

### LOAD RNC AND CORE NETWORK WITH THOUSANDS OF SIMULATED 3G TERMINALS

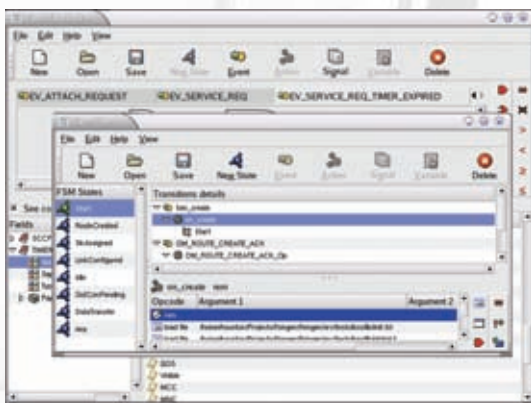
3G mobile networks pose new challenges to testing laboratories of both manufacturers and operators. New high speed physical interfaces and transport protocols have been introduced, mandatory management of the User Plane requires much higher processing capacity than before. LSUv3-based test beds deployed at major telecom manufacturers and operators prove the value of this solution. Customizations and development of proprietary protocols, provided by PRISMA Engineering's design team, guarantee that the test system exactly fits the customer's needs.

### RUN HUGE AND REALISTIC SIMULATION SCENARIOS OR SHARE ONE DEVICE AMONG MANY GROUPS FOR FUNCTIONAL TEST

PRISMA Engineering test solutions, based on the Line Server Unit v3 (LSUv3) family, implement all the interfaces needed to build test environments for UMTS network elements. High connectivity (up to 128 E1/T1 and 16 STM-1 lines) and processing power (up to 13 Pentium® CPUs) make it suitable not only for Functional test but also for Load&Stress test with huge and realistic scenarios, including wire-speed User Plane support. So a single test system is used throughout the test cycle.



### EASY TO USE TEST AUTOMATION AND CONFIGURATION ENVIRONMENT WITHOUT SACRIFICING FLEXIBILITY



On the user side, test development and management can be tailored to any user profile. The standard client application developed by PRISMA Engineering, the Test Manager Tool Suite, is a general purpose environment for test development, management and execution. With its friendly GUI and wide range of tools, it is suitable for any LSUv3 application.

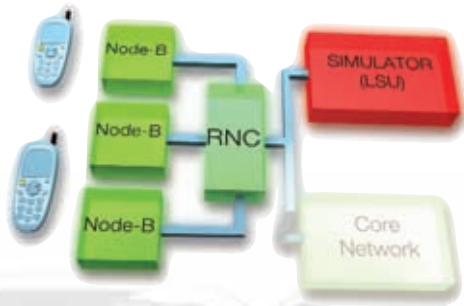
Alternatively, custom client applications are available and can be developed, based on several technologies:

- programming languages (e.g. C language)
- scripting languages (e.g. TCL)
- standard Telecom languages (SDL/TTCN)
- integration with 3rd party or proprietary tools

### MULTI-USER CAPABILITY FOR BOTH SIMULATION AND MONITORING

LSU users can access test equipment in a real multi-user environment, allowing optimal resource sharing and allocation towards remote users also broadening test lab environment.





## CORE NETWORK EMULATION FOR FUNCTIONAL AND LOAD TEST

The LSUv3 is used to emulate a complete UMTS core network, allowing to test RNC and Node-Bs in a controlled context.

Differently from real equipment, the fully programmable CN emulator can simulate any kind of correct and faulty behaviour

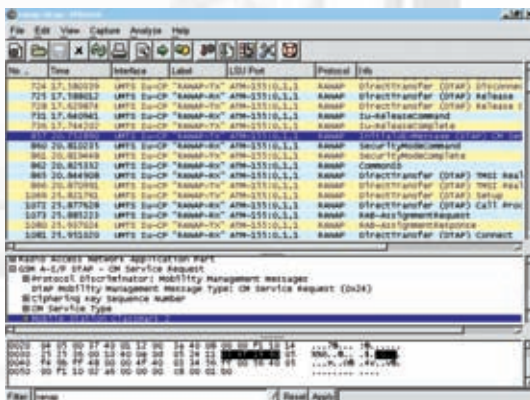
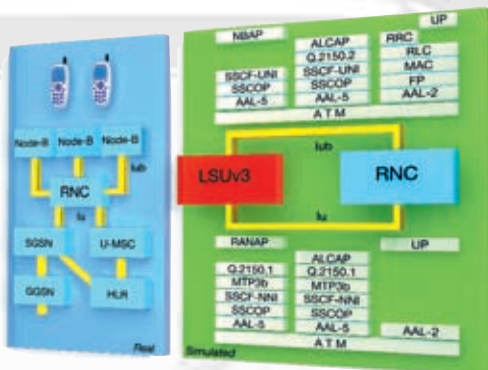
and mimic equipment from different manufacturers, besides being considerably cheaper. Both Circuit-Switched and Packet-Switched domains are supported. A friendly scripting environment allows to define the operating procedures.

## IU-CS USER-PLANE LOAD TEST WITH AMR SPEECH

The LSUv3 is used to simulate a number of RNCs towards the Core Network. The test activity is focused on the Circuit Switched User Plane, to verify the CN performances in that domain. Traffic generation uses test patterns or audio files. Additionally, voice traffic loop-back can be performed. CS data are supported too.

## RNC LOAD TEST FEATURES

The LSUv3 is used to bring the RNC to its operating limits, thus verifying its performances and reliability under heavy load. The LSUv3 simulates lub, lur and lu. The RNC is not fed with "bulk traffic" but instead realistic scenarios are simulated where several thousands simulated users perform voice/data calls or use real packet-switched data applications (file transfer, web browsing, e-mail, etc.)



(\*) Wireshark (formerly named Ethereal) is an open source network protocol analyzer for Unix and Windows, see [www.wireshark.org](http://www.wireshark.org)

## Core Network Emulation

- Mobility Management (including GPRS MM)
- Connection/Session Management
- Call Control
- Multiple STM-1 connections
- Heavy traffic volumes

## Performances per STM-1 (max 16)

- Maximum bandwidth (wire-speed) at application level
- Wire-speed AAL2 traffic management
- 80000 - 100000 BHCA (CS domain calls)

## RNC load test features

- User-definable populations of mobile users
- Measurements of performance parameters (throughput, latency...)
- Support for Speech, CS and PS Data
- Test the network with real applications bound to simulated mobiles
- Rich set of already running procedures and scenarios

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