

Spirent Managed Solutions

Mobile Service Launch Validation for 5G Networks

The Challenge of Ensuring QoE of New Services on Mobile Networks

Communication services providers (CSPs) launching new services must contend with the challenge of disaggregation in 5G. Once the separate components are brought together, will the new 5G network really work and deliver a superior user quality of experience (QoE)? The need to assure that nothing is 'broken' in the process is essential. The service planned must be the one delivered. Each component of 5G has its own requirements for validation.

What's required for 5G mobile networks to perform satisfactorily?

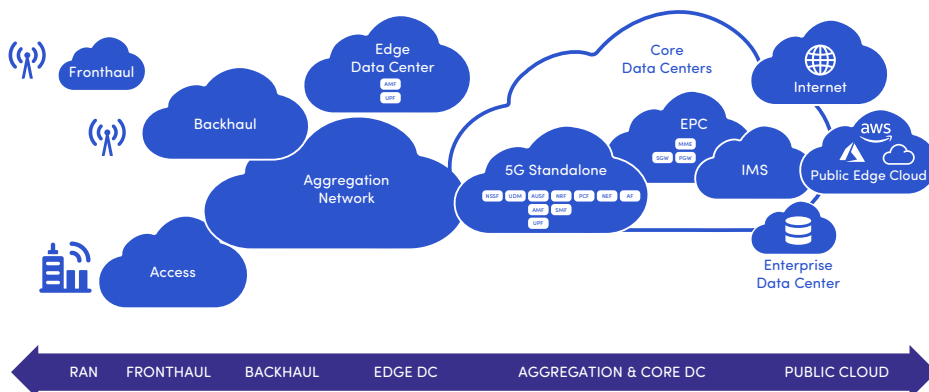
Launch of 5G Non-Standalone (NSA) and Evolution to 5G Standalone (SA). Are my first markets ready to launch? What is my 5G vs 4G coverage? Where must I optimize further before launch? Am I getting service QoE that my customers expect? Is QoE for services delivered via the 5G core consistent with or better than 4G?

Mobile Edge Computing (MEC). Is my 5G network hitting your latency targets? What cities and markets are underperforming and why? Are my infrastructure providers delivering? Is my (hyperscaler) partner delivering the low latency I expect? How does my edge latency compare to the cloud and my MEC competitors?

Digital Spectrum Sharing (DSS). How can I maximize my spectrum assets and assure all NEMs deliver? Is my DSS implementation ready to launch? What needs to be improved? Am I maximizing use of my spectrum with this approach? How do my infrastructure vendors compare?

Vehicle Connectivity (C-V2X). What in-vehicle experience does my connected car service offer? Is latency low enough for autonomous and safety applications? Is my new service ready to launch? Where do I need to improve before launch?

How can these questions be addressed in a comprehensive and cost-effective way?



The complexities of 5G mobile networks are considerable, and only a comprehensive solution capability can ensure reliable validation.

Highlights

Measuring What Matters:

- **Confirm service/features ready for launch.** Verify your investments are delivering and validate that the end user experience is what it should be
- **Attain real-world results.** Observe quantitatively how networks perform in real-life end user experience scenarios
- **Account for multiple technologies for 5G.** In an increasingly saturated marketplace, CSPs must compare their networks to the competition
- **Focus on end-user experience.** Mobile QoE testing is required to measure the user experience of new services to predict real-world performance
- **Attain comprehensive test coverage.** Methodology covering voice quality, data speed & latency, video quality, 5GmmWave, application performance, cloud gaming & location accuracy



The Solution: Mobile Service Launch Validation for 5G Networks

Spirent's solution for Mobile Service Launch Validation for 5G Networks is a sophisticated, proven program that delivers independent network performance analysis. Spirent has provided the world's leading operators and OEMs with customized measurement and reporting to help meet research objectives, minimize network impact, improve products, optimize the subscriber experience, and build brands. Spirent's ability to quickly deploy teams of engineers helps carriers make decisions on key strategies that can impact customers in the long term. Our team of specialists will build a test plan tailored to your needs that can answer specific questions regarding your network's interaction. Spirent will examine the challenges of your service, identify the key criteria for success, define the test plan, then execute the validation to make sure you are ready for launch.



Measure What Matters



Data speed & latency

- Speed
- Multi-service speed
- Latency
- MEC



5G / mmWave

- Coverage
- Sub6 and mmWave
- Test methodology



Streaming video

- VMOS
- Start time
- Buffering time



Cloud gaming

- Telemetry Lag / Latency
- Video frame quality
- Freezing



Voice calling

- MOS
- Completions
- Drops
- Acoustic & Noise Cancellation



Location services

- Accuracy
- Z-axis
- First Fix



Launch with Confidence

Why Spirent?

Our customizable Mobile Service Launch Validation for 5G Networks solution employs test and validation efficiencies and strategies drawn from an authoritative portfolio of capabilities and established leadership in broad technology and domain expertise. This stems from offering a comprehensive suite of solutions for cutting-edge technologies in networking, cybersecurity, and positioning, including 5G, 5G Core, Cloud, SD-WAN, SDN, NFV, Wi-Fi 6, and more. A pioneer in lab and test automation, our expertise includes DevOps and CI/CD, which employs industry-recognized best practices for test and assurance to achieve comprehensive continuous testing.

Business value:

- Work with the pioneers in testing mobile QoE under real-world conditions and global leaders in 5G validation
- Employ extensive experience with new and existing mobile technologies from leading industry players
- Maximize capital expense budgets, especially for quick-turn analysis based on near-term or evolving requirements
- Utilize proven methodologies and test plans, based on global cloud-based measurement systems
- Attain comprehensive test coverage with methodology covering voice, data, video, 5GmmWave, cloud gaming and location accuracy

Case Study: Validating to the Mobile Edge



The Challenge. A major North American service provider partnered with a major hyperscale company for exciting new low-latency mobile services. Prior to launch, performance issues existed, but the severity and cause of the degradation was unclear. The service provider's CEO needed definitive information for meetings with the hyperscaler.

The Solution. Spirent's Managed Solutions team deployed Umetrix and VisionWorks for testing of Verizon, T-Mobile and AT&T service to mobile edge virtual machines, with quality of experience metrics to indicate true end-user performance expectations. Spirent also captured server-side PCAP logs to understand potential bottlenecks and aid in issue resolution.

The Impact. Project identified issues with the customer's infrastructure that were quickly corrected. This led to incremental engagements with the customer to add new latency KPIs to their nationwide benchmarking program.

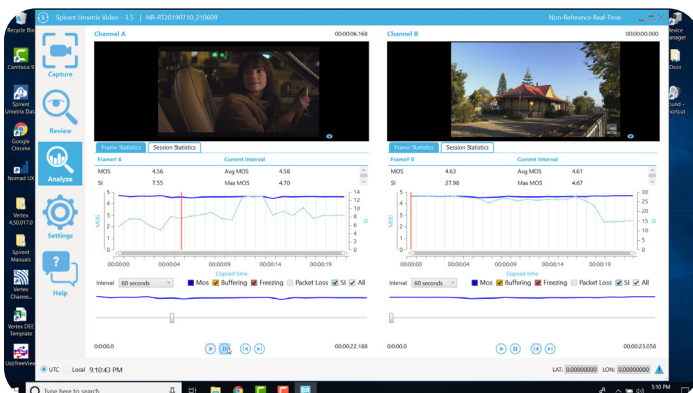
Case Study: Optimizing 5G Performance for an Emerging Network



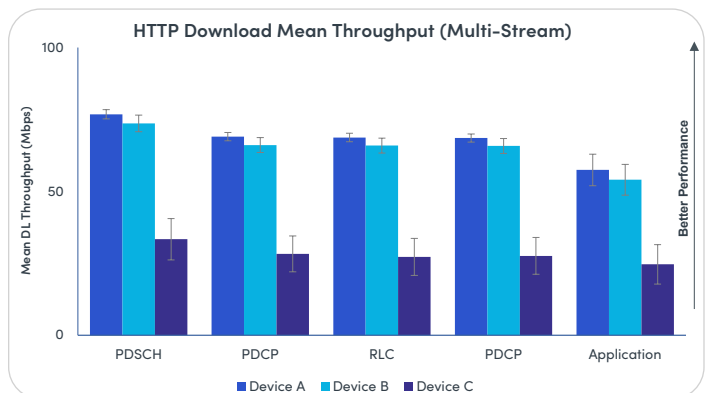
The Challenge. A major service provider was launching their 5G Standalone (SA) network and needed to determine the user experience of new SA devices in two markets with different infrastructures. They needed to launch SA with assurance of QoE from the start.

The Solution. Spirent's Managed Solutions team deployed Umetrix Data and LM logging to test the network and devices simultaneously, while gathering throughput, call performance, and 5G network messaging KPIs to explore the reasons for any network or device performance issues.

The Impact. The carrier was able to evaluate 5G SA performance to create guidelines on how to best make network and device configuration choices for optimizing the customer experience.



Gain insight into end-user experience for hundreds of key performance indicators – for your network, as well as the competition's



Throughput, data performance, and 5G network messaging KPIs are essential for a successful 5G SA launch

The Global Services Delivery Process



Discover: Gather requirements; perform gap analysis

Define: Identify solutions that scale seamlessly to integrate flexibly with disparate systems; present roadmap; illustrate ROI

Develop: Create next-gen end-to-end solutions driven by our technology and service portfolio

Deliver: Manage projects; ensure outcomes are measurable, tracked by KPIs and improved over time

Debrief: Ensure customer requirements and expectations have been met

Our Customers

Spirent has been a pioneer since the advent of network, wireless and GNSS testing, validation and assurance, and has provided services to customers across a broad range of global industries. These varied business sectors include global navigation satellite systems, aircraft and automotive manufacturers, as well as telecommunications and wireless service providers, network equipment manufacturers, petroleum, education, the media, financial institutions and stock exchanges, technology enterprises and publishing giants. Spirent also services governments worldwide, which includes military and space agency projects.

Spirent Expertise

Spirent provides services expertise for all major communications vendors — **from Lab to Live**. This end-to-end proficiency draws from a deep bench of seasoned professionals who are qualified experts in our technology portfolio. Our services cover devices, infrastructure, cloud infrastructure, networks, network applications, security and assurance, all powered by state-of-the-art lab and test automation. Such industry expertise maximizes your solution capabilities and ensures you deliver your product or service to market on time and with optimal quality.

Spirent Services Portfolio

Spirent's Mobile Service Launch Validation for 5G Networks is part of a comprehensive suite of services and solutions. Spirent's portfolio of services for an initiative's entire lifecycle – **from Lab to Live** – helps organizations achieve their short-term testing and validation goals, while building a strong framework for future and enduring business success.



Managed Solutions

Performing strategic operational functions for customers:

- Lab as a Service
- Test as a Service
- Certification as a Service
- Deployment as a Service



Product Services

Enabling customers to realize optimal use of Spirent products:

- Implementation & Integration
- Product Training
- Resident Engineers
- Product Support



Consulting Services

Supporting custom projects, helping customers with specific strategies and objectives:

- Assessments & strategy
- Planning & design
- Network architecture & engineering
- Test methodologies

For more information on Spirent's Product Services, please visit: www.spirent.com/products/services-managed-solutions

About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks. We help bring clarity to increasingly complex technological and business challenges. Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled. For more information visit: www.spirent.com

Americas 1-800-SPIRENT

+1-800-774-7368 | sales@spirent.com

Europe and the Middle East

+44 (0) 1293 767979 | emeainfo@spirent.com

Asia and the Pacific

+86-10-8518-2539 | salesasia@spirent.com