



Agreement for IP Packet eXchange (IPX) Services

3.0

July 2008

This is a non-binding permanent reference document of the GSM Association.

Security Classification Category (see next page)	
Unrestricted	X

Security Classification - UNRESTRICTED

This document is subject to copyright protection. The GSM Association (“Association”) makes no representation, warranty or undertaking (express or implied) with respect to and does not accept any responsibility for, and hereby disclaims liability for the accuracy or completeness or timeliness of the information contained in this document. The information contained in this document may be subject to change without prior notice. Access to and distribution of this document by the Association is made pursuant to the Regulations of the Association.

Copyright Notice

Copyright © 2008 GSM Association

GSM™ and the GSM Logo™ are registered and the property of the GSM Association.

Antitrust Notice

The information contain herein is in full compliance with the GSM Association’s Antitrust Compliance policy.

Document History

Version	Date	Brief Description
0.1	14 Sept 2006	First draft submitted to SOLU for approval
0.2	01 Nov 2006	Final Version agreed by SOLU: IPXfoc Doc 16_001
1.0	10 Nov 2006	New Non-Binding PRD covering the Agreement for IP Packet eXchange (IPX) Services, submitted to IWG #5 for Approval
2.0	14 May 2007	Major CR001 to AA.80, Change from restricted to unrestricted
2.1	December 2007	CR002 (IWG Doc 07_008) adds supplemental Definitions in the AA.80 main body in order to support the new AA.80 MMS Interworking Hub Service Schedule, CR003 (IWG Doc 07_009) and CR 004 (IWG Doc 07_010) add supplemental clauses (i.e. Suspension and Interruption of Service) to the AA.80 main body in order to support the new AA.80 MMS Interworking Hub Service Schedule, CR 005 (IWG Doc 07_011) adds definition of Invoice Period to the AA.80 main body in order to support the new AA.80 MMS Interworking Hub Service Schedule, CR006 (IWG Doc 07_014) removes Annex 11 since it has been decided to include a specific SLA in each Service Schedule, CR 007 (IWG Doc 07_015) adds a new annex with IPX charges for the transport mode which is included to AA80 as new Annex 11, CR008 (IWG Doc 07_020Rev1) adds the Service Schedule for MMS as AA.80 MMS Interworking Hub Service Schedule as Annex 9 (IWG Doc 07_027) to the AA.80, CR009 introduces changes to Annex 10 of the AA80 (SLA for IPX Transport) to reflect the local tail responsibility and the SP commitments
2.2	January 2008	Editorial Correction to replace ‘RESTRICTED’ with ‘UNRESTRICTED’ in header
3.0	July 2008	CR 012 Editorial tidy up of main body (IWG 08_031), CR 010 Service Credits Section Framework (IWG 08_025) CR 011 Addition of reference to KPIs in IR.34 (IWG 08_026) and restructuring of document to remove

Version	Date	Brief Description
		Service Schedules to separate PRDs for example PVI is now AA.81, SMS AA.82 & MMS AA.83
Changes Since Last Version		

Other Information

Type	Description
Document Owner	IWG
Revision Control	Semi Annual
Document editor/company	Elena Sacco (Telecom Italia)

Feedback

This document is intended for use by the members of GSMA. It is our intention to provide a quality product for your use. If you find any errors or omissions, please contact us with your comments. You may notify us at <mailto:prd@gsm.org>. Your comments or suggestions are always welcome.

GENERAL TERMS & CONDITIONS

FOR

Agreement for IP Packet eXchange (IPX) Services

Agreement for IP Packet eXchange (IPX) Services

Between

<Service Provider A>,
Having its registered address:

.....
(Hereinafter referred to as "Service Provider")

And

< [IP Packet eXchange Provider] >
having its registered address:

.....
(Hereinafter referred to as "IPX Provider")

(Together "the Parties")

1 General Introduction

In this Agreement, the Parties agree the terms and conditions for IP Packet eXchange (here under IPX) services.

IPX Provider shall supply the IPX Service through a private IP network, independent of the Internet, as governed by the IR.34 technical solution and supports end-to-end quality of service.

Enabling indirect connectivity:

1.1.1 Any Service Provider acting as a gateway between the IPX Domain and the non-IPX Domain (i.e. enabling other parties not directly connected to the IPX Domain, to send and receive traffic to and from the IPX Domain), must assume full responsibility with regard to all obligations of the IP Interworking (IPI) Framework and requirements specific for the IPX Domain. This means that everything outside the IPX Domain, interacting with the IPX Domain, must be compliant with the IPI framework as specified by the GSMA.

1.1.2 Where necessary, the IPX Provider must interconnect with any Third-Party IPX Provider required to enable connectivity with other Service Providers.

End-to-End Quality:

1.1.3 The IPX Provider shall be responsible for the end-to-end IPX Service between two Service Providers where the Participating Service Providers use the same IPX Provider according to IR.34.

1.1.4 IPX Provider shall take responsibility for the end-to-end IPX Service where the Participating Service Providers are connected to a Third-Party IPX Providers according to IR. 34.

The IPX Service consists of three Connectivity Options:

- IPX Transport
- IPX Service Transit
- IPX Service Hub

This Agreement enables the Service Provider to contract for a multiple of options within the realm of Transport, Transit and Hub.

Each IPX Service offered within this Agreement is implemented under the conditions governed by the applicable signed Service Schedule.

Cascading of Responsibilities

1.1.5 The IPX concept of Cascading of Responsibilities applies for all connectivity options according to SLA in Annex 7. IR.34 and IR.77 for this purpose the IPX Provider has to implement the appropriate commercial, technical, interconnection procedures, as appropriate, with any Third Party IPX Provider that the IPX Provider chooses in order to provide IPX Services to the Service Provider.

Nothing in this Agreement as such shall be construed as imposing any requirement or obligation upon any Party to convey IPX traffic to the other Party.

2 Scope

The following areas shall be covered in the Agreement:

- Definitions and interpretation
- Suspension, Interruption and Cancellation of the IPX Service
- Liability of the Parties
- Confidentiality
- Force majeure
- Term and termination
- Choice of law
- Dispute resolution
- IPX Charges and Payment
- Access
- Connectivity Options
- End-to-end responsibilities

3 IPX Services

General

- 3.1.1 Both Parties agree that in order to support all of the commercial business models and technical aspects of IPX, each service transmitted over the IPX must conform to the relevant Service Schedule. The Service Schedule will define the quality of service, service level agreement and commercial and technical framework for each IPX Service rendered under this Agreement.
- 3.1.2 IPX Providers agree to connect only with other Third-Party IPX Providers that are compliant with IPX Governance.
- 3.1.3 Parties agree that there will be Specific IPX services in future to be provided by the IPX Provider which will require IPX connection that may be either standardised or non-standardised. All IPX Services offered hereunder will be subject to applicable GSMA guidelines and other regulatory provisions affecting such IPX Services.

Service Schedules

- 3.1.4 Each IPX Service shall be fully described in the applicable Service Schedule. The Service Provider reserves the right to choose which IPX Service to use among the range of services offered by the IPX Provider. By signing the Service Schedule both Parties accept the conditions stated in the applicable Service Schedule.
- 3.1.5 The IPX provider shall not offer any IPX Service nor activate any Service between the Service Provider and any Participating Service Provider unless the Service Provider has expressly given its consent through signature of the relevant Service Schedule attached to this Agreement. In this way, only

agreed IPX Services are activated and Participating Services Providers are connected at any given time with the Service Provider.

Governance

3.1.6 Both Parties agree to abide by the IPX Governance as defined from time to time.

IPX Commercial & Technical Requirements

3.1.7 Both Parties shall each be responsible for ensuring that they adhere to certain business, operational and connection criterion in order for the IPX Provider to provide and for the Service Provider to receive IPX Services under this Agreement. Such criteria detailed in the IPX Governance are intended to ensure that the IPX Domain is properly managed to meet minimum commercial and technical requirements required in an IPX deployment.

Transparency and Traceability Requirements

3.1.8 Both Parties will adhere to the IPX Governance.

Routing

3.1.9 The IPX Provider chooses the routing up to the Terminating Service Provider provided that the QoS levels remain unchanged.

3.1.10 No more than two IPX Providers must be involved in the end-to-end delivery.

4 Access

The Parties shall connect and keep connected according to the IR.34 and the applicable SLA's. The Parties shall agree on how the connection between the Service Provider and the IPX Provider (IPX Transport) is implemented.

5 Charges and Payment

The charges and payment for each IPX Service and for the termination service offered by the Service Provider and the Participating Service Providers are defined in the applicable Service Schedule.

All Charges shall be invoiced and paid in [state currency agreed between parties].

Invoice Period means 00:00:00 AM (Country local time) on the first day of a calendar month until 11:59:59 PM (Country local time) on the last day of a calendar month;

In respect of each Invoice Period, if a currency exchange is necessary, the current exchange rate to be used by the each Party to make any necessary currency conversions in respect of any Termination Charges shall be the rate quoted by the IMF on the 23rd day of the month preceding the invoicing period, or the previous business day, in the case the 23rd is a public holiday in the US.

Where applicable, the IPX Provider shall notify the Service Provider by written notification, of any increase by any existing Participating Service Provider to its Participating Service Provider Termination Charges at least sixty (60) calendar days

prior to the Invoice Period in which such increase shall become effective. The IPX Provider may reduce all or any of the Participating Service Provider Termination Charges at any time upon written notice to the Service Provider.

Where applicable the Service Provider shall notify the IPX Provider of any proposed increase to the Service Provider Termination Charges at least ninety (90) calendar days prior to the Invoice Period in which such revisions shall become effective unless the Service Provider is required to revise the Service Provider Termination Charges by any decision of any regulator or other competent authority within timescales which preclude the giving of such ninety (90) calendar day notice in which event the Service Provider shall give the IPX as much prior written notice of such revisions as is reasonably practicable in the circumstances. The Service Provider may reduce the Service Provider Termination Charges at any time upon written notice to the IPX Provider.

The IPX Provider may increase the IPX Charges on [state number of days to be agreed between parties] days' prior written notice per the beginning of an Invoice Period but shall not increase the IPX Charges during the period of [state number of months agreed between parties] months following the Effective Date. The IPX Provider may notify the Service Provider of any reductions in the IPX Charges at any time upon written notice. In the event of any increase in the IPX Charges, the Service Provider shall have the right to terminate this Agreement upon at least [state number of days agreed between parties] days prior written notice to the IPX per the beginning of the Invoice Period for which the increased IPX Charges would become effective.

The IPX Provider shall provide the Service Provider with an invoice in respect of each Invoice Period within one calendar month of the end of the Invoice Period. The detail of such invoice shall depend on the IPX Service and will be included in the corresponding Service Schedule.

Invoices issued pursuant to this Agreement shall be payable by the other Party (the "Paying Party") within thirty (30) days of the date on which the invoice is dispatched by the Billing Party (the "due date").

If the Paying Party shall fail to pay any amount due hereunder by the due date then the Billing Party shall be entitled to charge and receive interest at the yearly rate of 5 per cent per annum above the three month EURIBOR lending rate from time to time which shall accrue from the due date until the date of payment and shall be calculated on a daily basis.

In the event that the Paying Party disputes the amount of any invoice delivered by the Billing Party, or the Paying Party disputes the applicable traffic delivered (volume, number, or as applicable) or the Charges applicable to the applicable traffic as notified by the Billing Party, it will, as soon as practicable, and in any case within thirty (30) days of the relevant invoice date, notify the Billing Party in writing (including with its notice all details reasonably necessary to substantiate its claim) and the Parties shall consult in good faith to try to resolve the dispute. Failing resolution, either Party may refer the matter for investigation and determination by such person, firm or company (being chartered accountants) as the Parties may agree to act as an expert and not as an arbitrator and whose decision, in the absence of evidence of manifest error, shall be final and binding on the Parties. The Parties shall co-operate in the investigation concerning the disputed invoice and any sum thus found to be due or overpaid shall be promptly paid or refunded (including any interest payable or paid pursuant to as the case may be). Subject as set out below and irrespective of whether an invoice was disputed, the Billing Party shall maintain and retain for a period of at least six (6) months (as or longer, if and as required by law) following the end of the month to which the invoice relates, true and accurate books of account and information contained in or on discs, tapes, documents or other records as may reasonably be required by such chartered

accountants for calculation or verification of the amounts payable under such invoice which shall include reasonable billing summary reports. In the event that a dispute relating to an invoice arises within six (6) months after the end of the month to which the invoice relates, the Billing Party shall maintain and retain the above records at least until the dispute is resolved. Each Party shall permit the chartered accountants who may be nominated in the circumstances referred to in this to have reasonable access (subject to receipt of reasonable prior written notice which shall not be less than fourteen (14) days) solely for the purpose of inspecting the apparatus used for recording the applicable traffic. Any such inspection shall be made in such a way as to cause the minimum inconvenience. The Party whose premises are being visited for such inspection shall provide such chartered accountants with reasonable facilities and assistance for such purpose. In no event may the Paying Party raise a dispute in relation to all or part of an invoice any later than six months after the end of the month to which the invoice relates.

The costs of the chartered accountant agreed or nominated pursuant to shall be paid by the Paying Party unless the relevant invoice is established to have been incorrect by more than [state percentage agreed between parties, recommended] (for example 5 percent of the total amount) of the charges (excluding VAT) specified in the invoice in which case the Billing Party shall pay such costs.

Notwithstanding the reference of any dispute for investigation and determination, if the amount in dispute represents less than [state percentage agreed between parties, recommended] of the total amount of the invoice (excluding VAT) the invoiced amount shall be payable in full pending the resolution of the dispute. If the amount in dispute represents [state percentage agreed between parties] or more of the total amount of the invoice (excluding VAT) the disputed amount may be withheld pending resolution of the dispute while, for the avoidance of doubt, any undisputed balance and interest payable thereon shall remain payable in full.

6 Tax

6.1.1 The Parties agree to comply with the provisions of Annex 2 in respect of Taxes.

7 Financial Security

7.1.1 The Parties agree to comply with the provisions of Annex 3 in respect of financial security.

8 Insurance

8.1.1 The Parties agree to comply with the provisions of Annex 4 in respect of insurance.

9 Suspension of Service

With regards to the following paragraphs, each service may be suspended independently.

Where a Suspension of Service is initiated based on either Operational or Non-Operational event (defined below), a suspension of payment is also initiated until such time that Service is restored.

Either Party that enters into this Agreement may initiate a suspension of Service based on an Operational and Non-Operational Event.

Operational Event

9.1.1 An Operational Event is defined as an event that has a direct affect on Service or revenue, for example but not limited to:

- Denial of Service Attack
- Fraudulent or unauthorised behaviour
- Unauthorised access to any part of the IPX.

9.1.2 Either Party, without liability, may at any time and with immediate effect suspend the affected part or all operation of the Service, in order to protect all or specific connected parties. As a consequence this may affect traffic both ways or one way depending on severity of the Operational Event, the protection requirement specific to this Service and in relation to the Party(s) affected where there is a reasonable opinion that:

- An end user or any Party is using the IP Service in a way which is fraudulent, unlawful or unauthorised;
- The IPX Service Provider has received notification from another Party or has reasonable grounds to suspect fraudulent, unlawful or unauthorised use of the IP Service by End-User(s) or any Parties, or:
- An End User or third Party is using equipment or utilising the IPX Service in a way which damages or is likely to cause damage to the IPX Provider's or an IPX Service Provider's System or any part thereof.

9.1.3 The initiating Party of a suspension of Service shall, as soon as reasonably practicable, inform the affected Party(s) through pre-defined communication channels (see applicable Service Schedule and Section 26 of the general section of the Agreement) that are agreed between the IPX Provider and the Service Provider prior to the commencement of Service.

9.1.4 The duration of such suspension will remain in effect until both Parties are satisfied that the conditions giving rise to such suspension of Service has been remedied.

Non-Operational Event

If the Services Provider is in material breach (including failure to pay any sum due) of this Agreement the IPX Provider may serve a notice specifying the breach and requiring it to be remedied within a period of no less than 10 days from the date of receipt of such notice. If Service Provider fails to remedy the breach within the period IPX Provider may suspend performance of such obligations under this Agreement as is reasonable in the circumstances. Suspension for a material breach may last until such breach is remedied or the breached Agreement is terminated – whichever comes first.

10 Interruption of Service

The following paragraphs apply to all services independently.

Planned

10.1.1 "Planned" is defined as a change that is an operational requirement in order to improve/configure or manage that Service or the network that it requires.

10.1.2 All planned changes initiated by any party shall require a 21 (calendar) days prior written notice, in writing (by fax or email), to the pre-agreed operational contacts (see appropriate Service Schedule and Section 26 of the general section of the Agreement).

Unplanned

10.1.3 "Unplanned" is defined as an interruption of Service that is not managed or due to any operational requirement. In this case, it is assumed that a fault scenario has occurred:

10.1.4 In such a case, the IPX Provider/ Service Provider shall inform the involved parties as soon as possible. The Service maximum recovery time is defined in Annexe 8

11 Cancellation of Service

Service Provider may cancel IPX Services with any of the Participating Service Providers, by providing at least 90 days prior written notification to IPX Provider. As part of its prior written notification to the IPX Provider the Service Provider should state its reason for IPX Service cancellation.

IPX Provider may cancel IPX Services on behalf of any Participating Service Provider to the Service Provider on 60 days prior written notification to the Service Provider. As part of its prior written notification to the Service Provider, the IPX Provider should state its reason for IPX Service cancellation.

12 Confidentiality

Each Party acknowledges that it will receive Confidential Information from the other Party under this Agreement. Each Party shall keep in confidence and trust all such Confidential Information and will make no use of any Confidential Information except as it is necessary for the performance of its obligations or exercise of its rights under this Agreement. Each Party shall disclose the other Party's Confidential Information only to its officers, employees, contractors, consultants on a need-to-know basis. Each Party so disclosing Confidential Information of the other Party shall make sure these persons are not authorized to use or disclose the Confidential Information. Each Party shall use a reasonable care to protect the other Party's Confidential Information.

Information shall not be deemed Confidential Information and neither Party shall have any obligation concerning the use or disclosure of any information, which: (a) is or becomes publicly known through no fault of the receiving Party; (b) is or becomes known to the receiving Party from a third party source other than the disclosing Party without duties of confidentiality attached and without breach of any agreement between the disclosing Party and such third party; (c) furnished to others by the disclosing Party without restriction on disclosure; or (d) was independently developed by the receiving Party. Nothing in this Agreement shall prevent either Party from disclosing Confidential Information to the extent it is

legally compelled to do so by any governmental, investigative or judicial agency pursuant to proceedings over which such agency has jurisdiction; provided, however, that prior to any such disclosure, that Party shall (i) assert the confidential nature of the Confidential Information to the agency; (ii) immediately notify the other Party in writing of the agency's order or request to disclose and (iii) cooperate fully with the other Party in protecting against any such disclosure and/or obtaining a protective order narrowing the scope of the compelled disclosure and protecting its confidentiality.

The IPX Provider reserves the right to disclose such Confidential Information necessary for the enabling of the agreed IPX Services, to potential Service Provider customers, other IPX Providers and other Participating Service Providers.

This Article shall survive the termination of this Agreement for a period of 5 (five) years but shall not in any way limit or restrict a disclosing Party's use of its own Confidential Information.

13 Regulatory Requirements

The Parties agree to meet the relevant regulatory requirements as required.

14 Data Privacy/Protection

The Parties shall at all times observe the requirements arising in particular from data protection legislation, the provisions of the civil code governing legal protection of personality, and telecommunications legislation (see clause 15 below).

The Parties may only use data transmitted for their own business purposes such as call registering, network management, billing and the tracking of malicious calls.

The Parties agree, irrespective of "Article Liability", to indemnify and hold harmless the other Party from and against all costs or expenses of any kind arising out of any claim or demand brought by any person as a result of any breach or alleged breach of such data protection laws.

15 Telecommunications Laws and Regulations

The Parties shall comply with any applicable laws and regulations of telecommunications services (including telecom secrecy and lawful interception) governing the provision of the Services and shall, irrespective of "Article Liability", indemnify and hold harmless the other Party from and against all costs or expenses of any kind arising out of any claim or demand brought by any person as a result of any breach or alleged breach of telecommunications laws or regulations.

16 Number Portability

The Service Provider and IPX Provider will agree the Number Portability resolution process in each applicable Service Schedule.

The IPX will endeavour to provide support for regulatory issues surrounding subscriber-addressing requirements, like number portability, as and where applicable and be compatible with local country number portability requirements.

17 Security

The Parties will conform to GSMA PRD IR.77.

18 Fraud prevention

The Parties agree to comply with the procedures and provisions concerning fraudulent or unauthorised use of the Services set out in the GSM Association Permanent Reference Documents.

19 Liability of Parties

Subject to other contractual agreements or compelling legal requirements, the Parties shall be liable for wilful contract infringements or infringements arising from negligence;

If binding deadlines are not met, a reasonable extended deadline must be set for delayed fulfilment of the contract requirements. In such cases the Parties shall be liable for damages unless they can prove that they are not at fault. The Party at fault shall be liable for negligence and for no more than the actual damages, whereby liability shall be limited per incident to [state amount to be agreed between parties] or the MRC due for the month in which the fault occurred per incident.

Subject to clause 19.4 below, neither Party shall be liable to the other Party including any liability for negligence or for breach of statutory duty, for:

- Any loss of revenue, business, contracts, or profits; or
- Any indirect or consequential loss, whatsoever arising.

19.4 Save for gross negligence or wilful intent, each Party's aggregate liability in contract (excluding any contractual obligation to make payment under this Agreement), tort or otherwise, howsoever arising out of or in connection with the performance of its obligations under this Agreement, shall be limited to (for example 50% or the MRC due for the month in which the breach occurred) [state amount to be agreed between parties] or to the amount of (for example Euro 1,,000.00), whichever is higher in respect of any one incident [state amount to be agreed between parties] in respect of any series of incidents arising from a common cause in any twelve calendar months period.

20 Force Majeure

Neither Party shall be liable for any breach of this Agreement caused by force majeure which expression shall mean act of God, insurrection or civil disorder, war or military operations, national or local emergency, acts or omissions of Government, acts or omissions of any third party operator or events affecting third party telecommunications systems, faults in telecommunications systems run by any third party or acts or omissions of third parties running other telecommunications systems, acts of terrorism, highway authority or other competent authority, industrial disputes of any kind (other than those affecting that Party's employees), fire, lightning, explosion, subsidence, seriously inclement weather, acts or omissions of persons or bodies for whom the Party affected by the

force majeure is not responsible, or any other cause whether similar or dissimilar outside the reasonable control of that Party, provided in all cases that the Party affected by the force majeure has taken all reasonable steps to avoid or minimise the act or omission giving rise to the force majeure. For the avoidance of doubt, 'force majeure' in respect of one Party shall not include any act or omission of any sub-contractor of that Party.

The Party affected by force majeure shall promptly notify the other in writing of the estimated extent and duration of its inability to perform its obligations and shall use reasonable endeavours to both mitigate such inability to perform its obligations and to resume performance of its obligations as soon as reasonably possible without hereby being obliged to incur any cost or expenditure.

If either Party is prevented from performance of its obligations for a continuous period in excess of sixty (60) days (other than in relation to payment of charges), the other Party may terminate this Agreement forthwith on service of written notice upon the Party so prevented, in which case neither Party shall have any liability to the other except that rights and liabilities which accrued prior to such termination shall continue to subsist.

Upon the cessation of the delay or failure resulting from force majeure the Party affected by force majeure shall promptly notify the other of such cessation.

21 Term and Termination

This Agreement shall commence on the Effective Date and continue in force until terminated at the end of a calendar month in accordance with the provisions hereof by either Party upon at least [state number of months to be agreed between parties] months' prior written notice to the other Party. However, this Agreement cannot be terminated at an earlier date than the date of commencing of IPX Service stated in the Service Schedules attached to this Agreement.

A Party may terminate this Agreement forthwith by giving the other Party immediate written notice of termination if any of the following events occur:

21.1.1 The other Party is in material or persistent breach (other than not paying on or before the due date) of this Agreement and fails to remedy such breach within [state number of days to be agreed between parties] days of the receipt of notice from the other Party specifying such breach;

21.1.2 An order is made or a resolution passed for the winding up of the other Party (other than for the purpose of a solvent scheme of reconstruction or amalgamation) or any analogous occurrence takes place in any jurisdiction;

21.1.3 An administrator, administrative receiver or receiver is appointed in respect of a material part of the other Party's assets or business or any analogous occurrence takes place in any jurisdiction;

21.1.4 If the other Party becomes bankrupt or insolvent or if that other Party enters into any composition or arrangement with its creditors and that other Party is not able to ensure performance of its obligations under this Agreement by a guarantee from a first class bank, payable on first written demand;

21.1.5 The other Party ceases to continue its business;

21.1.6 By one of the Parties, with immediate effect, if the other Party is liquidated;
or

21.1.7 By one of the Parties, with immediate effect, if the other Party engages directly or indirectly in any fraud with respect to its use of the other Party's Service or makes other unlawful use of the Service.

21.1.8 Subject to Article 13 Regulatory Requirements, immediately in the event a final order by the relevant governmental authority revoking or denying renewal of the license(s) or permission to operate a public telecommunications network(s) granted to either Party, or any other license necessary to operate the Service(s), takes effect.

21.1.9 Subject to clause 3.5.1 of this Agreement, the Service Provider is entitled to terminate the Agreement with immediate effect if the IPX Provider is no longer meeting the criteria coming from the IPX Governance.

Termination or expiry of this Agreement shall not:

21.1.10 operate as a waiver of any breach by a Party hereto of any of the provisions of this Agreement and shall be without prejudice to any rights liabilities or obligations of either Party which have accrued up to the date of such termination or expiry;

Consequences of Termination

21.1.11 On termination of this Agreement, the connectivity options and all IPX services in connection with the agreement are terminated.

21.1.12 (deleted)

21.1.13 (deleted)

22 Penalties

Penalties for breaches in IPX Services SLA are to be commercially agreed between the IPX Provider and Service Provider and specified in the mutually agreed Service Schedules.

23 Changes to the Agreement, annexes and Addenda

Any amendments and/or additions to this Agreement and/or Annexes and/or Addenda shall be valid only if made in writing and signed by duly authorized representatives of both Parties hereto.

24 Severability clause

If any part of this Agreement or any Annex hereto is held to be invalid or unenforceable, such determination shall not invalidate any other provision of this Agreement or Annexes hereto; and the Parties shall attempt, through negotiations in good faith, to replace any part of this Agreement or Annexes hereto so held to be invalid or unenforceable. The failure of the Parties to agree on such replacement shall not affect the validity of the remaining parts of the Agreement.

25 Miscellaneous

Successors and Assigns: This Agreement is personal to the Parties hereto and (except by operation of law) neither Party shall assign, transfer, charge, encumber or otherwise deal with the whole or any part of this Agreement or its rights or obligations hereunder without the prior consent in writing of the other Party which consent shall not be unreasonably withheld or delayed.

Subcontractors: For the avoidance of doubt, nothing in this Agreement shall prevent either Party from appointing sub-contractors to perform work in connection with the performance of its obligations under this Agreement, provided that the Party shall remain fully responsible for the acts and omissions of sub-contractors as if they were his own.

No waiver: Failure by any Party at any time or times to require performance of any provisions of the Agreement shall in no manner affect its rights to enforce the same, and the waiver by any Party of any breach of any provisions of this Agreement shall not be construed to be a waiver by such Party of any succeeding breach of such provision or waiver by such Party of any breach of any other provision hereof.

No Partnership: The Parties declare that it is not their intention to enter into a joint venture with each other hereby and nothing herein shall be deemed to constitute a partnership between the Parties or constitute one Party the agent of the other for any purpose whatsoever.

No Publicity: Without prejudice to Article 12 Confidentiality or the right of either Party to publish this Agreement or any part of thereof in order to comply with any legal or regulatory obligation neither Party shall make any press announcements or publicise the existence or contents of this Agreement or any part of it in any way except with the prior written consent of the other Party;

Trade Marks and Service Marks: For the avoidance of doubt, nothing in this Agreement shall be deemed or construed as granting to either Party any right or licence to use any trade or service marks of the other Party in connection with the promotion of its services or for any other reason.

Precedence: In the event of any inconsistency between the numbered Articles of this Agreement and Annexes hereto, the numbered Annexes of this Agreement shall prevail.

Previous Agreements between the Parties: This Agreement supersedes and prevails over all previous agreements, understandings or commitments made between the Parties or representations made by either Party whether oral or written relating to the subject matter thereof.

26 Notices

Any notice or other communication required to be given for the purposes of this Agreement shall be given by letter sent by acknowledgement of receipt of courier or by facsimile transmission with acknowledgement of receipt immediately confirmed by a letter sent by courier.

Any notice sent for the purposes of this Agreement shall, if addressed to the Service Provider be sent to the Contact Person as stated in Annex 4, or to such other address and/or facsimile number as may be notified in writing by the Service Provider to the IPX Provider.

and if addressed to the IPX Provider, be sent to the Contact Person as stated in Annex 5, or to such other address and/or facsimile number as may be notified in writing by the IPX Provider to the Service Provider.

Any notice sent by courier or personally delivered shall be deemed (in the absence of evidence of earlier receipt) to have been delivered 3 calendar days after its despatch. Any notice given by facsimile transmission shall be deemed to have been delivered on the same day as transmission once transmission is actually received (provided it is sent prior to 2pm in the recipient's time zone) or where transmitted at or after 2pm that day in the recipient's time zone, it shall be deemed to be received the next working day following transmission.

27 Intellectual Property Rights

"Intellectual Property Rights" means, for the purposes of this Agreement, rights in, and in relation to, any patents, registered designs, design rights, trade marks, trade and business names (including all goodwill associated with any trade marks or trade and business names), copyright and related rights, moral rights, databases, domain names, semi conductor and other topography rights and utility models, and including the benefit of all registrations of, applications to register and the right to apply for registration of any of the foregoing items, each for their full term (including any extensions or renewals thereof) and where ever in the world enforceable; and trade secrets, confidentiality and other proprietary rights, including rights to know how and other proprietary technical information.

Each Party shall retain full title and ownership with regard to such Party's or its subcontractors' Intellectual Property Rights insofar as any such Intellectual Property Rights may be required in order for either Party to provide or to make use of the Services and other associated services referred to in this Agreement. Nothing in this Agreement shall be deemed or construed as a transfer of title or ownership nor as the granting of any licence, right to use and/or as giving rise to any encumbrance of any kind with regard to either Party's Intellectual Property Rights.

Where Intellectual Property Rights are developed by a Party in connection with performance of this Agreement then in the absence of any other agreement between the Parties, the ownership of such Intellectual Property Rights shall remain with the Party who developed the same provided that in consideration of entering into this Agreement the other Party shall have a non exclusive licence, irrevocable at no cost to use the Intellectual Property Rights if necessary for the purposes and the duration of this Agreement.

28 Choice of Law

The Agreement and any matters relating hereto shall be governed by and construed in accordance with the law of _____ [state Law agreed between parties].

29 Dispute Resolution & Arbitration

The Parties agree to seek to resolve any dispute arising out of this Agreement in accordance with the following escalation procedures before commencing the arbitration procedures described below.

The Contact Persons of both parties shall work in good faith to try to resolve the dispute within thirty (30) days from the date that a Party first gives notice that a dispute has occurred.

If the Contact Persons fail to reach an agreement on the dispute within thirty (30) days, the dispute shall be referred to more senior persons within the respective companies who shall try to resolve the dispute within a further thirty-days period. If no resolution is found each Party is entitled to commence the arbitration proceedings described below.

All disputes arising out of or in connection with this Agreement shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce (ICC) by 3 arbitrators appointed in accordance with the said Rules.

The place of arbitration shall be [state arbitration agreed between parties] and the proceedings shall be conducted in the [state proceedings agreed between parties] language.

The award shall be final and binding and the Parties hereby waive all means of recourse to the courts of any country.

Signatures

By signing the agreement both Parties accept the conditions stated in the General Section and in the sections of the Connectivity Options (Transit, Transport and Hub).

Obligations regarding any IPX Services agreed between the Parties are not coming into force until the corresponding Service Schedule has been signed by the Parties.

[PA1]IN WITNESS WHEREOF the Parties have caused this Agreement to be executed by their duly authorised representatives on the date(s) shown below.

Signed on [redacted] (date) in

IPX Provider	
----- (name + function)	----- (name + function)

Signed on [redacted] (date) in [redacted] (place)

Service Provider

<p>----- [redacted] (name + function)</p>	<p>----- [redacted] (name + function)</p>
---	---

Annex – Index

Annex 1 Definitions

Annex 2 Tax

Annex 3 Financial Security

Annex 4 Insurance

Annex 5 Service Provider Contact details

Annex 6 IPX Provider Contact Details

Annex 7 Connectivity Options

Annex 8 IPX Transport SLA

Schedule A Access Connectivity Schedule

Schedule B Participating Service Provider Parameters

Schedule C Service Provider Premises

Schedule D Charging and Billing

Schedule E Elected Participating Service Providers

Schedule F Service Contact Details

Schedule G Service Credit Level

Annex 9 Charges for IPX Transport

ANNEX 1 Definitions

"Agreement" shall mean this Agreement for IPX Services together with Schedules and Annexes.

Carrier ENUM: A Service Providers-only Private ENUM that is separated from the Public ENUM (which is located in Internet and used by end-users). Carrier ENUM is synonymous with Operator ENUM but for IPX purposes it will only be used the term Carrier ENUM.

Connectivity Options: Options for interconnection enabling transmission of IP traffic and/or IP based services between Service Providers over the IPX.

Destination: means any geographical location in which a number of Service Providers reside.

Elected Participating Service Provider Commencement Date: means the date when the Service is open between the Service Provider and the Elected Participating Service Provider.

Effective Date: means the latest date of the signatures of the Agreement or any other date agreed between the Parties at which point this Agreement enters into force;

Elected: in respect of a Participating Service Provider means elected as Interworking Partner by the Service Provider.

End User: A customer of a Service Provider using an IP based service that is interconnected via the IPX Provider.

GSM Association Permanent Reference Documents (GSMA PRD): means a document noted as such by the EMC to the General Assembly and listed as such by Headquarters on the list of Permanent Reference Documents.

Hub: Hubbing or hub-service in this context is when an IPX Provider is performing multilateral interconnection.

Interworking: in this concept means exactly the same as the term "interconnection" in 3GPP. While generally speaking "interworking" is used only when talking about connection between different systems, here for example "IMS interworking" means that two IMS networks are connected through an IP network to enable SIP control (Mw interface) and transport of user plane (Gi interface).

IPX: IP Packet eXchange. This is the whole group of interconnected IPX Provider's networks.

IPX Provider: A business entity (such as an IP Carrier) offering IP interconnect capability for one or many IPX Services compliant with the IPX requirements according to IPX Governance

IPX Proxy: A service aware IPX network element that supports service interworking. The term hub may also be used to refer to a form of IPX Proxy. Hubs and proxies facilitate a multilateral model for each service.

IPX Domain: Refers to the whole group of business entities comprising interconnected Service Providers and IPX Providers.

IPX Service: An IP based service using the IPX as a means of interconnection that is provided by a Service Provider to an end-user.

IR.34: Inter PLMN Backbone Guidelines

IR.67: DNS Guidelines for Operators

IR.77: Inter Operator IP Backbone Security requirements for service Providers and Inetoperator IP Backbone Providers

Invoicing Currency: means the currency in which Participating Service Provider Termination Charges are invoiced and paid.

Key Performance Indicator (KPI) means any parameter out of those indicated in the SLA in Annexe 8.

Operational Procedures means the operational procedures set out in the applicable Service Schedule;

Opt-In: Where the Service Provider chooses which Participating Service Provider it wishes to open interworking with. By default all connections will be closed.

Opt-Out: Where the Service Provider chooses which Participating Service Provider it wishes not to open interworking with. By default all connections will be open.

Participating Service Provider Service Parameters means the service parameters and service restrictions relating to the specific service provided by a Participating Service Provider as set out in the applicable Service Schedule;

Participating Service Provider: means a Service Provider which has entered into an Agreement with the IPX Provider or with a Third Party IPX Provider.

Peer-to-Peer: Refers to direct communication between user terminals.

Performance Reporting or QoS report meaning the report on the actual performance of the IPX Service, based on the KPIs defined in the applicable Service Level Agreement;

Quality of Service or Quality or QoS: means the level of performance of the IPX Service as per the provisions of the SLA in Annex 8.

Service Awareness: Means the ability of the IPX to support Bilateral Service Transit and Multilateral Interconnect modes.

Service Commencement Date: means the date where the IPX Service is ready to be open as defined by the applicable Service Schedule.

Service Interworking: means the Service implemented between the Service Provider and the Elected Participating Service Provider using the IPX Service.

Service Level Agreement: means the service level agreement set out in the applicable Service Schedule.

1.1 Service Provider Service Parameters: means the service parameters and service restrictions relating to the specific service provided by the Service Provider as set out in the relevant Service Schedule.

Term: means the period during which this Agreement remains in force.

Termination Services: Means the receiving data under this Agreement whereby the receiving party shall be the Service Provider on its network pursuant to this Agreement and/ the Participating Service Providers on their respective network to

be obtained by the IPX Provider and provided to the Service Provider pursuant to this Agreement.

Test Plan: means the test specification and/or schedule set out in the applicable Service Schedule and as described as such.

Transparent Hubs/Proxies: An IPX Proxy that is invisible to the end points of the communication.

1.2 Third Party IPX Provider: means an IPX Provider to which a Service Provider is not directly connected. Nevertheless, it is an entity that is involved in the traffic handling as it is connected to the IPX Provider to terminate the Service

URL: means Uniform Resource Locator.

WAP: means Wireless Application Protocol.

ANNEX 2 TAX



ANNEX 3 FINANCIAL SECURITY



ANNEX 4 INSURANCE

ANNEX 5 SERVICE PROVIDER CONTACT DETAILS

<Operator>
<Additional info.>
<Postal address>
<Postcode>
<COUNTRY>

Contact person:

<Name>

Telephone: <+xx xx xx xx xx> (Operator: <+xx xx xx xx xx>)

Fax: <+xx xx xx xx xx>

Internet Address: xxx.xxxx@xxx.xxx.xxx.xx

Service hours: <.....>

ANNEX 6 IPX PROVIDER CONTACT DETAILS

<IPX
<Additional
<Postal
Contact for commercial matters:

Provider>
info.>
address>

Telephone: <+xx xx xx xx xx> (Operator: <+xx xx xx xx xx>)
Fax: <+xx xx xx xx xx>

Internet Address: xxx.xxxx@xxx.xxx.xx

Service hours: <.....>

ANNEX 7 CONNECTIVITY OPTIONS

30 CONNECTIVITY OPTION: "IPX TRANSPORT"

Definition of connectivity option "IPX Transport" (transport only, i.e. without service awareness):

The 'IPX Transport' connectivity option enables a bilateral connection between the Service Provider and one other Participating Service Provider utilising the IPX Transport Layer, but without service awareness. This includes providing guaranteed QoS only if the participating Service Provider is connected (a) directly to the IPX Provider or (b) to any other third Party IPX Provider who has separately agreed on guaranteeing QoS with the IPX Provider.

Commercial requirements

30.1.1 The scope of the IPX Transport connectivity option is considered applicable only between the IPX Provider and the Service Provider and is to implement the IPX connection between the Service Provider and a Participating Service Provider. Any other circumstance, that needs be agreed between the two Service Providers with regard to the bilateral connection between them, is outside the scope of this Agreement and shall be subject to a separate agreement directly between those Service Providers.

30.1.2 The IPX Provider agrees to convey traffic exchanged between the Service Provider and the respective other Participating Service Provider, either directly or via a Third Party IPX Provider for delivery to the Service Provider or the Participating Service Provider's respective networks in accordance to this Agreement and the Annexes hereto.

IPX Transport Charging and Payment

30.1.3 IPX Transport Charging and Payment shall be settled in accordance to the respective Service Schedule and other applicable clauses referring to this concept.

30.1.4 In the event that Third Party IPX Providers are involved, the remuneration to such Third Party IPX Providers for the traffic handling, shall be combined and presented by the IPX Provider to the Service Provider as one invoice.

Technical Requirements

30.1.5 IPX Transport technical requirements shall be defined in accordance with IREG PRD IR.34, IR.77 and IR.67.

Operational and Maintenance Requirements and IPX Transport SLA

30.1.6 Operational and Maintenance requirements and IPX Transport.as stated at Annex 8.

31 CONNECTIVITY OPTION “IPX SERVICE TRANSIT”

Definition of Connectivity Option “IPX Service Transit” (i.e. Transport with Service Awareness)

The ‘IPX Service Transit’ Connectivity Option enables a bilateral connection between the Service Provider and one other Participating Service Provider utilising the IPX Transport layer and IPX Service layer provided by the IPX Provider with guaranteed QoS end-to-end and service awareness.

Commercial requirements

31.1.1 The scope of the IPX Service Transit connectivity option is applicable only between the IPX Provider and the Service Provider.

31.1.2 IPX Provider agrees to convey the traffic exchanged between the Service Provider and a Participating Service Provider (with whom the Service Provider also deploys the IPX Provider’s IPX Service Transit), either directly or via a Third Party IPX for delivery to the Service Provider or the Participating Service Provider’s respective networks according to this Agreement and the applicable Service Schedule hereto; and

31.1.3 The Service Provider agrees to convey the traffic received from the IPX Provider to the Service Provider’s network, whereas (for the avoidance of doubt) such traffic according to this Agreement and the Service Schedule hereto may be:

Data received by the IPX Provider directly from a respective Participating Service Provider (with whom the Service Provider also deploys the IPX Provider’s IPX Service Transit);
or

Data received by the IPX Provider from a Participating Service Provider (with whom the Service Provider deploys the IPX Provider’s IPX Service Transit) via a Third Party IPX Provider.

IPX Service Transit Charging and Payments

31.1.4 General

IPX Service Transit Charging and Payment shall be settled in accordance to the respective IPX Service Schedule and other applicable clauses referring to this concept.

31.1.5 Charging components

- The charging components applicable to the IPX Provider’s IPX Service Transit with regard to any specific Service are defined in the respective Service Schedule.
- The charging components for IPX Service Transit are represented mainly by the IPX Service Transit Charge, i.e. the remuneration of the IPX Provider for the IPX Service Transit and the Termination Charges (a) quoted by the Service Provider and (b) agreed directly between Service Provider and the Participating Service Provider.
- The Service Providers shall pay the same IPX Service Transit Charge, whether a Third Party IPX Provider is involved or not.

The Termination Charges for each applicable Service shall be (a) agreed directly between the Service Provider and the Participating Service Provider in a separate agreement and (b) brought to the attention of the IPX Provider.

- In the event that Third Party IPX Providers are involved, the remuneration to such Third Party IPX Providers for the traffic handling, shall be combined and presented by the IPX Provider to the Service Provider as one invoice.

Settlement options for IPX Service Transit

The following two settlement options shall be available to all Services on request of the Service Provider:

31.1.6 Option A: Direct Settlement

- The Service Provider and the Participating Service Provider(s) (with whom the Service Provider deploys the IPX Provider's IPX Service Transit) shall perform the settlement of the applicable Termination Charges for the corresponding Service independently from this Agreement.
- The IPX Provider may invoice the Service Provider for the IPX Service Transit Charges and the Service Provider shall pay the IPX Provider:
- The IPX Service Transit Charges applicable for a respective Service are defined in the respective Service Schedule

31.1.7 Option B: Settlement via the IPX Providers

On request of the Service Provider, the IPX Provider shall perform on behalf of the Service Provider the settlement of the applicable Termination Charges for the Service in question between the Service Provider and the Participating Service Provider(s) (with whom the Service Provider deploys the IPX Provider's IPX Service Transit).

- The Service Provider shall be responsible to ensure that the Participating Service Provider(s) agree to perform the settlement via the IPX Provider(s).
- Further, it shall be the responsibility of the Service Provider to inform the IPX Provider about any change to Termination Charges, applicable between the Service Provider and the Participating Service Provider(s) (with whom the Service Provider deploys the IPX Provider's IPX Service Transit), with prior written notice of [state number of days agreed between parties] days and in any case no later than [state number of days agreed between parties] calendar days prior to such change coming into force. Such changes shall only be implemented on the first day of the following calendar month.
- The Service Provider shall specify its Termination Charge for the respective Service to the IPX Provider on a per Participating Service Provider basis. Consequently, Parties agree that the Service Provider is entitled to quote a different Termination Charge per different Participating Service Providers.
- The IPX Provider may invoice the Service Provider for the IPX Service Transit and the Service Provider shall pay the IPX Provider:
- The IPX Service Transit Charges applicable for a respective Service and as defined in the according Service Schedule

➤ The Participating Service Provider(s) Termination Charges

The respective implementation is stated within the applicable Service Schedule.

The IPX Provider will pay the Service Provider what due in accordance to the relevant Service Schedule for termination of traffic on the Service Provider's network. Netting between what due to the Service Provider and the Participating Service Provider (with whom the Service Provider deploys the IPX Provider's IPX Service Transit) on the basis of the respective Termination Charges, is an option that may be agreed between the Parties and in this case it will be stated in the applicable Service Schedule.

Technical Requirement

31.1.8 IPX Service Transit technical requirements shall be defined in accordance with IREG PRD IR.34, IR.67 and IR.77 and the applicable Service Schedule.

Operational and Maintenance Requirements and IPX Service Transit SLA

31.1.9 Both Parties will adhere to the GSMA IREG PRD IR.34, IR.67 and IR.77 and the applicable Service Schedule.

32 CONNECTIVITY OPTION "IPX SERVICE HUB"

Definition of Connectivity Option: IPX Service Hub

The IPX Provider's hub functionality ("IPX Hub") is a multilateral connection based on Service Awareness.

Traffic is exchanged between the Service Provider and multiple Participating Service Providers through the IPX Hub, which facilitates the service through a single agreement and connection between the Service Provider and the IPX Provider. The single agreement and connection enables inter alia cascading of quality of service responsibilities and of payments.

Commercial Requirements

32.1.1 IPX Service Hub

- The IPX Provider operates the IPX Hub enabling traffic exchange and Service Interworking between Participating Service Providers. Upon the terms and subject to the conditions set out in this Agreement, the Parties wish to establish terms and conditions for the IPX Service Hub.

32.1.2 Responsibility of the IPX Provider:

- Supply the IPX Hub to the Service Provider whereby the IPX Hub conveys traffic received from the Service Provider to the Elected Participating Service Providers' (see Annex 7 Definitions) Systems run by each Elected Participating Service Provider either directly or via another IPX Hub for delivery to a Participating Service Provider; vice versa the IPX Provider shall also convey traffic from the Elected Participating Service Providers to the Service Provider for termination to the Service Provider; and
- Procure, and provide to the Service Provider, the necessary Termination Services from, and in respect of, respectively, each Elected Participating Service Provider from which the Service Provider has elected to receive traffic by means of the IPX Hub in order to enable Service interworking; and
- The IPX Provider provides to the Service Provider the IPX Hub in accordance with the description set out in the corresponding Service Schedule, the Service Level Agreement and Test Plan and Operational Procedures included in the said Service Schedule.

32.1.3 Responsibility of the Service Provider

The Service Provider agrees to provide its Termination Service for traffic sent via the IPX Provider to the Service Provider according to this Agreement and the Service Schedule hereto which may include:

- Data received by the IPX Provider directly from a respective Participating Service Provider (with whom the Service Provider deploys the IPX Provider's IPX Service Hub) i.e. Elected Participating Service Provider; or
- Data received by the IPX Provider from a Participating Service Provider (with whom the Service Provider deploys the IPX Provider's IPX Service Hub) i.e. Elected Participating Service Provider, via a Third Party IPX Provider.

32.1.4 The Service Provider shall use the IPX Hub in accordance with this Agreement and the applicable Service Schedule hereto.

General Requirements

32.1.5 Cascading of Payments

- The Service Provider shall specify its Termination rate to the IPX Provider by Service according to the Service Schedule.
- The IPX Provider shall ensure transparency on the Participating Service Providers' Termination rates. Transparency in this context means a clear split, at an invoice level, between the Elected Participating Service Providers' Termination rates and other Service charging components as defined by the Service Schedule.
- Service Providers shall pay the same IPX Service Hub Transit charge, whether or not a Third Party IPX Provider is used.

Charges, Payment and Settlement

32.1.6 IPX Service Hub Charging and Payment shall be settled in accordance to the Section 5 of this Agreement and any applicable clauses referring to this concept.

32.1.7 IPX Service Transit Charging and Payment shall be made in accordance to the respective IPX Service Schedule and other applicable clauses referring to this concept.

32.1.8 Charging components: The Charging Components applicable to the IPX Providers for the IPX Service Hub with regards to any specific Service are defined in the respective Service Schedule.

32.1.9 The Charging component applied by the Service Provider to the IPX Provider for the Termination Service is detailed in the applicable Service Schedule.

32.1.10 In the event that Third Party IPX Providers are involved, the remuneration to such Third Party IPX Providers for the traffic handling, shall be combined and presented by the IPX Provider to the Service Provider as one invoice.

Opt-in or opt-out

32.1.11 Whether opt-in or opt-out applies may need to be subject to trial on a Service-by-Service basis, i.e. in reference to which particular Service is being implemented through the IPX Hub, and therefore it will be stated and defined in each Service Schedule.

Technical requirements

32.1.12 Technical requirements shall be defined in accordance with IREG PRD IR.34, IR.67 and IR.77.

Operational and Maintenance Requirements and IPX Service Hub SLA

32.1.13 Both Parties will adhere to the GSMA IREG PRD IR.34, IR.67 and IR.77 and the applicable Service Schedule.

Schedule A - Access Connectivity Schedule

The aim of this document is to provide general connectivity and Access requirements between Service Provider and IPX Provider. This document forms the basis for required connectivity requirements and bandwidth for the services highlighted in the Service Schedule and the relevant service class used

33 Access Connectivity Information

IP Traffic Class (Provided in Bits Per Second)	Forecast Bandwidth Requirement Class Basis	Overload Behaviour
1 - Conversational		Agreement shall be made between IPX Provider and Service Provider as to the handling of excess packets on a per Traffic class basis.
2 - Streaming		
3 - Interactive		
4 - Interactive		
5 - interactive		
6 - Background		

Overall Bandwidth Requirement (Provided in Bits Per Second): [REDACTED]

Physical Connectivity: [REDACTED]

Service Provider Access Location/Address: [REDACTED]

Access Connectivity Equipment Location: [REDACTED]

IPX Provider Access Location/Address: [REDACTED]

Access Connectivity Equipment Location: [REDACTED]

Local loop connectivity Requirements

Protocols/Physical: [REDACTED]

Technical Information: [REDACTED] (All specific technical information relating to Layer 2 requirements shall be included here.)

Address format (IP Version) : [REDACTED]

IP Addresses: [REDACTED]

Sub Net Mask: [REDACTED]

Bandwidth

All other bandwidth and obligations around bandwidth shall be covered by Annex 7.

Access

The IPX Provider shall provide all necessary physical and data layer access for Service Provider access set out in Annex 7.

Commencement of Access Connectivity Services

Access Connectivity Commencement Date: (State date agreed between parties with the following format
Month(in letters)/DD/YYYY)

Schedule B - Participating Service Provider Parameters

34 Service Specific Technical Requirements

Any Service specific technical requirements shall be defined within the Service definition document found as an Annex within IR34. All other Service specific requirements relating to the IPX Provider and/or Participating Service Providers requirements shall be defined here:

Technical Requirement	Configuration Parameters	Additional Information
[State Technical Requirement agreed between parties]		

35 End-to-End Requirements

All end-to-end requirements regarding QoS are subject to Annex 10.

36 Connectivity Information

IP Traffic Class	Traffic Class Requirement
1 - Conversational (VoIP, Video Conferencing)	
2 - Streaming (Audio, Video Streaming)	
3 - Interactive (Transactional Services)	
4 - Interactive (Web Browsing)	
5 - interactive (Telnet)	
6 – Background (Email download)	

Address format (IP Version):

IP Addresses:

Sub Net Mask:

Schedule C - Service Provider Parameters

37 Service Specific Technical Requirements

Any Service specific technical requirements shall be defined within the Service definition document found as an Annex within IR34. All other Service specific requirements relating to IPX Provider and/or Service Provider requirements shall be defined here:

Technical Requirement	Configuration Parameters	Additional Information
[State Technical Requirement agreed between parties]		

38 End-to-End Requirements

All end-to-end requirements regarding QoS re subject to Annex 10.

39 Connectivity Information

IP Traffic Class	Traffic Class Requirement
1 - Conversational (VoIP, Video Conferencing)	
2 - Streaming (Audio, Video Streaming)	
3 - Interactive (Transactional Services)	
4 - Interactive (Web Browsing)	
5 - interactive (Telnet)	
6 - Background (Email download)	

Address format (IP Version):

IP Addresses:
 Sub Net Mask:

Schedule D - Charging and Billing

40 IPX Provider Charging Components

Different Charges may apply depending on destination and the Participating Service Providers' Termination Rate.

Participating Service Provider	geographical destination	Participating Service Provider Termination rate	Transit Fee	Rate

41 Service Provider Charging Components

A different Termination Rate may be applied by the Service Provider depending on destination/Elected Participating Operator originating the traffic. The following charges shall apply to the IPX Provider for the Termination Service provided by the Service Provider under this Service Schedule.

Elected Participating Service Provider	Service Provider's Termination rate

Schedule E - Elected Participating Service Providers

This section describes all elected destinations, i.e. Service Providers, the connectivity options and the details that are Service specific related to that destination.

Destination (Participating Service Provider listed here)	Transit Option A (select as required)	Transit Option B (select as required)	Hub (select as required)	Overall Charging Rate (Including Transit Charge/ Rates/ Participating Service Party Termination Rate)

Schedule F- Service Contact Details

Notices and notifications relevant to the implementation and operation of this Service and listed in this Service Schedule will be considered as duly executed when exchanged between the Service Provider and the IPX Provider at the respective contact points defined here below.

42 Service Provider Contact Points:

- <Operator>
- <Additional info.>
- <Postal address>
- <Postcode>
- <COUNTRY>
- Contact person: <Name>
- Telephone: <+xx xx xx xx xx>
- Fax: <+xx xx xx xx xx>
- Email Address: xxx.xxxx@xxx.xxx.xx
- Service hours: <.....>

43 IPX Provider Contact Points:

- <Operator>
- <Additional info.>
- <Postal address>
- <Postcode>
- <COUNTRY>
- Contact person: <Name>
- Hotline: <+xx xx xx xx xx>
- Fax: <+xx xx xx xx xx>
- Email Address: xxx.xxxx@xxx.xxx.xx
- Service hours: <.....>

ANNEX 8 IPX TRANSPORT SLA

SERVICE LEVEL AGREEMENT FOR IPX TRANSPORT SERVICE

1 Purpose

The architecture of the IPX domain is clearly split in two layers: Service and Transport. The Service layer is in charge of Hub and Transit capabilities, and the Transport layer is in charge of maintaining along the whole path the technical characteristics of the communication depending on the Class of Service used.

This Annex is intended to provide the requirements to ensure the end-to-end Quality of the IPX Transport Service that will be described in this Service Level Agreements ("SLA") for the Transport Layer.

According to these principles, this Appendix includes the following areas:

- Service Definitions
- Definition of Terms
- Service Quality commitments
- Qualifying faults
- Service credits
- Service Credits claim procedures
- IPX Provider and Service Provider commitment to end-to-end quality
- Commitments to achieve guaranteed Service Level
- Troubleshooting
- Customer Care
- Fast response times
- Monthly reporting on QoS indicators
- SLA Review

2 Scope and Assumptions

The parties agree that this Annex to the Agreement:

- provides a detailed description of end to end Quality of Service (QoS), including related terms definition, initial requirements, provisioning and measurement methods.
- covers IPX end-to-end QoS at the transport layer for the communications between the Service Provider and the IPX Provider. That is, the traffic that starts from the Service Provider goes via the IPX Provider only or also via Third Party IPX Provider(s) to the destination/Terminating Service Provider (i.e. the Participating Service Provider on whose network the traffic has to be terminated). The IPX Provider commits to send to the Service Provider all the traffic it receives from other Participating Service Providers or Third Party IPX Provider(s) at the same QoS by which the IPX Provider receives the traffic.

- applies a cascade responsibility principle. This means that, in the typical scenario analysed in this document, in order to guarantee end-to-end QoS there will be an SLA in place between the Service Provider and the IPX Provider and an SLA between the IPX Provider and the Third Party IPX Provider (in the case where a Third Party IPX is involved in the traffic handling). IPX Provider must be held responsible for the behaviour of Third Party IPX Provider up to the second demarcation point (see definition below) that represents the point where the IPX Transport Service ends because the terminating Service Provider network is reached.
- in order to guarantee a full end-to-end SLA both ways from the originating Service Provider to the terminating Service Provider, a similar SLA chain must be in place in the backwards path from the destination/Terminating Service Provider to the originating Service Provider.
- assumes that any two Service Providers are interconnected by at most two IPX networks in the middle (whereby interconnection via two IPX Service Providers will be the second best solution compared to interconnection via one and the same IPX Service Provider). In case of more than two IPX Providers are needed to provide the connectivity, the QoS requirements shall remain unaltered.

The following circumstances are considered out of scope:

- A fault in, or any other problem associated with, Service Provider-supplied power, any Service Provider Equipment, non-maintained structured cabling.
- Service suspension in accordance with the terms of the AA.80 Agreement.

3 Service Definition

The requested Service is described as:

The Internet Protocol (IP) transport rendered by the IPX Provider to the Service Provider to allow the connectivity between the Service Provider and the Service Providers listed in the Agreement with the QoS requirements described in this Annex, enabling Service Interworking and (when applicable) Roaming services.

IPX end-to-end responsibility

- 3.1.1 The end-to-end path in an IP Service connection is a very long path made up of many components of a great diversity. Following drawing is only an illustration of what could be in the path:



3.1.2 The Service rendered by the IPX Provider 1 (IPX 1) is defined only for the transport path, excluding the Service Provider B Network, therefore, the responsibility of IPX 1 starts at the BG of the Service Provider A (SP A) and ends at the BG of the Service Provider B (SP B) as a general rule.

3.1.3 As shown in the picture above, the IPX Provider 1 network may need a Third Party IPX Provider (IPX 2) to reach all the destinations offered to the Service Provider A in their agreement, in this case the IPX 1 responsibility towards SP A will cover any Third Party IPX involved in the traffic handling, in a way that the responsibility regarding the Service Provider A will remain unaltered. That is, IPX Provider 1 will be responsible for the transport beyond its own IP network, but again, only until the BG of the destination/Terminating Service Provider B. Cascade of responsibility will apply for the different players involved.

Demarcation points

3.1.4 The demarcation point of the IPX is the point to which the responsibility of the IPX Provider extends. It could also be called responsibility boundary.

3.1.5 This Annex assumes – for simplicity purposes - that any two Service Providers are interconnected by two IPX networks.

3.1.6 From this assumption it can be easily understood how it applies to the rest of possibilities (only one IPX Provider in the middle, or more than one).

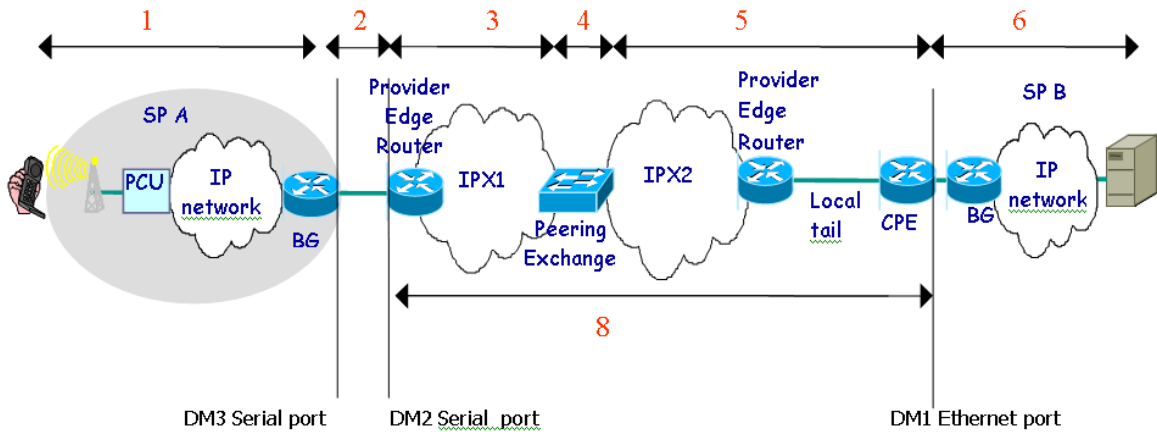
3.1.7 The responsibility of the IPX Provider is determined by two demarcation points:

- First Demarcation Point is the beginning of the IPX Provider's responsibility and is the point where the traffic is delivered from the Service Provider BG to IPX Provider router for the traffic transportation.
- Second Demarcation Point is where the IPX Provider's responsibility ends and is the point where the traffic is delivered to the terminating Service Provider from the last IPX Provider involved in the traffic termination.

- 3.1.8 It should be noted that Cascade of responsibility applies along the path up to the last BG, meaning that the responsibility for the whole transportation from the Service Provider's network up to the Terminating Service Provider's network remains on the IPX Provider, even if the whole path is not managed by the IPX Provider because there are Third Party IPX Providers involved in the traffic transportation end-to-end.

IPX Scenarios

In the case of an IPX provider supplying 'managed' CPE, End to End shall be from DM1 to either DM2 or DM3 (dependant depending on whether the local loop in stage 2 below is provided by the IPX Provider. See scenarios 1, 2, 3)

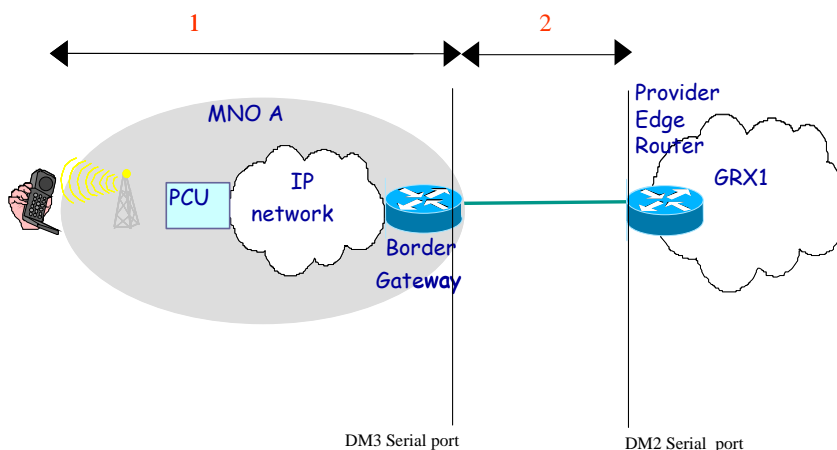


FIRST of the two Demarcation Points (left part of the sketch set out above)

It must be mutually agreed between the Parties which of the following scenarios would apply to this Appendix. **Hence, please delete those two scenarios which are NOT intended!**

Scenario 1 – Local loop (= local tail) provided by the Originating Service Provider.

The Demarcation Point for End-to-End purposes shall be DM2.



In this case the IPX Provider shall be responsible for all the KPIs of stage 8 above. If two IPX Providers are involved they have to provide access to their Edge Router to each other to return measurements.

Scenario 2 – Local loop provided by the IPX Provider

The Demarcation Point for End-to-End purposes shall be DM3.

Providing that the Service Provider shall agree to allow the IPX Provider to measure and monitor the Border Gateway.

Scenario 3 – Local Loop provided by the IPX Provider. Service Provider refuses access to the Border Gateway

The Demarcation Point for End-to-End purposes shall be DM2

The IPX Provider will only be responsible for Availability of the local loop (= local tail). KPIs such as RTD, packet loss & jitter cannot be measured on the local loop and are left to the responsibility of the Service Provider.

3.1.9 SECOND (of the two) Demarcation Points (right part of the sketch set out above):

The demarcation point between the last IPX Provider (the IPX provider or a Third Party IPX Provider) and the Terminating Service Provider marks the end of the responsibility of IPX Provider for the Service.

There can be different configuration of the second demarcation point depending of who is assuming the provision of the last local loop (i.e. the Third Party IPX Provider or the Terminating Service Provider) in the same way as it works for the First Demarcation Point.

The following list reflects the configuration of the Second Demarcation Point for each destination/Terminating Service Provider Service Provider.

COUNTRY	OPERATOR	3rd Party IPX Provider (if any)	Second Demarcation Point (Provider Edge Router or Participating Service Provider BG)	Comments

4 Quality Of Service

The Service, that is, the transport service has different levels of performance depending on the needs of the user service carried on, e.g. a video call, email, etc.

The 3GPP TS 23.107 have defined 4 different 'OoS Types' or 'Traffic Classes', each of them with its own characteristics. The Parties associate these different traffic classes to different levels of transport performance in terms of attributes like delay, jitter, packet loss that will characterize the traffic.

The main distinguishing factor between them is the level of sensitivity to delay. The traffic classes are (for UMTS networks):

- **Conversational:** Defined to support real time applications extremely sensitive to delay
- **Streaming:** Also for real time applications but less sensitive to delay.
- **Interactive:** Used for those interactive applications for which real time is not expected. Due to the high number of customer services that may be included, as subset of Interactive Classes is defined:
 1. Fatal
 2. Priority 2
 3. Priority 3
- **Background:** For the rest of non real time applications.

Key Performance Indicators

4.1.1 There is a set of key performance indicators that reflects the Level of Service rendered by the IPX Provider.

4.1.2 These KPI's are described below and their values are set out in the SLA

- **MTRS (=Maximum Time to Restore the Service) in case of**
 - Fatal errors: x hours
 - Severe errors: y hours
 - Warning errors: z hours
- **Traffic Classes parameters**
 - Delay
 - Jitter
 - Packet Loss
- **Service Availability**
- **Network Availably**

4.1.3 These indicators are based with regard to the traffic exchanged by Service Provider and IPX Provider networks for each destination or Terminating Service Provider, so the origin of the measurements is the BG of the Service Provider.

Besides the global measurements (on a monthly basis), detailed figures concerning only the peak hours traffic are also taken into account.

4.1.4 Maximum Time to Restore the Service (MTRS)

4.1.5 Traffic Classes parameters

Delay

Roundtrip delay is the total time that it takes to transmit an IP packet from the Originating Service Provider to the Terminating Service Provider and receive the reply packet from the Terminating Service Provider at the Originating Service Provider. (Measured over a given period of time, in milliseconds). For more detailed definition about this KPI consult IR.34.

Jitter (=Delay variation, =Standard Deviation of Delay)

Jitter is the delay variation among the different packets sent from the Originating Service Provider to the Terminating Service Provider (Measured over a given period of time, in milliseconds.) For more detailed definition about this KPI consult IR.34.

Packet Loss

Packet loss is the ratio of dropped packets to all packets sent from the Originating Service Provider to the Terminating Service Provider in percents (Measured over a given period of time). For more detailed definition about this KPI consult IR.34.

4.1.6 Service availability

Service availability is the percentage of time the IPX transport service is working, i.e. the transport of IP packets with the requested QoS to a Terminating Service Provider works successfully. For more detailed definition about this KPI consult IR.34.

The availability percentage to access the service offered by the IPX Provider will be calculated as the average of the time when the service was available to be used by the Service Provider during each (calendar)month as follows:

where:

- A is the number of hours in the period.
- B is the time without service due to programmed works
- C is the time without service due to fatal failures
- P is the total availability percentage

Parties agree:

- The measurement period is one calendar month.
- The unavailability time is the time the service has been unavailable within the measurement period.
- The unavailability time starts when the IPX Provider has noticed a fatal problem or the Service Provider reports it to the IPX Provider help desk. A trouble ticket

will be opened when unavailability time starts. The unavailability time ends when the Service is available again.

- Each fault is counted only once. Hence, one error having effect on several KPIs shall entitle the Service Provider to a Penalty of only one of the KPIs involved.
- The information sources for service availability are internal management system measurements, reporting and trouble ticket history.

Measurement Points

4.1.7 The Measurement Points are identical to the Demarcation Points agreed between the Parties. It is between these points that the IPX Provider guarantees the KPIs committed.

4.1.8 (deleted)

Targets for KPI

4.1.9 Maximum Time to Restore the Service (MTRS)

Severity	Maximum restoration times	Initial Feedback	Update Interval
Fatal	4 hours	30 minutes	1 hour
Severe	6 hours	30 minutes	4 hours
Warning	5 working days	30 minutes	2 working day

The maximum number of qualified fatal faults during the quarter must not be higher than [State number of faults agreed between Parties]

Additionally, the maximum number of fatal faults associated with the same problem and occurring with the same Terminating Service Provider must never be more than one during the year's quarter.

4.1.10 Traffic Classes

- The table below shows the standard form for the committed values for the KPIs associated to each Traffic Class that has to be fulfilled depending of the region the SP is located and the location of the Elected Participant Service Provider
- The above means that a single table must be fulfilled for any single destination

3GPP QoS Information		End to End QoS Requirement			Service Example
Traffic Class	THP	Max Delay	Max Jitter	Packet Loss	
Conversational	N/A	see IR.34	see IR.34	see IR.34	VoIP, Video Conferencing
Streaming	N/A	see IR.34	see IR.34	see IR.34	Audio/Video Streaming
Interactive	1	see IR.34	N/A	see IR.34	Transactional Services
	2	see IR.34	N/A	see IR.34	Web Browsing
	3	see IR.34	N/A	see IR.34	Telnet
Background	N/A	see IR.34	N/A	see IR.34	E-mail Download

The QoS type (specified as a combination of traffic class and Priority) is defined in 3GPP TS 23.107.

Due to technical constraints, it is currently not possible for the IPX Provider to distinguish and categorize the IP traffic according to the different traffic classes described in the table above. Therefore for the time being there will only be one set of KPIs (max delay, max jitter, and packet loss) valid and applicable for the IP traffic as a whole. This means that only one target value will be defined for each of max delay, max jitter, and packet loss KPIs according to the table above. The target values should allow the end-to-end transmission of the conversational services with the necessary QoS required.

The categorization of the IP traffic into the various traffic classes (e.g. background, streaming) will be applicable once the necessary technology will be available, allowing also the set of KPIs to be valid and applicable to each of the traffic classes individually. At that point of time each of the different traffic classes will have its own KPIs.

4.1.11 Service availability

The availability target is defined in the IR.34

5 Qualifying Faults

When according to the Service Provider's own measurement, the average daily level of QoS achieved by the IPX Provider as measured via the QoS indicators listed above, falls below the values agreed between the Parties of this Agreement as listed in this SLA, the Service Provider may raise a "Qualifying Fault".

The Service Provider must request the IPX Provider to handle and investigate all disturbances in quality performance, and to commit to resolve [redacted] [state percentage agreed between Parties]% of Qualifying Faults within [redacted] [state number of hours agreed between Parties] hrs either when the fault lies in its own network or when the fault lies in a Third Party IPX network involved in the traffic conveyance/termination.

When according to the Service Provider's own measurement, the average weekly or monthly QoS level achieved by the IPX Provider as measured via the QoS indicators listed above falls below the values agreed between the Parties the Service Provider is entitled to raise a "qualifying weekly/monthly fault".

The Service Provider must request the IPX Provider to handle and investigate all disturbances in quality performance, and to commit to resolve [redacted] [state percentage agreed between Parties]% of Qualifying Faults within [redacted] [state number of hours agreed between Parties] hrs either when the fault lies in its own network or when the fault lies in a Third Party IPX network involved in the traffic conveyance/termination.

6 Service Credits

Should the MPR or other source of information agreed between the IPX Provider and the Client Operator show that the actual level of performance achieved in the relevant period deviates from the commitments specified in this SLA (KPIs' target values committed in Schedule A), the Client Operator reserves the right to:

- Request a Service Credit. The precise amount of Service Credits to be applied by the IPX Provider to the Client Operator for the relevant period is to be agreed by the parties e.g. deduct x% from the total out payment due to the IPX Provider for the month in question. The Service Credit will be applied through a credit note relating to the concerned month; and/or
- To cease its obligations under the Agreement, e.g. to continue to route traffic to the IPX Provider on the effected destination(s).

6.1 Qualifying Claims

Service Provider may submit a claim for a service credits when a Qualifying fault as been raised and not resolved in the committed time.

6.2 Service Credit Level

Service Providers can use Schedule G attached to this SLA as reference

6.3 Service Credits Claim Procedure

6.3.1 In order to claim for a service credit, Service Provider may provide the following details of the faults to the IPX Provider Account Manager:

- IPX Provider fault reference
- Service Provider fault reference
- Destination
- Time of notification
- Time of resolution
- Severity of error
- Amount of credit claimed

6.3.2 The mechanism for compensating any eventual service credit due will mutually agree between parties.

7 Controlled Connectivity policy

In order to avoid deterioration of the quality of service, information on the connectivity for each Terminating Service Provider shall be made transparent to the Service Provider.

In any case, the direct termination of traffic by the IPX Provider on the Terminating Service Provider shall be favoured whenever it is technically possible.

The Service Provider may request the IPX Provider to provide all connectivity information associated to its offer, namely identifying the type of routing used per each Terminating Service Provider. In particular, the minimum information that the IPX Provider shall provide to the Service Provider consists of the type of connectivity used to reach each Terminating Service Providers, classifying the connection into two groups depending if the connectivity is made through: direct connectivity or, connectivity through a Third Party IPX Provider.

Direct Connectivity

7.1.1 Direct connectivity to Participating Service Providers is when the IPX Provider offers to the Service Provider a direct connectivity with the Participating Service Providers' networks (i.e. the Terminating Service Providers). That is, only one hop from the Service Provider and the Terminating Service Provider

Indirect Connectivity

- 7.1.2 Indirect connectivity to Participating Service Providers is when the IPX Provider uses a Third Party IPX Provider to offer connectivity to such Terminating Service Provider. That is, maximum two hops are needed between the Service Provider's network and the Terminating Service Provider.

8 Customer Care

The IPX Provider must provide a 24x7 Help Desk connectivity to support the needs of this SLA and to attend the Service Provider's enquiries.

Monitoring

- 8.1.1 The IPX Provider must provide a web access monitoring tool where the Service Provider must be able to see the performance of the IPX Provider for the traffic object of his agreement.
- 8.1.2 For avoidance of doubts the measurements shown in this web access must be only related with the traffic where the Service Provider is the originating network.

9 Operation & Maintenance Agreement – Fault Management

Introduction

- 9.1.1 This section details the operational processes and measures to be put in place by the IPX Provider and the Service Provider to guarantee the proper functioning of for the IPX Transport Service in line with the requirements of this Agreement and SLA.
- 9.1.2 The terms used in the Service Level Agreement between the IPX Provider and the Service Provider have the same meaning in this Operations and Maintenance Section unless otherwise stated.









Central Notification Addresses

- 9.1.3 Each Party must name a central entity (single point of contact) that is reachable 24 hours a day, 365 days a year and responsible for official notification processes in case of faults affecting the Service.
- 9.1.4 The requirements for the central notification contact are:
- Contact must be available 24 hours a day at a single telephone contact number
 - Competency concerning operational issues for IPX Services
 - Remote access to decentralized operational network elements
 - Relevant access to tools, resources and knowledgebase to solve problems

24 x7 Reference Details

IPX Provider Details

Service Provider Details

Contact Point		
Telephone Number		
Facsimile Number		
Email Address		

Fault Classification:

The IPX Provider shall open a trouble ticket in the case of any fault on the Service reported by the Service Provider or as identified by the IPX Provider at the contact points indicated in the Matrix above. A severity level shall be assigned to each trouble ticket to describe the effect of the fault.

The following three levels of severity will be used:

9.1.5 Fatal Errors include

A complete breakdown/outage, critical performance degradation, functionality of a single Service causing Service unavailability including but not limited to:

- Failure of connectivity and/or traffic between the IPX Provider and a connected Third Party IPX Provider
- Total loss of connectivity between the Service Provider and the IPX Provider platform
- Service affecting outage in the interconnection equipment
- Serious degradation of the quality as measured by the KPIs indicated within this SLA measured by the Service Provider or the IPX Provider

9.1.6 Severe Errors include

The functionality of the Service is affected to a large extent, major performance degradation or loss of important function occurs, legislation or security is critically affected. Degradation of the service, either of the performance or the quality, including but not limited to:

- If redundant connection is ordered separately: Loss of diversity or duplicity of the routes or/and signalling links, without isolation with the other network, i.e., one link of the redundant connections is out of service;
- backbone congestion causing excessive packet loss or jitter.
- If local loop to Terminating Service Provider is provided by the IPX Provider and IPX Provider has access to the Termination Service Provider's Boarder Gateway: Degradation of the QoS to any Terminating Service Provider, being defined as when any measured value for KPI is below the target threshold as indicated in the SLA.

9.1.7 Warning Errors include

A minimal limitation to the functionality of the Service. This Fault implies irregular network behaviour without operational constriction and without an impact on business, including but not limited to:

- Real-time reporting portal access problem;
- Asymmetric routing management issues;
- Failure affecting isolated or individual service numbers.

Fault Reporting procedures:

The following section describes the fault reporting procedure for both the Service Provider and the IPX Provider.

9.1.8 Fault Reporting by the Service Provider:

The IPX Provider shall provide a fault reporting capability that is available 24x7.

Suspected faults on the Service shall be reported to the IPX Provider by any of the approved methods listed above (phone/fax/email) to the contact indicated in the matrix detailed in 9.2 within this Annex. Reporting of fatal faults shall in any case also be made by a phone call to the same contact. Faults will be logged and each call will be time-stamped and allocated a unique number in the IPX Provider trouble ticket system to be used for all progress updates. The Service Provider will also provide its internal reference number for tracking.

To diagnose and resolve suspected faults, the IPX Provider requires certain information when the problem is first reported. This will include:

- Company name
- Name, telephone number and email of the person reporting the fault
- Service Provider's contact name, telephone number and email, if different from the above
- Service Provider's trouble ticket number for this fault (i.e. the Service Provider's internal reference number for tracking)
- Physical location of the fault if identified.
- Details of the fault (IPX Provider's services at site, symptoms, any tests carried out in attempting to isolate the problem)
- Any environmental conditions, such as a power failure, that may be causing the fault
- Severity
- Service Provider domain/DNS details (if applicable)
- IPX Provider traffic details should be included if available.

9.1.9 Fault Reporting by the IPX Provider

The IPX Provider shall without undue delay inform the Service Provider by telephone and email using the contact points given in the matrix detailed in 9.2 of this Annex, after becoming aware of any fatal fault in the IPX System, with any system run by any Third Party IPX Provider or with any Terminating Service Provider System or Service Provider System or other system involved in the traffic delivery having an impact on the Service.

The IPX Provider also agrees to work towards the implementation of an electronic notice board solution for

providing such notifications. Once such electronic notice board solution is implemented the IPX Provider shall no longer be bound to give notice in the way set out in clause 9.4.2.1 above but shall do so in this newly set up notice board. Following the issue of any such notice in respect of a fault, the IPX Provider shall keep the Service Provider informed of the progress of remedial works according to the time interval agreed in Clause 4.3.1 of this Annex.

Fault Resolution:

9.1.10 The IPX Provider shall start proper fault handling intervention actions without undue delay and inform the Service Provider accordingly, in line with the procedure stated within clause 9.4.

9.1.11 The time interval (to calculate MTRS) shall start from the moment when the TT (= trouble ticket) is opened.

9.1.12 Both Parties shall provide each other with the agreed progress updates as reported in Clause 4.7.1 above.

9.1.13 The minimum information required in the update are:

- Expected resolution date/time
- Any information as to the cause of the fault
- All actions undertaken to date since the previous update
- Any further information required
- Results of end-to-end measurement if applicable.

9.1.14 If the IPX Provider cannot resolve a fault within the defined MTRS targets defined in clause 4.7.1, the IPX Provider shall allocate extra resources, via an escalation procedure, to achieve its resolution.

9.1.15 In all cases, if the fault is not resolved within the timeframe agreed and there is a degradation of the agreed upon Service quality level the Service Provider reserves the right to:

- Request the IPX Provider to re-route the traffic to another Third Party IPX Provider if appropriate
- or
- Re-route the traffic to another IPX provider

Escalation procedure

9.1.16 Both Parties must name contact persons as single points of contact for each escalation level. The escalation procedure can be delayed at the discretion of the escalation contact points (being of same level) for a mutually agreed period when

the fault has been identified and is being addressed by engineering staff of the appropriate Party.

9.1.17 Non-service affecting faults will not be escalated outside of normal working hours.

9.1.18 The recipient of the trouble ticket may (but is not obliged to) escalate a fault in advance of the times set out below if it requires further information to progress the fault and that information has not been provided within a reasonable timescale.

9.1.19 In some cases certain faults need not be escalated automatically. A case can occur where the investigation of a fault is in progress and any escalation out of hours would serve no practical purpose. Both parties will use reasonable and mutually agreed judgment regarding the benefit of escalating a particular fault.

9.1.20 All escalation between the Service Provider and the IPX Provider must be accomplished using the following steps:

Escalation Level	IPX Provider	Service Provider
Level I	____ (name, email, phone#)	____ (name, email, phone#)
Level II	____ (name, email, phone#)	____ (name, email, phone#)
Level III	____ (name, email, phone#)	____ (name, email, phone#)

Fault Status	Max Escalation Time to Level II	Max Escalation Time to Level III
Fatal	____ (time)	____ (time)
Severe	____ (time)	____ (time)
Warning	____ (time)	____ (time)

Official Status Information

9.1.21 After the initial information, updates will be given as frequently as set out in clause 4.7.1. Upon reasonable request by either Party, the other Party's Central Notification Address will give information on the status of the trouble/problem.

Fault Clearance Procedures

9.1.22 Only a Party's Central Notification Address can issue a fault clearance (closure of trouble ticket for fault resolution).

9.1.23 If one Party's Central Notification Address closes a trouble ticket for fault resolution and informs the other Party thereon and the other Party does not complain about the fault still being there such fault will be classified as «cleared» and the «Response and Restoration Time Clock» are stopped.

Duration of a fault

9.1.24 The duration of a fault shall be defined as per clause 4.5.6.

Communications

9.1.25 The IPX Provider will undertake to communicate to the Service Provider the following events within the timescales below and at the contact points defined in clause 9.2 above:

- Planned Outages (including product upgrades/updates): minimum [redacted] [state number of days agreed between parties]. days of prior written notice
- Communication of Suspension of IPX Services for Operational Events: as soon as reasonably possible.

9.1.26 Parties agree that:

- Emergency situations shall be expedited.
- Where an event is planned, each Party is required to notify the other in advance of full details concerning that event. A brief explanation of the operation shall be included and the impact or risk of impact, in the IPX Service shall be always specified.

Planned Outages, Product Updates/Upgrades

9.1.27 Before a planned work is undertaken that might affect the Service, each Party shall give a notice to the other Party (receiving Party) at the contact points indicated in clause 9.2 above in line with the timescales stated in clause 9.10 above; if such timescales are not respected, the work will be considered as an unplanned outage (i.e. as a fault).

9.1.28 (deleted)

9.1.29 Unless agreed otherwise all planned works shall be made Monday through Thursday (if working day) between 02:00 and 06:00 am local time.

9.1.30 In all cases described above, each Party's network management organization will take action to reduce disruption of traffic flows to the minimum.

9.1.31 IPX Provider shall inform the Service Operator of a special contact who will be available during the time the IPX Provider carries out work which may affect the Service Provider's traffic. Upon the Service Provider's request this contact will provide information on the status of the work being carried out.

9.1.32 Both Parties reserve their right to refuse a scheduled event for a good reason. In such a case the Parties will postpone the work to a later date which need not fit into the time slot set out in 9.11.2.

9.1.33 Advice of proposed planned work shall be notified (e.g. by e-mail) to the contact points indicated in clause 9.2 above. Within 1 working day after receipt the

receiving Party shall acknowledge receipt of the advice (e.g. by a return e-mail). Only if the receiving Party fails to acknowledge the receipt, the originating Party shall call the contact number of the receiving Party and ask for a "GO" or "NO GO" decision. The originator shall not carry out the work as long as the receiving Party has not reacted to the notice at all (otherwise the work will be considered as an unplanned work/outage, i.e. an MTRS impacting fault).

9.1.34 If a new (e.g. software) release does not work properly for any reason the IPX Provider will have and make use of a rollback process to revert the system to its original working state. In such a case, the time to restore the proper functionality of the Service shall be taken into account when measuring the MTRS levels.

9.1.35 The Parties shall make no changes to their systems and any outage is defined as fatal during this freeze period: [redacted] (set out days and time zone, e.g. 24 December – 26 December local time).

Fault Handling Performance Reporting

9.1.36 This section sets out the reports that shall be supplied by both Parties. The information to be measured and supplied shall be agreed between the Parties at the Agreement's signature.

9.1.37 To be measured and/or supplied:

- Date and hour of the receipt of information pertaining to each Fault notification;
- Date and hour of acknowledgement of receipt of Fault notification;
- Date and hour of Fault resolution (and notification).

9.1.38 The IPX Provider is to supply to the Service Provider a monthly "Fault Report", with the following fields completed:

Monthly Fault Report								
IPX Provider Trouble Ticket No	Service Provider Trouble Ticket No	Priority	Brief description of the problem	Brief description of cause of the problem	Start Fault Date & Time	Response Date & Time	Resolution Date & Time	Time to Restore the Service
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

9.1.39 Based on this information, the IPX Provider is to provide a monthly performance report including the following statistics for the past month.

- Reporting Party

- Reporting Period (Calendar Month, i.e. January 2006)
- Faults by severity and Terminating Service Provider
- Number of open tickets at the end of the reporting period
- Number of tickets opened during the reporting period
- Number of tickets closed during the reporting period
- Average resolution time based on the closed tickets during the reporting period
- Number of opened Fatal trouble tickets

9.1.40 Parties agree that:

- The report shall be provided no later than the 10th calendar day of the month following the month to which the report applies
- The Service Provider commits to validating the data provided by the IPX Provider not later than the 20th calendar day.
- Reports shall be provided by the IPX Provider either online via an internet interface or by email:

	Name	Position	E-mail Address
1	Service Provider Contact #1	■■■■	■■■■
2	Service Provider Contact #2	■■■■	■■■■
		

9.1.41 Either party may change its contact names by providing written notice to the other Party seven days in advance of the change being valid.

9.1.42 In the event there is a discrepancy in the reporting of the KPI, between the reports provided by IPX Provider, and the Service Provider's own measurements, the Parties will agree the reconciliation process to follow.

10 Operations & Maintenance – Non-fault Management

Service Management

10.1.1 Such Customer Care Service shall be provided on Non-Faults situations to include, non-fault related operational problems, operations and maintenance routines and documentation, pricing and billing queries and technical information.

10.1.2 This service shall be provided Monday – Friday, 0900 - 1700 (Austrian time) excluding Public Holidays.

Traffic Management

10.1.3 The Service Provider commits to providing traffic forecasts at least monthly. The traffic forecasting provisions shall be used for dimensioning the transport capabilities of the IPX Provider's network and the IPX Provider's termination capabilities. They shall not have any binding effect unless otherwise agreed between the IPX Provider and the Service Provider in writing.

Participating Service Provider Management

10.1.4 Pursuant to the provisions for Election and Activation of the Participating Service Providers, the Service Provider may request the IPX Provider from time to time to activate the Interworking between its own network and a new Terminating Service Provider not included in the IPX Provider's list of Participating Service Providers.

10.1.5 In such cases, the IPX Provider shall inform the Service Provider within one month from his request, of the road map for implementation of the Interworking between the Service Provider and the required Terminating Service Provider.

10.1.6 If feasible, the IPX Provider shall offer this interconnection as a directly connected Terminating Service Provider to his own service, otherwise shall use a Third Party's IPX to implement the required IPX Transport to the required Terminating Service Provider in the shortest possible time.

10.1.7 At mutually agreed intervals the IPX Provider shall provide the Service Providers with its forecasts on the activation of new Terminating Service Providers. Those forecasts shall be used by the IPX Provider for implementing all necessary technical and charging parameters and by the Service Provider for systems configuration.

Monthly traffic report

10.1.8 The IPX Provider will produce traffic statistics in order to show:

- The total volume of traffic transmitted per quarter calendar year and per calendar month
- The maximum amount of traffic transmitted during the busiest hours,
- The average according to size definition

10.1.9 The Traffic report shall be used for forecast and billing management by both the IPX Provider and the Service Provider.

10.1.10 The results shall be monthly reported in the traffic report.

Quality of Service (QoS) Reports

10.1.11 The IPX Provider shall provide Monthly Performance Reports (MPR) on the QoS for the traffic handled from the Service Provider. These reports should be available to check the level of performance of the IPX service provided. Such level of performance is measured through the KPIs as indicated in this Appendix.

- 10.1.12 Monthly Performance Report (MPR):
- The MPR must include hourly values for the KPIs defined. The values should be measured 24 x 7.
 - The MPR shall be available to the Service Provider no later than the 10th calendar day of each month. By definition, the MPR shall detail the performance of the previous month.

Maintenance Operations management

10.1.13 Where an outage is planned by the Service Provider or the IPX Provider, the Party causing the outage is required to notify the other in advance at the contact points indicated in clause 9.2 with full details concerning that outage. A brief explanation of the operation shall be included and the impact or risk of impact, on the service shall be always specified.

- 10.1.14 Periodical maintenance tests
The IPX Provider shall perform regular tests to check:
- The proper functionality of the Service Provider's connection to the IPX Provider's platform;
 - The Interworking between the Service Provider and its Terminating Service Providers

10.1.15 The Parties will mutually agree, and document in the relevant Service Schedule, the appropriate maintenance tests to be performed including the allocation of any costs.

Parameter Change Notification & contact points update

10.1.16 The IPX Provider and the Service Provider shall agree at signature of their Agreement on ad hoc timing for notification of network and billing parameters' change & contact points' update.

Connection between IPX Provider System and the Service Provider's System

10.1.17 The IPX Provider shall designate account manager(s) as contacts for the IPX Transport Service.

10.1.18 The account manager shall co-ordinate all technical and implementation operations with the Service Provider and shall report regularly to them on the project progress, unless otherwise agreed between the parties.

Operating period

10.1.19 The IPX Provider shall designate an account manager to manage all technical and rollout operations required when a new Terminating Service Provider has to be activated.

10.1.20 Activation is considered to take place from the moment the Service Provider requests to implement the Service Interworking with that Terminating Service Provider and until 1 month after the relevant Commencement Date.

11 SLA Review

The Service Provider and the IPX Provider agree to perform a review of the SLA's QoS benchmark levels every 6 months to verify the necessity to update such levels in order for them to be always in line with the current technology and market trends.

2 SCHEDULE A – ACCESS CONNECTIVITY SCHEDULE

[TO BE AGREED BETWEEN PARTIES]

**3 SCHEDULE B – PARTICIPATING SERVICE PROVIDER
PARAMETERS**

4 SCHEDULE C – SERVICE PROVIDER PREMISES

5 SCHEDULE D – CHARGING AND BILLING

[TO BE AGREED BETWEEN PARTIES]

**6 SCHEDULE E – ELECTED PARTICIPATING SERVICE
PROVIDERS**

7 SCHEDULE F – SERVICE CONTACT DETAILS

8 SCHEDULE G – SERVICE CREDIT LEVEL

If the IPX Provider breaches any KPIs, the IPX Provider shall report the breach to the Service Provider.

If the Service Provider accrues the right to a Performance rebate, such rebate shall be automatically applied by the IPX Provider within the invoice of the relevant invoicing month, without the need of a request made by the Customer.

In the case where the Service Provider accrues the right to more than one rebate for a single event (e.g. Service availability and MTRS threshold exceeded) only the highest rebate shall apply.

The Parties agree that the KPIs subject to Service Credit procedure are:

- [TO BE AGREED BETWEEN PARTIES]

In six months time the Parties may review the agreed KPIs list in the light of adding/removing KPIs.

Service Credits Claim Procedure: in order to claim for a Service Credit, the Client Service Provider shall notify the IPX Provider of the request of Service Credit, no later than the period agreed between the Parties, with the following information:

- **KPIs affected**
- **Amount of credit claimed**

For the avoidance of doubt, Service Credit shall not apply in the following instances:

- **Any event that falls under section 17 of the Agreement (Force Majeure)**
- **Degradation of performance on the affected route/s for the period in question is found to be the result of originating and/or terminating end performance or end customer behavior which effects the successful delivery of the call;**

[This is a suggestion of how this schedule A may be but IT MUST BE AGREED BETWEEN PARTIES]

ANNEX 9 CHARGES for TRANSPORT

The IPX Provider will charge the Service Provider for transport service:

[TO BE AGREED BETWEEN PARTIES]

ANNEX 9 CHARGES FOR IPX TRANSPORT

