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Suppliers' Information Note

For The BT Network

OPENREACH WHOLESALE EXTENSION SERVICES 10 AND WHOLESALE END TO END EXTENSION SERVICES LOCAL REACH (WES/WEES 10LR)

Service Description

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1 Introduction

This Suppliers Information Note (SIN) describes the interfaces provided with the Openreach Wholesale Extension Services 10 Local Reach (WES 10LR) and Wholesale End to End Extension services Local Reach (WEES10LR). It also provides additional general information on this WES Service and on some of the physical aspects of the NTEs currently being deployed for new orders. This SIN is primarily intended to provide interface and service information to be used by Terminal Equipment (TE) manufacturers and developers.

WES/WEES services are high speed, point-to-point data circuits that are permanently connected and available 24 hours a day, 365 days per year. WES provides a secure link between a third party customer Site and the Communications Provider's (CP's) network at a CP's Site. WEES provides a secure link between a third party site and another third party site.

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 WES as new developments are made. All services are delivered over an uncontended transmission path.

SPECIAL NOTICE

Openreach has formally notified the withdrawal from new supply of all WES WEES BES products up and including 1Gbit/s as from 1st June 2011 along with the removal of all modify options (Bandwidth upgrade, shift, re-site & rearrange) as from 1st June 2013

Openreach have notified End of Support as from 1 April 2018 for all WES WEES BES (up to and including 1Gbits). Please refer to Openreach briefing GEN061/14 (www.openreach.co.uk)

WES WEES BES 2.5Gbit/s and 10Gbit/s will remain available along with WES Aggregation

2 Service Outline & Options

2.1 General

The Openreach Wholesale Extension Services and Wholesale End to End Extension Services allow a user to interconnect Ethernet - CSMA/CD Local Area Network segments conforming to ISO/IEC 8802-3 (IEEE 802.3)[1] standards.

The WES/WEES 10LR services operate at a data transmission rate of 10 Mbit/s between the NTEs.

Openreach does not offer any remote management on these services.

Wholesale Extension Service: WES/ WEES	Principal Ethernet Network Service Characteristic:	Interface	Maximum allowable **Radial** Distances between Premises / Sites: *(Note 1)*	Maximum **Route & Range** Distances between Premises / Sites: *(Note 2)*	Half / Full Duplex Operation:
10LR	Bridge	10BaseT – (RJ45)	3.5km	10km	Full Duplex only

Key to explanatory Notes above:

Note 1. - This is the direct distance "as the crow flies" between the site locations.

Note 2. - The maximum Route distance is the limiting factor of either the physical transmission limit between NTEs over the provided interconnecting fibre optic cables, or alternatively the maximum range that the service may be extended to due to other technical considerations (e.g. propagation or round trip delay).

Table 1. List of Services & Principle Features

A schematic of the WES10LR service arrangement is shown in Figure 1.

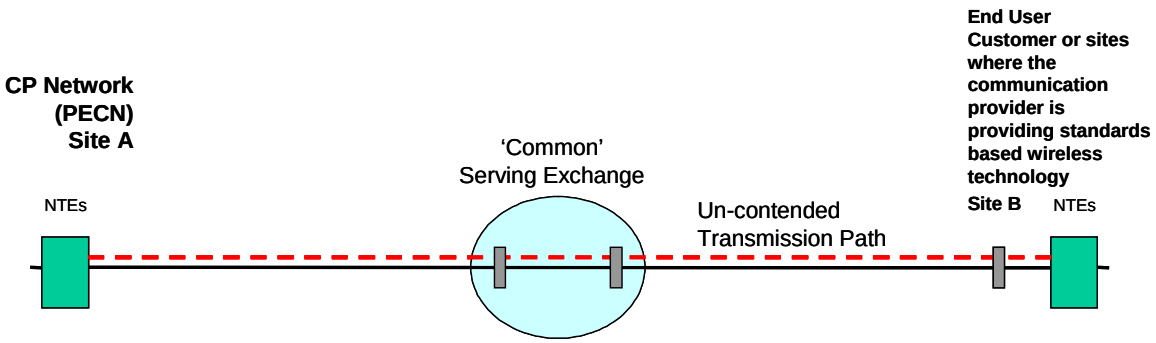


Figure 1. WES 10LR Typical service configuration

A schematic of the WEES10LR service arrangement is shown in Figure 2.

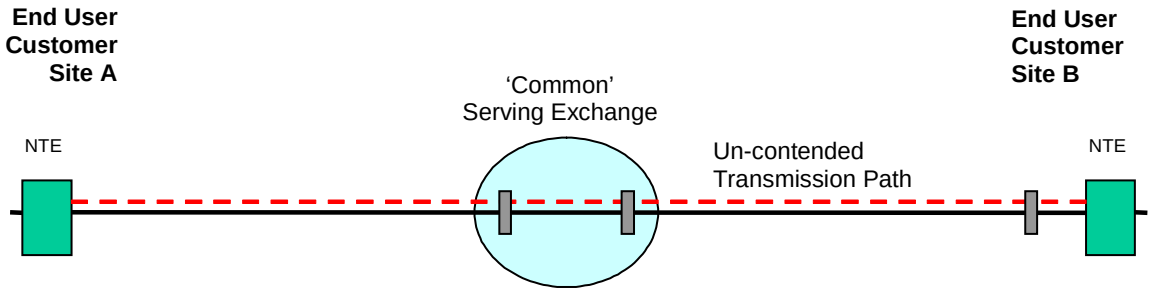


Figure 2. WEES 10LR Typical service configuration

WES/WEES 10LR service offers, additionally, the (Bridge) feature of automatically learning and filtering the transmission of traffic destined for the local end based on MAC addresses.

The overall design of the complete network, and the included WES circuit, will need to be within the normal operating ranges and parameters of Ethernet to operate satisfactorily.

2.2 WES/WEES 10LR Features

This service includes the IEEE 802.1d[2] Bridging functionality, which allows for the Learning and Filtering of traffic packets destined for those hosts connected at the local end. Packets destined for these local end (MAC) addresses will not be forwarded across the transmission path to the distant end, after these (MAC) addresses have been learnt and until the system's Cache memory has been refreshed after a host has been removed.

The Full Duplex option is in accordance with IEEE 802.3x[3]. The WES 10LR NTE is only offered with Full Duplex.

The WES/WEES 10LR NTE is capable of transmitting frame sizes from 64 bytes to a maximum of 1548 bytes. This is to maintain compatibility with a number of frame tagging formats, in particular VLAN tagging as specified in IEEE 802.1q[4] with 1522 byte frame size.

Note. The definition of frame lengths includes the 4 byte CRC but does not include any preamble.

A current limitation of the WES/WEES 10LR NTE is the blocking of certain Layer 2 control protocols, e.g. Bridge Protocol Data Unit (BPDU – Spanning Tree).

3 WES/WEES 10LR Interface Characteristics

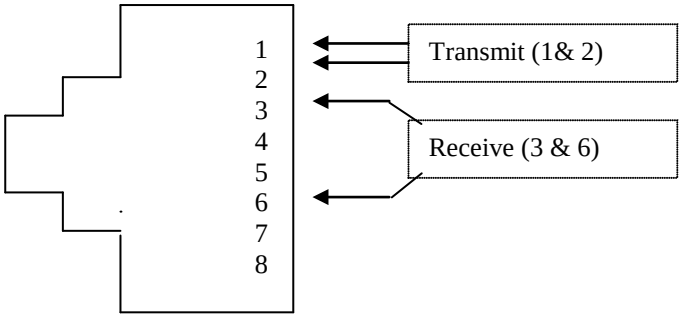
3.1 General

The interface supports Ethernet, operating at 10 Mbit/s. The interface requirements are specified in the 10BaseT Clause 14 of ISO/IEC 8802.3 (IEEE 803.2)[1].

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 TE 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.

The Openreach interface is at the Network Termination Point (NTP), i.e. the point of connection between the Openreach Network Terminating Equipment (NTE) and attached equipment, and is presented at an RJ-45 type socket. The connector pin outs are shown for information in Figure 3.

Any Category 5 connecting cords between the NTE and attached equipment should be no longer than 100m.



Note: WES/WEES 10LR equipment is always compliant to the above

Figure 3. WES/WEES 10LR NTE RJ45 Interface Connector Pin Out Connections

3.2 Network Link Loss Forwarding

When a break is detected on the Openreach network link, the customer interface (RJ-45 port) is shut down to indicate the state of the infrastructure. This continues until such time as the network break is repaired.

3.3 User Link Loss Forwarding

User Link Loss Forwarding (U-LLF) is not available on WES/WEES Local Reach.

4 Power Supply Requirements

4.1 Requirements for Testing Purposes

In addition to the NTE and Chassis powering requirements in 4.2, 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.

4.2 AC Power Connection

The Openreach NTE is locally powered by the customer's 50Hz AC mains supply, in the form of two provided standard 13A power sockets. These sockets should be in close proximity to the NTE installation location. Connection between Openreach equipment and the power sockets will be made using two standard IEC320 power leads fitted with standard 13A plugs. The NTE itself has dual power supply units internally, thus two mains supply sockets are to be provided.

For most installations:
This will require two mains connection for each single service card NTE provided, and the consumption of the Openreach NTE and power unit chassis in this unmanaged service arrangement will be no more than 50 Watts per NTE.

4.3 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 connections 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 Cartage Fuse), must be provided by the customer, up to and including the DC in-line connector, as per BT's requirements stated within the 'DC Power Planning and Installation Guide for WES-BES Products' document with respect to:

  (i) Correctly rated MCB/Fuse: refer to the WES/WEES product handbook for correct rating
  (ii) Correct labelling of wiring and MCB/fuse positions compliant with BS 7671,
  (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 'DC Power Planning and Installation Guide for WES-BES Products' document.

  The in-line connector has a maximum current handling capability of 11A, and is not to be used for equipment requiring greater than a 11A supply (such as the Nortel OPTera 5200 equipment, which require 20A feeds).

4.4 Additional Details

For further details on the provision of DC Power, see the 'DC Power Planning and Installation Guide for WES-BES Products' available on the Openreach Ethernet website http://www.openreach.co.uk/orpg/products/wes/wes_secondary.do

If there is a conflict between DC power information contained in the 'DC Power Planning and Installation Guide for WES-BES Products' and the SIN document, the order of precedence shall be as follows:

(a) DC Power Planning and Installation Guide for WES-BES Products
(b) SIN

5 Further Information

For enquiries concerning connection availability between particular sites and for further "sales and marketing" information please contact your Openreach Sales & Relationship Manager, or see http://www.openreach.co.uk/orpg/products/wes/eoiwes.do.

6 References

Ref:	Standard / Requirement:	Title / Description:	Date:
[1]	ISO/IEC 8802-3	ISO/IEC edition of ANSI/IEEE 802.3 CSMA/CD Ethernet Standard. (Clauses within the ISO document correspond to clauses within IEEE 802.3 document)	-
[2]	IEEE 802.1d	IEEE Recommendations for Bridging: Learning and Forwarding	-
[3]	IEEE 802.3x	IEEE Recommendations for Local and Metropolitan Area Networks: Specification for 802.3 Full Duplex	1997
[4]	IEEE 802.1q	IEEE Recommendations for Virtual LANs	1998

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

7 Abbreviations

ANSI	American National Standards Institute
CP	Communications Provider
BPDU	Bridge Protocol Data Unit
CSMA/CD	Carrier Sense Multiple Access with Collision Detection {Ethernet}
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers {USA}
IPR	Intellectual Property Rights
ISO	International Standards Organisation
ITU-T	International Telecommunications Union – Telecoms Sector {formerly CCITT}
LAN	Local Area Network
LR	Local Reach
MAC	Media Access Control (& Hardware Device Address)
NTE	Network Terminating Equipment
NTP	Network Terminating Point
PECN	Providers of Electronic Communications Networks
SHDS	Short Haul Data Service
SIN	Suppliers' Information Note
TE	Terminal Equipment
WES	Wholesale Extension Services

8 History

Issue:	Date:	Notes:
Issue 1.0	26 November 2004	
Issue 1.1	1 December 2004	Text on anticipated uses for WES 10LR removed.
Issue 1.2	29 September 2006	Changes made for Equivalence of Input compliant products, including addition of WEES 10LR.
Issue 1.3	21 February 2007	Power supply requirements for NTE revised.
Issue 1.4	5 March 2007	Text added to clause 2.2 concerning the blocking of certain Layer 2 control protocols.
Issue 1.5	25 June 2009	Updated to provide clarification on DC power requirements, and Link Loss Forwarding. Also minor editorial changes.
Issue 1.6	February 2011	Amended to notify no new service will be made available
Issue 1.7	February 2013	Amended to notify no new supply of Shift, re-arrange, resite or bandwidth upgrade on all WES WEES BES (up to 1G/bit) as from 1st June 2013
Issue 1.8	February 2015	Amended to notify End of Support as from 1 April 2018 for all WES WEES BES (up to and including 1Gbits). Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/

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