Chorus UFB Services Agreement
Bitstream Services: Service Description for Enhanced Bitstream 4 Technical Trial

Reference Offer

August 2017

This is the service description for the Enhanced Bitstream 4 Technical Trial. Some offered features/parameters and associated characteristics may change as a result of testing and feedback during the trial.

1 Interpretation

1.1 References to clauses or sections are references to clauses or sections in this Service Description unless expressly provided otherwise. The definitions set out in the General Terms and the Operations Manual apply to this Service Description unless expressly provided otherwise.

1.2 References to the Operations Manual are references to the Operations Manual for the Bitstream Services.

2 The Enhanced Bitstream 4 Service

2.1 The Enhanced Bitstream 4 Service is a high speed multi-class Bitstream Service suitable for complex business grade applications delivered over point-to-point fibre access. Enhanced Bitstream 4 is part of the UFB family of Bitstream Services:

Bitstream 2	Based on the TCF Mass Market service.
Bitstream 2 Accelerate	Based on the TCF Mass Market service with enhanced low priority options.
Bitstream 3	Based on the TCF Business service.
Bitstream 3 Accelerate	Based on the TCF Business service.
Bitstream 3a	Based on the TCF Business service with Low Priority options.
Bitstream 3a Accelerate	Based on the TCF Business service with Low Priority options.
Bitstream 3a P2P	Based on the TCF Business service with Low Priority options.
Bitstream 3a SPF ONT	Based on the TCF Business service with Low Priority options.
Bitstream 4	Based on the TCF Business Premium service.
UFB Handover Connection	Based on the TCF E-NNI specification.
100Gbps UFB Handover Connection	Based on the TCF E-NNI specification, 100Gbps interface
Multicast	Based on the TCF Ethernet Multicast Access (EMA) service.
ATA Voice	An analogue telephone access service.
UNI Voice (128/128)	Low speed Bitstream service for telephony access service.

2.2 A diagram of the configuration for the Enhanced Bitstream 4 Service is set out in Appendix A. The Enhanced Bitstream 4 Service provides an Ethernet Private Line (**EPL**) E-APL bitstream service supporting a single Access-EPL service per UNI at the End User Premises, Service Provider Premises or NBAP (as applicable) to the UFB Handover Connection Service located at the POI that enables a Service Provider to access and interconnect with the LFC Network

2.3 The Enhanced Bitstream 4 Service is an input service which a Service Provider can combine with other LFC services (or with the Service Provider's own network or wholesale services provided by other service providers) to provide fibre based telecommunications services to End Users.

2.4 The Enhanced Bitstream 4 Service has the following key characteristics:

2.4.1 It is available in two Access Rates configurations:

(a) 100/100 Mbps; and

(b) 1000/1000 Mbps;

where the Access Rate defines the maximum bandwidth that can be consumed on the access. A 10/10 Gbps Access Rate may be delivered in a future iteration of this service.

2.4.2 It includes a single Ethernet Access-EPL[1] Operator Virtual Circuit (OVC) service delivered over Active Optical Network (P2P) fibre access. An Access-EPL allows up to 4093 VLANS to be passed transparently between the UNI at the End User Premises, Service Provider Premises, NBAP or the Service Provider's co-location space (as applicable) and the E-NNI at the POI.

2.4.3 Supports for two classes of traffic, High and Low;

where:

Traffic Class	CIR	EIR
Low Priority	≥ 0	≥ 0
High Priority	≥ 0	= 0

2.4.4 Appendix C provides an overview of the Service Templates and bandwidth profiles that are initially offered, with the option to create modified or new Service Templates and bandwidth profiles using 'core building blocks ' and the Product Development Process. Public Service Templates and bandwidth profiles will published on the LFC website;

2.4.5 The UNI all-to-one bundling attribute is enabled, supporting both tagged and untagged frames at the UNI.

2.4.6 Can be delivered to a valid UFB Handover Connection located at a local POI or, using the NGA Tail Extension service, an associated regional POI.

2.4.7 Supports 1000/100 Base-T or SFP Socket UNIs on the NID located at the End User site.

2.4.8 Supports the following optional features:

(a) Colour Awareness for Low Traffic class;

(b) Single or Multiclass;

(c) OAM;

(d) Access Diversity;

2.4.9 Complies with the Access-EPL service described in *MEF Technical Specification MEF 51: OVC Services Definition August 2015*, *MEF Technical Specification MEF 33 Ethernet Access Services 2012* and the *Business Premium* service described in the *TCF Ethernet Access Service Description v33, 11 May 2017***.**

3 Enhanced Bitstream 4 Service and Implementation Activities

Installation Services

3.1 The Enhanced Bitstream 4 Service includes a Standard Install as set out in the Operations Manual.[2] The LFC will provide Non-Standard Installs as an ancillary service.

Termination Point

3.2 The Enhanced Bitstream 4 termination points are for;

3.2.1 Layer 1 the LCA connecter on the ONT; and for

[1] This document uses *Access-EPL* instead of *E-APL* to align with MEF 33, MEF 51 and TCF Ethernet Access Service Description v33 standards.

[2] Standard Install parameters may differ between LFCs

3.2.2 Layer 2 is the UNI on the ONT. In the instance of an SPF ONT this point is internal to the host CPE and is not externally accessible.

Testing

3.3 The LFC will test the Fibre Lead-in from the termination point at the Premises, as referred to in the Operations Manual, to the Central Office where the access node is located to ensure the fibre is within the technical specification for fibre set out in Appendix B.

3.4 The LFC will complete a functional test of the Enhanced Bitstream 4 Service at the Layer 2 termination point at the Premises referred to in the Operations Manual using the diagnostic tools and record a birth certificate.

Additional Services

3.5 If the Service Provider requires additional services such as:

(a) a Non-Standard Install which includes (where required):

(i) the installation of the Fibre Lead-in where there is no existing fibre cabling and the installation is outside the parameters set out in the Operations Manual; or

(ii) installation of specialised termination equipment in an NBAP; or

(iii) installation of Fibre-Lead-in diversity at an End User Premises, Service Provider Premises or NBAP (as applicable) (from the FAP to the ETP or OFDF as applicable);

(b) provision of diversity to End User Premises, Service Provider Premises or NBAP (as applicable) (when the second or subsequent instance of the Enhanced Bitstream 4 Service is purchased);

(c) any Premises' wiring services; or

(d) installation and testing of Service Provider equipment and services,

then the LFC may be able to provide items (c) and (d) on request subject to terms to be agreed between the LFC and the Service Provider. Items (a) and (b) are available on terms as set out in this Agreement.

Core Enhanced Bitstream 4 Service

3.6 The core bitstream services provided as part of the Enhanced Bitstream 4 Service are as follows:

3.6.1 One Access-EPL service that supports transparent pass-through of 802.3 and 802.1Q frames on a designated UNI on the NID at the End User Premises, Service Provider Premises or NBAP (as applicable);

3.6.2 Delivery over a single 802.1ad SVLAN on the E-NNI at the local or regional POI;

3.6.3 A QOS bandwidth profile that describes how traffic is carried between these points.

3.6.4 The following options, exercised by Service Request, to:

(a) Select the Access Rate. The Enhanced Bitstream 4 Bitstream Service has two Access Rates available which define the maximum downstream and upstream Layer 2 bandwidth allowed for that Access Rate:

- 100/100 Mbps;
- 1000/1000 Mbps;

Note the transmission of Ethernet frames includes additional overheads such as Ethernet preamble, frame delimiters and inter-frame gaps. This limits the maximum throughput to ~ 90% of the physical medium speed depending on frame size.

(b) Select the High Traffic Class and Low Traffic Class Bandwidth Profiles as follows:

- Only bandwidth profiles less than or equal to the Access Rate can be selected. However the sum of High and Low Traffic Class bandwidth profiles can exceed the Access Rate, noting that the physical medium speed defines the maximum bandwidth that can be utilised at any time.
- It is recommended that aggregate CIR service bandwidth does not exceed 70% of UNI or E-NNI physical speed.
- These bandwidth profiles can be modified or combined with other services using the Product Development Process as described in clause 3.7.
- The initial list of bandwidth templates for the Technical Trial is defined in Appendix C.

(c) Enable Colour Awareness for Low Traffic class as follows:

- Off – the UNI/E-NNI is set to colour-blind mode. Low Traffic Class frames received at the UNI/E-NNI are marked CIR/EIR based on CBS/EBS and DEI bit is ignored.
- ON – the UNI/E-NNI is set to colour-aware mode. Low Traffic Class frames received at the UNI/E-NNI are marked CIR/EIR based on the DEI bit.

(d) Enable MEF 33 Compliance (single Class of Service per OVC) as follows;

- Off – Frame Traffic Class will be classified based on the individual frames priority markings and colour-awareness setting as set out below

CoS	UNI CE-tag PCP	E-NNI S-tag PCP	DEI Green	DEI Yellow
High	5	5	0	-
Low	0 untagged	0	0	1
Discarded	1,2, 3, 4, 6, 7	1,2, 3, 4, 6, 7	-	-

- High – all frames will be classified as High Traffic Class including untagged frames at the UNI and single-tagged frames at the E-NNI;
- Low – all frames will be classified as Low Traffic Class including untagged frames at the UNI and single-tagged frames at the E-NNI;

(e) Enable OAM as follows;

- On - UNI Maintenance and E-NNI Maintenance Association Intermediate Point (MIP) are available to the Service Provider and can be integrated with Service Provider 802.1ag OAM solutions; or
- Off – no UNI or E-NNI MIP are available to the Service Provider.

(f) Enable the required level of Access Diversity as described in the Operations Manual;

(g) Specify the following attributes per Access-EPL:

- The Access-EPL E-NNI;
- The E-NNI SVLAN Identifier.

(h) Tail Extension ON or OFF, as per Tail Extension Service Description.

3.6.5 Frames are managed as follows:

(a) Upstream:

- Untagged frames are delivered as single tagged frames at the E-NNI (S-tag only).
- Tagged frames are delivered as double tagged frames at the E-NNI. CE-VLAN and PCP values are preserved in the E-NNI C-tag.

(b) Downstream:

- Single-tagged frames are delivered as untagged frames at the UNI.
- Double tagged frames are delivered as single tagged frames at the UNI. C-tag 802.1Q VLAN and PCP values are preserved as in the single-tagged 802.1Q frame at the UNI.

3.6.6 Frames will be treated as follows based on the individual frames Traffic Class classification:

3.6.7 Frames are policed at ingress based on CIR/CBS/EIR/EBS;

(a) Frames are transported between the E-NNI and UINI as follows:

Type	**Ingress**	**Transport**
Low Traffic Class	CIR ≥ 0 EIR ≥ 0	Queued and Weighted fairly under congestion conditions Frames classified as EIR dropped first
High Traffic Class	CIR ≥ 0 EIR = 0	Strictly prioritised

(b) In-profile Frame drop preference is:

- Low Traffic Class EIR;
- Low Traffic Class CIR;
- High Traffic Class (CIR);

CIR frames will be delivered according to performance metrics. The drop preference mainly applies where the handover or UNI has been oversubscribed.

(c) Traffic can burst up to line rate as per policer settings (CBS/EBS);

(d) The headline rate = CIR+EIR.
There will be no bandwidth overhead to compensate for higher protocol encapsulation overheads;

3.6.8 The Enhanced Bitstream 4 Service has similar characteristics to the other services within the UFB family of Bitstream services as identified below:

Attribute	**Bitstream 2**	**Bitstream 3**	**Bitstream 3a**	**Bitstream 4**	**Enhanced Bitstream 4**
Bitstream	E-AVPL	E-APL	E-APL	E-APL	Access-EPL
High Priority	Yes	Yes	Yes	Yes	Yes
Low Priority	Yes	No	Yes	No	Yes
Service Bandwidths*	From 30/10 Mbps up to 1000/500 Mbps	From 2.5Mbps up and downstream to 100/100 Mbps	200/200 Mbps with High Priority from 2.5Mbps	From 100 Mbps up to 10 GigE	Low up to 1000/1000 Mbps High from 10/10 Mbps to 1000/1000** Mbps
MTU (at E-NNI)	2000 Bytes	2000 Bytes	2000 Bytes	9100 Bytes	9100 Bytes

MAC addresses	16	64	64	Unlimited	Unlimited
Number of available UNIs	4 standard	4 standard	4 standard	1 with a second UNI available on request	2 1000/100 Base-T + 2 SFP Sockets standard
L2CP support	No	No	No	Limited	Limited
Diversity	On request with limited availability	On request with limited availability	On request with limited availability	Available to Priority Users in selected areas	Available to Priority Users in selected areas

** Bandwidth options for each Bitstream Service are detailed in each Bitstream Service Description and further options can be developed using the Product Development Process.*

*** A 10G version is expected to be introduced in a future iteration of this product, but is not part of the initial offering.*

NID characteristics

3.6.9 The standard NID includes at least two 1000/100 Base-T and two SFP Socket UNIs.

3.6.10 Additional NIDs may be introduced with different characteristics and features, number and type of UNI ports and/or environmental tolerances.

3.6.11 If a Service Provider requests a feature that is not available on the currently installed NID then this will require the NID to be replaced as part of the feature activation. Replacing a NID requires a site visit and will incur appropriate charges as set out in the Price List. All services on the NID will experience an outage during the NID replacement.

UNI – NNI characteristics

3.6.12 The sum of High and Low Traffic Class bandwidth profiles of all services delivered downstream to a UNI can exceed the UNI line rate. If there is insufficient UNI line rate to deliver demanded traffic then frames will be randomly discarded, based on their drop precedence, and Service Levels for that Class of Service do not apply. It is therefore the Service Provider's responsibility to shape and queue traffic appropriately.

3.6.13 If colour-awareness is on:

(a) Frames marked as discard ineligible will be subject to Committed Information Rate / Committed Burst Size (CIR/CBS) policing and potential recolouring;

(b) Frames that are discard eligible that exceed the Excess Information Rate /Excess Burst Size (EIR/EBS) will be dropped. The coupling flag is set to OFF.

3.6.14 The sum of High and Low Traffic Class bandwidth profiles of all services delivered upstream to a UFB Handover Connection Service can exceed the UFB Handover Connection Service line rate. If there is insufficient UFB Handover Connection line rate to deliver the submitted traffic then frames will be randomly discarded, based on their drop precedence, and Service Levels for that Class of Service do not apply. It is therefore the Service Provider's responsibility to shape and queue traffic appropriately.

New Template Options

3.7 A Service Provider may request that the LFC creates additional Bandwidth profiles using the process in the Operations Manual and the following standard building blocks:

(a) CIR in increments of 10 Mbps upstream and downstream;

(b) EIR in increments of 100 Mbps upstream and downstream;

Noting that:

- CIR and EIR are specified independently;

- If CIR = 10Mbps and EIR = 100Mbps then CIR+EIR = 110Mbps;
- If CIR = 20Mbps and EIR = 100Mbps then CIR+EIR = 120Mbps;
- For Low Traffic Class the initial 100 Mbps may optionally comprise 10Mbps CIR and 90 Mbps EIR.

These bandwidth profiles are available to all Service Providers and will be published on the LFC website.

3.8 In addition to the Access Rate, as set out in 3.7 above, Service Templates have the following options:

(a) One Access-EPL service with one or more bandwidth profiles, each as defined in 3.7:

(b) Colour Awareness;

(c) Alternative classes of traffic, e.g. Medium Traffic Class or a Traffic Class designed for Variable Bit Rate (VBR) Video;

(d) Alternative CBS/EBS values, where the LFC determines that these new values do not impact the SLAs;

(e) MEF 33 compliance (single class);

(f) OAM configuration options, such as maintenance levels;

(g) Other services or attributes requested by the Service Provider and agreed by the LFC.

where a Service Template is a pre-set combination of building blocks and service attributes, i.e. would contain limited per-service-request attributes

3.9 Service Templates can be primary or secondary, as defined in the Operations Manual.

3.10 Service Templates can be added as public or private Service Templates, as defined in the Operations Manual:

3.11 Requests for additional Service Templates will be implemented and delivered through the Product Development Process, as described in the Operations Manual.

Operations, Administration and Maintenance (OAM) and Diagnostic tools

3.12 The Enhanced Bitstream 4 Bitstream service includes a repeatable birth certificate function that verifies the as-provisioned service is performing to bandwidth and QoS performance specifications;

3.13 The Enhanced Bitstream 4 Bitstream service will support 802.1ag and include the following two Maintenance Associations that are available for the Service Provider's OAM system:

3.13.1 UNI Service Provider-facing MIP; and

3.13.2 E-NNI MIP.

3.14 The following maintenance levels will apply:

3.14.1 Maintenance Domain levels 0-2 are reserved for use by the LFC.

3.14.2 Maintenance Domain level 3 is used for the UNI MIP/E-NNI MIP;

3.14.3 A Service Provider may request specific OAM attributes, including custom Maintenance Domain levels, via the Product Development Process.

3.15 An API/GUI remote diagnostic tool will be delivered in a future iteration of this service;

Service Requirements

3.16 To use the Enhanced Bitstream 4 Service the Service Provider must have the capability to access and interconnect with it, by one of the following:

3.16.1 co-locating Service Provider equipment at the local or regional POI using the UFB Handover Connection Service and Central Office and POI Co-location Service;

3.16.2 connecting to third party co-location space at the local or regional POI using the UFB Handover Connection Service, and with the third party taking the Central Office and POI Co-location Service;

3.16.3 connecting to a backhaul service at the local or regional POI; or

3.16.4 by using the Direct Fibre Access Service to connect the UFB Handover Connection Service to Service Provider equipment at a remote location within the local or regional POI Central Office area.

The location of the POIs is detailed in the Operations Manual appendices. Note use of a connection to a Regional POI may also require the use of the Tail Extension Service to extend traffic from Local POI.

Additional Service Characteristics

3.17 The technical specification of the Enhanced Bitstream 4 Service is set out in Appendix B.

3.18 The LFC will provide certain support and other assistance as part of the Enhanced Bitstream 4 Service including:

3.18.1 an automated facility for Service Requests;

3.18.2 an automated facility for fault notifications;

3.18.3 a tool to assist the Service Provider in determining the location and availability of the Enhanced Bitstream 4 Service (pre-qualification) and

3.18.4 an online application that tracks and manages the progress and status of an installation request,

each as more particularly set out in the Operations Manual.

3.19 The Enhanced Bitstream 4 Service specifically excludes:

3.19.1 the UFB Handover Connection Service;

3.19.2 provision or maintenance of any cabling or connection or active device:

(a) beyond the Service Demarcation Points;

(b) between the jack terminating the LFC provided Fibre Lead-in and the NID where that cabling or connection is not provided by the LFC and the LFC has not agreed to take responsibility for that cabling or connection;

3.19.3 configuration, monitoring, operation, on-going support or maintenance of Service Providers' or End Users' applications, equipment or networks; and

3.19.4 supply of AC mains & UPS power, accommodation space, heating, ventilating, and air conditioning at the POI or End User Premises or Service Provider Premises or NBAP (as applicable).

4 Service Demarcation Point at End User Premises or Service Provider Premises or NBAP (as applicable)

4.1 The Service Demarcation Point at the End User Premises, Service Provider Premises or NBAP (as applicable) is the 1000/100 Base-T or SFP Socket UNI on the NID.

4.2 The Enhanced Bitstream 4 Service excludes the End User Premises', Service Provider Premises' or NBAP's (as applicable) wiring. If a fault reported by the Service Provider is found to be caused by the End User Premises', Service Provider Premises' or NBAP's (as applicable) equipment (CPE) or the wiring at the End User Premises, Service Provider Premises or NBAP (as applicable) beyond the Service Demarcation Point, then the Service Provider may be charged the "No fault found" Ancillary Charge in the Price List. Note the wiring should comply with the industry standard Premises wiring requirements which are available at www.tcf.org.nz.

5 Service Demarcation Point at POI

5.1 Where no Tail Extension Service is supplied, the POI Service Demarcation Point is:

5.1.1 The physical service demarcation point is the MOFDF in the local POI which is part of the UFB Handover Connection Service; and

5.1.2 Logically, the single S-VLAN per Access-EPL on the UFB Handover Connection located at the local POI.

5.2 Where Tail Extension is used, the POI Service Demarcation Point is:

5.2.1 Physically, the MOFDF in the regional POI, which is part of the UFB Handover Connection Service; and

5.2.2 Logically, the single S-VLAN per Access-EPL on the UFB Handover Connection located at the regional POI.

5.2.3 The logical demarcation between the Enhanced Bitstream 4 Bitstream Access service and the Tail Extension Service is the middle of the Ethernet Aggregation Switch at the local POI. There is no physical demarcation point and the Access-EPL is provisioned as a single entity.

6 Service Prerequisites

6.1 The UFB Handover Connection Service is a separate service and is a prerequisite to the supply of the Enhanced Bitstream 4 Service i.e. the Service Provider must first purchase and then continue to maintain a local or regional UFB Handover Connection Service at all times while taking the Enhanced Bitstream 4 Service.

7 LFC and Service Provider Responsibilities

7.1 Other LFC and Service Provider responsibilities are detailed in the General Terms and the Operations Manual.

8 Fibre Diversity

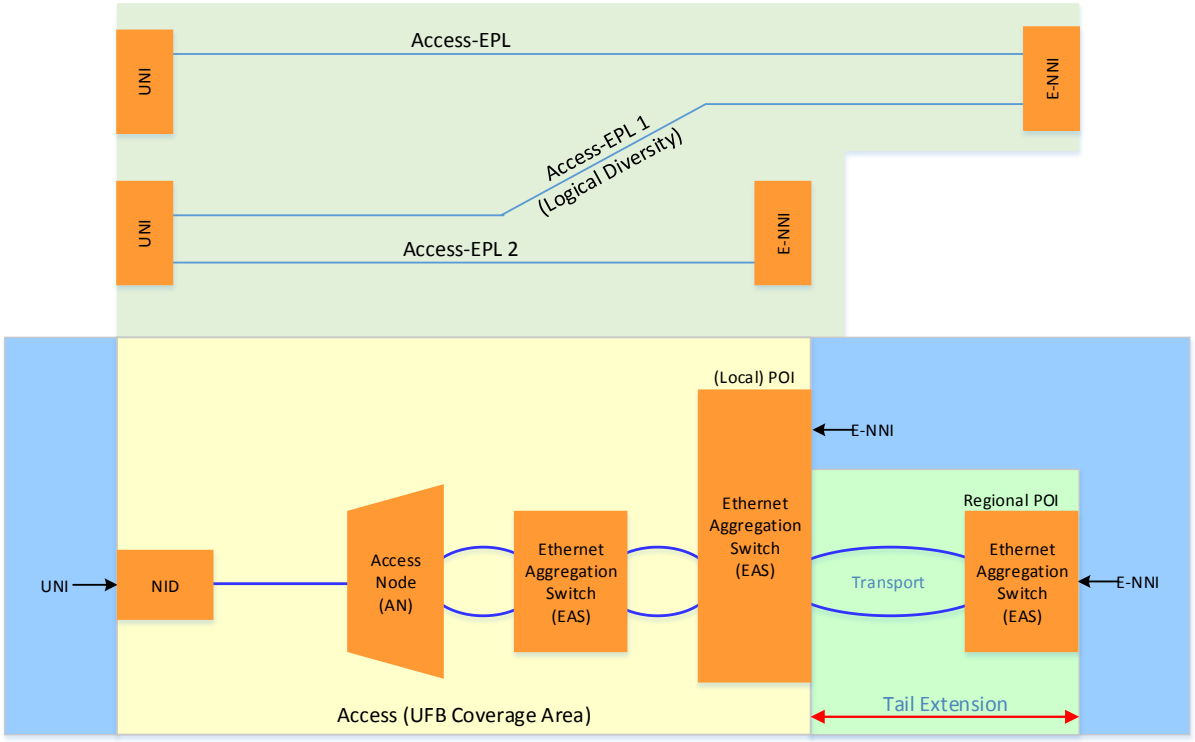
8.1 Enhanced Bitstream 4 supports Access Diversity options, where diversity is relative to another Enhanced Bitstream 4 Bitstream product instance in the same the End User Premises, Service Provider Premises or NBAP. Diversity is subject to the options, availability and limitations set on in clause 7 of the Operations Manual.

8.2 There may be practical limitations to providing full physical diversity to some sites. The provision of a separate entry to a LFC Central Office will have unique site specific engineering considerations and may attract additional costs.

9 Enhanced Bitstream 4 Service Levels

9.1 Service Levels for both the Layer 1 and Layer 2 components of the Enhanced Bitstream 4 Service are set out in the Service Level Terms for the Bitstream Services.

Appendix A – Diagram



This is a generic diagram showing the standard configuration and Service Demarcation Points for an Enhanced Bitstream 4 Bitstream service, with and without Tail Extension. It is not intended to represent every situation or detailed physical architecture. The following points should be noted:

- The Enhanced Bitstream 4 Service, Service Levels and pricing applies from the UNI to the local POI.
- The Enhanced Bitstream 4 Service tail extension service, Service Levels and pricing applies from the local POI to the E-NNI at the regional POI.
- Access node and aggregation interconnection may use redundant links to meet Service Level requirements.
- OAM MIPs are configured on the NID UNI and E-NNI.

Logical Diversity requires two Access-EPL with a common bandwidth profile, associated with two different E-NNIs.

- The Access-EPLs are differentiated at the UNI by an S-VLAN ID.
- Both E-NNI's must belong to the same Service Provider but can be in the same or different POIs. The POI must be a valid local or regional POI for the Enhanced Bitstream 4 Bitstream Access

Appendix B – Technical Specification

Technical Specification

Ethernet (UNI)	• IEEE 802.3 – 2005 • Single tagged 802.1ad supporting 4093 VLANs
UNI	• RJ45 1000/100 Mbps = 1000/100BaseT • SFP Socket (1000/1000 Mbps)
UFB Handover Connection (E-NNI)	Ethernet: • 802.1ad VLAN (SVID, CVID); or • Double tagged QnQ. Other Ethertypes on request
VLAN	Point-to-Point (Access-EPL) MTU • 9096 Bytes at the UNI; • 9100 Bytes at the E-NNI. Unicast Frame Delivery = passed within service CIR/EIR Multicast Frame Delivery = passed within service CIR/EIR Broadcast Frame Delivery = passed within service CIR/EIR Layer 2 Control Protocols Processing = Limited (but may be amended by the LFC from time to time)
Fibre	External fibre must comply with ITU-T specification G.652D or 657A. Internal building fibres cables must meet appropriate fire regulations i.e. be Flame-Retardant, Non Corrosive, Low Smoke, Zero Halogen (FRNC/LSZH). Testing for power loss will be at either 1310 or 1550 nm 1625 nm reserved for network maintenance testing purposes compliant with ITU-T L.41.
Connector Type	Fibre terminations must be SC/APC type connectors (complying with the IEC 61754-4 standard) or alternatively LC/APC also known as LCA type connectors (complying with the IEC 61754-20 standard) as appropriate.
Optic Types	Laser types and path characteristics expected to be designed to a minimum standard which are contained in either IEEE 802.3 Section 5 standard or ITU-T G.984 standards.

Appendix C –Initial Enhanced Bitstream 4 Service Templates and Bandwidth Profiles

This section is included here to provide a view of the initial Enhanced Bitstream 4 Service Templates and Bandwidth Profiles. These, and any future public Service Templates and Bandwidth Profiles, will be published on the LFC website. CBS/EBS values are based on the *TCF Ethernet Access Service Description v33, 11 May 2017*

Service Templates

Offer	Access Rate	Segment	Primary	Geographic Zones	Type	Headline Rate				Other Attributes		
						Select	Low DS/US	High DS/US	MEF 33 Compliance	Colour Awareness	OAM	Logical Diversity
Business Premium 100	100/100	Business	Primary	UFB, RBI, Other	4 MEF	0-10	-	10/10	High	ON/OFF	ON/OFF	ON/OFF
						0-20	-	20/20	High	ON/OFF	ON/OFF	ON/OFF
						0-30	-	30/30	High	ON/OFF	ON/OFF	ON/OFF
						0-50	-	50/50	High	ON/OFF	ON/OFF	ON/OFF
						0-70	-	70/70	High	ON/OFF	ON/OFF	ON/OFF
						0-100	-	100/100	High	ON/OFF	ON/OFF	ON/OFF
						100-10	100/100	10/10	Off	ON/OFF	ON/OFF	ON/OFF
Business Premium 1G	1000/1000	Business	Primary	UFB, RBI, Other	4 MEF	0-10	-	10/10	High	ON/OFF	ON/OFF	ON/OFF
						0-20	-	20/20	High	ON/OFF	ON/OFF	ON/OFF
						0-30	-	30/30	High	ON/OFF	ON/OFF	ON/OFF
						0-50	-	50/50	High	ON/OFF	ON/OFF	ON/OFF
						0-70	-	70/70	High	ON/OFF	ON/OFF	ON/OFF
						0-100	-	100/100	High	ON/OFF	ON/OFF	ON/OFF
						0-150	-	150/150	High	ON/OFF	ON/OFF	ON/OFF
						0-200	-	200/200	High	ON/OFF	ON/OFF	ON/OFF
						0-300	-	300/300	High	ON/OFF	ON/OFF	ON/OFF
						0-500	-	500/500	High	ON/OFF	ON/OFF	ON/OFF
						0-700	-	700/700	High	ON/OFF	ON/OFF	ON/OFF
						0-1000	-	1000/1000	High	ON/OFF	ON/OFF	ON/OFF
						200-10	200/200	10/10	Off	ON/OFF	ON/OFF	ON/OFF
						200-20	200/200	20/20	Off	ON/OFF	ON/OFF	ON/OFF
						200-30	200/200	30/30	Off	ON/OFF	ON/OFF	ON/OFF
						200-50	200/200	50/50	Off	ON/OFF	ON/OFF	ON/OFF
						200-70	200/200	70/70	Off	ON/OFF	ON/OFF	ON/OFF
						200-100	200/200	100/100	Off	ON/OFF	ON/OFF	ON/OFF
						200-200	200/200	200/200	Off	ON/OFF	ON/OFF	ON/OFF
						500-100	500/500	100/100	Off	ON/OFF	ON/OFF	ON/OFF
						500-200	500/500	200/200	Off	ON/OFF	ON/OFF	ON/OFF
						500-300	500/500	300/300	Off	ON/OFF	ON/OFF	ON/OFF
						500-500	500/500	500/500	Off	ON/OFF	ON/OFF	ON/OFF
						1000-100	1000/1000	100/100	Off	ON/OFF	ON/OFF	ON/OFF
						1000-200	1000/1000	200/200	Off	ON/OFF	ON/OFF	ON/OFF
						1000-300	1000/1000	300/300	Off	ON/OFF	ON/OFF	ON/OFF
						1000-500	1000/1000	500/500	Off	ON/OFF	ON/OFF	ON/OFF
						1000-700	1000/1000	700/700	Off	ON/OFF	ON/OFF	ON/OFF
						1000-1000	1000/1000	50/50	Off	ON/OFF	ON/OFF	ON/OFF

Bandwidth Profile Full Specification

Product Name	Bandwidth Profile	Headline Rate			Low Downstream				Low Priority Upstream				High Downstream				High Upstream			
		Low DS/US	Med	High DS/US	CIR+EIR Mbps	EBS kB	CIR Mbps	CBS kB	CIR+EIR Mbps	EBS kB	CIR Mbps	CBS kB	EIR Mbps	EBS kB	CIR Mbps	CBS kB	EIR Mbps	EBS kB	CIR Mbps	CBS kB
Business Premium 100	0-10	0/0	0/0	10/10	0	0	0	0	0	0	0	0	0	0	10	32	0	0	10	32
	0-20	0/0	0/0	20/20	0	0	0	0	0	0	0	0	0	0	20	32	0	0	20	32
	0-30	0/0	0/0	30/30	0	0	0	0	0	0	0	0	0	0	30	32	0	0	30	32
	0-50	0/0	0/0	50/50	0	0	0	0	0	0	0	0	0	0	50	32	0	0	50	32
	0-70	0/0	0/0	70/70	0	0	0	0	0	0	0	0	0	0	70	44	0	0	70	44
	0-100	0/0	0/0	100/100	0	0	0	0	0	0	0	0	0	0	100	63	0	0	100	63
	100-10*	100/100	0/0	10/10	100	180	10	32	100	180	10	32	0	0	10	32	0	0	10	32
Business Premium 1G	0-10	0/0	0/0	10/10	0	0	0	0	0	0	0	0	0	0	10	32	0	0	10	32
	0-20	0/0	0/0	20/20	0	0	0	0	0	0	0	0	0	0	20	32	0	0	20	32
	0-30	0/0	0/0	30/30	0	0	0	0	0	0	0	0	0	0	30	32	0	0	30	32
	0-50	0/0	0/0	50/50	0	0	0	0	0	0	0	0	0	0	50	32	0	0	50	32
	0-70	0/0	0/0	70/70	0	0	0	0	0	0	0	0	0	0	70	44	0	0	70	44
	0-100	0/0	0/0	100/100	0	0	0	0	0	0	0	0	0	0	100	63	0	0	100	63
	0-150	0/0	0/0	150/150	0	0	0	0	0	0	0	0	0	0	150	150	0	0	150	150
	0-200	0/0	0/0	200/200	0	0	0	0	0	0	0	0	0	0	200	243	0	0	200	243
	0-300	0/0	0/0	300/300	0	0	0	0	0	0	0	0	0	0	300	372	0	0	300	372
	0-500	0/0	0/0	500/500	0	0	0	0	0	0	0	0	0	0	500	624	0	0	500	624
	0-700	0/0	0/0	700/700	0	0	0	0	0	0	0	0	0	0	700	872	0	0	700	872
	0-1000	0/0	0/0	1000/1000	0	0	0	0	0	0	0	0	0	0	1000	1248	0	0	1000	1248
	200-10	200/200	0/0	10/10	200	180	10	32	200	180	10	32	0	0	10	32	0	0	10	32
	200-20	200/200	0/0	20/20	200	180	10	32	200	180	10	32	0	0	20	32	0	0	20	32
	200-30	200/200	0/0	30/30	200	180	10	32	200	180	10	32	0	0	30	32	0	0	30	32
	200-50	200/200	0/0	50/50	200	180	10	32	200	180	10	32	0	0	50	32	0	0	50	32
	200-70	200/200	0/0	70/70	200	180	10	32	200	180	10	32	0	0	70	44	0	0	70	44
	200-100	200/200	0/0	100/100	200	180	10	32	200	180	10	32	0	0	100	63	0	0	100	63
	200-200	200/200	0/0	200/200	200	180	10	32	200	180	10	32	0	0	200	243	0	0	200	243
	500-100	500/500	0/0	100/100	500	180	10	32	500	180	10	32	0	0	100	63	0	0	100	63
	500-200	500/500	0/0	200/200	500	180	10	32	500	180	10	32	0	0	200	243	0	0	200	243
	500-300	500/500	0/0	300/300	500	180	10	32	500	180	10	32	0	0	300	372	0	0	300	372
	500-500	500/500	0/0	500/500	500	180	10	32	500	180	10	32	0	0	500	624	0	0	500	624
	1000-100	1000/1000	0/0	100/100	1000	250	10	32	1000	250	10	32	0	0	100	63	0	0	100	63
	1000-200	1000/1000	0/0	200/200	1000	250	10	32	1000	250	10	32	0	0	200	243	0	0	200	243
	1000-300	1000/1000	0/0	300/300	1000	250	10	32	1000	250	10	32	0	0	300	372	0	0	300	372
	1000-500	1000/1000	0/0	500/500	1000	250	10	32	1000	250	10	32	0	0	500	624	0	0	500	624

* 100-10 is a special case, where the PIR exceeds the Access Rate.