



RADCOM's MaverIQ Solution for

# VoLTE & IMS Service Assurance

## Highlights

- Holistic monitoring solution for the entire user experience
- Powerful, yet user-friendly analytical tools detect and pinpoint performance issues
- Small footprint with unlimited scalability
- Inherent support for IPv6
- Prediction of performance trends
- Resolution and analysis of interoperability issues between protocols and technologies
- Monitoring and fast troubleshooting of QoS and network performance issues
- End-to-end correlated call flow for IMS and VoLTE

## Extreme Analytical Power for Service Assurance and Customer Experience for VoLTE and IMS Networks

Wireline and wireless operators around the world are embracing the IMS (IP Multimedia Subsystems) architecture. This functional framework is the ultimate means to significantly reduce operating expenses, while gaining the flexibility needed to smoothly introduce new customized subscriber-centric services. The necessity for the fast rollout of new LTE based multimedia services (VoLTE), the complexity of implementing new high definition voice and video services, and the interoperability with legacy networks make's RADCOM's VoLTE & IMS Service Assurance solution a must for any service provider.

RADCOM's VoLTE & IMS solution enables service providers to monitor voice and multimedia services over IMS and LTE networks. It features fully correlated end-to-end session-based SIP signaling analysis and multimedia quality measurements based on RTP protocol analysis such as Mean Opinion Score (MOS).

## IMS Network Challenges

As a result of this network transformation and the proliferation of NG VoLTE, IP operators face new challenges:

- A wide variety of technologies and control protocols that must work together
- IP network limitations which may drastically affect voice quality
- Introduction of IPv6
- Systems that are more prone to service degradation due to congestion
- Interoperability between LTE and Legacy Networks

Deployment and operation of new generation mobile IMS services such as:

- SIP based IMS and SMS
- Cloud data services
- Presence indication

Operators need powerful monitoring tools to provide and maintain high quality in this challenging environment and to maintain subscriber satisfaction, increase loyalty and reduce churn. RADCOM's MaverIQ VoLTE & IMS Service Assurance solution is the most comprehensive solution for your monitoring needs.

# RADCOM's Solution

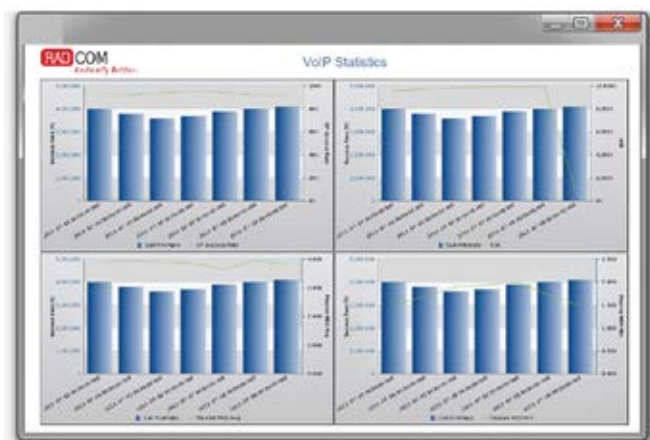
RADCOM's MaveriQ Radically Better Service Assurance and Customer Experience solution provides a comprehensive solution that meets all the challenges that service providers face when delivering VoLTE and IMS services.

## MaveriQ's Unique Capabilities

RADCOM's MaveriQ service monitoring solution provides operators with real value in an IMS environment. It includes high performance scalable probes, columnar database and advanced report studio.

## Superior Troubleshooting

The MaveriQ solution provides fully correlated, end-to-end, session-based signaling analysis that is integrated into the eDR database (extended call detail records). The benefit to the customer is that in-depth troubleshooting capabilities, conditioned through analysis of the signaling frames, can easily be accessed by drilling down from network and trace reports.



*Drill down troubleshooting and statistical analysis for IMS KPIs*

## Service Profiling

The MaveriQ solution detects and classifies the different flow types within the operator's VoLTE & IMS service offering. This is achieved by creating correlated sessions and using them for KPIs, rather than just for a signaling ladder diagram. The master eDR manipulates fields from the selected eDRs composing the end-to-end session, to concisely provide the essence of the end-to-end flow.

This clear visibility of meaningful service and network performance statistics, rather than just leg-based quality indicators, is of benefit to service providers. Flow-type classification can also be used to segment flows within the network and the IMS core to provide important key performance indicators (KPIs) for preventive troubleshooting and network planning.

## VoLTE

MaveriQ probes capture and process the many legs and protocols related to voice, video and IMS over LTE networks. End-to-end correlation is performed to provide visibility into complete VoLTE sessions from the LTE session establishment, until the SIP session is terminated.

## Integrated Active Testing

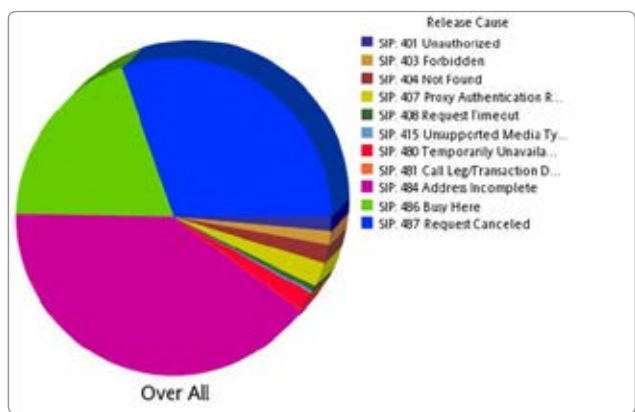
The MaveriQ solution generates active test calls and provides point-to-point path quality measurements. As the active test call capabilities are fully integrated in the MaveriQ, the test call is also monitored by the non-intrusive probe, to provide a unified, correlated view of the entire call as it progresses through the network. The test call, emulating a real customer call, also provides additional measurements, such as ITU T P862 results and echo. An important benefit to operators from this, is the ability to test across the IMS core regardless of the actual implementation and network elements, to benchmark services and act as a 'heart beat' for the viability of various path routes within the core.

## High Performance

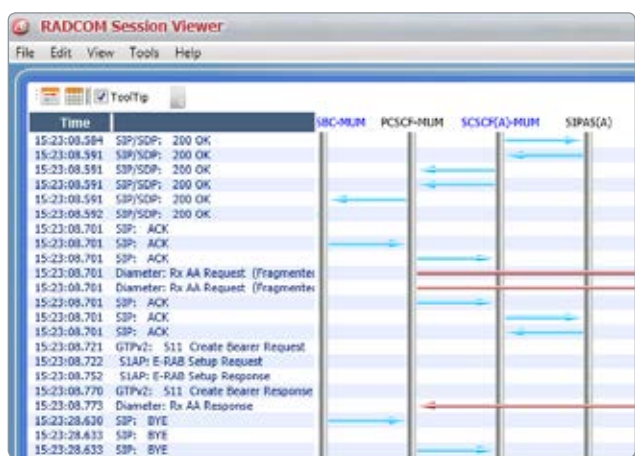
RADCOM's high speed MaveriQ delivers more than 150,000 RTP media stream analyses and over 500,000 signaling session analyses in a single 2U monitoring point.

# Comprehensive Solution for VoLTE & IMS Service Assurance

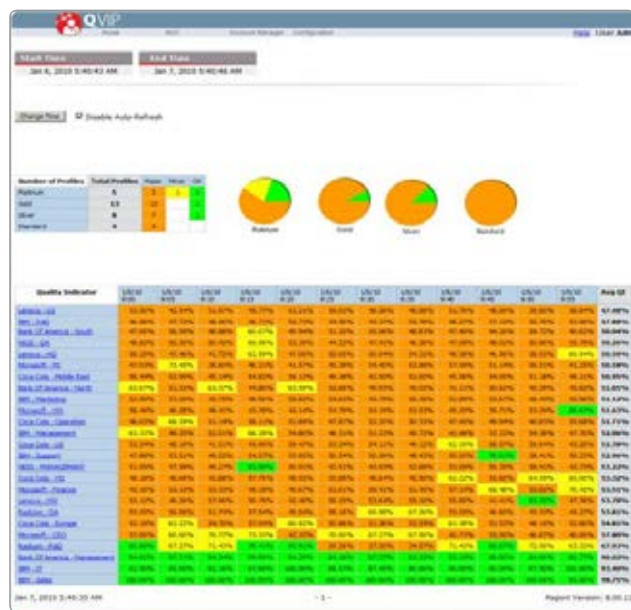
MaveriQ for VoLTE and IMS features the RADCOM Service Assurance application suite, including applications for Tier 1 customer care, Marketing NOC quality and engineering. These applications provide enhanced drill down workflows for engineers, as well as quality analysis for customer care.



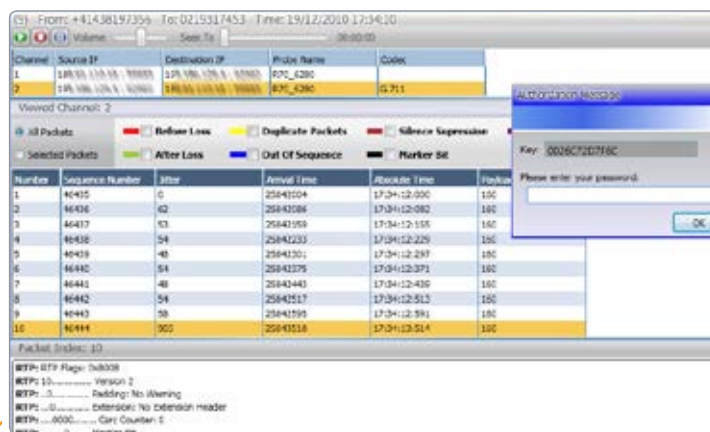
QExpert provides a comprehensive suite of dashboards showing key quality indicators (KQIs) for VoIP, IMS and VoLTE signaling and media, including SIP and registration failure rate and voice and video media quality (MOS). Drill-down workflows make problem isolation and analysis both fast and efficient, while providing the user with full flexibility.



End-to-end signaling ladder diagrams are provided for all IMS, VoIP, SMS over IP and video sessions. For VoLTE, end-to-end correlation is applied to combine all the various legs comprising the voice, SMS or video session from the LTE radio interface to the IMS core. This correlation applies to *on net* IMS sessions as well as interoperability with legacy voice/SMS networks and LTE 3G fall-back (SRVCC).



The QVIP SLA Management application provides dashboards for monitoring the overall service quality for VIPs and enterprise accounts, and enables operators to be proactive in identifying and resolving problems pertaining to IMS/VoLTE QoS before VIP customers are aware of these problems. QVIP utilizes Quality of Experience indexes which represent the VIPs perception of the quality of service.

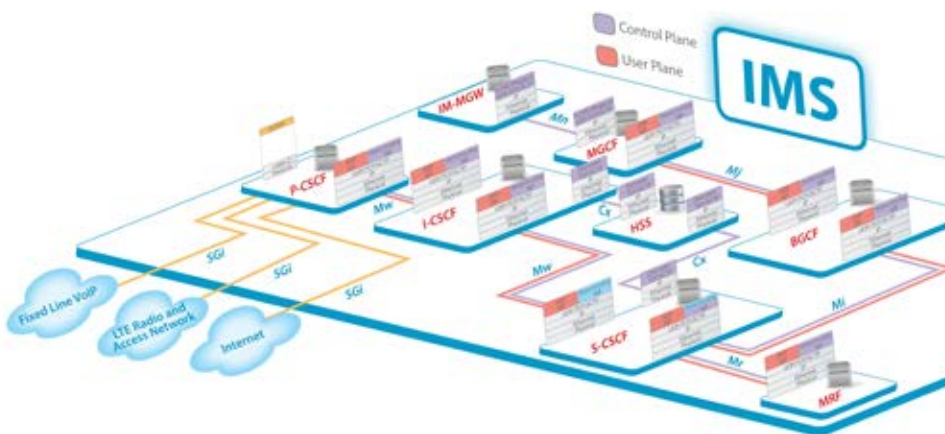


The QTrace online call troubleshooting application provides an online and historical session trace for IMS, VoIP and VoLTE voice, SMS and video sessions. Advanced filtering options combined with a user friendly GUI enable engineers to quickly pinpoint the source of any network problem. End-to-end correlation is employed to show the signaling flow for complete voice, SMS and video sessions, and RTP recording and playback may be used to experience the media quality provided to the subscriber.



## Why MaveriQ?

- A cost effective solution for any network size
- Scalable solution with built-in architecture for Big Data marketing analytics
- Monitors LTE, VoLTE, 3G, 2G, VoIP/IMS, Mobile Data & SIGTRAN simultaneously on one probe
- Guarantees customer satisfaction by proactive troubleshooting
- Minimizes churn by enabling smarter customer care
- Protects revenue streams by improving VIP customer QoE



## Protocols and Interfaces Supported

The following protocols and interfaces are supported

- Cx, Dh, Dx, DNS, ENUM, Gm, Go, Gx, Gq, Gy, ISC, Ma, Mb, Mi, Mg, Mj, Mk, Mm, Mn, Mr, Mw, Mx, P2, Rc, Rf/Ro, Rx, Sh, H.248, SS7
- Diameter, LTE S1-U/ S11 for VoLTE

## About RADCOM

RADCOM provides innovative service assurance and customer experience management solutions for leading telecom operators and communications service providers.

RADCOM specializes in solutions for next-generation mobile and fixed networks, including LTE, VoLTE, IMS, VoIP, UMTS/GSM and mobile broadband.

RADCOM's comprehensive, carrier-grade solutions are designed for big data analytics on terabit networks, and are used to prevent service provider revenue leakage and to enhance customer care management.

RADCOM's products interact with policy management to provide self-optimizing network solutions. RADCOM's shares are listed on the NASDAQ Capital Market under the symbol RDCM.

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