



ROCCO

VOLTE VISION STRATEGY REPORT 2018

Executive Summary Version

“We are all now connected by the Internet, like neurons in a giant brain.”

Stephen Hawking



VoLTE Vision Strategy Report 2018

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VoLTE has been debated and discussed at length, now the hard work has started and already MNOs are making considerable progress

About the Authors

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Introduction

ROCCO Reports are research reports undertaken to support MNOs and other interested parties in understanding the Roaming and Interconnect Industry today and to help that industry strategically with data on the position of processes, Industry challenges or Industry Suppliers.

The ROCCO VoLTE Vision Strategy Report 2016 is dedicated to the investigation of VoLTE as a Roaming and Interconnect service based on research we have conducted with MNOs and the Vendor community.

This report contains the strategic direction of 164 MNOs on VoLTE Roaming and Interconnect and interviews with 3 very diverse Vendors in the market, IVR Technologies, Inc., iBASIS and SIGOS.

Sometimes we include MNO or Vendor insights within our reports to provide a wider and more conclusive perspective. MNOs take part in our research confidentially and receive for their time Executive Summaries of the research they have helped contributed to. Vendors use our research projects to give their views, visibility to their products and services and to understand their competition. Together these insights give a wide view on the topic.

This report is created neutrally, sponsored only by ROCCO, enabling us to directly ask the questions we want and receive and publish the responses verbatim from the MNO and Vendors who took part.

Objectives

ROCCO provides within this report MNO opinions on the status of VoLTE Roaming and Interconnect to assist all MNOs and Vendors to understand the current status of VoLTE and the likely timeline for roll-out of these services. In order to do this we have analysed data from various sources to tell the history of VoLTE up to the date of the publication of this report.

VoLTE is the GSM based solution for Voice calling services over the top of the GSM LTE data network. It comes with a promise of high definition Voice calling services which can really please subscribers focussed on the quality of their calls. VoLTE calls are basically identified by analysing the data usage and pinpointing a certain data usage as a call and potentially charging for that differently both in a Wholesale and Retail capacity. MNOs bundle the high quality VoLTE Calls in with other services to offer it as a real value added service.

We have also captured unbiased and neutral information from key Roaming personnel in 164 MNOs (in 104 Countries globally) on their strategic plans for VoLTE. The data was captured between March and July 2018.

Methodology

ROCCOs methodology for this research is very simple. We send a survey to all the MNOs and MVNOs, we publish posts and make communications across our 34,000+ telecommunications contacts in the industry (with a focus on MNOs) and we gather the insights and feedback from every MNO we can to make our report.

ROCCO is a neutral consulting and research company and does not assist with the sales of products and services of any vendors in the market. ROCCO does not produce sponsored research, our aim is to provide always the truth in a situation, to ask the questions we want and give the responses we want to give to assist MNOs in their challenges.

Since there has never been a GSMA based project focussed on VoLTE Vision, it was always ROCCOs feeling that not enough support is available in the industry for MNOs to understand the best practice of other MNOs. We think that this report helps with this.

This report is sent to all MNOs who responded to the research and is also available for download on the web from www.roamingconsulting.com

For any question about our methodology, please contact ROCCO at hq@roamingconsulting.com

Executive Summary

VoLTE: From Smoke to Steam

A new era of voice calls is slowly making its way across the globe; muffled or distorted conversations will become a thing of the past, like the monophonic ringtones which can only amuse us in these modern times. The change is supposed to be so radical, that the number of VoLTE users will surpass the subscriber count of 'OTT' voice app services. Is it truly possible? VoIP apps and Messaging apps are one of the main culprits in the decline in revenues — but we were all here when those apps became more than just apps; they evolved into thriving tech hubs that threaten the sovereignty of the telecom world.

Of course, there are challenges and technical hurdles to overcome, but it is the natural way of things, to move forward with enough preparation and foresight to avoid a cataclysm, and patch things along the way.

We must remain realistic and recognise that VoLTE might not be deployed anytime soon in developing countries where the majority of the population does not have a smartphone, let alone data. And with VoLTE in motion, 2G and 3G might be eventually switched off, bringing forth a new wave of trial-and-error episodes until the network regains its stability.

There will be strong support from subscribers if the upgrade provides exceptional quality of experience, as well as an agreeable price; disposing of 3G will throw all non-LTE calls back on 2G, drastically decreasing the quality of normal calls, which is what some subscribers are experiencing in the US. The other 'HD voice' projects remain stagnant, while all efforts are syphoned into the development of VoLTE... but not everyone can or wants to purchase a smartphone, and thus suffers the consequences of an almost underwater sound distortion.

In order to minimise unpleasant experiences while riding the crystal-clear sound of VoLTE, the network must be sufficiently instrumented and tested, capable of supporting VoLTE dropped calls and quality issues which tend to occur in the

backhaul and radio access network, far out of the reach of legacy testing and monitoring equipment.

VOLTE: A VISION AND A REALITY FOR ROAMING

FOLLOWING EXTENSIVE RESEARCH WITH 164 MNOS ROCCO REVEALS SOME NEW INSIGHTS INTO VOLTE ROAMING

MNO Opinion
79%
OF MNOS WE SURVEYED HAVE VOLTE ROAMING OR WILL LAUNCH BEFORE 2020

VOLTE ADOPTION IS HAPPENING AND WHILE SLOW WILL BECOME UBIQUITOUS: ✓

- IT'S NOT WISHFUL THINKING OR HYPE, NOR IS IT A NICHE
- TAKE UP HAS BEEN SLOW BUT MAJOR GROUPS ARE NOW PRIORITISING THIS OVER 5G
- WHY?: RE-FARMING OF FREQUENCIES CLOSING DOWN OF 2G/3G VOICE NETWORKS
- 4G MNOS ARE GENERATING ADDITIONAL REVENUES ADDING VOICE OVER THEIR LTE SERVICES

THE 50+ PAGE REPORT PRESENTS FEEDBACK FROM MNOS AND VENDORS ON VOLTE ROAMING

DATA FROM THE ROCCO™ VOLTE VISION STRATEGY REPORT 2018

Some realise that in order to make this transition – transition, yes, it will not be a leap – hefty investments in 3G voice quality must be made for cost-conscious LTE subscribers... because how else would you tempt your subscribers to upgrade, without losing them or forcing them?

On balance, there's some decisions yet to be made by some MNOs on whether to progress with VoLTE but it is coming. This report's main intention is therefore to provide some strategic inputs to allow for MNOs to make their strategic decisions on VoLTE Roaming and Interconnect and moreover to see the progress. The feedback from MNOs reveals a mixed strategy, but the message of our last report "To VoLTE or not to VoLTE" is no longer a question.



VoLTE: the US perspective - An article by Polina Hristova

While it might be a challenge to implement VoLTE in countries like Brazil and India (most of the population does not have smartphones), it has been

successfully launched in the US, Asia and Europe. KT, SK Telecom and LG Uplus – South Korean MNOs – hold a predominant spot with their high-speed, high quality solutions also in countries outside of South Korea.

[Global Voice over LTE \(VoLTE\) subscriptions are expected to jump 746% by 2023.](#) VoLTE subscriptions are projected to hit 5.5 billion in 2023, up from the 650 million in 2017. Growth in VoLTE subscriptions is significant as it will become the groundwork for enabling voice calls over 5G access.

A lot of time and money were invested in the deployment of VoLTE – which should've sped up its release and adaptation rather than slowing it down – therefore, there is no rush to start replacing it with a 5G voice service.

“I think VoLTE will be there for a very, very long time,”

Nokia's North American CTO Mike Murphy.

Some carriers label and market their services as VoLTE, but many of them fail to deliver the promised HD voice quality, especially in Europe. HD voice is another component of VoLTE. Many use these terms interchangeably as both give a crystal clear audio quality, but they are not the same thing – VoLTE is the carriage of voice over LTE, HD voice is a trade name of a voice codec, AMR Wideband (AMR-WB). HD voice operates also over UMTS and GSM; it is not unique to LTE.

“Should I buy a phone that isn’t certified for VoLTE?”

- American subscribers ask, unsure of how affected they will be by the massive transition onto full LTE support.

“There's absolutely no reason to pay a bunch of money for a phone that doesn't do VoLTE right now.” US CellPhone Subscriber

The only question right now is - buy a phone now or wait a few months for phones with 600mhz support. 600mhz covers the entire country and looks like it will be the last major hardware frequency update for a while, so your phone should last a long time.



The rising competition among telecom operators to acquire 4G space, the growing adoption of VoLTE-supported devices and stabilised prices are expected to affect market dynamics for years, up until 2025.

VoLTE is a lot more widespread in the US than it is in Europe, where things are still slowly progressing. But one thing is clear, by 2021,

North America, the more developed countries within Asia and Western Europe will see close to or all LTE subscriptions being VoLTE enabled.

China (1.08 billion connections), the United States (379 million) and Japan (147 million) will be the three countries with the most VoLTE connections by the end of 2021. The highest penetration rates will sit in South Korea (99.4 percent), Japan (96.7 percent) and Norway (94.1 percent).

MNOs which appear in this report

- **102 Respondees** to our survey representing
- **164 MNOs** in
- **104 Countries** and
- **6 MNO Groups**

Vendors which appear in this report

As well as a VoLTE Interview with MNOs we also send a VoLTE Specific Interview to Vendors to get their perspectives on VoLTE. This is what we did during our 2016 Report and MNOs found the data very interesting.

Our Survey for Vendors contained 48 questions of VoLTE Roaming and Interconnect. 5 Vendors responded and they were all Vendors from different areas of the business bringing unique perspectives to the report. You will see that we add these Vendors opinions throughout our report and at the end of the Executive Summary you can find a contact table for you to follow up incase you want to.

In the Strategic Analysis Report we also present the full interviews.

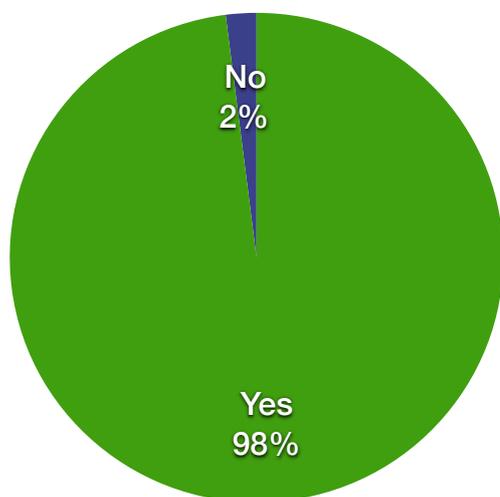
Vendors who appear in this Report

Vendor	Origin	VoLTE Solutions in their own words
Deutsche Telekom International Carrier Sales & Solutions (ICSS)	Germany	Standard IMS base application server, feature parity with R4 legacy services; VoLTE Roaming solution is based on S8 Home Routing roaming architecture. Currently no SRVCC supported.
IVR Technologies, Inc.	USA	We provide a DIAMETER compatible OCS platform for the offering of prepaid voice, data and SMS services coupled with our suite of converged services, native SIP signalling, subscriber portal, web management portal and web service API.
iBasis	USA	VoLTE Interworking, VoLTE Inbound and Outbound Roaming (LBO and S8HR models), roaming monitoring and analysis
SIGOS GmbH	Germany	We provide testing solutions for VoLTE from E2E perspective. Tests can be done using real Smartphones, embedded modules and core network interfaces (S1)
Syniverse	USA	Syniverse's VoLTE solutions are components of its Connected LTE portfolio of IPX services, allowing subscribers to leverage an all-IP network to make and receive high-definition voice calls while roaming or through an interconnection. Syniverse's VoLTE solutions enable operators to manage LTE data and LTE voice via the same IP network.

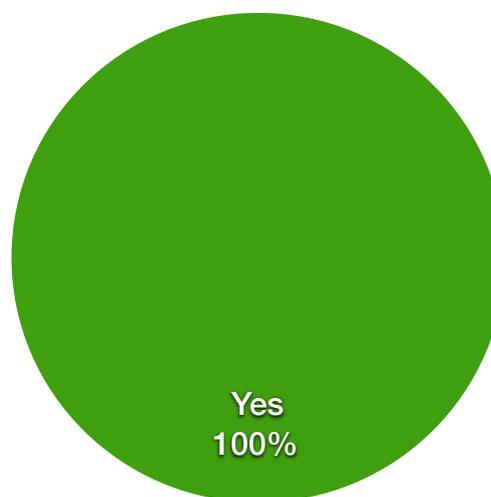
MNOs Status with LTE and VoLTE

The chart below show the focus of MNOs in their Roaming footprints in 2018 as compared with the previous report in 2016. Increasing demand for LTE while Roaming has a positive impact on the number of LTE agreements.

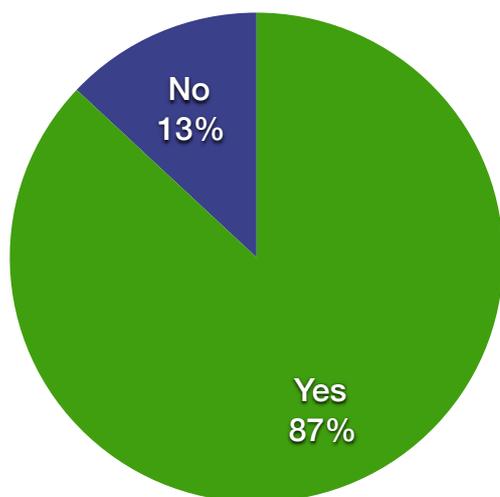
MNOs with LTE Domestically
2016



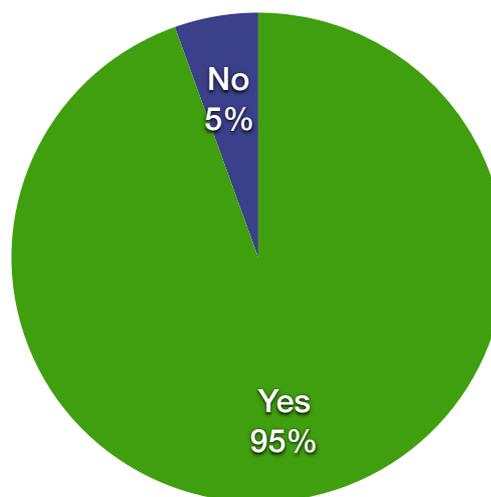
MNOs with LTE Domestically
2018



MNOs with LTE roaming 2016

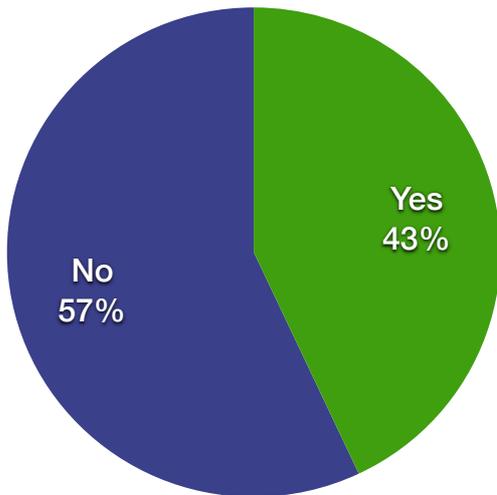


MNOs with LTE roaming 2018

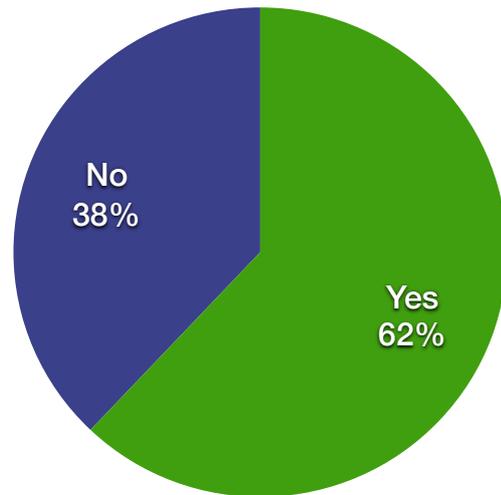


We can also see here that adoption of VoLTE has increased within the last two years. For VoLTE Roaming, a good increase in adoption.

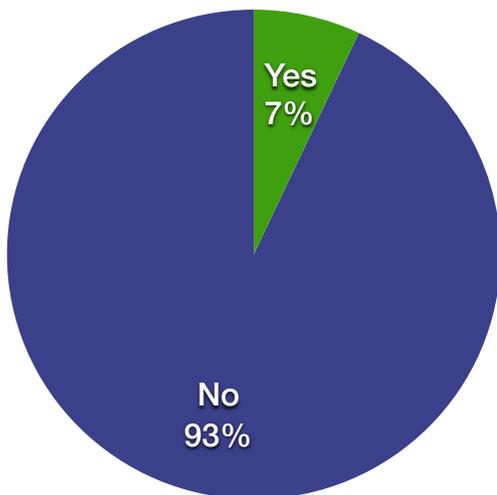
MNOs with VoLTE Domestically
2016



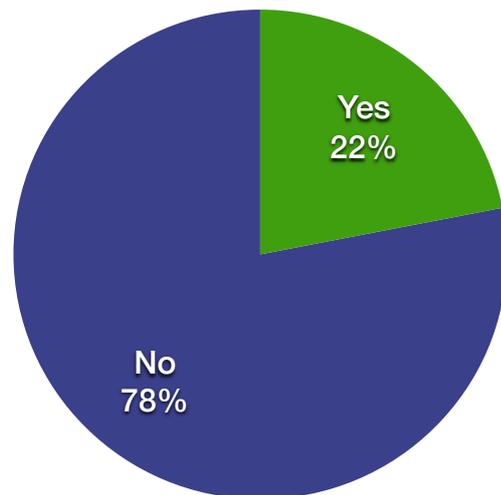
MNOs with VoLTE Domestically
2018



MNOs with VoLTE Roaming 2016



MNOs with VoLTE Roaming 2018

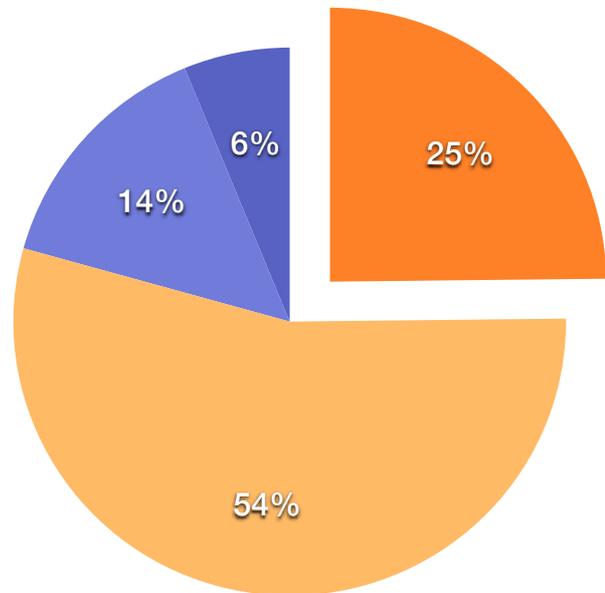
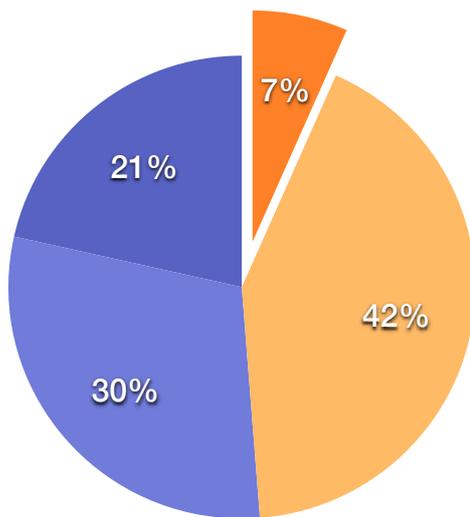


Status of Roll-out of VoLTE Roaming Services

Many of the 164 MNOs gave their view (145 MNOs) on whether they would develop VoLTE Roaming. 25% of MNOs who responded (36 MNOs in our report) have VoLTE Roaming today (GSMA report over 40 MNOs across the world have VoLTE Roaming) and 54% (79 MNOs) have clear plans to work on it.

Roll-out Status for VoLTE 2018

Roll-out Status for VoLTE 2016



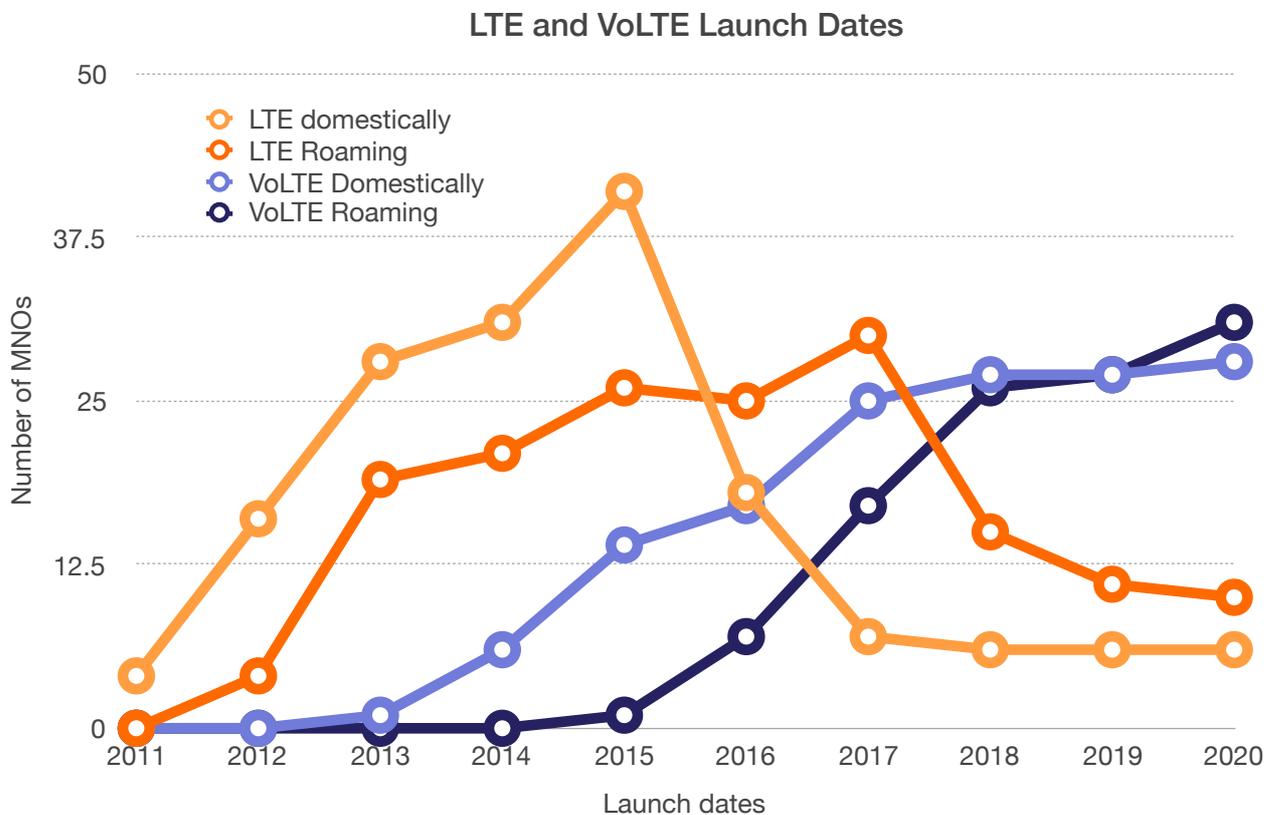
- We have VoLTE Roaming
- We don't have VoLTE Roaming yet, but we are working on it
- We don't have VoLTE Roaming yet and we are not sure if we will
- We don't have VoLTE Roaming yet and it's not on our roadmap

Vendors Client Numbers

From the Vendors we interviewed they also provided some interesting data on VoLTE Roaming Rollout. We noted that some had as many as 200 clients were working on VoLTE. One IPX vendor said that over 130 MNOs in over 60 countries were engaged with VoLTE planning or launches. Another IPX Vendor indicated that they had at least 10 clients within Europe who had live agreements between each other.

Launch timeframe for LTE and VoLTE

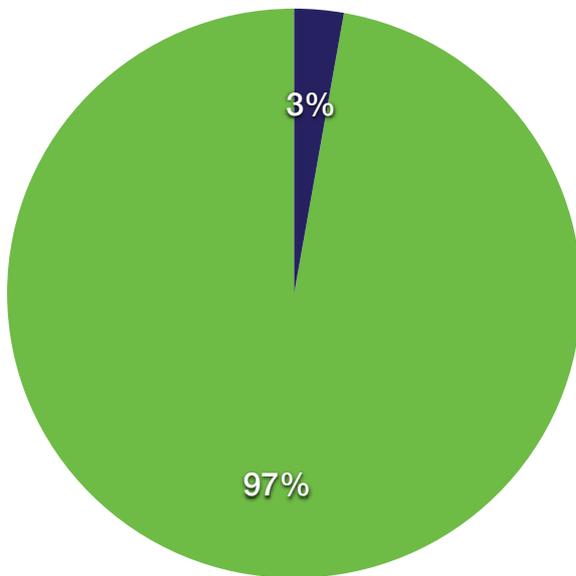
The chart below shows the approximate launch dates for the 164 MNOs who are part of this research. The dates represent the years in which launches occurred or will occur in their markets. We anticipate then by 2020 there will be a minimum of 132 MNOs with VoLTE Roaming.



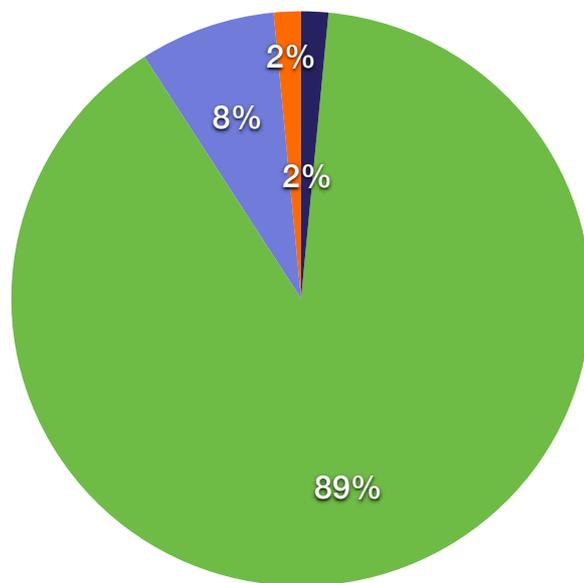
Which model do you plan to use for VoLTE Roaming

MNOs have been in favour of S8HR Model for VoLTE so far. Of the 79 MNOs who are planning VoLTE Roaming we wanted to know which model they will use. With those MNOs planning VoLTE Roaming, the results are clearly in favour of the S8HR model.

Which model for VoLTE Roaming
MNOs have used so far



Which model for VoLTE Roaming
MNOs planning to launch going to use



● LBO
 ● S8HR
 ● Both in Parallel
 ● No Decision Yet

Vendors perceptions of VoLTE's tangible benefits for MNOs

For operators around the globe, enabling VoLTE is a complex milestone in the transition to LTE. But Vendors believe it also brings tangible benefits.



iBasis told us some of the Key drivers for Outbound VoLTE:

“Potential cost savings in case of out-payment. More control in case of S8HR A roaming solution in case of greenfield situation” - iBasis

IVR also added:

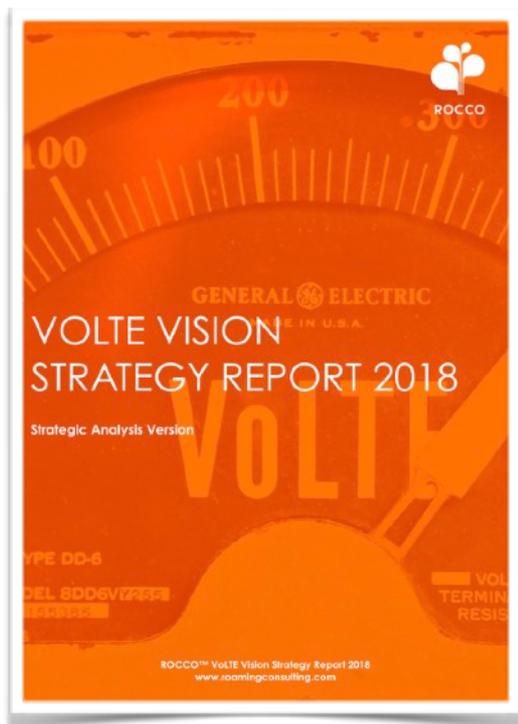
“Cost savings, innovative call routing and convergence of enterprise/ consumer services to a single device” - IVR technologies

Syniverse gave some food reason for Inbound:

“The Key drivers for supporting inbound roaming:

- 1.Maintain voice revenues that may not otherwise be received without a common 3G footprint.**
- 2.Generate new revenue opportunities for services.**
- 3.Provide higher quality of experience.”**

End of Executive Summary



This Strategic Analysis Report

VoLTE Vision Strategy Report 2018

This Strategic Analysis Report has been created based on interviews with MNOs and International Vendors and contains 30+ Pages of data

Executive Summary (this part of the report is sent to the MNOs who took part in the research for free)

Highlights from the Report

Contents, About the Authors, Introduction, The Objective of this Report, What are the benefits of VoLTE?, Executive Summary, The VoLTE Roaming

Environment, The Threat to Traditional Voice Roaming Revenues, MNO Strategies on VoLTE Roaming, MNOs Status with LTE and VoLTE, Launch timeframe for LTE and VoLTE, Status of Roll-out of VoLTE Roaming Services Overview Vendor Strategies on VoLTE Roaming, The Strategic Analysis Version contents:

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This report also features quotes from Vendors who completed interviews with us on VoLTE Roaming, DT-ICSS, IVR Technologies, Inc., iBASIS, SIGOS & Syniverse.

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UK Companies are subject to V.A.T. Paid at the Standard Rates.

Eligibility for taking part in this report

This research is open exclusively to all MNOs and MVNOs globally. Any company responding to this research who is not an MNO or MVNO is removed from the results.

Your Feedback, Our Future Reports

This represents ROCCO's third annual report in to VoLTE Vision.

It should be noted that it is important to identify MNO respondents who are working directly with VoLTE Vision within their companies and can actively comment.

We would welcome your feedback on our questions, research, interpretation of the results and our presentation of the results.

Please contact hq@roamingconsulting.com to give your view.

Current research projects for MNOs

On the date of publication of this report ROCCO was working on other Research projects which may be of interest. All the Research projects will result in Reports published by ROCCO in the near future.

ROCCO Catalogue

For more information about our Reports being published in 2018 please see our catalogue available for download from www.roamingconsulting.com

Annex A: Vendor Directory

Vendor Directory

Vendor	Origin	Website Address	How to reach them
Deutsche Telekom International Carrier Sales & Solutions (ICSS)	Germany	https://www.telekom-icss.com/	Ab Egberink Head of Sales Mobile World A.Egberink@t-systems.com +31 347 327 361
IVR Technologies, Inc.	USA	www.ivr.com	sales@ivr.com
iBasis	USA	www.ibasis.com	sales@ibasis.net
SIGOS GmbH	Germany	www.sigos.com	Phone, Email, Internet contact form
Syniverse	USA	www.syniverse.com	https://www.syniverse.com/contacts