



# SPIRENT NOMAD

## CALL AND VOICE MEASUREMENT SYSTEM

The Fit4Launch Call & Voice Measurement System, Nomad, is a uniquely scalable, centralized platform utilized by leading carriers and OEMs to evaluate and improve voice quality and call performance in 2G, 3G and 4G devices.



Nomad leverages industry-standard algorithms such as PESQ and POLQA, as well as patented voice quality testing technology, enabling carriers and OEMs to test thousands of calls automatically to or from the device and instantly generate performance statistics, saving precious time and money when launching a new device. Nomad enables large-scale performance testing for new device launches, post-launch troubleshooting and competitive benchmarking. As 3G and 4G networks increasingly drive converged voice and data traffic, Nomad enables service providers to assure call and voice quality in a multi-service scenario. Nomad is considered the most comprehensive, accurate and easy to use mobile call and voice user experience measurement platform commercially available.

### ADVANTAGES OF NOMAD:

- Client-side platform with multiple options for connecting to devices, simultaneous call performance and voice quality testing, and automating transmission of thousands of calls
- Spirent-hosted call and voice servers, available globally, with guaranteed access and levels of service
- Comprehensive query and reporting services, including automatic synchronization of data on client from server

“This is one of the best products we’ve ever used for device field certification for accessibility and retainability across different UE vendors. Due to the Bluetooth interface, it’s hassle free and saves a lot of field time not dealing with physical cables and PC driver issues.”

### OVERVIEW

Nomad was developed to assist the world’s leading mobile service providers and OEMs with a robust and reliable way to evaluate mobile device performance for the most repeated task: voice calling. The local client connects to multiple handsets, regardless of operating system or access technology, via Bluetooth or electrical coupling, enabling testing of subject and reference devices, and call performance and voice quality, simultaneously. The client connects to Spirent-hosted call and voice servers, available globally with guaranteed access and levels of service, to complete calls and automatically receive data for instantaneous analysis. This system enables rapid, rigorous and large-scale measurement and analysis of devices in the lab and the field.

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Nomad addresses common challenges for mobile service providers and device OEMs:

- Objective measurement of voice quality and call performance across multiple mobile OS's and technologies
- Testing in both live and simulated network environments
- Managing extensive testing projects from a centralized location
- Measuring how a device's performance will impact subscribers
- Measuring performance on multiple devices without buying a lot of test equipment.

Versatile and scalable, Nomad can be used in many situations:

- Device Acceptance Testing
- Field Testing
- Benchmarking of Devices, Networks and Content/Services
- New Technology and Configuration Testing
- Multi-Service Testing
- Network Loading & Dimensioning
- Customer Support Applications
- Custom or Branded Content Testing

### SYSTEM ARCHITECTURE

The Nomad Call Performance & Voice Quality Measurement System comprises:

- Measurement unit, capable of connecting to multiple mobile terminals, and to the computer-based client
- Spirent-hosted call and voice servers

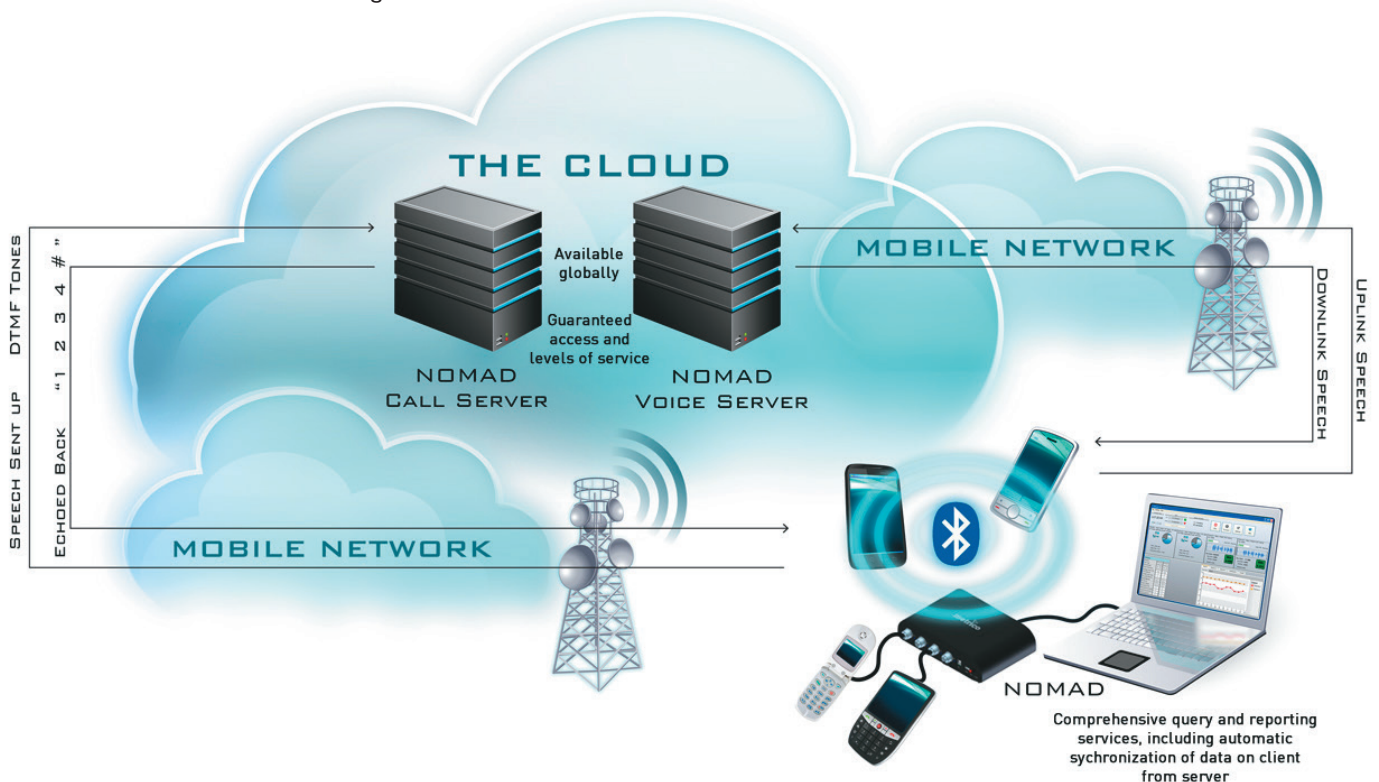
By exchanging thousands of samples of uplink and downlink recorded speech or DTMF tones, and employing the echo-back test to further verify correct operation, the system provides a fair and representative analysis of the device's performance. The client can be configured to automatically synchronize data from the servers, to enable instantaneous and sophisticated analysis at the local level.

#### On-Device Measurement

Nomad does not require any additional hardware (non-tethered) so the tests closely mimic your subscribers' experience.

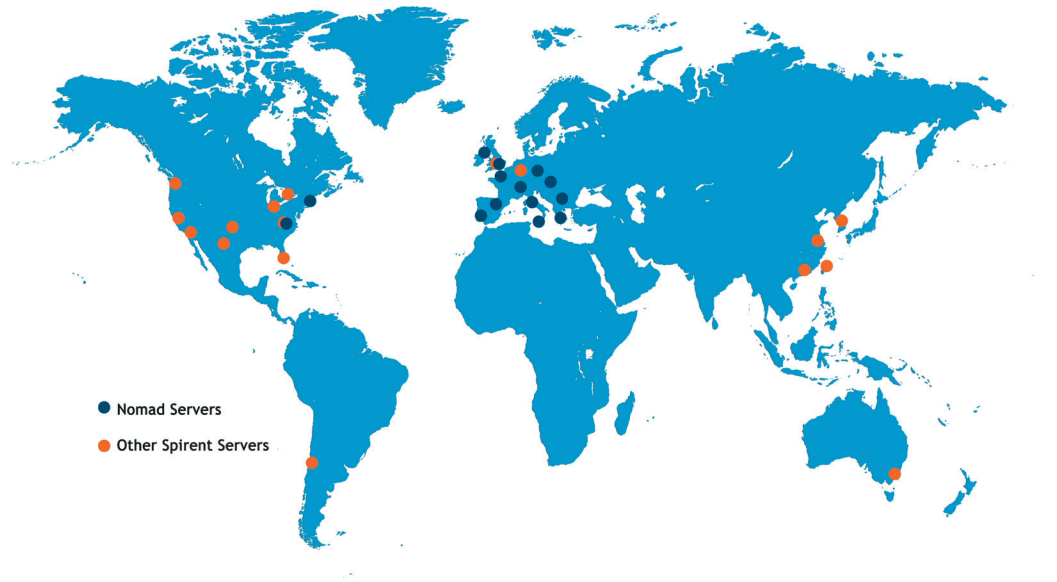
#### Mobile Device Neutral

Nomad is mobile device neutral. This means the tool can be used for any mobile operating system and mobile device you want to test, significantly reducing the hassle, time and costs associated with testing and launching different devices over time.



**GLOBAL INFRASTRUCTURE**

As part of Spirent’s global infrastructure, Nomad has call and voice servers launched worldwide to allow for accurate performance testing no matter the time zone. Additional infrastructure can be deployed to meet client requirements.



<b>HOW DOES NOMAD COMPARE?</b>			
<b>FEATURES</b>	<b>NOMAD</b>	<b>IN-HOUSE TEST TOOLS</b>	<b>RF TEST EQUIPMENT</b>
Test voice quality and call performance simultaneously	YES	NO	NO
Measures multi-radio access bearer (multi-service) or simultaneous voice and data communication	YES	NO	NO
Automated, accurate and consistent wide-scale collection of data services QoE	YES	NO	NO
Common solution to test all devices on any OS or access technology	YES	NO	NO
Data Sharing	YES	NO	NO
Historical trending	YES	NO	NO
Proven independent industry-accepted solution	YES	NO	YES
Centralized, online access to control and configure test plans, and report and analyze test results in real-time	YES	NO	YES
Dedicated test servers, content and storage	YES	NO	NO
Representative and repeatable measurement of end user experience	YES	NO	NO

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<b>TECHNICAL SPECIFICATIONS</b>	
<b>Network Technologies</b>	CDMA, GSM, UMTS, HSPA+, LTE, VoIP
<b>Device Operating Systems</b>	Device Operating Systems Android, Bada, Blackberry, iOS, Symbian, WebOS, Windows Phone
<b>Interfaces</b>	<p><b>To devices (four channels)</b></p> <ul style="list-style-type: none"> <li>• Electric coupling</li> <li>• Bluetooth</li> </ul> <p><b>To servers</b></p> <ul style="list-style-type: none"> <li>• IP</li> <li>• PSTN</li> </ul>
<b>Test Algorithms and Metrics</b>	<ul style="list-style-type: none"> <li>• PESQ (ITU-T P.862)</li> <li>• POLQA (ITU-T P.863)</li> <li>• Bluetooth voice and service quality</li> <li>• End-to-end verified call testing using programmed interfaces such as Bluetooth</li> </ul>
<b>Calling Scenarios</b>	<ul style="list-style-type: none"> <li>• Mobile to Landline</li> <li>• Mobile to Mobile</li> <li>• Mobile-Originated</li> <li>• Mobile-Terminated</li> </ul>
<b>Environments</b>	<p><b>Simulated network tests</b> — in-lab tests that measure baseband performance for voice applications</p> <p><b>Live network tests</b></p> <ul style="list-style-type: none"> <li>• In every network infrastructure environment</li> <li>• Across radio access technology boundaries</li> <li>• Poor coverage</li> <li>• Drive out of coverage</li> <li>• Stationary / mobile / indoor</li> </ul> <p>Free-space, handset to head, handset in hand to head</p>

**SPIRENT SERVICES**

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at [www.spirent.com](http://www.spirent.com) or contact your Spirent sales representative.



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