SIN 338

Issue 1.8

August 2014

Suppliers' Information Note

For The BT Network

BT LAN EXTENSION SERVICE 1000

Service Description

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1 Introduction

Note. Whilst still supported for existing customers, this product has been withdrawn for new sale. Contract resigns and external shifts are no longer allowed.

The BT Global service LES 1000 described in this SIN is now known as EES 1000 and is delivered using Openreach Wholesale End to End Extension Service 1000 (WEES 1000), which is described in SIN 436. However, this SIN 338 remains available for reference.

This Suppliers Information Note (SIN) describes the BT Local Area Network (LAN) Extension Service 1000 (LES 1000). The SIN also provides information about the service for use by Customer Premises Equipment (CPE) manufacturers and developers.

LES 1000 ER (Extended Reach), which extends the radial distance capability between customer sites has launched in 2003. For further information please refer to the contacts listed in Section 7.

The introduction of 'LES 1000 ER' does not impact upon customer-network interface characteristics described in this SIN, these are consistent for both 'Standard' and 'ER' product options.

2 Service Outline

The LES 1000 service operates at a speed of 1000Mbit/s in full duplex mode between customers' sites. Possible uses of the LES 1000 service are shown below.

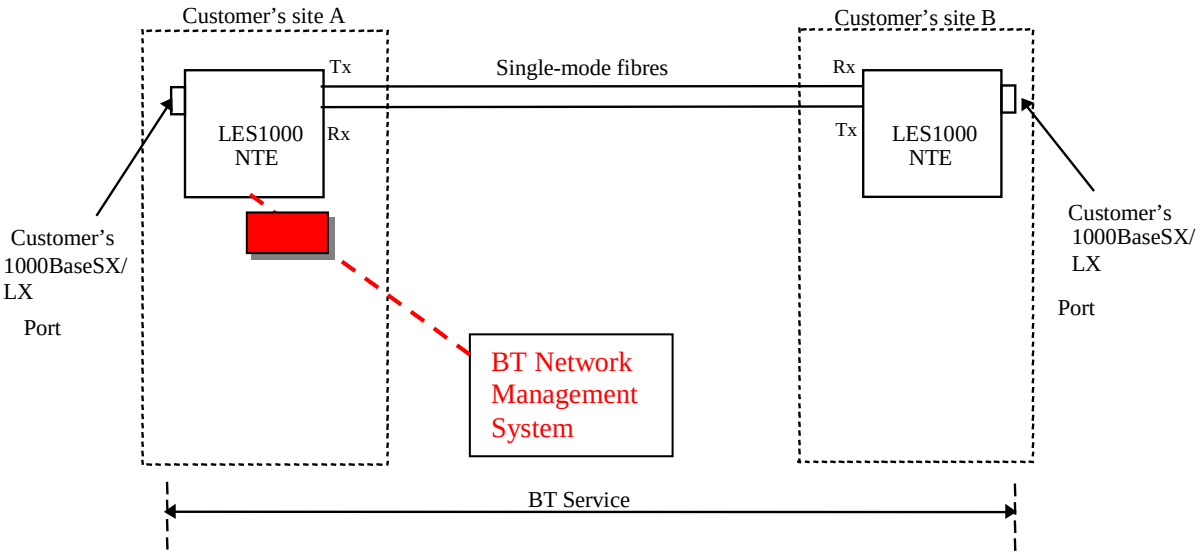

Figure 1 Typical LES 1000 service configuration

It is intended that customers will use this service for the interconnection of Gigabit Ethernet Local Area Networks (LAN), Data Centres incorporating a Gigabit Ethernet backbone, and or disaster recovery availability when mirroring two storage areas with Gigabit Ethernet networking.

3 Customer Interface

Gigabit Ethernet conforms to the IEEE 802.3 standard. It is conventional ethernet but 10 times faster than Fast Ethernet, operating at 1000Mbits/s instead of 100Mbit/s. Based on the IEEE 802.3z[1] Gigabit Ethernet standard, data can move from 10Mbit/s to 100Mbit/s to 1000Mbit/s without protocol translation or changes to application and networking software.

3.1 Connector

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 Dual SC type 1000BaseSX **or** LX fibre interface port (**not both on a single NTE**). The customer provides the fibre patch connectors between NTE and CPE. The maximum fibre length between the NTE and customer equipment is 550 metres for SX (850nm multi-mode) ports when 50/125 micron optical patch cords are used or 220 metres if 62.5/125 micron optical patch cords are used. For LX (1310nm single-mode) ports, the maximum fibre length is 3Km when a 9/125 micron optical patch cable is used.

The SX and LX type interface is as specified in the Gigabit Ethernet IEEE802.3z[1] specifications. 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.

3.2 Transmission

[The definition of frame length includes the 4 byte CRC but does not include any preamble].

The NTE is also capable of transporting IEEE 802.1q[2] VLAN-tagged frames of 1522 bytes in length, as well as being capable of transporting frames of up to 1548 bytes in length to maintain compatibility with a large number of vendor proprietary frame tagging formats. The NTE can transport frames in both directions simultaneously (full duplex) at wire-speed without frame loss or error.

The NTE does not have the capability to intercept and/or view ‘customer data’.

3.3 Network Link Break

When a fibre break is detected on the network link, a specific 8B/10B code is continuously transmitted on the customer interface to indicate the fibre state. This continues until such time as the fibre break is repaired. The control code transmitted under this fibre fault condition is K28.5.

4 Power supply

The NTE is powered from the normal domestic mains supply, standard CEE 22 (IEC 320) inlets which are fitted to the rear panel of the NTE. The appropriate mains cord is supplied.

The power consumption of the BT NTE is 30 watts.

5 Customer Apparatus Design/Installation Advice

The LES 1000 service has been designed such that any vendors' switch or router that has IEEE 802.3z compatible interfaces of the SX or LX variety will be able to connect to each NTE.

6 Technical Specification

Protocol	Gigabit Ethernet IEEE 802.3z
Line Rate	1.25 Gbp/s
Maximum Bit Error Rate	10^{-12}
Power Requirement	Mains voltage 50 Hz AC input
Customer Fibre Connector	SC type
SX Fibre Cable *Customer provided*	Multi-mode 850nm, 50/125 or 62.5/125 micron patch
SX Fibre *Maximum Delivery Distance*	550m from NTE's SX port using 50/125 micron patch 220m from NTE's SX port using 62.5/125 micron patch
LX Fibre Cable *Customer provided*	Single-mode 1310nm, 9/125 micron patch
LX Fibre *Maximum Delivery Distance*	3Km from NTE's LX port
Operating Temperature	0° to 40° C
Laser Safety	Class 1 under all conditions as per IEC 825-1

7 Further Information

For enquiries concerning connection availability between particular sites and for further "sales and marketing" information on the LES 1000 service please contact the Data Connect Helpdesk, see http://www.btplc.com/sinet/

Alternatively please contact either:

- Your Company's BT account manager
- For customers who do not have an account manager, please contact BT sales on 0800 800152 for product and service information, sales, and rental enquiries.
- If you have enquiries relating to this document then please contact: sinet.helpdesk@bt.com

8 References

IEEE Standards:

[1]	IEEE 802.3z	IEEE standards for Gigabit Ethernet in the LAN/MAN environment	1998
[2]	IEEE 802.3q	VLAN tagging of ethernet frames	1998

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

9 Abbreviations

CPE	Customer Premises Equipment
CRC	Cyclic Redundany Check
ER	Extended Reach
IEEE	Institute of Electronic & Electrical Engineers
IPR	Intellectual Property Rights
LAN	Local Area Network
LES	LAN Extension Service
LX	Long Wavelength (1310nm)
NTE	Network Terminating Equipment
NTP	Network Terminating Point
SIN	Suppliers' Information Note
SX	Short Wavelength (850nm)
VLAN	Virtual Local Area network

10 History

Issue 1	First Issue, Monday, 06 March 2000
Issue 1.1	Thursday, 29 June 2000. Section 3.1 second paragraph emphasis of "or"
Issue 1.2	December 2001 Editorial changes
Issue 1.3	January 2003, Content review, key edits: - Correction to remove reference to NTE internal switch for link loss propogation, this has never been a feature of NTE deployed with the LES1000 service. - Clarification of cable distances between CPE and NTE.
Issue 1.4	March 2003, - Reinstatment of LX CPE to NTE cable distance which existed prior to the January 2003 edit, reflected in Clause 3.1 and Clause 6 table. - Clause 3.3 network link loss statement added. - Clause 4 NTE power consumption corrected. - Approval Requirements section removed, information now available via SINet Useful Contacts.
Issue 1.5	October 2003 – Updated to accomodate LES 1000 ER (Extended Reach).
Issue 1.6	October 2007 – withdrawal of service.
Issue 1.7	May 2009 - Noted that the service is now delivered using Openreach Wholesale End to End Extension Service 1000 (WEES 1000), as described in SIN 436.
Issue 1.8	August 2014 - Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/

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