

# **This Former Spirent Business is Now Part of VIAVI**

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# Spirent NE-ONE Professional: Software Defined Test Networks

## Simplifying Application Performance Testing Over Networks

### Rapid recreation of real-world networks

The NE-ONE Professional Edition has been designed with ease-of-use in mind. Whether you are an Application Developer, Software Tester, Network Engineer or a Systems Architect, it will enable you to quickly and easily recreate a wide range of realistic networks (LAN, WAN, Internet (cloud), Wi-Fi, (A)DSL, Mobile, Satellite, etc.) in order to test application performance.



### Intuitive and intelligent web GUI

Create accurate, controllable and repeatable test networks for organizations of all sizes. NE-ONE Professional simplifies the creation of point-to-point and dual point-to-point networks with fast setup that is easily deployed, controlled and managed.

### Auto configuration - removing the guess work

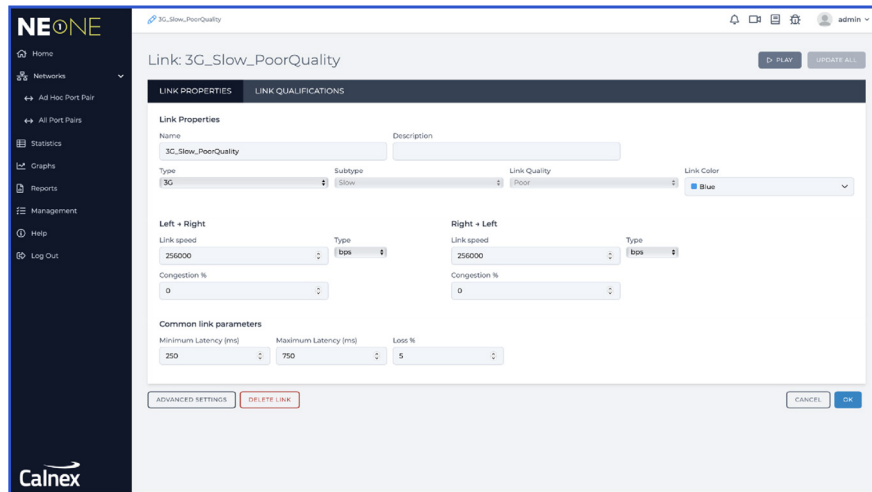
NE-ONE Professional has a range of Auto-Configuration capabilities to save you time and remove the guess work or need to be a network specialist when setting up your test network:

### Key Features

- Fast setup and configuration
- Intuitive & Intelligent Pictorial Web GUI
- Predefined Link Types & Associated
- Dual Hop/Last Mile Emulation
- Geolocation Network Latency Calculator
- Multiple Concurrent Links (Paths)
- Real-World Network Conditions
- Graphs, Statistics & Packet Capture
- Network Scenario Builder
- Reports
- Multi-User
- External Integration-RESTful API
- Packet Capture and Replay

## Geolocation network latency calculator

Imagine you need to emulate a link from New York to London but you're unsure of what latency to use. NE-ONE Professional comes with a catalogue of over 42,000 locations, so simply choose the required start and end point locations and NE-ONE Professional will calculate and insert the base latency for a typical WAN circuit.



## Predefined link types and associated properties

You know that you need to test using a 5G network, a VSAT link or some other type of network but how do you go about creating a range of real-world network experiences? Drawing on our expertise, we have populated the NE-ONE Professional with representative latency, loss, bandwidth, etc. values reflecting Excellent, Good, Average and Poor link qualities experienced in real networks. However, for more experienced users or where specific conditions need to be configured, NE-ONE's comprehensive impairment library allows you to have complete control over the quality of the test network.

## Network scenario builder and player

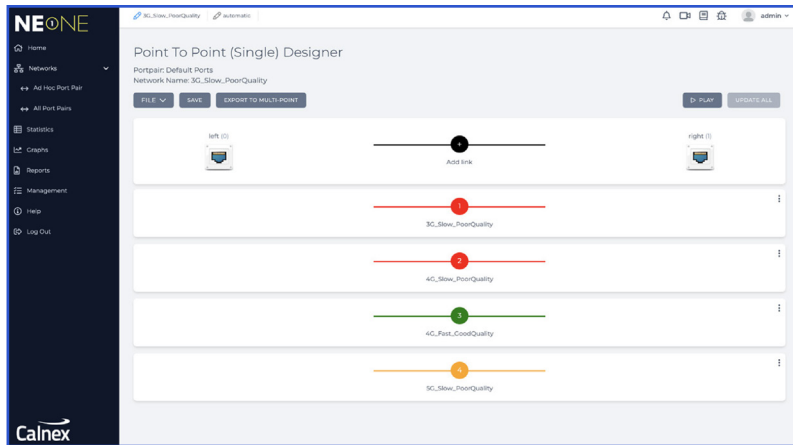
The unique drag & drop Network Scenario Builder & Player lets you easily create time- based network scenarios to test how applications handle variations in network quality and availability. It allows you to rapidly create a real world situations by combining network experiences together to be run over time.

The realism of the network experience can be further enhanced by adding intelligent transitions between each element. Transitions define how NE-ONE Professional will handle the changes, for example a variable transition from a 4G to 5G network or perhaps a momentary outage between the change.

NE-ONE Professional's Scenario Builder comes with a number of example network scenarios including office, coffee shop, underground station, car journey, cruise ship and train. Each scenario provides a realistic representation of what can happen to the network conditions when a user's location changes and application performance is affected.

## Multiple concurrent links (paths)

Create accurate, controllable and repeatable test networks for organizations of all sizes. NE-ONE Professional simplifies the creation of test networks from simple point-to-point to complex fully meshed with fast setup that is easily deployed, controlled and managed.



## Dual hop / last mile emulation

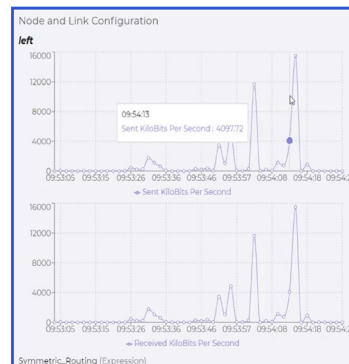
Frequently, real networks comprise more than a single segment i.e. Dual Hop. There is often another significant portion of the network chain, including a “last mile” hop.

## Real-world conditions

When used in Advanced Mode, NE-ONE Professional provides access to more than 50 network impairments that provide accurate, realistic, repeatable and controllable network conditions. Each of these are further customizable to enhance the realism of your test setup. Please refer to the “NE-ONE Family Impairments and Transitions Data Sheet” for more information.

## Graphs statistics and packet capture

NE-ONE Professional’s built-in graphing feature allows you to view and compare key network performance metrics in the GUI. Statistics can be exported for use in analytical tools enabling you to visualize and understand how the applications are being affected by changes in the network.



## Use the NE-ONE to test:

- Defense application resilience testing
- Enterprise application performance testing
- Server and data center migration
- SD-WAN proof of concepts
- Healthcare equipment testing
- IoT testing
- Satellite link emulation
- Broadcast QoS
- Cloud migration
- Gaming and entertainment media QA
- Radio over IP testing
- WAN & Network Simulation
- Remote worker infrastructure testing

## NE-ONE is used across industry sectors including:

- Aerospace & Defense
- Broadcasting
- Chemical & Oil
- Communications
- Education
- Finance
- Games
- Government
- Healthcare
- Logistics
- Manufacturing
- Professional Services
- Retail
- Technology
- Utilities

## Graphs, statistics and packet capture (cont'd)

Imagine you need to emulate a link from New York to London but you're unsure of what latency to use. NE-ONE Professional comes with a catalogue of over 42,000 locations, so simply choose the required start and end point locations and NE-ONE Professional will calculate and insert the base latency for a typical WAN circuit.

Passive Packet Replay Settings

Packet Replay Type

Passive Packet Replay

Full Path of PCAP File

/Private/packet\_replay/100m\_tcp.pcap

CHOOSE FILE

SELECT STREAMS

Loop Times (0 is infinite, 1 is run once and stop)

1

APPLY CONFIGURATION

CLOSE

Selected Streams: 1

Pages: 0

Quick Search (Press enter to search)

Initiator Address:

Responder Address: 212.58.235.129

Initiator Port:

Responder Port:

Protocol: Any

CLEAR

| STREAM ID                             | INITIATOR ADDRESS | RESPONDER ADDRESS | INITIATOR PORT | RESPONDER PORT | PROTOCOL | PACKET COUNT |
|---------------------------------------|-------------------|-------------------|----------------|----------------|----------|--------------|
| <input checked="" type="checkbox"/> 9 | 192.168.5.1       | 212.58.235.129    | 55737          | 443            | TCP      | 20           |
| <input type="checkbox"/> 10           | 192.168.5.1       | 212.58.235.129    | 55738          | 443            | TCP      | 97           |
| <input type="checkbox"/> 11           | 192.168.5.1       | 212.58.235.129    | 55739          | 443            | TCP      | 125          |
| <input type="checkbox"/> 21           | 192.168.5.1       | 212.58.235.129    | 55748          | 443            | TCP      | 231          |
| <input type="checkbox"/> 42           | 192.168.5.1       | 212.58.235.129    | 55770          | 443            | TCP      | 148          |
| <input type="checkbox"/> 53           | 192.168.5.1       | 212.58.235.129    | 55781          | 443            | TCP      | 29           |
| <input type="checkbox"/> 64           | 192.168.5.1       | 212.58.235.129    | 55792          | 443            | TCP      | 209          |
| <input type="checkbox"/> 72           | 192.168.5.1       | 212.58.235.129    | 55800          | 443            | TCP      | 12           |

## Reports

NE-ONE's Professional Reports provide you with instant visibility into how the test network was configured and how it was used. The ability to instantly see key performance metrics allow you to quickly identify application inefficiencies and reduce the amount of time troubleshooting.

**Configuration Report** - Lists all settings including nodes, links, routing, bandwidth and impairments about the configuration of a Test Network.

**Test Report** - Provides all of the information from the Configuration Report, together with graphs that show how much data was transferred across each Link and Node.

## External integration

NE-ONE provides a couple of ways for users to interact with the NE-ONE to automate changing network conditions from functional and/or performance test tools or scripts.

The CLI or API\* provides a simple way to control the NE-ONE from the command line or a TCP sockets interface.

NE-ONE's powerful RESTful API\* can be used to automatically create, control and teardown test networks on demand from external applications and tools. Every GUI operation has a RESTful API equivalent that enables easy integration therefore reducing complexity and development time.

## Multi-user

NE-ONE's multi-user design makes it really easy for the administrator to control access to ports and for users to collaborate with each other. Users can work on multiple test network configurations at the same time, within the same browser session, and the built-in file browser allows sharing of test network configurations between users as well as a secure folder to store private configurations.

Furthermore, multi-user also allows two users\* to simultaneously configure and operate their own individual test networks with independent logins at the same time using the same Appliance. This negates the need to run and maintain two separate emulators.

## Enterprise management

Optionally integrate the NE-ONE into organization-wide LDAP or RADIUS single-sign for authenticating users against their existing login credentials. Add the NE-ONE Enterprise into standard security and monitoring systems using built-in SNMP support.

## LCD control panel

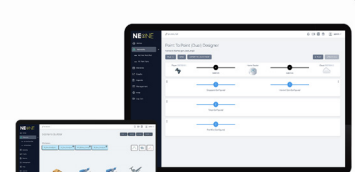
(Desktop Appliance Only) The appliance LCD provides rapid initial configuration. Additionally, test networks can be selected, run and managed through this LCD panel. This is particularly useful when working in labs and comms rooms where it isn't always convenient to connect a device with a web browser.

## Enable enterprise features

As the NE-ONE family uses the same code across the entire range it's really easy to enable NE-ONE Enterprise features, therefore protecting your initial investment and future proofing you for more extensive requirements.

## Appliance Options:

### Desktop - Up to 1 Gbps



### Half Rack - Up to 10 Gbps



### Virtual - Up to 10 Gbps



### Virtual - Up to 10 Gbps



| Feature Description                                                                | PRODUCT MODELS       |                       |                       |                        |                                            |
|------------------------------------------------------------------------------------|----------------------|-----------------------|-----------------------|------------------------|--------------------------------------------|
|                                                                                    | Model 1              | Model 5               | Model 10              | Model 20               | Model X2                                   |
| <b>Platform</b>                                                                    |                      |                       |                       |                        |                                            |
| Desktop Hardware Appliance                                                         | Virtual Only         | ✓                     | ✓                     | ✓                      | -                                          |
| Half Rack Hardware Appliance                                                       | -                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Soft Ports                                                                         | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Virtual Appliance<br>-Certified VMware-Ready<br>-OpenStack KVM                     | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Cloud AWS                                                                          | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Number of Licenced Emulation Ports                                                 | 2                    | 2                     | 2                     | 4                      | 4 (2 x 10G SFP+,<br>2 x 1G RJ45<br>Copper) |
| Maximum Link Speed (Bandwidth) / Packet Rate                                       | 50 Mbps/<br>(3Mpps)* | 100 Mbps/<br>(3Mpps)* | 200 Mbps/<br>(3Mpps)* | 1 Gbps /<br>(5.5Mpps)* | 10 Gbps/<br>(44Mpps)*                      |
| BMC / IPMI Management Port                                                         | -                    | -                     | -                     | -                      | ✓                                          |
| UID Identifier Button                                                              | -                    | -                     | -                     | -                      | ✓                                          |
| <b>Network Links</b>                                                               |                      |                       |                       |                        |                                            |
| Link Type: LAN, WAN, Wi-Fi, (A)DSL, 2G,<br>3G, 4G/LTE, 5G, Satellite, Custom       | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Point-to-Point                                                                     | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Dual hop (Single or Multi Link)                                                    | -                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Multi-Link                                                                         | -                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Maximum Links                                                                      | 1                    | 5                     | 10                    | 20                     | 20                                         |
| Link Congestion to mimic busy networks                                             | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Bidirectional Link Configuration                                                   | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Queue Size (Buffer used when data rate ex-<br>ceeds transmission speed)            | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Adjust Layer 2 Header Size                                                         | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Decrement Packet Time To Live<br>(TTL/Hop Limit)                                   | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Jumbo Frame Support                                                                | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| <b>Built-In Intelligence &amp; Automation</b>                                      |                      |                       |                       |                        |                                            |
| Geolocation Network Latency Calculator                                             | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |
| Database of more than 100 predefined<br>networks, properties, types and conditions | ✓                    | ✓                     | ✓                     | ✓                      | ✓                                          |

| Feature Description                                                                                                                                                                                            | PRODUCT MODELS |         |          |          |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|----------|----------|----------|
|                                                                                                                                                                                                                | Model 1        | Model 5 | Model 10 | Model 20 | Model X2 |
| <b>Built-In Intelligence &amp; Automation (Cont.)</b>                                                                                                                                                          |                |         |          |          |          |
| Network Scenario Builder & Player                                                                                                                                                                              | -              | -       | ✓        | ✓        | -        |
| Command Line Interface                                                                                                                                                                                         | -              | -       | -        | ✓        | ✓        |
| RESTful API                                                                                                                                                                                                    | -              | -       | -        | ✓        | ✓        |
| <b>Presentation, Usage &amp; Control</b>                                                                                                                                                                       |                |         |          |          |          |
| Intuitive Multi-User Web GUI including built-in hover-over help; manuals & video tutorials                                                                                                                     | ✓              | ✓       | ✓        | ✓        | ✓        |
| LCD Set Up & Control Panel (Desktop only)                                                                                                                                                                      | -              | ✓       | ✓        | ✓        | -        |
| Packet Capture on Ports or Links                                                                                                                                                                               | ✓              | ✓       | ✓        | ✓        | ✓        |
| Graphs & Statistics Logging per link                                                                                                                                                                           | ✓              | ✓       | ✓        | ✓        | ✓        |
| Configuration Reports                                                                                                                                                                                          | ✓              | ✓       | ✓        | ✓        | ✓        |
| Test Reports                                                                                                                                                                                                   | ✓              | ✓       | ✓        | ✓        | ✓        |
| Multi-Tenanted                                                                                                                                                                                                 | -              | -       | -        | ✓        | ✓        |
| Connect unlimited users or test devices                                                                                                                                                                        | ✓              | ✓       | ✓        | ✓        | ✓        |
| Save & Share Configurations & Scenarios                                                                                                                                                                        | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Value-Added Features and Options</b>                                                                                                                                                                        |                |         |          |          |          |
| Intuitive Multi-User Web GUI including built-in hover-over help; manuals & video tutorials                                                                                                                     | ✓              | ✓       | ✓        | ✓        | ✓        |
| LCD Set Up & Control Panel (Desktop only)                                                                                                                                                                      | ✓              | ✓       | ✓        | -        | -        |
| Packet Capture on Ports or Links                                                                                                                                                                               | -              | ✓       | ✓        | ✓        | -        |
| <b>Network Impairments</b><br>Listed below are the principal impairments the NE-ONE Professional can recreate. Each of these are further customizable by parameters to enhance the realism of your test setup. |                |         |          |          |          |
| <b>Latency &amp; Jitter</b>                                                                                                                                                                                    |                |         |          |          |          |
| Gaussian Delay                                                                                                                                                                                                 | ✓              | ✓       | ✓        | ✓        | ✓        |
| Step Delay Periodic                                                                                                                                                                                            | ✓              | ✓       | ✓        | -        | -        |
| Step Delay Packet                                                                                                                                                                                              | -              | ✓       | ✓        | ✓        | -        |
| Fixed Delay                                                                                                                                                                                                    | ✓              | ✓       | ✓        | ✓        | ✓        |
| Fixed Delay with Jitter                                                                                                                                                                                        | ✓              | ✓       | ✓        | ✓        | ✓        |
| Random Delay                                                                                                                                                                                                   | ✓              | ✓       | ✓        | ✓        | ✓        |
| Inter Packet Gap                                                                                                                                                                                               | ✓              | ✓       | ✓        | ✓        | ✓        |



| Feature Description                                                                                               | PRODUCT MODELS |         |          |          |          |
|-------------------------------------------------------------------------------------------------------------------|----------------|---------|----------|----------|----------|
|                                                                                                                   | Model 1        | Model 5 | Model 10 | Model 20 | Model X2 |
| <b>Loss</b>                                                                                                       |                |         |          |          |          |
| Random Loss with Burst                                                                                            | ✓              | ✓       | ✓        | ✓        | ✓        |
| Poisson Drop                                                                                                      | ✓              | ✓       | ✓        | ✓        | ✓        |
| Packet Error - 1 in X bits                                                                                        | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Burst Loss</b>                                                                                                 | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Drop - 1 in X</b>                                                                                              | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Random Drop</b>                                                                                                | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Duplicate</b>                                                                                                  |                |         |          |          |          |
| Packet Duplicate & Move                                                                                           | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Out of Order</b>                                                                                               |                |         |          |          |          |
| Random Packet Time Reorder                                                                                        | ✓              | ✓       | ✓        | ✓        | ✓        |
| Random Packet Move Offset                                                                                         | ✓              | ✓       | ✓        | ✓        | ✓        |
| Packet Reorder 1 in X                                                                                             | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Fragment</b>                                                                                                   |                |         |          |          |          |
| Fragment MTU                                                                                                      | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Bit Error</b>                                                                                                  |                |         |          |          |          |
| Error with Burst                                                                                                  | ✓              | ✓       | ✓        | ✓        | ✓        |
| Poisson Error                                                                                                     | ✓              | ✓       | ✓        | ✓        | ✓        |
| Random Packet Error                                                                                               | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Random Packet Corrupt (Including Bit Flipping)</b>                                                             | ✓              | ✓       | ✓        | ✓        | ✓        |
| <b>Scenario Builder Network Transitions</b>                                                                       |                |         |          |          |          |
| Gradual - Changes parameters gradually (linearly)                                                                 | -              | -       | ✓        | ✓        | ✓        |
| Variable - Changes parameters randomly                                                                            | -              | -       | ✓        | ✓        | ✓        |
| Outage - creates an increasingly lossy network, followed by total loss, then comes back quickly but not instantly | -              | -       | ✓        | ✓        | ✓        |
| <b>Certification</b>                                                                                              |                |         |          |          |          |
| FCC/CE Certified (Hard- ware appliances only)                                                                     | -              | ✓       | ✓        | ✓        | ✓        |
| VMware Ready Certified (Virtual appliances only)                                                                  | ✓              | ✓       | ✓        | ✓        | ✓        |



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