



KCOM wholesale

Wholesale Direct Internet Access (DIA)

DIA provides a fast, dedicated and direct connection to the Internet, designed with resilience and flexibility, to suit any size of company and grow to match the ever-increasing demands of its business.

Direct Internet Access Service comprises Ethernet links between the customer site and the internet, utilising KCOM's dedicated IP transit and routing.

Key features

- Direct, symmetrical, uncontended internet access supporting high-bandwidth applications such as video, VoIP and off-site hosted data access
- Range of access bandwidths 10mb to 10Gb speeds. Flexibility to increase bandwidth at any time
- KCOM Business Field Engineering Teams for Installation and Repair
- Suitable for data applications requiring guaranteed speeds and assured uptime
- Managed NTE for prompt diagnosis and repair

Equipment provided	Adtran network termination equipment (robust carrier grade)
KCOM Technical Support Team	Second line support on 0800 7022000
Installation Lead Times	1 Gb/s and below 42 Working Days 10Gb/s 75 Working Days
Support	24 x7 x 365 CP Technical Support desk
Repair Time	5 Clock Hour SLA 24 x 7 x 365
Service Level Guarantees	Documented compensation scheme for breach
Availability	Hull, East Yorkshire and North Lincolnshire*
Resilience	Available on request
Minimum Contract Term	12 Months

* National coverage options available using our carrier partners

Other Features

Utilises OFCOM Reference Offer components for full service reassurance

Real time access to fault tracking via portal

Dedicated account management and completely unscripted UK-based technical support answered within the Hull area

Own staff deployed throughout service

90% of all calls answered within 30 seconds and average wait time for all calls less than 60 seconds

Core Network and Traffic Details

- Local content caching by partner CDN's at around 60% of total traffic
- Geographically diverse services
- Member of multiple peering exchanges
- Multiple tier 1 provider connectivity
- Tbps combined bandwidth capacity over multiple circuits for resilience
- Dual stack capable
- Low latency
- High network availability
- Distributed Denial of Service mitigation:
 - **Standard (included on all DIA services):**
 - Addresses:
 - DDoS attacks from outside the KCOM Core network addressing all users, seeking to swamp all connections with unwanted traffic on an indiscriminate basis. Without mitigation, this would cause interruption, slow connection and downtime for all internet users on the KCOM network;
 - Features:
 - Detection of unusual mass traffic flows onto KCOM network and prevention of onward transmission to end users;
 - Automated mitigation 24/7/365 against KCOM network wide attacks
 - **Premium (Available as an option on all DIA services over a 10Gb bearer):**
 - Addresses:
 - DDoS attacks from within the KCOM Core network that are NOT picked up as a general KCOM network threat but are specifically addressed to targeted end users. Any business can become a target. DDoS is often multi-vector, combining flood, application and state exhaustion attacks against infrastructure devices all in a single, sustained attack.
 - Features:
 - High bandwidth DDoS mitigation techniques and protocol level accounting capabilities incorporating management systems that continually analyse data so that, when a DDoS attack is detected, unusual traffic can be redirected to the platform for cleaning. This will remove any traffic that matches known attacks or unusual traffic patterns and only pass on clean traffic to your customer



- Automated mitigation 24/7/365 against end user specific network attacks
- Pro active attack alerts 24/7/365
- Attack and mitigation reports accessed via a portal
- Up to 5 managed object mitigation customised templates
- Incident management enabled through unlimited auto-mitigations plus manual mitigation
- Fast flood mitigation time of under one minute
- On site device for self-monitoring
- Support 24/7/365 including annual security review
- Unlimited number of amendments to be made within business hours.

Core network utilises Juniper equipment that is:

- Highly scalable
- Carrier grade
- Space and power optimised
- Rich multiservice edge feature set

Deployment of award winning Juniper kit - this won “best in show awards” for cloud platform and Carrier/ISP networking at the Interop Japan awards in 2017. **Best of Show Award | Interop Tokyo 2017**

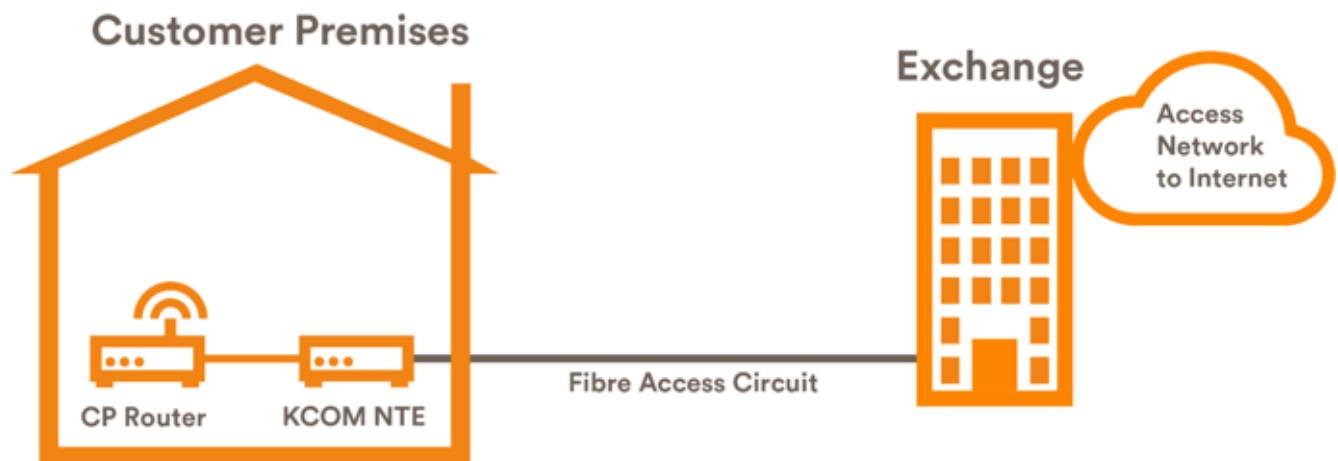
Transmission Details

Carrier-grade solution	Adtran FSP 150 technology is designed for intelligent service demarcation at the edge of the network. Comprehensive assurance functions and precise timing capabilities ensure high levels of stability.
Universal use	The KCOM network is future-proof. It leverages the latest generation of Adtran products that allows KCOM to meet the needs of its customer base – both today and tomorrow. The technology provides a pathway to high bandwidths up to 400G and enables costs to be minimized with Adtran’s innovative products, such as the coherent DWDM QSFP28.

Adtran ConnectGuard™ security	Robust security - Adtran's ConnectGuard™ Ethernet provides a secure solution to protect data over untrusted networks. Adtran provides regular security updates to network elements. It operates a system where security vulnerabilities are investigated promptly with an impact analysis, risk assessment and recommended procedure to address the vulnerability. Its equipment can provide network layer encryption as a service enhancement.
Service level monitoring	All Adtran FSP 150 products have the technical capability to provide proactive service level monitoring. This means service availability can easily be measured using key metrics such as utilization, traffic loss, delay and jitter. These service parameters can be presented in report form.
Timing excellence	Many business sectors are now demanding the support of network-based timing transport, and KCOM's network has been designed to meet this requirement with Adtran network elements that can deliver Synchronous Ethernet and Precision Time Protocol as a service.
Temperature Environmentally hardened	The latest generation of Adtran FSP 150-XG400 Series equipment is designed to provide high-bandwidth capacity services with environmental hardening for streetside locations. FSP 150 devices offer fanless operations, extended temperature range and low power consumption.
Ensemble management and control	KCOM service offerings leverage Adtran's FSP 3000 open optical networking technology portfolio. Deployed in KCOM's core network, this ensures service resilience over greater distances throughout East Yorkshire and surrounding areas. The core network is composed of multi-degree ROADM equipment, providing easy scale for up to 400Gbit/s coherent wavelengths, all managed by Adtran's Ensemble Controller network management solution with point-and-click provisioning of services.

This is a 'Wires Only' product requiring the Communications Provider or end customer to provide routing and firewall equipment. KCOM wholesale provides Network Termination Equipment (NTE) that provides the network interface between the customers equipment and the KCOM network.





Wholesale DIA circuits provide an adaptable dedicated link to the Internet, they provide a high-speed Internet connection for a company's Local Area Network (LAN). Service options range from 10Mbps to 10Gbps, providing dedicated access with a high-speed "always-on" connection.

Fibre ethernet delivery offers the fastest symmetrical speeds and highest reliability of all Leased Lines with the ability to rapidly increase speeds when needed.

Speed options include:

100Mb/s Bearer	1 Gb/s Bearer	10Gb/s Bearer
Wholesale DIA 10Mb	Wholesale DIA 100Mb	Wholesale DIA 1Gb
Wholesale DIA 20Mb	Wholesale DIA 150Mb	Wholesale DIA 2Gb
Wholesale DIA 30Mb	Wholesale DIA 250Mb	Wholesale DIA 3Gb
Wholesale DIA 50Mb	Wholesale DIA 500Mb	Wholesale DIA 4Gb
Wholesale DIA 100Mb	Wholesale DIA 750Mb	Wholesale DIA 10Gb
	Wholesale DIA 1Gb	



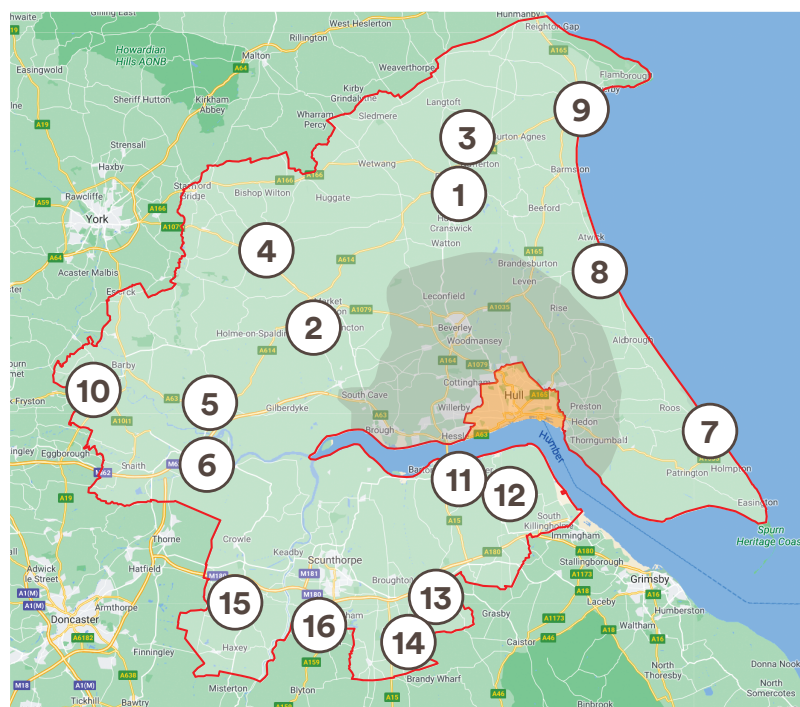
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Area Definitions

The Hull Area is defined as the 'Licensed Area' in the licence granted on November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and its' successor telecommunication operators. The map illustrates the exchanges within the licensed area.



The Expansion Area constitutes those areas where KCOM has built its network outside the area defined as the 'Hull Area' above. This network is expanding and currently operates in the East Riding of Yorkshire and North East Lincolnshire:



Order	Area
1	Driffield
2	Market Weighton
3	Nafferton
4	Pocklington
5	Howden
6	Goole
7	Withernsea
8	Hornsea
9	Bridlington
10	Selby
11	Barton upon Humber
12	Barrow upon Humber/Goxhill
13	Brigg/Broughton
14	Hibaldstow/Kirton in Lindsey/Scawby
15	Epworth/Haxey/Crowle
16	Messingham

