



Visual Online S.A.
Reference Interconnect Offer
VO-RIO 2018/02

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Contents

1	<i>Introduction</i>	3
1.1.	Validity	4
2	<i>Definitions</i>	5
3	<i>Interconnection Architecture</i>	7
3.1.	Interconnection Sites	7
3.2.	System Alteration	7
3.3.	Standards	7
4	<i>The terminating access service</i>	8
5	<i>Interconnection Link Service</i>	9
5.1.	Interconnection Link and Co-Location	9
5.2.	Interconnection Capacity	9
6	<i>Quality of service of VO's Interconnection Services</i>	10
7	<i>Procedure for Reaching an Interconnection Agreement</i>	11
8	<i>Annexes</i>	12
8.1.	Annex 1: Tariffs applicable to the terminating access service	13
8.2.	Annex 2: Tariffs applicable to the interconnection link service	15

1 Introduction

This Reference Interconnect Offer ("RIO") defines the interconnection terms and conditions (including the list of the interconnection services) which VO 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 VO, or services accessible through VO's system and vice versa. This RIO focuses on voice services over IP Networks.

- Services covered:
 - Terminating access service
 - Interconnection link service
 - Number portability

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

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

1.1. Validity

This RIO is valid from 9th April 2021, unless

- A new RIO is approved or adopted by the ILR, or
- A material change occurs in the laws or regulations, governing telecommunications in Luxembourg.

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

Unless defined otherwise, the terms used in this RIO must be interpreted in accordance with the Law of May 30, 2005 on Networks and Electronic Communication Services (the "Law") and its implementing regulations.

1.1.1 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

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.
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.
Calling Line Identification Presentation (CLIP):	Supplementary service provided for in ITU-T Recommendation I.251.3.
Calling Line Identification Restriction (CLIR):	Supplementary service provided for in ITU-T Recommendation I.251.4.
Capacity of the Interconnection Link:	The capacity defined for the Interconnection Link and the corresponding VO access point to which the Operator wishes to be connected.
VO:	Visual Online S.A. established 21 December 2000. The shareholders are Entreprise des Postes et Télécommunications and Trade-Comm S.à r.l. (former Visual Online S.à r.l. established 24 March 1996)
VO Access Point:	The physical interface within VO's System from which the Interconnection Services can be obtained.
ILR:	Institut Luxembourgeois de Régulation.
Interconnect Agreement:	An agreement between VO and an Operator, which defines the conditions for the Interconnection.
Interconnection Link:	A Link between a VO Access Point and an Operator Access Point for the provision of Interconnection traffic.
Interconnection Service:	Services described in the present Reference Interconnect Offer.
International Public Telecommunication Number:	Defined as in ITU-T Recommendation E.164

Link:	Set of telecommunications facilities necessary to establish one or more transmission paths between two locations.
National (Significant) Number:	Defined as in ITU-T Recommendation E.164.
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.
Operator:	Any legal or natural person exploiting telecommunications networks and/or providing telecommunications services in Luxembourg.
Operator Access Point:	The physical interface within the Operator's System at which the Interconnection Services can be obtained.
Parties:	VO and the Operator which an Interconnection Agreement is (being) concluded with.
Point of Interconnection (POI):	The physical point on the Interconnection Link where the telecommunications network of VO and the Operator's System are interconnected. The POI is the boundary between VO and the Operator domains of responsibility.
Reference Interconnect Offer (RIO):	The present offer for Interconnection Services.
System:	All equipment and software which, an Operator uses to provide his telecommunications services.
SIP:	SIP, the session initiation protocol, is the IETF protocol for VOIP and other text and multimedia sessions.

3 Interconnection Architecture

3.1. Interconnection Sites

VO has two sites that have been designed for use as Interconnection Access Points grounds of their optimal network integration. These are existing VO sites, containing relevant IP switching and equipment.

- Interconnection point addresses:
 - 3 rue Pierre Flammang, L-8399 Windhof
 - 6 rue Goell, L-5326 Contern

The Operator can either use both or selects only one Interconnection Access Point at which he wants to interconnect his System.

3.2. System Alteration

If VO 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 VO 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.

3.3. Standards

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

- Any legal requirements
- IETF RFCs
- ETSI standards
- Any other international standards

The signaling system will be based on the IETF SIP protocol, RFC 3261.

The transmission level of the interconnection is based on IP Networks.

4 The terminating access service

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

The tariffs applied by VO 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 VO, VO 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 Service

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

The Operator must interconnect to a VO Point of Interconnection defined in paragraph 3.1 (VO-sited Interconnection). The charges per interconnect site are defined in Annex 2.

5.1. Interconnection Link and Co-Location

For VO-sited interconnection, VO can provide a custom offer for an Interconnection Link Service or the Operator will supply and operate an Interconnection Link in its entirety.

VO will provide access to the Operator at its site for the installation and maintenance of the Operator's transmission equipment located at this site. VO will supply a suitable location for the Operator's transmission equipment used in direct relation with interconnect services, electric power and safekeeping.

In its request for VO-sited interconnection, the Operator will describe his needs regarding the installation of his transmission equipment on the premises of VO. Whenever VO determines that VO-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. VO will comply, should the ILR find that VO-sited interconnection is reasonably feasible. In case of non-feasibility of VO-sited interconnection, VO will cooperate with the Operator in order 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 VO.

5.2.1 Signaling System

The signaling systems between VO 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 VO's Interconnection Services

As far as the terminating access service is concerned, VO undertakes to ensure for its own System a network failure rate, which does not exceed 1, 5% 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 VO's Network and failed due to insufficiencies in VO Network and the total amount of calls handed over by that Operator to be terminated on VO'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, VO may be constrained to implement the classical measures of traffic regulation (limiting channels, etc.) in order 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 have to be applied and how long they may last.

VO shall respect the quality conditions as they are defined in the applicable legal regulation and in accordance with the quality VO 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).

VO may demand the delivery of a bank guarantee on first demand of a Luxembourg based bank of 10.000,- € in favor of VO for the provisioning of the interconnect service.

VO may also without prejudice to previous arrangements demand payment in advance.

Requests for interconnection services shall be made in writing to the following address:

Visual Online S.A.
Interconnection Services
BP 2534
L-1025 Luxembourg
Phone: +352 424411-1
Email: interconnection@visual-online.lu

8 Annexes

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

8.1. Annex 1: Tariffs applicable to the terminating access service

The tariff in the following paragraph 8.1.1 only applies to the termination of voice calls originating within the EEA (European Economic Area), provided that the calling number can be identified as belonging to a numbering plan of one of the countries of the EEA.

8.1.1 Terminating access service of Calls Originating from within the EEA

Billing Period	Charge per minute ¹
Peak & Off-Peak	0.138 €ct

The tariffs for Terminating Access Services will be adapted in compliance with the Delegated Act “supplementing Directive (EU) 2018/1972 of the European Parliament and of the Council by setting a single maximum Union-wide voice termination rate and a single maximum Union-wide fixed voice termination rate” as soon as this regulation enters into force in 2021.

¹) To be billed on a per nearest second basis.

8.1.2 Terminating access service of Calls Originating outside of the EEA

- a) Termination of originating calls with A-Number belonging to any of the Country Codes included in the table 1, VO will not apply a surcharge to the national termination rate specified in 8.1.1 .

Alaska (+1907)	Korea South (+82)
Australia (+61)	Latvia (+371)
Austria (+43)	Liechtenstein (+423)
Belgium (+32)	Lithuania (+370)
Bulgaria (+359)	Malta (+356)
Canada (+1)	Martinique (+596)
China (+86)	Mayotte (+262)
Colombia (+57)	Mexico (+52)
Croatia (+385)	Netherlands (+31)
Cyprus (+357)	Norway (+47)
Czech (+420)	Poland (+48)
Denmark (+45)	Portugal (+351)
Estonia (+372)	Puerto Rico (+1787, +1939)
Finland (+358)	Reunion (+262262)
France (+33)	Romania (+40)
French Guiana (+594)	Slovakia (+421)
Germany (+49)	Slovenia (+386)
Greece (+30)	Spain (+34)
Guadeloupe (+590)	Sweden (+46)
Hawaii (+1808)	UK (+44)
Hungary (+36)	USA (+1)
Iceland (+354)	
India (+91)	
Ireland (+353)	
Italy (+39)	
Japan (+81)	

Table 1: No surcharge will be applied for the termination of calls originating from these countries

- b) Termination of originating calls with A-Number belonging to any of the Country Codes included in the table 2, VO will apply a surcharge of 4,5 €cts/minute to the national termination rate specified in 8.1.1 .

United Nat. Office for Coord. of Human. Affairs (+888, +8835100)	Laos (+856)
Bangladesh (+880)	Malaysia (+60)
Bermuda (+1441)	Mauritius (+230)
Bhutan (+975)	Mongolia (+976)
Brazil (+55)	Netherlands Antilles St. Martin (+1721)
Brunei (+673)	New Zealand (+64)
Cambodia (+855)	Pakistan (+92)
Costa Rica (+506)	Panama (+507)
Dominican Rep (+1809; +1829; +1849)	Paraguay (+595)
Egypt (+20)	Singapore (+65)
Faroe Islands (+298)	South Africa (+27)
French Polynesia (+689)	Switzerland (+41)
Gibraltar (+350)	Taiwan (+886)
Guam (+1671)	Thailand (+66)
Hong Kong (+852)	Uruguay (+598)
Indonesia (+62)	Venezuela (+58)
Kuwait (+965)	Vietnam (+84)
	Virgin Islands (US) (+1340)

Table 2: A surcharge of 4,5 €cts/minute will be applied for the termination of calls originating from these countries

- c) Termination of originating calls with A-Number not belonging to any of the Country Codes included in the table 1 and table 2, without an A-Number or an invalid A-Number, VO will apply a surcharge of 12 €cts/minute to the national termination rate specified in 8.1.1 .

8.1.3 Terminating access service to Emergency Numbers

Terminating access to emergency numbers is free of charge.

8.2. Annex 2: Tariffs applicable to the interconnection link service

One-off charge per Operator (covering installation and testing):
1300. - €

Annual fee per 100 Mbit/s (annual costs for the access point equipment and maintenance):
600. - €

Monthly charge per used Interconnect Site (covering billing, maintenance and service quality control):
210. - €

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