

Appendix 2: Tracked changes to Schedule 1, UBA Service Description



COMMERCE COMMISSION

**STANDARD TERMS DETERMINATION FOR
TELECOM'S UNBUNDLED BITSTREAM ACCESS
SERVICE**

**SCHEDULE 1
UBA SERVICE DESCRIPTION
PUBLIC VERSION**

12 December 2007

Incorporates clarifications up to 8 July 2010

All changes as a result of the draft s30R review are shown as tracked changes.
Changes to the original version of the UBA Service Description from earlier
clarifications are not shown as tracked changes.

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UBA Service Description

1 Introduction

- 1.1 This UBA Service Description is part of the UBA Terms, which set out the rights and obligations of Telecom and Access Seekers in relation to Telecom's unbundled bitstream access service.
- 1.2 References to clauses or sections are references to clauses and sections in this UBA Service Description unless expressly provided otherwise. Clause 1.3 sets out definitions for terms contained in this UBA Service Description that are not defined in the UBA General Terms [or the UBA Operations Manual](#). Otherwise, the definitions set out in the UBA General Terms apply.

Definitions

- 1.3 Except where expressly provided otherwise:

Approved Modem List means the list of Modems that have been approved for installation by Telecom under clause 16.3 of the UBA Operations Manual, published on a Telecom website accessible by the Access Seeker.

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Basic UBA Service means the UBA service as described in section 3 of this schedule.

Conditions [Telecom faces limited, or is likely to face lessened, competition in the markets for Telecom's UBA Service, which is a designated access service that is set out in subpart 1 of Part 2 of Schedule 1 of the Act.](#)

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Coverage Area means the geographic area serviced by a given Handover Point.

CoS means Class of Service.

CPE means Customer Premises Equipment.

DSLAM means Digital Subscriber Line Access Multiplexer - a device that connects many digital subscriber lines to a network by multiplexing the DSL traffic onto one or more network trunk lines.

DSL means Digital Subscriber Line.

Enhanced UBA Services means the Enhanced UBA services as set out in section 4 of the UBA Service Description.

ETP is the External Termination Point at an End User's premises or, where there is no termination point external to the premises, the first jack on the premises wiring, or the building distribution frame.

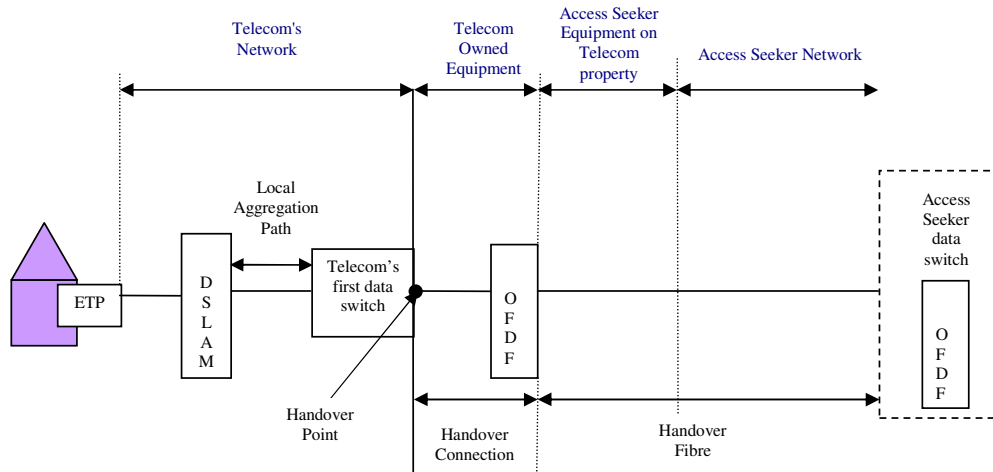
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Handover Connection	means the Telecom Owned Equipment and includes: (a) the port on the relevant data switch; (b) the optical fibre from the port to Telecom's OFDF; and (c) the OFDF.
Handover Fibre	means the Handover Fibre interconnected with the Handover Connection (and is supplied by either the Access Seeker or Telecom) that provides physical interconnection with the Access Seeker's Network.
Handover Point	means Telecom's first data switch, or equivalent facility, located in the Coverage Area.
LAP	means the Local Aggregation Path, operating between the End-user DSLAM, and Telecom's first data switch (or equivalent facility) other than a DSLAM.
PTD	means Packet Transfer Delay.
POTS	means Plain Old Telephone Service.
UBA	means Unbundled Bitstream Access.
UBS	means the Unbundled Bitstream Service supplied by Telecom on a commercial basis or pursuant to a determination in relation to the now expired designated access service of "access to, and interconnection with, Telecom's fixed PDN."
UBA Backhaul Service	means the designated access service of "Telecom's unbundled bitstream access backhaul" as set out in subpart 1 of Part 2 of Schedule 1 of the Act.

2 The UBA Service

- 2.1 For the purposes of the UBA STD, the UBA Service comprises the Basic UBA Service and the Enhanced UBA Services. Separate service descriptions for the Basic UBA Service and the Enhanced UBA Services are set out below.
- 2.2 The UBA Service is a DSL enabled service (and its associated functions, including the associated functions of Telecom's operational support systems) that enables access to, and interconnection with, that part of Telecom's fixed PDN¹ that connects the End User's building (or, where relevant, the building distribution frames) to Telecom's first data switch (or equivalent facility), other than a DSLAM.
- 2.3 The supply of a UBA Service is not conditional on a requirement that the Access Seeker, the End User, or any other person must purchase any other service from Telecom.
- 2.4 The following diagram² illustrates the UBA Service:

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Application of the Conditions

- 2.5 The UBA Service is only available in the markets where the Conditions apply.
- 2.6 In considering the Conditions, the Commission determined that the markets in which Telecom's UBA Service are supplied are:
- 2.6.1 the wholesale markets for broadband access in each of Telecom's exchange service areas (excluding lines that are cabinetised); and
- 2.6.2 the wholesale market for broadband access in cabinetised areas.

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¹ PDN or public data network means a data network used, or intended for use, in whole or in part, by the public.

² This is a logical diagram and it does not describe any technical build.

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2.7 After the coming into force of the Conditions under the Act, the Commission applied the Conditions to the markets set out in clause 2.6. For all cabinetised lines, the Commission decided that the Conditions apply and, therefore, the UBA Service is available on those lines.

2.8 Telecom is not required to supply the UBA Service in respect of lines served from exchanges (excluding all lines that are cabinetised) where the Commission has determined that the Conditions do not apply. The exchanges where the Conditions do not apply are set out in Appendix A of this UBA Service Description.

2.9 For the purposes of this UBA Service Description, lines served from the exchanges:

2.9.1 set out in Appendix A are referred to as "Unregulated Exchange Service Areas"; and

2.9.2 not set out in Appendix A are referred to as "Regulated Exchange Service Areas".

2.10 For the avoidance of doubt:

2.10.1 any Handover Point that is located in an Unregulated Exchange Service Area remains available for handover of regulated UBA traffic from DSLAMs in the Coverage Area; and

2.10.2 the UBA Service is not available in respect of lines located in an Unregulated Exchange Service Area even where the corresponding Handover Point in the same Coverage Area is located in a Regulated Exchange Service Area.

3 Basic UBA Service

Introduction

- 3.1 The Basic UBA Service provides an Access Seeker with an internet-grade 'best efforts' bitstream service and enables an Access Seeker to offer its End Users DSL enabled services.
- 3.2 The Basic UBA Service is a wholesale access service which the Access Seeker can combine with other wholesale access services offered by Telecom such as the UBA Backhaul Service to deliver a DSL enabled service to End Users.
- 3.3 The Basic UBA Service is not available for resale to End Users. However, the Basic UBA Service is available for resale to other Access Seekers.
- 3.4 The Basic UBA Service can be provided with or without an active analogue telephone service on the same copper pair (with or without POTS respectively). POTS does not form part of the UBA Service. Where a 'with POTS' UBA Service is provided, POTS must be purchased from Telecom separately, either directly by the End User from Telecom retail, or by the Access Seeker or another Service Provider under a separate wholesale service agreement.

3.5 The Basic UBA Service is solely available in respect of:

3.5.1 lines served in Regulated Exchange Service Areas; and

3.5.2 all cabinetised lines.

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Basic UBA Service

3.6 Subject always to clause 3.5, the Basic UBA Service available under this service description is:

3.6.1 Basic UBA Service without POTS – a DSL enabled service without POTS which has a maximum downstream line speed for data traffic sent to the End User and a maximum upstream line speed for data traffic sent from the End User; and

3.6.2 Basic UBA Service with POTS – a DSL enabled service with POTS which has a maximum downstream line speed for data traffic sent to the End User and a maximum upstream line speed for data traffic sent from the End User.

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3.7 The maximum upstream or downstream line speed that the DSLAM can support on the End User's line given existing line conditions is subject to:

3.7.1 any constraints required to comply with the Interference Management Plan;

3.7.2 the use of interleaving;

3.7.3 any network settings required by the Access Seeker to provide a reliable service, where such settings are not applied for the primary purpose of limiting the maximum line speed; and

3.7.4 any factors limiting line speed as described in 3.8.

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3.8 The upstream or downstream line speed the DSLAM can support on the End User's line may be limited by factors including:

3.8.1 the condition of the copper line;

3.8.2 copper loop length;

3.8.3 type of cable containing the copper loop;

3.8.4 the presence of other services in a cable sheath containing the copper loop;

3.8.5 the performance capability of the DSLAM;

3.8.6 the End User's modem;

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- 3.8.7 presence and degree of external interference (from potential causes such as poor suppression of AC power, electric fences, radio broadcasts etc); and
- 3.8.8 the configuration and/or condition of wiring within the End User's premises.

Service Specifications

3.9 The Basic UBA Service:

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- 3.9.1 is an internet grade service, delivering a point-to-point protocol (PPP) bitstream to the End User and Layer 2 Tunnel Protocol (L2TP) to the Access Seeker;
- 3.9.2 is supplied to an End User by a DSLAM in their local exchange or cabinet and bitstream rate limits (if any) are applied at the DSLAM in their local exchange or cabinet; and
- 3.9.3 transports Access Seeker's internet traffic from the ETP at an End User's premises to the Handover Point (as described in clause 3.19 below) for the Coverage Area which hosts the DSLAM.

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3.10 Where the End User is in the same Coverage Area as an Access Seeker's Handover Point, traffic for that End User is handed over at the Handover Point, assuming the End User is located, for the purposes of the Basic UBA Service, within a Regulated Exchange Service Area or is served by a cabinetised line.

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3.11 Where the End User is not in the same Coverage Area as an Access Seeker's Handover Point, then the Access Seeker must purchase backhaul from either Telecom or another party. Traffic is carried from the ETP and handed over at the Handover Point nominated by the Access Seeker.

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3.12 The table below outlines the metrics that the Basic UBA Service will achieve:

Metric	Specification (1500 byte packet)
Throughput	99.9% probability of providing to any provisioned End User a minimum uplink and downlink average throughput of 32kbps during any 15 minute period on demand
Mean one-way packet delay	< 1 sec
One-way packet delay variation	Unspecified
One-way packet loss ratio	Unspecified

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3.13 Note:

- 3.13.1 The service specifications relate to the Basic UBA Service performance from the ETP to the Handover Point, and exclude serialisation delays, transcoding delays, etc.
- 3.13.2 Packet delay variation is measured as: PTD upper minus PTD min, where the PTD upper is the 99.9% quartile of PTD in the evaluation interval, and PTD min is the minimum PTD in the evaluation interval.
- 3.13.3 Packet loss ratio and delay variation must be evaluated over an interval of 15 minutes.

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Interleaving

3.14 For each Basic UBA Service connection ordered, the Access Seeker will advise Telecom whether that connection will be provisioned with interleaving on, or off.

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3.15 The default setting for the Basic UBA Service is to have interleaving turned on.

3.16 Interleaving is used by Telecom on DSL connections to increase the tolerance of line noise. End Users can ask their Access Seeker to have interleaving turned off. With interleaving turned off there may be a reduction in latency, but the Basic UBA Service may be more susceptible to line noise that may cause the End User to believe their service is faulty. Access Seekers will bear the responsibility for evaluating if the fault is attributable to interleaving being turned off and, if so, for remedying this.

General Service Requirements

3.17 The Access Seeker is to fulfil any authentication, authorisation, and addressing functions for the service provided to the End User. The Access Seeker is to provide all Layer 3 functions.

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Coverage Areas and Handover Points

3.18 Each End User will be located in a Coverage Area. Each End User must be located within a Regulated Exchange Service Area, or be served by a cabinetised line, to receive a broadband service through the Basic UBA Service. In those circumstances, the End User traffic from DSLAMs in a Coverage Area is carried to the Handover Point over LAPs supporting the Basic UBA Service.

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3.19 The Handover Point is the aggregation point for the DSLAMs supplying the Basic UBA Service within a Coverage Area. For the avoidance of doubt, the Handover Point is only an aggregation point to the extent that the Coverage Area includes Regulated Exchange Service Areas and cabinetised lines. Access Seekers may, via backhaul services and/or other services, connect their network to any available Handover Points throughout the country.

3.20 A list of current Handover Points and Coverage Areas are available to an Access Seeker via a secure web portal. Telecom may introduce new Handover Points and Coverage Areas or change the available Handover Points and Coverage Areas in accordance with the UBA Operations Manual.

External Termination Point

3.21 The Basic UBA Service is delivered as PPP over ATM (PPPoA) over a DSL copper interface (ITU-T G.992.1) to the ETP at the End User's premises.

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3.22 The Access Seeker or the End User is responsible for providing and installing all required CPE and wiring at the End User's site beyond the ETP, including a service compatible modem. The Access Seeker will ensure that TelePermit and premises wiring requirements are adhered to. Where requested by the Access Seeker, Telecom will provide wiring at the End User's site beyond the ETP to a single jackpoint and install a service compatible modem provided by the Access Seeker from the Approved Modem List.

Handover of the Basic UBA Service

3.23 The Access Seeker must establish interconnection for the Basic UBA Service at a minimum of one Handover Point. Interconnection with the Handover Point is required for hand over of the Basic UBA Service to the Access Seeker. If requested by the Access Seeker, the same Handover Point may also carry Enhanced UBA Services traffic.

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3.24 Telecom must supply the Handover Connection. Telecom is also required to install and interconnect the Handover Fibre and the Handover Connection. The Access Seeker or Telecom will supply the Handover Fibre.

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- 3.25 Basic UBA Service traffic will not be distinguishable from other traffic supplied at the same Handover Point, such as, Unbundled Bitstream Service traffic.
- 3.26 Prior to provision of the Basic UBA Service, the Access Seeker must:

 - 3.26.1 have Handover Fibre interconnected with Telecom's Handover Connection in the Coverage Area where handover is to occur; and
 - 3.26.2 advise Telecom of the Coverage Areas in which its End Users are located and indicate the handover arrangements for those Coverage Areas, including backhaul mapping arrangements.
- 3.27 The UBA Backhaul Service is not part of the UBA Service and additional terms and charges will apply where the Access Seeker purchases this service.

Geographic Availability

- 3.28 ~~Subject always to clause 3.5.~~ the Basic UBA Service is available where Telecom has ADSL or ADSL2+ (or other next generation type technologies) coverage and the line speed meets the minimum rate of 64 kbps. The 'with POTS' Basic UBA Service will only be available in areas where Telecom has an active analogue telephone service.

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4 Enhanced UBA Services

Introduction

- 4.1 The Enhanced UBA Services enable an Access Seeker to offer its End Users simultaneous delivery of internet grade IP traffic and real time grade IP traffic over a single UBA service connection. The Enhanced UBA Services provide connectivity between the ETP and the Access Seeker side of the first Ethernet aggregation switch.
- 4.2 The Enhanced UBA Services are wholesale access services that the Access Seeker can combine with other wholesale services offered by Telecom, such as the UBA Backhaul Service, to deliver a DSL enabled service to End Users.
- 4.3 The Enhanced UBA Services are not available for resale to End Users. However, Enhanced UBA Services are available for resale to other Access Seekers.
- 4.4 The Enhanced UBA Services can be provided with or without an active analogue telephone service on the same copper pair (with or without POTS respectively). POTS does not form part of the UBA Service. Where a 'with POTS' UBA Service is provided, POTS must be purchased from Telecom separately, either directly by the End User from Telecom Retail, or by the Access Seeker or another Service Provider under a separate wholesale service agreement.

4.5 The Enhanced UBA Service is solely available in respect of:

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4.5.1 lines served in Regulated Exchange Service Areas; and

4.5.2 all cabinetised lines.

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Enhanced UBA Services

4.6 ~~Subject always to clause 4.5.~~ the Enhanced UBA Services available under the UBA Service description are:

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4.6.1 40kbps Enhanced UBA Service without POTS;

4.6.2 90kbps Enhanced UBA Service without POTS;

4.6.3 180kbps Enhanced UBA Service without POTS;

4.6.4 40kbps Enhanced UBA Service with POTS;

4.6.5 90kbps Enhanced UBA Service with POTS; and

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4.6.6 180kbps Enhanced UBA Service with POTS.

4.7 All Enhanced UBA Services are Ethernet-based DSL enabled services that allow the simultaneous delivery of two CoS:

4.7.1 Internet grade IP traffic: delivered as a 'best efforts' class of service (Internet CoS). This will achieve a 99.9% probability of providing to any End User a minimum downlink average throughout of 32kbps during any 15 minute period on demand, irrespective of whether the Real Time CoS is in use or not.

4.7.2 Real time grade IP traffic: delivered as a real time class of service to support some latency sensitive applications (Real Time CoS). This will support real time traffic with the following characteristics:

- (a) one of the following three profiles of guaranteed real time traffic, including Layer 3 headers (RTP, UDP, IP) but excluding Layer 2 headers (Ethernet):
 - 40kbps;
 - 90kbps; or
 - 180kbps; and
- (b) the Real Time CoS will be dedicated per End User and available at all times on demand.

4.8 The maximum upstream or downstream line speed that the DSLAM can support on the End User's line given existing line conditions is subject to:

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4.8.1 any constraints required to comply with the Interference Management Plan;

4.8.2 the use of interleaving;

4.8.3 any network settings required by the Access Seeker to provide a reliable service, where such settings are not applied for the primary purpose of limiting the maximum line speed; and

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4.8.4 any factors limiting line speed as described in 4.9.

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4.9 The upstream or downstream line speed the DSLAM can support on the End User's line may be limited by factors including:

4.9.1 the condition of the copper line;

4.9.2 copper loop length;

4.9.3 type of cable containing the copper loop;

4.9.4 the presence of other services in a cable sheath containing the copper loop;

4.9.5 the performance capability of the DSLAM;

4.9.6 the End User's modem;

4.9.7 presence and degree of external interference (from potential causes such as poor suppression of AC power, electric fences, radio broadcasts etc); and

4.9.8 the configuration and/or condition of wiring within the End User's premises.

Service Specifications

4.10 The table below outlines the metrics that the Enhanced UBA Services will achieve:

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Metric	Notes:	Real time CoS	Internet CoS
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		(200 byte packet)	(1500 byte packet)
Throughput	kbit/s	= 40kbit/s or 90 kbit/s or 180kbit/s	99.9% probability of providing to any provisioned End User a minimum uplink and downlink average throughput of 32kbps during any 15 minute period on demand
Mean one-way packet delay	Interleaving HIGH	<50ms	<1s
	Interleaving LOW	<25ms	<1s
One-way packet delay variation	Milliseconds	<10ms	Unspecified
One-way packet loss ratio	Interleaving HIGH	<0.1%	Unspecified

4.11 Note:

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- 4.11.1** The service specifications relate to the performance of the Enhanced UBA Services from the ETP to the Handover Point, and exclude serialisation delays, transcoding delays, etc.
- 4.11.2** Packet delay variation is measured as: PTD upper minus PTD min where PTD upper is the 99.9% quartile of PTD in the evaluation interval, and PTD min is the minimum PTD in the evaluation interval³.
- 4.11.3** Packet loss ratio and delay variation must be evaluated over an interval of 15 minutes for all classes of service, as per Telecom standard network practice.
- 4.11.4** Low interleaving means an interleaving setting that delivers as much error protection as possible while introducing no more than 10ms additional one way packet delay and subject to the mean one way packet delay specification for interleaving low being met.
- 4.11.5** Traffic may be policed at both an aggregate level and at an End User level to ensure compliance with the service specification.
- 4.11.6** Depending on the Enhanced UBA Service supplied, either 40kbps, 90 kbps or 180 kbps of real time traffic may be tagged per End User. Exceeding this limit could prevent the service specifications from being achieved.

Exceptions to Service Specifications

- 4.12** Where the End User line quality does not meet the required line speed threshold to deliver the service the Enhanced UBA Service specifications will not apply. This threshold would be based on the ability of the End User copper loop to achieve the specifications of the service.
- 4.13** The presence of any of the below factors may mean an End User's peak throughput for the internet CoS is less than their line speed:

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³ Evaluation intervals are explained in [4.11.3](#)

- 4.13.1 protocol overheads;
- 4.13.2 network load;
- 4.13.3 constraints within the Access Seeker and End User domains;
- 4.13.4 the presence of any real time traffic;
- 4.13.5 the capacity of the Local Aggregation Path (LAP); or
- 4.13.6 any constraints external to the Enhanced UBA Services.

Interleaving

- 4.14 For each Enhanced UBA Service connection ordered, the Access Seeker will advise Telecom whether that connection will be provisioned with interleaving low or interleaving high.
- 4.15 The default setting for the Enhanced UBA Services is to have interleaving set to high.
- 4.16 Interleaving is used by Telecom on DSL connections to increase the tolerance of line noise. End Users can ask their Access Seeker to have interleaving set on low for the Enhanced UBA Services. With interleaving set on low, there may be a reduction in latency, but the Enhanced UBA Services may be more susceptible to line noise that may cause the End User to believe their service is faulty. Access Seekers will bear the responsibility for evaluating if the fault is attributable to interleaving being set on low, and if so, for remedying this.

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General Service Requirements

- 4.17 The Access Seeker is to fulfil any authentication, authorisation, and addressing functions for the Enhanced UBA Service provided to the End User. The Access Seeker is to provide all Layer 3 functions.
- 4.18 Bandwidth reserved for real time traffic but not used will be aggregated and available to all internet CoS users on that DSLAM.

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Coverage Areas and Handover Points

- 4.19 Each End User will be located in a Coverage Area. Each End User must be located within a Regulated Exchange Service Area, or be served by a cabinetised line, to receive a broadband service through the Enhanced UBA Service. In those circumstances, the End User traffic from DSLAMs in a Coverage Area is carried to the Handover Point over LAPs supporting the Enhanced UBA Services.
- 4.20 The Handover Point is the aggregation point for the DSLAMs supplying the Enhanced UBA Services within a Coverage Area. For the avoidance of doubt, the Handover Point is only an aggregation point to the extent that the Coverage Area includes Regulated Exchange Service Areas and cabinetised lines. Access Seekers may, via backhaul services and/or other services, connect their network to any available Handover Points throughout the country.
- 4.21 A list of current Handover Points and Coverage Areas are available to an Access Seeker via a secure web portal. Telecom may introduce new Handover Points and Coverage Areas or change the available Handover Points and Coverage Areas in accordance with the UBA Operations Manual

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External Termination Point

- 4.22 The Enhanced UBA Services are delivered as Ethernet services over a DSL copper interface to the End User ETP.
- 4.23 The Access Seeker or the End User is responsible for providing and installing all required CPE and wiring at the End User's site beyond the ETP, including a service compatible modem. The Access Seeker will ensure that TelePermit and premises wiring requirements are adhered to. Where requested by the Access Seeker, Telecom will provide wiring at the End User's site

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beyond the ETP to a single jackpoint and install a service compatible modem provided by the Access Seeker from the Approved Modem List.

Handover of Enhanced UBA Services

4.24 The Access Seeker must establish interconnection for the Enhanced UBA Services at a minimum of one Handover Point. Interconnection with the Handover Point is required for hand over of the Enhanced UBA Services to the Access Seeker. If requested by the Access Seeker, the same Handover Point may also carry Basic UBA Service traffic.

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4.25 Telecom must supply the Handover Connection. Telecom is also required to install and interconnect the Handover Fibre and the Handover Connection. Telecom or the Access Seeker will supply the Handover Fibre.

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4.26 The internet CoS Enhanced UBA traffic will not be distinguishable from the Unbundled Bitstream Service traffic supplied at the same Handover Point.

4.27 Prior to provision of the Enhanced UBA Services, the Access Seeker must:

4.27.1 have Handover Fibre interconnected with Telecom's Handover Connection in the Coverage Area where handover is to occur; and

4.27.2 advise Telecom of the Coverage Areas in which its End Users are located and indicate the handover arrangements for those Coverage Areas, including backhaul mapping arrangements.

4.28 The UBA Backhaul Service is not part of the Enhanced UBA Services and additional terms and charges will apply where the Access Seeker purchases this service.

Geographic Availability

4.29 ~~Subject always to clause 4.5,~~ the Enhanced UBA Services are available where Telecom has Ethernet-based ADSL2+ (or other next generation type technologies) coverage and the line speed meets the line speed threshold. Also, the 'with POTS' Enhanced UBA Services will only be available in areas where Telecom has an active analogue telephone service.

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APPENDIX A – EXCHANGES WHERE THE CONDITIONS DO NOT APPLY

<u>Exchange Name</u>	<u>Exchange Code</u>	<u>Exchange Name</u>	<u>Exchange Code</u>
<u>Auckland (Akcen)</u>	<u>AK</u>	<u>Mt Albert</u>	<u>MAB</u>
<u>Avondale</u>	<u>AVD</u>	<u>Mt Eden</u>	<u>MOD</u>
<u>Birkdale</u>	<u>BKL</u>	<u>Mt Roskill</u>	<u>MTL</u>
<u>Birkenhead</u>	<u>BD</u>	<u>Nelson</u>	<u>NN</u>
<u>Blockhouse Bay</u>	<u>BHB</u>	<u>New Lynn</u>	<u>NLN</u>
<u>Browns Bay</u>	<u>BSY</u>	<u>Onehunga</u>	<u>ON</u>
<u>Christchurch</u>	<u>CH</u>	<u>Otahuhu</u>	<u>OH</u>
<u>Claudelands</u>	<u>CLE</u>	<u>Pakuranga</u>	<u>PGA</u>
<u>Courtenay Place</u>	<u>CPC</u>	<u>Palmerston North</u>	<u>PM</u>
<u>Devonport</u>	<u>DA</u>	<u>Papakura</u>	<u>PAK</u>
<u>Dunedin</u>	<u>DN</u>	<u>Papatoetoe</u>	<u>POP</u>
<u>Ellerslie</u>	<u>ELL</u>	<u>Ponsonby</u>	<u>POY</u>
<u>Forrest Hill</u>	<u>FOR</u>	<u>Remuera</u>	<u>RUE</u>
<u>Frankton</u>	<u>FJN</u>	<u>Rotorua</u>	<u>RO</u>
<u>Glen Eden</u>	<u>GLE</u>	<u>St Heliers</u>	<u>SHB</u>
<u>Glendowie</u>	<u>GDW</u>	<u>Takapuna</u>	<u>TNA</u>
<u>Glenfield</u>	<u>GLF</u>	<u>Tamaki</u>	<u>TMK</u>
<u>Hamilton</u>	<u>HN</u>	<u>Tauranga</u>	<u>TG</u>
<u>Hamilton East</u>	<u>HNE</u>	<u>Te Atatu</u>	<u>TAT</u>
<u>Hastings</u>	<u>HBN</u>	<u>Te Rapa</u>	<u>TRV</u>
<u>Henderson</u>	<u>HSN</u>	<u>Three Kings</u>	<u>TIS</u>
<u>Howick</u>	<u>HCK</u>	<u>Titirangi</u>	<u>TGN</u>
<u>Mangere</u>	<u>MRE</u>	<u>Torbay</u>	<u>TBY</u>
<u>Manukau City</u>	<u>MKY</u>	<u>Wellington</u>	<u>WN</u>
<u>Manurewa</u>	<u>MNR</u>	<u>Whangarei</u>	<u>WR</u>
<u>Massey</u>	<u>MSY</u>		

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