



Reference Interconnect Offer (RIO)

Mixvoip SA

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1 Introduction

1.1 Scope

This Reference Interconnect Offer (RIO) defines the interconnection terms and conditions (including the list of the interconnection services) which Mixvoip (OP) will apply to all Operators in order to allow end-users who are connected to the system of an Operator to communicate with end-users who are connected to the telecommunication networks of Mixvoip, or services accessible through OP's system and vice versa. This RIO focuses mainly on voice services.

1.2 Services covered

The services covered by this RIO are:

- Terminating access service
- Interconnection link service
- Number Portability
- Special Services Offered to Operators

1.3 Terms and Conditions

This RIO defines the minimal interconnection terms and conditions which OP will grant to other Operators. Nevertheless, OP reserves the right to provide more beneficial terms and conditions, in accordance with the applicable regulatory framework, including the principle of nondiscrimination.

1.4 Responsibility of content

No Operator shall be responsible for the content of calls passed through his own or an interconnected Operator's network. Luxembourgish laws and regulations regarding confidentiality and access by legal authorities to calls on the Operator's and OP's network will apply.

1.5 Validity

This RIO is valid from November 1st, 2023 unless

- A new RIO is published, or
- A material change occurs in the laws or regulations, governing telecommunications in Luxembourg.

This RIO shall remain in full force and effect after November 1st, 2023 until such time a new RIO into force.

1.6 Reviews and Amendments

The content of this RIO may be reviewed and amended to comply with applicable rules and regulations. Furthermore, the ILR reserves the right to request or impose on OP modifications to the RIO or the adoption of a new RIO to be undertaken by OP.

1.7 Applicable Law

Unless defined otherwise, the terms used in this RIO must be interpreted in accordance with the Luxembourgish Law of February 27th, 2011 on Networks and Electronic Communication Services (the "Law") and its implementing regulations.

1.8 Prices

All prices mentioned in this RIO, including those specified in the Appendices attached hereto, are in EURO (€) and exclusive of Value-Added Tax (VAT) or any other legal taxes, which will be added where applicable.

2 Definitions

2.1 Call

The establishment of a connection through a telecommunications network and the transmission and the delivery of a signal from the terminal on which this signal was generated to the terminal to which this signal is addressed or to a network platform or any other facility giving an automatic answer in those cases where the connection cannot be established.

2.2 Calling Line Identification (CLI)

The CLI is the number of the calling user conveyed by each Operator's network for each call, it may also be provided by the network or partly by the calling user. This information is flagged either as "network- provided" or as "user provided, verified and passed". If the verification of a user provided CLI fails, the network- provided CLI would be transmitted.

2.3 Calling Line Identification Presentation (CLIP)

Supplementary service provided for in ITU-T Recommendation I.251.3.

2.4 Calling Line Identification Restriction (CLIR)

Supplementary service provided for in ITU-T Recommendation I.251.4.

2.5 Capacity of the Interconnection Link

The capacity defined for the Interconnection Link and the corresponding OP access point to which the Operator wishes to be connected.

2.6 EEA

European Economic Area

2.7 ILR

Institut Luxembourgeois de Régulation.

2.8 Interconnection

The interconnection with OP, as defined by the Law.

2.9 Interconnect Agreement

An agreement between OP and an Operator, which defines the conditions for the Interconnection.

2.10 Interconnection Link

A Link between an OP Access Point and an Operator Access Point for the provision of Interconnection traffic.

2.11 Interconnection Service

Services described in the present Reference Interconnect Offer.

2.12 International Public Telecommunication Number

Defined as in ITU-T Recommendation E.164.

2.13 IP

Internet Protocol version 4 (RFC 791) and Internet Protocol version 6 (RFC 2460)

2.14 IXP

Internet Exchange Point

2.15 KPI

Key Performance Indicator

2.16 Link

Set of telecommunications facilities necessary to establish one or more transmission paths between two locations.

2.17 National (Significant) Number

Defined as in ITU-T Recommendation E.164.

2.18 Number portability

The case where a subscriber retains its originally assigned directory number when changing from one network Operator (Donor network; Donor Operator) to another (recipient network; Recipient Operator) and is not related to changing the nature of service nor the location.

2.19 Operator

Any person exploiting telecommunications networks and/or providing telecommunications services in Luxembourg.

2.20 Operator Access Gateway Exchange

An Operator exchange directly connected to an Operator Access Point at which calls are initially switched in the Operator System, when conveyed from the OP Access Point, or finally switched in Operator System when conveyed to the OP Access Point.

2.21 Operator Access Point

The physical interface within the Operator's System at which the Interconnection Services can be obtained.

2.22 Parties

OP and the Operator with which an Interconnection Agreement is (or is being) concluded.

2.23 Point of Interconnection (POI)

The physical point on the Interconnection Link where the telecommunications network of OP and the Operator's System are interconnected. The POI is the boundary between OP and the Operator domains of responsibility.

2.24 Reference Interconnect Offer (RIO)

The present offer for Interconnection Services.

2.25 System

All equipment and software which, an Operator uses to provide his telecommunications services.

2.26 SLA

Service Level Agreement

2.27 SIP

SIP, the session initiation protocol, is the IETF protocol for VoIP and other text and multimedia sessions.

2.28 OP Access Gateway Exchange

A OP exchange directly connected to an OP Access Point at which calls are initially switched in the telecommunications network of the OP, when conveyed from the Operator Access Point, or finally switched in the telecommunications network of the OP when conveyed to the Operator Access Point.

2.29 OP Access Point

The physical interface within OP's System from which the Interconnection Services can be obtained.

2.30 Transit – Trunk

A transit trunk contains a minimum of 20 and up to 30 channels.

2.31 Transit – Link

A Transit link is one 100Mbit/s Port.

3 Interconnection Architecture

3.1 OP sited Interconnection

OP has four (5) sites that have been designed for use as Interconnection Access Points grounds of their optimal network integration. These are existing OP sites, containing relevant IP switching, routing, and equipment.

OP Interconnection point addresses:

- 4 rue A. Graham Bell, L-3235 Bettembourg (LuxConnect DC 1.1)
- 1 ZA et Commerciale Klengbusbiert, L-7795 Bissen (Luxconnect DC2)
- 19 rue de Reims, L-2417 Luxembourg (POST POP0148)
- 12 impasse Drosbach, L-1882 Luxembourg (European Data Hub DDC)
- 3 rue Pierre Flammang, L-8399 Windhof (eBRC RCLW)

3.2 IXP Interconnection

OP has one (1) site that has been designed for use as IXP Interconnection Access Points grounds of its optimal network integration. This is an existing IXP, containing relevant IP switching, routing and equipment,

IXP Interconnection point location :

- Luxembourg Commercial Internet Exchange (LuCIX)

3.3 System Alteration

If OP wishes to make a system alteration, it shall give the connected Operators 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 OP shall supply to the connected Operators such information as the connected Operator may reasonably request including, to the extent reasonably practicable, the potential impact on the service provided by the connected Operator to the End Users.

3.4 Standards

Where relevant for interconnection with OP, the following hierarchy of standards and procedures will apply:

- Any legal requirements
- IETF RFC documents
- ETSI standards
- ITU-T Recommendations
- National standards
- Any other international standards

4 Terminating access service

4.1 Scope

The terminating access service conveys a call handed over from the Operator's System, at an OP Access Point for termination on any national number of OP network. Tariffs may be different for different categories of services identified by different number ranges.

4.2 Tariffs

The tariffs applied by OP for the provision of the terminating access service are indicated in Annex 1 Tariffs applicable to the terminating access service. 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.

4.3 CLI

Whenever CLI is transferred to the telecommunications network of OP, OP 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.

5 Interconnection Link Services

The interconnection link service consists in the physical linking between a OP Access Point and an Operator Access Point.

The Operator must interconnect to a OP Point of Interconnection as defined in paragraphs 3.1, 3.2, 3.3 and 3.4. The charges per interconnect site are defined in Annex 2 Tariffs applicable to the interconnection link service.

5.1 Interconnection Link and Co-Location

For OP-sited and IXP interconnections, OP can provide a custom offer for an Interconnection Link Service or the Operator will supply and operate an Interconnection Link in its entirety. OP will provide access to the Operator at its site for the installation and maintenance of the Operator's transmission equipment used in direct relation with the interconnect services, electric power, and safekeeping.

In its request for OP-sited interconnection, the Operator will describe his needs regarding the installation of his transmission equipment on the premises of OP. Whenever OP determines that an OP-sited and an IXP 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. OP will comply should the ILR find that OP-sited interconnection is reasonably feasible. In case of non-feasibility of OP-sited Interconnection, OP will cooperate with the Operator to find an appropriate alternative solution.

For the provision of the co-location facilities, the conditions and prices are subject to a separate offer.

5.2 Interconnection Capacity

The Operator is responsible for the dimensioning of the Interconnection Links capacity required for the conveyance of its own traffic. An Operator's own traffic consists in the traffic for which the Operator is billed by OP.

5.3 Signaling System

5.3.1 IP Interconnection

The signaling systems between OP and the Operator shall be based on the IETF SIP protocol. At the transmission levels, the interconnection is based on IP Networks.

6 Quality of service of OP's Interconnection Services

As far as the terminating access service is concerned, OP undertakes to ensure for its own System a network failure rate, which does not exceed 1,5% as a nation-wide 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 OP's Network and failed due to insufficiencies in OP Network and the total amount of calls handed over by that Operator to be terminated on OP's network (excluding, in particular, failures due to end-user behavior and failure of terminal equipment).

In the unlikely event of disturbance of the conveyance of traffic within its System, OP may be constrained to implement the classical measures of traffic regulation (limiting channels, etc.) to limit its effect on the quality of the service provided to its customers as well as to the Interconnected Operators. 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 must be applied and how long they may last.

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

7 Procedure for Reaching an Interconnection Agreement

Interconnection agreements shall be negotiated and reached according to the general modalities for interconnection as determined by the ILR (Article 23 of the Law).

OP may demand the delivery of a bank guarantee on first demand of a Luxembourg based bank of 25.000,-- € in favor of OP for the provisioning of the interconnect service.

OP may also without prejudice to previous arrangements demand payment in advance. Requests for interconnection services shall be made in writing to the following address:

Mixvoip SA
Head of Carrier Operations
70 rue des Près
L - 7333 Steinsel
T: +352 20333366
F: +352 20333390
M: voice@mixvoip.com

8 Annexes 1 to 4

All prices mentioned here after are given exclusive of VAT or any other legal taxes, which will be added where applicable.

9 Annex 1 Tariffs applicable to the terminating access service

9.1 Tariffs applicable to the terminating access service of calls originating within EEA

The tariffs for the terminating access service are defined in accordance with ILR regulation ILR/T21/1. Unless defined otherwise in future amendments of the present RIO, the tariffs will be automatically adapted at the start of a new billing period as featured in the following tables.

The tariffs in the following paragraph 9.1.1. of this RIO only apply to the termination of voice calls originating within the EEA, provided that the calling number can be identified as belonging to a numbering plan of one of the countries of the EEA.

The tariffs for Terminating Access Services is adapted in compliance with the Commission Delegated Regulation (EU) 2021/654 of 18 December 2020 supplementing Directive (EU) 2018/1972 of the European Parliament and of the Council by setting a single maximum Unionwide mobile voice termination rate and a single maximum Union-wide fixed voice termination rate

9.1.1 Terminating access service to geographic numbers

From January 1, 2022 until the application of a new regulation

	Call setup €cts	Charge per minute €cts
peak	0,00	0,07
off-peak	0,00	0,07

Tariffs and billing arrangements for terminating access service to numbers not determined in the present RIO may vary according to the technical implementation chosen for the interconnection. In any circumstance, the tariffs will be cost based and non-discriminatory.

9.2 Tariffs Applicable to the terminating access service of calls originating outside of the EEA

OP will apply, based upon the country of the calling party number, a surcharge for the termination in its network according to the following rules:

1. Termination of calls with A-Number belonging to any of the country codes included in Table 1: OP will not apply any surcharge.
2. Termination of calls with A-Number not belonging to any of the country codes included in Table 1, with no A-number (no CLI), with incorrect A-Number (either in format or content), invalid A-Number, modified or manipulated A-Number: OP will apply a surcharge of 12,60 €cts/min.

These surcharges will be applied in addition to the termination rate specified in paragraphs 11.1.1 of this RIO.

Table 1

Destination Zone	Destination Detail	Prefix
AUT	Austria	+43
BEL	Belgium	+32
BGR	Bulgaria (Republic of)	+359
CAN	Canada	+1
CYP	Cyprus (Republic of)	+357
CZE	Czech Republic	+420
DNK	Denmark	+45
EST	Estonia (Republic of)	+372
FIN	Finland	+358
FRA	France	+33
GUF	French Guiana (French Department of)	+594
DEU	Germany (Federal Republic of)	+49
GRC	Greece	+30
HUN	Hungary (Republic of)	+36
GLP	Guadeloupe (French Department of), including Saint Martin	+590
ISL	Iceland	+354
IRL	Ireland	+353
ITA	Italy	+39
LVA	Latvia (Republic of)	+371
LIE	Liechtenstein (Principality of)	+423
LTU	Lithuania (Republic of)	+370
LUX	Luxembourg	+352
MLT	Malta	+356
MTQ	Martinique (French Department of)	+596
MYT	Mayotte	+269
NLD	Netherlands (Kingdom of the)	+31
NOR	Norway	+47
POL	Poland (Republic of)	+48
PRT	Portugal, including Azores and Madeira	+351
REU	Reunion (French Department of)	+262
ROU	Romania	+40
SVK	Slovak Republic	+421
SVN	Slovenia (Republic of)	+386
ESP	Spain, including Canary Islands	+34
SWE	Sweden	+46
GBR ⁸	United Kingdom of Great Britain and Northern Ireland	+44
USA	United States of America	+1

Table 1: No surcharges will be applied for the termination of voice calls originating in these countries.

10 Annex 2 Tariffs applicable to the interconnection link service

10.1 IP Interconnection

One-off charge per Operator (covering installation and testing):

- 8.149,-- €

For the provision of co-location facilities, when required, the conditions and prices are subject to a separate offer.

10.2 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 on an existing interconnect trunk by adding supplementary interconnect links are not charges to the operator.

Establishment of a new trunk

- IP: 646,--€

Modification or cancellation of an existing trunk

- 485,--€

Connection or disconnection of links

- 161,--€

Connection or disconnection of a signaling link

- 323,--€

10.3 Recurring Trunk Fees

- 149,--€ / Month / Trunk (30 channels)
- 4,97 € / Month / Channel (20 minimum)

10.4 Recurring Link Fees

- 240,--€ / Month / Link

10.5 Transit and Settlement Fees

OP will invoice set fee for traffic going through OP's network destined to other Operator as followed:

- 0,0041 € / minute

10.6 Optional SLA Monthly Fees

Upgrade to 24/7 Support Access:

- 92,-- € / Month

10.7 Monthly Fees For Routing Code

- 75,-- € / Month

11 Annex 3 Tariffs for Special Services offered to Operators

11.1 Calls to 800 number terminated in the OP network (Toll-Free, Free-Phone)

This service consists in the conveyance by OP of Calls handed over by an Operator at a National Point of Interconnection between the Operator's System and OP System for termination on OP System, on one of OP's Free phone numbers in accordance with the National Numbering Plan of Luxembourg. The rates to be paid by OP for Terminating Access Service to OP's Free phone numbers are as specified below:

	Origin	Call setup €cts	Charge per minute €cts
peak	fixed	0,00	0,28
	mobile	0,00	1,11
	payphone	0,00	0,28
off-peak	fixed	0,00	0,28
	mobile	0,00	1,11
	Payphone	0,00	0,28

11.2 Terminating Access service to Shared Revenue Numbers (Premium Rate Service – 90x)

This service consists in the conveyance by OP of Calls handed over by the Operator at a National Point of Interconnection between the Operator's System and OP System for termination on OP System, on one of OP's Shared revenue numbers in accordance with the National Numbering Plan of Luxembourg.

11.2.1 Premium rate services on duration basis (price per minute)

	Charge per minute €cts	Billing period (in seconds)
Level 0	0,79	60
Level 1	10,26	30
Level 2	17,82	30
Level 3	29,42	30
Level 4	48,77	30
Level 5	64,25	20
Level 6	87,47	20
Level 7	153,25	20

11.2.2 Premium rate services on call basis (price per call)

	Charge per call €cts	Maximum call duration (in seconds)
Level 1	7,91	30
Level 2	17,59	30
Level 3	36,93	30
Level 4	56,28	30
Level 5	114,32	30
Level 6	172,37	30
Level 7	230,41	30
Level 8	462,59	30

12 Annex 4 OP numbering resources

12.1 Geographic numbers

201017	20204	2060	2832	28388
201020	20210	207070	2833	28389
20112	20211	2071	28380	2844
201911	20212	2072	28381	2876
201919	2030	2425	28382	2880
20200	20332	2718	28384	
20201	20333	2722	28385	
20202	20339	2772	28386	
20203	2050	2779	28387	

12.2 Toll-Free numbers

80080

12.3 Shared Revenue numbers

90020

90047

90120

90144

90520

12.3.1 Charges applicable to Shared Revenue Numbers

12.3.1.1 Premium rate services on duration basis

Charges applied according to 14.2.1

Level 0

Level 1

90y201

Level 2

90y207

Level 3

90y203

Level 4

90y204, 90y208

Level 5

90y205

Level 6

90y202, 90y209, 90y47

Level 7

90y200, 90y206

y = 0,1 or 5

12.3.1.2 Premium rate services on call basis

Charges applied according to 14.2.2

- Level 1
- Level 2
- Level 3
- Level 4
- Level 5
- Level 6
- Level 7
- Level 8

y = 0,1 or 5