



CAMTEL-BUF 2023 INTERCONNECTION CATALOGUE

- Offering for
Concession operators

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I. INTRODUCTION

This CAMEROON TELECOMMUNICATIONS (CAMTEL-BUF) interconnection and access catalogue for the operation of the (CAMTEL-BUF) Wireline Telephony Licence falls within the framework of the provisions of Law No. 2010/013 of 21 December 2010 governing electronic communications in Cameroon, as amended and supplemented by Law No. 2015/006 of 20 April 2015, and its implementing decrees, in particular:

- Decree No. 2012/1638/PM of 14 June 2012 to lay down conditions for establishing and/or operating networks and providing electronic communication services subject to an authorisation scheme;
- Decree No. 2012/1640/PM of 14 June 2012 to lay down conditions for interconnection, access to public electronic communications networks, and infrastructure sharing;
- Decree No. 2022/10902/PM of 7 December 2022 to lay down the conditions for reserving, allocating and using numbering resources.

It is valid for 2023.

This catalogue presents CAMTEL-BUF's technical offering and tariffs for Licensed Public Electronic Communications Network Operators (LPECNO) with a view to enabling all users of interconnected networks to communicate freely with each other or access services. It covers the following interconnection and access offers:

1. Traffic routing to telephone numbers;
2. Traffic routing to VAS numbers;
3. Traffic routing to emergency and public utility numbers
4. Co-location and infrastructure sharing service.

In the context of the implementation of an interconnection between the CAMTEL-BUF network and that of an LPECNO, the provisions of this interconnection catalogue shall be used to draw up and sign an interconnection agreement between CAMTEL-BUF and the operator concerned.

II. DEFINITIONS

For the purposes of this catalogue, the following definitions shall apply:

Board: Telecommunications Regulatory Board (TRB)

Customer: Natural person or legal entity, identified by a number, who uses an electronic communication service for private or professional purposes.

Application-to-Person (A2P) Communication: Telephony service between application platforms and natural persons.

Person-to-Person (P2P) Communication: Telephone service between natural persons.

PDB: Primary Digital Block, refers to the grouping together of several communications on the same physical transmission medium, using a technique known as multiplexing. A PDB thus corresponds to a throughput of 2 Mbit/s.

Interconnection catalogue: Catalogue containing the reference technical and tariff offering for interconnection services, published by each LPECNO and approved by the Board.

Interconnection agreement: Agreement between CAMTEL-BUF and an LPECNO setting out the contractual relationship between the two parties with reference to the technical and tariff offering in force for interconnection services.

Circuit: Transmission equipment permanently interconnecting two interconnection points and enabling unidirectional or bidirectional transmission.

CLI: Calling Line Identification.

Communication Services Provider (CSP): Operator holding a category 1 licence with virtual fixed numbers acquired from those made available for the provision of A2P communication services to the public.

Count(s): Statistical statement(s) summarising the traffic exchanged between two operators and counted in terms of the number and actual duration of calls over a calendar month. Counts are drawn up for all interconnection links, distinguishing between each type of traffic corresponding to a specific tariff valuation.

Terminal equipment: Any device, installation or set of installations meant to be connected to a network termination point, and which transmits, receives or processes electronic communications signals.

Interconnection: Services offered by CAMTEL-BUF to an LPECNO and vice versa, which enable all their customers and those accessible to their respective networks to communicate freely with each other, regardless of the services they use.

IP interconnection: Reciprocal services provided by CAMTEL-BUF and LPECNO to establish connectivity links between their networks via Internet exchange points to enable customers of one network and those accessible to their network to communicate with customers of the other network via the available channels: Voice, SMS.

Interconnection interface: All the technical data relating to the throughput and the nature of the transmission media enabling two separate networks to be physically joined.

Internet Services Provider (ISP): Operator holding a category 1 licence with frequency resources allocated by the Board for the operation of a public Internet access network.

Interconnection links: Circuit enabling the connection between the Third Party Operator's network and a Point of Interconnection (POI) of the CAMTEL-BUF network, and which is used for routing interconnection traffic.

Media Gateway (MGW): Conversion equipment or service that transforms and converts multimedia streams (voice, text or video) between telecommunications networks using different network standards, communication protocols, coding techniques and physical connections, such that telephone calls work properly between networks that use different technologies.

Fixed numbers: These are numbers with the prefix "2" in the national numbering plan, activated on telephone lines identifying the customers of a fixed network operator for the provision of P2P and A2P communication services via Voice, SMS and Data channels.

Virtual fixed numbers: These are numbers with the prefix "2" in the national numbering plan, activated on application platforms identifying CAMTEL-BUF customers or those of a CSP-type operator for the provision of A2P communication services via Voice, SMS and USSD channels.

Mobile numbers: These are numbers with the prefix "6" in the national numbering plan, activated on SIM cards identifying the customers of a mobile network operator for the provision of P2P and A2P communication services via Voice, SMS, USSD and Data channels.

VAS numbers: These are short or long numbers with the prefix "8", activated on application platforms identifying a VAS Operator for the provision of A2P value-added communication services accessible via Voice, SMS or USSD channels.

Third-party operator: Any natural person or legal entity holding a concession or licence operating a public electronic communications services network or holding a prior declaration receipt providing public electronic communications services.

VAS operator: Any third-party operator using VAS numbers to provide value-added services.

LPECNO: Operator running a public electronic communications network, holding a Licence and owning a block of fixed or mobile numbers and frequency resources allocated by the Board.

Interconnection point: Place where CAMTEL-BUF or a third-party operator sets up the interface equipment enabling interconnection to its network.

Reconciliation of counts: Comparison, in a simultaneous exchange, of the counts established by each of the operators with a view to approving, in a report, the amounts to be deducted for the billing of the various respective termination services.

Session Initiation Protocol (SIP). This is an IETF protocol described in document RFC3261, which is gradually replacing H.323 and is widely used for all voice over IP transmissions.

Value-added services: Content service offered by a VAS operator by means of application platforms accessible to CAMTEL-BUF customers via the Voice channel in Pull or Push mode.

Bearer service: Simple information transport service meant either to transmit, or to transmit and route signals between termination points of an electronic communications network, without subjecting these signals to any processing other than that required for their transmission, routing and the control of these functions.

Signalling: Integrated into the Media Gateway, the signalling function ensures the exchange of information within the interconnection link required for routing communications.

Call termination: Traffic routing service provided by CAMTEL-BUF from one of its points of interconnection to customers on its network and customers accessible from its network.

Traffic: Volume of voice, SMS and data communications carried by any operator.

Transmission: Transport of information from one point in the network to another. The transmission media can be copper or optical fibre cables, or microwave links.

ITU-T: Telecommunication Standardisation Sector of the International Telecommunication Union (ITU).

Voice over Internet Protocol (VoIP): Voice service transported over an IP network.

VPN: Virtual Private Network.

Other terms and expressions used in this catalogue shall have the meaning given to them by the law governing electronic communications or any other instrument governing telecommunications in Cameroon or, failing that, the relevant ITU-T definition.

III. INTERCONNECTION SERVICES

III.1 List and Description of Points of Interconnection

The points of interconnection (POI) CAMTEL-BUF offers LPECNOs are as follows:

Description	Sites	Type of Signal
MGW YAOUNDE	CAMTEL-BUF building Yaounde, Centre	Code No. 7 ISUP SIP protocol
MGW DOUALA	CAMTEL-BUF building Douala-Bepanda	Code No. 7 ISUP SIP protocol

Interconnection with the CAMTEL-BUF network can be made via 2 (two) points of interconnection, located in the premises hosting the Media Gateways. These points enable a two-way exchange of traffic.

III.2 Technical Terms and Conditions of Interconnection

The technical connection offering presented in this catalogue enables all types of traffic (Voice, SMS, USSD) originating from or destined for LPECNOs to be carried under conditions of quality and technical availability identical to those for all communications carried on the CAMTEL-BUF network.

The LPECNO must organise its translation, routing and conveyance system in accordance with the technical specifications defined by CAMTEL-BUF and the Board's National Numbering Plan.

With regard to local traffic carried by the LPECNO on interconnection links, only numbers duly allocated or declared by the Board shall be routed by CAMTEL-BUF.

Two interconnection modes are proposed for routing traffic:

- interconnection in TDM mode via SS7,
- interconnection in IP mode via VPN.

III.2.1 Interconnection in TDM Mode

Connection interface

The connecting link shall consist of a set of 2Mbps PDB links. The connection interface complies with recommendation ITU-T G.703.

Warning, signalling, fault location and intervention procedures are defined in the interconnection agreement between CAMTEL-BUF and LPECNO.

Signalling Protocols

The signalling protocol to be used for the interconnection of LPECNOs will be signalling system No. 7 based on ISUP (ITU-T Recommendation No. Q.761-Q.764 1992 Specifications of ISDN User Part) in the POIs in Yaounde and in Douala.

The opening of a link with an LPECNO shall be preceded by a series of validation and compatibility tests in accordance with the regulatory provisions and the interconnection agreement.

III.2.2 Interconnection in IP Mode

Connection interface

CAMTEL-BUF has deployed a specific IP infrastructure at its Media Gateways to enable interoperability of services with third-party operators via IP routers, with physical connection interfaces of **X Gbps**.

CAMTEL-BUF's service points, generally Interconnection Session Border Controller (I-SBC) platforms, specific to the service, are meant to enable the concentration of Media flows and Signalling flows handed over by the LPECNO in the CAMTEL-BUF network. These service points are the only interface points for CAMTEL-BUF's infrastructure. Their IP address shall be provided to the third-party operator as part of the service.

CAMTEL-BUF and the LPECNO shall each take all measures to ensure the sizing of the number of IP Sessions necessary for the flow of IP traffic from the point of interconnection.

Signalling Protocols

The signalling protocols that can be used to interconnect LPENCOs shall be SIP for voice traffic and SMPP for SMS traffic (for A2P traffic).

Prior to opening a link with any network, a series of tests shall be conducted to validate the compatibility of the protocol, the list and conditions of which shall be specified in the interconnection agreement.

III.3 Financial Terms and Conditions of Interconnection

All rates quoted are in CFA francs and exclusive of tax.

III.3.1 Interconnection links

Service	Rate
Provision of PDB (2Mbps)	CFAF 800,000 per E1 port per year
Provision of IP sessions	Free of charge

III.3.2 Traffic routing to telephone numbers

a) Types of traffic routing to telephone numbers

- P2P voice termination:** This service shall consist, on CAMTEL-BUF's part, in routing voice traffic originating from an LPECNO to its numbers allocated as CLI, from the point of interconnection to the terminals of customers on its network.
- P2A voice/SMS termination:** This service shall consist, on CAMTEL-BUF's part, in routing voice/SMS traffic originating from an LPECNO to its numbers allocated as CLI, from the point of interconnection to platforms identified by CAMTEL-BUF's declared virtual fixed numbers or those of a CSP-type third-party operator interconnected to its network.
- A2P voice/SMS termination:** This service shall consist, on CAMTEL-BUF's part, in routing voice/SMS traffic collected by an LPECNO and originating from platforms to virtual fixed-line numbers declared as CLI, from the point of interconnection to the terminals of customers on its network.
- Voice termination for incoming international calls:** This service shall consist, on CAMTEL-BUF's part, in routing international voice traffic originating from an LPECNO to international numbers as CLI, from the point of interconnection to the terminals of customers on its network.
- Voice termination for outgoing international calls:** This service shall consist, on CAMTEL-BUF's part, in routing international voice traffic originating from an LPECNO to its numbers allocated as CLI, from the point of interconnection to the terminals of customers on international networks.

b) Tariff for terminating traffic on telephone numbers

Service	in CFAF (T.E.)	
	Peak Hour Rates (7:00 am-8:59 pm)	Off-Peak Hour Rates (9:00 pm-6:59 am)
P2P voice termination	CFAF 10/min	CFAF 8/min
P2A voice termination	CFAF 8/min	CFAF 8/min
P2A SMS termination	CFAF 2/SMS	CFAF 2/SMS
A2P voice termination	CFAF 8/min	CFAF 8/min
A2P SMS termination	CFAF 1/SMS	CFAF 1/SMS
Voice termination for incoming international calls	CFAF 12/min	CFAF 10/min
Voice termination for outgoing international calls	To be negotiated	To be negotiated

Billing Terms and Conditions:

CAMTEL-BUF shall bill LPECNO for all completed communications (Voice, SMS) on the basis of the termination rate in force and corresponding to each type of traffic.

A monthly bill shall be issued once traffic counts are reconciled.

Note on the volume of communications:

The volume of communications shall be calculated at the end of each month of the calendar year, on the last day of the month at 12:00 am.

For voice calls, call duration shall be calculated per second. The monthly sum of calls, by type and in seconds, shall be rounded to the nearest minute. The call volume to be billed shall then be the total duration in minutes.

The chargeable duration of each call shall be “the duration of the conversation” in accordance with ITU-T Recommendation No. D150, in particular section 1.2.2.

For SMS messages, the volume to be billed shall be the number of messages with DLR.

III.3.3 Traffic routing to VAS numbers

a) Types of traffic routing to VAS numbers

1. **P2A voice termination:** This service shall consist, on CAMTEL-BUF’s part, in routing voice traffic originating from an LPECNO to its numbers allocated as CLI, from the point of interconnection to platforms identified by VAS numbers used by CAMTEL-BUF or a VAS operator interconnected to its network.
2. **A2P voice termination:** This service shall consist, on CAMTEL-BUF’s part, in routing voice traffic originating from an LPECNO to VAS numbers from the point of interconnection to the terminals of customers on its network.

b) Types of traffic routing to VAS numbers

Service	Rate (in CFAF, T.E.)
P2A voice termination on VAS short numbers as recipient	CFAF 8/min
A2P voice termination on VAS short numbers as CLI	CFAF 8/min

Billing Terms and Conditions

CAMTEL-BUF shall bill LPECNO for all completed communications on the basis of the termination rate in force and corresponding to each type of traffic. The monthly bill shall be issued once traffic counts are reconciled.

Note on the volume of communications:

The volume of communications shall be calculated at the end of each month of the calendar year, on the last day of the month at 12:00 am.

For voice calls, call duration shall be calculated per second. The monthly sum of calls, by type and in seconds, shall be rounded to the nearest minute. The call volume to be billed shall then be the total duration in minutes.

The chargeable duration of each call shall be “the duration of the conversation” in accordance

III.3.4 Traffic routing to emergency and public utility numbers

These shall be A2P voice-type services operated by public bodies on special dedicated short numbers allocated by the Board, which shall be accessible free of charge in Pull or Push mode to all customers on all telephone networks.

a) Types of traffic routing to emergency and public utility numbers

- 1) **P2A voice termination:** This service shall consist, on CAMTEL-BUF's part, in routing voice traffic originating from an LPECNO to its numbers allocated as CLI, from the point of interconnection to the emergency or public utility service platforms identified by short numbers and accessible from its network.
- 2) **A2P voice termination:** This service shall consist, on CAMTEL-BUF's part, in routing voice traffic collected by an LPECNO and originating from short numbers as CLI, from the point of interconnection to the terminals of customers on its network.

All P2A voice traffic of emergency and public utility services shall be routed free of charge from the CAMTEL-BUF point of interconnection to the call centre management platform operated by the public body.

All A2P voice traffic of emergency and public utility services shall be routed free of charge from CAMTEL-BUF's point of interconnection to customers on its network.

b) List of emergency and public utility services

Emergency services	Short toll-free number
Police	117
Fire Brigade	118
Gendarmerie	172

Public utility services	Short toll-free number
Report acts of corruption	1517
Combating illegal trade	1502
Abuse in hospitals	1506

IV. CO-LOCATION AND INFRASTRUCTURE SHARING SERVICES

IV.1 Technical Terms and Conditions for Co-location

CAMTEL-BUF shall offer the co-location service to LPECNOs that want to implement the interconnection link themselves. Where the equipment is located on its premises, CAMTEL-BUF shall be notified of any intervention thereon.

To implement an interconnection link up to a point of interconnection, the service provider may use CAMTEL-BUF's infrastructure, within the limits of the site's available hosting capacities (land, power supply, building, tower, conduits, etc.), to install the transmission link's support.

IV.1.1 Terminal Equipment Hosting

Where possible, the terminal equipment used for transmission may be installed in a room reserved for the LPECNO and located in CAMTEL-BUF's building or in a room built by the LPECNO on CAMTEL-BUF's site. In both cases, the LPECNO shall be responsible for the operation and maintenance of their equipment. The connection of the LPECNO's equipment to CAMTEL-BUF's PCM distribution frame shall be implemented by a joint CAMTEL-BUF/LPECNO team.

In exceptional cases, terminal equipment used for transmission may be installed in a CAMTEL-BUF transmission room. The said equipment must be installed in a watertight cabinet that also contains the secondary power supply equipment and air conditioning. CAMTEL-BUF may, under terms to be negotiated, handle the first level operation and maintenance of the equipment housed in its rooms.

The terms under which the LPECNO shall access the room the said equipment is installed shall be specified in an infrastructure sharing agreement.

IV.1.2 Towers

With regard to towers, the requesting LPECNO shall provide, in particular:

- the characteristics (radio and mechanical) of the antenna;
- the installation height on the tower, the weight and size of the antenna.

The hosted equipment must comply with the latest ITU-T and ITU-R technical standards, as well as any other technical standards set by CAMTEL-BUF in the interconnection agreement, including those related to environmental compliance.

The list of towers proposed for sharing by CAMTEL-BUF is provided in the appendices.

IV.1.3 Power Supply

The infrastructure sharing agreement shall specify the terms for the provision of power by CAMTEL-BUF, the terms of access to the equipment, the terms and conditions of maintenance, the documentation, the material to be provided by the service provider and additional services.

IV.2 Pricing

Type of Service	Rate (in CFAF, T.E.)
Towers	<p>Based on a cost estimate according to the calculation formula below.</p> $C = a_i(R_j * M_k + E_n)$ <p>ai: coefficient pertaining to the category of the tower. Rj: radio characteristics of the antenna Mk: mechanical characteristics of the antenna En = Characteristics of the footprint on the tower</p>
Land	<p>Based on a cost estimate according to regions, price per m2, surface area required (surveys, surveys, miscellaneous research).</p> <p>Undeveloped land:</p> <ul style="list-style-type: none"> - Yaounde, Douala, Kribi, Limbe: CFAF 7,000/m2/yr - Other towns: CFAF 5,000/m2/yr - Rural areas: CFAF 3,000/m2/yr
Building	<p>Douala, Yaounde, Kribi, Limbe: CFAF 90,000/m2/yr</p> <p>Other urban areas: CFAF 60,000/m2/yr</p> <p>Rural areas: CFAF 40,000/m2/yr</p>
Back-up power supply	<p>CFAF 500 /KWH/month</p> <p>+ fixed premium of CFAF 2,865/KW/month</p>
Air-conditioning	<p>On the basis of equipment installed and capacity requested.</p>

V. APPENDICES

- Appendix 1: Global architecture of interconnection services
- Appendix 2: List of CAMTEL-BUF towers