Presentation on

Impact of Call Refiling on QoS: Nigerian Experience

By

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OUTLINE

What is Call Refiling (Masking)

Call Masking:

This is the practice where a local entity (originating network) transits incoming international calls which it sends as local calls to another entity (terminating network) using the local network interconnection between both entities. The originating network in addition changes the calling number of the international call to a number in the National Numbering Plan (NNP).

Call Refiling (Masking) Ecosystem

1. **MNOs: Mobile Network Operators**
2. **IDAs: International Data Accesses**
3. **ICHs: Interconnect Clearing Houses**
4. **LEOs/PNLs: Local Exchange Operators / Private Network Links**
5. **Others: Individuals, MSMEs etc**

MNOs

Others using SIMBOXes, ISDN PRI E1s

IDAs

ICHs

International Carriers and Operators

LEOs/PNLs
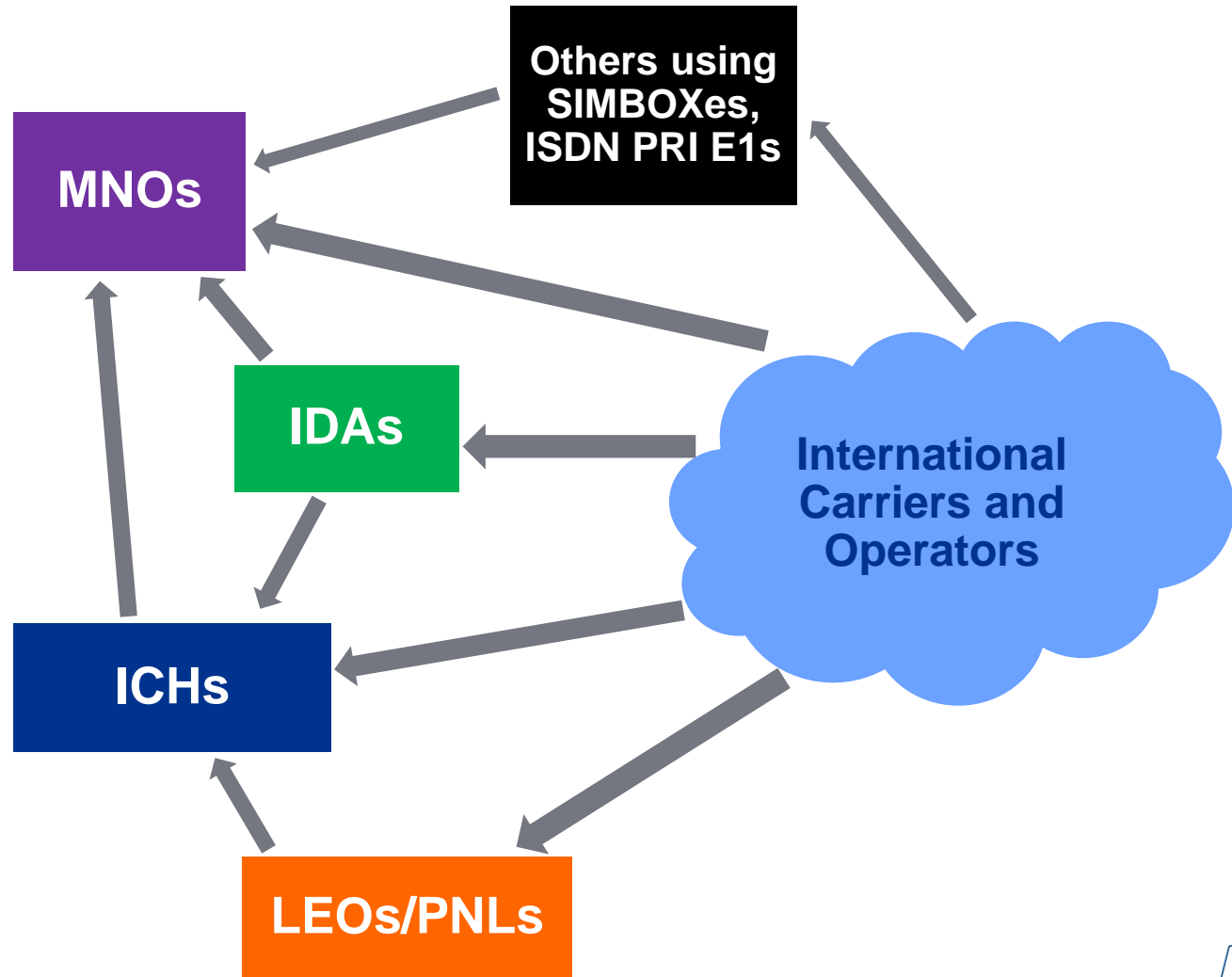
How Call Masking Occurs

Masking-
Original Calling No: +4420xxx
New calling No: 08xxx; 01xxx
and other NNP

SIMBOXING-
Original Calling No:+4420xxx
New calling No: MSISDNs of
SIMs in SIMBOX

Others using SIMBOXES

MNOs

Local Route

- **MNOs**
- **PNLs**
- **ICHs**
- **IDAs**
- **LEOs**

International Route

International Carriers and Operators

Calling No: +4420xxx
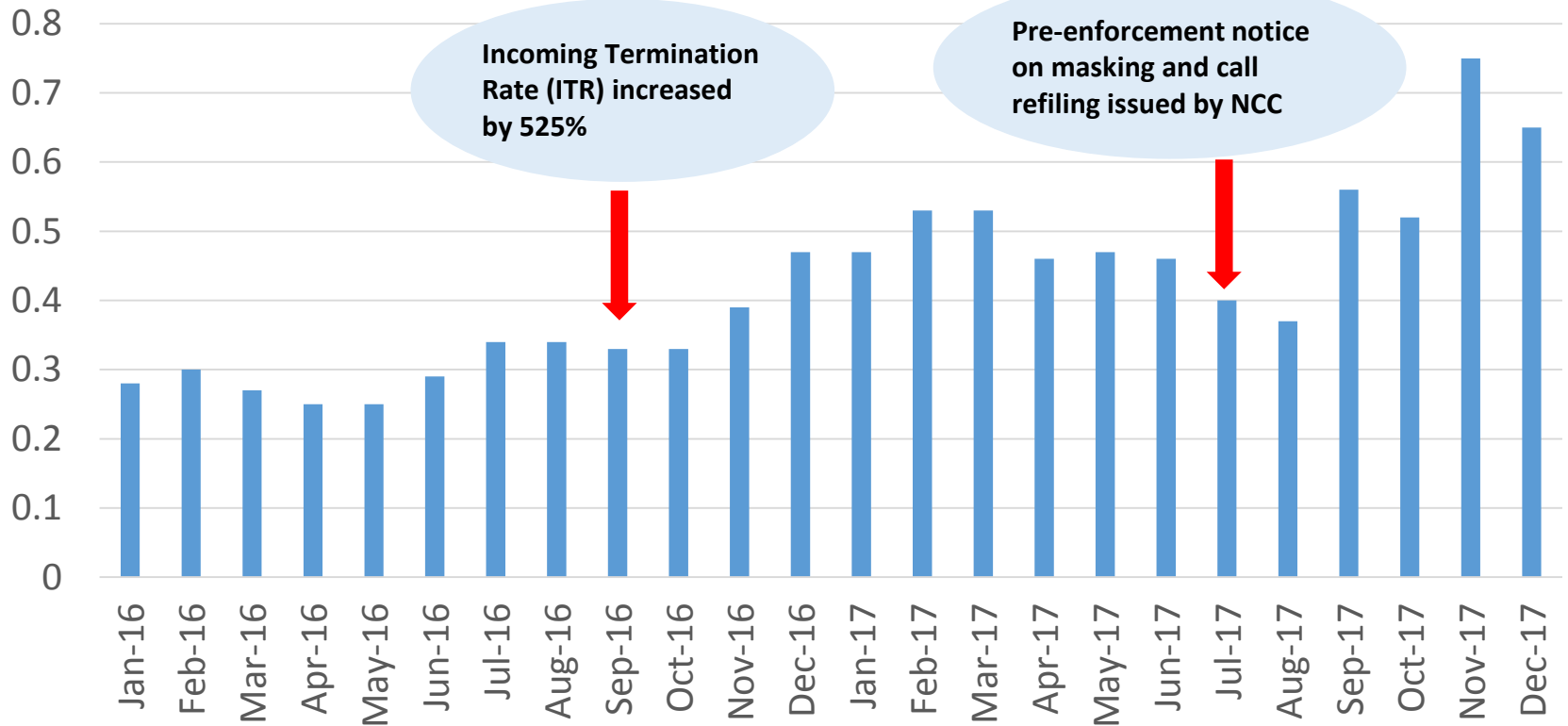
SECURITY IMPACT OF CALL MASKING

- **Increased complexity for security agents in tracking fraudulent calls**

- **Provides increased anonymity for criminally minded individuals using the telecommunications network**

- **Potential accusation and implication of innocent subscribers in criminal investigations**

- **Complicates the assessment mechanisms of security agencies with respect to investigating and preventing potential national security issues**

- **Potential security issues with authorities for directors and top officials of licensees if a serious security breach takes place due to masking traced to their networks**

ECONOMIC AND QOS IMPACT OF CALL MASKING

- **Loss of revenue for terminating operators**
- **Economic sabotage by unlicensed entities involved in the practice**
- **Negative Impact on investment decisions of operators to expand requisite infrastructure**
- **Loss of revenue for government**
- **Potential for punitive financial sanctions on perpetrators**
- **Rejection by receiving parties of otherwise critical calls due to non-display of actual calling numbers**
- **Negative Quality of Service Experienced by subscribers**
- **Negative impact on QoS due to usage of compressed transmission links and multiple codecs**

2G TRAFFIC CHANNEL CONGESTION IMPACT

Operator "J" Monthly Traffic Channel Congestion

Incoming Termination Rate (ITR) increased by 525%

Pre-enforcement notice on masking and call refiling issued by NCC

Tackling Call Masking in Nigeria

INVESTIGATION PROCESS

Investigation Process:

1. Data request and collection from participants in the call refiling and masking ecosystem

    i. Invoices issued and received by MNOs for the months of September 2016, December 2016, March 2017 and June 2017

    ii. Invoices issued and received by Clearinghouses for the months of September 2016, December 2016, March 2017 and June 2017

    iii. Traffic sent from one MNO to another through ICHs

2. Data request and collection from personnel receiving masked calls

3. Analysis of collected data

INTERIM OUTCOME OF INVESTIGATIONS

Findings:

1. **ClearingHouses:** Some Interconnect Clearing houses terminated traffic larger than what some MNOs sent to them to other MNOs. This indicates the concerned clearing houses are bringing in traffic from other sources and sending it to other licensees as if it is coming from an originating licensee.

2. **LEOs and PNLs:** Some LEOs and PNLs are masking international calls using NNP allocated to them by the Commission. These calls are usually passed through the clearing houses for termination on MNO networks. This gave rise to receiving calls with geographic numbering plans.

3. **Unlicensed Entities Using SIMBOXES:** Unlicensed entities (individuals and MSMEs) use SIMBOXES to terminate international calls that displays the MSISDNs of the SIMs in the SIMBOXes

Findings contd:

4. **Unlicensed Entities using PRI E1s:** Some unlicensed entities (individuals and MSMEs) potentially using direct connect ISDN PRI E1s to terminate international calls that displays the MSISDNs of the PRIs

5. **Lower ITR charged:** Some operators are charging much less than the International Termination Rate (ITR) set by the Commission in order to attract incoming international calls destined for other operators' networks to be masked and sent on the local interconnect route.

Actions Taken and Next Steps

Actions Taken

1. **Direction:** Letter written by the Commission to all licensees to cease and desist from all call masking activities

2. **Stakeholders Engagement:** The Commission held a stakeholders meeting with relevant licensees where a clear direction was re-iterated for all licensees to desist from the nefarious practice of call refiling and masking.

3. **Investigation:** The Commission carried out network audit and data collection on licensees networks as part of the investigation process

4. **Notice of License Suspension:** Notice of suspension of operating license issued to clearinghouses that investigation showed are involved in call refiling and masking activities

5. **License and NNP Suspension:** Some Licences and National Numbering Plans (NNP) used for call Masking were suspended.

Next Steps

1. **Forfeiture:** Sanctions to be imposed on perpetrators in line with the NCA Act 2003 and Enforcement Regulations 2003.

2. **Expose:** Continuous naming and shaming of perpetrators in the media

3. **Prosecution:** Tracing, apprehension and prosecution of unlicensed entities involved in SIMBoxing.

4. **Remedial Measures:** Institution of a monitoring framework for call refiling and masking (including SIMBOXing)

5. **Others Actions:** Any other action NCC may deem required and appropriate.

CONCLUSION

1. **Impact on QoS:** Call Masking (including SIMBOXing) have negative impact on QoS (both quantitative and qualitative)

2. **Mitigation:** Use of both technical and Non-technical approaches towards the limitation of call masking (including SIMBOXing) is required.

3. **Financial Sanctions:** Consideration of financial sanctions on perpetrators.

4. **Non-Financial Sanctions:** Consideration of operating license suspension of confirmed licensed perpetrators

5. **Expose:** A naming and shaming of perpetrators in the media

6. **Prosecution:** Tracing, apprehension and prosecution of unlicensed entities involved in SIMBoxing and use of ISDN PRI E1s for illegally terminating incoming international traffic

Thank You