

Spirent CLEAR Mobility

LTE Migration Test Optimization (Europe)

Customer profile

Before implementing a major infrastructure investment incorporating a Long Term Evolution (LTE) wireless technology upgrade, a major wireless service provider needed to validate that their network could sustain traffic for Quality of Experience (QoE) in the present and assure future service reliability. For infrastructure planning and forthcoming budget requirements, the customer needed a fully controllable 'Any-G' test bed network 'replica' in their test lab to map existing Busy Hour Call Model (BHCM) QoE and to also extrapolate four years into the future. This emulation solution of current and planned deployments with call models needed to include complex users, services and device behavior as seen in the carrier's real live network. Testing model would need to accommodate independent and/or simultaneous testing with specific customized procedures. The complexity of the call model and the constellation of the test scenarios involved up to 40 different test cases. In addition, a transformation and optimization initiative was required to assure investment and resource effectiveness.

Challenges overview:

- Ensuring successful convergence on evolving standards and highly complex requirements of LTE
- Assuring existing 2G/3G framework and future 4G 'Any-G' testing with complex multiple sub-call models running simultaneously, including complex user patterns through the entire network
- Implementation of up to 40 different test cases required for successful incorporation, including: control messaging, data plane, scale & performance

Solution delivery criteria

Spirent Professional Services test optimization and engineering experts worked closely with the service provider to build a realistic user equipment (UE) and BHCM traffic model with Spirent Landslide according to data provided by customer. Legacy 2G/3G and state-of-the-art 4G LTE networks to be simulated and tested were components of the solution plan. In addition, Spirent worked to design, develop and deliver a browser-based, highly scalable test optimization solution which addressed the following requirements:

- **Products** – Test optimization of all test cases; A streamlined test plan; A scalable & stable vendor agnostic framework facilitating expanded test case as needed; Robust Layer 4-7 testing tool, with the appropriate interface & built-in support for validating a wide range of DUTs and testing devices; Built-in functionality for test report archiving & logging all data to the reports database
- **Process** – Implementation of test optimization best practices; Accommodation of sub-call models within call models to test a range of different use case scenarios prevalent in the telecom's customer environment; Capability to facilitate test team members of all skill levels; Effective & transparent reporting
- **People** – Qualified expertise to deploy the solution & provide engaged consulting for informed use & adoption advocacy for solution success; Post-sales solution training

Customer pains

- LTE 'Any-G' testing for current validation (2G/3G) and future planning (4G)
- Need to replicate highly complex production of operational traffic in test lab
- Up to 40 separate test cases required, many run in parallel, through entire network

Solution requirements

- **Product** – Comprehensive Layer 4-7 testing & test optimization; easy-to-use execution & test report monitoring & storage
- **Process** – Implement proven best practices & test optimization methodologies; Support of BHCM sub-call models; Facilitate all team-member skill levels
- **People** – Professional Services consultation, delivery expertise & training through engagement

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Solution delivery components

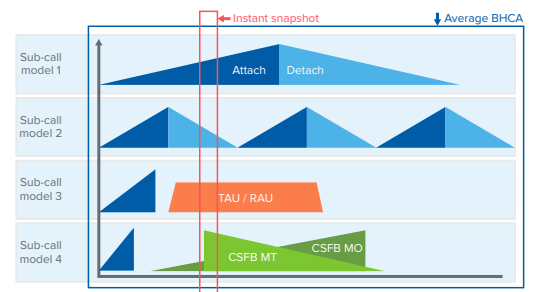
- Proof of Concept (PoC) trials and demonstrations
- Professional Services consultation, adoption advocacy and delivery expertise throughout the engagement
- **Spirent iTest** – Software for agnostic automation of various test cases into a cohesive testing strategy, for creating new test cases, executing test suites
- **Spirent Landslide** – Software software enables service providers and equipment vendors to test the functionality, performance and scale of their networks and nodes including Mobile, Wi-Fi, IMS and Diameter networks
- Holistic modeling vision, at scale, for:
 - Smartphone emulation of device data models
 - Mobility Layer (Any-G and service oriented) service provider call models
 - Layer 4-7 user application models
 - Accommodation of sub-call models within call models to test a range of different use case scenarios in the telecom's customer environment.
- Topology emulation of complete network
- Streamlined test plan duration
- Individual and/or combined 'Any-G' test beds and call modeling delivering easy issue detection
- Future enhancement support as well as training and transfer of solution information and best practices

Solution outcome & benefits

- **Replicated live customer traffic model**
In their test lab environment
- **Delivered existing and future call models**
Sub-call models for current and future planning
- **Discovered critical bugs**
Enabling customer engineering to address issues quickly before they impacted efficiency
- **Created of a 'Golden Reference' for LTE**
With turnkey solution which imitated carrier's network daily usage and delivered key validation points

With Spirent CLEAR Automation Solutions realize more...

- **Profitability** – Accelerate defect detection, earlier and increase revenue by getting products to market faster
- **Customer satisfaction** – Reduce released defects with expanded test coverage & speed time to market
- **Productivity** – Automate repetitive tasks & reuse of test cases maximizing time and freeing test team for innovation
- **Visibility** – Increase insight into testing progress & identify resource bottlenecks



“Spirent delivered the ‘Any-G’ test bed we needed to assure QoE of our services for the present and our future planning strategies continue to be validated by Spirent’s solution.”

*Wireless Service Provider
Test Lab Director*

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