

UeSIM UE Emulation Solutions

for Radio Access Network Testing

Assess the Complete Performance of the Network

With the increasing complexity of mobile network ecosystems and the evolution of legacy Radio Access Network technologies, accurate and efficient continuous standards conformance testing and network performance verification are more crucial than ever before.

Full Protocol Stack Validation from Layer 1 to Layer 7

UeSIM UE emulation solutions enable infrastructure vendors, chipset providers and mobile operators to validate end-to-end Radio Access Network performance by emulating real network traffic over both radio and O-RAN fronthaul interfaces. Fully scalable, our systems have been designed to accelerate multi-standard end-to-end network verification by generating IP traffic load, simulating applications running on thousands of concurrent devices operating real voice and data sessions. Both conducted and live testing across the full range of frequencies are supported, with the possibility to cover real-world scenarios spanning protocol and load testing in the lab to field testing, trials and deployments.

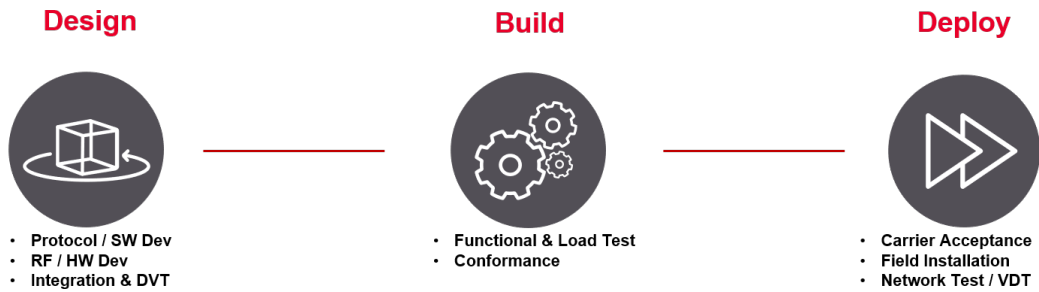
5G

Validate 5G RAN functionality and performance both in field and lab testing

- 5G RAN performance validation
- Full protocol stack assessment, layer 1 to 7
- Functional testing – layer by layer - up to thousands UEs
- Load testing of 5G RAN, NSA/SA modes
- O-RAN fronthaul interface support with different 5G RAN split architectures options



Address Challenges Across the Whole Product Lifecycle



Validate Ahead of Commercial Availability	Replicate Real World Conditions	Automate your Testing
<p>Always aligned to the latest 3GPP releases, the functional testing capabilities of UeSIM are of crucial importance when validating network equipment and are especially useful for IoT and 5G implementations support well ahead of chipset production and commercial devices release.</p>	<p>UeSIM UE emulation solutions, fully scalable, can create different levels of traffic load across multiple cells by enabling mobile operators to test their networks by replicating both real world conditions and mobility, and also by recreating traffic surges closely similar to those generated by a variety of real smartphones and apps.</p>	<p>A choice between two intuitive yet powerful GUIs allow to generate impressive graphical reports detailing KPIs and complete performance analysis, while a dedicated Test Automation interface ensures an easy integration with existing testing environments.</p>

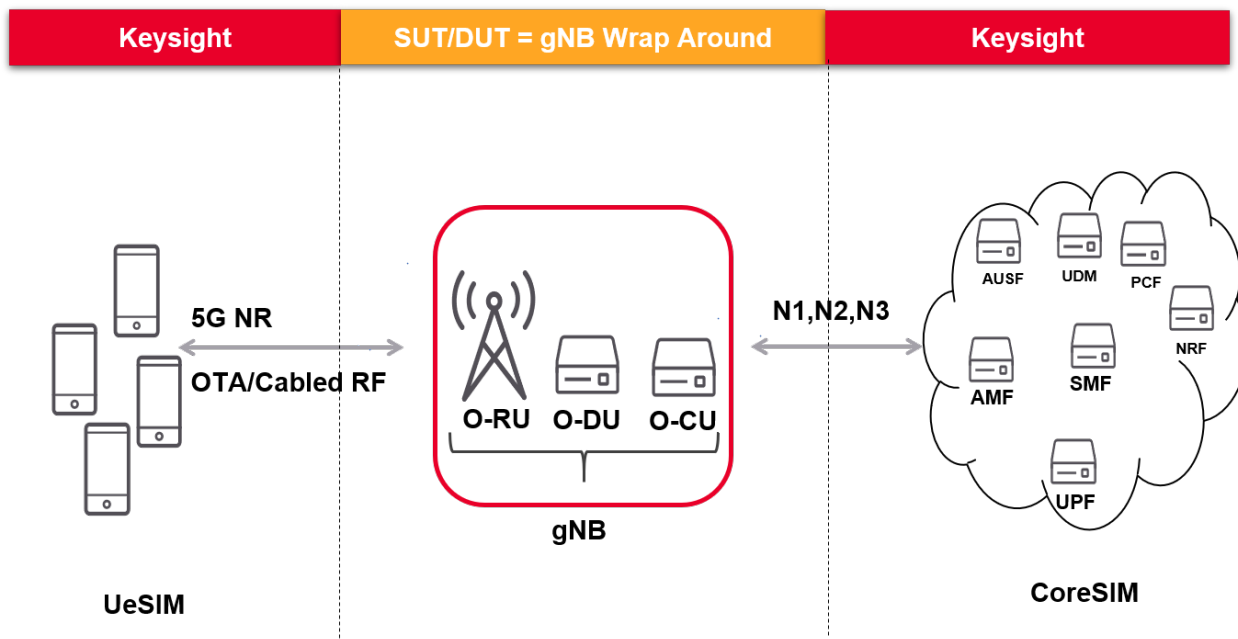
Accelerate IoT Network Deployment Time

IoT network design is fundamentally different from a traditional network structure involving only smartphone devices (and their irregularly shaped traffic), in that the majority of IoT devices will require relatively low power and throughput, with much more predictable traffic transmission patterns. However, both the sheer number of connected devices and their related control plane messaging will place an unprecedented set of demands on the mobile infrastructure. UeSIM UE emulation solution offers the unique capability to verify the functionality of a complex network ecosystem across both newest and legacy access technologies.

Perform Massive UE Emulation for Thorough gNB Validation

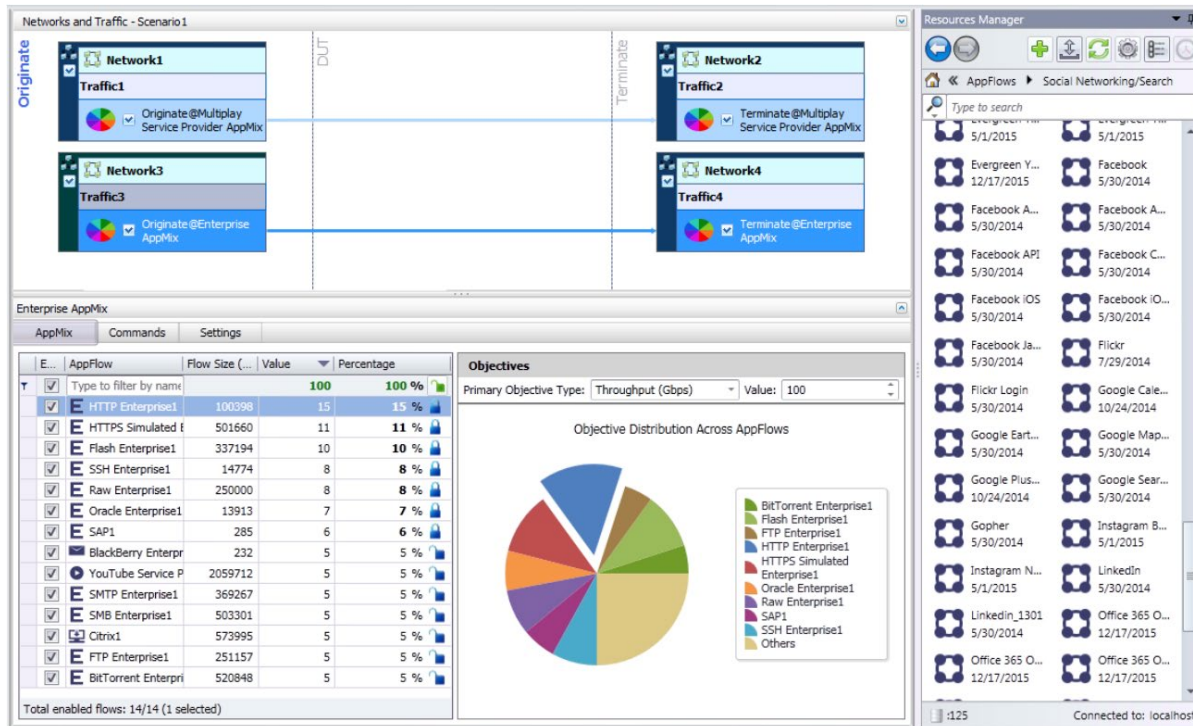
Network Equipment Manufacturers can perform full-stack testing for LTE and 5G NR to verify Radio Access Networks via both radio and O-RAN fronthaul interfaces. Fully scalable, UeSIM enables massive UE emulation to ensure functionality across all air interfaces. Both conducted and live testing across the full range of frequencies are supported, with the possibility to cover real-world scenarios spanning protocol and load testing in the lab to field testing, trials and deployments.

This solution optionally includes core network emulation, which delivers complete gNB wrap-around testing. With UeSIM providing thorough performance and load testing on the radio side of the base station, the ability to simultaneously drive the network side of the gNB assures that testing is conducted in complex, realistic conditions that thoroughly verify all layers of functionality.



Verify Complex Network Ecosystems

Designed for multi-standard end-to-end mobile network verification, UeSIM UE emulation solutions enable operators to validate complex network environments by emulating real network traffic over both the radio and the O-RAN fronthaul interfaces. By verifying functionality across all air interfaces, mobile operators can cover real-world scenarios to achieve thorough validation, also recreating traffic surges similar to those generated by a variety of real smartphones and applications.



Perform Comprehensive End-to-End Service Validation

LoadRAN, a specially devised traffic generator, delivers comprehensive performance testing for validating user QoE. Web, video, voice, storage, VPN, wireless, infrastructure, and encapsulation/security protocols can be emulated to create realistic scenarios. A modular system design allows the solution to scale with your infrastructure, while real-time QoE metrics let you drill down to quickly identify network degradations and isolate breaking points. An especially easy to use and effective graphical user interface ensures that no protocol experience is needed during the testing phase, to achieve complete and thorough end-to-end service validation. Realistic device traffic patterns can be closely replicated, to optimize network performance and ensure a smooth end-user experience. UE emulation involving also accurate real radio conditions and mobility replication ensures an accurate verification of current complex network ecosystems across newest and legacy access technologies.

Validate 5G Network Performance Both in Field and Lab Testing

Start validating your 5G network today: for performance testing over the radio in terms of ultra-low latency, high reliability, extreme throughput and massive connectivity, you can rely on Keysight to provide highly scalable systems with a reduced footprint.

- 5G RAN functionality validation (NSA/SA mode) by full protocol stack assessment, from layer 1 to 7
- Functional testing – full stack and single layer – up to thousands UEs
- Load testing of 5G RAN
- Up to 8xCC, 2x2/4x4 MIMO, 256 QAM DL/UL
- FR1, FR2, O-RAN eCPRI
- Massive MIMO AAS, MU-MIMO support
- Extremely compact footprint with potential to grow up to 5,000 active UEs/cell
- gNB wrap-around testing with core emulation option
- O-RAN fronthaul interface support with different 5G RAN split architectures options
- Real smartphones applications and traffic profiles simulation
- Service quality validation with subscriber modeling, and multi-play voice, video, and data traffic generation: eMBMS, VoNR/VoLTE, ViNR/ViLTE
- Inter-Beam and Inter-Cell advanced mobility scenarios support
- Fading and interference simulation
- OTA/field and conducted/lab testing
- 3GPP R15/R16 support

P8800S UeSIM – UE Emulation RAN Solutions

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