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Suppliers' Information Note

For The BT Network

Openreach Time Division Multiplex (TDM) Backhaul Bearer Service

Service & Interface Description

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1. Introduction

This Suppliers' Information Note (SIN) describes the Time Division Multiplex (TDM) Backhaul Bearer (TBB) product supplied by Openreach. This product will be ordered under the TDM Backhaul Bearer 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 TDM Backhaul Bearer services as new developments are made. All services are delivered over an uncontended transmission path.

This SIN should be read in conjunction with the TDM Backhaul Bearer Services product information on the Openreach website
http://www.openreach.co.uk/orpg/home/products/products.do

Note: Openreach has provided formal notification that the TDM Backhaul Bearer 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

TDM Backhaul Bearer is an Openreach product that offers permanently connected, point-to-point high speed data circuits that provide a secure and un-contended backhaul service for Communications Providers (CPs). Where is this defined?

The TDM Backhaul Bearer service operates at speeds of 2.488Gbit/s (STM-16 rate as defined in ITU-T recommendation G707)[2], and 10Gbit/s (STM-64 rate as defined in ITU-T recommendation G.693[4])

The TDM Bearer service can be used to provide transparent transport for equipment with STM-16 and STM-64 interfaces such as SDH equipment, ATM switches or IP routers with POS interfaces.

This service will operate between a Communications Provider's (CP) Point of Presence (PoP) located in a designated Openreach Access Serving Node (ASN) BT Local Exchange (using a licensed facility in the BT exchange), and

(i) a CP's core network PoP or Third Party CPs equipment located in the designated Openreach Handover Point (OHP) or

(ii) the CP's core network PoP sites or Third Party CP equipment located in a designated Openreach ASN BT Local Exchange (using a licensed facility in the BT exchange), where both ASNs are either on the same WDM chain or share a common Tier 1 Openreach handover point (OHP).

TDM Backhaul Bearer is available from a number of ASN (BT Local Exchange) locations across the UK. The list of allowable TDM Backhaul Bearer ordering sites and those anticipated

to be live in a rolling time period is available via the Openreach web site http://www.openreach.co.uk/orpg/products/ebd/ebd.do.

The TDM Backhaul Bearer service has no distance related elements (i.e. neither radial/route distance limit nor distance related price component) between an ASN and its designated OHP, or between an ASN and its Extended Reach OHP, or between originating and terminating ASNs (in an ASN-to-ASN configuration). Details of the Access Serving Node (ASN) to Openreach Handover Point (OHP) parenting are available via

http://www.openreach.co.uk/orpg/home/products/products.do

Where an ASN and OHP are co-located (i.e. in the same building) TDM Backhaul Bearer is not an applicable connection.

TDM Backhaul Bearer services are offered at fixed bandwidths of 2.5Gbit/s and 10Gbit/s only, on an uncontended basis. Customer presentation is described in section 2.3.

TDM Backhaul Bearer service offers Resilience Option 2 (RO2) protection on ASN-to-OHP routes only. Resilience is not available on ASN-to-ASN routes. Refer to the TDM Backhaul Bearer product information for further details on Resilience Options.

A schematic of the TDM Backhaul Bearer service is shown in Figure 1.

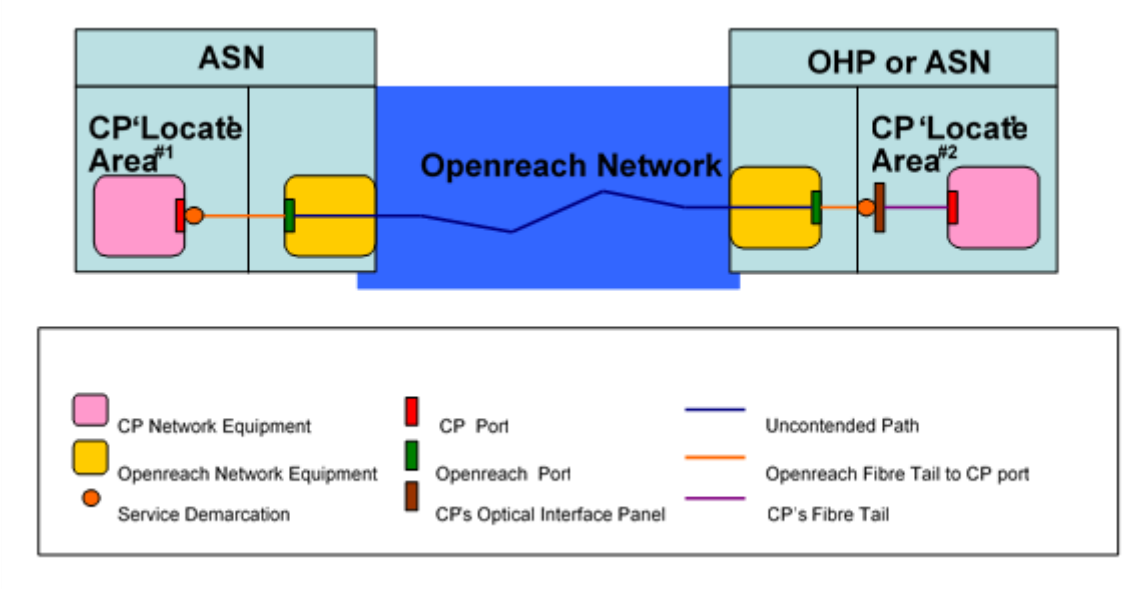

Figure 1. Typical TDM Backhaul Bearer service configuration

Note 1. Figure 1 shows CP's identified interface as both a direct port connection and an interface panel, both of which are customer options.

The TBB product's diagnostic monitoring capability is base-lined at the regenerator section. This means BT will not always have visibility of remote defect indicators, which are at the multiplex section layer. There will be no visibility of the VC payloads or the type of payload. It is therefore not possible to accept faults at the VC layer.

The client signal must fall within standard SDH parameters including synchronisation specifications. (This is important as, although payloads are transported transparently, the STM-

16 signals must be within specification to enable multiplexing into a 10G wavelength for transport).

2.2 CP's Identified Interface for TDM Backhaul Bearer Direct termination

Service demarcation will be between the CP's identified interfaces in CP areas of an ASN or OHP site.

The identified interface could be either (to be captured during order request):

1. CP owned and provided Interface Panel
2. CP owned and provided equipment interface

The interface is the Circuit Terminating Point (CTP), i.e. the connector on the end of the Openreach fibre tail.

Only the following physical optical interface connector types are supported for the CP provided identified interface for TDM Backhaul Bearer products:

- FC/PC (Fibre Connector / Physical Contact)
- LC (Lucent Connector)
- SC (Subscriber Connector)

The physical interface must be specified on the order request. 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 fulfilment and assurance purposes.

Note 1. Angle Polished Connectors (APC) such as SC/APC and LC/APC are NOT supported.

Note 2. All connections are single mode fibre only .

2.3 TDM Interfaces

TDM Backhaul Bearer (TBB)

STM16, I16 ITU-T G.957[3], 1310nm, Single Mode Fibre

STM64, I64.1 ITU-T G.693[4] 1310nm, Single Mode Fibre

Note: TBB interfaces as defined by ITU-T G.707[2]/ G.957[3]

The optical power specifications for these interfaces are shown in the table below. If the CP interface is a higher specification (e.g. S16.1) such that it could overload the TBB interface, it should be appropriately attenuated by the CP so that the TBB interface receives a level lower than the maximum receive power specified below.

Optical Characteristic	I.16 Optical Power (dBm)	I64.1 Optical Power (dBm)
Maximum Transmit	**-3**	**-1**
Minimum Transmit	**-10**	**-6**
Maximum Receive	**-3**	**0**
Minimum Receive	**-18**	**-18**

2.4 TDM Backhaul Bearer product features

Table 1 outlines the features supported by the TDM Backhaul Bearer product.

Product	TDM Interface
TBB 2500	**STM16**
TBB 10000	**STM64**

Table 1. Product Feature Support

3. References

[1]	TDM Backhaul Bearer product information http://www.openreach.co.uk/orpg/home/products/products.do
[2]	ITU-T Recommendation G.707 Network node interface for the synchronous digital hierarchy (SDH)
[3]	ITU-T Recommendation G.957 Optical Interfaces for Equipments and Systems Relating to the Synchronous Digital Hierarchy
[4]	ITU-T Recommendation G.693 Optical interfaces for intra-office systems

4. Further Information

For enquiries concerning connection availability between particular sites and for further product information about this service please visit the website at

http://www.openreach.co.uk/orpg/home/products/products.do 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

APC	Angle Polished Connector
ASN	Access Serving Node
BT	British Telecommunications plc
CP	Communications Provider
CPE	Customer Premises Equipment
CTP	Circuit Terminating Point
FC / PC	Fibre Connector / Physical Contact
IP	Internet Protocol
ITU-T	International Telecommunications Union - Telecoms
LC	Lucent Connector
OHP	Openreach Handover Point
PoP	Point of Presence
POS	Packet Over SONET/SDH
SC	Subscriber Connector
SDH	Synchronous Digital Hierarchy
SIN	Suppliers' Information Note [BT]
STM	Synchronous Transport Module
TBB	TDM Backhaul Bearer
TDM	Time Division Multiplex
UK	United Kingdom
VC	Virtual Container
VLAN	Virtual Local Area Network
WDM	Wave Division Multiplexing

6. Document History

Issue	Date	Revision changes
Issue 1	May 2012	First issue.
Issue 1.1	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.

– END –