SIN 481

Issue 1.3
August 2016

Suppliers' Information Note

For The BT Network

Openreach Bulk Transport Link (BTL)
Service & Interface Description

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1. Introduction

This Suppliers' Information Note (SIN) describes the Bulk Transport Link (BTL) product supplied by Openreach. This product will inter-work between an Openreach Handover Point (OHP) and a Communications Provider's (CP) site not located in a BT Local Exchange, as described in the BTL Product Handbook and ordered under the Bulk Transport Link schedule of the Connectivity Services contract terms and conditions.

Any specific technology mentioned in this document is current as of today, however it may be subject to change in the future. Should the specification of the interface be changed, this will be notified by a new issue of this SIN. Openreach reserves the right to adapt technology to deliver BTL as new developments are made. All services are delivered over an uncontended transmission path.

This SIN should be read in conjunction with SIN 360[2], "Ethernet Customer Interfaces: Interface Characteristics", SIN480 "Ethernet Backhaul Direct", the Bulk Transport Link product handbook and the Ethernet Backhaul Direct product handbook.

Note: Openreach has provided formal notification that the BTL products are no longer available for new supply with effect from 11 May 2016. External shifts (re-sites and re-arranges) are also not available from this date.

2. Service Outline

2.1 General

The Bulk Transport Link (BTL) product is a high capacity, resilient solution for the delivery of multiple Openreach services from an Openreach Handover Point (OHP) to a Communications Provider's site not located in a BT Local Exchange.

The Bulk Transport Link (BTL) is limited to a maximum radial distance of 35km and a maximum route length of 50km between the OHP and the CP's own site.

The BTL product is a cost effective solution to connect a CP's network into the Openreach network thereby gaining the advantages of shorter lead times and providing an efficient transport medium for the Openreach services routed over it.

The BTL product structure is modular. The three pricing elements of the service are:

1. OHP hub module(s)

2. OHP to PoP main link (one per module)

3. Customer PoP module(s)

The channel modules provide circuit aggregation/de-aggregation for transmission over a path between the OHP and the CP's premises. Each 'OHP to PoP main link' supports a single module. Currently, each BTL can support up to a maximum of 4 modules, each carrying 8 1Gbit/s channels i.e. a maximum of 32 channels per BTL.

As a minimum, each BTL service must include the first OHP Module, first OHP to PoP Main Link, and first Customer PoP module.

At launch the BTL product is optimised to support the efficient transport of multiple 1Gbit/s services. In addition to providing onward transport to the CP PoP for designated Openreach services (e.g. EBD1000) originating from other ASNs, access to one or more of the available channels can be provided to a CP's licensed facility (Co-location, Netlocate or BT Locate) within the OHP site. This would require the Communications Provider to separately purchase a Cablelink connection (Internal Variant 2) which would extend the port of the Bulk Transport Link to that licensed facility.

The schematic diagram (Figure 1) below shows the implementation of a Bulk Transport Link delivering multiple Ethernet Backhaul Direct Services to a CP's site and a Cablelink connection at the OHP. Note that the CP does not require Co-Location, Netlocate or BT Locate space within the OHP site for the BTL.
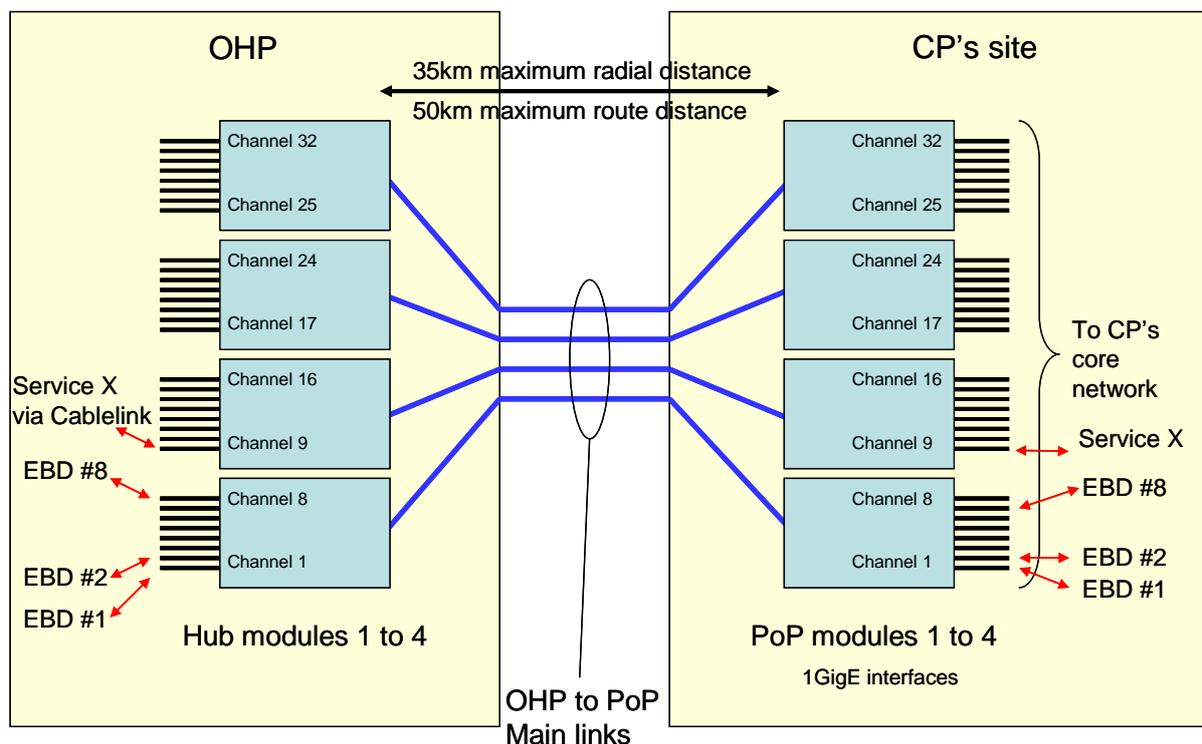
Figure 1. Typical BTL service configuration

2.2 Resilience

The Bulk Transport Link has 1+1 Hot Standby protection over its Main Link and will automatically switch traffic to the secondary fibre path on failure of the primary working path. CPs will have a single port for their connectivity and will not have access to the secondary path unless there is a failure on the primary path.

2.3 CP's Identified Interface for BTL termination

Each supported service will be routed individually over separate channels of the BTL and presented as discrete services on the customer interfaces at the CP's PoP site.

Customer connection to each channel at the CP's site is provided via an optical interface presented as Gigabit Ethernet (IEEE 802.3z) on an interface panel on the Openreach NTE chassis. This will be the Network Termination Point (NTP) and is the demarcation point of the service transported on each BTL channel.

Multi-mode (1000Base-SX) and single mode (1000Base-LX) optical transmission interfaces are optionally available.

Channel interface information	
Protocol	Gigabit Ethernet (IEEE 802.3z)
Duplex	Full duplex
Customer fibre connector	FC/PC type
SX Fibre cable (customer provided)	850nm Multi mode, 50/125 micron patch cable
SX Fibre – maximum delivery distance	550 metres from the SX port using 50/125 micron patch cable
LX Fibre cable (customer provided)	1310nm Single mode, 9/125 micron patch cable
LX Fibre – maximum delivery distance	10 kilometres from the LX port using 9/125 micron patch cable
Laser safety	Class 1 under all conditions as per IEC 825-1

Table 1. Channel Interface Information

Any conversion of interfaces is the CP's responsibility, i.e. the CP must provide interface converters on its card or at the interface panel, if necessary. Openreach engineers must be provided with access to the identified interface point (whether that is an interface panel or the CP's actual interface card itself) for both provision and repair purposes.

Note 1.   Angle Polished Connectors are NOT supported.

Note 2.   Where a multi-mode fibre interface is chosen, i.e. 1000Base-SX Ethernet interface, performance can only be guaranteed if 50μm core fibre is used between the CP equipment (CP Ethernet port) and the Openreach/Customer interface.

2.3.1   Transmission

Customers can, if required, use spanning tree packets (IEEE 802.1d, IEEE 802.1s or IEEE 802.1w control packets) across the Ethernet interface. The BT network will not participate with the spanning tree protocol, but will transport spanning tree BPDU (Bridge Protocol Data Units) unchanged between customer sites.

The access speeds currently supported are listed in Table 2. Note that for some services the contracted data rate may be below the access rate; in this case traffic should be shaped on egress at the CPE, and will be rate-limited on ingress to the network.

Ethernet interface (valid for EBD services that terminate at an OHP)	Fibre Type	Subject To Survey (Due to distance limitations)
1000Base-LX (Gigabit Ethernet - IEEE 802.3[1])	Single Mode	No
1000Base-SX (Gigabit Ethernet - IEEE 802.3[1])	Multi-Mode	Yes

Table 2. Network Interfaces

Note 1. Please refer to SIN 360[2] for detailed Ethernet interface specifications.

2.3.2 Frame Length

2.3.2.1 1000 Mbit/s speed

The service is capable of supporting IEEE 802.3 frames of 2000 bytes in length, as well as being capable of transporting Jumbo frames of up to 9000 bytes in length to maintain compatibility with a large number of vendor proprietary frame tagging formats. Service Performance however cannot be guaranteed when transporting Jumbo frames as they are not in the Ethernet standards. The frames are transported in both directions, full duplex, at wire-speed.

2.4 Space and Power Requirements

At a CP site, Openreach will supply a 2200mm x 600mm x 600mm cabinet into which a maximum of one Bulk Transport Link service will be installed (each BTL requires two chassis to be installed in the cabinet).The cabinet will also house the shelf used to bring in the external fibres and the customer interface panels (FC/PC).

In addition to the chassis powering requirements shown below, a 50Hz AC mains supply 13amp socket should also be provided, in close proximity to the cabinet, to power Openreach test equipment during both initial commissioning and subsequent maintenance support activities

2.4.1 AC Power Supply

The CP is responsible for the provision of dual 240 Volt fused AC power supply feeds which Openreach will cable to/from into the cabinet top power shelf for internal distribution within the cabinet.

2.4.2 DC Power supply

If the CP requires that a DC supply is used to power the BTL chassis they are responsible for the supply of Dual DC fused supplies which Openreach will cable to/from into the cabinet top power shelf for internal distribution within the cabinet.

DC power connections onto the BTL equipment are by crimped cable ends into a screw terminal block. Connection to the CP supplied DC must only be carried out by Openreach or their approved suppliers. The CP must not do this.
- Input voltage: -38.5Vdc to -72Vdc
- Current (max): 12.5 Amp @ -38.5Vdc

The customer's installation is required to be compliant with BS7671 in order to comply with the requirements of Wiring Regulations 16th Edition; the Electricity at Work Regulations (1989); and Health & Safety regulations. All wiring must be labelled, including earth

bonding. Openreach will be unable to install DC powered services at customer sites where the installation does not comply with the above mentioned regulations.

2.5   Environmental Requirements

The BTL equipment is designed to operate under the following conditions:
- Operating temperature: 5°C to 50°C (41°F to 122°F)
- Humidity: between 5% and 85% (non-condensing)
- HVAC cooling to accommodate a heat dissipation of 400 Watts for each fully populated BTL chassis.

3. References

[1]	IEEE 802.3: CSMA/CD access method and physical layer specifications, 2002
[2]	IEEE 802.3z, IEEE standards for Gigabit Ethernet in the LAN/MAN environment, 1998
[3]	SIN 360, Ethernet Customer Interfaces, Interface characteristics, http://www.btplc.com/sinet/
[4]	SIN 480, Ethernet Backhaul Direct. http://www.btplc.com/sinet/
[5]	Bulk Transport Link product handbook. http://www.openreach.co.uk/orpg/products/btl/btl.do.

4. Further Information

For enquiries concerning connection availability between particular sites and for further product information about this service please visit the website at www.openreach.co.uk or contact your Openreach Customer Business Manager or BT Account Manager.

For further information or copies of referenced sources, please see document sources at http://www.btplc.com/sinet/.

5. Abbreviations

BT	British Telecommunications plc
CD	Collision Detection
CP	Communications Provider
CPE	Customer Premises Equipment
CSMA	Carrier Sense Multiple Access
FC / PC	Fibre Connector / Physical Contact
GE	Gigabit Ethernet
HVAC	Heating, Ventilating, and Air Conditioning
IEC	International Electrotechnical Commission
IEEE	Institute of Electronic and Electrical Engineers [USA]
IPR	Intellectual Property Right
LAN	Local Area Network
LC	Lucent Connector
NTP	Network Terminating Point
RO	Resilience Option
SC	Subscriber Connector
SIN	Suppliers' Information Note [BT]
TBC	To Be Confirmed
UK	United Kingdom

6. Document History

Issue	Date	Revision changes
Issue 1.0	22 April 2008	First issue.
Issue 1.1	11 July 2008	Update to Section 2.4 to clarify that only one BTL can be fitted per cabinet (each BTL requires 2 chassis in the cabinet).
Issue 1.2	January 2015	Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/
Issue 1.3	August 2016	Addition of note in section 1 to state that these services are no longer available for new supply as from 11 May 2016.

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