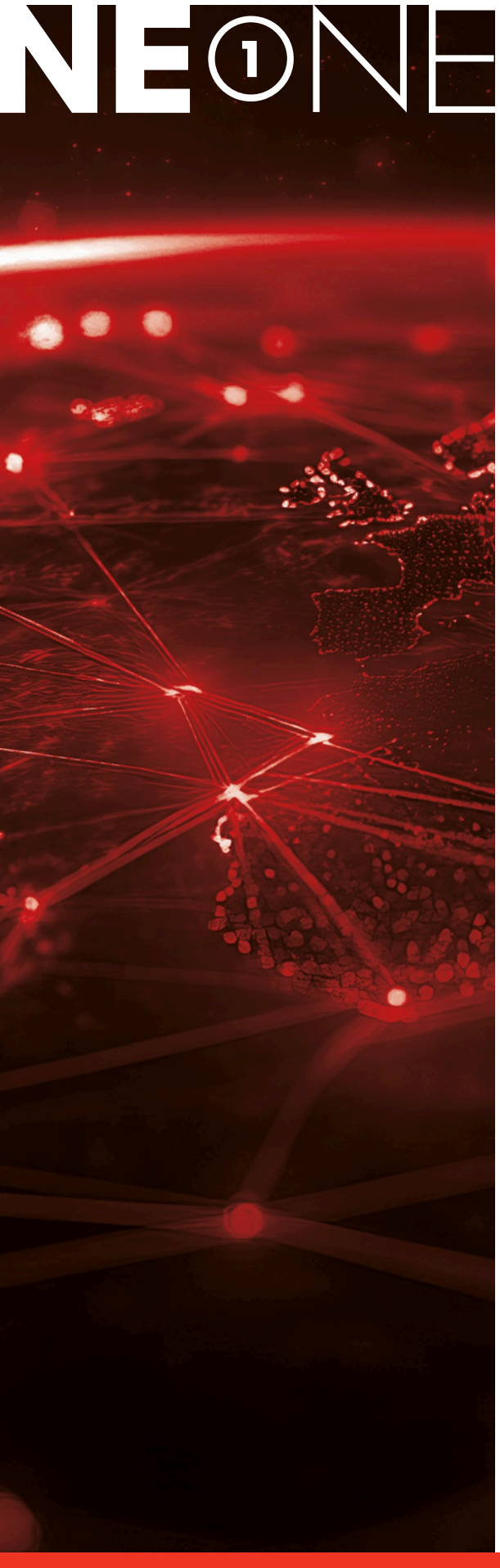


NE-ONE Enterprise

ACompleteSoftware Defined Test Network in One System

Accelerate Application Readiness With An Accurate, Controllable And Repeatable Test Network



Calnex NE-ONE Enterprise

Key Features

- Choose from hardware or virtual appliances.
- Virtual Editions for VMware, Proxmox, Openstack and KVM
- Cloud Editions for AWS and Azure
- Preloaded Networks, LAN, WAN, Cloud, Satellite and many other example profiles.
- Inline and sophisticated routing options.
- Internal and External (OSPF / BGP) Dynamic Routing
- Supports port-to-port or port-to-multi-port traffic.
- Mimic real-world devices postnetwork impairment.
- Soft Ports: Create hundreds of sub-ports for independent or large scale testing.
- Topology Wizard: Ready-made network templates and free-form network designer.
- Geo-location network latency calculator.
- Impair traffic by any packet field and easily add your own protocols.
- Apply 100+ parameters for realistic network impairments.
- Intelligent Packet Replay: Recreate real-world applications traffic flows.
- Real-time graphs and comprehensive reports.
- RESTful APIs, and Network Variables System for easy automation.
- Dynamic and static NAT options.
- LDAP RADIUS single-sign-on and SNMP support.
- Multi-user / Multi-Team.

Test applications in controllable test networks

Whetheryou're rolling outan enterprise business critical application like SAP or SharePoint, consolidating data centers, evaluating SD-WAN, VDI or WAN Optimization products, moving to the Cloud, or testing a new mobile app, NE-ONE Enterprise provides organizations with a way to create real-world network conditions in which to analyze, predict and verify application performance before deploying into potentially challenging network environments.

The insight NE-ONE Enterprise provides allows businesses to effectively manage their digital products and brand, reducing deployment costs and risk, mitigating remediation expense and the impact on resources at the same time as improving quality.



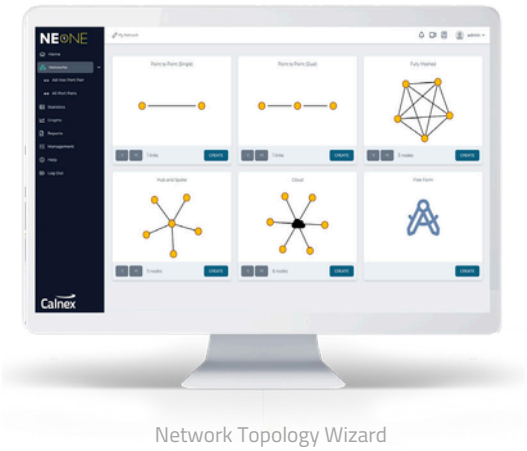
All the test networks you need

Create accurate, controllable and repeatable test networks for organizations of all sizes. NE-ONE 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.

Ease-of-use

Atthe heartof NE-ONE is its intelligent user interface which is designed to make setting up and running a realworld test network achievable in a few minutes. NE-ONE eliminates the need to spend hours learning complex tools with cumbersome tabular interfaces and scripting. Instead, just use your preferred browser (no plug-in required) and choose from the Network Topology Wizard, Scenario Builder or built-in templates to get started.

The Network Topology Wizard automates test network creation with pre-set templates such as including Point-to-Point, Multi-Point, Hub & Spoke or Cloud , while advanced users can customize topologies using the Free-Form Network Designer's drag-and-drop interface.



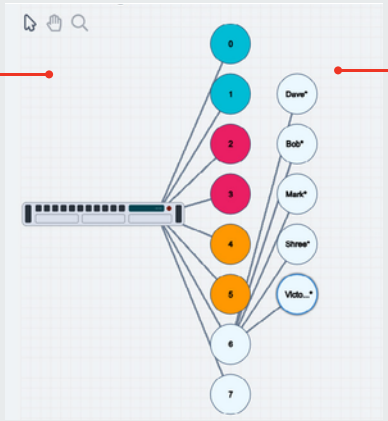
Network Topology Wizard

Port Manager

Configure IP, NAT, and DHCP settings for new ports, create named Port Pairs, and assign to multiple

Soft Ports

Create Soft Ports as subdivisions of physical ports for user-specific, independent test networks on the same NE



Route Anywhere

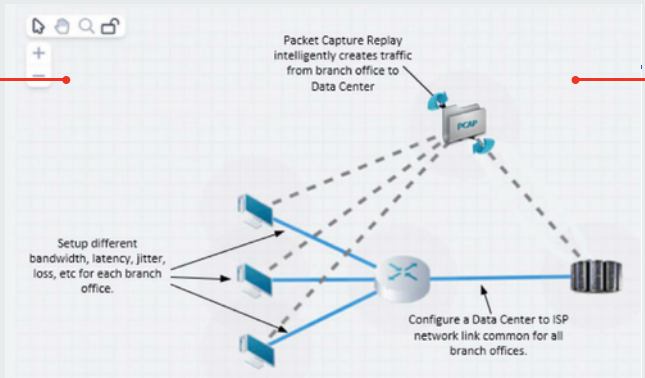
"Route" traffic from port-to-port or portto-multi-port, including both physical and Soft Ports, without any limitations on connectivity. This includes "routing" in bridged networks.

NAT

Configure Static or Dynamic NAT, including Port Forwarding, on any port to mimic real-world devices including firewalls and routers.

Packet Replay

Scale-up testing mimicking multiple clients, servers and other devices, that do not need to physically exist, so that you can understand the impact on associated application performance.



Intelligent Packet Replay

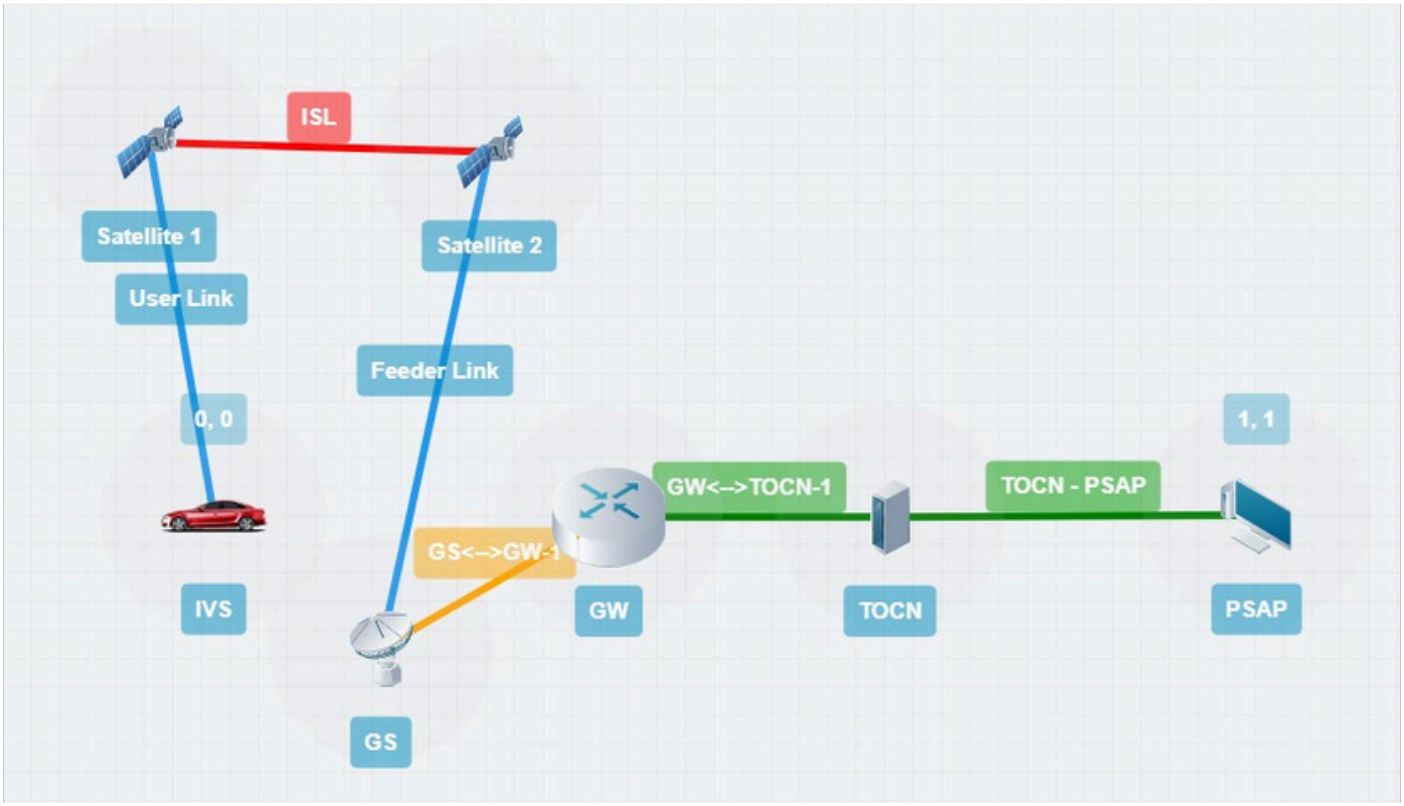
Create traffic that intelligently takes into consideration the test network characteristics ensuring accurate playback and analysis.

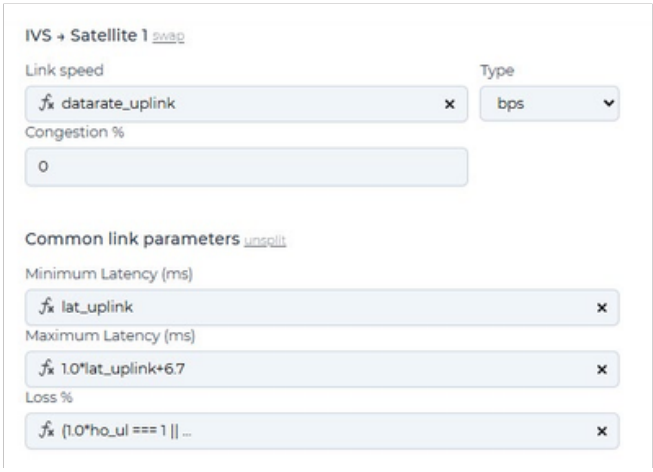
Powerful automation with Network Variables and a complete REST API

NE-ONE includes a RESTAPI soyoucan integratenetwork emulationintoyourautomatedteststrategy. But it also gives you powerful no-code automation through Network Variables.

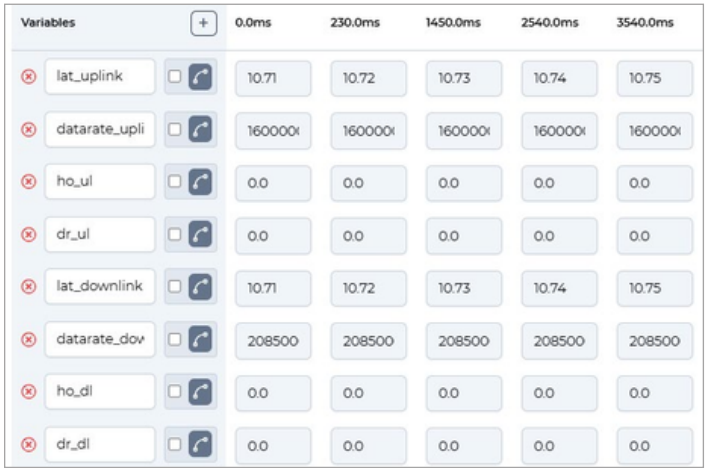
Almost anywhere you would normally enter a fixed value — such as bandwidth, latency, loss, routing statements or dynamic route costs — you can use a variable or formula instead, much like Excel. These variables can be driven by one or more timelines, making it easy to model changing network conditions such as aircraft movement, LEO satellite overpass, changing link quality and intermittent connectivity — all without programming.

When you do need full automation, NE-ONE provides the complete REST API: the same API used by the GUI, not a limited subset. You can also copy REST API calls directly from the GUI and reuse them in your own code, making it easy to move from interactive test design to repeatable automated execution.





Formulas can be used to create changing network conditions



Use tables of different parameter values to run tests in rapidly changing network conditions

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:

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

Fast, flexible and easy deployment

Witharange of platforms and modelstochoosefrom you can decide on the best features that are right for your organization.

Choose from our ready-to-use Hardware, Virtual or Cloud Appliances, all of which are available in a number of models to suit your needs.

Cloud AWS & Azure: Available for deployment in both Azure and AWS environments.

VMware: Certified Partner Ready for VMware's vSphere, NE-ONE Enterprise provides easy integration with your existing environment while leveraging the scalability and cost benefits of virtualization.

Openstack and KVM: support is available too.

Applications

Deployedbyover 850 enterprises, governments and military organizations around the world NE-ONE is allowing businesses to effectively manage their digital products and brand, minimizing costs and risk while improving quality:
Application Performance – Understand how applications will perform under normal and degraded network conditions.

Optimize for Scalability – Test applications under the most extreme network conditions to discover their weaknesses and limitations.

QoS Testing / User Acceptance – Validate that your application will meet user expectations in different network environments, particularly those that are less than ideal. Ensure that your product will perform sufficiently well even in lowbandwidth or high-latency situations.

Proof of Concepts – Simulate real-world conditions for multi-cloud, data center, WAN, and SD-WAN migrations. Identify performance bottlenecks, optimize configurations, and assess reliability before actual implementation.

Product Features

Explore the capabilities ofNE-ONE Software Defined Test Networks, designed to meet all your network application testing needs:

Inline, Sophisticated Routing or Both – Directly connect your test equipment inline (Layer 2) or configure to route (Layer 3) and impair traffic in VLAN and multi-IP configurations such as router- on-a-stick. At the same time other traffic, not under test, can flow through the test network unimpaired.

Out-of-the-Box Test Networks – The NE-ONE Enterprise comes pre-installed with a wide range of different network types and example profiles for LAN, WAN, Cloud, Satellite, Mobile, DSL and WiFi saving you time having to create them from scratch. Simply select your required environment and run your test. Of course, you can adjust any of the parameters or add your own custom settings.
Every Port to Port Connectivity – "Route" traffic from port- to-port or port-to-multi-port, including both physical and Soft Ports, without any limitations on connectivity. This includes "routing" in bridged networks.

Advanced Packet Handling – Classify, route, filter and selectively impair traffic by any packet field within any protocol layer (2-7) using a Wireshark®-like syntax. Bridge and/or route traffic via the emulator enabling you to mimic the complexity of your real world network. Easily add your own protocols.

Network Address Translation – Configure Static or Dynamic NAT, including Port Forwarding, on any port to mimic real- world devices including firewalls and routers.
Continuous Test Network – Deploy on the edge of the production network allowing users to test application performance from their usual location but as if they were physically at another location.

Powerful Integration – Advanced CLI / API, RESTful API, Embedded Javascript Engine and Packet Engine Programming Language (PEPL).

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 comes with a catalogue of over 42,000 locations, so simply choose the required start and end point locations and NE-ONE will calculate and insert the base latency for you.

Intelligent Packet Replay – QA Teams and Network Engineers need to reliably recreate real-world application traffic flows for realistic and useful application performance testing. NE-ONE's Intelligent Packet Replay feature extends packet replay by properly taking into consideration the test network characteristics. Application traffic can be intelligently replayed from one or more nodes in the test network to mimic its realworld counterpart.

Impairments – Apply one or more impairments from categories that include bandwidth, congestion, latency, packet loss, errors, fragmentation, reordering, duplication and more! With more than 100 parameters to choose from NE-ONE combines realism and accuracy in a Software Defined Test Network that allows you to test applications over a range of controllable and repeatable scenarios.
Graphs & Statistics – Analyze the test network in real-time to identify and resolve potential application performance issues to ensure service level compliance before deployment. Easily see what is happening to packet flows at any point in the test network and get easy and fast visibility into your application's performance using built-in graphs including an export data feature for offline analysis in other tools.

Reports – NE-ONE's built-in expert knowledge provides comprehensive understanding of the end-to-end performance of applications and how and who they interact with over the network. Its powerful, intelligent and interactive reports empower you to know if an application is Network Ready, validates planned changes and accelerates troubleshooting performance problems in production applications.

Predictive Analytics – Predictive Analytics makes forecasts about future networked application performance using historical data to identify potential performance problems.
Packet Capture – Full packet capture in PCAP format at any point in the test network provides pervasive application visibility, analysis and troubleshooting.

1 Gbps models:

Technical Specifications	Model 2	Model 4	Model 6	Model 8
Emulation Ports - RJ45 Copper	2	4	6	8
Network Objects	20	30	40	50
Soft Ports	16	32	48	64
Management Port	1 RJ45 Copper	1 RJ45 Copper	1 RJ45 Copper	1 RJ45 Copper
Product Code	CN-NE1-ENTP-2-1G	CN-NE1-ENTP-4-1G	CN-NE1-ENTP-6-1G	CN-NE1-ENTP-8-1G

10 Gbps models:

Feature Description	Model 2	Model 4	Model 6
Emulation Ports - 10G Fiber Optic	2	4	6
Emulation Ports - RJ45 Copper	2	2	0
Network Objects	20	40	60
Soft Ports	64	128	192
Management Port	1 RJ45 Copper	1 RJ45 Copper	1 RJ45 Copper
Product Code	CN-NE1-ENTP-2-10G	CN-NE1-ENTP-4-10G	CN-NE1-ENTP-6-10G

Features

General:

- Intuitive Web GUI
- Management Ethernet Port
- Multi-user (Unlimited)
- Control access to physical and Soft Ports by user
- Centrally Save & Share Test Networks
- Virtual Appliance (VMware Certified) for all models

User Authentication:

- Built-in
- LDAP

Network Scenario Builder:

- Example Profiles
- Transition - None
- Transition - Variable
- Transition - Outage
- Transition - Gradual

Network Toplogy Wizard:

- Point to Point (Single)
- Point to Point (Dual)
- Fully Mesh
- Hub and Spoke
- Cloud
- Free Form

Soft Ports:

- Port Manager
- Create Soft Port from Physical Port
- Create Soft Port from Soft Port
- Route Traffic by:
  - VLAN (Layer 2) with tagging/detagging/retagging
  - IPv4 (Layer 3) with ICMP/ARP/DHCP Relay support
  - IP (Layer 3) with IPv4 and IPv6 support
  - Filter (layer-less) by ranges of IP src/dest, Port (application), VLANs or "Wireshark-like" expression

Features (contd.)

Multi-Point Designer:

- Icon Library
- Customizable Background
- Save & share Test Networks
- Apply Impairments on Links (circuits)
- Apply Impairments on Nodes (routers)

Test Networks

General:

- Port Pairs - Ad Hoc
- Port Pairs - Favourite
- Set Default Test Network on Boot
- Nodes1 - (Virtual Routers)
- Links1 - (Circuits)
- Geolocation Network Latency Calculator
- Packet Capture; Nodes and Links
- Jumbo Frame Support (Up to 9,700 bytes)

Port Set-up:

- IP V4 & V6 Addressing
- Inline - Bridge
- Inline - Route
- Router
- Router on one port (router-on-a-stick)
- DHCP Relay
- NAT - Both Static & Dynamic

Routing & Filtering:

- Sophisticated routing/filtering including route by Layer 2 and Layer 3 properties e.g. IP/Subnet, IP Range, IP src/dest, Port (application)
- Both symmetric and asymmetric, and using "Wireshark-like" classification "route" at Layers 4-7
- Advanced "Wireshark-like" expressions to specify Filters and Routes matching with Just-in-time (JIT) compiler for speed
- NAT & PAT

Network Topologies:

- Point-to-Point
- Point-to-Point Dual Hop
- Hub and Spoke
- Partial Mesh & Fully Meshed
- Cloud
- Any Combination of the above

Network Profiles:

- LAN
- WAN
- Mobile - 2G
- Mobile - 3G
- Mobile - 4G
- Mobile - 5G
- SDSL
- ADSL
- Satcom
- Custom

Unlimited Impairments:

- Bandwidth (1bps increments)
- Loss
- Latency
- Bit Error
- Duplicate
- Fragment
- Out Of Order
- Congestion - Static
- Congestion - Variable
- And More...

Traffic Generation:

- UDP
- TCP

PCAP Playback:

- Packet Replay
- Intelligent Packet Replay

QoS:

- QoS Bandwidth & Priority
- Class of Service Handling and Traffic Shaping

Features (contd.)

Administration:

- Backup
- Restore
- File Browser
- Port Pair Manager
- System Notifications (Audit Log)
- SSL Certificate
- Software Update
- Network Time (NTP) Server
- SNMP Support
- Session Time-out

Integration Feature Pack:

- API/CLI[2]
- Restful API2
- Embedded Javascript Engine
- Packet Engine Programming Language (PEPL)

Integration features are not included in the base license

Help and Training:

- Operator Manual (via GUI)
- CLI/API Manual (via GUI)
- Restful API (via GUI)
- Online videos - (via GUI)
- Training Course

Calnex Solutions plc designs, produces and markets test instrumentation solutions for network synchronization, monitoring and emulation.

For more information on Calnex's network emulation products, and how they enable network and application assurance, contact Calnex Solutions today:

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email: info@calnexsol.com
web: calnexsol.com



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