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## Interconnection Architecture

### National Interconnection Sites

Orange Business Luxembourg S.A. (hereafter Orange Business Luxembourg) has 2 sites that have been designed for use as National Interconnection Access Points for wholesale VoIP services. The address of the interconnection points is:

#### Centre Schneider, Route de Thionville 201, L-5885, Howald Luxembourg

This is an existing manned Orange Business Luxembourg's site, containing relevant switching and transmission equipment with all digital functionality for national and international traffic.

#### Findel Airport Bureaux J2075-J2077 Luxair Cargo Centre, L-1360, Luxembourg

This is an existing unmanned Orange Business Luxembourg's site, containing relevant switching and transmission equipment with all digital functionality for national and international traffic.

In case of national interconnection, the offered Interconnect Services relate to the entire national area.

### Regional Interconnection Sites

Orange Business Luxembourg has **no** site that has been designated for use as Regional Interconnection Access.

### System Alteration

If Orange Business Luxembourg wishes to make a system alteration, it shall give the OAO and the ILR no less than 6 months written notice prior to the date of the anticipated system alteration. The notice shall specify the technical details of the system alteration and the date of the anticipated system alteration. Following such notification Orange Business Luxembourg shall supply to the OAO such information as the OAO may reasonably request including, to the extent reasonably practicable, the potential impact on the service provided by the OAO to the End Users.

### Standards

The signaling system will be based on the SIP protocol. Detailed technical setup and testing procedure will be agreed between operators. The transmission level of the interconnection is based on Ethernet interfaces.

### **Interconnection Link Services**

The interconnection link service consists of the physical link between an Orange Business Luxembourg's Access Point and an Operator Access Point. The Interconnection Link provided by Operator is Ethernet (optical / metallic interface) based line .

Orange Business Luxembourg ensures the availability of only following Interconnection Link Service for the conveyance of the Operator's traffic:

Orange Business Luxembourg sited interconnection

### **Orange Business Luxembourg -sited Interconnection**

For Orange Business Luxembourg -sited interconnection, the operator will supply and operate an Interconnection Link in its entirety. The Interconnection Link will remain in the Operator's property.

The Point of Interconnection shall be located at the Access Point on the DDF (digital distribution frame) or ODF (optical distribution frame) of the Party that has the operational responsibility for the Interconnect Link.

Orange Business Luxembourg will permit Orange Business Luxembourg -sited interconnection at the site identified in preceding Article 3.

In its request for Orange Business Luxembourg -sited interconnection, the operator will describe his needs regarding the installation of transmission equipment. Whenever Orange Business Luxembourg determines that Orange Business Luxembourg -sited interconnection is not reasonably feasible, it will inform the operator and the ILR of the reasons of such unfeasibility within 15 days of receiving the request. Orange Business Luxembourg will comply, should the ILR find that Orange Business Luxembourg -sited interconnection is reasonably feasible.

In case of non-feasibility of Orange Business Luxembourg -sited interconnection, Orange Business Luxembourg will cooperate with the Operator in order to find an appropriate alternative solution.

### **Interconnection Links**

The tariffs for Interconnection Links are indicated in Annex 2.

The operator is responsible for the dimensioning and payment of the Interconnection Links required for the conveyance of its own traffic. An operator's own traffic consists in the traffic for which the operator is billed by the operator who it interconnects with.

The operator is responsible for:

- the traffic conveyed through its System and handed over at Orange Business Luxembourg Access Point in order to use Orange Business Luxembourg Terminating Access Services.

The operator shall supply capacity requirements, forecasts and routing data every 6 months to Orange Business Luxembourg for a 12 months planning. This information will only be used by Orange Business Luxembourg for dimensioning of its network and will be kept strictly confidential.

The signaling systems between Orange Business Luxembourg and the operator will be based, where relevant, on the SIP protocol. Technical details to be agreed upon between the operator and Orange Business Luxembourg.

At the transmission level, the interconnection is based on the Ethernet interface (exact details to be agreed between the operator and Orange Business Services).

### **Quality of service of Orange Business Luxembourg 's Interconnection Services**

As far as the terminating access service is concerned, Orange Business Luxembourg undertakes to ensure for its own system a network failure rate, which does not exceed 1% as a national 3 months average, for failures which are exclusively due to its system. Network failure rate is the ratio between the number of calls handed over by an operator to be terminated on Orange Business Luxembourg's network and failed due to insufficiencies in Orange Business Luxembourg's network and the total amount of calls handed over by that operator to be terminated on Orange Business Luxembourg's network (excluding, in particular, failures due to end-user behavior and failure of terminal equipment).

In the event of disturbance of the conveyance of traffic within its system, Orange Business Luxembourg may be constrained to implement the classical measures of traffic regulation (call gapping, etc. ...) in order to limit its effect on the quality of the service provided to its customers as well as to the interconnected operators. These measures of traffic regulation are applied to Orange Business Luxembourg's and operator's traffic without discrimination. The target figures given above for network failure rate do not include failures that are caused by the mentioned measures of traffic regulation. The operator and the ILR shall be informed if the above-mentioned measures for traffic regulation have to be applied and how long they may last.

Orange Business Luxembourg shall respect the quality conditions as they are defined in the applicable legal regulation and in accordance with the quality Orange Business Luxembourg provides for its clients.

KPI's covering the provisioning time and fault repair time are always stated in the "SLA and escalation matrix" document.

### **Terminating access service**

The terminating access service conveys a call handed over from the operator's system, at an Orange Business Luxembourg's access point for termination on any national number of Orange Business Luxembourg network.

Tariffs may be different for different categories of services identified by different number ranges.

The tariffs applied by Orange Business Luxembourg for the provision of the terminating access service are indicated in Annex 1. Only calls that have been setup successfully and answered will be charged. The charging time starts with the answering signal and ends with the first clear signal generated either by the calling or the called party.

Whenever CLI is transferred to the telecommunications network of Orange Business Luxembourg, Orange Business Luxembourg will not communicate such CLI to an end-user if such CLI is marked as CLIR unless the call is directed to an emergency number.

### **Originating access service**

Orange Business Luxembourg does not offer any originating access service from its network for operators.

### **Transit access service**

Orange Business Luxembourg does not offer any transit access service towards its network for operators.

### **Leased Lines Interconnection Service**

Orange Business Luxembourg does not offer any leased line interconnection service on its network for operators.

### **Number Portability (NP)**

#### **Scope**

Number portability (NP) is applicable under the conditions defined by the document DOC-NP-ILT which describes the procedures applicable to number portability in Luxembourg (the NP-Document).

As defined by the NP-Document, the recipient operator transmits the electronic file containing the requested data to Orange Business Luxembourg by means of an electronic messaging system.

The transmission of the electronic files can be operated between 06.00 and 18.00 hours from Monday to Friday, except legal and public holidays.

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Orange Business Luxembourg will acknowledge receipt of the transmission file by means of the same electronic messaging system.

As defined in the NP-Documents, requests can be transmitted in timeframe T1+n .. T1+m.

For Orange Business Luxembourg, n=2 weeks and m = 16 weeks.

NP will be activated by the Orange Business Luxembourg from Monday to Friday from 8.00 to 12.00 and 13.00 to 17.00 hours except legal and public holidays in Luxembourg.

This time schedule may be extended to 7.00 to 19.00 hours on Monday to Friday and 8.00 to 12.00 hours on Saturday with the supplementary costs to be paid by the recipient operator.

### **Tariffs and Billing**

Tariffs of number portability will be those defined in Annex 1.

### **Request form for Number Portability**

The template of the request form to be used for number portability is agreed during number portability service establishment.

## Annex 1 : Terminating access Price

### Calls to Toll Free +352 800 numbers terminated in the Orange Business Luxembourg's network

This service consists in the conveyance by Orange Business Luxembourg of calls handed over by an operator at a national point of interconnection between the operator's system and the Orange Business Luxembourg's system for termination on Orange Business Luxembourg's system, on one of Orange Business Luxembourg's free phone numbers in accordance with the national numbering plan of Luxembourg.

The rates to be paid **by** Orange Business Luxembourg for terminating access service to Orange Business Luxembourg's free phone numbers are as specified below:

	Call Setup (€ct)	Charge/Minute (€ct) from fixed networks	Charge/Minute (€ct) from mobile networks
Peak	0	1,67	9,87
Off Peak	0	1,67	9,87

### Calls to Shared Revenue Numbers Premium +352 90x numbers terminated in the Orange Business Luxembourg's network

This service consists in the conveyance by Orange Business Luxembourg of calls handed over by an operator at a national point of interconnection between the operator's system and Orange Business Luxembourg's system for termination on Orange Business Luxembourg's system, on one of Orange Business Luxembourg's premium numbers 90x in accordance with the national numbering plan of Luxembourg.

The rates to be paid **to** Orange Business Luxembourg for terminating access service to Orange Business Luxembourg's premium numbers 90x are as specified below:

Model1

Numbers	End-user price		Rate to be paid to Orange Business Luxembourg	
	Call Setup (€ct)	Charge/Minute (€ct)	Call Setup (€ct)	Charge/Minute (€ct)
0900 40 1xx	0	2,56	0	0,74
0900 40 2xx	0	12,82	0	9,86
0900 40 3xx	0	21,37	0	17,45
0900 73 xxx	0	21,37	0	17,45
0900 40 4xx	0	34,19	0	28,83
0900 40 5xx	0	55,56	0	47,81
0900 40 6xx	0	72,65	0	62,99
0900 40 7xx	0	98,29	0	85,76
0900 40 8xx	0	170,94	0	150,28

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### **Calls to non-geographical numbers +352 20x terminated in the Orange Business Luxembourg's network**

This service consists in the conveyance by Orange Business Luxembourg of calls handed over by an operator at a national point of interconnection between the operator's system and Orange Business Luxembourg's system for termination on Orange Business Luxembourg's system, on one of Orange Business Luxembourg's non-geographical numbers 20x in accordance with the national numbering plan of Luxembourg.

The rates to be paid to Orange Business Luxembourg for terminating access service to Orange Business Luxembourg's non-geographical numbers 20x are as specified below:

For year **2017** (valid from 1.1.2017 to 31.12.2017):

	<b>Call Setup (€ct)</b>	<b>Charge/Minute (€ct)</b>
Peak	0	0,131
Off Peak	0	0,131

For year **2018** (valid from 1.1.2018 to 31.12.2018):

	<b>Call Setup (€ct)</b>	<b>Charge/Minute (€ct)</b>
Peak	0	0,135
Off Peak	0	0,135

For year **2019** (valid from 1.1.2019 to 31.12.2019):

	<b>Call Setup (€ct)</b>	<b>Charge/Minute (€ct)</b>
Peak	0	0,138
Off Peak	0	0,138

### **Calls to geographical numbers +352 xx terminated in the Orange Business Luxembourg's network**

This service consists in the conveyance by Orange Business Luxembourg of calls handed over by an operator at a national point of interconnection between the operator's system and Orange Business Luxembourg's system for termination on Orange Business Luxembourg's system, on one of Orange Business Luxembourg's geographical numbers in accordance with the national numbering plan of Luxembourg.

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The rates to be paid to Orange Business Luxembourg for terminating access service to OBS's geographical numbers are as specified below:

For year **2017** (valid from 1.1.2017 to 31.12.2017):

	<b>Call Setup (€ct)</b>	<b>Charge/Minute (€ct)</b>
Peak	0	0,131
Off Peak	0	0,131

For year **2018** (valid from 1.1.2018 to 31.12.2018):

	<b>Call Setup (€ct)</b>	<b>Charge/Minute (€ct)</b>
Peak	0	0,135
Off Peak	0	0,135

For year **2019** (valid from 1.1.2019 to 31.12.2019):

	<b>Call Setup (€ct)</b>	<b>Charge/Minute (€ct)</b>
Peak	0	0,138
Off Peak	0	0,138

### Number Portability Request

Standard tariffs applicable to number portability :

	<b>Per Porting Request (€)</b>
Regular Business Hours	14,38
Out Of Business Hours	14,38

## Annex 2: Tariffs applicable to the interconnection link service

### Orange Business Luxembourg -sited Interconnection

Monthly charge per used Interconnect Site (covering billing, maintenance and service quality control): 250,- €

Installation charge covering project preparation, allocation of resources, testing and all the administrative aspects : 2500,- €.

### Modification of Interconnection Links

The establishment, the modification and the cancellation of trunks, as well as the connection or disconnection of circuits or signaling links required by an operator, are charged to this operator if these changes apply to existing interconnect trunks. The necessary changes related to the extension of an existing interconnect trunk by adding supplementary interconnect links are not charged to the operator.

<b>Change required by the operator</b>	<b>Tariff (€)</b>
Establishment of a new trunk	700
Modification or cancellation of an existing trunk	500
Connection or disconnection of circuits	200