Communications Alliance (C559:2005) Part 1, p. 16.

## 2.2 Scenarios where a variation may be required

The current ULLS declaration may need to be varied to allow for access to the sub-loop when either a FTTN network has been deployed by the incumbent or in order to enable a non-incumbent operator to deploy its own FTTN network.

A FTTN network involves the deployment of optical fibre (to replace or augment copper) between the local exchange and a node, which is a point closer to the customer in the CAN.

<sup>5</sup> The ACCC considers that an access seeker’s DSLAM is ‘associated with’ a CAM in Telstra’s exchanges. While both in the exchange, the link between an access seeker’s DSLAM and a Telstra CAM is indirect as it is routed through Telstra’s MDF.

In the situation where the incumbent operator has deployed a FTTN network, as in the case of a Telstra FTTN upgrade, access to the sub-loop may be a necessary input for quasi-facilities-based competitors to compete in downstream broadband and voice markets. Access seekers would install their own DSLAM (or MSAN) and switching equipment at the node and use the sub-loop infrastructure to provide voice and data services to end-users.

Access to the sub-loop under this scenario may be referred to as sub-loop unbundling (SLU). SLU refers to access to the unconditioned communications wire in the CAN between the boundary of a telecommunications network (on the customer side) and a node which is closer to the customer than the local exchange. Specifically, SLU involves access on a *line-by-line* basis, subsequent to a FTTN network being deployed.

In the context of a proposed FTTN deployment, such as the G9 (FANOC) FTTN proposal, access to the sub-loop infrastructure may be a necessary input for a non-incumbent operator to deploy its own FTTN network. For example, access to Telstra's sub-loops will be required for providing end-to-end retail and wholesale services under G9's proposed FTTN network architecture. While a non-incumbent operator may seek access to the sub-loop on a line-by-line basis in order to deploy its own FTTN network, there are likely to be commercial and technical advantages to it having access to 100 per cent of the copper lines at the node in a particular distribution area ('100 per cent cutover'). The G9 has emphasised that its FTTN proposal involves building a node next to each of Telstra's pillars and doing a single 100 per cent cutover of all the copper pairs at a pillar to the node. Access to the sub-loop under this scenario may be referred to as sub-loop access (SLA). SLA refers to access to *all of the* unconditioned communications wire in the CAN of a telecommunications network (on the customers' side) and a node.

Therefore, the two relevant FTTN scenarios in Australia are:

- A Telstra FTTN deployment and
- A third party FTTN deployment, e.g. the G9 proposal.

The following sections consider whether the existing ULLS declaration may need to be varied to allow for access to the sub-loop under these two scenarios. It is important to note that the discussion in the following sections is predicated on the basis that an FTTN network is deployed *without* an upgrade to the IP core network. The issue of IP core network upgrades are discussed separately in section 3 of this paper.

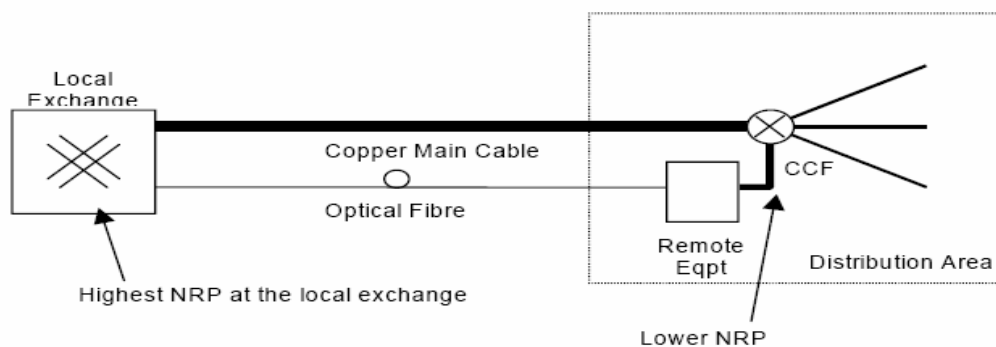
### **2.2.1 Telstra FTTN deployment**

The key question for consideration in the event of a Telstra FTTN deployment is: does the current ULLS declaration allow for access seekers to interconnect at Telstra's nodes in the sub-loop? The question relates to whether access seekers can access a SLU service to provide downstream services as quasi-facilities-based competitors, once Telstra's FTTN network has been deployed.

If Telstra was to install optical fibre between the local exchange and remote equipment at the node for a particular distribution area, it would place CAMs (shown in **figure 2** as 'remote equipment') at the node to provide services to its customers (figure 2).

Given that Telstra would place CAMs at the node, the current ULLS declaration would allow for access seekers to access a SLU service such that they could interconnect at Telstra's nodes on a line-by-line basis. Effectively, under a Telstra FTTN deployment, the point of interconnection is 'shifted out' closer to the customer from the local exchange to the node. Therefore, under this scenario there is no need to vary the current ULLS declaration.

**Figure 2 Possible network architecture for a Telstra FTTN deployment**



Source: ACIF C559, Part 1, figure 7.5.

While a SLU service falls under the existing ULLS declaration and is therefore available to access seekers under a Telstra FTTN deployment, international evidence suggests that where an incumbent telecommunications provider has built an FTTN network, access seekers have shown little interest in deploying their own DSLAM and switching equipment at nodes to utilise SLU (Appendix B).

This outcome may be due to the limited economic viability of interconnecting at the node. Due to the smaller addressable market provided via remote sites and higher per unit costs of equipment (relative to deployment of DSLAM and switching equipment at the local exchange), a significantly large proportion of the total number of customers in each distribution area would need to be secured by any one access seeker to meet the minimum efficient scale necessary to deploy infrastructure within a particular distribution area.

For example, a report prepared by Analysys for the Netherlands regulator, OPTA<sup>6</sup>, concluded that use of a sub-loop service by a competitor to KPN would only be commercially viable in very restricted circumstances (i.e. in the densest urban areas) and even then only on the basis of radical reductions (50 per cent) in KPN's proposed charges for the sub-loop service, co-location and backhaul.

<sup>6</sup> Analysys, *Final report for OPTA: The business case for sub-loop unbundling in the Netherlands*, January 2007.

### 2.2.2 Third party FTTN deployment

The key question in relation to a possible third party FTTN deployment is: does the current ULLS declaration allow for a third party to interconnect at a point in the sub-loop thereby enabling it to deploy its FTTN network?

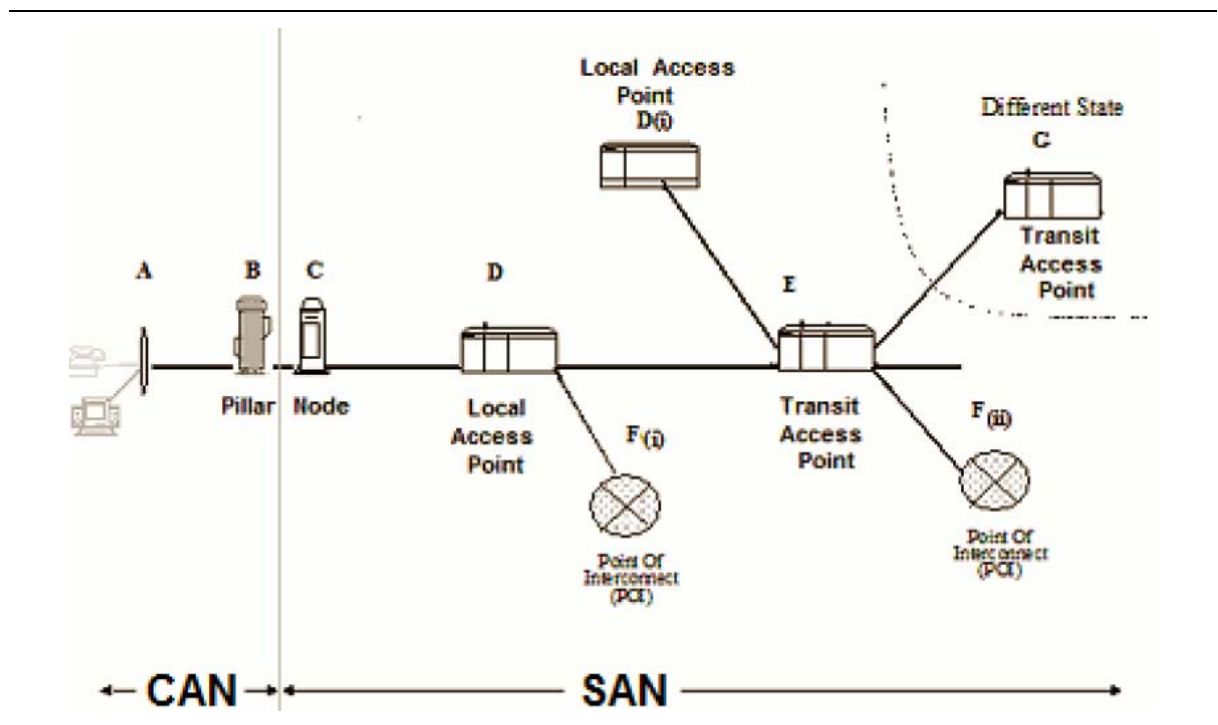
Before considering this question, it is important to consider what a third party FTTN network deployment might involve. There are a number of possible options available to third parties – for example, a third party FTTN deployment could involve retention of the copper cable between an exchange and node for the provision of voice and/or legacy copper services.

The G9 proposal, which represents one possible third party deployment option, is likely to involve:

- replacing the current copper wire between the Telstra local exchange building and the proposed node with fibre
- building a node next to Telstra's pillars within the proposed FTTN footprint and doing a *one time cutover* and connection of *all* the copper wire pairs at those pillars across to the node
- linking the pillar to the node, such that all end-users would be connected to the G9's or a third party's fibre network and
- Telstra retaining ownership and control of the copper sub-loops between the pillar and the customer, and providing the G9 or a third party with use of all of the copper sub-loops.

The G9's proposed FTTN network is illustrated in **figure 3**.

**Figure 3 G9's proposed FTTN network architecture**



Source: FANOC's Submission related to its Special Access Undertaking, 2007.

In considering the question of how the current ULLS declaration applies in this scenario, it is assumed that the G9 would install its own CAMs at the node. The G9 would therefore be seeking to interconnect—and cut across the copper pairs—at a point that may not necessarily be ‘associated with’ a CAM. As a result, the current ULLS declaration may need to be varied to allow for interconnection at the G9’s node.

Information received from interested parties is consistent with the conclusion that there is uncertainty around interconnection at a sub-loop level in the event of a G9 or third party FTTN rollout. The CCC noted that:

As devices such as pillars, which would form the point of interconnection between the sub-loop and a potential FTTN network, are passive devices that do not provide ring tone, ring current and battery feed, an infrastructure owner may well refuse access to sub-loops on the basis that nodes are not points of interconnection associated with a CAM.<sup>7</sup>

TransAct submitted that:

Where a pillar, node or other remote device is *not* co-located with a CAM, it would appear that such a device would not be associated with the CAM and therefore would not be covered under the current ULLS declaration.<sup>8</sup>

Telstra argued that a pillar, node or remote device would only be associated with a CAM when:

<sup>7</sup> CCC's Submission in response to the ACCC's Discussion Paper, June 2007, p. 2.

<sup>8</sup> TransACT's Submission in response to the ACCC's Discussion Paper, June 2007, p. 3.

...the network provider has installed analogue telephony line cards at that particular remote access point so that the pillar, node or other remote device provides ring tone, ring current and battery feed.<sup>9</sup>

The G9 went further and submitted that a DSLAM could be regarded as ‘associated with’ a CAM:

It follows that a pillar, node or other remote device can be regarded as ‘associated with a CAM’, since a digital DSLAM port may be regarded as forming the CAM, and DSLAM ports may be located in nodes, pillars and other remote devices.<sup>10</sup>

The ACCC does not consider this view to always be correct. While a DSLAM may be located at a remote location, a DSLAM does not necessarily have CAM functionality and therefore does not necessarily satisfy the current ULLS service description. The only situation where this view would be correct is when a MSAN—a DSLAM with CAM functionality—is located at a remote location; then it would fall under the current ULLS service description.

However, a variation to the current ULLS service description to ensure that copper lines can be cutover without first being ‘located at or associated with’ a CAM would not in and of itself provide the G9 with access to a SLA service (including 100 per cent cutover) that it has indicated it requires to deploy a FTTN network. Rather, the ACCC understands that the G9 is also seeking a legislative amendment to Part XIC of the Act to allow for this to occur. The G9 has indicated that s. 152AR(4)(b) of the Act means that Telstra may not be required to provide access to copper sub-loops where that would prevent it meeting its own ‘reasonably anticipated requirements’. Therefore, any variation to the current ULLS declaration in the absence of legislative amendments to enable 100 per cent cutover would likely have no material effect on the ability of non-incumbent operators, such as the G9, to deploy a FTTN network.

Further, the ACCC understands that there are several technical issues that would affect the performance of the G9’s FTTN network in the absence of 100 per cent cutover. These issues are discussed below.

#### *Difficulties in identifying copper pairs for physical line-by-line transfer*

Submitting parties indicated that there would be technical problems associated with physically transferring copper pairs at Telstra’s pillars to an alternative network (via tie cabling between the pillar and the G9’s node).

Telstra submitted that physical activity associated with work being undertaken at cross-connection points is a common cause of network faults. The CEPU also noted that there may be difficulties in that the alternative carrier seeking to interconnect (the G9 or a third party) could not readily identify the relevant cable pair to be transferred as:

---

<sup>9</sup> *Telstra’s Submission in response to the ACCC’s Discussion Paper*, June 2007, p. 25.

<sup>10</sup> *G9 submission in response to the ACCC’s Discussion Paper*, June 2007, p. 4.

This would require access to Telstra's cable records data base. This access could, presumably, be mandated, but such a step would represent a potentially costly intrusion into the incumbent's internal systems.<sup>11</sup>

### *Increased faults in the network from line-by-line transfer*

CEPU and Telstra noted that increased transfers of the copper line will cause more faults in the network and would therefore affect service quality.

Telstra argued that interconnection at multiple points in the same distribution area would affect its ability to remotely identify and test faults.<sup>12</sup> In addition, Telstra asserted that allowing multiple access points to the network threatens all the benefits that can accrue from a FTTN network, such as new higher speed services. For a FTTN network to be viable, Telstra claimed that an FTTN provider would need to have a single feed point from its node.<sup>13</sup>

### *Inability to connect at Telstra's pillars*

CEPU noted that:

the most immediate difficulty in the Australian case ... is that the existing Telstra pillars are full i.e. the physical connection points on the exchange side of the pillar (for Mains/M cables) are all (or virtually all) in use for active services.<sup>14</sup>

Thus, the G9 or a third party FTTN provider may not be able to connect their node to the exchange side of the Telstra pillar if it is already full. CEPU suggested that this problem could be addressed in two ways: (1) by requiring Telstra to 'reconfigure or reconstruct its pillar/cross-connect facility to allow for such extra capacity, but this would obviously involve a cost' or (2) by requiring the competitor to build 'not only its own node but its own pillar/cross connect'. The latter would not alleviate the technical problems relating to the physical transfer of pairs from Telstra's network to the G9's or a third party's network.

### *Cross-talk*

One of the key issues associated with a line-by-line (or less than 100 per cent) cutover is 'cross-talk' or 'mid point injection interference'. Cross-talk occurs when one xDSL service interferes with other xDSL services transmitted over copper pairs, which are in close proximity to each other (i.e. within the same binder cable). Cross-talk increases the further the copper pairs run in parallel, the closer they are together, and the larger (more powerful) the interfering signals. Cross-talk also increases with the frequency of the transmitted signals: ADSL2+ is affected to a greater extent than ADSL while VDSL2 is affected to a greater extent than ADSL2+.

---

<sup>11</sup> CEPU's Submission to the ACCC's Discussion Paper, June 2007, p. 7.

<sup>12</sup> Telstra's Submission to the ACCC's Discussion Paper, June 2007, p. 11-12.

<sup>13</sup> *ibid*, p. 12.

<sup>14</sup> CEPU's Submission to the ACCC's Discussion Paper, June 2007, p. 6.

If the G9's FTTN network operated alongside Telstra's existing copper network, there would be crosstalk. As the signal strength over a copper pair coming out of the remote node is high relative to the signal strength over a copper pair coming out of the local exchange (given signals attenuate over distance travelled), cross-talk can be significant. The issue is that a copper pair carrying a signal from the node negatively affects a copper pair carrying the signal from the local exchange.

Currently, cross-talk is dealt with indirectly by a mandatory ACIF Code.<sup>15</sup> Under the Code, providers must comply with a maximum power limit to ensure that a certain level of performance can be achieved for xDSL services provided over the ULL. In effect, this factor would mean that the capacity to provide higher xDSL through-put speeds would be significantly compromised. Therefore, the benefits of deploying a FTTN network may not be realised.

Another technique to manage cross-talk is 'Dynamic Spectrum Management' (DSM). Earlier forms of DSM (Levels 0–2) involve a form of central and simultaneous processing of xDSL signals over the same binder cable to avoid cross-talk. Essentially, these forms of DSM reduce cross-talk by attenuating the power (and hence speed) of the xDSL service. The most advanced form of DSM (Level 3) can eliminate cross-talk while allowing xDSL services to operate at full power. However, one pre-condition of DSM Level 3 is that each of the copper pairs in a binder cable must come from the same line card within a DSLAM.<sup>16</sup> That is, the DSM Level 3 technology cannot be used effectively unless it is used over all coppers pairs in a particular line card/DSLAM.

Alcatel-Lucent argued that the use of DSM Level 3 techniques will ensure adequate service performance. Alcatel-Lucent submitted that, given that DSM Level 3 requires there to be only one DSLAM at the remote access unit serving a distribution area, allowing access at the sub-loop will impede DSM Level 3 deployment and therefore speeds on a FTTN network.<sup>17</sup>

## Conclusion

The above analysis indicates that the current ULLS declaration does not need to be amended to allow for interconnection at the sub-loop level in the event that a FTTN network was deployed by Telstra. While the current ULLS declaration applies, it is worth noting that evidence from overseas jurisdictions suggests that access seekers may not find it economic to connect at this level.

However, the current ULLS declaration may need to be amended to allow for interconnection at the sub-loop level in the event that a FTTN network deployment by the G9 or another third party was imminent. The amendment would need to ensure that

---

<sup>15</sup> ACIF Code C559:2006. ACIF codes are administered by the ACMA. This code is currently being modified by the Communications Alliance to include VDSL2, and this is expected to be completed in early 2008.

<sup>16</sup> *Telstra's Submission to the ACCC's Discussion Paper*, June 2007, p. 12.

<sup>17</sup> *Alcatel-Lucent's Submission to the ACCC's Discussion Paper*, June 2007, p. 4.

copper lines can be cutover without first being ‘located at or associated with’ a CAM. Such an amendment is likely to provide greater certainty for a non-incumbent operator wishing to deploy its own FTTN network.

Nevertheless, the G9 has emphasised that 100 per cent cutover of all copper lines is crucial to its business case for deploying a FTTN network and that legislative change is required to enable this. In addition, interested parties have identified a number of technical impediments that, in the absence of 100 per cent cutover, may compromise the ability of parties to efficiently deploy a FTTN network capable of providing high quality wholesale and retail services.

Therefore, in the absence of legislative amendments to allow 100 per cent cutover provisions there is likely to be limited demand by non-incumbent operators to gain access at the sub-loop level in order to deploy a FTTN network. Accordingly, there is no pressing need at this time to vary the ULLS declaration to address uncertainty over whether the current ULLS declaration would allow the G9 or another third party to gain access to the sub-loop. However, as set out in section 3 below, the ACCC notes that there may be good reasons to vary the current ULLS service description for other reasons, and such a variation might also enable access to the sub-loop.

### 3. Is a variation required in the absence of a fibre network rollout?

A more general issue to consider is whether definitions of network elements, such as the CAM and the copper wire, and current assumptions about their characteristics and locations within the network will continue to apply in the evolution towards a modern next generation network (NGN).

The ACCC received submissions from interested parties that the use of the term CAM is becoming increasingly redundant. The definition of the CAM in the current ULLS declaration is based on the assumption that the communications wire is being used to provide traditional telephony services that incorporate ring tone, ring current and battery feed.

Interested parties—including the G9, CEPU and CCC—took the view that following network modernisation, including an IP core upgrade, the current ULLS declaration's reference to 'ring tone, ring current and battery feed' would need to be updated to reflect increasing data provisioning on the communications wire. The CCC stated that:

...the service description is being rendered anachronistic given the extent to which telecommunications services are increasingly being provided over IP-based networks ... voice over IP networks do not utilise ring tone in the manner of traditional PSTN telephony.<sup>18</sup>

Following the move to an IP-based environment, the ACCC is of the view that a CAM may not provide functionality such as ring tone, ring current and battery feed. For example, a CAM might be in a location such as in a node, remote from an exchange building, such that these functions could be provided at the end-user's premises. Alternatively, a DSLAM, MSAN or telephony line card may be used at the node, instead of a CAM. For example, VoIP handsets are generally powered at the end-user's premises using the power supply at that location, removing the need for a battery feed at the CAM or from the telecommunications network at all.

The ACCC is aware that Telstra launched its IP core network in April 2007.<sup>19</sup> To date, Telstra has, among other things, capped or exited some of its network platforms and has migrated most of its internet backbone IP traffic. However, the ACCC is not aware of Telstra having soft switches operational such that it is in a position to migrate any of its customers off PSTN switches.<sup>20</sup>

The ACCC aims to keep service descriptions technically and functionally neutral to avoid distorting technological or innovative developments.<sup>21</sup> For the reasons described

---

<sup>18</sup> CCC's Submission in response to the ACCC's Discussion Paper, June 2007, pp. 2–3.

<sup>19</sup> Telstra 2007, Full year newsletter, available at: [www.telstra.com](http://www.telstra.com).

<sup>20</sup> See <http://www.btplc.com/21CN/> for detailed information on BT's IP core network upgrade.

<sup>21</sup> ACCC, *Telecommunications services — Declaration provisions: a guide to the declaration provisions of Part XIC of the Trade Practices Act*, July 1999.

above, the current ULLS declaration may not be technically or functionally neutral. In particular, the ability to interconnect with the communications wire at a sub-loop level is tied to the description of a device (the CAM) that, in some circumstances, may be redundant in the event of the deployment of an IP core network.

Therefore, the current ULLS declaration may need to be varied to accommodate the move to an IP-based core network. Amending the current declaration to incorporate a more technically and functionally neutral point of interconnection will remove the uncertainty from the current service description as interconnection will not be restricted to a specific network component. Such a variation would also be consistent with the way the ULLS is described in other jurisdictions.

For example, the European Commission (EC) makes reference to a ‘concentration point’ in the definition of the local sub-loop:

...a partial local loop connecting the network termination point at the subscriber's premises to a concentration point or a specified intermediate access point in the fixed public telephone network.<sup>22</sup>

In the UK, BT the incumbent, has adopted the EU definition and refers to a “concentration point” in the definition of the SLU:

...providing an operator with access to a partial local loop connecting the network termination point at the end customer's premises to a concentration point or a specified intermediate point in the local network.<sup>23</sup>

Similarly in Belgium, the incumbent operator, Belgacom, refers to “concentration points” in its reference ULL offer:

To facilitate and optimise the management and development of a Local Network, following Concentration Points are used in the Belgacom Local Networks:

- Local Distribution Centre (LDC): an active Concentration Point installed typically in a small (prefab) building, containing a distribution frame, local loop line equipment and transmission equipment for relay with the local exchange (LEX), two types of LDC's can be distinguished: LDC's that do have copper pairs available from the LDC to the LEX and LDC's that do not have this.
- Cross Connectable Street Cabinet (KVD – ‘Kabelverdeler’ or ‘Borne’): A Concentration Point, containing a cross connect distribution frame. At the level of some KVD's active equipment, e.g. pair gain systems or line access equipment, may be installed.<sup>24</sup>

Belgacom further divide these “concentration points”:

---

<sup>22</sup> Regulation (EC) No. 2887/2000 of the European Parliament and of the Council of 18 December 2000 - Article 2(d) of the Regulations.

<sup>23</sup> BT Openreach 2006, Product Description: Sub-loop Unbundling (SLU), December, p. 2.

<sup>24</sup> Belgacom, *Annex C – Belgacom Raw Copper and Shared Pair Products – Technical Specifications*, 14 March 2006, p. 24.

- Local junction: The copper cables between the LDC and LEX. These cables may be used:
  - To connect Users in or out of the serving area of an LDC to the LEX. These Users will be cross connected on the Distribution Frame of the LDC directly towards the LEX, i.e. without using (active) line equipment installed in the LDC. (Remark: The number of Users, that can be directly connected to the LEX, will depend on the capacity of the local junction cable). In some cases, there is no facility to connect such users. Those LDC's are explicitly indicated by Belgacom.
  - As bearer of a transmission system to connect the LDC line equipment with the LEX.
- Feeder Network: The copper 'feeder' cables between the LEX or LDC and the KVD.
- Distribution network: The copper 'distribution' cables in the street, between the KVD or LDC and the Introduction Cable at User premises. The KVD or LDC is thus the connection point between the Feeder Network and the Distribution Network.<sup>25</sup>

In its submission, the G9 supported changing the ULLS definition to allow for access at '*a junction or concentration point.*'<sup>26</sup>

Further, the definition of a communications wire is tied to a specific technology – copper. Expanding the definition from 'unconditioned *copper* based communications wire' to *metallic* based wire would account for the small number of aluminium wires currently in the Telstra CAN. Such a variation would make the ULLS service description more technically neutral. However, the ACCC is not aware of access being denied on this basis.

In light of the above factors, the ACCC considers that there is merit in considering possible variation to the current ULLS service description to make it more technically and functionally neutral. To this end, the ACCC is seeking the views of interested parties on the proposed draft variation contained in Appendix C to this paper. This amendment would also effectively enable a non-incumbent operator to gain access to the sub-loop on a line-by-line basis in order to deploy its own FTTN network, subject to the technical impediments identified above.

Interested parties should have regard to the legislative criteria in s. 152AB of the Act when responding to the proposed draft variation. Subsequent to receiving submissions from interested parties on the proposed draft variation, the ACCC will undertake a LTIE assessment pursuant to s.152AL(3)(d) of the Act before reaching a final decision on whether to make a variation to the ULLS declaration.

---

<sup>25</sup> Belgacom, *Belgacom's Reference ULL Offer – For Telecommunications Operators valid from 01/01/06 to 31/12/06*, pp. 7-8.

<sup>26</sup> *G9's Submission in response to the ACCC's Discussion Paper*, June 2007, p.13.

## 4. Conclusion

Access to the sub-loop is only a relevant issue in the context of FTTN deployment. The ACCC's view is there is no need at this point in time to vary to the current ULLS declaration for the purpose of enabling access at the sub-loop level.

The preceding analysis indicates that the current ULLS declaration would enable access to the sub-loop in the case where Telstra was to deploy a FTTN network. On the other hand, the current ULLS declaration may need to be amended to allow for interconnection at the sub-loop level in the event that a FTTN network deployment by the G9 or another third party was imminent. However, the G9 has emphasised that 100 per cent cutover of all copper lines is crucial to its business case for deploying a FTTN network and that a legislative change is required to enable this. In addition, there appear to be a number of technical impediments that, in the absence of 100 per cent cutover, may compromise the ability of third parties to efficiently deploy a FTTN network capable of providing high quality wholesale and retail services.

Any variation to the current ULLS declaration in the absence of legislative amendments to enable 100 per cent cutover would likely have no material effect on the ability of non-incumbent operators, such as the G9, to deploy a FTTN network. As the G9 is currently seeking a legislative amendment to allow for 100 per cent cutover of all copper lines, any decision to vary the ULLS declaration should follow any decision on this proposed legislative amendment.

Regardless of FTTN developments, the ACCC is mindful that the ULLS declaration may need to be varied to ensure technical and functional neutrality in the event of IP core upgrades. While there is a degree of uncertainty around when this will be required, the ACCC considers that there is merit in considering variation to the current ULLS declaration service description to make it sufficiently robust to future IP developments.

In this regard, the ACCC as part of the next stage of its inquiry process is seeking the views of interested parties on the proposed draft variation to the ULLS service description as contained in Appendix C to this paper.

# Appendix A – G9’s proposed variation to the ULLS declaration

## Unconditioned local loop service

### Declared service

The Australian Competition and Consumer Commission declares pursuant to section 152AL(3) of the Trade Practices Act 1974 (the Act) that the Unconditioned local loop service (ULLS) is a "declared service" for the purposes of Part XIC of the Act.

### Date

The declaration takes effect on 1 August 2006 and expires on 31 July 2009.

### Service description

~~An~~The unconditioned local loop service is the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user’s premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with:

~~(a) a customer access module;~~

~~(b) a junction or concentration point for two or more communications wires; or~~

~~(c) any other physically accessible point of interconnection on a communications wire or any section of it,~~

~~and located on the end-user side of the a customer access module.~~

~~For the avoidance of doubt a request by an access seeker for access at one point of interconnection on a communications wire is not satisfied by the provision of access at another point of interconnection on that communications wire.~~

### Definitions

Where words or phrases used in this declaration are defined in the Trade Practices Act 1974 or the Telecommunications Act 1997, they have the meaning given in the relevant Act.

In this Appendix:

**boundary of a telecommunications network** is the point ascertained in accordance with section 22 of the Telecommunications Act 1997;

**communications wire** is a copper based wire forming part of a public switched telephone network;

**customer access module** is a device that provides ring tone, ring current ~~and or~~ battery feed to customers’ equipment or facilitates the provision of a listed carriage service over a communications wire. Examples are Remote Subscriber Stages, Remote Subscriber Units, Integrated Remote Integrated Multiplexers, Non-integrated Remote Integrated Multiplexers, ~~and~~ the customer line module of a Local Access Switch and a Digital Subscriber Line Access Multiplexer;

**public switched telephone network** is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies.

# Appendix B - International research

## B1. Sub-loop regulation in overseas jurisdictions

Access to the sub-loop on a line-by-line basis (SLU) is regulated in several overseas countries. Table B1 provides an overview of whether SLU is regulated, whether SLU has been taken up and the progress of FTTx network roll outs in selected OECD countries.

Table B1 **Sub-loop availability and take-up vs. fibre deployment in selected OECD countries**

<i>Countries</i>	<i>Is SLU available?</i>	<i>Has SLU been taken up?</i>	<i>Progress of fibre deployments</i>
Belgium	✓	X	SLU mandated 1 March 2001. <sup>a</sup> BelgaCom (the incumbent) has begun to roll-out fibre. It offers SLU access subject to qualifications. <sup>b</sup> BIPT (the regulator) imposes power attenuation deployment rules on BelgaCom to reduce mid-point injection interference. <sup>c</sup>
Canada	X	X	Although SLU is not mandated, Bell Canada has rolled out FTTN and it is expected to cover around 2 million people by the end of 2007. <sup>d</sup>
Denmark	✓	X	SLU mandated July 1998. <sup>e</sup> There have been limited rollouts of FTTH, and no clear on-going rollout plans. <sup>o</sup>
Finland	✓	X	SLU mandated January 2001. <sup>f</sup> There have been a small number of FTTx deployments by small communities with support from their local government and in some cases the European Regional Development Fund. <sup>n</sup>
France	✓	X	SLU mandated January 2001. <sup>f</sup> France Telecom undertaking FTTH trials. <sup>d</sup>
Germany	✓	X	SLU mandated January 2001. <sup>f</sup> Deutsche Telecom, the incumbent, has plans to deploy FTTC, aiming to upgrade 50 cities to 50Mps by the end of 2007. <sup>i</sup>
Greece	✓	X	SLU mandated January 2001. <sup>f</sup>
Ireland	✓	X	SLU mandated December 2000. <sup>f</sup> SLU is available but has not been taken up as yet. Currently undertaking a review in Regulatory Aspects of NGN. <sup>d</sup>
Italy	✓	X	SLU mandated January 2001. No requests at this stage. <sup>g</sup>
Japan	X	X	NTT is migrating to an all-in-one IP FTTH service to replace the PSTN copper. NTT must also allow access to its fibre network. <sup>d</sup>
South Korea	X	X	In 2002 MIC (the regulator) introduced local loop unbundling of both copper and fibre loops. <sup>m</sup> However in 2003 MIC declared that fibre networks deployed after 2004 were not required to provide unbundled access to competing carriers. <sup>m</sup> On 23 March 2007, KT, the incumbent, announced a plan to roll-out FTTH to 100% of homes by 2010. <sup>k</sup>

<i>Countries</i>	<i>Is SLU available?</i>	<i>Has SLU been taken up?</i>	<i>Progress of fibre deployments</i>
Netherlands	✓	X	SLU mandated June 2000. <sup>f</sup> KPN (the incumbent) has begun rolling out fibre and is looking to dismantle MDF's in 2008 in order to provide FTTC. <sup>d</sup>
New Zealand	X	X	NZ is only just going through the process of unbundling their local loop.
Norway	✓	X	SLU mandated January 2001. <sup>f</sup>
Poland	✓	X	SLU mandated January 2001. <sup>f</sup>
Portugal	✓	X	SLU mandated January 2001. <sup>f</sup> PTC (the incumbent) announced that it would like to build a "future proof" access network consisting of 50% fibre and 50% copper. <sup>j</sup>
Spain	✓	X	SLU mandated January 2001. <sup>f</sup> Telefónica has made public announcements about deploying a new generation network with both FTTN and FTTH. <sup>i</sup>
Sweden	✓	X	SLU mandated August 2004. <sup>h</sup> PTS has not yet formulated a regulatory policy for FTTx development. PTS also commented that it had not received any complaints regarding FTTN deployment. <sup>p</sup>
United Kingdom	✓	X	SLU mandated January 2001. <sup>f</sup> BT (the incumbent) announced in September 2005 that it will trial FTTx. No information on the outcome or progress of these trials has been made available as yet. BT's efforts are currently focussed on the core and not yet on the access. <sup>d</sup>
United States	✓	X	SLU mandated in September 1999. Aggressive fibre roll-out plans by Verizon (the incumbent) as well as the competitors. Fibre roll-out is occurring predominantly through FTTP (FTTH, FTTB), however, AT&T plans to bring FTTN to 18 million homes by end 2007. <sup>d</sup>

<sup>a</sup> OECD, *OECD Communications Outlook 2007*, July 2007, p. 53. <sup>b</sup> ERG, *Consultation Document on Regulatory Principles of NGA*, ERG (07) 16, p. 57. <sup>c</sup> BelgaCom, *Annex C – BelgaCom Raw Copper and Shared Pair Products – Technical Specifications*, 30 November 2005, pp. 24-28. <sup>d</sup> Ovum, *FTTx Regulatory Triannual Monitoring Reports: Report No 1*, 16 May 2007. <sup>e</sup> Ovum, *Denmark (country regulation overview)*, 25 July 2007. <sup>f</sup> *Regulation (EC) No. 2887/2000 of the European Parliament and of the Council of 18 December 2000*. <sup>g</sup> AGCOM, *Resolution 24/01/CIR: Measures for the implementation of shared local loop access and unbundled local sub-loop access services*, Official Journal of the Italian Republic no. 292, 17 December 2001. <sup>h</sup> Post & Telestyrelsen, *Case SE/2004/0084: Wholesale unbundled access (including shared access) to metallic loops and sub-loops for the purpose of providing broadband and voice services in Sweden*, August 2004. <sup>i</sup> ERG, *Consultation Document on Regulatory Principles of NGA*, ERG (07) 16, p. 72. <sup>j</sup> ERG, *Consultation Document on Regulatory Principles of NGA*, ERG (07) 16, p. 68. <sup>k</sup> Ovum, *FTTx Regulatory Triannual Monitoring Reports: Report No 1*, 16 May 2007, p. 6. <sup>l</sup> Holmes, J, Rogerson, D., Sephton, J. and Wilson, B., *The regulation of fibre to the node (FTTN) in Europe: A Report for the ACCC*, November 2005, p. 10. <sup>m</sup> OECD, *Monitoring review of Korea: Telecommunications Regulation Reform*, 2006, p. 20. <sup>n</sup> Racepoint, *FTTx Deployment Profile: Finnish Municipality Adopts Active Technology*, 2004. Available at <http://www.wwp.com/news/media/FiberOpticForecast09.13.04.pdf> accessed 4 September 2007. <sup>o</sup> Ovum, *The regulation of fibre-to-the-node (FTTN) in Europe – Report for the ACCC*, November 2005, p. 9. <sup>p</sup> Ovum, *The regulation of fibre-to-the-node (FTTN) in Europe – Report for the ACCC*, November 2005, p. 11.

The EU introduced SLU in January 2001<sup>27</sup>, while the US unbundled the sub-loop in 1999.<sup>28</sup>

The EU defines the 'local sub loop' as:

...a partial local loop connecting the network termination point at the subscriber's premises to a concentration point or a specified intermediate access point in the fixed public telephone network.<sup>29</sup>

In the UK, BT has defined the SLU as:

...providing an operator with access to a partial local loop connecting the network termination point at the end customer's premises to a concentration point or a specified intermediate point in the local network.<sup>30</sup>

SLU will be implemented on a dedicated point to point metallic path between a specific end-user's premise and SLU Operator's Equipment connected via a Sub Loop Connection Point (SLCP) in the OPENREACH Access Network.<sup>31</sup>

The sub-loop is defined in similar terms in other overseas countries.

While the sub-loop has been regulated for around six to eight years in overseas jurisdictions, the available evidence shows that there has been no take-up of the service to date (table B1).

In fibre-prevalent countries, such as Japan and South Korea, the incumbent and competitive providers have chosen to roll out FTTH networks, such that a SLU service is not relevant.

## **B2. Issues with accessing the sub-loop in overseas jurisdictions**

Similar to the issues that arise in Australia, the key issues arising in the context of SLU in overseas jurisdictions include:

- limited cabinet space and
- technical issues, such as cross talk/mid-point injection interference which affects network integrity.

---

<sup>27</sup> Regulation (EC) No. 2887/2000 of the European Parliament and of the Council of 18 December 2000.

<sup>28</sup> Federal Communications Commission, 1999, FCC 99-238, 15 September, p. 11.

<sup>29</sup> Regulation (EC) No. 2887/2000 of the European Parliament and of the Council of 18 December 2000 - Article 2(d) of the Regulations.

<sup>30</sup> BT Openreach 2006, Product Description: Sub-loop Unbundling (SLU), December, p. 2.

<sup>31</sup> Ibid, p. 3.

Some jurisdictions have examined methods to overcome or reduce the impact of these issues. Examples are outlined below.

### *B2.1 Co-location to overcome limited cabinet space*

In the Netherlands, co-location is offered as a solution to overcome lack of space in the remote unit. The incumbent, KPN, offers two types of co-location at the street cabinet distribution frame (SDF) in its reference offer: build a second cabinet adjacent to KPN's or co-locate with KPN's street cabinet.<sup>32</sup>

In this regard, the ERG noted that the incumbent operator's investments may be 'inefficient' if obliged to reserve space in cabinets that might not be used by alternative operators.<sup>33</sup> ERG also noted that National Regulatory Authorities (NRAs) should facilitate discussions between the incumbent operator and those wishing to be present at the street cabinet.

### *B2.2 Attenuation of power to overcome cross-talk*

In countries where FTTN roll-out is occurring, cross-talk/interference issues are a subject of ongoing contention between VDSL and ADSL2+ providers.<sup>34</sup>

European regulators have generally used power attenuation to deal with cross talk (i.e. DSM technologies, Levels 0–2). For example, the Belgian Institute of Postal Services and Telecommunications (BIPT) regulates the strength of the VDSL signal at the node.<sup>35</sup> In the UK, Ofcom (then Oftel) developed an Access Network Frequency Plan (ANFP), similar to the Australian ACIF Code for the ULLS, which seeks to reduce interference by regulating both the "spectrum and power that can be launched into both the Exchange end and the Customer premise end of the wire-pair."<sup>36</sup>

### *B2.3 Conditions on access to overcome cross-talk*

For some international jurisdictions, such as the UK, US and Belgium, SLU is available to access seekers under certain conditions. These conditions generally exist to protect network integrity.

---

<sup>32</sup> Analysys 2007, *The business case for sub-loop unbundling in the Netherlands*, 26 January.

<sup>33</sup> ERG, *Consultation Document on Regulatory Principles of NGA*, ERG (07) 16, May 2007. This consultation paper described the ERG's current thinking on next-generation access (NGA) rollout and the subsequent regulatory implications. It focused explicitly on wireline NGA implementation issues and specifically analysed FTTCab and FTTB/H.

<sup>34</sup> Yves Blondeel, T-REGS, *Prospects for the Roll-Out of Alternative Technologies Across Europe*, March 2007, p. 16.

<sup>35</sup> Belgacom, for instance, has been required by the national regulatory authority to reduce its power output for VDSL services to limit interference with other DSL services. See European Regulators Group (ERG) *Consultation Document on Regulatory Principles of NGA (ERG (07) 16)* Undated (May?) 2007, p. 53.

<sup>36</sup> *Specification of the Network Access Frequency Plan applicable to transmission systems used on the KCH network*, Network Interoperability Consultative Committee, Ofcom, 2006, p. 7.

For example, in Belgium, BelgaCom's ULL service allows access to the sub-loop at the street cabinet level. While access seekers have the right to gain access to an end-to-end sub-loop in the incumbent's access network, BelgaCom imposes several conditions and qualifications on access. These are summarised in Box B1.

In the US, similar restrictions are placed on requests for SLU. Incumbents must offer unbundled access to sub-loops, or portions of the loop, at any accessible point.<sup>37</sup> However, in areas where FTTH and FTTC deployments are deployed with 500 feet or less of copper, incumbents are relieved of their unbundling obligation because these deployments are able to provide advanced service capabilities to end users.<sup>38</sup>

**Box B1 BelgaCom's restrictions on access to the sub-loop**

Access seekers can only gain access to the sub-loop if it exists, the requested pair is unequipped and access would not require severe network modifications. Further, BelgaCom will reject requests for the sub-loop where:

- no (non)-active loops are available (in case of a request for a (non)-active loop); without prejudice of the right of the [access seeker] to request in that case a small network adaptation by BelgaCom, according to the conditions set out in [BelgaCom's Reference ULL Offer].
- no migration is possible due to technical constraints which must be detailed and proved to the Beneficiary in the implementation of the existing user connection;
- no loop, compatible with the applicable pair selection rules as defined in Annex C: Technical Specifications document, is available;
- no positions and/or pairs are available on the Type 1 or Type 2 Beneficiary Blocks, Tie Cables and/or Connectors or Extended Tie Cables, depending on the type of collocation.

*Source: BelgaCom, 2006, BelgaCom's Reference ULL Offer – For Telecommunications Operators - General Terms and Conditions, 4 January, pp. 11-12, 21-22.*

---

<sup>37</sup> Such points include, for example, a pole or pedestal, the network interface device, the minimum point of entry to the customer premises, and the feeder distribution interface located in, for example, a utility room, a remote terminal, or a controlled environment vault.

<sup>38</sup> Federal Communications Commission, FCC Order 04-248.

# Appendix C - Proposed draft variation to the ULLS service description

## Proposed amendment to the current unconditioned local loop service description

### The current ULLS description

The unconditioned local loop service is the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user's premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with:

(a) a customer access module or

(b) a concentration point.

and located on the end-user side of the customer access module.

For the avoidance of doubt a request by an access seeker for access at one point of interconnection on a communications wire is not satisfied by the provision of access at another point of interconnection on that communications wire.

### Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

*boundary of a telecommunications network* is the point ascertained in accordance with section 22 of the *Telecommunications Act 1997*;

concentration point is a technically feasible concentration point or intermediate access point in the local access network capable of supporting sub-loop access to an operator without affecting network integrity. An example would be a pillar;

*communications wire* is a ~~copper~~ metallic based wire forming part of a public switched telephone network;

*customer access module* is a device that provides and receives signalling across the metallic access wire to the ~~ring tone, ring current and battery feed to customers' equipment. Examples are include Remote Subscriber Stages, Remote Subscriber Units, Integrated Remote Integrated Multiplexers, Non-integrated Remote Integrated Multiplexers and the customer line module of a Local Access Switch,~~ customer line module of a DSLAM, or customer line module of a MSAN;

*public switched telephone network* is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies.