

Delivering Multimedia Communication Services using VoLTE with Oracle Communications Evolved Communications Application Server and Radisys MediaEngine

Mobile networks are being transformed as the proliferation of IP-enabled smart devices is driving the adoption of new interactive voice and video communication services. With the combined solution set of the Radisys MediaEngine family and the Oracle Communications Evolved Communications Application Server (OCECAS), Communications Service Providers (CSPs) have the tools to rapidly introduce and generate revenues from new VoLTE-based voice and video value-added communications services delivered over their LTE access networks and mobile devices.

VoLTE - Much more than mobile voice calls

With the growing number of worldwide deployments of LTE mobile networks to deliver broadband mobile IP connectivity, mobile operators are now focusing on the delivery of revenue-generating interactive voice and video services on these LTE networks. VoLTE is the foundation for this revenue opportunity. Services like video calling, multimedia conferencing, ringback tones, audio and video advertising, video voicemail and messaging are just some of the applications that service providers can deliver when adopting VoLTE. Enterprises use VoLTE services for video conferencing and call center applications. By connecting calls using VoLTE, the result will be much faster than using the older circuit-switched technology on a 2G wireless network. For the consumer, the most apparent VoLTE benefit will be high-quality voice calls. For services providers, there are cost savings benefits due to the fact that from an operational efficiency standpoint, they derive spectral efficiency by refarming spectrum at the same time as still providing voice call continuity.



Figure 1: Service Possibilities with VoLTE service delivery foundation

VOLTE MARKET AT A GLANCE

The VoLTE market is forecasted to grow at a CAGR of 100.64% subscriber base over the 2014-2019 periods. There are a number of factors that are contributing to the VoLTE market:

- An increase in the deployment of LTE networks.
- A rapid increase in shipments of LTE-enabled handsets.
- An increasing demand for quality over voice services.

SOURCE: PR NEWswire VOLTE MARKET TO GROW AT 100% CAGR IN SUBSCRIBER BASE TO 2019, DEC 21, 2015 FROM REPORTSNREPORTS

At least 63 operators have commercially launched VoLTE services in 35 countries. In the US, AT&T announced they have 27 million VoLTE customers as of Q4 2015.

SOURCE: GSA/3G MARKET/TECHNOLOGY UPDATE, MAY 2016

Oracle Communications and Radisys IMS Solution for delivering VoLTE services

In an LTE network, LTE radio access is aggregated into the Enhanced Packet Core (EPC). This provides the basic foundation to deliver LTE broadband data services to LTE subscribers. For the delivery of VoLTE services, an IP Multimedia Subsystem (IMS) is added to the EPC, providing the service delivery foundation to support the large variety of revenue-generating interactive voice and services that can be offered with VoLTE.

A VoLTE call typically consists of a signaling path – using Session Initiation Protocol or SIP, and a media path delivered using Real Time Protocol (RTP) media packet streams. A VoLTE call would be routed through the EPC to the Call Session Control Function (CSCF), which provides overall call orchestration in IMS architecture. The CSCF typically hands off incoming SIP call requests to the Application Server (AS), where the call logic is hosted. When the call logic requires media processing, such as collecting digits, playing a tone or media clip, or bridging RTP call legs into a conference mix, then the AS would request termination of the RTP call legs on the Media Resource Function (MRF) to perform the media processing against the encoded media inside the RTP packets. It is the combination of CSCF, AS, and MRF that provides the basic service delivery foundation for VoLTE, along with all the other value-added multimedia services.

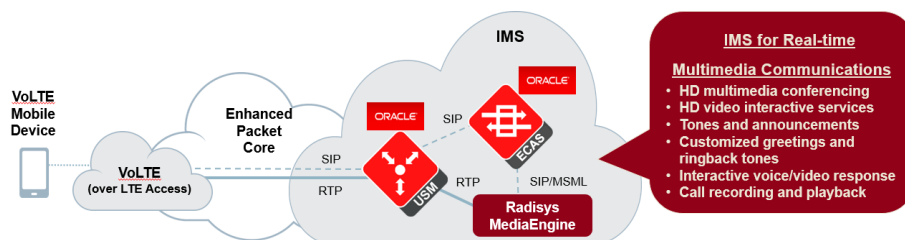


Figure 2: Oracle Communications and Radisys IMS solution to deliver multimedia services to VoLTE mobile subscribers

Oracle Communications and Radisys together offer a standards-compliant implementation of an IMS for VoLTE voice and video services. When used in conjunction with the Oracle Communications Unified Session Manager (OCUSM) acting as the CSCF and The Oracle Communications Evolved Communications Application Server (OCECAS), the Radisys MediaEngine MRF product family makes a powerful toolkit for developers of multimedia applications. OCECAS is a SIP application server tailored for VoLTE networks, with built-in features including single-radio voice call continuity (SRVCC), and a comprehensive suite of supplementary services, such as communications forwarding, barring, hold, identification and ad-hoc conferencing. OCECAS is itself based on the Oracle Communications Converged Application Server (OCCAS), considered by many to be the premier Java SIP application server for IMS environments, which delivers an open, standards-based, highly-available development and deployment platform for next-generation communications applications, and used by over 125 network operators and service

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providers. OCECAS takes this signaling, and invokes media services from MediaEngine using RFC 5707-compliant Media Server Markup Language (MSML) carried by SIP.

Connecting VoLTE subscribers with non-VoLTE users

VoLTE standards define the use of an HD audio codec called AMR Wideband. VoLTE subscribers calling other VoLTE subscribers, using AMR Wideband end-to-end, will be amazed at the crystal clear audio quality that they experience with the services offered by the Oracle Communications and Radisys VoLTE solution. But in the early adopter and growth phases of VoLTE, there is a high probability that a VoLTE subscriber will be making calls with non-VoLTE users. And these non-VoLTE endpoints will likely have call legs using different audio codecs. Hence the mobile operator infrastructure must also support real-time transcoding of the media packets from one codec format to another.

Fortunately, the same Oracle and Radisys IMS solution for delivering multimedia services also provides the foundation for carrier-scale audio transcoding and interoperability. The Radisys MediaEngine family of products, from the cloud-ready vMRF to the powerful carrier-grade MPX-12000, can transcode from AMR Wideband to many other codec formats, including AMR Narrowband for 2G/3G mobile, EVRC for CDMA networks, G.722 HD audio for Enterprise communication solutions, or legacy G.711 codec for incumbent fixed and cable networks. Radisys is also the first MRF in the industry to support the newest Enhanced Voice Services (EVS) codec, offering the most spectral efficient high fidelity audio experience in the market today.

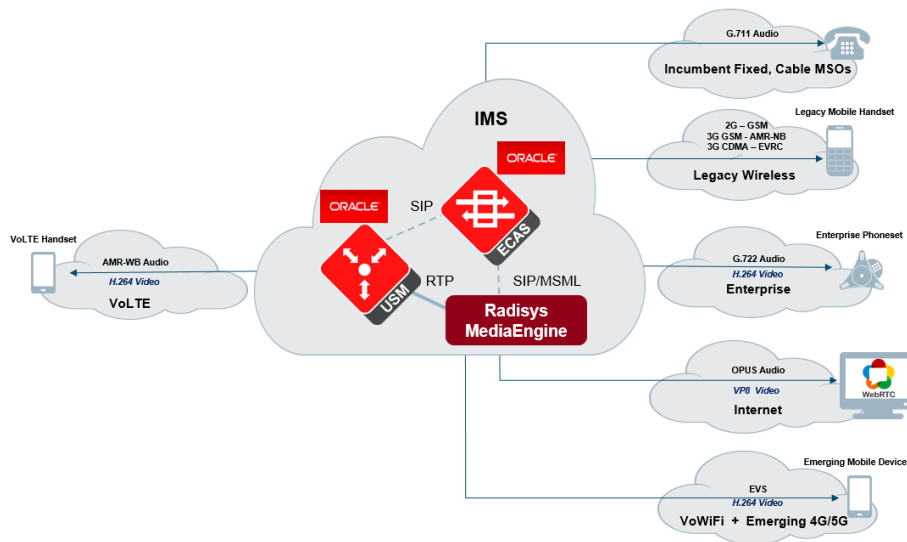


Figure 3: Audio Transcoding from VoLTE to non-VoLTE endpoints

Video over LTE services will also require video transcoding and transrating services to maintain interoperability with WebRTC or other SIP video endpoints. For example, Radisys MediaEngine MRF is able to transcode AMR Wideband audio and H.264 720p video for Video over LTE endpoints, to OPUS audio and VP8 720p video commonly used by WebRTC endpoints.

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Radisys WebConnect Java adapter for OCECAS and OCCAS

Oracle Communications ECAS is a leading Java-based application server platform supporting JSR 289 standards, as well as JSR 309 for java-based media service requests. Meanwhile, Radisys MRF supports media processing requests using SIP with Media Server Markup Language (MSML – RFC 5707). To achieve interoperability between the Java and SIP environments, Radisys WebConnect Java provides a JSR-309 compliant adapter that exposes the feature-rich media processing capabilities of the Radisys vMRF and MPX-12000 platforms to OCECAS and OCCAS developers. No knowledge of SIP or MSML is necessary to develop applications for conferencing, interactive voice/video response systems, tones and announcements, recording and playback, and so on.

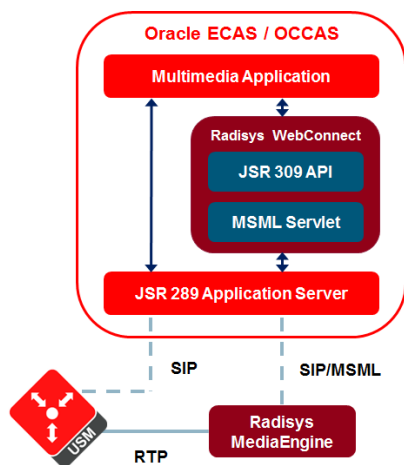


Figure 4: Radisys WebConnect Java Adapter simplifies building media applications

Benefits of Radisys MediaEngine for media processing

Radisys MediaEngine, combined with WebConnect Java for OCECAS and OCCAS, delivers the following benefits for Oracle customers:

VoLTE and IMS Standards Compliance – Radisys’ MRF products are compliant with VoLTE and Video over LTE service requirements in an IMS architecture, as defined in 3GPP IR.92 and IR.94 standards. This also ensures compliance with end-to-end QoS mechanisms built into an IMS, ensuring a high-quality mobile voice and video calling experience, which is superior to “best effort over the Internet” delivery mechanisms used in many VoWiFi, OTT, or WebRTC services.

Multi-Service – Radisys’ MediaEngine delivers media processing support for a broad range of interactive multimedia services. Therefore one MRF platform for all VoLTE and video over LTE services – delivering operational and economic benefits for service providers offering a broad range of services and helping to future proof their service infrastructure investments.

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Multi-Codec – Oracle Communications service developers can ignore the issue of incompatible endpoint codec technology. MediaEngine supports a broad list of industry standard codecs, including AMR-WB HD-audio for VoLTE services, and H.264 video for Video over LTE services.

Voice Quality Enhancements - Radisys' VQE capabilities encompass an integrated set of features designed to overcome common audio quality problems in VoIP/VoLTE services, including noise, packet loss and echo. MediaEngine with VQE eliminates the need for stand-alone voice conditioning equipment, delivering additional savings for the service provider.

Multimedia Transcoding – When an audio codec mismatch is identified during session setup, MediaEngine will automatically apply audio transcoding. For video endpoints using different codecs, MediaEngine applies video transcoding with transrating, including picture size, framerate, and bitrate adaptation. Transcoding is applied either automatically within a service context (like multi-point video conferencing for example), or for point-to-point network transcoding use cases.

Radisys MediaEngine offers reliable scalability for Oracle Communications ECAS deployments

Radisys is unique in the industry by offering the industry's most comprehensive range of media processing solutions, from entry-level single-server deployments, to virtualized media processing solutions, through to the DSP-based MPX-12000 Broadband MRF with industry-leading densities and capacities. Deploying OCECAS and OCCAS with a Radisys MediaEngine platform ensures that the service provider can start small, yet scale very large. Radisys WebConnect Java for OCECAS and OCCAS is compatible with any Radisys MediaEngine platform approach or solution.

World Class Technical Support

Radisys is a recognized leader in IP media server and IMS MRF technology. With over 10 years' experience and 6 million ports deployed globally, Radisys has the experience and expertise to offer 24/7 support coverage for OCCAS installations around the globe.

Summary

Network operators and service providers have deployed OCCAS to support a growing variety of IMS-based communication services, including VoLTE and video over LTE, using an increasing number of modern HD codecs in the underlying IP media packet streams for these interactive services. Radisys is a leader in multimedia packet processing and transcoding services for the telecommunications industry. The combination of Oracle Communications ECAS, with Radisys' MediaEngine family, integrated using Radisys' WebConnect Java, offers Oracle customers a proven media processing solution and technology partner for offering a broad range of multimedia services using VoLTE, along with the required service interoperability with non-VoLTE endpoints.

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