CSA Service Appendix - Schedule 2

Draft Service Description for Boost Service
August 2014

1.   Introduction

1.1   References to clauses or sections are references to clauses or sections in this Service Description unless expressly provided otherwise.

1.2   References to Chorus' website are to the secure web portal that Chorus makes available to the Service Provider.

1.3   The definitions set out in the General Terms, the Special Terms and the Operations Manual apply to the extent that they are not expressly modified by or inconsistent with the context of this Service Description.

1.4   References to the Special Terms, Price List and Operations Manual are references to those documents under the same Service Appendix as this Service Description. References to the Service Appendix are references to the Service Appendix for the Boost Service.

2.   Boost Service

Introduction

2.1   The Boost Service:

2.1.1   includes Boost HD and Boost VDSL. Where the term the "Boost Service" is used in this Service Description it refers to these two services;

2.1.2   is a DSL enabled service, and its associated functions, including the Chorus System, that enables access to, and interconnection with, that part of Chorus' public data network (PDN) that connects the End User Premises, Service Provider Premises or NBAP to Chorus' first data switch or equivalent facility, other than a DSLAM; and

2.1.3   is an Ethernet based bitstream product that, when combined with other services, such as Commercial Handover Connection Service and Commercial Tail Extension Service, enables a Service Provider to offer its End Users delivery of Premium Best Efforts internet grade broadband services using either ADSL2+ technology (ITU-T Rec.G.992.5) or VDSL2 technology (ITU-T Rec.G.993.2).

2.2   The Service Provider must meet the pre-requisites at clause 3.1.

2.3   The Diagram set out at Appendix A illustrates the Boost Service with Commercial Handover Connection Service and Commercial Tail Extension Service. The technical specification of the Boost Service is set out in Appendix B. The Boost Service is provided between the Demarcation Points.

2.4   The Boost Service can be provided with or without an active telephone service on the same copper pair (such as POTS, UCLF Service, Baseband IP or Baseband Copper ("**Voice Services**")). The Voice Services do not form part of the Boost Service and separate charges may apply.

2.5   The Service Provider is to fulfil any authentication, authorisation, and addressing functions for the service provided to the End User. Chorus will have no responsibility for providing any Layer 3 functions.

2.6   The Boost Service is not available for resale to End Users. However, the Boost Service is available for resale to Other Service Providers.

Demarcation Points

2.7   The Demarcation Points for the Boost Service are (as noted on the Diagram):

2.7.1   **End User Demarcation Point**: The ETP at the End User Premises, Service Provider Premises or NBAP;

2.7.2   **Chorus Network Logical Service Demarcation Point**: The Boost Service is delivered as a single VLAN on the Commercial Handover Connection located at the Handover Point; and

2.7.3   **Chorus Network Physical Service Demarcation Point**:

(i)   If no Commercial Tail Extension Service is taken in conjunction with the Boost Service, the MOFDF at the Handover Point; and

(ii)   If Commercial Tail Extension Service is taken in conjunction with the Boost Service, the point where the separate instances of the Boost Service within the applicable Coverage Area are aggregated, i.e. where the Commercial Tail Extension Service commences, but there will be no physical Demarcation Point.

Service Specifications

2.8   The table below outlines the target metrics for Boost Service:

Metric	Internet CoS (1500 byte Frames) Boost VDSL	Internet CoS (1500 byte Frames) Boost HD
Mean one-way frame delay	<1s	<1s
One-way frame delay variation	Unspecified	Unspecified
One-way frame loss ratio	Unspecified	Unspecified

2.9   In relation to the above table:

2.9.1   Chorus will provide sufficient network capacity to meet the specifications in the above table and the Minimum Throughput (except for Non-Qualifying Connections or Connection with UBA Handover) from the relevant Commercial Handover Connection to the End User Demarcation Point during any 15 minute period.

2.9.2   The service specifications relate to the performance of the Boost Service from the Handover Point to the ETP, and excludes factors beyond Chorus' reasonable control, for example congestion arising from oversubscription of handover, serialisation delays or transcoding delays.

Line Profile Optimisation

2.10   Chorus will apply line profile optimisation to every Boost VDSL port and, in due course, to every Boost HD port to proactively improve individual line performance by optimising the line for speed and stability over the lifetime of the Connection. The line optimisation for Boost HD is currently being developed by Chorus and will be implemented on 3 months' notice to the Service Provider.

2.11   The line profile optimisation process will commence after various events, including connection, a port reset, a port refresh, card failure or a node failure, and may take up to ten days after any such event to initially achieve the best performance.

2.12   When the Connection is provisioned, the interleaving setting for the Boost Service may be optimised by Chorus and cannot be changed by the Service Provider.

Traffic Tagging

2.13   It is the responsibility of the Service Provider to ensure all Boost Service traffic is tagged as Premium Best Efforts CoS, using PCP=0. Untagged or incorrectly tagged traffic will be discarded.

Service Commitment

2.14   On a Premium Best Efforts basis, the minimum line speed and minimum throughput are as follows:

   2.14.1   a minimum downstream / upstream line speed of 12 / 1 Mbps for Boost VDSL and of 6 Mbps / 600 kbps for Boost HD (**Minimum Line Speed**); and

   2.14.2   a minimum downstream average throughput of 10 Mbps during a 15 minute period for Boost VDSL and 5 Mbps during a 15 minute period for Boost HD (**Minimum Throughput**).

2.15   The Service Commitment for the Boost Service is:

   2.15.1   for each Connection with UBA Handover, the Connection meeting the Minimum Line Speed; and

   2.15.2   for any Connection other than a Connection with UBA Handover, the Connection meeting both the Minimum Line Speed and the Minimum Throughput.

   For the avoidance of doubt, the above Service Commitment will not apply to any Non-Qualifying Connection.

2.16   If the information returned during Pre-qualification states that the Connection will not meet the applicable Minimum Line Speed, the Connection will be deemed to be a Non-Qualifying Connection and the Service Provider may either cancel the Order prior to Chorus issuing an RFS Date or continue with the Order on the basis that it will be deemed to be a Non-Qualifying Connection. If the Connection is a Non-Qualifying Connection, the Service Commitment will not apply to that Connection.

2.17   The maximum upstream or downstream line speed that the DSLAM can support on the line given existing line conditions is subject to:

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

2.17.2   the use of line profile optimisation;

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

2.17.4   any factors limiting line speed as described in the following clause 2.18.

2.18   The upstream or downstream line speed the DSLAM can support on the line may be limited by factors including:

2.18.1   the condition of the copper line;

2.18.2   copper loop length;

2.18.3   type of cable containing the copper line;

2.18.4   the presence of multiples on the copper line;

2.18.5   the presence of other services in a cable sheath containing the copper line;

2.18.6   the performance capability of the DSLAM;

2.18.7   the End User's modem;

2.18.8   presence and degree of external interference (from potential causes such as un-suppressed AC powered equipment, electric fences, radio broadcasts etc); and

2.18.9   the configuration and/or condition of wiring within the End User Premises, Service Provider Premises or NBAP.

Provisioning

2.19   Except to the extent expressly provided for in the Boost Service, the Service Provider or the End User is responsible for providing and installing all required Customer Premises Equipment and wiring at the End User Premises, Service Provider Premises or the NBAP beyond the ETP, including a modem that is on the Approved Modem List or an Accredited Modem. The Service Provider will ensure that TelePermit and premises wiring requirements are adhered to.

2.20   The Boost VDSL installation will include, if required, the installation of a VDSL2 standard splitter and wiring at the End User Premises, Service Provider Premises or the NBAP beyond the ETP to a single jack point. Where requested, Chorus will provide additional wiring, which will incur additional charges.

Service Commitment Fault

2.21   If a fault is reported for a Qualifying Connection and it fails to meet the Service Commitment after connection and line profile optimisation, Chorus will, if it is responsible for the fault:

2.21.1   restore the Connection so that it meets the Service Commitment; or

2.21.2   if, acting reasonably, Chorus considers that it is uneconomic to repair the Connection to enable the Service Commitment to be met or if a UFB

Service is available for that premise, Chorus may notify the Service Provider that the Connection is a Non-Qualifying Connection and clause 2.23 will apply.

2.22 If the Service Provider reports a fault for a Non-Qualifying Connection, Chorus will handle the fault in accordance with the Operations Manual, but it is not obliged to restore a Non-Qualifying Connection to enable it to meet the Service Commitment.

Non-Qualifying Connection

2.23 If Chorus notifies the Service Provider under clause 2.21.2 that a Connection is Non-Qualifying Connection, the Service Provider shall within 30 days of such notice elect to:

2.23.1 accept the Connection as a Non-Qualifying Connection;

2.23.2 if Boost VDSL has been requested take Boost HD if the Service Commitment can be achieved for Boost HD;

2.23.3 take the regulated service under the UBA STD, if available; or

2.23.4 cancel the Connection.

2.24 There will be no Charge for any changes described in clause 2.23.

2.25 After Chorus notifies the Service Provider and until the Service Provider notifies Chorus of its election under clause 2.23, the Connection will be deemed to be a Non-Qualifying Connection.

2.26 If a Connection is deemed or accepted by the Service Provider to be a Non-Qualifying Connection, the Service Commitment will not apply to that Connection.

Upgrade of a Non-Qualifying Connection

2.27 Chorus may give the Service Provider notice that one or more Non-Qualifying Connections have been upgraded and are able to meet the Service Commitment. The Service Provider shall within 30 days of such notice elect for each Connection to:

2.27.1 accept the Connection as a Qualifying Connection;

2.27.2 take the regulated service under the UBA STD, if available; or

2.27.3 cancel the Connection.

2.28 If the Service Provider does not make an election under clause 2.27 within 30 days of the notice, it will be deemed to have elected to accept the Connection as a Qualifying Connection.

2.29 There will be no Charge for any changes described in clause 2.27.

Coverage Areas and Handover Points

2.30 Each End User will be located in a Coverage Area. The End User traffic from DSLAMs in a Coverage Area is carried to the Handover Point over Location Aggregation Paths supporting the Boost Service.

2.31 The Handover Point is the aggregation point for the DSLAMs supplying the Boost Service within a Coverage Area. Service Providers may, via Commercial Tail Extension Services, backhaul services and/or other services, connect the Service Provider Network to any available Handover Point throughout the country.

2.32 The Boost Services must be collected via a Commercial Handover Connection, which is separate from handovers for the UBA Services provided under the UBA STD. If the Service Provider is taking the Boost Service and services under the UBA STD at a single handover point, it will be necessary to take a Commercial Handover Connection and a separate handover connection under the UBA STD.

2.33 A list of current Handover Points and Coverage Areas are available to Service Providers via Chorus' website. Chorus may introduce new Handover Points and Coverage Areas or change the available Handover Points and Coverage Areas in accordance with the procedures set out in the Operations Manual.

Handover of the Boost Service

2.34 The Service Provider must establish interconnection for the Boost Service at a minimum of one Handover Connection at the appropriate Handover Point.

2.35 The Handover Connection can be at either:

2.35.1 a First Data Switch;

2.35.2 a Handover Point for a coverage area; or

2.35.3 a Handover Point for a coverage area in conjunction with Commercial Tail Extension Service and traffic from remote coverage areas.

2.36 Prior to Ordering the Boost Service, the Service Provider must:

2.36.1 have either a Tie Cable or access service or backhaul service interconnected with a Handover Connection in the Coverage Area where handover is to occur; and

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

2.37 Any Tie Cable, access service, backhaul service, Handover Connection or Commercial Tail Extension Service is not part of the Boost Service and additional terms and charges will apply where the Service Provider takes such services from Chorus.

Geographic Availability

2.38 The Boost Service is available:

2.38.1 as Boost VDSL where Chorus has Ethernet-based VDSL2 coverage; or

2.38.2 as Boost HD where Chorus has ADSL2+ coverage.

2.39 The Boost Service with Voice Services will only be available in areas where Chorus has network capacity to support the Voice Services.

3. Service Prerequisites

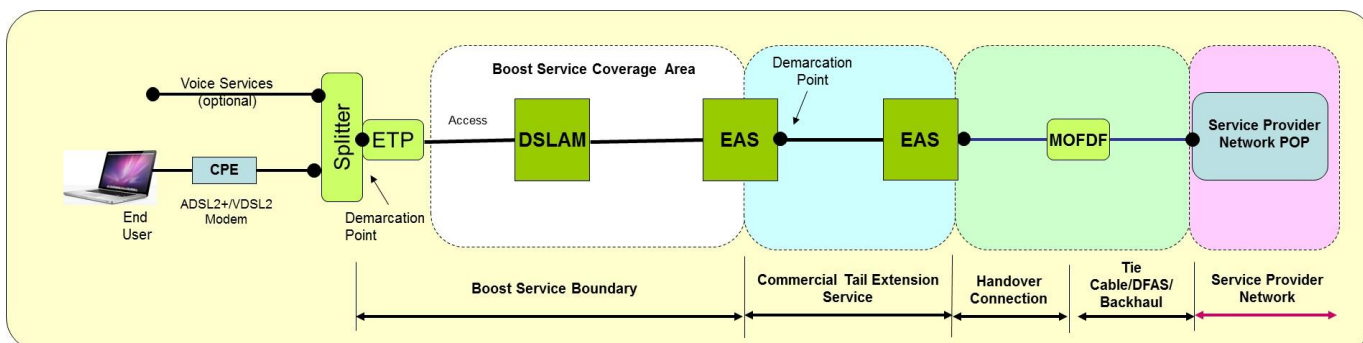3.1   The following are prerequisites for the Boost Service:

3.1.1   sufficient Handover Connections to support the number of Connections to be Ordered by the Service Provider; and

3.1.2   any Commercial Tail Extension Services required to support the Connections to be Ordered by the Service Provider.

Appendix A – Diagram for the Boost Service

The following diagram provides a simplified overview of the physical components of the Boost Service.
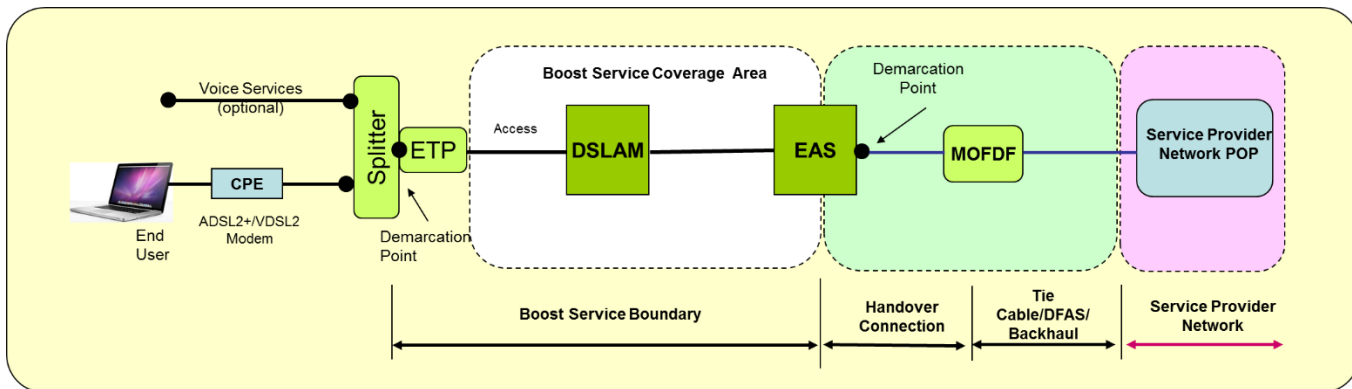
The following diagram provides a simplified overview of the physical components of the Boost Service when used with the Commercial Tail Extension Service.

Draft for industry consultation August 2014

Appendix B – Technical Specification for the Boost Service

End User Interface

BOOST HD Ethernet	
Ethernet	MTU 1522 bytes. End Users and Service Providers should not use packet sizes that will require fragmentation at the Handover Point. This size will deliver a maximum 1500 byte IP packet from the End User, or a 1492 byte IP packet carried over PPPoE. Note that PPPoE is optional. 802.1q tagged interface with • VLAN id = 10 • 802.1p = 0 'Premium Best Efforts' allowed • 802.1p = 1, 2, 3, 4, 5, 6, 7; discarded • Untagged; discarded
ATM	RFC 2684 bridged ethernet over vpi/vci 0/110
ADSL2+	ADSL2+ conforming to G.992.5, Annex A ADSL conforming to ITU-T G.992.1 (G.dmt) Annex A
VLAN	Point-to-Point (1:1 VLAN) MTU 1500 Bytes (802.1q 1522B upstream and 1526B 802.1ad downstream
BOOST HD PPPoA (provides backwards compatibility with PPPoA modems) All PPPoA packets will be classified as Premium Best Efforts	
IP	MTU 1492 bytes
PPP	PPP Compression (LCP PCOMP) – Off PPP Address & Control Filed Compression (LCP PCOMP) – Off Magic Number – enabled MRU – 1500B Authentication Protocol – PAP Multilink PPP – controlled by Service Provider
ATM	PPP over ATM (PPPoA) (RFC 2364) with VC multiplexed encapsulation carried over vpi/vci 0/100
ADSL2+	ADSL2+ conforming to G.992.5, Annex A ADSL conforming to ITU-T G.992.1 (G.dmt) Annex A
VLAN	Delivered as PPPoE at handover on an 802.1ad VLAN.

BOOST VDSL	
Ethernet	MTU 1522 bytes. End Users and Service Providers should not use packet sizes that will require fragmentation at the Handover Point. This size will deliver a maximum 1500 byte IP packet from the End User, or a 1492 byte IP packet carried over PPPoE. Note that PPPoE is optional. 802.1q tagged interface with • VLAN id = 10 • 802.1p = 0 'Premium Best Efforts' allowed • 802.1p = 1, 2, 3, 4, 5, 6, 7; discarded • Untagged; discarded
VDSL2	Encapsulation set to Packet Transfer Mode (PTM) Ethernet (64/65 encapsulation). VDSL2 confirming to ITU-T Rec G.993.2 spectrum profiles: ITU-T G.993.2 997E8b and 997E17a VDSL2 profiles
VLAN	Point-to-Point (1:1 VLAN) MTU 1500 Bytes (802.1q 1522B upstream and 1526B 802.1ad downstream

Handover Interface

BOOST HD Ethernet / BOOST HD PPPoA / BOOST VDSL	
Ethernet	Double-tagged 802.1ad The maximum Ethernet (Layer 2) frame size accepted and transmitted will be 1526 bytes. End Users and Service Providers should not use packet sizes that will require fragmentation at the Handover Point. This size will deliver a maximum 1500byte IP packet to the End User, or a 1492 byte IP packet carried over PPPoE. Note that PPPoE is optional. 802.1 p (Ethernet priority flags) settings: • SVID PCP = CVID PCP = 0 'Premium Best Efforts'
802.1ad (Virtual LAN ID) settings	Each End User will be delivered over Ethernet with a unique Stacked VLAN ID of the following format: • Inner tag (Ethertype = 8100) = Customer Virtual LAN ID (CVID) • Outer tag (Ethertype = 88A8) = Service Virtual LAN ID (SVID) Outer tag Ethertype can be set to 0x8100 or other Ethertypes on request, for compatibility with specific vendor equipment. The SVID/CVID combination is unique to an End User on the same handover. One SVID/CVID combination will map to one End User. SVID/CVID may not be unique among multiple handover points. SVID/CVID parameters will be assigned by Chorus as part of the fulfil process.

Draft for industry consultation August 2014

Additional BOOST HD PPPoA specific features	
IP	MTU of 1492 Bytes
PPP	PPP Compression (LCP PCOMP) – Off PPP Address & Control Filed Compression (LCP PCOMP) – Off Magic Number – enabled MRU – 1500B Authentication Protocol – PAP

Draft for industry consultation August 2014