

Spirent Solutions

Azure public MEC Experience Assurance

The Challenge for Validating New Multi-access Edge Compute Zones

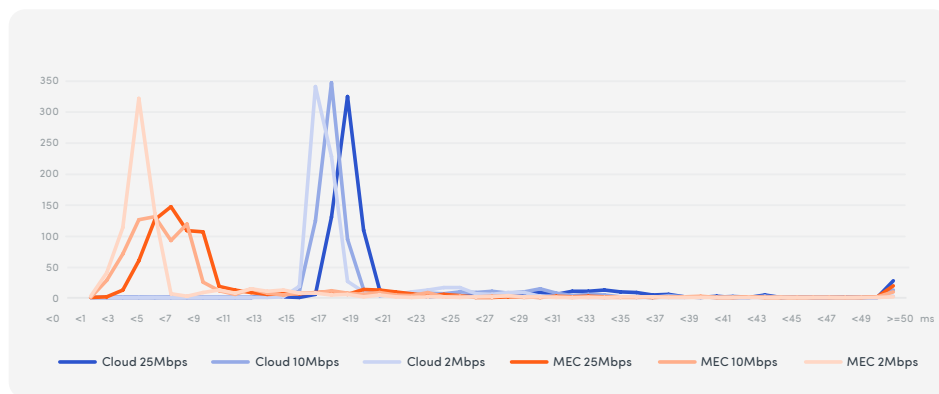
Azure and operators offering public or private clouds must ensure three delivery phases are properly validated to realize success throughout the solution lifecycle. The three phases are: launch, optimization and operation, with testing requirements extending across all phases. Here avoidance of anecdotal or uncontrolled testing of the public or private multi-access edge computing (MEC) solutions must be ensured. Hyperscalers and operators must also maintain a mechanism where customers can run tests from their device to edge zones in a controlled manner. These tests seek empirical latency and reliability statistics for actual end users.

What's required for comprehensive validation of a public or private MEC launch?

Mobility drive testing. *Market and edge zone launch assessment with benchmarking:* Run mobility and stationary scenarios to Azure MEC and cloud endpoints. The objective is to find and correct customer-impacting problems before launch, assess and prioritize where optimization is needed to ensure a positive customer experience. Test as users would and measure what matters to end users.

Stationary active testing. *Service assurance and network change management:* Monitor network performance over time across multiple markets. Detect changes in cloud performance. Work with carriers to optimize KPIs aligned to customer applications. Attain real-time feedback on updates.

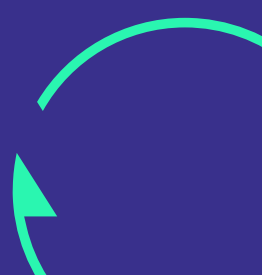
Customer experience validation. *Presales demos and trials, application emulation and customer support.* Objectively measure the user experience of MEC services with a unified approach across all major mobile OS platforms and PCs. Maintain managed customer experience validation in operations, including software and service.



Comprehensive validation of MEC launches requires regional latency correlations between MEC and Cloud.

Highlights

- **Azure for public MEC.** Attain objective quantifiable results to showcase superior performance of public MEC
- **Enterprises.** Identify performance impacts in local (in-enterprise) network changes before rollout to employee base
- **Operators.** Use objective real-time results to triage performance problems from customer thru mobile network to public MEC



The Solution:

Testing Solutions for MEC Network Launches

Spirent’s Testing Solutions for MEC Network Launches 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.

Our team of specialists will build a lifecycle test plan tailored to your needs that can answer specific questions regarding your network’s interaction.

The Offer: Spirent’s Testing Solutions for MEC Network Launches. Spirent conducts a comprehensive range of validation services across the lifecycle of the public cloud solution:

Mobility Drive Testing – Launch Assessment & Benchmarking. Run mobility and stationary scenarios to Azure public MEC cloud endpoints. Test on major carrier networks. Design test cases to emulate common MEC applications. Ensure consistent testing across all MEC services. Manage program including mapping, vehicles, collection, quality assurance, reporting, analysis, devices, travel.

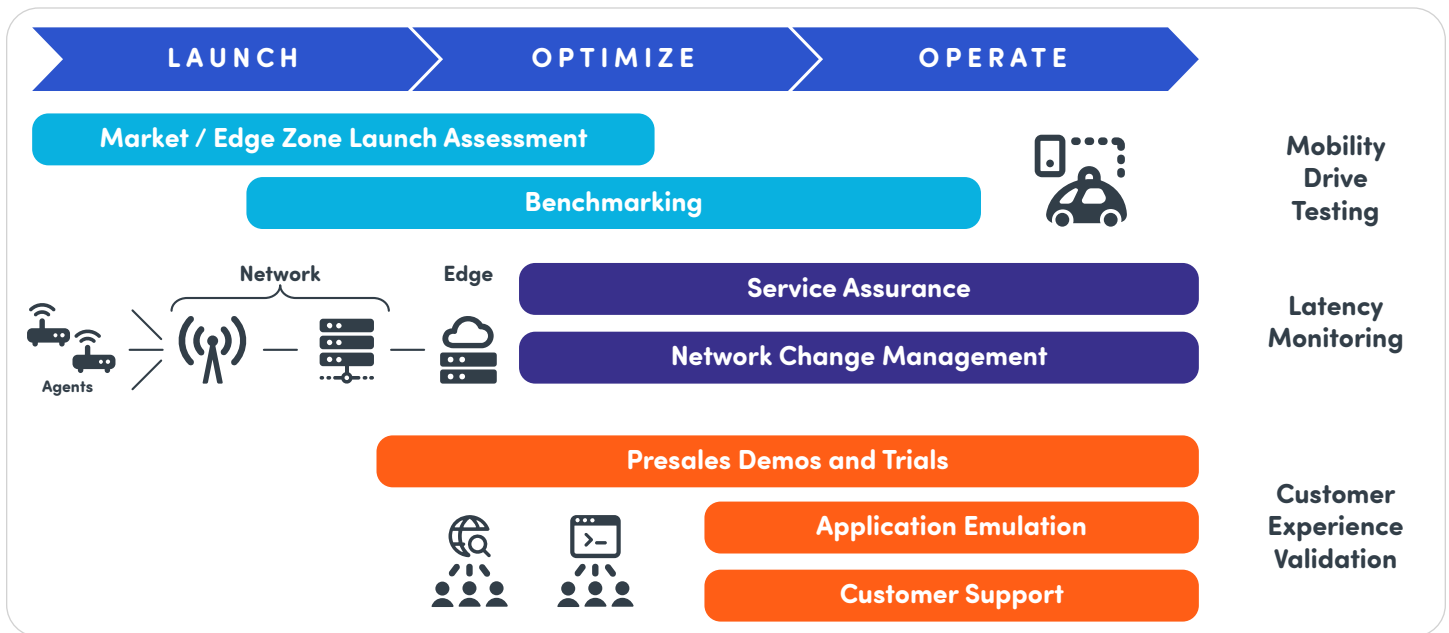
Deliverables: PDF report with KPIs and key findings per market; Logfiles and CSVs

Stationary Active Testing – Service Assurance & Network Change Management. Monitor network performance over time across multiple markets. Run active tests 24/7. Test on major carrier networks. Design test cases to emulate common MEC applications.

Deliverables: Tailored reports and alarms for key KPIs and real-time monitoring pre/during/post upgrades

Customer Experience Validation – Manage Customer Launch & Experience. Managed customer experience solution including software and service: Media server endpoints at hyperscaler edge zones. Web portal for test case development, orchestration, and analysis. Customized test profile management. User and access management. Infrastructure management.

Deliverables: Objective real-time empirical measurements of the user experience with MEC services utilizing a unified approach across all major mobile OS platforms and PCs.



A range of testing is required in the lifecycle of a public or private MEC launch.

Distributed Benefits

Azure public MEC

Use objective testing results to showcase superior performance of new public MEC; Emulate customer apps for sales process; Demonstrate performance of public MEC from customer devices in a controlled manner

Enterprises

Ensure new MEC applications work before rollout to customer base; Allow testing from employee offices; Provide independent quantified performance results to hyperscaler for user problems or SLA concerns

Operators

Use objective testing results to triage performance problems from customer thru mobile network to Azure public MEC and avoid anecdotal or uncontrolled testing to the Azure's public MEC through operator network

Focus on Customer Experience

The Solution

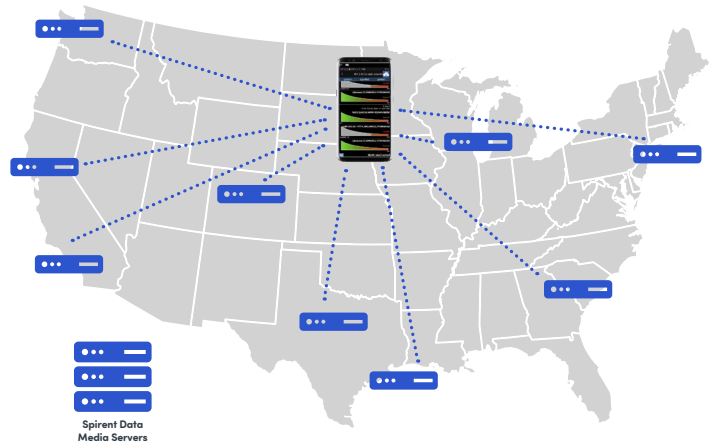
Spirent virtual media servers in all MEC edge zones, pre-defined per-customer test profiles

- Custom test cases and settings to emulate specific MEC applications
- Targeted to specific customer edge points
- Each test case and results are tied to a unique key for user management

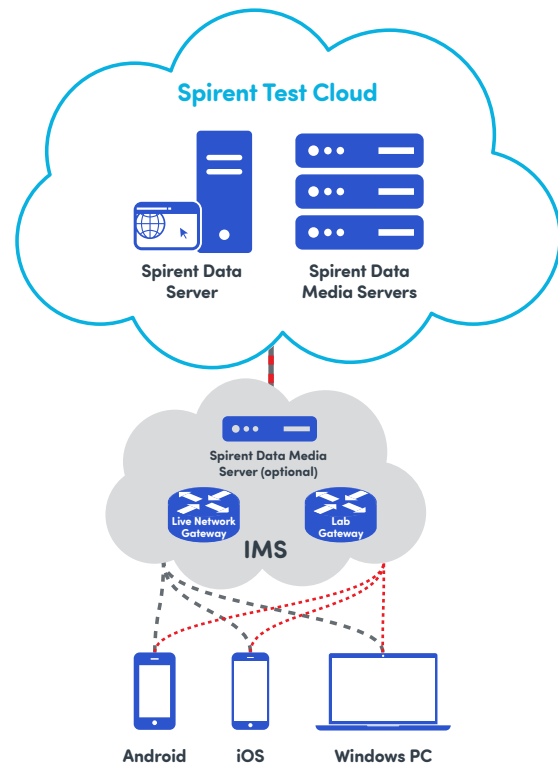
Reporting for Azure and end user with access-control for confidentiality.

Test cases

- Bandwidth DL/UL HTTP, HTTPS, UDP, FTP
- Bandwidth Simultaneous HTTP, UDP
- FTP DL/UL
- FTP Simultaneous DL with UL
- HTTP and HTTPS DL/ UL
- ICMP Ping
- UDP Simultaneous DL with UL
- UDP DL/UL
- Traceroute
- Web Browser
- Google Play App Download
- Mobile Originated/Terminated Call



Objective user experience measurement of MEC services with a unified approach across all major mobile OS platforms and PCs.



Customer Experience Validation Solution

Why Spirent?

Our customizable Testing Solutions for MEC Network Launches employ 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
- Rely on complete confidentiality of results and reports to substantiate marketing claims

Spirent’s MEC Latency Report – Why Test MEC?

MEC Latency Expectations vs. Reality: Spirent and STL Partners teamed up to provide information on real-world edge network testing with over 150 prospective edge customer interviews to illuminate the path ahead for MEC. Read the [report](#).

RECOMMENDATIONS

Establish the right visibility and assurance regime

- Field testing and continuous testing/monitoring

Realize the benefits of 5G standalone upgrades

- Early upgrades have demonstrated reducing latency by >20%

Identify opportunities to optimize the E2E network

- Use active testing to isolate and prioritize latency issues and optimizations

Utilize Private MEC for enterprise and industry

- Further latency reduction due to proximity of localized processing

Implement latest 3GPP release upgrades ASAP

- R16 enhances low latency across RAN and Core

Educate demand side

- On boundaries of accountability and best practices for applications

CONCLUSIONS

Consistency matters

- Demand side requires reliability and consistency of latency (not just low)
- Variations across regions impact SP ability to provide SLAs

Supply and demand side disconnect

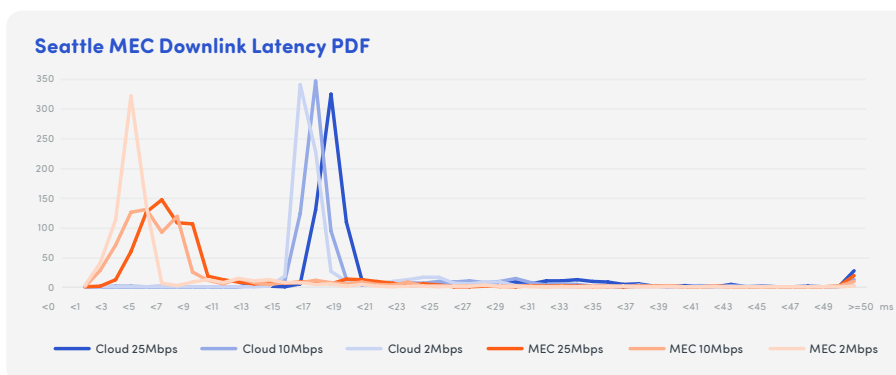
- Enterprises overestimate required latency (lack of factual numbers and ranges)
- Misalignment with the network and 3GPP releases can support requirements

Short-term Edge opportunities

- Consumer gaming, video, and AR/VR
- Edge locations and distribution: not as many needed

Latency performance is more than just the Edge

- Network optimization is a critical component (air, transport, core, etc.)
- Application latency is outside CSP control, requiring customer education



Downlink latency correlations for MEC and Cloud in Seattle.

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 Azure public MEC Experience Assurance solution 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
- SecurityLabs



Professional Services

Providing a broad range of test and validation services enabling Spirent products and solutions that involves:

- Implementation & Integration
- Customer Training
- Resident Engineers



Consulting Services

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

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

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

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