GSMA

LinkedIn Live

VoLTE Challenges - Addressing Real-World Issues and Facilitating Rollouts

Tuesday, 23 September, 12pm (BST)

GSMA Working Groups

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Five reasons you should join GSMA Membership

Discover how we can transform your business

Agenda

Today's LinkedIn Live session will cover:

VoLTE Challenges

Despite VoLTE being deployed since 2012, there are still issues. This session will show how the Networks Group leads efforts to help companies across the ecosystem align on VoLTE standards and facilitate deployments.

OXIO VoLTE Deployment

Q&A

Please share your questions in the chat.

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Speakers

Wayne Cutler
Technical Director
GSMA

Miguel Monforte Nicolas
VP of Telecom
OXIO

VoLTE Challenges

Addressing real world issues and facilitating VoLTE rollouts

Wayne Cutler
Technical Director
GSMA

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VoLTE Focus in Network Group

- UPG – User Profile Group
  - Responsible for User Network Interface (UNI) aspects
  - Key documents include IR.92 (VoLTE Profile) & IR.94 (ViLTE Profile)
- NRG – Network Roaming Group
  - Responsible for Network-to-Network Interface(NNI) aspects, including roaming & interconnect
  - Key Documents include IR.88 (LTE Roaming Guidelines), IR.65 (VoLTE Roaming Guidelines), IR.95 (IMS Interconnect Profile) & IR.21 (Roaming Agreement Exchange - RAEX)

IMS Configuration Parameters

- UPG defined a minimum set of configuration parameters to facilitate VoLTE interoperability to address optionality in IR.92 etc.
- IMS (IP Multimedia Subsystem) configuration parameters are owned by UPG and documented in IR.92 etc. but also reflected in PRD TS.32
- TS.32 (“Technical Adaption of Devices through Late Customization”)
- TS.32 underpins the GSMA Network Settings Exchange (NSX) platform – see NSX Database

VoLTE Implementation Guide

- Based on issues reported to GSMA, NRG initiated a study and published a VoLTE Implementation Guide for S8 Home Routed (S8HR) based roaming
- Five streams of works :- VoLTE Issues, SMSoIP, Emergency Calling, Regulatory Issues, Testing & IR.21 data
- The testing work stream output was also reflected in PRD IR.25 (VoLTE Roaming Testing) and forms the basis of GSMA Interoperability Testing – see IOP
- The Implementation Guide is here

Reported Issues / Challenges to NRG

- MNOs unable to sunset 2G/3G networks
- OEMs block unknown VoLTE networks
- OEMs block VoLTE roaming
- Variations in network settings despite GSMA Network Settings Exchange
- Lack of industry VoLTE interoperability experience
- ~ 500 LTE networks yet to launch VoLTE increases roaming testing exponentially
- 5G roll out is delayed as MNOs unable to use 2G/3G spectrum
- Operational costs of maintaining old networks
- Regional device blocking
- Testing logistics - shipping of test devices expensive and impractical at volume
- Large OEMs will not provide the time or resource to smaller MNOs
- Scale prevents direct testing ~2000 VoLTE capable devices ~350 new ones per year

Testing Recommendations

- Definition of a Test Methodology
- Definition of 6 recommended service-based IMS configuration profiles (voice, SMS, Emergency)
- Definition of “Network-Types” reflecting their deployed IMS services with applicable test suites and an evolution path between them
- Definition of a roaming test matrix covering all network type combinations and IMS profiles
- Six profiles subsequently rationalised to two profiles (namely P#4 & P#6) – P#6 being a superset of P#4 (i.e. adds VoWiFi)
    - GSMA recommends MNOs who have not yet deployed to adopt one of P#4 or P#6
    - GSMA recommends OEMs to support P#6

GSMA VoLTE Interoperability Test

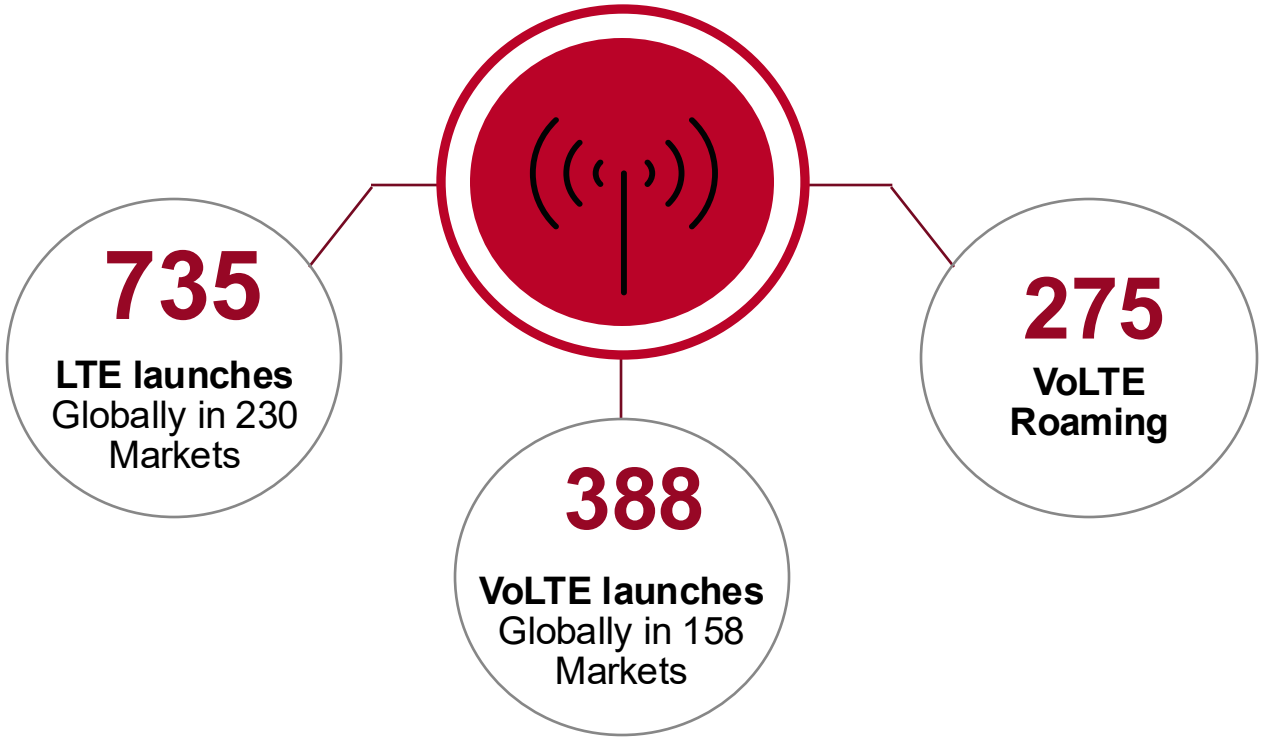
- VoLTE testing service launched based on NRG work – see VoLTE Testing
- MNOs share settings via NSX database
- OEMs informed of accredited networks and vice versa
- Following network accreditation, OEMs are requested to engage with those networks for VoLTE enablement to address device blocking
  - Favoured method is for MNOs to test an in-hand device (unlocked with OEM help) and sharing of traces
  - Still 1:1 testing – but is the most efficient way of doing it.
- OEMs also encouraged to allow VoLTE on any network and to use Profile#4 / #6 as a default setting if settings not in NSX
  - Some progress has been made
- Intent is to break the logjam of 1:1 testing between OEM/Network

See VoLTE Test Results

Emergency Call Issues

- Concerns regarding support of IMS emergency call for inbound roamers were raised in 2022 – in particular when “normal” voice service not available,
- GSMA formed a Board Level Task Force (TF) to address the issue as well as general VoLTE Interoperability
- The TF surveyed OEMs for emergency call behaviour and discovered that behaviour was unpredictable even within a single OEM,
- TF clarified requirements and made recommendations on device behaviour for emergency call
- The TF also endorsed Profiles #4 & #6 for VoLTE interoperability
- Co-ordination with NRG / UPG / TSG to reflect the TF output as well as LSs to partner organizations

VoLTE / Roaming Stats – August 2025



VoLTE rollout is slow	**VoLTE** roaming agreements are stalling	**2/3G** sunsetting and spectrum re-farming is compromised

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A Source of Expertise for VoLTE

- There is still a long way to go before VoLTE & S8HR Roaming is ubiquitous,
- NG Working Groups provides a source of expertise to consider VoLTE related issues moving forward as and when they are raised – and underpins a number of current GSMA services which aid VoLTE deployment.

OXIO VoLTE Deployment

Miguel Monforte Nicolas
VP of Telecom
OXIO

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Reimagine telecom for a limitless, connected tomorrow

OXIO was founded in 2018 to build the global mobile network of the future - an intelligent, secure, and reliable platform with the flexibility required to bring scalable connectivity experiences and business models to a market that's currently limited by the industry's legacy constraints.

Our goal is to create a simplified yet uncompromising solution that unleashes full control of telecom as a service and unlocks actionable insights for customer-obsessed companies competing in a data-driven world.

OXIO

OXIO is rethinking the way telecom is distributed and monetized.

By creating rails to telecom infrastructure around the world, we're bringing connectivity and business intelligence into the cloud, and turning it into new enterprise use cases, revenue streams, and actionable 1st-party customer data.

Unlike traditional telecom providers, OXIO is a cloud-native, software-first platform purpose-built for embedded mobile experiences. Our **Telecom-as-a-Service** model gives us unparalleled control over provisioning, device recognition, and secure network interaction—all via APIs.

While legacy carriers operate with hardware lock-in and limited programmability, OXIO abstracts those complexities and delivers turnkey access to global carrier infrastructure. We can securely issue, bind, and verify eSIM credentials across devices without user input. No other platform offers this combination of agility, scalability, and compliance.

OXIO is built for digital innovation from the ground up without legacy telecom constraints.

OXIO Telecom Core

National Roaming Agreement (IR.21, IREG)

RAT

LTE, 5G NSA

S1

MNO Core Network

- **Mobility Management** *MME*
- **User Plane** *SGW-U*
- Sxa
- **PDN-Session Management** *SGW-C*

S11

Devices

Local Peering / Long Distance Talk / Text

International Roaming

A2P SMS Provider(s)

OXIO Converged Telecom Core Network

Internet / Intranet

SGi

S5-U

- **User Plane** *PGW-U*
- **Border Controllers** *SBC*

Sxb

S5-C

- **PDN Session Management** *PGW-C*
- **Voice, Messaging** *IMS, SMSC, MMSC, DNS/ENUM,*
- **Policy and Charging Control** *PCRF, CCS, CDR Mediation*
- **Subscriber Management** *HSS / HLR*

S6a

- **Signalling Control** *DRA / STP*
- **SIM Provisioning** *OTAP*
- **Lawful Interception** *LIMS*
- **VAS** *Voicemail*

MVNO / Enterprise

CPQ | CRM | Self Service

Public API

OXIO BrandVNO™

Business Support System

Operational Support System

- **Service Order Management**
- **Service Inventory**
- **Provisioning**

BI & Analytics

OXIO BrandIQ

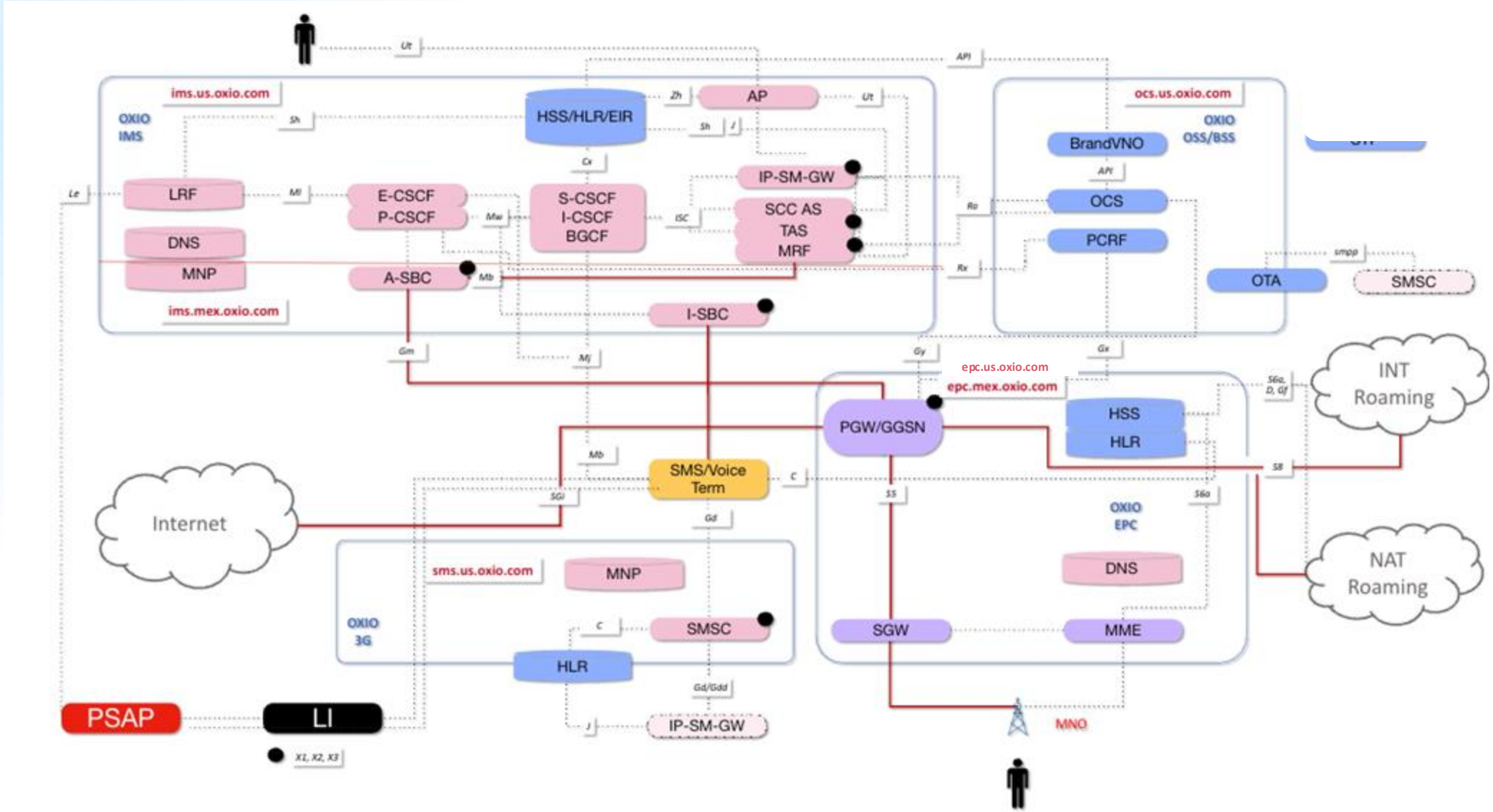
OXIO VoLTE Hybrid Cloud Setup

AWS

IMS-C
DNS
MNP
HSS
HLR
SMSC
IPSMGW
OCS
PCRF
BSS
LI

AWS

SBC
DRA
STP
PGW



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Q&A

Survey

Scan to participate

Please take a moment to complete this short survey

- It will take just 2 mins
- GSMA Confidential (Disclaimer Note: All responses will be anonymous)
- Thank you!

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