



## Product Description

Line sharing LS

Issue 4

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## Document Control

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### Revision History

Version	Date	Revised by	Revision Details
4.0	23 April 2012	open eir	Draft
4.0	October 2015	open eir	Rebranded

### Associated Documents

Title	Location
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## 1 Introduction

This document defines the industry agreed product description for Line Sharing.

The processes supporting the implementation of the services are outlined in the Industry agreed Inter Operator “Process Manual for the open eir services Unbundled Local Metallic Path and Line Sharing”.

This product description will be adapted as new information, such as new requests and technological change, necessitate amendments.

## 2 Product Description

The Line Sharing product allows a DSL service offered by an Operator, to be integrated over the same two wire metallic path as open eir retail voice PSTN service or SB-WLR.

The points of demarcation for open eir will be the Network Termination Unit (NTU) in the customers' premises and the Operator's connection blocks on the MDF.

The Operator will rent the line sharing facility from open eir.

If an end-user disconnects open eir's retail voice PSTN service, open eir will initiate action to disconnect the retail voice PSTN service and will notify the Operator of such a disconnection. In such circumstances where the Operator wishes to retain the DSL service, open eir will reconfigure the line to a 'stand- alone' Unbundled Local Metallic Path for the Operator. Otherwise, all services on that path will be ceased (as per the Inter Operator “Process Manual for the open eir services Unbundled Local Metallic Path and Line Sharing”).

If an Operator ceases SB-WLR service and there is no corresponding connection to an open eir retail voice PSTN service, open eir will initiate action to disconnect the SB-WLR service and the Line Sharing Service, open eir will notify the Operator of the disconnection of the Line Sharing Service. In such circumstances, the option for the Operator to reconfigure the Line Sharing Service as a “stand alone” Unbundled Local Metallic Path will not be available. All services on that path will be ceased (as per the Inter Operator “Process Manual for the open eir services Unbundled Local Metallic Path and Line Sharing”).

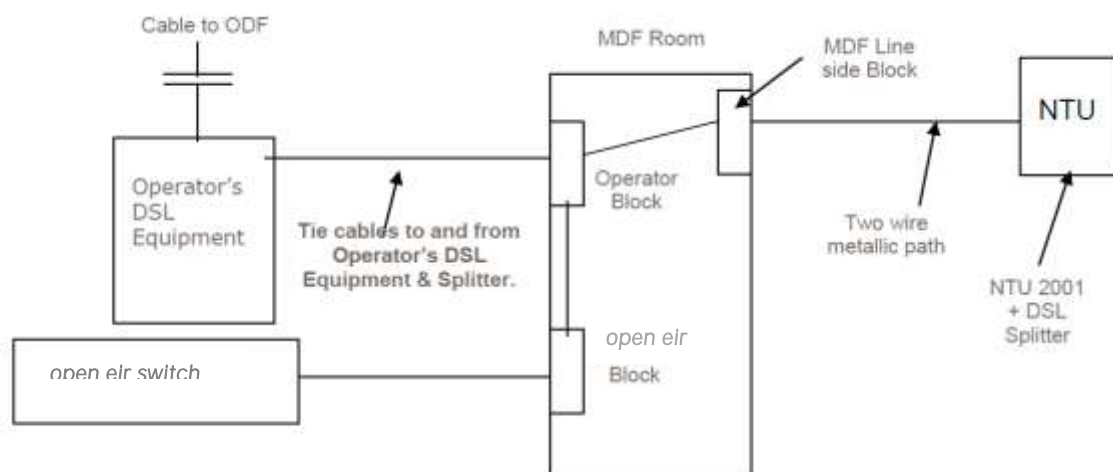


Figure 1: Network Diagram

Figure 1. Network Diagram

## 2.1 Product Components

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### 2.1.1 DSL Equipment

The capability to integrate the voice and DSL services will be provided by the Operator's DSL rack. The Operator's equipment will be installed on *open eir's* premises as per the Physical Co-location product description.

The actual method(s) of provision are as detailed in the Inter Operator "Process Manual for the *open eir* services Unbundled Local Metallic Path and Line Sharing". The voice service from *open eir* will be connected from the *open eir* exchange side block on the MDF to the Operator's block on the MDF. A tie cable from this block to the DSL equipment will enable the voice service to be integrated with the DSL service. The Operator block will then be jumpered to the line side of the MDF to access the metallic path to the customer premises.

The Operator will provide the tie cables from the DSL equipment to their blocks on the MDF as described in the Physical Co-location product description. This continuity must be in place before an order for the Line Sharing product is submitted by an Operator.

Line sharing will only be permitted where the *open eir* voice services stay within *open eir* Telephone Exchange curtilage.

The criteria associated with the installation of the DSL equipment will be determined as part of the Physical Co-location product description.

### 2.1.2 ODF

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The Operator's DSL equipment will be connected to an Optical Distribution Frame (ODF) as detailed in the Technical Manual for Physical Co-location.

### 2.1.3 MDF

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*open eir* will provide the space on the MDF for the Operator blocks. *open eir* will provide the jumpers on the MDF from:

- the *open eir* voice Block on the exchange side of the MDF to the Operator Block and from
- The Operator Block on the exchange side of the MDF to the line side Block so that the Operator can access the two wire metallic path.

In the event of restricted availability of space on the MDF for provision of the blocks required by the Operator, space will be allocated on a first come, first served basis.

### 2.1.4 Local Loop

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The local loop is a two wire physical metallic path that provides a connection from the Main Distribution Frame (MDF) to the Network Terminating Unit (NTU) in the customers' premises.

### 2.1.5 Customer Premises

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The customers' side of *open eir's* Network Termination Unit (NTU) is the final point of *open eir* responsibility for the Line Sharing product. At the customers' premises the Operator will access the shared line via *open eir's* Network Termination Unit (NTU). Where NTU equipment needs to be installed the procedure for the provision and installation will be detailed in the Inter Operator "Process Manual for the *open eir* services Unbundled Local Metallic Path and Line Sharing".

The provision and maintenance of the customers wiring for the DSL services as well as the provision and installation of any equipment to provide customer with end to end DSL services will be the responsibility of the Operator. Replacement or changes to the existing customer's wiring to install the appropriate equipment will also be the responsibility of the Operator.

### 3 Product Technical Information

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- The parameters for the MDF interface are detailed in Appendix 1.
- The parameters of the two wire metallic path are detailed in Appendix 2
- The parameters for the NTU interface are detailed in Appendix 3.

#### 3.1 Spectrum Management

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Both open eir and the Operator shall adhere to the Industry agreed Copper Loop Frequency Management Plan (CLFMP), as agreed under the LLU Review Forum.

### 4 Product Availability

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The metallic paths available for Line Sharing are PSTN and ISDN lines currently in service. The parameters of the metallic paths are specified in Appendix 2.

The suitability of the metallic paths will be dependent upon individual surveys. The reason(s) for a failed survey will be provided to the respective Operator

### 5 Services Responsibilities

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*open eir* will have responsibility for the open eir services, for the Line Sharing Product delivered to the Operator, and for the provision, repair and maintenance of the two wire metallic path.

The Operator must ensure the continuing integrity of the *open eir* services on the Line Sharing Product during and following the installation of Licensee's Equipment/services. If the customer is dissatisfied with the quality of the *open eir* services, occurring after the installation of the Licensee's Equipment/services, the Operator must correct the service problems within an agreed timeframe or open eir reserves the right to restore the installation to its original status.

With regard to the provision of the end to end DSL services, this will be the responsibility of the Operator.

In the case of faults post installation reported to the Operator, the Operator must first rectify the fault if the fault occurs within their equipment. If the fault does not occur within their equipment, the Operator shall localise the fault into *open eir's* two wire metallic path before reporting the fault to *open eir* for repair.

Agreed planned outages of an Operator's equipment/services which impact *open eir's* services on the Line Sharing product must not take place during normal activity hours.



Where the Operator's equipment/services affects *open eir* services to a particular customer, *open eir* reserves the right to withdraw the Line Sharing product from the Operator and thus restore *open eir*'s services to its customer(s). The Operator is liable for the cost of work thus incurred.

When the Operator confirms that its equipment/services are fault free, then the Operator can apply to *open eir* to restore the Line Sharing product. *Open eir* will restore the Line Sharing product, at a fee to be paid by the Operator.

The Operator must ensure and guarantee the privacy and confidentiality of the *open eir* services on the line sharing product over their equipment.

A Service Level Agreement (SLA) within the terms of contract between *open eir* and the Operator for the provision, repair and maintenance of the Line Sharing product is attached in Annex E, Section B of the Access Agreement.

## 6 Service Management

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Service Management parameters, targets procedures and processes for Line Sharing are detailed in the Inter Operator "Process Manual for the *open eir* services Unbundled Local Metallic Path and Line Sharing".

In addition, the Operator shall be obliged to comply with the "open eir Wholesale Unified Gateway, Interface Guidelines." This document shall be contractually binding and the controlling version is latest version published on the open eir website which shall be notified to Operators.

### 6.1 Ordering

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The interface between the Operator and *open eir* for the submission of orders will be as detailed in the Inter Operator "Process Manual for the *open eir* Unbundled Local Metallic Path and Line Sharing".

### 6.2 Service Provisioning

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Processes for service provisioning will be as detailed in the Inter Operator "Process Manual for the *open eir* Unbundled Local Metallic Path and Line Sharing".

### 6.3 Network Operation and Maintenance

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Processes for network operation and maintenance will be as detailed in the Inter Operator "Process Manual for the *open eir* Unbundled Local Metallic Path and Line Sharing".

### 6.4 Fault Repair

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Fault repair process will be as detailed in the Inter Operator "Process Manual for the *open eir* Unbundled Local Metallic Path and Line Sharing".

### 6.5 Service Levels

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Specific service levels and processes will be as detailed in the Inter Operator "Process Manual for the *open eir* Unbundled Local Metallic Path and Line and Line Sharing".

## Appendix 1 - Parameters of the Main Distribution Frame

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### MDF Access Block:

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The following blocks are currently being used in the termination of cables in MDFs.

#### Insulation Displacement Types

- Jacks Test 200/D –Line Side
- Jacks Test 512/D- Exchange Side
- Jacks Test 240/D – exchange side Multiplex Equipment

#### QM Types

- QM 2000 Blocks (left & right) 104pr –Line Side
- QM System equip block 128pr – Exchange Side

#### Quante ID 3000

- To be inserted once available.

#### Ericsson Mini MDF

- Exceptional item where required.
- The block to be used will depend on the MDF. These will be updated as required.
- open eir will advise the Operator of the appropriate block for each MDF.

The Technical Manual for Physical Co-location outlines more detailed parameters

## Appendix 2 - Parameters of the Metallic Path

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The standards have been in place since 1995 and are updated as and when needed.

The relevant Operator will be advised of any changes to the parameters as required.

### 1. Summary of Transmission and Signalling Standards

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- 1.1. The standard circuit for connection of a customer's terminal to the network is an unloaded cable pair. However loop treatment devices are used in special cases where there is a shortage of copper pairs.

### 2. Transmission Limit:

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- 2.1. The maximum recommended attenuation for the customer's line is 10 dB at a frequency of 1020Hz.

### 3. Signalling Limit:

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- 3.1. The recommended loop resistance for the customer's line is 1200 Ohms.
- 3.2. The cable gauge chosen should be the smallest which meets the above limits. Cables of lower gauge should be used close to the exchange and

the gauge increased with distance from the exchange. A cable should only be jointed to the next largest (or smallest) cable gauge.

#### 4. Local Network Standards

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4.1. A standard, dedicated copper pair (2 wire) should be used if possible. However, the following line treatment devices may be used:

- 4.1.1. Signalling loop extenders
- 4.1.2. Line amplifiers
- 4.1.3. Subscriber carrier systems.

#### 5. Signalling and Feeding Limits

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5.1. These limits are determined by the DC current required by the telephone receiver and the customer's home section in the exchange.

5.2. The telephone instrument needs a current of 20mA. Parent exchange signalling normally needs 16 mA. Hence the instrument is the limiting factor.

The resistance limit is:

$$R = \frac{(V_s.) - (R_f + R_i)}{I_{min}}$$

Where

R = permitted loop resistance

Vs. = exchange feed voltage

Imin = minimum feed current

Rf = total feed resistance

Ri = instrument resistance

Modern electronic instruments have a higher resistance (up to 400 Ohms) than older types.

$$R = \frac{(48) - (800+400)}{0.02}$$

$$R = 1200 \text{ Ohms}$$

A maximum value of 1200 ohms is allowed.

Note: Rf. For digital exchanges is 800 Ohms.

## 6. Physical Parameters

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### Line Insulation

#### At installation

The line, including the internal wiring and master socket with no telephone connected to it, shall have minimum leakage resistances measured at 100V DC, as follows;

- 10MOhms A leg to earth and B leg to earth,
- 10MOhms between line terminals (A & B).

The line, including the internal wiring, but excluding the master socket and with no telephone connected to it, shall have minimum leakage resistances as follows:

- 50MOhms A leg to earth and B leg to earth,
- 50MOhms between line terminals (A & B).

Air spaced cables, tested with an Ohmmeter on the 500V range, and shall have a minimum-leakage resistance of 500MOhms between cable pairs and moisture barrier.

#### For operation and maintenance

The line, including the internal wiring and the master socket with the telephone connected to it, shall have minimum leakage resistances as follows;

- 1MOhms A leg to earth and B leg to earth.
- 1MOhms between the A leg and the exchange battery and between the B leg and the exchange battery. (Alternatively, the voltage across a 20kOhm resistor connected between the A or B leg and the battery shall not exceed 0.5V).
- 500kOhms A leg to B leg.

#### Maximum Loop Resistance

The maximum loop resistance shall be 1,200Ohms.

#### Jacks Modular Resistance

The resistor in the master socket should be 470kOhms.

## Attenuation Distortion

The attenuation distortion of a connection, relative to 800Hz, shall conform to ITU-T Recommendation M1040. Distortion shall be within the limits shown in Figure 1.

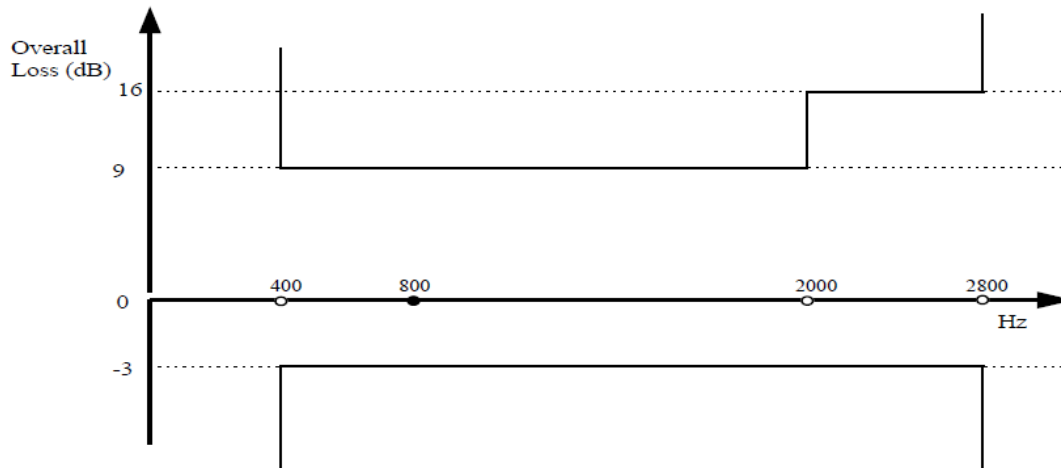


Figure 2: Limits for the overall loss of the circuit relative to that at 800Hz

Figure 2: Limits for the overall loss of the circuit relative to that at 800Hz

## Data Speed

No data rate is guaranteed on a telephony connection.

## Random Noise

Random noise shall not exceed 50dBmOp.

## Impulse Noise

Immunity from impulse noise is not guaranteed. While it should not significantly impair speech transmission, it may affect data transmission.

## Maximum Transmission Level

The customer's equipment shall not transmit at levels exceeding -5dbm for PSTN.

## Appendix 3 - Extended availability

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Extended availability for certain Order Types on UG

The hours of availability of some order types on UG is 23 hours on 7 days per week. This means that several key service assurance order types are fully assessable on both Saturdays and Sundays.

The order types affected are:

- Fault Orders
- Line Test Orders

The LLU Order Type impacted is as follows:

LLU Faults	
FLS	Fault on Line Sharing

Line test orders	
LLC	Telephone Line Characteristics
TLS	Test Line Sharing