



GUIDELINES ON NATIONAL ROAMING

June 2021

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THE NIGERIAN COMMUNICATIONS COMMISSION

NIGERIAN COMMUNICATIONS ACT 2003

GUIDELINES ON NATIONAL ROAMING

PART I INTRODUCTION

1. Background

- (1) In exercise of the powers conferred upon it by Section 70 of the Nigerian Communications Act, 2003 and other enabling powers in that regard, the Commission hereby makes these Guidelines.
- (2) These Guidelines are intended to give effect to the provisions of licences which permit the licensees to enter into agreements for the purpose of providing National Roaming services in Nigeria, subject to the prior approval of the Commission.
- (3) These Guidelines are designed and developed to encourage National Roaming between Roaming Providers and Roaming Seekers within a predetermined framework to remove uncertainty and ensure seamless communication across all networks in Nigeria.

2. Objective

The objective of these Guidelines is to prescribe a regulatory framework for the implementation of National Roaming services in Nigeria.

3. Scope

- (1) These Guidelines shall apply only to holders of licences validly issued by the Commission, containing a condition that makes the holder eligible to enter into a national roaming service agreement.
- (2) National Roaming services shall be provided within the geographical boundaries of Nigeria.
- (3) These Guidelines are to be read in conjunction with the Act, the Collocation Guidelines, Interconnection Regulations, Quality of Service Regulations, Competition Practices Regulations, other subsidiary legislations that may be issued by the Commission from time to time, and relevant Licence Conditions.

PART II
LEGAL PROVISIONS

4. Procedure for National Roaming

- (1) Duly authorised Service Providers shall request and negotiate National Roaming Agreements with each other on bi-lateral and non-discriminatory terms.
- (2) A Roaming Seeker requesting for National Roaming services shall forward a duly completed Roaming Request Form A contained under Schedule 1 of these Guidelines to the Roaming Provider.
- (3) A Roaming Provider shall notify the Roaming Seeker of its approval or rejection of the Roaming Request in line with the procedure stated under Sub-paragraph (5) and (6) below.
- (4) Where the Roaming Seeker receives no response from the Roaming Provider within 15 days of its request, the Roaming Seeker shall immediately notify the Commission in writing, and the Commission shall take necessary steps to ensure the Roaming Provider responds to the Roaming Request.
- (5) Where the Roaming Request is approved,
 - (a) The Roaming Provider shall within 15 days of receipt of the Roaming Request notify the Roaming Seeker of its acceptance by completing the relevant section of the Response to Roaming Request Form B contained under Schedule 1 of these Guidelines.
 - (b) Parties shall thereafter enter into a Non-Disclosure Agreement and commence negotiations of the terms of the National Roaming Agreement.
 - (c) Parties shall conclude negotiations on the terms of the National Roaming Agreement and execute same within 60 days from receipt of the Roaming Request.
 - (d) Parties shall ensure that the National Roaming Agreement is submitted to the Commission for review and approval, prior to registration, within 14 days of execution by parties.
 - (e) If within 15 days from the date of submission the Commission does not act on the National Roaming Agreement, such shall be deemed approved and registered.

- (f) The Commission reserves the right to request for additional information or amendment of relevant parts of the National Roaming Agreement in order to comply with the provisions of the Act, these Guidelines, and any other relevant subsidiary legislation or regulatory instrument.
 - (g) All negotiations for Roaming must be done in utmost good faith. Neither party shall:
 - (i) Obstruct or delay negotiations.
 - (ii) Refuse to provide information relevant to an agreement including information necessary for the required cluster.
 - (iii) Refuse to designate proper representative to expedite negotiation.
 - (h) National roaming services shall commence within 90 days from receipt of the Roaming Request.
- (6) Where the Roaming Request is rejected,
- (a) The Roaming Provider shall within 10 working days of receipt of the Roaming Request notify the Roaming Seeker and the Commission of its refusal by completing the relevant section of the Response to Roaming Request Form B contained under Schedule 1 of these Guidelines and furnish supporting evidence therewith.
 - (b) The following are grounds for refusal of Roaming Requests under these Guidelines:
 - (i) Insufficient capacity.
 - (ii) Non-payment by the Roaming Seeker of indebtedness for other services such as interconnection and shared facilities.
 - (c) It shall be the responsibility of the Roaming Provider to prove the existence of any of the grounds listed under (b) above.
 - (d) Notwithstanding the above, where the Commission investigates any of the grounds listed under (b) and determines that it is not justifiable, it shall request the Roaming Provider to respond to the Roaming Request Form A of the Roaming Seeker with an offer to enter into a National Roaming Agreement.

5. Considerations for National Roaming Agreements

- (1) The charges, terms and conditions for National Roaming services shall be through bilateral negotiations and in line with the provisions of these Guidelines.
- (2) National Roaming Agreements shall take into consideration legal aspects of authentication, authorisation and billing of the Visiting or Roaming Subscriber so as

not to compromise minimal safety standards such as location update procedures, financial security or warranty procedures in line with GSMA reference documents on roaming services as applicable to National Roaming.

- (3) In addition to these Guidelines, the following existing Regulations and Guidelines shall be taken into consideration in drafting National Roaming Agreements:
 - (a) Quality of Service Regulations;
 - (b) Guidelines on Collocation and Infrastructure Sharing;
 - (c) Spectrum Trading Guidelines;
 - (d) Mobile Number Portability Business Rules & Port Order Processes; and
 - (e) Any other regulations or guidelines published by the Commission from time to time that have provisions relating to or impacting on national roaming.
- (4) Multiple National Roaming Agreements can be signed with different operators in the same or different clusters.
- (5) Notwithstanding the above, the allowable number of Roaming partners on a Visited Network shall be determined by capacity and clusters.
- (6) National Roaming services shall be provided under non-discriminatory terms, conditions and of a quality no less favourable than that provided by the Roaming Provider for its services or for services by its subsidiaries and other affiliates.
- (7) Meeting the minimum network roll-out obligation as spelt out in a Service Provider's Licence Condition is a pre-condition for entering into a National Roaming Agreement.

6. Intellectual Property Rights

- (1) Except as otherwise expressly provided in the National Roaming Agreement, all intellectual property rights shall remain the property of the party creating or owning same.
- (2) Nothing in the National Roaming Agreement shall be deemed to licence, confer, transfer or assign the intellectual property rights of one party to the other party, provided however that, nothing in the National Roaming Agreement shall be deemed to restrict the rights of any Party to own, use, enjoy, license, assign or transfer its own Intellectual Property.

7. Dispute Resolution

- (1) Where a dispute arises during negotiation, parties shall endeavour to amicably resolve the issues.

- (2) Where a resolution is not reached, either party may refer the matter to the Commission for resolution, in line with the provisions of Sections 75 and 76 of the Act and the Dispute Resolution Guidelines. The decision of the Commission in this regard shall be final and binding on parties until set aside by a court of competent jurisdiction.

8. Intervention by the Commission

- (1) Further to Paragraph 7(2) above, if a National Roaming Agreement is not finalised and executed by parties within 60 days from the date the Roaming Provider receives a Roaming Request, either party may request the Commission to intervene in order to facilitate the conclusion of the National Roaming Agreement.
- (2) The Commission shall, within 30 days from date of receipt of the request for intervention, prescribe the terms and conditions including national roaming charges.
- (3) The Commission shall exercise its authority to intervene and regulate rates or tariffs whenever rates or tariffs are prohibitive and subscribers will be adversely affected.

9. Duration of Agreement

- (1) National roaming services shall not exceed 3 years from date of execution of the National Roaming Agreement.
- (2) The Commission reserves the right to permit parties to renew the National Roaming Agreement for another 3 years. Any further extension must be subject to the approval of the Commission.

10. Termination of Agreement

- (1) A party may request in writing to the Commission for approval to terminate a National Roaming Agreement with the other party on any of the following grounds:
 - (a) Bankruptcy
 - (b) Revocation of licence or failure to renew expired licence
 - (c) Consistent breach of commercial roaming obligations
- (2) After considering the request for termination, the Commission reserves the right to:
 - (a) Request parties to provide additional information which would assist it in making a decision;
 - (b) Request the defaulting party, where possible, to take remedial steps to avoid termination; or

- (c) Convey its decision within 15 days, either declining the application or granting approval for the applicant to suspend the service.
- (3) Where the service has been suspended for a period of 3 months and the party against whom notice was issued has not taken satisfactory steps to warrant the reversal of the suspension, the Commission shall approve the final termination of the National Roaming Agreement.

11. Responsibility for Regulatory Compliance

Each Network shall be responsible for its own compliance with regulatory provisions under the Quality of Service Regulations, including but not limited to quality of service and network availability.

12. Complaints on Call Masking

Any complaint on call masking, call refile, suspected fraud by the Roamer shall be reported to the Home Network for investigation and possible compensation as may be included in the National Roaming Agreement.

13. Provision of Subscriber Information

All requests for subscriber information by Security Agencies made pursuant to the Act and any other relevant regulations or guidelines shall be the responsibility of the Home Network.

PART III TECHNICAL PROVISIONS

14. Guiding Principles

- (1) The Visiting and Visited Network operators under the National Roaming Agreement shall make available network elements required for Roaming set up.
- (2) The exchange of network parameters shall be GSM 1R21 as modified for National Roaming or any other compatible format.
- (3) Inter-standards Roaming for voice shall not be permitted under these Guidelines except with the approval of the Commission based on verifiable inter-operability test by both parties.
- (4) Where technically necessary, Service Providers who have agreed to Roaming are required to redesign their networks to accommodate additional traffic for the duration of the National Roaming Agreement.

- (5) The Roaming Provider shall take into consideration in its engineering planning and design, the Roaming Seeker's requirements as contained in the Roaming Request Form A.
- (6) The Home and Visited Network shall meet on a quarterly basis or as may be required in order to review the technical data and review both short and long term requirements.
- (7) Deployment and rollout sharing may be agreed by parties in order to mitigate congestion and reduce reliance on Roaming.
- (8) Network administration shall be the responsibility of each party.

15. Control of Overload

- (1) The Visited Network shall device a means of controlling the amount of Roaming traffic in the local area where overload is noticed in order to reduce the risk of network contagion, especially where the failure of one network would lead to the failure of other networks.
- (2) The main trigger to control overload shall be Signalling or Traffic.
- (3) Further to entering into a National Roaming Agreement, parties shall agree on the threshold to be used for –
 - (a) Triggering Roaming
 - (b) Roaming management rules
 - (c) Capacity management; and
 - (d) Other shared resources usage such as STP, SGSN in the agreed Roaming clusters.

16. Trigger for Roaming

Further to Paragraph 15 (3) (a) above, Roaming shall be triggered on a subscriber's mobile phone where there is –

- (a) Loss of Service;
- (b) Lack of Service; and/or
- (c) Poor Quality of Service

17. Roaming Selection

- (1) Roaming Attachment for voice services shall be automatic or manual.
- (2) Roaming Attachment for data services may be automatic or manual.

- (3) Roaming Detachment for both voice and data services shall be automatic once the Home Network is available.
- (4) Roaming notification to subscribers shall be through voice prompt or SMS.
- (5) The terminal display on the mobile phone of a Roamer shall be that of the Home network.
- (6) Where extra charges might apply for Roaming, the voice prompt or SMS on Roaming Attachment shall include such information prior to opting in.
- (7) Where there are multiple Roaming partners, a subscriber shall have the option to manually choose the network to roam on.
 - (a) Where the Roamer opts for automatic selection, signal strength shall determine automatic selection of a Visited Network.
- (8) A Roamer shall only enjoy similar service levels as that of subscribers on his Home Network.
- (9) All anti-steering practices, including but not limited to the marketing of Host Network products and services to a Roamer, are prohibited.

18. Roaming Services

- (1) Subject to any conditions or restrictions set in the National Roaming Agreement, the Host Network shall provide the following services to a Roamer, upon completion of initial authentication and location updates –
 - (a) Voice
 - (b) SMS
 - (c) Account Balance Inquiry
 - (d) Recharge (Prepaid)
 - (e) VAS
 - (f) Data
 - (g) USSD
 - (h) Premium short codes
- (2) The experience of a Roamer on the Visited Network should, as much as possible, be Network Agnostic.

19. Call Routing and Processing

- (1) The following call routing and processing shall be available:
 - (a) Outgoing and Incoming Calls
 - (i) Roamer to another Roamer (Home Network)
 - (ii) Roamer to Home Network
 - (iii) Roamer to other Networks
 - (iv) Roamer to Visited Network
 - (b) Routing
 - (i) Selection process (All in All or Home select)
 - (ii) In call handover
 - (c) Call Processing
 - (i) The recommended standard for voice call flow and processing shall be 3GPP.
 - (ii) There should be no Call Tromboning.
 - (iii) For Incoming calls routing, all calling subscribers must be notified of calls to Roamers, as may be required.
 - (d) SMS MO and MT
 - (i) MAP procedure is recommended
 - (e) Data
 - (i) Home Roaming for data services shall apply under these Guidelines except where otherwise agreed by parties.
 - (ii) Where Home Roaming is adopted, the Serving GPRS Support Node (SGSN) in the Visited Network and the Gateway GPRS Support Node (GGSN) in the Home Network shall be interconnected using a GPRS Roaming Exchange (GRX), as contained under Schedule 2, Appendix 3 of these Guidelines, or any other acceptable mechanism for interconnecting.

20. Supported Technology

Different technologies including 2G, 3G, 4G and services such as Voice, Data, SMS, shall be supported under these Guidelines, provided Roamers shall not enjoy services not offered by the Home Network.

21. Roaming Connection

The recommended Roaming connection and interworking for different technology such as 2G, 3G, 4G is contained under Schedule 2, Appendix 1(A) – (C). Parties may however adopt other connection modes based on bilateral agreement.

22. Billing and Call Data Record Verification

- (1) The format for billing and Call Data Record (CDR) verification shall be configured, tested and signed off on or before the commencement of Roaming. In this regard, 3GPP format is recommended.
- (2) The Home Network shall, as much as possible, support existing models for charging such as prepaid/postpaid, on-net/off-net, MO/MT, per volume/time for data, in addition to pre-agreed terms with Roaming partner and verified tests.
- (3) The charges shall be based on the following considerations –
 - (a) Outgoing
 - (i) On –line (Prepaid)
 - (ii) Off-line post-paid
 - (b) Incoming
 - (i) On–line (Prepaid)
 - (ii) Off-line post-paid
 - (c) MT & MO for VAS, SMS, etc.
 - (d) End of Call Notifications.
- (4) The following MO and MT tests scenario for both post-paid and prepaid among others are to be carried out with CDR verification and signed off –
 - (a) Roamer to Roamer (Home Network)
 - (b) Roamer to Home Network
 - (c) Roamer to other Network
 - (d) Roamer to Visited Network
 - (e) International Outgoing Calls
 - (f) International Incoming Calls
 - (g) Unclassified MT & MO Calls
 - (h) VAS Outgoing
 - (i) VAS Incoming
 - (j) Special number calling
 - (k) Emergency and other non-chargeable calls

- (l) SMS MT & MT
- (m) Data session

23. Notifications

The following notifications shall be configured and tested before the commencement of Roaming services –

- (a) Roaming Attachment
- (b) Extra charge while Roaming
- (c) Roaming charge for originating calls where Roamer pays
- (d) Restriction message, if any; and
- (e) Any other notifications as may be deemed relevant to the Roaming service.

24. Security

- (1) Parties shall ensure that adequate security measures are deployed to protect their respective networks.
- (2) Roaming partners shall agree mutually on a process to mitigate against fraud associated with Roaming. However, fraud enabled by flaws in other network business areas shall be the responsibility of the concerned network.
- (3) Roaming partners shall agree not to benefit from any fraudulent incident. Any settlement between the parties will be at cost level computation, where fraud is established.
- (4) The Home and Visited Network shall further agree on a process to mitigate against the following common fraudulent practices:
 - (a) Interoperability fault due to difference in equipment vendor
 - (b) Time delay in exchange of data
 - (c) Network configuration flaws
 - (d) Call masking and other frauds associated with Roaming

PART IV OPERATIONAL AND MAINTENANCE PROVISIONS

25. Fault Management

- (1) The Home and Visited Network shall agree on fault escalation procedure using the flowchart contained under Schedule 2, Appendix 5 as a guide or by using a modified IR21 escalation matrix.

- (2) The Home or Visiting Network shall take ownership of the faulty network element and ensure prompt resolution of the fault.
- (3) Information regarding the cause of the fault and resolution shall be provided to other partners for record purposes.
- (4) Where fault is traceable to interface between the two parties, best efforts should be made to resolve the issue taking into consideration network availability as contained under the Quality of Service Regulations developed by the Commission.
- (5) In case of dispute after third level escalation as contained in the Fault Escalation Process under Schedule 2 Appendix 5, the Roaming Partners shall call in the vendors of their equipment for resolution.

26. Network Availability

The Visited Network shall make every effort to make sure that the Roamer enjoys the same level of availability as its own customers and maintain such level as contained under the Quality of Service Regulations developed by the Commission.

27. Quality of Service and Experience

- (1) The Visited Network shall offer the same quality of service to the Roamer on the agreed Roaming Technology.
- (2) Parties shall ensure that all quality of service requirements under the Quality of Service Regulations and other relevant regulations and guidelines developed by the Commission are met.
- (3) The Visited Network shall provide network Key Performance Indicators for all clusters under the roaming arrangement.
- (3) A party that defaults in complying with quality of service requirements under the Quality of Service Regulations shall be responsible for any infraction traced to its network.
- (4) Service support for Roamers (i.e. resolution of complaints by subscribers) shall be the responsibility of the Home Network.
- (5) The Home Network shall reserve not more than 25% of spare capacity for its short term or emergency need.

PART V
COMMERCIAL PROVISIONS

28. Set up Cost for Roaming

- (1) Each party shall bear the set up cost for Roaming, including but not limited to last mile connection, interfaces, and software upgrade except where otherwise agreed by parties.
- (2) Additional capital expenditure and operating expenses associated with Roaming shall form part of the negotiated Roaming cost.

29. Roaming Charges

- (1) Subject to prior approval of the Commission, each operator shall set its Roaming tariff, having due regards to the fact that the calling party pays. The tariff shall take into consideration the need to ensure Roamers enjoy seamless connectivity at a reasonable cost.
- (2) The Commission may set a price cap for Roaming charges based on industry data until a detailed cost study is carried out.
- (3) The Visited Network shall not offer any incentive such as free data, free or lower tariff calls to the Roamer.
- (4) Each operator shall seek and obtain prior written approval of the Commission before setting Roaming charges for its subscribers.
- (5) In determining the retail Roaming charge for voice calls, the current interconnect charges shall serve as the bottom line (base).
- (6) In determining the Roaming charge for data services, parties shall mutually agree on tariff sharing, taking into consideration the Home Roaming principle.
- (7) In setting the Roaming charges, the following cost elements shall be taken into consideration:
 - (a) For all outgoing calls to Visited ON NET while Roaming:
 - (i) Origination charge for originating the call in the Visited network
 - (ii) Termination charge for terminating the call in the Visited network
 - (iii) Incremental capital expenditure and operating expenses for infrastructure dedicated for Roaming
 - (b) For all outgoing calls to other Networks including Host (OFF NET) calls while Roaming:

- (i) Origination charge for originating the call in the visited network
 - (ii) Interconnect charge for terminating on other network to the called network
 - (iii) Termination charge for terminating the call in the called network
 - (iv) Incremental capital expenditure, National signalling cost and operating expenses for infrastructure dedicated for Roaming
- (c) For all international calls while Roaming:
- (i) Origination charge for originating the call in the visited network
 - (ii) Interconnect charge for terminating on Home Network to the called network
 - (iii) Termination charge for terminating the call by Host to International partner
- (8) For Inter Operator tariffs, parties are to develop a document in the format of AA14 for all call scenarios.
- (9) Under these Guidelines, there shall be no requirements for a Data and/or Financial clearing house. In this regard, operators are to adopt interconnect TAP files format.

30. TAP File Transfer

- (1) Usage by a subscriber in a Visited Network is captured in the TAP (Transferred Account Procedure) file and is transferred to the Home Network.
- (2) TAP file transfer shall be within 2 hours of call initiation.

31. Billing

- (1) Under these Guidelines, Billing shall be:
 - (a) Separate from other transactions such as interconnect between both parties
 - (b) Monthly
- (2) The following guiding principles shall also apply during billing:
 - (a) Invoicing shall be monthly while receipt of invoice shall be within 14 days after transaction.
 - (b) The error margin shall be +/- 2%.
 - (c) Dispute declaration and request for data shall be within 7 days of receipt of invoice.
 - (d) Submission of data shall be within 14 days after receipt of request.
 - (e) Resolution of dispute shall be within 7 days of receipt of request.
 - (f) Settlement shall be within 30 days of receipt of invoice.
 - (g) During the pendency of a dispute, all undisputed amounts must be paid.

- (h) Transit calls shall not be allowed.
 - (i) Rejected TAP files shall be settled within 60 days.
- (3) The operators are to agree on CDR during technical negotiation, testing and sign off, while the Commission may request parties to submit the agreed template to it.
 - (4) The invoicing requirement will not include TAP files but CDR.
 - (5) Interconnect bills for all OFFNET calls by the Roamers shall be settled by the Visited Network.
 - (6) National Roaming type which can be in clusters, aggregated clusters, regional or national shall be billed at the same price as non-geographical.
 - (7) Roaming Tariffs Cost Profile shall be agreed under commercial negotiation:
 - (a) National MT Calls
 - (b) National MO Calls
 - (c) International Outgoing Calls
 - (d) International Incoming Calls
 - (e) Unclassified MT &MO Calls
 - (f) VAS Outgoing
 - (g) VAS Incoming
 - (h) Special number calling
 - (i) SMS MT
 - (j) SMS MO
 - (k) Access charge for Data
 - (l) Data Calls

32. Other Considerations for Setting Roaming Charges

In addition to Paragraphs 29 (5), 29 (6) and 29 (7) of these Guidelines, the following considerations must be taken into account in setting Roaming charges:

- (a) An incoming call to a Roamer could be of 2 types:
 - (i) From the home service area of the Roaming subscriber
 - (ii) From a service area other than the home service area of the Roaming subscriber including the service area where the subscriber is Roaming
 - (iii) In (i) and (ii) above, an incoming call to a Roamer first reaches his Home Network.
- (b) When the Roamer makes an outgoing call, the Visited Network routes the call on the basis of the dialled number as follows:

- (i) In case of a call from (Visited ON NET), the Visited Network passes the call to the called party
 - (ii) In case of calls to other networks including Host (OFF NET calls), the Visited Network passes the call via interconnect link to the operator concerned who then passes the call to the called party.
- (c) For all international calls, the call is passed through interconnect link to Home Network for termination to called party or may be routed to destination by Visited Network based on agreement on tariff.

33. Review/Modification

The Commission reserves the right to review and if applicable, modify these Guidelines from time to time.

34. Interpretation

In these Guidelines –

“Act” means the Nigerian Communications Act 2003 and any amendment thereto;

“Call Tromboning” means a process where a voice channel is setup for a voice call from operator A to operator B (for calls from operator A subscriber to operator B subscriber roaming on operator A's network) and a different voice channel is also setup from operator B to Operator A to enable the complete connection of operator A subscriber to operator B subscriber roaming on operator A network.

“Emergency need” means capacity required to support the highest network traffic on a day-to-day basis.

“Lack of Infrastructure” means no infrastructure has been deployed in the Roaming area;

“Lack of Service” relates to different services based on technology (2G, 3G, 4G, etc);

“Loss of Service” is based on availability of service;

“MO” and “MT” means Mobile Originated and Mobile Terminated;

“National Roaming Agreement” means a Roaming Agreement entered into by Unified Access Service Licensees pursuant to these Guidelines and their Licence Conditions;

“Poor Quality of Service” means a threshold of service where a subscriber cannot establish a call (this is optional);

“Roaming” does not include resale services;

“Security Agencies” refers to any or all of the following law enforcement and security agencies: (a) Nigerian Police Force (b) the Economic and Financial Crimes Commission (c) the State Security Service (d) the Nigeria Security and Civil Defence Corps (e) the National Intelligence Agency (f) the Office of the National Security Adviser; and (g) any other law enforcement or Security Agency established by the Federal Government;

“Service Provider” means holder of a licence validly issued by the Commission, containing a condition that makes the holder eligible to enter into a national roaming service agreement.

“Short term” means the network capacity required to support not more than 6 months of projected traffic.

Emergency need” means capacity required to support the highest network traffic on a day-to-day basis.

“TAP File” A Transferred Account Procedure (TAP) File contains details of the calls made by the subscriber, namely; location, calling party, called party, time of call and duration, etc;

“Visited Network” means the Host Network or Roaming Provider;

“Visiting Network” means the Home Network or Roaming Seeker;

“Visiting Subscriber” means the Roamer;

Made at Abuja this.....day of June 2021

Professor Umar Garba Danbatta, FNSE, FRAES, FAEng, FNIEEE

**Executive Vice Chairman / CEO
Nigerian Communications Commission**

SCHEDULE 1

ROAMING REQUEST FORM A

Request for Roaming (to be filled by the Roaming Seeker)

1. Details of Roaming Seeker:

- a. Name of the Licensee:
- b. Licence Number and Date of Issue/Renewal:
- c. Type(s) of Telecommunication Services Provided by the Roaming Seeker:

2. Details of the Roaming request:

S/N	ITEMS	UNIT	DESCRIPTION
1	Reference Number of the Request		
2.	Type of the Service	Voice only	
		Data only	
		Data and Voice	
		All Services	
3.	Purpose of request	Lack of service (State service Data or Voice, 2G,3G,4G)	
		Lack of infrastructure	
		Loss of service (Back up)	
4.	Coverage area	National	
		Regional	
		Cluster	
5.	12 months traffic forecast	May use additional sheet	
6.	Date of Request		
7.	Any Other Information	May use additional sheet	

 Authorised Signature of the Roaming Seeker

RESPONSE TO ROAMING REQUEST FORM B

Approval/Rejection of Roaming Request (to be filled by the Roaming Provider)

1. Details of Roaming Provider:

- a. Name of the Licensee:
- b. Licence Number and Date of Issue/Renewal:
- c. Type(s) of Telecommunication Services Provided by the Roaming Seeker:

2. Details of Roaming Seeker:

- a. Name of the Licensee:
- b. License Number and Date of Issue/Renewal:
- c. Type (s) of Telecommunication Services Provided by the Roaming Provider:

3. Details of Approval by the Roaming Provider:

S/N	ITEMS	UNIT	DESCRIPTION
1.	Reference Number of the Request		
2.	Type of the Service	Voice only	
		Data only	
		Data and Voice	
		All Services	
3.	Purpose of Request	Lack of service (State service Data or Voice, 2G,3G,4G)	
		Lack of infrastructure	
		Loss of service (Back up)	
4.	Coverage area	National	
		Regional	
		Cluster	
5.	Duration of Roaming		
6.	Date Roaming Request received		
7.	Date NDA forwarded		
8.	Date signed NDA received		
9.	Date DATA exchange commenced		
10.	Date Negotiation commenced		
11.	Any Other Information	May use additional sheet	

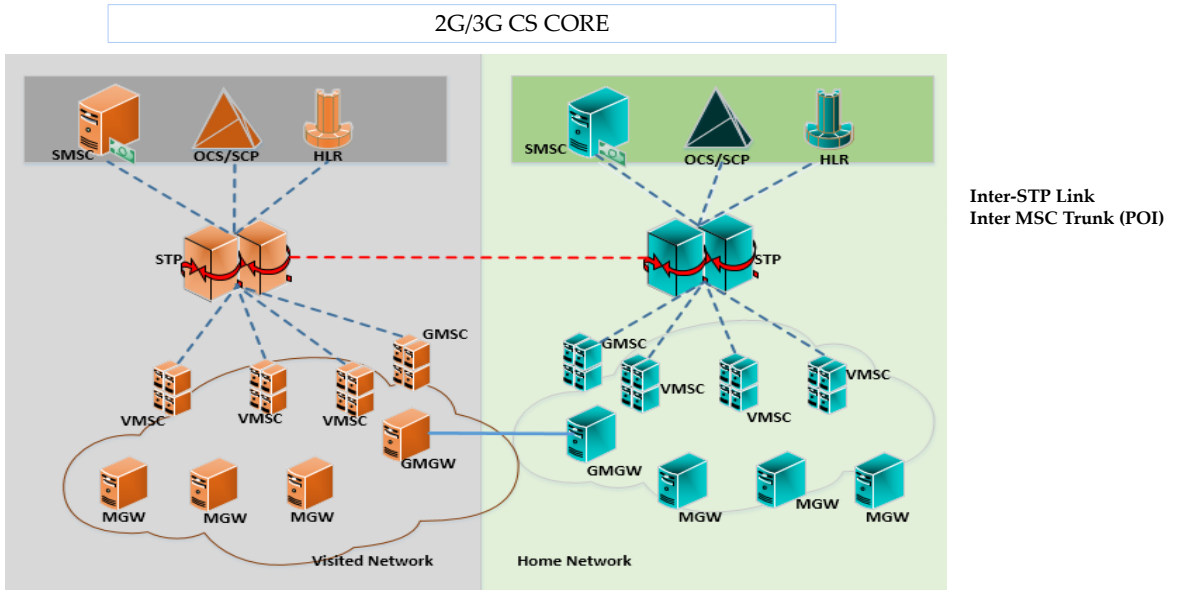
4. Details of Rejection by the Roaming Provider:

S/N	Items	Description
1.	Reference Number of the Roaming Seeker's Request	
2.	Reference Number of Rejection	
3.	Type of Service	
4.	Purpose of service	
5.	Coverage of service	
6.	Reasons of Rejection	
7.	Any Other Information	

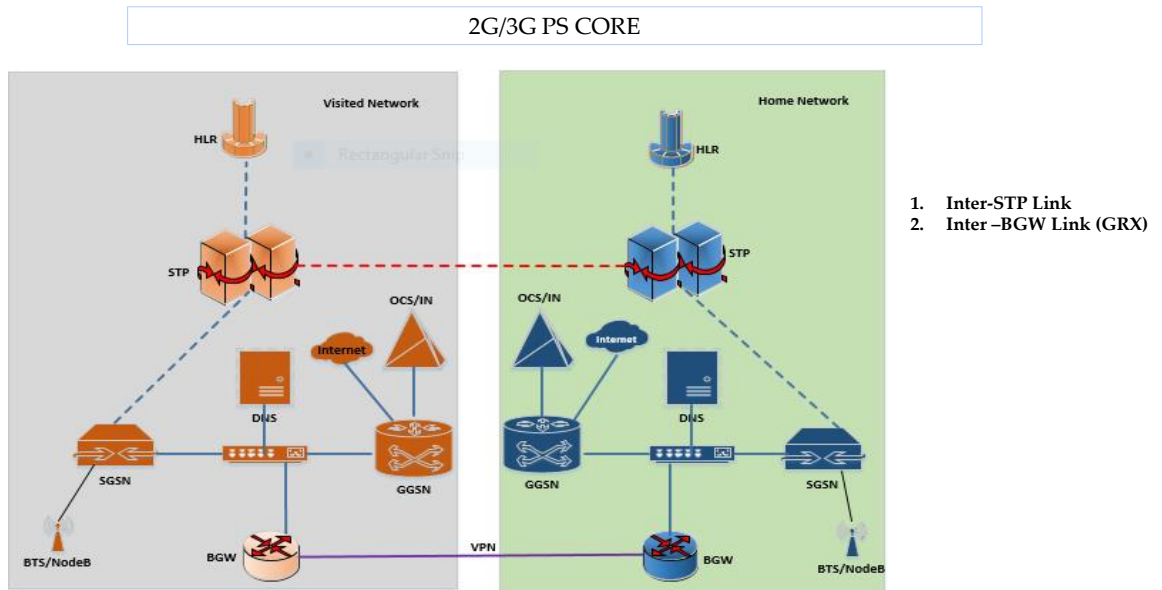
Authorised Signature of the Roaming Provider

SCHEDULE 2

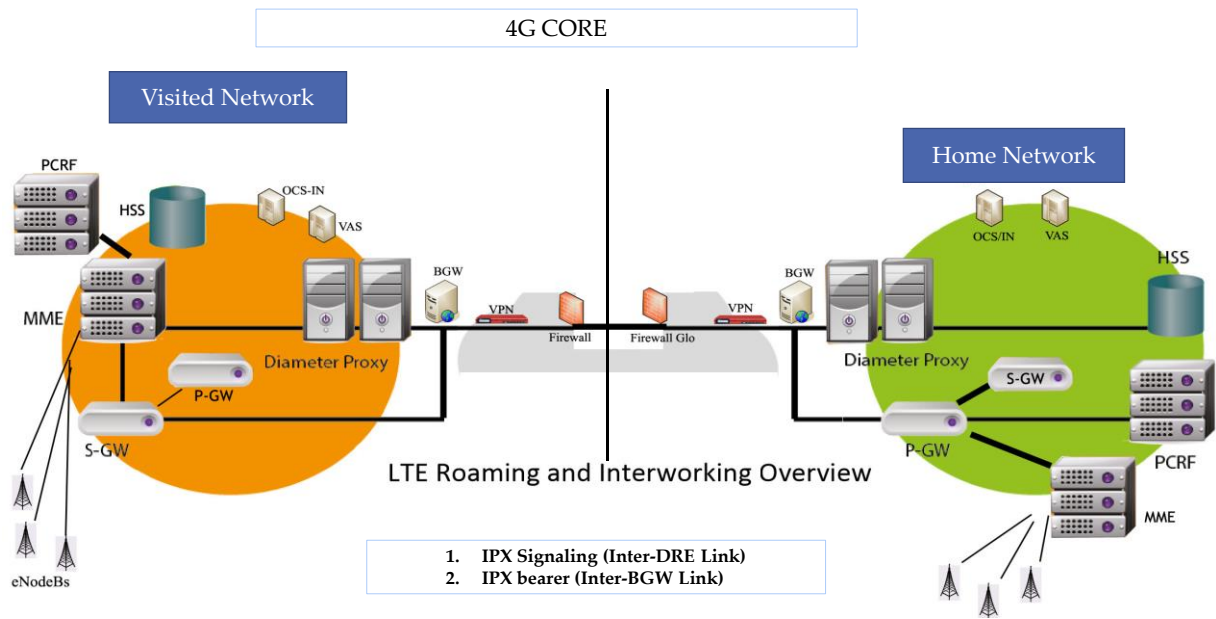
APPENDIX 1A: ROAMING CONNECTION



APPENDIX 1B: ROAMING CONNECTION

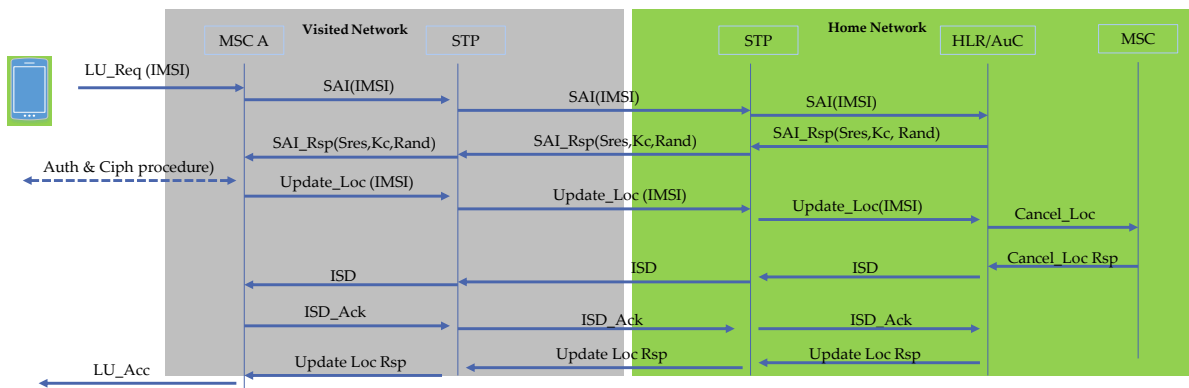


APPENDIX 1C: ROAMING CONNECTION



APPENDIX 2A: Calls Flow Scenario and SCCP Routing

1. Roamer Attach Procedure in Visited Network



Charging Indicator:

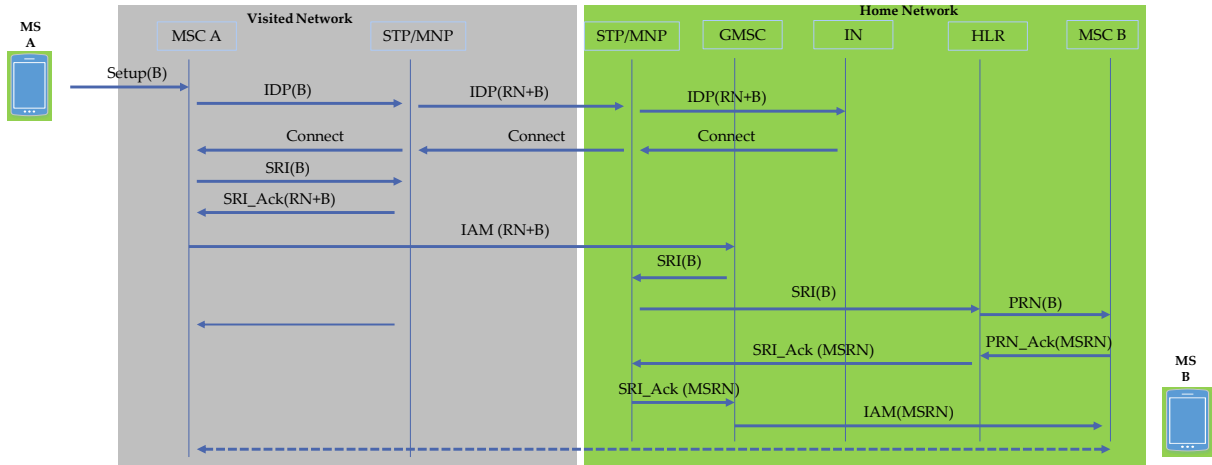
- > Only signaling involved.

SCCP Routing:

- > IMSI, E.164 range routing thru inter-STP link

APPENDIX 2B: Calls Flow Scenario and SCCP Routing

2. Prepaid Roamer Calling Home Network



SCCP Routing & MNP Query:

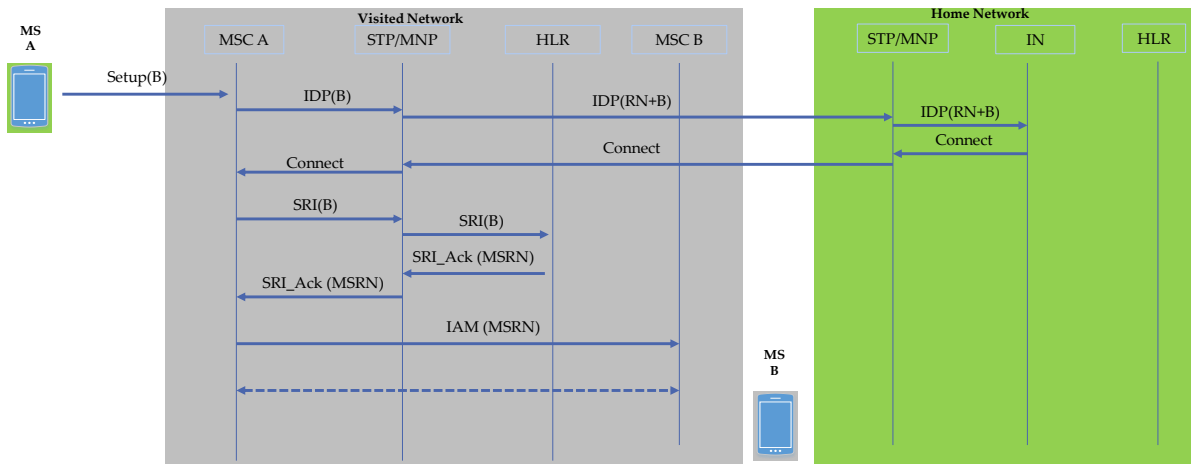
- E.164 range routing thru inter-STP link
- Home network should bypass MNP query for IDP . MNP query performed already on Visited Network.

Charging Indicator:

- Roaming + Interconnect charge apply

APPENDIX 2C: Calls Flow Scenario and SCCP Routing

3. Prepaid Roamer Calling Visited Network



SCCP Routing & MNP Query:

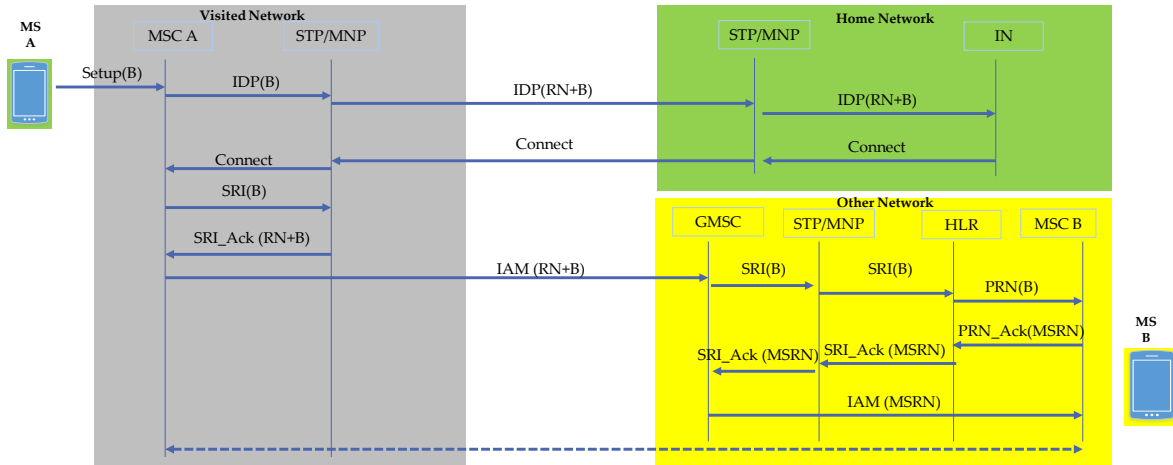
- E.164 range routing thru inter-STP link
- Home network should bypass MNP query for IDP . MNP query performed already on Visited Network.

Charging Indicator:

- Roaming charge apply

APPENDIX 2D: Calls Flow Scenario and SCCP Routing

4. Prepaid Roamer Calling Other Networks



SCCP Routing & MNP Query:

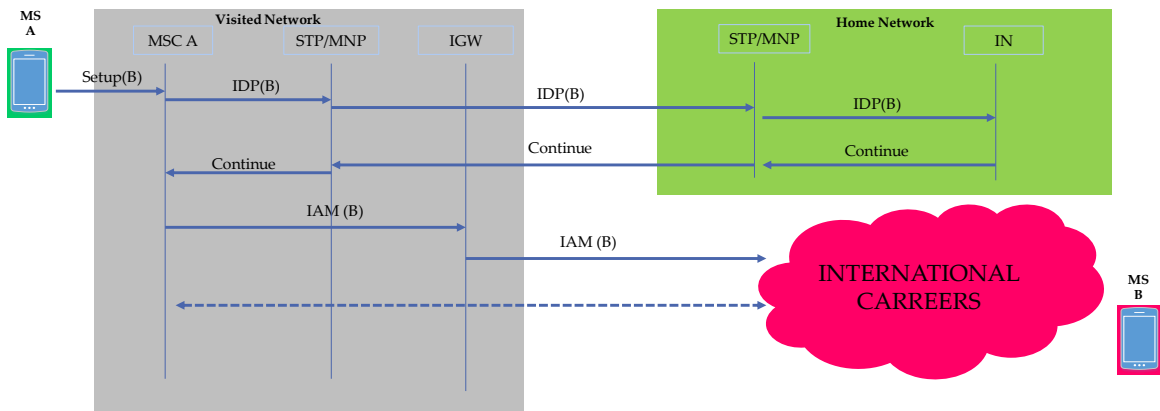
- E.164 range routing thru inter-STP link
- Home network should bypass MNP query for IDP . MNP query performed already on Visited Network.

Charging Indicator:

- Roaming + Interconnect charge apply

APPENDIX 2E: Calls Flow Scenario and SCCP Routing

4. Prepaid Roamer Calling International Networks



SCCP Routing:

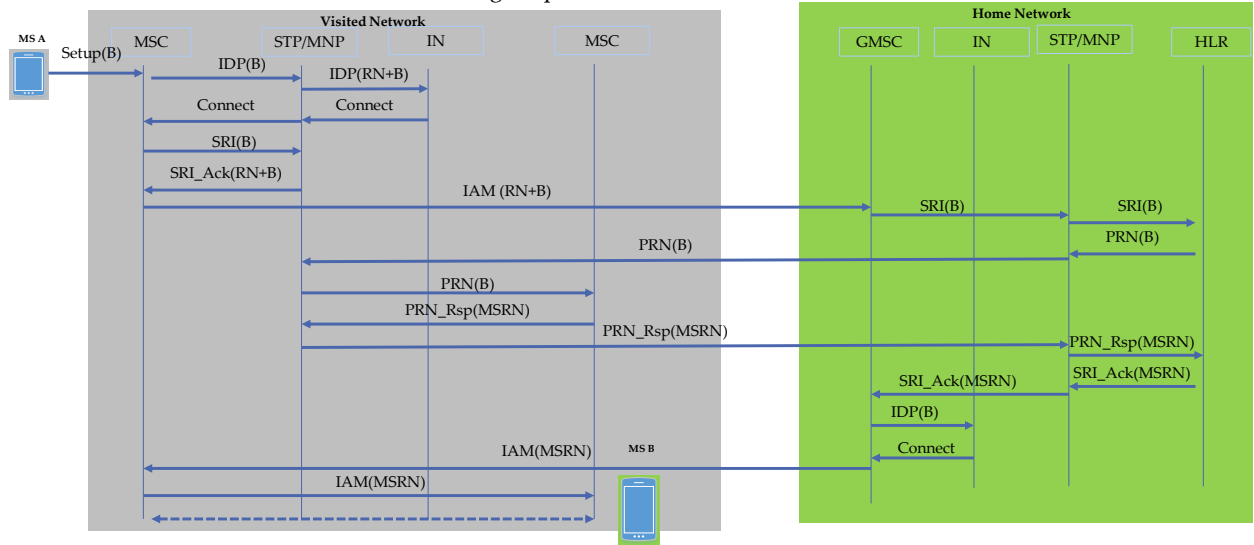
- E.164 range routing thru inter-STP link

Charging Indicator:

- Roaming + International charge apply

APPENDIX 2F: Calls Flow Scenario and SCCP Routing

5. Visited Network Calling Prepaid Roamer



SCCP Routing:

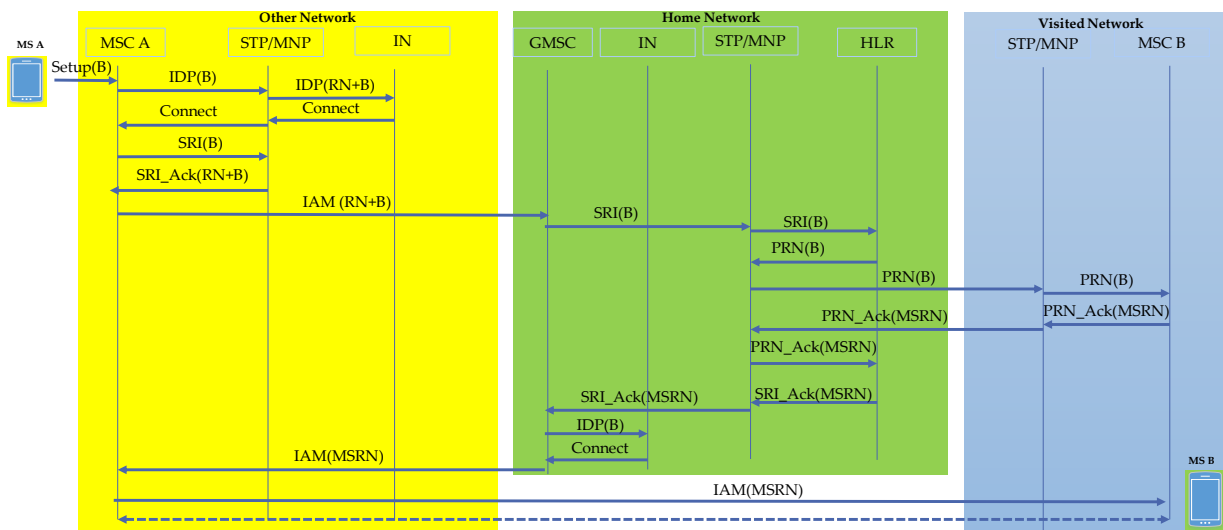
- E.164 range routing thru inter-STP link
- T-CSI trigger should be implemented on Home Network if Roaming Subscriber is charged for call termination

Charging Indicator:

- Roaming charge apply

APPENDIX 2G: Calls Flow Scenario and SCCP Routing

6. Other Network Calling Prepaid Roamer



SCCP Routing:

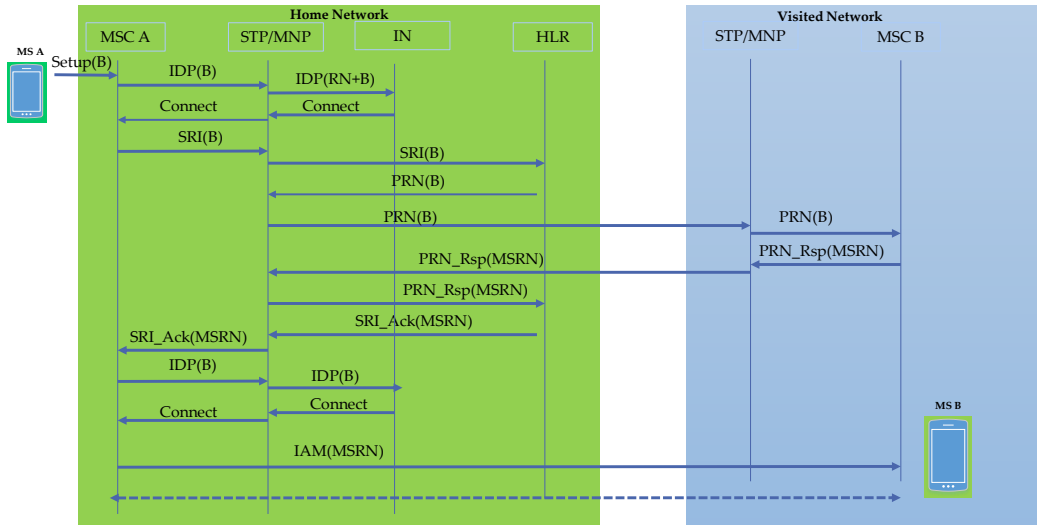
- E.164 range routing thru inter-STP link
- T-CSI trigger should be implemented on Home Network if Roaming Subscriber is charged for call termination

Charging Indicator:

- Roaming + Interconnect charge apply

APPENDIX 2H: Calls Flow Scenario and SCCP Routing

7. Home Network Calling Prepaid Roamer



SCCP Routing:

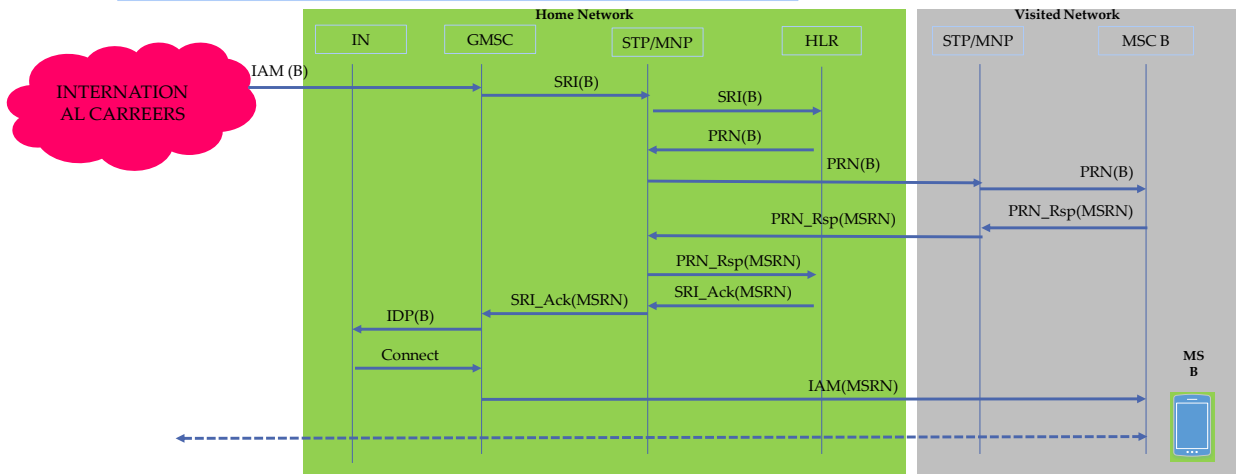
- E.164 range routing thru inter-STP link
- T-CSI trigger should be implemented on Home Network if Roaming Subscriber is charged for call termination

Charging Indicator:

- Roaming + Interconnect charge apply

APPENDIX 2I: Calls Flow Scenario and SCCP Routing

8. International Calling Prepaid Roamer



SCCP Routing:

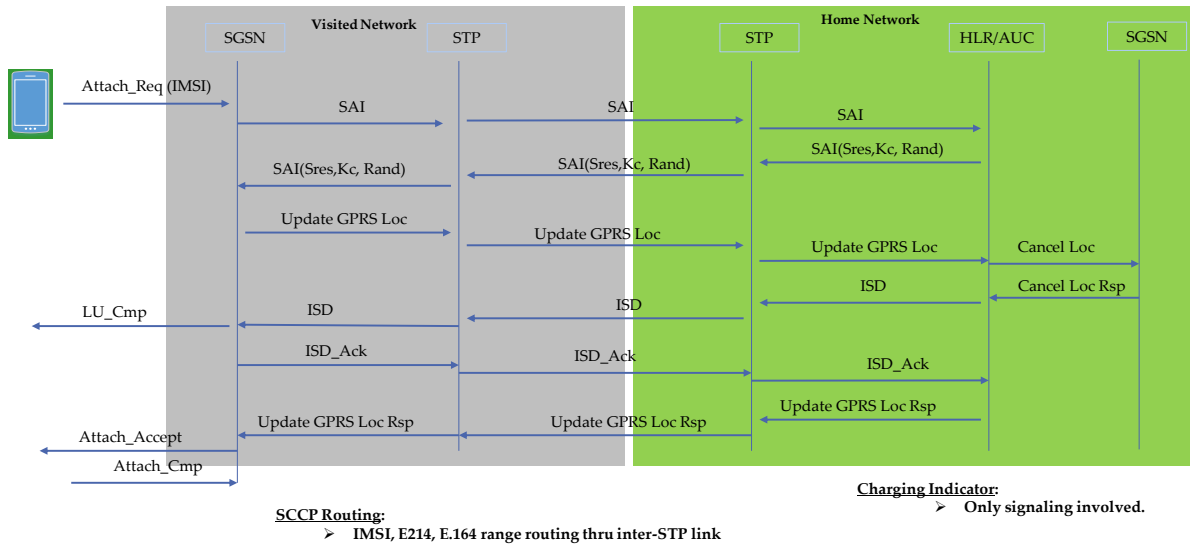
- E.164 range routing thru inter-STP link
- T-CSI trigger should be implemented on Home Network if Roaming Subscriber is charged for call termination

Charging Indicator:

- Roaming + International charge apply

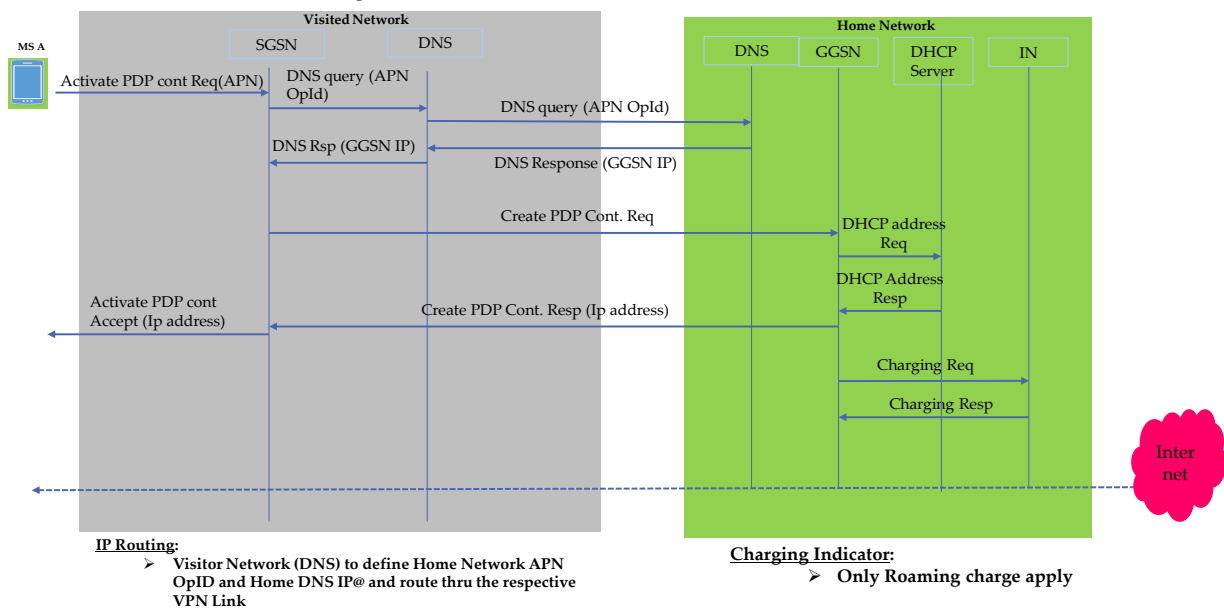
APPENDIX 2J: Calls Flow Scenario and Routing

9. Roamer GPRS Attach Procedure in Visited Network



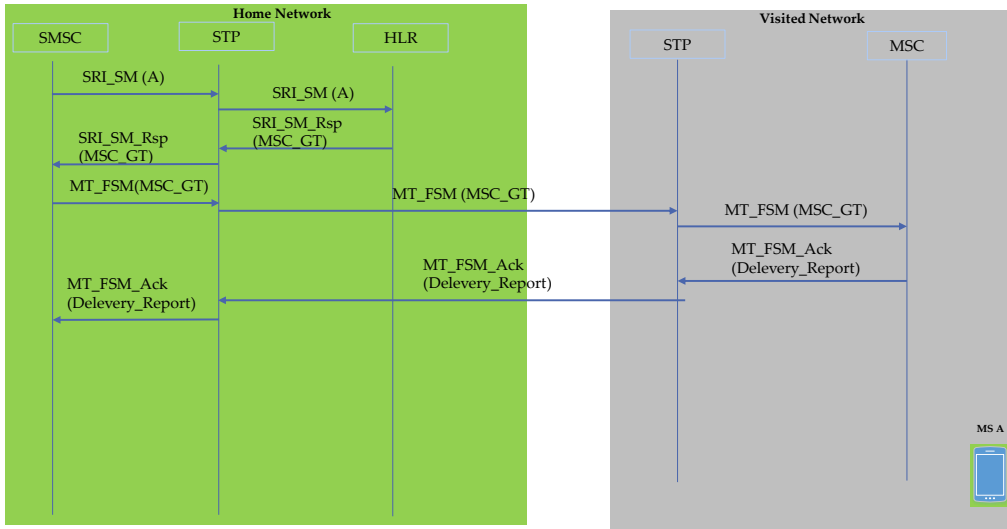
APPENDIX 2K: Calls Flow Scenario and Routing

10. National Roaming GPRS PDP Context activation call flow



APPENDIX 2L: Calls Flow Scenario and Routing

11. SMS_MT from Home Network to Roamer

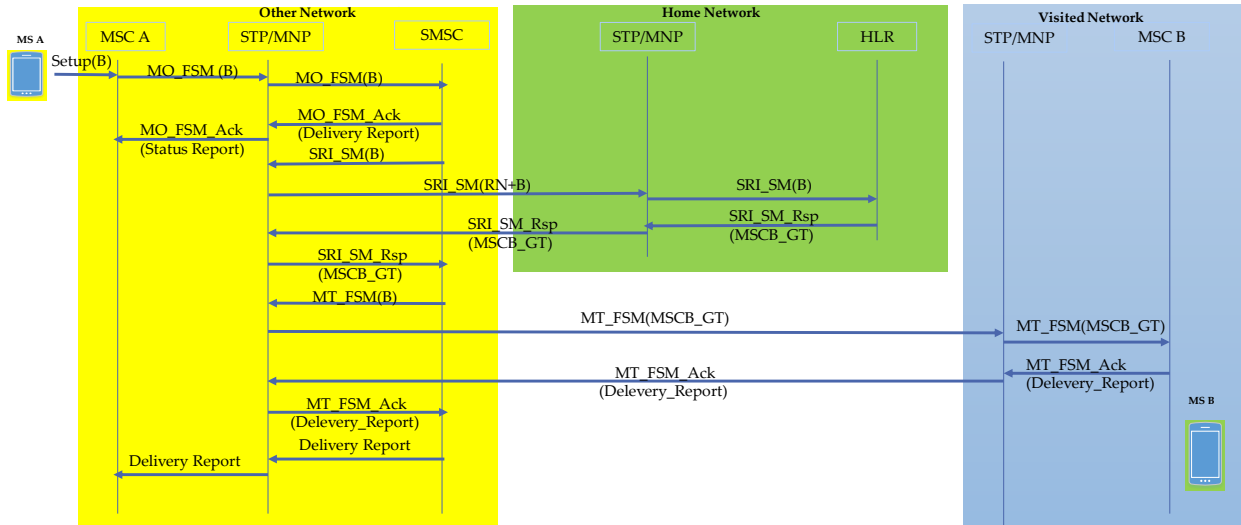


Charging Indicator:

➤ Only signaling involved. No charge apply

APPENDIX 2M: Calls Flow Scenario and Routing

12. SMS_MT from other Network (National or International) to Roamer

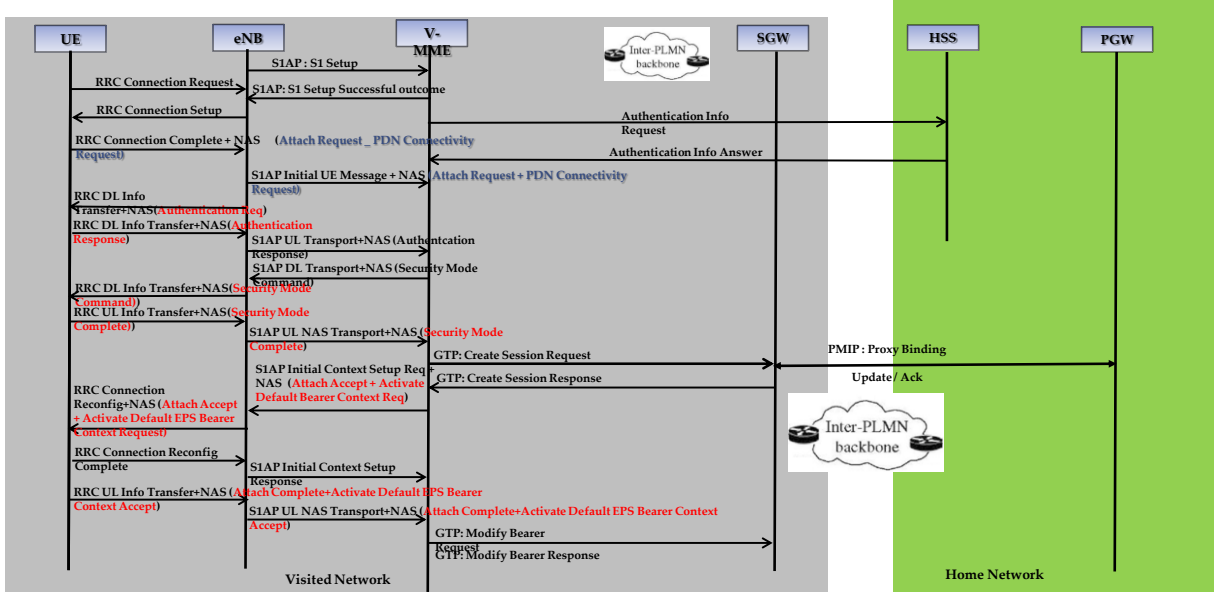


Charging Indicator:

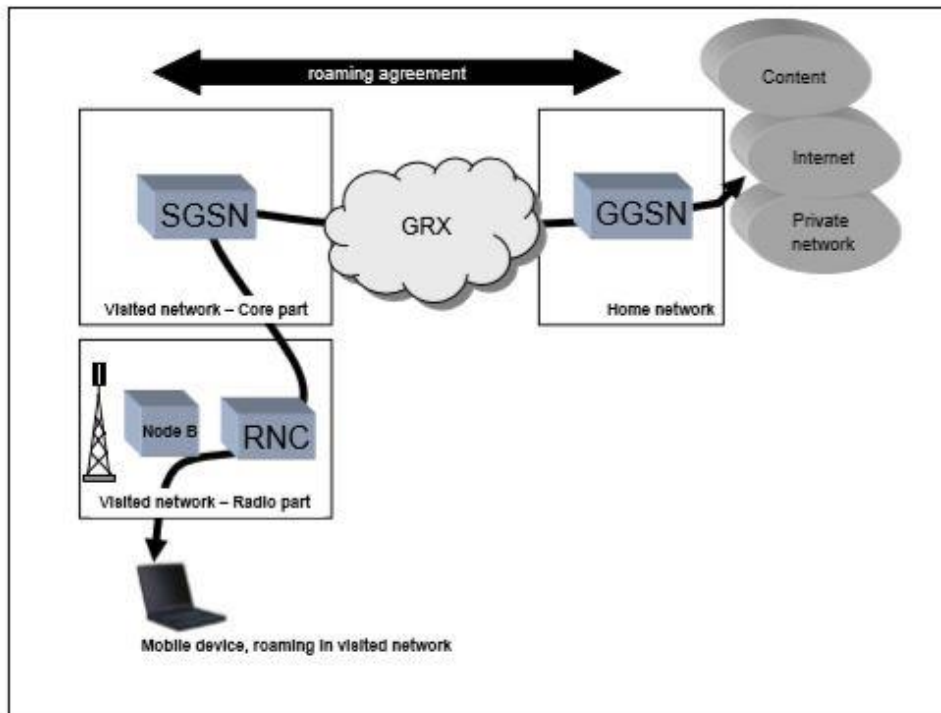
➤ Only signaling involved. No charge apply

APPENDIX 2N: Calls Flow Scenario and Routing

13. 4G_LTE Attach Procedure and PDP Activation



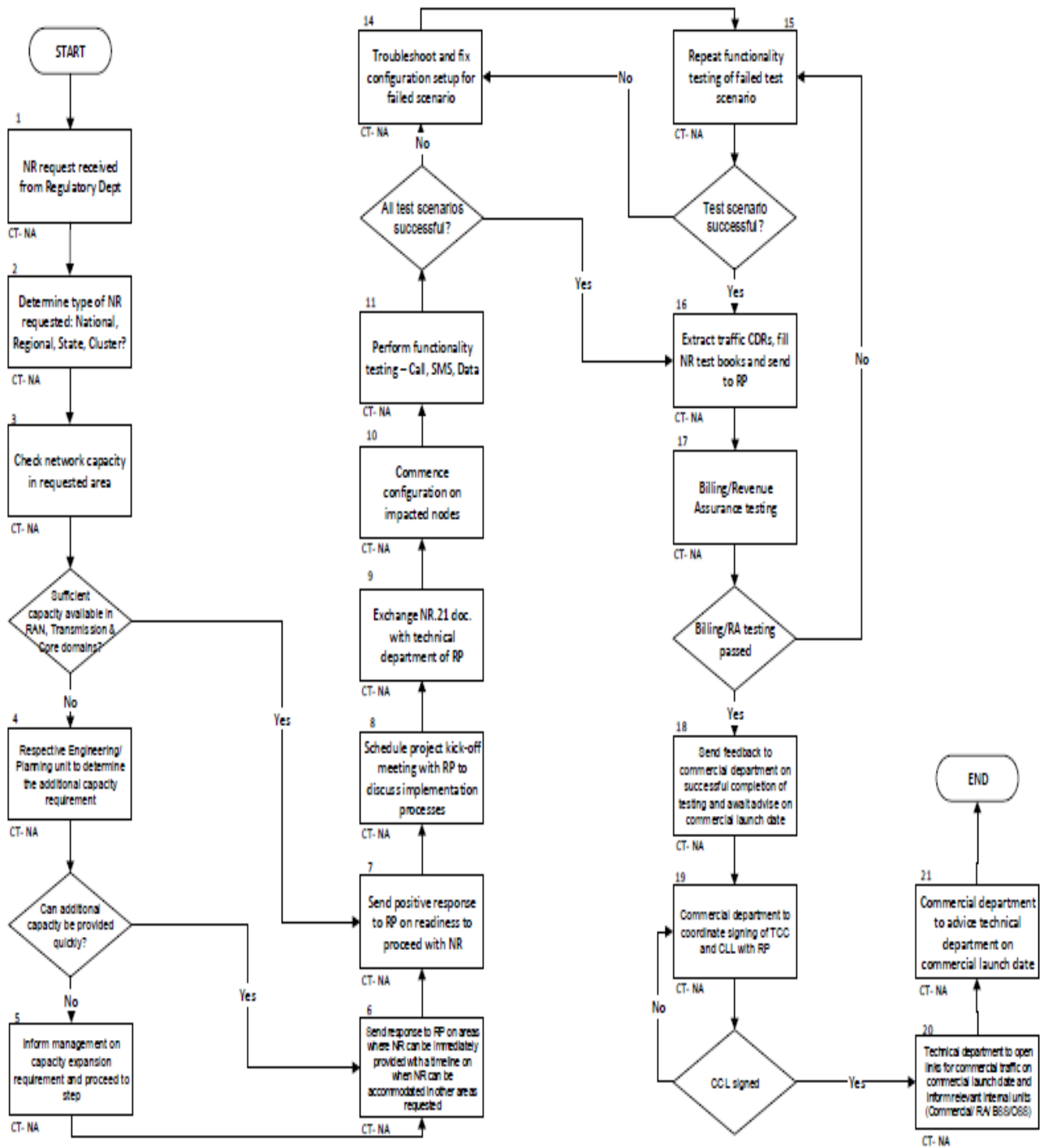
APPENDIX 3: HOME ROAMING DATA CONNECTION SCENARIO USING GRX



Source: Study "DATA ROAMING SERVICES", 2008 Erik Vrolijk & Raymond Bouwman

Note: IPX solutions (IPX, Internetwork Packet Exchange) to support VoIP service as well as IMS network infrastructures may also be considered

APPENDIX 4: FLOW CHART FOR IMPLEMENTATION



APPENDIX 5: FAULT ESCALATION PROCESS

