

# Kent Public Service Network

## Connectivity Services

### Solution Overview

KPSN can offer a number of ways to connect your site into KPSN. These range from Fibre circuits to wireless broadband. A full range of resilient services are also offered. All of these services are available within the KPSN Service Catalogue.

KPSN also provides infrastructure services to Partners. This includes a wide range of link types and SLAs. All of these services are available via the KPSN Service Catalogue that all Partners have access to.

All services are monitored 24/7/365 (366 days in each leap year) and have a fully managed CPE.

- Link types of:
  - Fibre at speeds of 10Mb, 100Mb, 1Gb and 10Gb (10Gb is available upon request).
  - Copper based EFM services at speeds ranging from 2Mb up to 12Mb.
  - NGA services up to 80Mb.
  - Wireless point to point services to connect buildings in close proximity.
  - ADSL services (managed asymmetric DSL service across PSTN lines or MPF).
  - Managed ADSL (managed Asymmetric DSL service across PSTN lines delivered using Third Party Suppliers).
  - FTTC Wholesale Broadband.
  - Both Cat5 and UTP fibre cabling is also available upon request.

KPSN also offers a range of SLAs on the links and services. These are:

- Link Availability SLAs of:
  - On Fibre circuits - 99.95%.
  - On Fibre circuits that are resilient and diversely routed - 99.99%.
  - On Copper based EFM circuits - 99.85%.
  - On Copper based EFM with ADSL Back-up - 99.95%.
  - NGA based services - 99.85%.
  - ADSL services - 99.75%.
  - Managed ADSL services - 99.00%.
  - FTTC Wholesale Broadband services - 99.00%.
  - Wireless services - 99.85%
- Service Support hours provided with these services are:
  - Full - 24 X 7 X 365 (366).
- Time to restore SLAs on all services are expressed as follows:
  - Category P1 - 8hr
  - Category P2 - 12hr
  - Category P3 - 24hr
  - Category P4 - best endeavours

Connectivity services are provided by multiple vendors including BT, TalkTalk and Virgin.

*Joining public services  
together!*

## Asymmetrical NGA Service

Next-generation access (NGA) which is described as a significant upgrade to the Broadband available by making a step change in speed and quality of service. This is typically thought of as asymmetrical with a download speed of 24Mb plus and a fast upload speed. Super-fast broadband is generally taken to mean broadband products that provide a maximum download speed that is greater than 24 Mbit/s. This threshold is commonly considered to be the maximum speed that can be supported on current generation (copper-based) networks.

Fully managed Fibre to the Cabinet (FttC) Ethernet connectivity service delivered between the customer site and the local serving exchange. FttC connectivity is connected directly into the local KPSN Provider Edge (PE) MPLS device via a Generic Ethernet Access (GEA) cable link within the exchange.

Upstream and Downstream speeds are reliant on line distance and quality and is therefore provided as a 'best effort' bandwidth service.

The Service is provided with a managed Cisco 800 series CPE router.

Access Connection	Uplink Bandwidth	Downlink Bandwidth
Primary	Up to 20 Mb	Up to 80 Mb

## Asymmetrical Wholesale NGA Service

Fully managed Fibre to the Cabinet (FttC) Ethernet connectivity service delivered via Wholesale supplier and backhauled into the KPSN via supplier interconnections within the DUCL MPLS core network. Suppliers include:

- BT Wholesale
- Virgin Media Business
- TalkTalk Business

The service is available in two flavours each offering different maximum upstream and downstream speeds. Speed is reliant on line distance and quality and is therefore provided as a 'best effort' bandwidth service.

The Service provided with a managed Cisco 800 series CPE router.

Access Connection	Uplink Bandwidth	Downlink Bandwidth
Primary	Up to 10 Mb	Up to 40 Mb
Primary	Up to 20 Mb	Up to 80 Mb

## Ethernet in the First Mile (EFM) Service

Ethernet in the first mile (EFM) refers to using one of the Ethernet family of computer network protocols between a telecommunications company and a customer's premises. From the customer's point of view it is their "first" mile, although from the access network's point of view it is known as the "last mile".

Fully managed Ethernet in the First Mile delivered across bonded copper from the Supplier enabled public telephone exchanges. The service supports up to 8 bonded copper pairs.

The Service is provided with a managed Cisco 800 series CPE router.

Access Connection	Minimum Uplink Bandwidth	Minimum Downlink Bandwidth
Primary	2 Mb	2 Mb
Primary	4 Mb	4 Mb
Primary	6 Mb	6 Mb
Primary	8 Mb	8 Mb
Primary	10 Mb	10 Mb
Primary	12 Mb	12 Mb
Primary	16 Mb	16 Mb
Primary	20 Mb	20 Mb

## Symmetrical Wholesale EFM Service

Fully managed Ethernet First Mile connectivity service delivered via Wholesale supplier.

The service uses bonded copper (2 or 4 pair) from the 3rd party Supplier enabled public telephone exchange and is delivered back into KPSN via supplier Interconnections within the DUCL MPLS core network. Suppliers include:

- BT Wholesale
- Virgin Media Business
- TalkTalk Business

The Service is provided with a managed Cisco 800 series CPE router.

Access Connection	Minimum Uplink Bandwidth	Minimum Downlink Bandwidth
Primary	Up to 10 Mb (2 or 4 pair)	Up to 10 Mb (2 or 4 pair)

## Wires Only Service

In general, a managed CPE is required for connection at layer-3 to the KPSN network however, on occasion; Wires Only Services are provisioned for edge sites. In this instance no CPE is provided specifically, or the connection is through an existing KPSN CPE. Generally, this type of connection is point-to-point between two KPSN connected locations.

Types of Wires Only Service:

- **EoMPLS Layer-2 VPN Services** - These connections are layer-2 only and, as such, do not interact with the KPSN network at a layer-3 routing level. This type of connection has been used to good effect between data centres.
- **Wires Only Circuitry** - On a number of occasions KPSN have just provided the circuitry between two KPSN sites (usually as a backhaul between two schools as an adjunct but not into the KPSN network).

SLAs in relation to this service are available upon request.

## Basic Deployment

All sites provided with connectivity via the KPSN network are deployed with a managed Customer Premise Equipment (CPE) device. The CPE is a router (sometimes with switch capability) which provides connectivity to the Partner end site via a tail circuit between the KPSN provider network and the end Partner or customer edge. The CPE provides a number of functions with regards to the connectivity namely:

- **Demarcation** - A clear demarcation point between KPSN and the Partner network allowing for simplified troubleshooting. Where multiple VPNs are required VRF-lite is used on the CPE to terminate the VPNs and provide secure separation.
- **Routing** - Route advertisement and control between the KPSN network and the Partner domain is currently provided via BGP and static routing. BGP can be a complex to deploy and allows for route injection, by controlling the BGP element on the CPE the KPSN provider is in control of routes added to the network.
- **QOS Trust Boundary** - The KPSN network model allows for traffic to be marked with a QOS value (DSCP) prior to entering the network for actioning throughout transit. As standard, the KPSN CPE does not trust markings received from a client site but rather re-marks traffic based upon a QOS marking model pre agreed with the Partner.
- In order to provide a managed service and service level statistics for each connection it is essential to have visibility of the end-site at a poll and SNMP level. The CPE fulfils to job of a circuit poll reflector so that site reachability, availability, and statistics can be viewed.
- Within KPSN additional telemetry such as Netflow and / or NBAR information is gathered from the CPE, collected and presented by the KPSN NetQOS tool.
- **Broadcast/ Multicast Control** - The CPE provides a Broadcast/ Multicast boundary and can be used to rate limit high volume multicast traffic.

To find out more information on these services, please contact us:

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