



VPLS

Service Description

VPLS is a Virtual Private LAN Service using Ethernet circuits to provide an 'any-to-any' connectivity service between customer sites. This is designed to service customers who require high-speed bandwidth in a meshed architecture.

VPLS is a wires-only service, but KC can provide customer equipment as part of a VPLS solution.

Multiple access circuits can be incorporated into a VPLS service. The WAN network will be based on KCOM's VPLS service supporting all sites either directly, or via the BT Wholesale Ethernet network.

Underlying circuit types include

KCOM Etherline Connect services in the Original licenced area (point-to-point circuits).

KCOM Etherline Connect services in the East Yorkshire Expansion area

KCOM Etherline Connect services from a BT local Loop Unbundled exchange (i.e Hornsea and Withernsea) backhauled into the KCOM network

In the above instances the B-end of the circuit is the KC Exchange that is closest to the customer and KCOM's IP Core that delivers the VPLS service.

National circuits using BT Wholesale Ethernet into the VPLS network in Hull. These are aggregated and delivered across the BT/KCOM NNI interconnect into the VPLS Closed User Group (CUG).

Features

VPLS provides KCOM Etherline Connect tail-end circuits or BT Wholesale Ethernet circuits into the KCOM VPLS IP Core.

It provides a dedicated, permanently open transmission circuits between multiple sites on the customer network providing 'any-to-any' meshed or partially meshed networks, between multiple sites on the service.

Fault repair is [BusinessCare Plus](#) and operates 24 hours per day, 7 days per week including Bank and Public holidays with a repair time of 5 clock hours.

KCOM will create a private Closed User Group (CUG) for the Service, creating a private, Any to Any network offering guaranteed speeds with three layers of traffic classifications. See section 8 below.

This is a wires only service. KCOM can provide router termination using Cisco equipment which is a separate managed service.

Charging Structure

| KC VPLS | | Connection Charge | | Rental | |
|---|----------------------------------|-------------------|----------|----------|----------|
| | | Exc. VAT | Inc. VAT | Exc. VAT | Inc. VAT |
| 1 end within original KCOM licensed area into VPLS cloud | | | | | |
| 1 end within KCOM's East Yorkshire Expansion Area into VPLS cloud | | | | | |
| 1 end within KCOM's Local Loop Unbundled Exchange into VPLS cloud | | | | | |
| | No Existing Network Connectivity | POA | | POA | |
| KC VPLS 10Mb | Existing Network Connectivity | POA | | | |
| KC VPLS 20Mb | No Existing Network Connectivity | POA | | POA | |
| | Existing Network Connectivity | POA | | | |
| KC VPLS 30Mb | No Existing Network Connectivity | POA | | POA | |
| | Existing Network Connectivity | POA | | | |
| KC VPLS 50Mb | No Existing Network Connectivity | POA | | POA | |
| | Existing Network Connectivity | POA | | | |
| KC VPLS 100Mb | No Existing Network Connectivity | POA | | POA | |
| | Existing Network Connectivity | POA | | | |
| KC VPLS 200Mb | No Existing Network Connectivity | POA | | POA | |
| | Existing Network Connectivity | POA | | | |
| KC VPLS 500Mb | No Existing Network Connectivity | POA | | POA | |
| | Existing Network Connectivity | POA | | | |
| KC VPLS 1Gb | No Existing Network Connectivity | POA | | POA | |
| | Existing Network Connectivity | POA | | | |
| CUG Management & Support | | POA | | POA | |

Customers on one-year contracts will be charged the full Connection Charge and Rental Charge if they cease a circuit within 12 months of the Operational Service Date.

Customers ceasing long-term contracts before completion will be charged the Rental difference between the committed contract term and the actual contract length Rental fee. An additional charge of 30% of the next 12 months rentals will also be charged or the rentals due to the contract end date, whichever is the lower.

Lead Times

The standard lead-time for delivery of the Service access is 40 Working Days, subject to survey and a suitable agreed roll-out plan. The installation date will be the Contractual Delivery Date (CDD) unless a later date has been specified in writing before commencement of installation.

Upgrades

Upgrades may be requested. A new minimum Contract period of 12 months will apply at the new bandwidth level.

Downgrades

Downgrade of bandwidth is not permitted during the first 12 months after installation. After the first 12 months, bandwidth downgrades are permitted subject to a reconnection fee. A new minimum Contract period of 12 months will apply at the new bandwidth level.

Cancellation Charges

This part outlines the termination costs associated with cancelling orders for private circuits before they have been delivered.

The delivery of a circuit is timed to meet a Contractual Delivery Date (CDD). The termination charges raised reflect the amount of work undertaken and are calculated on the number of working days between the date the customer requests cancellation and the CDD. The cancellation charge is expressed as a percentage of the appropriate circuit connection charge.

The full cost of any additional work, e.g. duct, that is separately identified on the contract and which has been specifically incurred for the order by the time of the cancellation, will be recovered in addition to the cancellation charge.

Customers should note that once delivered private circuits have a standard one year minimum term for which rental will be due. The cancellation charge scale applies to circuits normally provided within 40 working days.

| Working Days Before Contractual Delivery Date (CDD) Circuits Normally Provided in 40 Working Days | % of Connection Charge |
|--|------------------------|
| 2 or less | 90 |
| 3 - 21 | 75 |
| 22 - 29 | 60 |
| 30 - 35 | 30 |
| 36 or more | 0 |

The full cost of any additional work (for example, duct) that is separately identified by KCOM for the Customer's order by the time of the cancellation, will be recovered in addition to the cancellation charge.

All days will be calculated as working days, i.e. ignoring weekends and public holidays.

The cancellation date must be given in writing by the customer.

Should a customer request amendments to the CDD and subsequently cancel the order, the cancellation charge will be calculated on the days between the date the customer notified KCOM of the first amendment and the original CDD.

Technical Summary

VPLS provides any-to-any Layer 2 service supporting multiple classes of service to give customer control over traffic prioritisation.

VPLS removes the need to fully MESH between all other sites in a network thus making it simpler to interconnect large numbers of sites, and giving improved scalability of customers' routers.

VPLS provides an any to any service with no Layer 3 interaction. Each VPLS Closed User Group (CUG) is capable of up to 50 connections.

A maximum of 2000 MAC addresses are permitted per VPN - this defines the maximum number of directly connected Ethernet interfaces (many customers will connect via a router which aggregates equipment into single MAC address).

MAC Learning

The VPLS service shall learn MAC addresses and each VPLS is limited to learn a maximum of 2000 addresses. In order to manage the service some MAC addresses will be used by KCOM (one MAC address per access) and these MAC addresses will consume some of this space.

When MAC addresses have been learnt by the VPLS service then they are used to direct the traffic. If the same MAC address is learnt via two different accesses then connectivity problems could arise. Again, using a different router to connect to each access of the VPLS service will help prevent learning the same MAC address via two accesses.



Class of Service (CoS) and Performance

Class 1 – Real Time

The Class 1 traffic class is Top Priority CoS and is intended to support applications requiring low latency and jitter i.e. voice. This CoS can support up to 50% of a Customers total traffic and aims to provide a 3ms jitter performance and 10ms latency service level.

As a result the size of the Ethernet frames in this class is expected to be small (<350bytes). Customer should be aware of the potential impact to jitter if large Ethernet frames are queued along with the smaller frames. To prevent impact and maintain the performance of the real time applications Customers should avoid placing large Ethernet frames in this class. In this context a large frame is anything greater than 350 bytes, although the impact will be greater the longer the frame is.

Note that the service will not prevent large frames from being sent in the real time class, but customers may experience performance issues if large frames are present.

Class 2 – Assured

The Class 2 Assured class can support up to 75% of a Customers total traffic and is aimed at applications like Video Conferencing.

Class 3 – Best Effort

Class 3 is for non-time critical traffic. The VPLS service shall rate limit the amount of Multicast, Broadcast and Unknown traffic. By default this is limited to 500kbps and is treated as Class 3. Since many control protocols use multicast and broadcast frames the VPLS service shall queue the control traffic separately in Class 2 to ensure that it is not impacted by large amounts of Multicast, Broadcast and Unknown traffic.

Notes

The Customer can only use VPLS and therefore cannot sublet to other organisations.

Prices will be available on application. All prices are subject to survey.

Definitions

Contractual Delivery Date means the date on which KCOM is to complete provision of the access circuit or such as maybe agreed in writing between KCOM and the Customer.

No Existing Network Connectivity means the customer has not got an existing contract for a fibre based service in the building that requires the VPLS service.

Existing Network Connectivity means the existing customer has an existing fibre based circuit in the building and requires another circuit to be provisioned at the same entry point into the building. Two circuits ordered at the same time would result in the second circuit connection fee at the Existing Capacity connection fee.