

Telenet Group Mobile IP Reference Interconnect Offer

25/10/2021

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1 Introduction

1.1 Scope of the Mobile IP Reference Interconnect Offer

The present Mobile IP Reference Interconnect Offer concerns the Mobile IP interconnect services Telenet Group offers to an Operator, in order to allow end-users connected to or via the Network of that Operator to communicate with end-users connected to Telenet Group's Network.

The present IP Reference Interconnect Offer has been elaborated in accordance with the BIPT Decision of 26 May 2017 pursuant to which Telenet Group has the obligation to publish a Reference Interconnect Offer for the Terminating Access Service for voice calls to the mobile numbers of Telenet Group located in Belgium or roaming abroad, for traffic originating in the EEA or outside the EEA.

The scope of this Mobile IP Reference Interconnect Offer is strictly limited to the services which Telenet Group must include in its standard reference offer in accordance with such decision. For the sake of clarity, this only concerns the termination service of voice calls to the mobile numbers of Telenet Group.

Prior to the publication of this Mobile IP Reference Interconnect Offer, this Offer has been provided to the BIPT. Following a pre-consultation conducted by the BIPT, certain adjustments and clarifications have been made.

Without prejudice to the rights of Telenet Group provided by the regulatory framework, Telenet Group cannot be considered as responsible for the inability of the Operator equipment to properly interpret and process the relevant signalling elements. In this respect Telenet Group is following amongst others the international standards (ITU-T and ETSI).

The present Mobile IP Reference Interconnect Offer is not a binding offer and does not oblige Telenet Group to provide the services set forth in the present Mobile Reference Interconnect Offer. Such services will only be provided following the negotiation and conclusion of an Interconnect Agreement.

Telenet Group reserves the right to modify its terms and conditions following any further review.

The point of contact with respect to this Mobile IP Reference Interconnect Offer is:

Telenet Group
Interconnect Department
Liersesteenweg 4, 2800 Mechelen

1.2 Limitations of the Reference Interconnect Offer

Modifications to the prices and conditions for Interconnection contained in the present Mobile IP Reference Interconnect Offer can be made at any time subject to the conditions for such modification set out in the applicable regulatory framework.

This Mobile IP Reference Interconnect Offer does not cover Calls to Telenet Group numbers which are ported to other Networks. In general, this Mobile IP Reference Interconnect Offer does not consider issues of number portability.

Each Interconnect Agreement concluded with an Operator can include specific services negotiated between the two Parties which are not covered in the present Reference Interconnect Offer. The list of available services can be obtained by the Operator after the signing of a non-disclosure agreement.

Telenet Group is not responsible for the content of the communications conveyed through its interconnect services.

All prices indicated in this document are expressed in Euro or Eurocent and are exclusive of any taxes.

1.3 Definitions

The definitions included in this Mobile IP Reference Interconnect Offer are specific to this document and are without prejudice to the definitions contained in the applicable regulatory framework.

This Mobile IP Reference Interconnect Offer only applies to services that are explicitly included in this offer and, in case particular applications are indicated in the definition of some services, the terms of the offer shall only be applicable for the applications concerned.

The capitalized terms in the present Mobile IP Reference Interconnect Offer have the meaning as defined below:

Access Point:	Physical interface within Telenet Group Network to which Interconnect Links can be connected (a similar physical interface is defined in the Operator's Network) and through which Interconnect Services can be obtained
Act:	The law of 13 June 2005 on electronic communications
BIPT:	Belgian Institute for Postal services and Telecommunications
BIPT Decision of 26 May 2017	Decision of 26 May 2017 regarding the market definition, market analysis, identification of SMP Operators and the determination of appropriate remedies for market 2: termination on mobile networks.
Call Attempt:	An attempt to establish a Call. In VoIP (Voice over IP), a call attempt corresponds to a SIP session setup attempt.
Call (s):	The establishment of a SIP session through a Network for the transmission and the delivery of a voice communication, from the terminal on which this communication has been generated to the terminal to which this communication is addressed, or to a network platform or to any other facility giving an automatic answer in the cases where the connection cannot be established.
Capacity (of the Interconnect Link):	The maximum amount of data throughput that the physical links can contain. The capacity of the interconnect interface is typically 1GB ¹ . The actual throughput over that physical link might be limited to an agreed value corresponding to the required capacity. The number of simultaneous SIP sessions will be limited at SBC level to the agreed capacity.
CLI:	Calling Line Identification, as presented in the PAI (P-asserted-identity) field

¹ Only if the traffic volumes justify a larger capacity, a 10GB will be installed.

Commission	The European Commission, the executive of the European Union, responsible for initiating laws, enforcing the laws of the EU and managing the EU's policies
Delegated Regulation	The Commission Delegated Regulation (EU) 2021/654 of 18/12/2020, setting a single maximum Union-wide termination rate.
Demarcation Point:	The physical point where Telenet Group's Network and the Operator's Network are interconnected. The Demarcation Point is the boundary between the Telenet Group and the Operator domains of responsibility. This point is typically located in a third-party data centre.
EDU	Ethernet Demarcation Unit
Interconnect Agreement:	An agreement concluded between Telenet Group and an Operator which describes, amongst other things, the technical, operational, billing, planning and financial conditions for the Interconnect Services between Telenet Group and the Operator.
Interconnect Link:	A Link between two Access Points located, respectively, in Telenet Group's Network and in the Operator's Network in order to enable the provision of Interconnect Services, except for the transport Interconnect Service. Interconnect links are composed of a pair of 1GB ² interfaces in a 1+1 geo-redundant setup.
Interconnect(ion):	Cf. the Act, Article 2, 19°
Network:	Cf. the Act, Article 2, 3°
Operator:	A duly authorised public telecommunications network operator, who has obtained numbering capacity from BIPT and has at least 2 Access Points in Belgium.
Party (ies):	Depending on the context, Telenet Group and/or the Operator entering into an Interconnect Agreement
SBC:	Session Border Controller: Network element terminating the interconnect SIP trunks. This node controls the SIP Signalling with the interconnect partner and is the relay for the exchanged media streams (RTP)
Successful Call:	A Call during which an answer signal (in the backward direction) has been received in accordance with the applicable international recommendations
Terminating Access Services:	Interconnect services offered at a Telenet Group Access Point in which Telenet Group conveys the Calls handed over by the Operator and directed to Telenet Group numbers from that Telenet Group Access Point to the destinations concerned
Unsuccessful Call:	All Calls which have passed through the Telenet Group Access Point and which are not Successful Calls
Working Day:	Each day except Saturday, Sunday and the national legal holidays in Belgium

² Only if the traffic volumes justify a larger capacity, a 10GB will be installed.

2 Terminating Access Services

2.1 Physical & IP connectivity

The Telenet Group Network is composed of one single area and is accessible from a number of possible Access Points. These access points are located in following third party data centre buildings:

Interxion Zaventem	Wezembeekstraat 2, bus 1 – 1930 Zaventem
LCL Antwerpen	Noorderlaan 133 – 2030 Antwerpen
LCL Diegem	Kouterveldstraat 13 – 1831 Diegem
Level 3	Avenue Léon Grosjean 2 – 1140 Evere

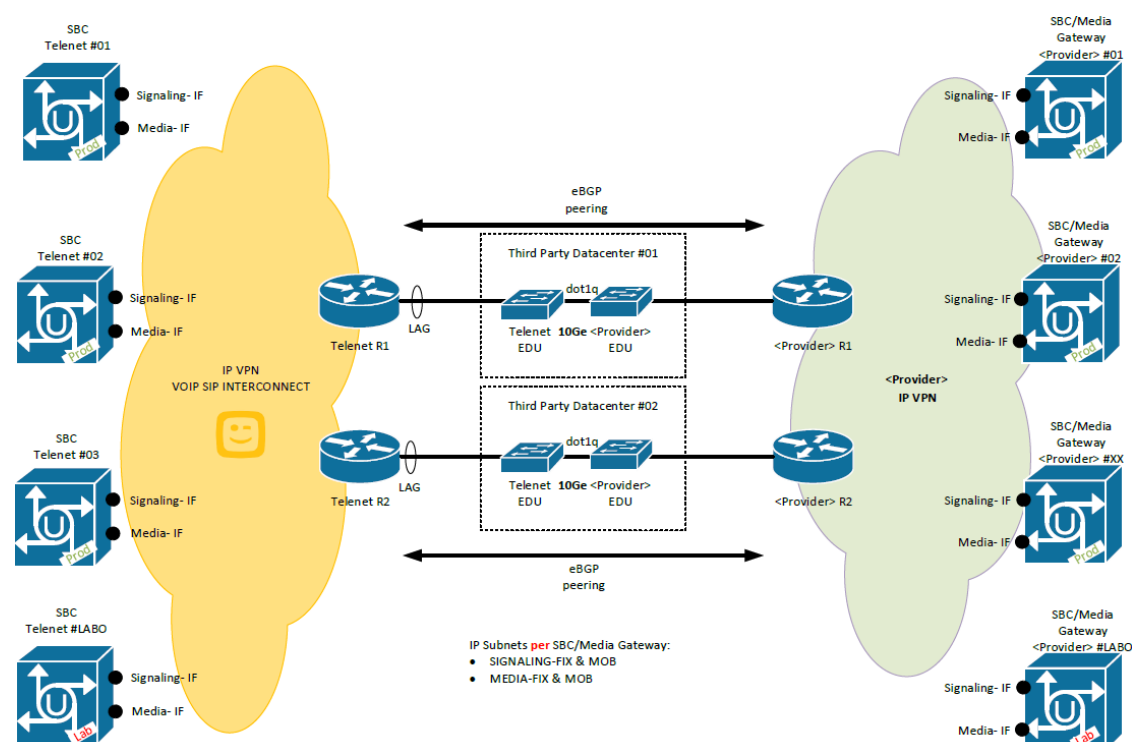
Upon request of the Operator, Telenet Group may, exceptionally, investigate alternative Access Points. Telenet Group may decide, at its sole discretion and after a case by case assessment, whether or not Telenet Group will offer such alternative Access Point. Any costs related to this assessment and the physical connection for the alternative Access Point (if Telenet Group agrees to provide this Access Point) will be charged to the requesting Operator.

Interconnection is realized by the linking of two Access Points each of them located in the Networks to be interconnected. The linking of Access Points is implemented by means of an Interconnect Link.

The standard Interconnection to Telenet Group Network is based on two 1+1 geo-redundant interconnect links.

Telenet Group supports both IPv4 and IPv6 for the SIP interconnects.

Both Telenet Group and the Operator will each install one EDU in each third-party data centre, and will interconnect to each other with a 1GB interfaces. Only if the traffic volumes justify a larger capacity, a 10GB will be installed (see also 2.5).



The demarcation point between the two networks is the patching between the two EDUs. The Party having ordered the patching to data centre is liable for the patching itself.

One single VLAN per physical interconnect link shall be used for both SIP and RTP.

BGP protocol is used for peering between the Parties and for routing/redundancy over the 1+1 NNI interfaces.

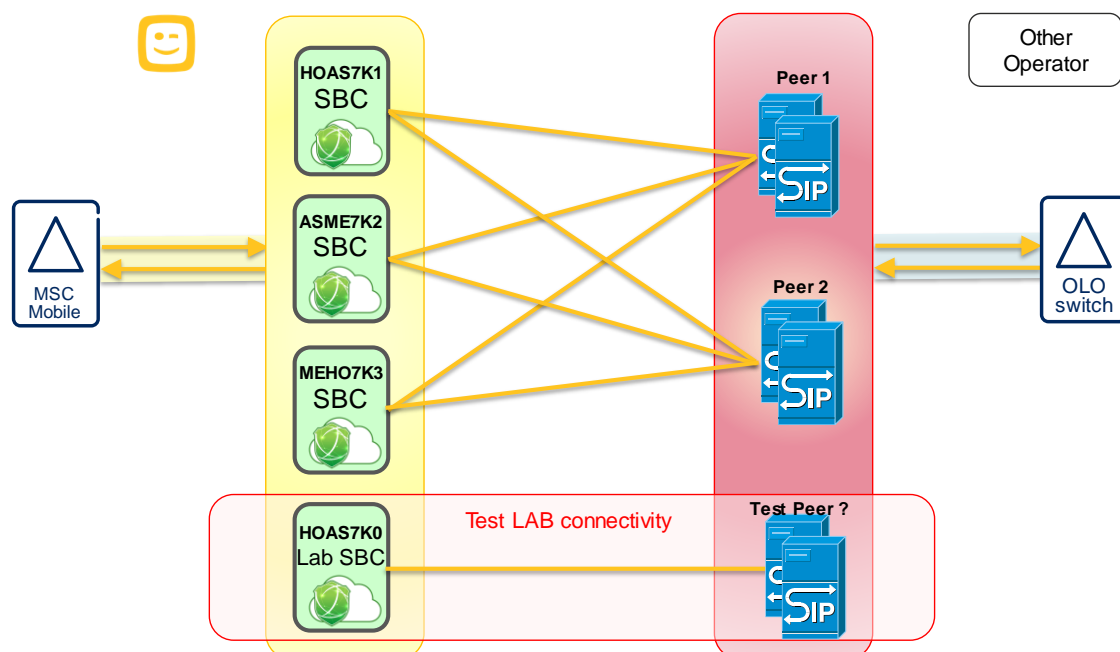
All SBC's IPs shall be advertised over both links.

Both SIP and RTP messages are transported over UDP protocol.

2.2 SIP trunk Groups connectivity

SIP trunks are established over the above-described IP connectivity

- A meshed topology shall be built between the 3 production SBCs of Telenet and the x (minimum 2) SBCs/SIP servers of the Operator.
- The traffic terminated to Telenet must be properly load-balanced between the 3 production SBCs
- Different trunks will be built for incoming and outgoing traffic (a different IP address will be allocated on each Telenet SBC for incoming and outgoing trunk termination)
- Setup of a new interconnect will always start with the setup of a test LAB environment from LAB Telenet SBC to LAB (or production if no LAB is available) SBC/SIP server of the Operator. This test setup shall remain in place for validation of future configuration changes (future regression testing)



2.3 SIP header and Numbering format

SIP protocol shall be “native” SIP, without encapsulated ISUP

Numbers shall be sent in international format (E.164) and be preceded with “+” sign

- Example: sip:+<CC><NSN>@<domain>;user=phone
- <domain> is “free” format, eg. IP of the SBC)

- SIP URI shall be used (rather than TEL URI [tel: +<CC><NSN>])

Numbers with a hexadecimal prefix (for instance preceded by a porting code) shall be sent without the "+" sign. The prefix CXXXX shall be followed by national significant digits only (without leading zero):

- Example: sip:CXXXX<NSN>@<domain>;phone-context=+32;user=phone

PAI (P-Asserted-Identity) is mandatory and must provide the correct and complete CLI.

Call diversion: History-Info (RFC 4244) is the preferred format. Diversion header (RFC 5806) is supported as well. In case of both are present History info prevail.

Supported SIP methods are "INVITE", "ACK", "CANCEL", "BYE", "PRACK", "OPTIONS", "UPDATE".

Following messages are not expected over interconnect trunks: "INFO", "SUBSCRIBE", "NOTIFY", "REFER", "REGISTER", "PUBLISH", "MESSAGE"

2.4 SIP SDP – Session Description Protocol

- Both Parties will support G.711, A-law codec (20ms packetization) and offer it in ALL call setup (at least as last resort codec).
- DTMF will be sent according to RFC 2833 (telephone-event).
- Call from/to Telenet Group to/from the Operator can optionally contain additional codecs from the AMR family. In that case the chosen codec shall be end to end negotiated. The purpose of this negotiation is to avoid transcoding and potentially offer higher voice quality thanks to HD codec (AMR-WB).
- In case no common compatible flavour of AMR codec is found between the 2 end points, G.711 is selected as last resort.
- For reference, find below the supported codec that will be offered and can be received by the current Mobile network of Telenet Group. This example offer is subject to change at any time in the future.
 - AMR-WB/16000 - mode-set=0,1,2;mode-change-period=2;mode-change-capability=2;mode-change-neighbor=1;max-red=0
 - AMR/8000 - mode-set=0,2,4,7;mode-change-period=2;mode-change-capability=2;mode-change-neighbor=1;max-red=0
 - AMR/8000 - mode-set=7;max-red=0
 - PCMA/8000 <- **Mandatory Codec (at least last resort)**
 - telephone-event/16000 or telephone-event/8000 (RFC 2833 for DTMF)

2.5 Capacity dimensioning

Physical interface of the interconnection will be a 1GB³ Ethernet interface. This capacity can typically convey ~10000 simultaneous calls (depending on the codec used).

Only if the traffic volumes would justify, or if other service are making use of the same pair of NNI interface, connectivity will be established with 10 GB Ethernet interfaces.

A throughput limitation will be applied to the VLAN carrying SIP & RTP traffic. This soft limit in throughput is set for security reasons and to avoid flooding of unexpected traffic. The typical IP throughput threshold will be set to 150% of the designed capacity assuming G.711 codec (150 * Number of simultaneous calls * 100 kbps/call)

³ Only if the traffic volumes justify a larger capacity, a 10GB will be installed.

A limit will be set at SBC level for the number of simultaneous sessions:
This maximum number will be set for incoming traffic, for outgoing traffic and for total traffic per set of trunk group.
This maximum will be agreed at the time of the setup and can be modified later on in order to adapt to the evolution of the interconnect traffic volume.

2.6 Termination rates

The voice traffic, generated by end-users on or via the Operator's Network and directed to the Telenet Group Network is to be conveyed from the Operator's Access Point to one or more Telenet Group Access Points.

The Terminating Access Service for Calls coming from a national, EEA or ex-EEA origin to Telenet Group Network and the terms and conditions applicable to it are available for Calls handed over by the Operator to the Telenet Group Network, destined for mobile numbers of Telenet Group located in Belgium or roaming abroad, for traffic originating in the EEA or outside the EEA.

The Terminating Access Service is meant to cover all calls of national, EEA (incl third countries listed in the Annex to the Delegated Regulation as foreseen by article 1, paragraph 4 of the Delegated Regulation) or ex-EEA origin destined to be terminated on:

- 1) a mobile number range assigned by BIPT to Telenet Group, not listed in the CRDC (non-ported);
- 2) a mobile number range assigned by BIPT to Telenet Group and last assigned to Telenet Group in the CRDC (ported back);
- 3) a mobile number range not assigned by BIPT to Telenet Group, and last assigned to Telenet Group in the CRDC (ported-in).

Each Successful Call shall only be charged for its call duration (measured on a per second basis) in accordance with the applicable rate per minute, except that surcharges for fraudulent traffic may apply.

The rates will be applied per Origin Group, based on the origin of the call as determined by the Origin CLI.

The Telenet Group termination service for national or EEA (incl third countries listed in the Annex to the Delegated Regulation as foreseen by article 1, paragraph 4 of the Delegated Regulation) origin traffic will be charged in accordance with the tariff regulation imposed by the Commission via the Delegated Regulation, the BIPT or another competent body. These charges can therefore be modified at any point in time pursuant to the intervention of the Commission, the BIPT or another competent body, and are taken up as an Annex to this Offer (see Annex 1).

These tariffs are also applicable to calls to non-Telenet Group numbers ported to the Telenet Group Network, which are handed over by the Operator at a Telenet Group access point. These tariffs will not be applicable for calls to Telenet Group numbers ported to another Network.

Telenet Group is entitled to review and modify the rates from time to time by assigning an Origin Country to another Origin Group, with a notice period of at least 1 calendar month whereby the resulting rate modification will only be applicable as of the first day of the second calendar month following the notification.

Telenet Group is entitled to modify the structure of the Origin Group rating from time to time by implementation of any means or principles impacting this rating structure, such as reducing or increasing the number of Origin Groups or applying call setup fees, with a notice period of 2 calendar months whereby the resulting rate modification

will only be applicable as of the first day of the third calendar month following the notification.

In case of addition of a Member state to the EEA, this Member States will be deemed to be included into Origin Group 1. In case of exit of a Member State from the EEA, Telenet Group is entitled to exclude this Member State from Origin Group 1 and include into an Origin Group to be specified by Telenet Group.

The Operator will be considered to have accepted to the above price conditions if he has conveyed traffic to Telenet Group's access point.

In case of modification or annulment by a court or other competent authority of a regulation or decision of the Commission, the BIPT or another competent body imposing a reduction on tariffs (such as MTRs), or in case of withdrawal of such a decision by the the Commission, the BIPT or another competent body, Telenet Group reserves the right to apply the tariffs charged before this modified, annulled or withdrawn regulation or decision of the Commission, the BIPT or another competent body (or any other tariff the court, the Commission, the BIPT or another competent body would set). Telenet Group is also entitled to retroactively apply the tariffs charged before the modified, annulled or withdrawn regulation impacted the tariffs, meaning that Telenet Group may claim payment of the difference between (i) the amounts paid on the basis of the tariffs in accordance with the modified, annulled or withdrawn regulation or decision of the Commission, the BIPT or another competent body and (ii) the amounts payable on the basis of the tariffs charged before the modified, annulled or withdrawn regulation (or, if applicable, the tariff set by the court, the Commission, the BIPT or another competent body) plus interest for late payments.

The Operator is responsible for determining the prices for its retail and wholesale offers towards its customers, and for the invoicing of its end-users and customers for the Calls to Telenet Group numbers.

2.7 Request for interconnection and ordering procedure

2.7.1 Start of interconnect negotiations

Interconnect negotiations with an Operator can only start after signing an NDA and the transmission to Telenet Group of a standard declaration granted by the competent authority that evidences that the Operator made the notifications required for the provision of electronic communication networks and services (cfr BIPT website form in relation to the notification of publicly available electronic communications services or public electronic communications). The bringing into service of an Interconnection will be subject to the signature of an Interconnect Agreement with Telenet Group covering the services to be provided. Any bringing into service of an additional interconnect service is subject to the conclusion of a commercial agreement concerning the additional interconnect service concerned. The reception by Telenet Group of the evidence that the Operator has been granted the adequate type of standard declaration granted by the competent authority (evidencing, *inter alia*, the authorization entitling the Operator to the benefit of the present Mobile IP Reference Interconnect Offer), is one of the prerequisites for the conclusion of an Interconnect Agreement.

2.7.2 Interconnection orders

Orders for interconnection and Capacity will only be valid after the signing of the Interconnect Agreement.

At all times, Telenet Group reserves the right to submit questions to the BIPT regarding the demand for interconnection Capacity, its degree of reasonableness and its relationship with the feasibility for Telenet Group to implement such demand in order to

determine what measures need to be taken to cope with any delays which may occur in the provision of the Capacity concerned.

For any requests to migrate from an existing TDM interconnect to an IP interconnect, the Operator must migrate all of its Voice Telephony Services under the existing interconnect agreement from the TDM interconnect to the IP interconnect. No parallel routes on TDM and IP are allowed for the Terminating Access Service, except during the testing and transition period.

2.7.3 Dimensioning and payment of the Interconnect links

The Operator requesting Interconnection with the Telenet Group Network is responsible for the dimensioning and payment of the Interconnect Links conveying the traffic handed over at the Telenet Group Access Point in order to use Telenet Group's Terminating Access Services.

2.7.4 Implementation of the Interconnect links

The physical linking between the Parties is based upon the linking of the respective Access Points via a third party provider, as included in art 2.1, by means of minimum 2 redundant 1Gb Interconnect Links, each link having 1 VLAN. Redundancy will be managed by the BGP.

The Operator is responsible for requesting and implementing connectivity up to the Telenet Group Access Point, and the inhouse cabling to connect to the Telenet Group EDU.

All one-off and recurring costs for this connectivity and cabling are borne by the Operator.

The Operator is responsible to ensure appropriate protection on the interconnect links which it connects to Telenet Group's Network until the Demarcation Point.

2.7.5 Implementation and testing fees

Telenet Group incurs various significant costs for the implementation and testing of a direct Interconnect, such as costs for design and configuration, the setup and testing of the interconnection between the networks, the configuration and testing of the Services.

Telenet Group will charge the Operator for these costs a one-off implementation and testing fee of €55,445, and the Operator will pay these costs within 30 calendar days following the date of the invoice sent by Telenet Group.

2.7.6 Timing

Once the Interconnect Agreement is signed, the timetable below provides indicative timers for the implementation of firm orders.

The process is described in the following table. Queries during the process shall be addressed to the co-ordinator mentioned in the table. The Telenet Group co-ordinator will to be IC Technical Co-ordinator (ICTC).

Timer	Lead time	Activity	Operator	Telenet Group
T0		request for interconnect	Operator provides a formal request for interconnect via letter or email, clearly describing the requested services	

T1	T0 + 5 WD	NDA draft		Telenet Group confirms receipt of the request for interconnect, and provides the draft NDA to Operator for review
T2	T1 + 10 WD	NDA negotiations	Parties negotiate on the terms and conditions to be covered in the NDA	Parties negotiate on the terms and conditions and liabilities to be covered in the NDA
T3	T2 + 10 WD	NDA signed	Signing of the NDA	Signing of the NDA
T4	T3 + 5 WD	RIO		Telenet Group provides the RIO to Operator, requesting to confirm compliancy with the relevant requirements for interconnect
T5	T4 + 10 WD	RIO compliancy	Operator confirms compliancy with the relevant requirements for interconnect, and provides the relevant documents	
T6	T5 + 10 WD	IC agreement draft		Telenet Group updates the draft IC agreement for the requested services, and provides the draft IC agreement to Operator for review
T7	T6 + 60 WD	IC agreement negotiations	Parties negotiate on the terms and conditions to be covered in the IC agreement	Parties negotiate on the terms and conditions to be covered in the IC agreement
T8	T7 + 10 WD	IC agreement signed	Signing of the Interconnect agreement	Signing of the Interconnect agreement
T9	T8 + 15 WD	TIC meeting + design	Statement of requirement submitted to Telenet Group. Statement of requirement to include links to be implemented between Telenet Group and Operator and link information	Telenet Group checks the proposed technical requirements. Telenet Group checks the proposed RFS and confirms to Operator that target dates are achievable.
T10	T9 + 10 WD	firm order	Operator submits firm order to Telenet Group (for requirements agreed during TIC meeting)	Telenet Group acknowledges receipt of the firm order
T11	T10 + 12 WD	Implementation	Implementation (internal procedures). Operator confirms to Telenet Group that Operator part is ready and stand-alone tested	Implementation (internal procedures). Telenet Group confirms to Operator that Telenet Group part is ready and stand-alone tested
T12	T11 + 5 WD	testing planning	Operator contacts Telenet Group and makes an appointment for switching continuity test	Telenet Group confirms testing date, and prepares testing scenarios
T13	T12 + 12 WD	testing phase 1	Perform per link continuity testing. Activation at switch level (only for links with successful continuity test)	Perform per link continuity testing. Activation at switch level (only for links with successful continuity test)
T14	T13 + 10 WD	testing phase 2	For links with failed continuity test: Identify fault and fix end-to-end continuity. Activation at switch level.	For links with failed continuity test: Identify fault and fix end-to-end continuity. Activation at switch level.
T15	T14	Acceptance	Confirm to Telenet Group that IC is operational and accepted	Confirm to Operator that IC is operational and accepted

3 General conditions and service levels

3.1 Service levels

Telenet Group shall implement Interconnection within the scope of Article 2 hereof in good faith and diligently. In particular, Telenet Group shall use its best efforts to find reasonable technical and operational solutions for any difficulties which may occur in respect of the initial implementation and set-up of the Interconnection of their Networks and which are notified by one Party to the other. Telenet Group shall however not be required to incur any costs or make any investments to provide such technical and operational solutions, unless the Operator approves these solutions in advance and undertakes to compensate Telenet Group fully for such costs or investments.

The Parties shall set up an Interconnection coordination group which shall handle all technical, operational, planning, billing and service aspects related to the Interconnection. The Interconnection coordination group shall meet 2 times per year or upon a Party's reasonable request to the other Party. Such a request shall be transmitted by email and shall contain a proposed agenda and a proposed time, place and date for such meeting.

Telenet Group shall, in accordance with its normal engineering practices, use its best efforts to correct faults which occur in its network materially affecting the Termination Access Services. Telenet Group does not warrant that its Network is, or will be, free from faults.

Telenet Group shall convey the Operator's Calls at the same standard and quality of service as for the conveyance of similar Calls for other interconnected partners.

3.2 CLIP/CLIR services

The proper functioning of the CLIP/CLIR supplementary services depends on the availability of the CLI and the status of the relevant parameters to be transmitted in the signalling protocol indicating whether or not the CLI may be presented to the called end-user.

The Operator is required to respect the following minimum principles with respect to the use of the CLI in addition to any other regulatory obligations that may exist.

The CLI must always represent the correct number associated with the network termination point of the public network at which the Call was originated. The said number is a number that has been allocated by the competent authority. The Operator has to comply, to the extent technically possible, with the relevant ITU recommendations and the European Guidelines for Calling Line Identification as issued by the European Telecom Platform (22 January 1999).

The Operator is responsible and accountable for delivering the correct originating CLI for all the traffic originating on the Operator's network, or transited via the Operator's network, onto the Telenet Group network (CLI transparency).

3.3 Incident Management

3.3.1 Reporting incidents

Incidents can be reported via email or phone to the Telenet Group (GNOC) on a 24x7 basis. The GNOC will record the incident in the Telenet Group incident management system and provide the requester with an incident number which must be used in communication referring to the incident.

The working language of Telenet Group's GNOC is English and all communications will be in English.

When reporting an incident, the reporting party must provide the following basic information:

- Reporting party's contact details (name, phone, email, etc)
- Time that the incident occurred or was detected
- Description and impact
- Diagnostic information (tests already carried out and results, etc)

The contact details of Telenet Group GNOC are:

Telenet Group – Incident management and escalation matrix for 3rd parties				
When?	Who?	Primary phone number:	Backup phone number:	Email:
Normal contact	Ericsson GNOC	+3227284800	+918130062008	MobileMonitoring@telenetgroup.be
Escalation point L1	Ericsson GNOC IDM	+3227284800 (via GNOC) +91 9811990697 (direct contact)	+918130062008 (via GNOC) +91 9958001621 (direct contact)	gnoc.india.incident.managers@ericsson.com
Escalation point L2	Telenet Group IDM	+32 15 33 20 20 (Option 2)	+32 15 33 32 65 (Option 2)	F_TG_Mobile_Network_DM@telenetgroup.be
Escalation point L3	Telenet Group IM	Contact via Telenet Group IDM	+32 15 33 32 75 (if Telenet Group IDM cannot be reached for more than 30 min)	

GNOC: Global Network Operations Center
IDM: Incident Duty Manager

3.3.2 Incident priorities

Incidents reported to Telenet Group will be categorized according to the priority levels defined below:

Priority	Description
Critical	Incidents that severely affect the service. The service is not available and users are unable to make calls or the service quality is dramatically reduced for a significant number of end users. For example: <ul style="list-style-type: none"> • Interconnect or signalling Capacity loss of more than 50% • Complete service outage
Major	Incidents that have an impact on service quality but end users are able to make calls. Incidents that have the potential to become "critical" if not resolved quickly. For example: <ul style="list-style-type: none"> • Interconnect Capacity loss of between 20% and 50% • Reduction of up to 50% of the signalling Capacity
Minor	Non-service affecting incidents or requests for information. For example: <ul style="list-style-type: none"> • Interconnect Capacity loss of 20% or less • Loss of a signalling link • Information requests

3.3.3 Incident resolution targets

Telenet Group will use all reasonable endeavours to close incidents in the times given below. Where an incident resolution requires the intervention of a party outside of

Telenet Group (for example, a leased line supplier) the incident resolution targets will be extended to take account of the incident resolution timers of the third party.

Timers are measured using the Telenet Group Incident Management system (Expertdesk – a Remedy based system).

<i>Priority</i>	<i>Resolution Timer</i>	<i>Key Performance Indicator (KPI)</i>	
Critical	8 elapsed hours	80%	of incidents resolved within the timer
Major	60 elapsed hours	75%	of incidents resolved within the timer
Minor	7 business days	75%	of incidents resolved within the timer

3.3.4 Incident escalation

In the event that a critical incident is at risk of not being resolved within the timer the reporting party can request that the Telenet Group OMC informs the Telenet Group Duty Manager.

The Telenet Group Duty Manager, who is contactable 24x7, will then review the incident and ensure that appropriate action is taken.

4 Evolution of the Interconnect offer

As most of the European operators, Telenet Group is in the process of adapting and upgrading its telecommunication infrastructure. In particular, Telenet Group will implement where necessary the modifications resulting from the evolution of international standards (ITU-T and ETSI). This may have an impact on the interconnect services and Access Points offered. Telenet Group will inform the Operator about the changes in its infrastructure that have an effect on the interconnect services that Telenet Group offers. In as far as such technical changes are concerned that have a foreseeable impact on the interconnect services, Telenet Group will communicate such information as soon as reasonably practicable and no later than 12 months in advance of the planned changes (except if the change concerned is due to unforeseen circumstances and it therefore does not allow Telenet Group to respect the above mentioned period).

The present Mobile IP Reference Interconnect Offer can also be modified pursuant to Telenet Group's review of the reference offer in order to take account of the evolution of Telenet Group's offers and the conditions applied by Telenet Group's partners or regulatory changes including in particular an intervention by the Commission, the BIPT or another competent body or the annulment of any decision regulating Telenet Group's Termination Services.

5 Financial Guarantees

Upon signing an Interconnect agreement and providing the Terminating Access Service to the Operator, Telenet Group requires the Operator to provide a financial guarantee to assure payment of the interconnect services as provided by Telenet Group. Such guarantees shall consist of:

- A deposit by the Operator on and escrow account with a reputable bank or financial institution established in the EU, or
- An irrevocable and unconditional first demand bank guarantee from the Operator, or
- A cash deposit.

For new Interconnects, the amount of the financial guarantee will be equal to the volumes forecasted in the Statement of Requirements for the 3 months as of the 6th month following the acceptance of the Interconnect, as specified in the table in art 2.7.2 under T0 and T7, multiplied with the applicable termination rate(s), with a minimum of €50,000.

In case of capacity upgrades or downgrades of existing Interconnects, or changes of the monthly actual traffic volumes, either Party can request the amount of the financial guarantee to be adapted to the charges of the preceding 3 months, as invoiced by Telenet Group to the Operator for the interconnect services provided, with a minimum of €50,000.

For a bilateral Interconnect agreement, an arrangement on monthly nettings is required. In that case, the financial guarantee will be equal to the netted amounts of the preceding 3 months, as calculated for the above scenarios for new or existing interconnects, with a minimum of €50,000.

Without prejudice to any other legal or contractual remedies and notwithstanding anything to the contrary in the Interconnection Agreement, in the event the Operator fails to pay on due date, either any due amount or prepayment, Telenet Group shall be entitled to execute the following alternatives until full payment is made:

- with a reasonable notice period, suspension of the interconnect services;
- refusal of any Interconnect capacity upgrades or downgrades;
- refusal of any other new interconnect services.

6 Fraud

Telenet Group is committed to secure its network and customers against fraudulent traffic and has put the necessary tools and processes in place for doing so.

However, Telenet Group considers the Operator to be responsible and accountable for the traffic originating on or transiting via its network. Therefore, the Operator will implement the necessary and reasonable means to query and identify fraudulent traffic, and to prevent such traffic to be delivered onto the Telenet Group network.

Telenet Group cannot be considered as responsible and accountable for the inability of the Operator to query and identify fraudulent traffic, and to prevent such traffic to be delivered onto the Telenet Group network, and reserves the right to block or to apply surcharges for such traffic, or dispute and withhold payment of any usage costs charged by the Operator resulting from such traffic. In both cases, the details of the fraudulent traffic will be shared with the Operator, together with the relevant usage details if available.

Traffic that is considered as fraudulent traffic includes but is not limited to following scenarios:

6.1 CLI manipulation (refiling)

All Calls or Call Attempts delivered onto the Telenet Group network from unknown/undefined Origin CLIs, empty Origin CLIs, non-existing Origin CLIs, manipulated Origin CLIs, and from national Origin CLIs not being geographic or mobile, are considered by Telenet Group as fraudulent traffic, and can be blocked for termination onto the end-user. Telenet Group may also apply a surcharge for such fraudulent traffic.

6.2 Wangiri fraud

All Calls or Call Attempts delivered onto the Telenet Group network from expensive international numbers, generating one-ring missed calls, aiming for the recipient to call back and incur high costs, are considered by Telenet Group as fraudulent traffic, and can be blocked for termination onto the end-user. Telenet Group may also apply a surcharge for such fraudulent traffic.

6.3 SIM boxes

All Calls or Call Attempts delivered onto the Telenet Group network from SIM boxes are considered by Telenet Group as fraudulent traffic, and can be blocked for termination onto the end-user. Telenet Group may also apply a surcharge for such fraudulent traffic.

6.4 Numbering Harvesting

All Calls or Call Attempts delivered onto the Telenet Group network for checking if numbers are assigned or unassigned (Number Harvesting) are considered by Telenet Group as fraudulent traffic, and can be blocked for termination onto the end-user. Telenet Group may also apply a surcharge for such fraudulent traffic.

6.5 Denial of Service Attack

All Calls or Call Attempts delivered onto the Telenet Group network aiming to make network resources unavailable or to disrupt Telenet Group services (DoS attacks) are considered by Telenet Group as

fraudulent traffic, and can be blocked for termination onto the end-user. Telenet Group may also apply a surcharge for such fraudulent traffic.

6.6 Scam/spam

All Calls or Call Attempts delivered onto the Telenet Group network for scamming or spamming Telenet Group customers are considered by Telenet Group as fraudulent traffic, and can be blocked for termination onto the end-user. Telenet Group may also apply a surcharge for such fraudulent traffic.

6.7 Other fraud

All other Calls or Call Attempts analysed and identified by Telenet Group as fraudulent traffic can be blocked for termination onto the end-user. Telenet Group may also apply a surcharge for such fraudulent traffic.

Overview Annexes:

Annex 1: Overview regulated tariffs in accordance with the Decision of 20 November 2018

Annex 1: Overview regulated tariffs in accordance with the the Commission Delegated Regulation (EU) 2021/654 applicable to national or EEA traffic (incl third countries listed in the Annex to the Delegated Regulation as foreseen by article 1, paragraph 4 of the Delegated Regulation) of 18/12/2020

	setup (€/call)			conveyance (€/minute)		
valid from	peak	off peak	weekend	peak	off peak	weekend
1/7/2021	0.0000	0.0000	0.0000	0.0070	0.0070	0.0070
1/1/2022	0.0000	0.0000	0.0000	0.0055	0.0055	0.0055
1/1/2023	0.0000	0.0000	0.0000	0.0040	0.0040	0.0040
1/1/2024	0.0000	0.0000	0.0000	0.0020	0.0020	0.0020