



## Customer Interface Publication: CIP045

### **KCOM Group Limited LOCAL ACCESS BACKHAUL SERVICE (LABS) SERVICE DESCRIPTION AND TECHNICAL CHARACTERISTICS**

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Definitions within this CIP are set out at paragraph 8 below and in the 'Reference Offer For The Provision of KCOM Wholesale FibreLine Local Access'.

Users of this CIP should not rely solely on the information in this document but should carry out their own tests to satisfy themselves that terminal equipment supplied by them will work with the networks of KCOM Group Limited.

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## 1 Introduction

KCOM wholesale, the wholesale division of KCOM Group Limited provides the Wholesale FibreLine Local Access (WFLLA) Service to Communications Providers (CPs), enabling the delivery of their IP services either

- between an aggregation point at a KCOM Exchange and the service specific equipment within the End User (EU) premise – ‘Distant WFLLA’; or
- via KCOM Co-location Services , a component of Ancillary Services.

This CIP refers only to the Distant WFLLA variant.

The LABS (the “Service”) provides a connection between a KCOM Exchange and a CP site in the Hull Area using an ethernet 10Gbps connection and ethernet interface from the requested KCOM Exchange to the CP site.

This CIP sets out the scope and technical details of the Service provided to CPs. Changes to the technical architecture and network interfaces that affect the correct working of the Service will be published by KCOM in documents made available from the address provided below. This CIP will be updated to reflect any such changes, with the most recent version available at: <https://www.kcom.com/wholesale/products/service-information/technical-interface-information/>

This document should be read in conjunction with the KCOM Wholesale Fibre Line Local Access (WFLLA) CIP040 [13] and any associated product documents: <https://www.kcom.com/wholesale/products/broadband-and-internet/wholesale-fibreline-local-access-services-wfla/>

The Service is subject to change where there are revisions to the technical specifications applying through industry forums and standards bodies. The technical and service specification may also be impacted by a change in the associated regulatory requirements.

References to KCOM within this document refer to KCOM wholesale, unless otherwise stated.

Enquiries relating to the technical content of this document and the availability of other publications should be directed to:

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## 2 Product Service Description

The product is shown in concept form below in Figure 2-1. The product provides ethernet connectivity between the WFLLA Service and a designated POI at a CP Site in the Hull Area.

The product delivers an ethernet 10Gbps bearer connection. The product is configured to transport the CP requested EU connections from a KCOM Exchange to the CP nominated point of handover (POI) at a CP Site.

As part of each CP's Distant WFLLA core installation order, a LABS is required to connect a KCOM Exchange to the POI at a CP site. This LABS is then utilised by the CP for their customer traffic backhaul.

The Service is terminated, dependent on area in which WFLLA services are to be offered, on one or more of five designated KCOM Exchanges. For full WFLLA coverage of the Hull Area, CPs will need to take service at each of the five designated Exchange sites, if backhauling to its own premises within the Hull area, or from four back to a Co-location Hostel if utilising Ancillary Services in the fifth Exchange. Co-location Services are available under the Reference Offer for the Provision of Ancillary Services

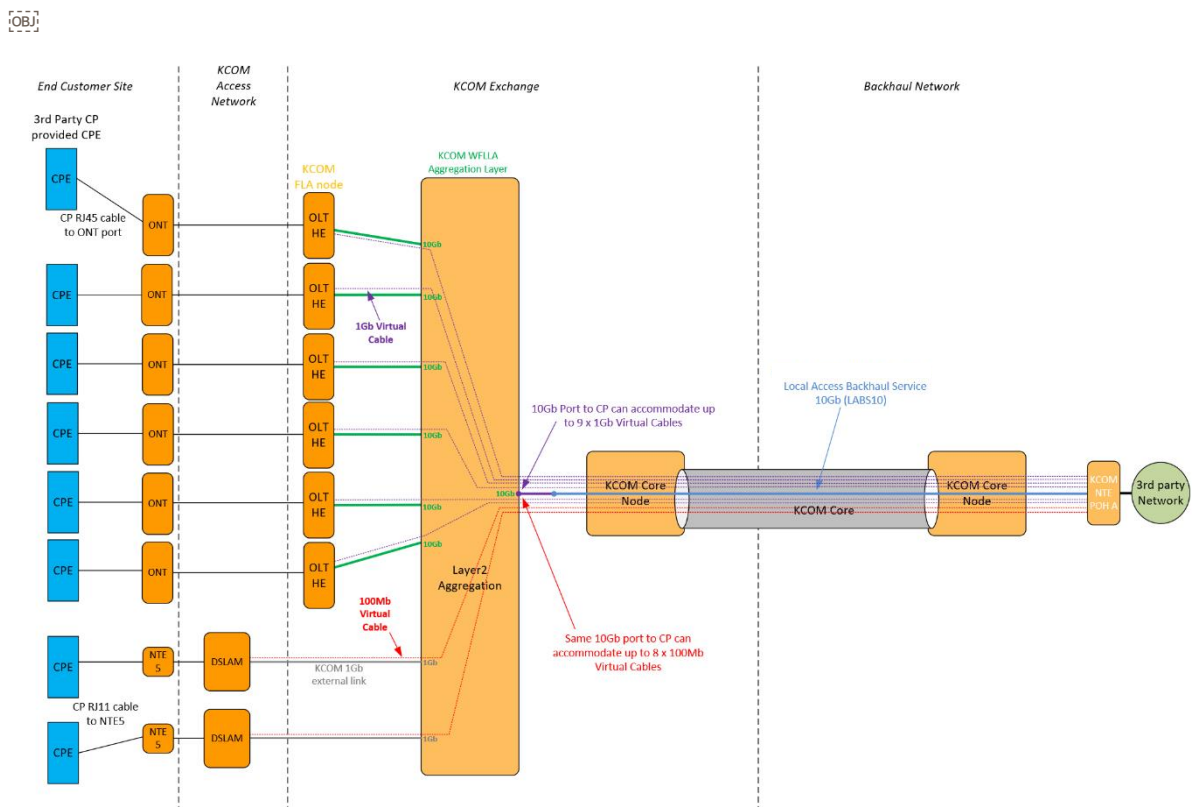


Figure 2.1

## 3 Interfaces

### 3.1 LABS Communication Provider Access Interface and Data Rates

The KCOM LABS CP access interface is available as 10Gbps.

The interface is located on the fibre Network Terminal Equipment (NTE) sited on the CP Site. The NTEs are located on the CP's Site and remain KCOM's property. The Network Termination Point (NTP) demarcation is the port interface on the KCOM Equipment. This is presented for 10Gbps interfaces as a 1310 SMF dual fibre working LC.

The fibre NTE will require a 19" rack mount with the environmental conditions as provided for in the manufacturer specification. The fibre NTE will require a customer supplied 240V A.C., at a Nominal 5A, supply to be available within 3m of the fibre NTE location. A standard IEC 13A lead will be supplied.

The connection between the KCOM LABS NTP and the CP's Equipment is the responsibility of the CP.

The ethernet interface characteristics are in accordance with the KCOM Customer Interface Publication CIP 016 [3] (available at: <https://www.kcom.com/wholesale/products/service-information/technical-interface-information/>).

The IP is presented according to the following IETF specifications:

RFC 791[4]	IETF document: Internet Protocol DARPA Internet Program Protocol Specification
RFC 826[5]	IETF document: An Ethernet Address Resolution Protocol -- or - - Converting Network Protocol Addresses to 48.bit Ethernet Address for Transmission on Ethernet Hardware
RFC 1042[6]	IETF document: A Standard for the Transmission of IP Datagrams over IEEE 802 Networks

The CP will be required to host and provide power and facilities for the KCOM NTE used to provide the connectivity at the CP Site. The conditions for this are stipulated in section 4 of KCOM CIP035 [8] (available at <https://www.kcom.com/wholesale/products/service-information/technical-interface-information/>).

### 3.2 Line rates

The KCOM LABS product supports a line speed of 10Gbps. This rate is inclusive of all traffic types and packet sizes so actual throughput will be lower than the stated line rate. This is normal for varying traffic types and frame sizes.

The line speed is the maximum possible and the performance of components outside of KCOM's control may impact these rates.

## 4 Ethernet Layer Aspects

### 4.1 Traffic Shaping

The Service operates a first in / first out (FIFO) system within the CP requested Service at all interfaces.

### 4.2 Management MTU

The maximum frame size is 2,000 bytes.

## 5 NTE Interface equipment

There is one interface that requires description. This is present at the POI handover of the LABS Circuit to the CP.

### 5.1 End CP connection interface

The CP connection is presented as an SFP based fibre at single-mode 10Gbps. The port speed is as per the product description of 10Gbps.

Access Port Speed	LABS 10000Mbps
Interface option(s)	10GBASE(SMF)
Connector	Dual LC (Fibre)

Connection of CP Equipment to the Access Port is the responsibility of the CP. The interface on the CP Equipment must conform to IEEE 802.3 and support Full Duplex operation without link auto-negotiation.

All CP cabling for the requested speed shall meet the requisite specification for the interface type above. The interface, 10GBaseLR, requires Single Mode Fibre (SMF)

### 5.2 Service NTE

The Service is delivered by a CP-located Managed NTE. The unit requires

- 1 rack U of space vertically and occupies half the width of the 19" rack.
  - 19" / 23" kits are available as required to mount directly in a rack space.
- Dimensions are (H x W x D) 43.6mm x 220mm x 212mm
- Units can be wall mounted.
- At least 38 mm air gap is required on all sides for environment airflow.
- Passive cooling to maintain a maximum air temperature of 40°C

#### 5.2.1 Environmental

The NTE unit is designed to operate in the following environmental conditions:-

- Temperatures between -40°C and +65°C with an ambient room temperature of between 0 and +40°C.
- Humidity levels of 5% to 90%.
- The units are passively cooled, therefore, at all times, the heat sinks and ventilation grills must remain clear and unobstructed. The heat sinks shall not be in contact with any other surface or object at any time.

The environmental conditions of the area used to contain the NTE must always remain within these limitations.

### 5.2.2 Power Supply

The NTE is locally powered and is offered with AC power as standard. There is an option for DC powered versions. This option must be requested at time of order.

All supplies must be closely located to the NTE installation location. For AC power, the CP will be required to supply standard 50Hz AC power via Single 13A power sockets or, for DC, 48V power connections and Earth Connection. All wiring must conform to BS7671 IEEE Wiring Regulations. It is the full responsibility of the CP to ensure that the power supplies are compliant to all applicable regulations and are marked, fully rated and fused correctly and safe for KCOM use.

During installation and any testing in life, a spare mains 50Hz AC 13A power socket is required.

The CP is responsible for providing the correct power source and capacity as identified as part of the survey process.

The maximum power requirements are shown below for each power variant.

All wiring schemes shall conform to BS7671.

The CP is responsible for ensuring all power supplies are correctly fused and safe for use by KCOM.

### 5.2.3 DC Power Option

Maximum Power consumption for a DC-powered chassis: 300W

For the installation of a DC powered unit, KCOM will work with the CP to ensure the correct connectors for the unit connection are identified and where needed supplied.

The wiring up to the CP identified power connection is the responsibility of the CP. The wiring must be compliant to BS 7671 and isolation by MCB or fuse must be provided by the CP for the supply provided.

The supply leg must be isolatable at the in-rack isolation / connection points. The power connections shall be in the same rack as the unit will be installed.

The CP shall also provide KCOM with power supplies that are:

- Correctly fused for the load.
- Wired with the correct colour wiring compliant with BS 7671.
- Labelled as per BS 7671 and clearly identifiable without reference elsewhere.
- Cable that is correctly sized for the voltage drop from the power source to provide the required voltage at the unit for the maximum rated load of the unit.

The CP should also have available a standard 13A AC power socket available for test equipment should it be needed.

#### 5.2.4 AC Power Option

For AC powered NTE the supply voltage range is 230V to 240V.

Maximum Consumption at 220V (Input voltage): 300 W

As part of the survey process the power supply cards will be identified by KCOM. KCOM will require the CP to provide a standard 13A socket supply. The CP should also have available a further 13A AC power socket available for test equipment should it be needed.

#### 5.3 Power consumption

The typical power consumption in this application is expected to be 200W

#### 5.4 Heat output

In line with the typical power consumption the expected heat output is:

- $\approx 683\text{BTU/h}$ 
  - Conversion factor used  $1\text{ BTU/h} = 0.293\text{ W}$ .

#### 5.5 Electrical safety

The KCOM Equipment supplied is compliant with BS EN 60950-1 Information Technology equipment. Safety.” BSI Group Web site for further details.

### 6 Safety & EMC Information

#### 6.1 Safety

Where the CP customer interface takes the form of an optical presentation this is classified as a class 1M laser product as defined in the laser safety product standards BS EN 60825-1/2 [10].

The 10Mbps interface is classified as unexposed as defined in CENELEC Reports/ETSI Guide ROBT-002/EG 201 212.[11]

The CP shall note and pay heed that this equipment uses and operates transmission grade optics on the network interface. At no time should any non KCOM appointed personal interact with the network equipment or the optical connections to it. Should any issue or concerns arise then the CP should contact KCOM on the telephone number given in the completion documentation.

Please see section 5.2.2 Power supply for further safety information

#### 6.2 EMC

KCOM Equipment, including the relevant network terminating equipment, complies with the current EMC regulations.

The Service will often be installed in commercial and light industrial environments. However, this does not preclude the customer interface or EU NTEs being installed in other environments.



## 7 Availability

The Service is available to CPs within the Hull Area.

## 8 Interconnection Arrangements

A Local Access Backhaul Service is provided for the sole purpose of connecting the CP's WFLLA End Users served via an Exchange Site to a Point of Interconnect with the CP's network. It is not available for use in connection with any other service delivered through the Exchange Site.

## 9 Definitions

This section includes terms used in this document.

BNG	Broadband Network Gateway
BSIL	Broadband Services Interconnect Links
CIP	Customer Interface Publication
CP	Communications Provider
EBGP	External Border Gateway Protocol
EMC	Electromagnetic Compatibility
EU	End User
Hull Area	The geographic boundary that is defined by KCOM's original license granted on 30 November 1987 by the Secretary of State under Section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM.
IETF	Internet Engineering Task Force
IP	Internet Protocol
KCOM	KCOM Group Limited
L2TP	Layer 2 Tunnelling Protocol
LAC	L2TP Access Concentrator
LNS	L2TP Network Server
MTU	Maximum Transmission Unit
NGA	Next Generation Access
NTE	Network Terminating Equipment
NTP	Network Termination Point
POI	Point of Interconnect / Point of Handover
PPP	The Point-to-Point Protocol
RADIUS	Remote Authentication Dial-In User Service
RFC	Request For Comment – IETF Publications
Service	Supply of Virtual Cable Connect, Local Access Backhaul Services, WFLLA FTTC and WFLLA FTTP as described in the WFLLA Schedules
SFP	Small Form-Factor Pluggable Transceiver

## 10 References

[1]	RFC 2866	RADIUS Accounting	
[2]	KCOM CIP 016	Technical Characteristics of the 10Mbps, 100Mbit/s digital leased line and 1Gbps, 10Gbps Digital interfaces - RJ45 details in section 2	
[3]	KCOM CIP 016	Technical Characteristics of the 10Mbps, 100Mbit/s digital leased line and 1Gbps, 10Gbps Digital interfaces	
[4]	RFC 791	Internet Protocol DARPA Internet Program Protocol Specification	
[5]	RFC 826	An Ethernet Address Resolution Protocol – or – Converting Network Protocol Addresses to 48.bit Ethernet Address for Transmission on Ethernet Hardware	
[6]	RFC 1042	A Standard for the Transmission of IP Datagrams over IEEE 802 Networks.	
[7]	KCOM CIP 021	Technical Characteristics of the ADSL Interface	
[8]	KCOM CIP 035	KCOM Ethernet Connect Access Service (ECAS) and Ethernet Direct Access Service (EDAS) Service Description and Technical Characteristics	
[9]	RFC 1661	IETF: The Point-to-Point Protocol (PPP) [15]	
[10]	BS EN 60825-1/2	Safety of laser products – Part 1: Equipment classification and requirements	2007
[11]	ROBT-002/EG 201 212	Electrical Safety; Classification of interfaces for equipment to be connected to telecommunications networks	1998
[12]	RFC 1994	IETF: PPP Challenge Handshake Authentication Protocol (CHAP)	
[13]	KCOM CIP 040	WHOLESALE FIBRELINE LOCAL ACCESS SERVICE DESCRIPTION AND TECHNICAL CHARACTERISTICS	

References [1], [4], [5], [6], [9], and [12] may be found at: [www.ietf.org/standards/rfcs/](http://www.ietf.org/standards/rfcs/)

Reference [2], [3], [7], [8] and [13] may be found at: <https://www.kcom.com/wholesale/products/service-information/technical-interface-information/>

Reference [10] may be obtained through: [www.standardsuk.com](http://www.standardsuk.com)

Reference [11] may be found at: [www.etsi.org/standards](http://www.etsi.org/standards)

## 11 History

Date	Issue	Comments	Author
01/05/22	1.0	Version 1. New CIP to support new broadband Wholesale Reference Offer	Product Architecture KCOM wholesale