Testing Automation

Load & Stress Test

prisma engineering

Real World User Experience

QoS

Testing Automation

QoS

Fading

Load & Stress Test

UeSIM™

UeSIM LTE

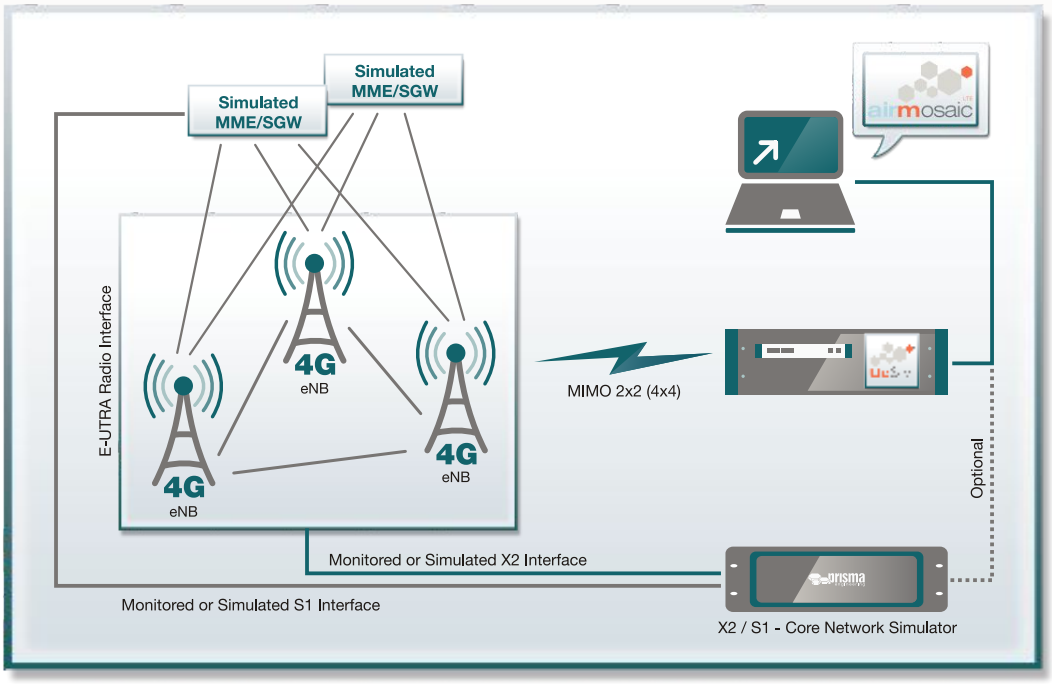
multi-UE simulation over the radio interface with a single device

Facing the new testing challenges for LTE

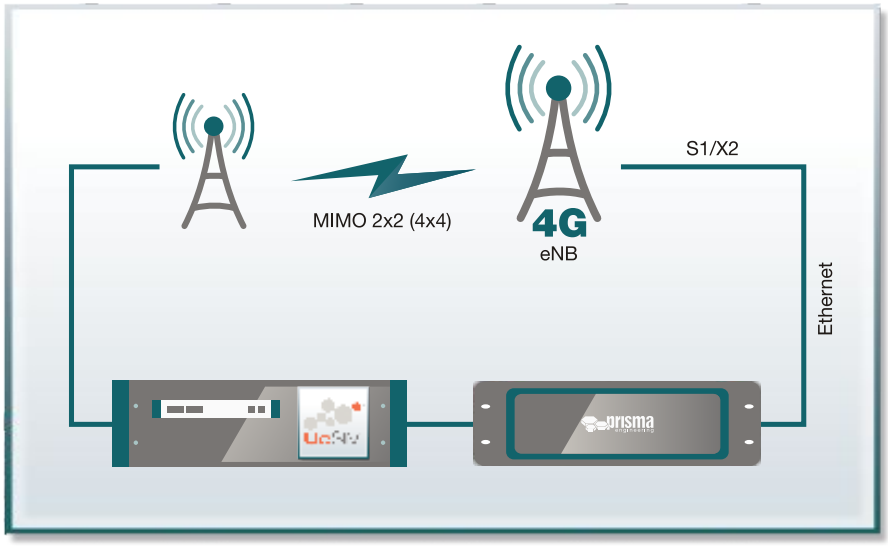
UeSIM is the complete solution for all your LTE testing needs. UeSIM allows full loading of multiple LTE sectors with a single device. On each sector, hundreds of simulated mobiles can concurrently generate load over the radio interface. Load & stress and functional testing over the radio interface encompass the complete LTE protocol stacks and their applications. UeSIM can stress and monitor both the FDD/TDD radio interface and the Core Network.

Flexible hardware configurations to load multiple LTE sectors with a single system

UeSIM configuration is modular and easily scalable. Radio modules are based on a powerful and flexible FPGA/DSP architecture which allows tailored solutions for any testing need, from small to large test beds. From a single control point, the UeSIM system is capable to load up to 8 sectors (20 MHz, full throughput), 2x2 MIMO. Radio modules for all FDD and TDD radio frequency bands are available off the shelf.



UeSIM can stress and monitor both the FDD/TDD radio interface and the Core Network



UeSIM radio interface testing can be complemented by S1 and X2 simulation

Testing over radio interface completed by S1 and X2 simulation solution

UeSIM can be part of a complete testing and monitoring solution if integrated with other PRISMA modules. Simulation over the radio interface can be complemented by S1 and X2 simulation, obtaining a complete end-to-end test platform completely encompassing the eNodeB.

Customizable automated testing to fit every need

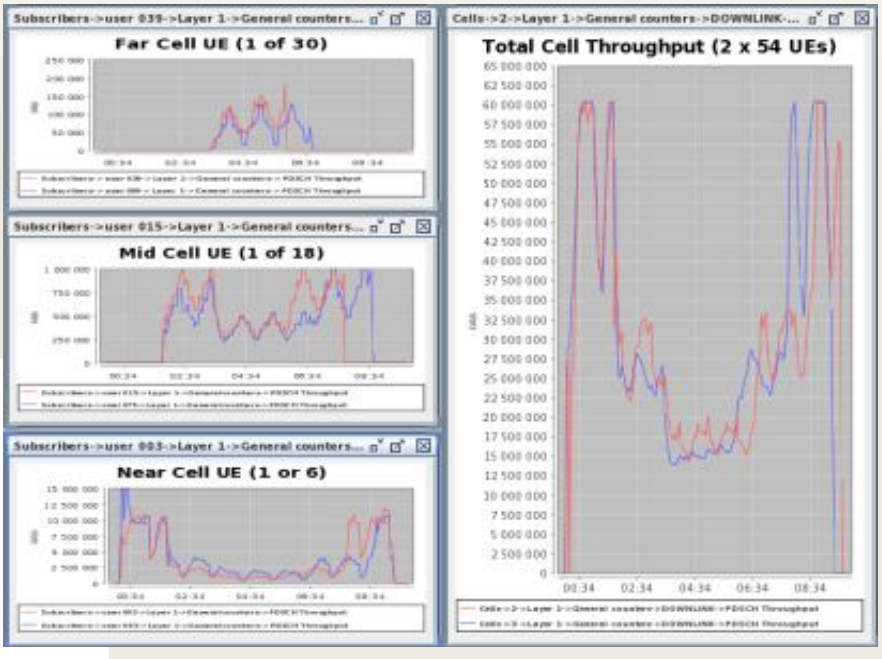
PRISMA provides an unrivaled set of ready-to-use test scripts that can be run right out of the box, enabling the execution of complex testing plans and mobility scenarios without the need to create special scripts.
Tests can be designed in a few clicks using *AirMosaic* (PRISMA's Graphical User Interface for UeSIM).
Optionally, an open interface is also available to integrate UeSIM functionalities within other test management suites. Very specific tasks such as test automation or simulation of protocol violations (at different protocol layers) and fine granularity reporting are possible.
PRISMA has acquired more than a decade of load & stress testing experience in the cellular wireless industry to create one of the industry's most flexible and easy-to-use management software.

Multi standard hardware platform

UeSIM LTE, MsSIM VAMOS/EDGE/GSM and 3GSIM UMTS are part of the LSU SDR Family designed by PRISMA to test radio interfaces with different standards, using a common hardware and modular software architecture. This approach will ensure an unrivaled protection of investment for testing equipment, simply because PRISMA's solution will intelligently follow Customer needs as they evolve and expand. PRISMA's LSU SDR hardware and software releases follow the ever evolving official standards versions, thus being immediately available for deployment.

Inter Radio Access Technology testing

A key requirement for all 3GPP standards is the interoperability between different Radio Access Technologies (RATs). PRISMA complies by providing multi-terminal solutions for 2G, 3G and 4G radio standards.



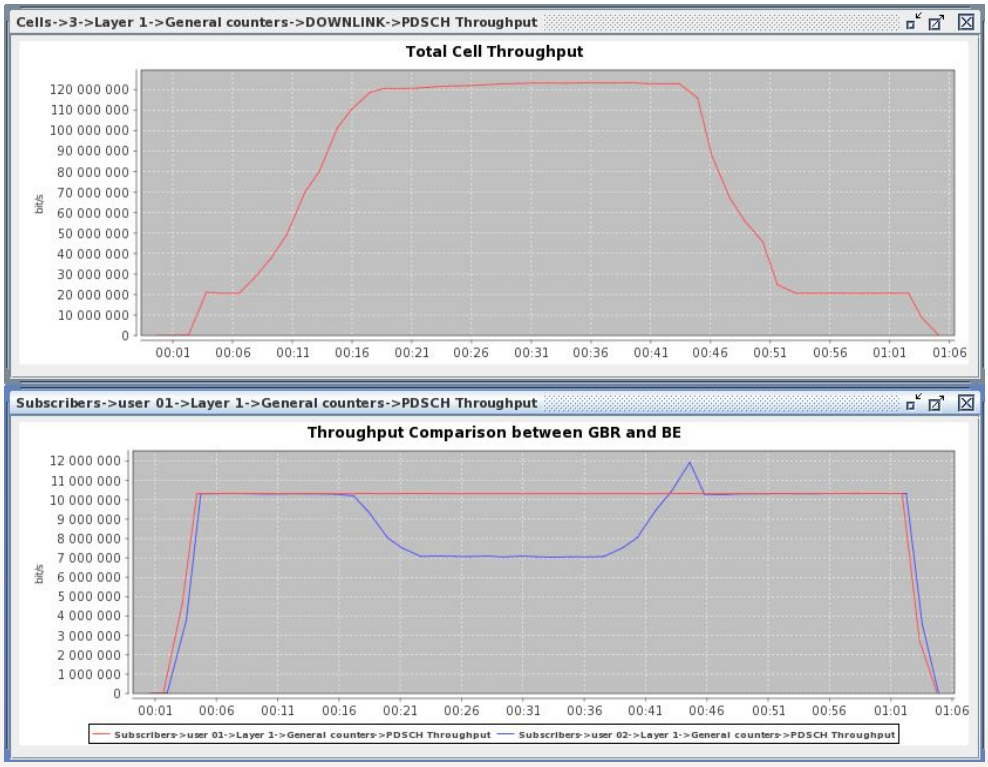
On each sector, hundreds of simulated mobiles can concurrently generate load over the radio interface

Integration with other PRISMA products, such as Ticket Producer for Charging Verification

Ticket Producer is a solution developed by PRISMA to avoid any risk of revenue loss on the network.
It gives Mobile Service Providers the ability to verify at the signaling source of their wireless network elements the accuracy of their billing system.
UeSIM can be part of this solution, constituting the most accurate system for charging verification today.

AirMosaic: how to reduce LTE complexity by means of an easy GUI

Simulation over the radio interface takes into account several simulation layers, their protocol and physical multiplied by the numbers of mobiles simulated. A rough estimation leads to several thousands of parameters to be managed, just to be able to test a standard scenario.
To manage the full range of possible configurations for all protocol layers (i.e. RF power thresholds, interference, data transfer protocols, servers configurations, etc.), PRISMA has developed a unique Graphical User Interface called *AirMosaic*.
Stemming from PRISMA's long-established experience in testing, *AirMosaic* is optimized for everyday use, for test automation as well for the generation of impressive graphical reports detailing KPIs, test results and overall system performance.



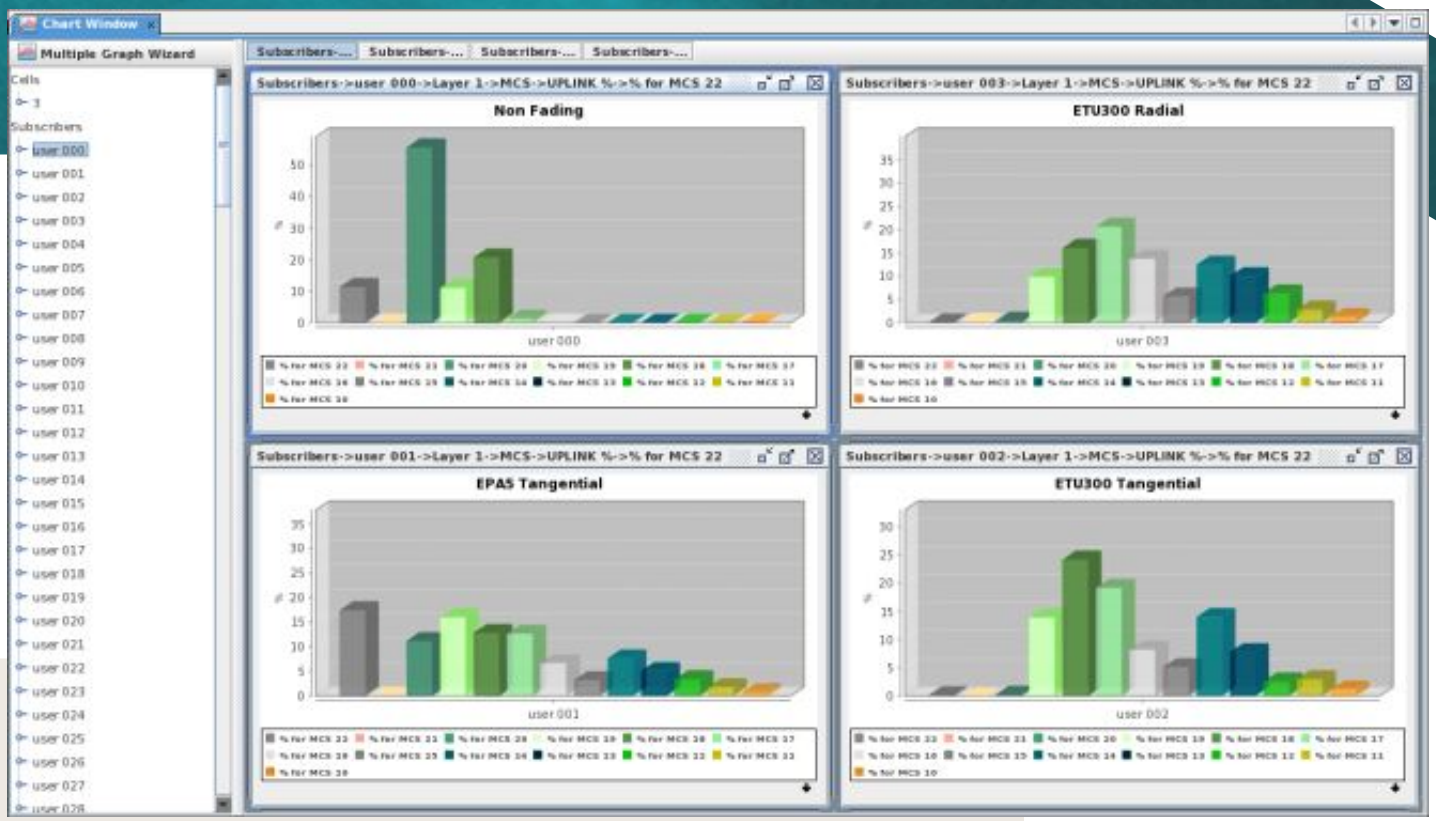
AirMosaic is optimized for the generation of impressive graphical reports detailing KPIs, test results and overall system performance

LTE radio interface testing with a typical smartphone application

Multi terminal simulations are of no use if traffic profiles do not mirror real subscriber usage, and take into consideration the current fragmentation of smartphone operating systems, radio capabilities and terminal types (i.e. data-cards vs. handheld).
To address this issue, PRISMA has profiled several real smartphones currently available on the market and their “always connected” applications.
AirMosaic can rely on traffic models that reflect both a real customer base and real traffic that UeSIM will simulate over the radio interface.
A sample scenario could consider a customer base composed by different smartphones running different type of applications, voice calls, etc.

Benefit of a user database mirroring the real world handset type distribution

PRISMA commits to update its terminal database periodically, taking into account new up-grades and new terminals on the market.
The Customer will then have the opportunity to evaluate the user experience evolving with the mobile market and technologies.



PRISMA has specifically designed AirMosaic to take real radio conditions, such as fading, into account

Create, manage and execute test (hyper-)scenarios in one click

The generation wizard in *AirMosaic* will dramatically speed up the creation of large and complex scenarios composed by hundreds of mobiles differing in traffic profiles, radio conditions and mobility.
A large scenario can also be part of a hyper-scenario with fixed mobiles profiles in an environment of changing network conditions. *AirMosaic* offers an impressive test result granularity: depending on the settings chosen, the level of detail can be anything in between the complete trace of each message at any protocol layer, and a simple Pass/Fail indicator on a per cluster, cell, mobile or application basis.

Analyze test reports via specific real time counters and KPIs

Following the typical quality assurance activities, the perceived quality is better estimated by grouping several counters in complex formulas called Key Performance Indicators (KPIs). This useful type of measurement aggregation is already present in *AirMosaic* and can be expanded to implement specific Customer KPI requests.

Simulate real radio conditions such as mobility, path attenuation and fading effects - all in one solution

In the real world, subscribers experience very different radio conditions, mainly due to their mobility profiles with respect to the position of the eNodeB; PRISMA has specifically designed *AirMosaic* to take terminal mobility into account. A realistic fixed distribution of subscribers within a cluster of cells can be simulated, but also tests can be created where the subscribers move programmatically, simulating mobile terminals while on a high-speed train or on a moving car. Closely integrated with UeSIM, *AirMosaic* can accurately simulate terminal mobility by interacting directly with the physical layer, signaling and uplink/downlink measurements on a per UE granularity.

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