

Global WAN Solutions Service Schedule

- Attachment - VPLS Service

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1 VPLS Service Description

Overview

- 1.1 The Virtual Private LAN Service (**VPLS**) is an Ethernet based Layer 2 multipoint communication service providing any-to-any connectivity via Logical Interfaces between access end points (“Ports”) at PoPs on Telstra’s VPLS Network.
- 1.2 For each VPLS:
- (a) there is a Port on Telstra’s VPLS Network configured to support Ethernet-based data traffic;
 - (b) each Port has a Physical Bandwidth;
 - (c) each Port has one or more Logical Interfaces;
 - (d) each Logical Interface has a Logical Interface Bandwidth;
 - (e) Customer may select one of the two available Service Modes:
 - (i) Transparent Mode; and
 - (ii) VLAN Mode,

as further described below in Section 1. There may also be, for each VPLS, Local Access if Ordered. Where associated Local Access is Ordered, such Local Access shall form part of the VPLS Service.

Ports, Bandwidth and Logical Interfaces

- 1.3 Ports are available at the following speeds:
- (a) 10Mb (**Ethernet**);
 - (b) 100Mb (**Fast Ethernet**); and
 - (c) 1000Mb (**Gigabit Ethernet**).
- The relevant speed is the maximum bandwidth physically available for that Port (**Physical Bandwidth**).
- 1.4 A Logical Interface is a sub-interface of a VPLS Port. Each Logical Interface has a subscribed data speed selected by Customer, as set out in the Order (**Logical Interface Bandwidth**).
- 1.5 For VPLS with Transparent Mode, the Port has only one Logical Interface which is mapped to the Low Priority Data Class on Telstra’s VPLS Network. For VPLS with Transparent Mode, the Logical Interface Bandwidth may be equal to or less than the Physical Bandwidth of the Port.
- 1.6 For VPLS with VLAN Mode, the Port may have one or more Logical Interfaces up to a maximum of 10. Each Logical Interface has one or more classes of service (**CoS**), as set out in the Order and further described in Sections 1.10-1.11 below. Each CoS for a Logical Interface may be allocated a percentage of the Logical Interface Bandwidth for that Logical Interface (**CoS Bandwidth**), as set out in the Order.
- 1.7 The total of all Logical Interface Bandwidths on a Port may not exceed the Physical Bandwidth for that Port.

Service Modes: Transparent Mode and VLAN Mode

- 1.8 Customer is able to subscribe to one of the following “**Service Modes**” for VPLS:
- (a) **Transparent Mode:** This Service Mode provides transparent transport of all VPLS traffic over Telstra’s VPLS Network. CoS options are not available for VPLS with Transparent Mode. Any VLAN tags sent by Customer will be preserved but will not be acted upon by Telstra’s VPLS Network.
 - (b) **VLAN Mode:** This Service Mode provides virtual local area network (**VLAN**) based transport of VPLS traffic. CoS options are available for VLAN Mode. Customer is responsible for ensuring that Customer’s VPLS traffic is sent with appropriate VLAN tags to enable Telstra’s VPLS Network to carry the traffic as separate VLANs. Each Logical Interface on a Port will represent one VLAN.

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- 1.9 Each of Customer's VPLS can only send and receive traffic with Customer's other VPLS with the same Service Mode.

CoS for VLAN Mode

- 1.10 For VPLS with VLAN Mode, Customer may subscribe to between 1 and 3 CoS on a Logical Interface.
- 1.11 The available CoS for VPLS with VLAN Mode are:
- (a) **Voice** – optimised Network performance suitable for real-time applications that require rigorous timing control and performance metrics such as voice over IP and circuit emulation;
 - (b) **Video** – suitable for delay sensitive interactive video conferencing and streaming of audio/video applications or surveillance video;
 - (c) **Critical Data** – suitable for mission critical business applications and applications with flow-control capable transport layers and signalling traffic;
 - (d) **Interactive Data** – suitable for sporadic LAN-to-LAN traffic, or applications that favour throughput over delay and network management;
 - (e) **Standard Data** – suitable for transactional services and database access; and
 - (f) **Low Priority Data** – suitable for low-priority, sporadic applications such as email and web browsing.

Australian and New Zealand Ports

- 1.12 The VPLS Service is not available solely for use as a service to carry data between Customer's Sites either within Australia or within New Zealand. If Customer cancels all of its Ports with the exception of its Ports in either Australia or New Zealand, such Australian or New Zealand Ports shall be deemed cancelled by the Customer and the Customer will be liable for the payment of Early Termination Fees, if applicable.

2 Charges

- 2.1 For each VPLS with VLAN Mode, non-recurring and monthly recurring charges are charged per Logical Interface.
- 2.2 For each VPLS with Transparent Mode, non-recurring and monthly recurring charges are charged per Port.

3 Service Levels Scope

- 3.1 The Service Levels that apply to each VPLS Service and the Relevant Credit Charges are set out in Table 1 below.

Table 1: Service Levels and Relevant Credit Charges for VPLS Service

Types of Service Levels	Applicable Service Levels	VPLS Service	
		VLAN Mode	Transparent Mode
		Relevant Credit Charges	Relevant Credit Charges
Service Delivery	Service Provisioning Time (SPT)	First month's Logical Interface MRC*	First Month's Logical Interface (Port) MRC*

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Types of Service Levels	Applicable Service Levels	VPLS Service	
		VLAN Mode	Transparent Mode
		Relevant Credit Charges	Relevant Credit Charges
Service Reliability	Service Availability (Availability)	Logical Interface MRC	Logical Interface (Port) MRC
	Mean Time to Restore (MTTR)	Logical Interface MRC	Logical Interface (Port) MRC
Network Performance	PoP-to-PoP Round Trip Delay (RTD)	Logical Interface MRC for the subscribed CoS which did not meet the RTD**	Logical Interface (Port) MRC
	PoP-to-PoP Throughput	Logical Interface MRC for the subscribed CoS which did not meet the Throughput**	Logical Interface (Port) MRC
	PoP-to-PoP Jitter	Logical Interface MRC for the subscribed Voice CoS ***	Not Applicable

* Logical Interface MRC means the monthly recurring charge for the applicable Logical Interface that does not meet the applicable Service Level during the applicable month (expressly excluding, among other things, any non-recurring charges or any monthly recurring charges for any included Local Access or other service). In the case of Transparent Mode, the Port has only one Logical Interface so the Logical Interface MRC may also be referred to as the Port MRC.

**This Service Level is measured separately for each subscribed CoS and Credits are calculated separately for each subscribed CoS on a Logical Interface for which the Service Level is not met using the following calculation:

$$a \times \left(\frac{x}{y} \right) \text{ where:}$$

- (a) "a" is the Logical Interface MRC;
- (b) "x" is CoS Bandwidth of the affected CoS on that Logical Interface; and
- (c) "y" is total Logical Interface Bandwidth for the affected Logical Interface .

*** Only measured on the Voice subscribed CoS. Credits are calculated by reference to the charge for the Voice subscribed CoS only.

- 3.2 Any Service Level measure relating to Network Performance is a carrier network level measurement. As such, the measure does not necessarily reflect the actual VPLS performance at the individual VPLS Service level.
- 3.3 The Service Level Targets may not be measured and therefore do not apply between Ports or Sites utilising the same PoP within the same country.
- 3.4 Measurement points for carrier network performance parameters, being PE Routers enabled with a device to measure continuous VPLS traffic flow over Telstra's VPLS Network, are identified by Telstra on the PoP List. This list may be changed from time to time, as advised by Telstra. Network Performance Service Levels are only measured for PoPs enabled with an SAA router.

4 Service Delivery - Service Provisioning Time (SPT)

- 4.1 Telstra will provide Customer with a service delivery date in writing for each VPLS Service (inclusive of any included Local Access) purchased by Customer, after completing a feasibility assessment (**Firm Delivery Date**).

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- 4.2 If the Service Start Date for such VPLS Service with a Firm Delivery Date is delayed by Telstra beyond the Firm Delivery Date (other than as a result of an Exclusion Event, including without limitation, the Customer's unavailability upon the Firm Delivery Date, Customer's providing incomplete or inaccurate information on the Order, or Customer changing information on the Order) Customer is entitled to claim a credit of 5% of the Relevant Credit Charges for the delayed VPLS Service for each Business Day (in the jurisdiction(s) where the affected VPLS Service is being installed) of delay past the Firm Delivery Date up to a maximum of 100% of the Relevant Credit Charges for the delayed VPLS Service.
- 4.3 Where the Order for a VPLS Service is changed at Customer's request, then the SPT will not apply.
- 4.4 If a VPLS Service is not delivered within 31 days of its Firm Delivery Date, other than as a result of an Exclusion Event, Customer may cancel that VPLS Service without the payment of Early Termination Fees, by providing notice to Telstra at least 10 Business Days before the earlier of the scheduled or actual delivery date; provided that Customer shall be required to reimburse Telstra for any out-of-pocket expenses associated with the termination of any included Local Access.

5 Service Availability

- 5.1 Telstra will endeavour to provide Availability for each VPLS (inclusive of any included Local Access) at 99.99% for each full calendar month during the applicable Service Term (**Service Availability Service Level Target**).
- 5.2 If during any such month, such VPLS Service experiences cumulative Unavailability of 9 minutes or more, Customer is entitled to claim a Credit (not cumulative) as a percentage of the Relevant Credit Charge for the each affected Logical Interface on that VPLS Service, calculated in accordance with Table 2, dependent upon the cumulative Unavailability experienced during the applicable calendar month.

Table 2: Service Availability Credits

Availability calculated as a percentage*	Cumulative Unavailability for the applicable calendar month, calculated in minutes**	Noncumulative Credit
99.98%-99.84	9 minutes – 120 minutes	10%
<99.84-99.50	121 minutes – 180 minutes	20%
<99.5-99.45%	181 minutes – 240 minutes	30%
<99.45%	>240 minutes	50%

*Percentages are provided for illustrative purposes only, based upon a 30 day (730 hour, 43,800 minute) month. For purpose of calculating the Credits, the dispositive column is the one entitled "Unavailability calculated in minutes")

**Unavailability measurements are rounded down to the nearest minute.

- 5.3 The Credit payable for a failure to meet the Service Availability Service Level Target for a Logical Interface in a month is capped at 50% of the Relevant Credit Charges for the applicable affected Logical Interface on that VPLS Service for that month.
- 5.4 If a VPLS Service experiences either:
- (a) a single period of Unavailability in excess of 24 hours in any month; or
 - (b) three or more distinct periods of Unavailability of eight hours or longer in any six month period,

Customer may cancel the affected VPLS Service without the payment of Early Termination Fees; provided that Customer provides at least 45 days' written notice of cancellation to Telstra, which notice must be delivered within 15 days of the event giving rise to the right to cancel under this clause; provided further that Customer

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shall be required to reimburse Telstra for any out-of-pocket expenses associated with the termination of any included Local Access.

For the purpose of this Service Availability Service Level, a period of Unavailability will not be distinct from a preceding period of Unavailability to the extent the trouble ticket for the original period of Unavailability remains open.

6 Mean Time To Restore (MTTR)

- 6.1 Mean Time to Restore means the sum of all minutes of Unavailability for a VPLS Service during a month divided by the total number of Global Service Interruptions that gave rise to such Unavailability on that VPLS Service in that month.
- 6.2 Telstra will endeavour to provide a Mean Time to Restore of four hours or less for each VPLS Service for each full calendar month during its Service Term (**MTTR Service Level Target**).
- 6.3 If the Mean Time to Restore for a VPLS Service is more than four hours for any such month, Customer is entitled to a Credit (not cumulative) as a percentage of the Relevant Credit Charge for each affected Logical Interface for that VPLS Service, calculated in accordance with Table 3.

Table 3: MTTR Credits

Mean Time to Restore calculated in minutes*	Noncumulative Credit
241 minutes – 480 minutes	10%
481 minutes – 720 minutes	15%
721 minutes – 960 minutes	20%
961 minutes – 1200 minutes	25%
1201 minutes – 1440 minutes	30%
>1440 minutes	35%

*Mean Time to Restore measurements are rounded down to the nearest minute.

- 6.4 The credit payable for a failure to meet the MTTR Service Level Target for a VPLS Service in a month is capped at 35% of the Relevant Credit Charges for that VPLS for that month.

7 Pop-to-Pop Round Trip Delay (RTD)

- 7.1 RTD is a measure of the monthly average round trip delay performance for the Pop-to-Pop portion of each VPLS Service. RTD is measured PoP-to-PoP using sample data sent at 5 minute intervals between PE Routers enabled with a device to measure continuous traffic over Telstra's VPLS Network. If none of the sample data is received back for a measurement test, it is assumed that there is a line fault and the test is excluded.
- 7.2 RTD is measured:
- (a) for the VLAN Mode, separately for each subscribed CoS on a Logical Interface; and
 - (b) for the Transparent Mode, for the Logical Interface.
- 7.3 The current RTD Service Level Targets for Customer's VPLS Service are set forth on Exhibit A to this Service Attachment.
- 7.4 Credits for exceeding the RTD Service Level Target for a VPLS Service in a month are calculated:
- (a) separately for each affected CoS on each Logical Interface for VLAN Mode; and

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- (b) for the Logical Interface for Transparent Mode.
- 7.5 If the RTD Service Level Target is not met for a VPLS Service in a month, Customer is entitled to claim a Credit of 10% of the Relevant Credit Charges for each affected:
- (a) CoS on each Logical Interface for VLAN Mode; and
- (b) the Logical Interface for Transparent Mode,
- on that VPLS Service for that month.

8 Pop-to-Pop Throughput

- 8.1 Throughput means the average success rate of data transmission from origin to destination PE Routers over Telstra's VPLS Network during a month. Throughput is measured PoP-to-PoP using sample data sent at 5 minute intervals between PE Routers enabled with a device to measure continuous traffic over Telstra's VPLS Network. If none of the sample data is received back for a measurement test, it is assumed that there is a line fault and the test is excluded.
- 8.2 The Throughput Service Level Targets for VLAN Mode are set out in Table 4 below.

Table 4 – Throughput Service Level Targets – VLAN Mode

Targets (%)					
Voice CoS	Video CoS	Critical Data CoS	Interactive Data CoS	Standard Data CoS	Low Priority Data CoS
99.995%	99.99%	99.95%	99.95%	99.95%	99.9%

- 8.3 Throughput is measured:
- (a) for the VLAN Mode, separately for each subscribed CoS on a Logical Interface; and
- (b) for the Transparent Mode, for the Logical Interface.
- 8.4 The Throughput Service Level Target for Transparent Mode is 99.9%.
- 8.5 If the Throughput Service Level Target is not met for a VPLS Service in a month, Customer is entitled to claim a Credit of 10% of the Relevant Credit Charges for each affected:
- (a) CoS on a Logical Interface for VLAN Mode; and
- (b) Logical Interface for Transparent Mode,
- on that VPLS Service for that month.

9 Pop-to-Pop Jitter

- 9.1 The Jitter Service Level only applies to the Voice CoS of the VLAN Mode.
- 9.2 Jitter measures the average deviation in a month in the RTD for the Voice CoS. Jitter is measured PoP-to-PoP using sample data sent at 5 minute intervals between PE Routers enabled with a device to measure continuous traffic over Telstra's VPLS Network. If none of the sample data is received back for a measurement test, it is assumed that there is a line fault and the test is excluded.
- 9.3 The monthly average Jitter Service Level Target is ≤ 5 milliseconds.
- 9.4 If the Jitter Service Level Target is not met for a VPLS Service, Customer is entitled to claim a Credit of 10% of

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the Relevant Credit Charges for each affected Voice CoS per Logical Interface on that VPLS Service.