SIN 508

Issue 1.2
August 2016

Suppliers' Information Note

For The BT Network

OPENREACH TIME DIVISION MULTIPLEX ACCESS BEARER SERVICES (TDM ACCESS)

Service Description

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1. Introduction

This Suppliers' Information Note (SIN) describes the Openreach Time Division Multiplex Access (TDM Access) Bearer Services. The SIN also provides information about the service for use by Customer Premises Equipment (CPE) manufacturers and developers.

For further information please refer to the contacts listed in Section 5.

Note: Openreach has provided formal notification that the TDM Access 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

The TDM Access Bearer service operates at speeds of 155Mbit/s (STM-1), 622Mbit/s (STM-4) and 2.488Gbit/s (STM-1, STM-4 and STM-16 rate as defined in ITU-T recommendation G707 [1]).

The TDM Access Bearer service can be used to provide transparent transport for equipment with STM-1, STM-4 and STM-16 interfaces such as SDH equipment, ATM switches or IP routers with POS interfaces.

The TDM Access Bearer service is an unprotected service. However, if protection against both network fibre breaks and card failures is sought, two TDM Access Bearer services may be used. The use of two TDM Access Bearer circuits to provide additional resilience will result in two customer interfaces being presented at each site.

The maximum route distance of the TDM Access Bearer service is 63km. A typical TDM Access Bearer service, between customer site and CP locate area is shown in Figure 1.

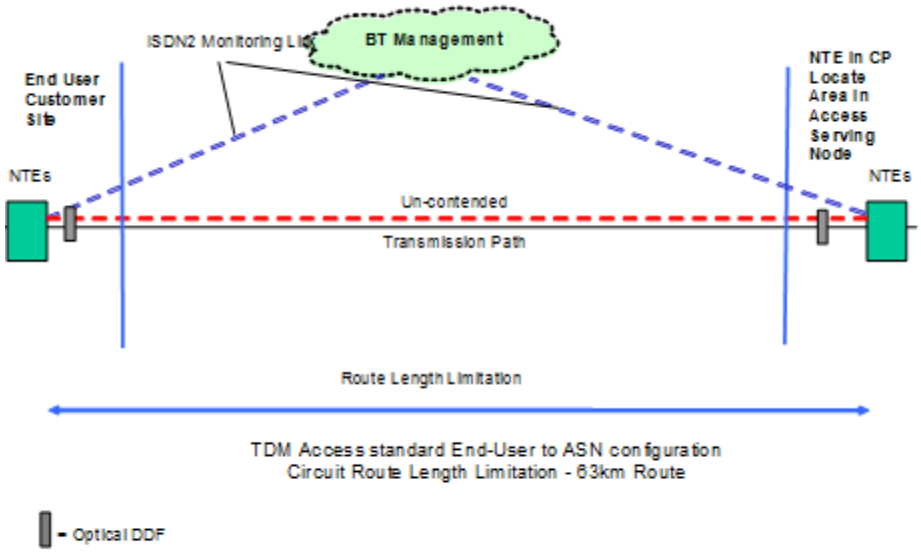

Figure 1. Typical TDM Access Bearer End User to ASN configuration

Two typical TDM Access Bearer services provided between CP locate areas are shown in Figure 2. The first (upper) via a single serving exchange and the second (lower) service via two serving exchanges. The second (lower) service is delivered via two intermediate exchanges.

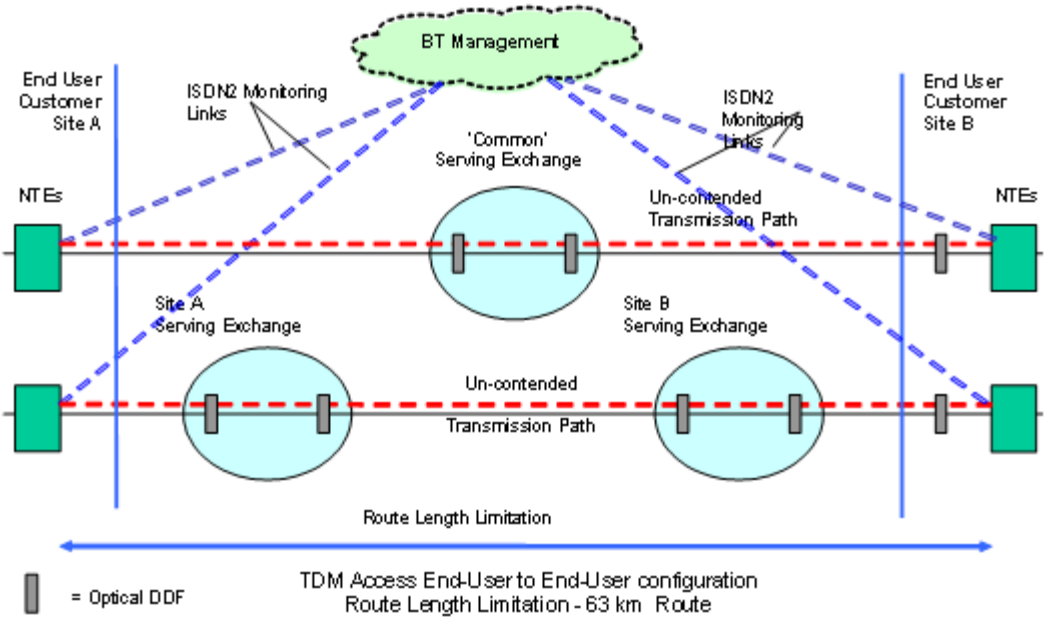

Figure 2. Two examples of Typical TDM Access Bearer end-user to end-user routing configuration

3. Technical Specification

3.1. Interface

The TDM Access Bearer NTE supports the following customer interfaces:-

- 155Mbit/s STM 1

- 622Mbit/s STM-4

- 2.488 Gbit/s STM-16 SDH

S-1.1(STM-1), S-4.1(STM-4), S-16.1(STM-16) optical presentation conforming to ITU-T Recommendation G.957 [2] and G.707 [1].

The interface is the Network Termination Point (NTP), i.e. the point of connection between the BT Network Terminating Equipment (NTE) and the CPE interface. The Customer Interface consists of a pair of SCPC type fibre interface ports (transmit and receive). The Customer provides the fibre patch connectors between the NTE and CPE; the maximum fibre length is shown in Table 1.

The STM-1 S-1.1, STM-4 S-4.1 and STM-16 S-16.1 interfaces are as specified in ITU-T G.957 [2] recommendations. Attention is drawn to the Intellectual Property Rights (IPRs) set out in the preface of this agreed International standard. It is the responsibility of the CPE supplier to ensure that they

have the necessary rights from the owner of the IPR. The IPR owner has stated that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world.

Protocol	G.707 STM-1, STM-4 and STM-16 according to ITU-T G.707
Line Rate	155,520Mbit/s (STM-1), 622,080Mbit/s (STM-4) and 2.48832 Gbit/s(STM-16)
Power Requirement	See Section 4.2
Customer Fibre Connector	SCPC type
Customer interface Fibre ***(Customer provided)***	Single-mode 1310nm, 9/125 micron
Customer interface Fibre Maximum Delivery Distance	10km from NTE's customer port.
Temperature (Operating)	5° to 40° C
Temperature (Short-term*)	-5º to 55º C
Optical input range	-16dBm to -3dBm
Optical output range	-10dBm to -3dBm
Laser Safety	Class 1 under all conditions as per IEC 825-1 [3]

Table 1. Customer interface NTE technical specification

* *Short-term refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year. (This refers to a total of 360 hours in any given year, but no more than 15 occurrences during that 1-year period.)*

3.2. Network Fibre Break

In the event of a network fibre break, a MS-AIS signal is generated at the customer interface.

3.3. Transparency

The TDM Access Bearer service is a transparent physical layer transport service.

4. Physical Arrangements

4.1. Physical Location of Connectors

The User–Network Interface (UNI) is located at the connector on the BT Network Terminating Equipment (NTE) with a connector on the Customer side as described in the relevant part of Section 3 of this document.

4.2. NTE Power Supply Requirements

4.2.1. General

By placing an order with BT the customer accepts BT's terms and conditions. In relation to powering of equipment, the customer must comply with the requirements of BS7671[4] and the details giving within the 'AC/DC Power Planning and Installation Guide' available from the Openreach Ethernet website.

The Openreach NTE is locally powered and offers AC or DC power options. The CP will be required to provide either a local 50Hz AC supply in the form of standard 13 Amp power socket(s); or dual -50V DC power distributions and Earth connections, with all wiring colour schemes conforming to IEEE Wiring Regulations in British Standard BS7671[4]. It will be the customers' responsibility to ensure that

the power supply is fused and safe for Openreach to use. These should be in close proximity to the NTE installation location.

4.2.2. Installation and Testing

In addition to the NTE and Chassis powering requirements below, a spare 50Hz AC mains supply 13A socket should also be provided in close proximity to the NTEs, to power BT test equipment during both initial commissioning and subsequent maintenance support activities.

Please note that although the TDM Access Bearer chassis is 1U high, a further 2U is required for the customer interface patch-panel, and the network interface patch-panel respectively. Therefore total height required is 3U. One pair of interface patch-panels can be used to serve multiple NTEs within the same cabinet. Where patch panels are deployed, the interface connections are as follows:-

- Network interface connectors are fibre connector type FC/PC
- Customer interface connectors are Duplex fibre connector type SC/PC.

A management router is also required at each end of the circuit. The router is free standing.

4.2.3. AC Power Connection

AC power connection between Openreach equipment and the power socket will be made using a standard IEC60320[5] C13-14 power lead fitted with a standard 13A plug. The NTE itself has dual power supply units internally, and requires two AC mains supply sockets. The consumption of the Openreach NTE and power unit chassis in this service will be no more than 150 Watts per NTE.

4.2.4. DC Power Connection

The DC In-Line (Molex) connector is specified as the standard method of connecting DC power by Openreach, and represents the "Demarcation Point" between Openreach and the customer. At their site, the customer is required to provide suitable power and earth connection up to the demarcation point, and be responsible for the supply, wiring and labelling up to the demarcation point. Openreach will not supply or install the DC distribution system as part of the standard Ethernet installation.

- ***Customer provided wiring up to the Openreach specified In-Line connector.***

  Wiring, MCB isolation or fuse (i.e. C Type MCB or Cartridge Fuse), must be provided by the customer, up to and including the DC in-line connector, as per BT's requirements stated within the 'AC/DC Power Planning and Installation Guide' document with respect to:

  (i) correctly rated MCB/Fuse, refer to TDM Access Bearer product handbook for correct rating

  (ii) correct labelling of wiring and MCB/fuse positions compliant with BS 7671[4],

  (iii) correct size of cable for required voltage drop at required maximum current,

  (iv) separately fused isolatable A & B power supplies, as detailed in the 'AC/DC Power Planning and Installation Guide.

  The in-line connector has a maximum current handling capability of 11A, and is not to be used for equipment requiring greater than an 11A supply, otherwise the fuse may blow under normal equipment operation.

4.2.5. Additional Details

For further details on the provision of AC and DC Power, see the 'AC/DC Power Planning and Installation Guide' available on the Openreach Ethernet website
http://www.openreach.co.uk/orpg/home/products/products.do

5. Service Availability and Tariffs

For further information on service availability and tariffs please contact your Openreach Sales & Relationship manager, or see the TDM Access Bearer Product Description at the following address.

https://www.internal.openreach.co.uk/orpg/home/products/ethernetservices/ethernetservices.do

6. References

[1]	ITU-T Recommendation G.707 Network node interface for the synchronous digital hierarchy (SDH)
[2]	ITU-T Recommendation G.957 Optical Interfaces for Equipments and Systems Relating to the Synchronous Digital Hierarchy
[3]	IEC 825-1, International Electrotechnical Commission (IEC) Standard – Safety of Laser products Part 1
[4]	BS 7671 Requirements for electrical installations. IET Wiring Regulations. Seventeenth edition
[5]	IEC60320 Appliance couplers for household and similar general purposes

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

7. Abbreviations

BT	British Telecommunications plc
CPE	Customers' Premises Equipment
IEC	International Electrotechnical Commission
IPR	Intellectual Property Right
LAN	Local Area Network
MCB	Mini Circuit Breaker
NTE	Network Termination Equipment
NTP	Network Terminating Point
POS	Packet over SONET (SDH)
SIN	Suppliers' Information Note [BT]
TDM	Time Division Multiplex
UNI	User-to-Network Interface
SC/PC	Subscriber Connector/Physical Contact
FC/PC	Ferrule Connector/Physical Contact
MS-AIS	Multiplex Section – Alarm Indication Signal

8. History

Issue	Date	Revision changes
Issue 1	May 2012	First issue
Issue 1.1	July 2015	Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/
Issue 1.2	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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