

IxNetwork Overview—L2/3 Network Infrastructure Performance Testing

Scales to handle the most powerful devices and largest networks

Problem: Network Complexities Put Performance to the Test

Organizations have long tested their networks for scale and performance. But as networks become increasingly complex, so do the challenges of ensuring peak network performance and resiliency. Forget about simply testing for sluggish response times—the right testing tool must now assess complex network topologies with thousands of network devices, emulate sophisticated traffic flows, and conduct stress tests under countless scenarios and network conditions.

Solution: a reliable test system for complex and unpredictable networks

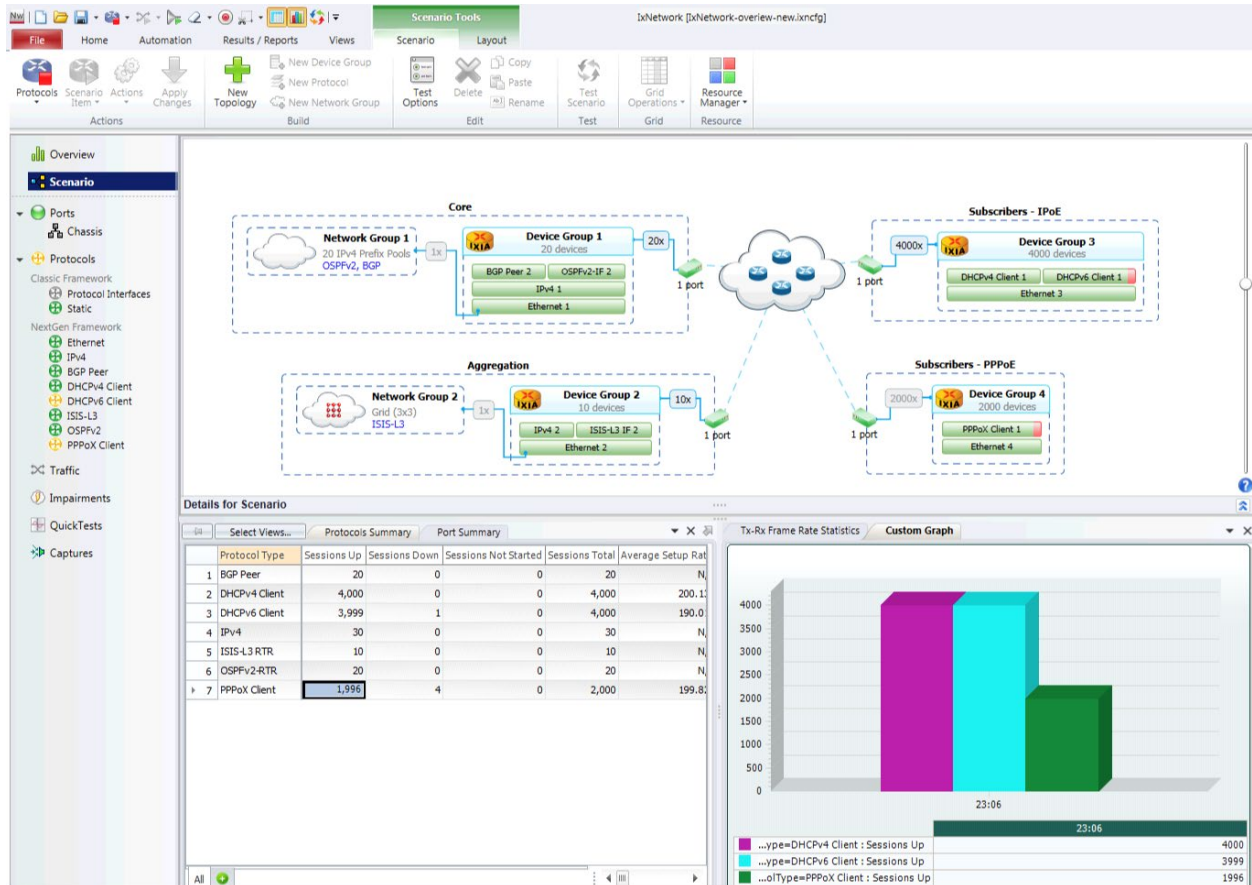
IxNetwork delivers performance testing under the most challenging conditions. Capable of generating multiple terabytes of data and analyzing up to 4 million traffic flows simultaneously, IxNetwork scales to handle the most powerful devices and the largest networks. With its enhanced real-time analysis and statistics, this powerful solution emulates everything from routing and switching, data center Ethernet and SDN to broadband access and industrial Ethernet for comprehensive testing. And graphical user interface (GUI) wizards make it easier for our customers to meet a wide range of performance requirements with minimal resources.

Key features

- Offers test coverage from 1G to 800G Ethernet
- Provides comprehensive protocol coverage for routing/switching, multiprotocol label switching (MPLS), software-defined networking (SDN), data center networking, carrier Ethernet, broadband access, time synchronization, automotive and industrial Ethernet (AVB/TSN), L2 security (MACsec)
- Generates traffic flows that mimic realistic user applications and scenarios
- Works smoothly in virtualized network environments, and runs from any commercially available compute environment
- Delivers end-to-end test system automation
- Performs rapid isolation of service violations, including thorough traffic-flow analysis

Highlights

- **Save capital expenditure in testing**—emulate a very large number of routers/switches without using real devices
- **Reduce test time**—use visual topology-based protocol configuration and comprehensive analytics with drill-down and learned information
- **Identify problems in the lab before deployment in the field**—realistically mimic real-world conditions with granular traffic generators and stateful AppLibrary
- **Understand performance and scaling bottlenecks**—rely on unparalleled density, scale, and performance to stress and take down the most powerful networking devices
- **Ease of deployment and access**—available either as a Windows application or a web-based application that is running on Linux



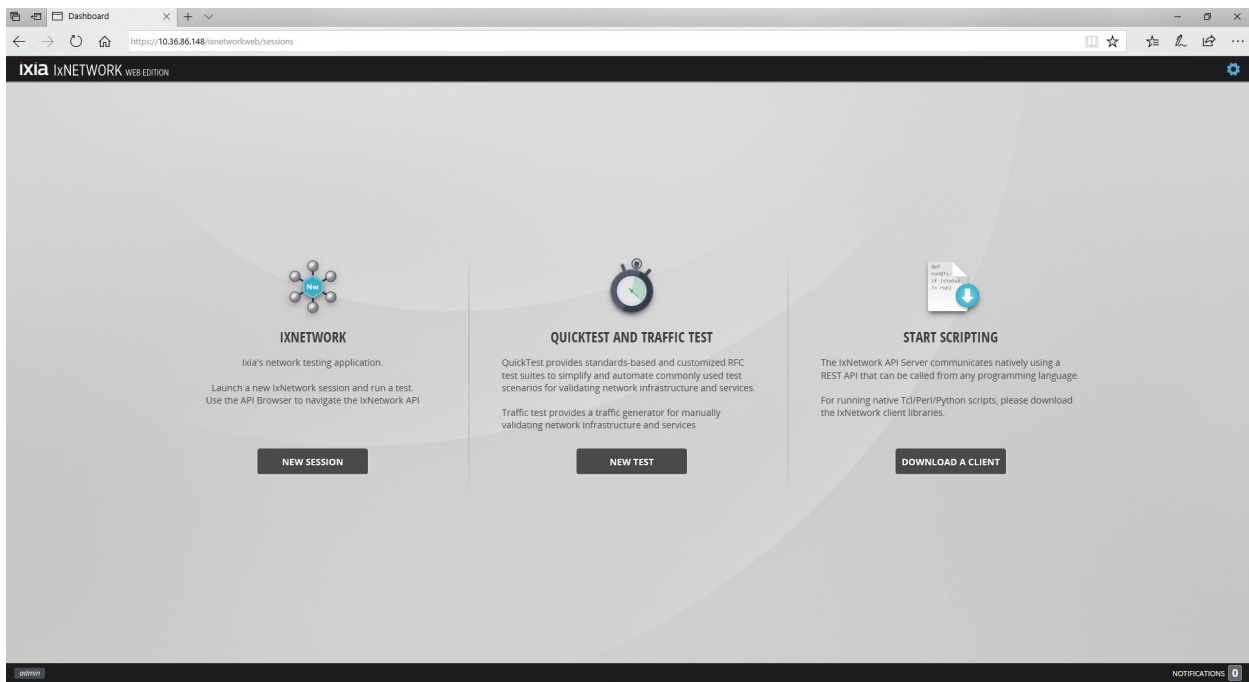
Multi-protocol visibility with protocol drill-down and control

IxNetwork—Web Edition

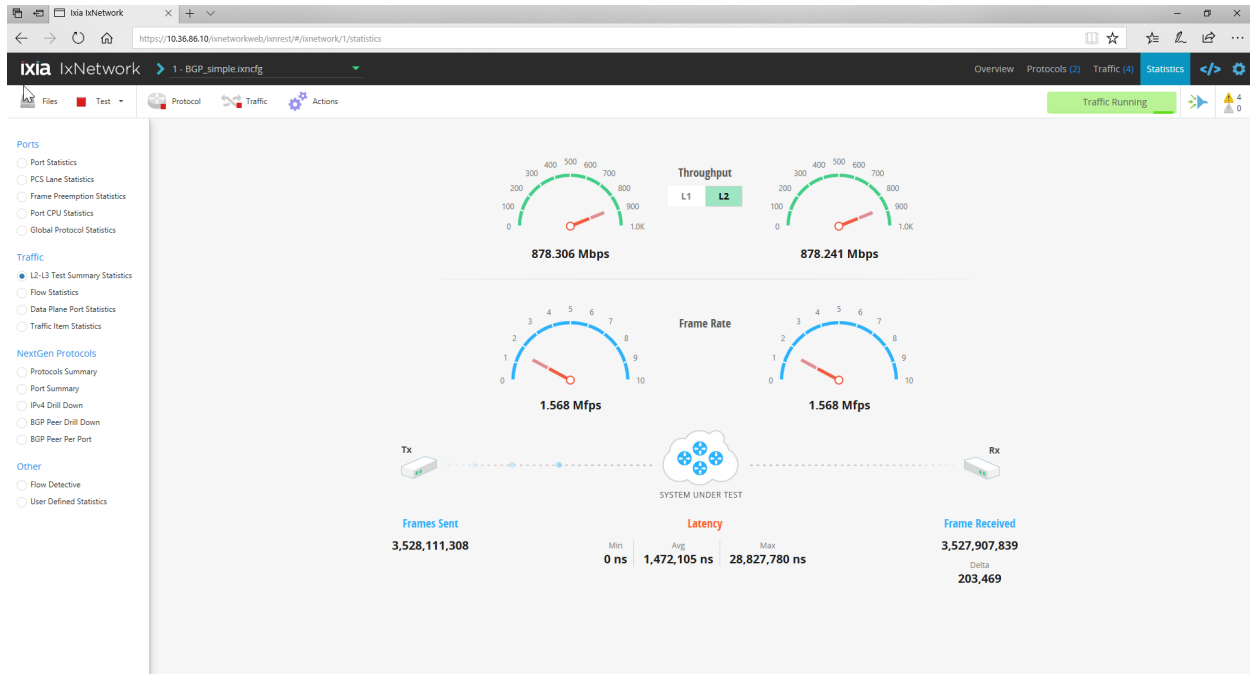
With the introduction of IxNetwork Web Edition, users now have a choice to use complete Linux deployment of IxNetwork test environment. Lightweight HTML5 based user interface lets user to connect to IxNetwork test session with a web browser from anywhere, anytime and eliminates need of installing PC based large memory footprint client application. IxNetwork web edition empowers users to perform testing manually and seamlessly move to automation using a modern automation framework like REST API.

IxNetwork Web Edition includes the following:

- IxNetwork Web UI (protocol emulation and traffic test)
- QuickTest (RFC benchmarking test suites) and basic traffic test
- API Browser (powerful automation tool)



IxNetwork Web Edition options menu



IxNetwork Web Edition test summary statistics

Specifications

Protocols

IxNetwork emulates a wide variety of protocols by using Keysight's CPU-based test port. Each test port supports an independent multi-core CPU running protocol emulations under a Linux operating system. Using the IxNetwork test application, each Keysight test port is capable of emulating thousands of routers or bridges with millions of reachable networks and hosts. Users can easily scale the size of emulated topologies by adding additional test ports. Combined with line-rate traffic generation and QoS measurement capabilities, the CPU-based load modules verify advertised topologies and networks for reachability and QoS performance.

| Technology | Protocol |
|----------------------------------|--|
| Routing and switching | BGP-4, BGP+, OSPFv2/v3, ISISv4/v6, EIGRP, EIGRPv6, RIP, RIPng, BFD, S-BFD, IGMP/MLD, PIM-SM/SSM, STP/RSTP/MSTP, PVST+/RPVST+, Link Aggregation (LACP), LISP, LLDP, BGP FlowSpec, NTP |
| Software defined network | OpenFlow, Segment Routing (ISISv4/v6, OSPFv2/v3, BGP), Segment Routing v6 (ISISv6, L3VPN/EVPN), BGP Link State (BGP-LS), PCEP, BGP SR TE Policy, ISIS/OSPF Flex-Algo, NETCONF, BIER, VXLAN, EVPN VXLAN, OVSD, GENEVE, BGP FlowSpec, eCPRI |
| MPLS | RSVP-TE P2P/P2MP, LDP/LDPv6/mLDP, LDP L2VPN (PWE/VPLS), BGP VPLS/VPWS, L3VPN/6VPE, 6PE, Inter-AS VPN Options A/B/C, BGP LU, MPLS-TP, MPLS OAM, EVPN/PBB-EVPN, Multicast VPN Rosen Draft, NG Multicast VPN, MPLSoUDP, MPLSoGRE |
| Broadband and authentication | PPPoX/L2TPv2, DHCPv4/DHCPv6, Radius attributes for L2TP, ANCP, IPv6 Autoconfiguration (SLAAC), IGMP/MLD, IPTV, 802.1x, WebAuth, EAPoUDP, Cisco NAC, Bonded GRE |
| Automotive & industrial ethernet | Link OAM (IEEE 802.3ah), CFM IEEE 802.1ag, Service OAM ITUT-Y.1731, PBT/PBB-TE, ELMI, Sync-E ESMC, PTP IEEE 1588 with G.8265.1/G.8275.1 Telecom Profile, ST-2059-2 SMPTE Profile, IEEE C37.238 (Power profile), gPTP IEEE 802.1AS, MSRP IEEE 802.1 Qat, Layer 2 AVB Transport Protocols IEEE 1722, Time Aware Shaper IEEE 802.1Qbv, Credit Based Shaper IEEE 802.1Qav, Frame Preemption IEEE 802.3br / IEEE 802.1Qbu, Frame Replication IEEE 802.1CB, Stream Filtering and Policing IEEE 802.1Qci, Avnu Automotive Profile, TSN Conformance Test package |
| Data center | DCBX/LLDP, FCoE/FIP, Priority Flow Control IEEE 802.1Qbb (PFC), TRILL, TRILL OAM, Cisco FabricPath, SPBM, VEPA, VNTAG/VIC, VXLAN, EVPN VXLAN, OVSD, GENEVE |
| L2 security | MACsec |

Traffic

IxNetwork supports hardware-based traffic generation and measurement that can ensure highest precision and performance. The sophisticated traffic generator is also tightly integrated with the control-plane protocols.

| Traffic generator | Specification | | | | | | | | | | |
|---|---|------------|---|------|--|-----------------|--|-----|---|---------|---|
| Configuration | Advanced Traffic Wizard—steps by steps wizard assisted traffic configuration Quick FlowGroup—granular control of packet sequence and variations | | | | | | | | | | |
| Scale | <ul style="list-style-type: none"> Generate up to 4 million trackable flows Configure up to 16,000 unique Flow Groups—each supporting a unique transmit profile Up to 4,096 hardware streams per-port Learn and bind up to 4 million MPLS labels | | | | | | | | | | |
| Dynamic controls | <ul style="list-style-type: none"> Change frame rate and frame size on the fly Change pre-defined packet header field on the fly Update MPLS and PPP traffic dynamically, without having to stop and restart traffic | | | | | | | | | | |
| Traffic types | IPv4, IPv6, MPLS multi-labels, Ethernet, VLAN, provider bridges (Q-in-Q), provider backbone bridges (MAC-in-MAC), frame relay, ATM, PPP, HDLC, L2 MPLS VPN (including FR and ATM to Ethernet PWE3 Internetworking), L3 MPLS VPN, VPLS, 6PE, 6VPE, multicast, multicast VPN | | | | | | | | | | |
| Source/Destination Ports Mapping | One-to-one, many-to-many, fully meshed | | | | | | | | | | |
| Routes mapping between peer ports | One-to-one, fully meshed | | | | | | | | | | |
| Flow grouping | Build flow groups based on packet content (e.g., QoS or VLAN ID) | | | | | | | | | | |
| Traffic profile | <table border="1"> <tbody> <tr> <td>Frame size</td> <td>Fixed, increment, random, IMIX, custom IMIX, Quad Gaussian distribution, auto</td> </tr> <tr> <td>Rate</td> <td>percent line rate, packets/sec, L2 bit rate (bps, Bps, Kbps, MBps)</td> </tr> <tr> <td>Payload pattern</td> <td>Increment byte/word, decrement byte/word, random, custom</td> </tr> <tr> <td>QoS</td> <td>TOS, DSCP, IPv6 traffic classes, 802.1p, MPLS EXP</td> </tr> <tr> <td>Dynamic</td> <td>Traffic supports gratuitous ARP - auto Re-ARP on cable re-connect</td> </tr> </tbody> </table> | Frame size | Fixed, increment, random, IMIX, custom IMIX, Quad Gaussian distribution, auto | Rate | percent line rate, packets/sec, L2 bit rate (bps, Bps, Kbps, MBps) | Payload pattern | Increment byte/word, decrement byte/word, random, custom | QoS | TOS, DSCP, IPv6 traffic classes, 802.1p, MPLS EXP | Dynamic | Traffic supports gratuitous ARP - auto Re-ARP on cable re-connect |
| Frame size | Fixed, increment, random, IMIX, custom IMIX, Quad Gaussian distribution, auto | | | | | | | | | | |
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| QoS | TOS, DSCP, IPv6 traffic classes, 802.1p, MPLS EXP | | | | | | | | | | |
| Dynamic | Traffic supports gratuitous ARP - auto Re-ARP on cable re-connect | | | | | | | | | | |
| Dynamic fields | Pre-defined packet header field, MPLS, and PPP—update corresponding traffic packets on the fly when control plane information changes | | | | | | | | | | |
| Packet error injection | Bad CRC, No CRC | | | | | | | | | | |
| Per-flow traffic tracking | Single or multi-field tracking of any field including: QoS (TOS/DSCP), VLAN, source MAC address, destination MAC address, source IP address, destination IP address, MPLS label, MPLS flow descriptor, streams, Src/Dst IP pair, Src/Dst MAC pair, custom packet tracking | | | | | | | | | | |
| Real-time flow filtering and flow detective | Real-time filtering of flows based on tracking settings with user defined criteria. Single out best/worst performing flows based on Rx count, min/max/average latency, timestamp, real-time packet loss using sequence, identify dead flows | | | | | | | | | | |

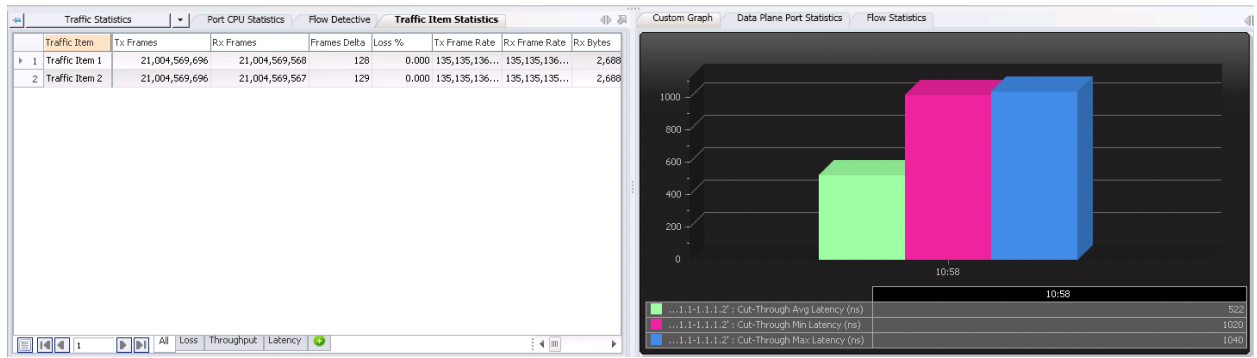
| Traffic generator | Specification |
|-------------------|---|
| Packet editor | Edit packet header fields and payload |
| | Header field value editing Increment, decrement, list, user defined, default, link/unlink with other header fields |
| | Add tracking Track user defined traffic flows |
| | Payload editing Increment byte/word, decrement byte/word, repeat, fixed, user defined |
| | Custom editing Add or insert additional layers of protocols |

| Measurement | Specification |
|--------------------------|--|
| Loss | Track Tx frames, Rx expected frames, Rx frames, Rx bytes frame delta loss % |
| Rate | Tx frame rate, Rx frame rate, Rx rate (bps, Bps, Kbps, Mbps) |
| Latency | Store and forward, cut-through, MEF frame delay, forwarding delay |
| Delay variation (jitter) | Delay variation measurement (jitter) minimum, average, maximum |
| Inter-arrival time | Inter-arrival minimum, average, maximum |
| Sequence | Small error, big error, reverse error, last sequence number, duplicate frames, sequence gaps |
| Time stamps | First and last timestamp per flow |
| TrueView™ convergence | Control plane and data plane integrated time stamping for calculating convergence measurements |
| Packet loss duration | Estimated time without received packets calculated by frames delta at the expected Rx rate |
| Misdirected packets | Per-port based count of packets not expected on a Rx port |
| Late packets | Per-flow count of packets that arrived late; user-defined threshold for late packets |
| Re-ordered packets | Per-flow count of packets that were received out of order |
| Duplicate packets | Per-flow count of duplicate packets that were received |
| In-order packets | Per-flow count of packets that were received in order |

Test results — statistics viewer

The IxNetwork statistics viewer is a powerful tool for viewing and analyzing real-time results and generating test reports.

- Aggregate statistics are displayed hierarchically, with the ability to drill-down to group-level and flow-level statistics
- Different modes to view traffic statistics – Instantaneous, Cumulative, or both
- CSV files can be used to capture a single-results view or, at the global level, to capture all results in real-time. An integrated CSV viewer is provided to view large-result files

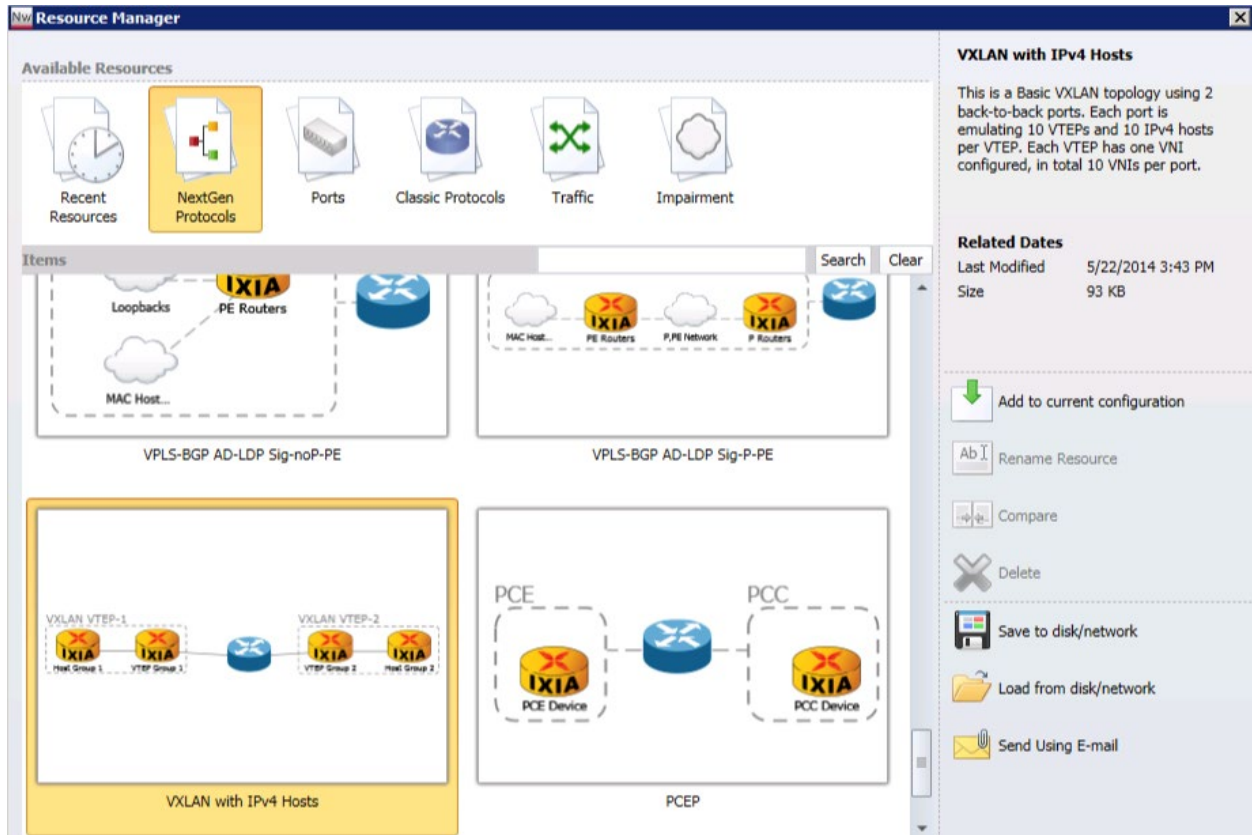


Statistics viewer

| Function | Statistics |
|------------------|---|
| Global protocol | Port-level protocol counters |
| Port | Port mode, speed, frame and data rate, OAM statistics, misdirected |
| Tx-Rx frame rate | Tx-Rx frame rate graph |
| Port CPU | Port CPU utilization and statistics |
| Data plane port | Port-based frame counts and rate excluding control-plane traffic |
| Traffic item | Statistics provide an aggregate of all the flows in the Traffic Item |
| User defined | User-defined view is used for drill-down to user-defined tracking options |
| Flow statistics | Flow-level measurements |
| Flow detective | Filtering and sorting based results |

Resource Manager

Often expertise for different protocols lies within different members of a testing team. A common pain-point for our customers was the lack of a collaboration tool to aid them in incrementally building configurations. With the Resource Manager, users can now piece-meal their configurations together. The Resource Manager allows users to save different pieces of their configurations, like protocols and traffic elements, and then build a configuration by re-using saved elements in their current configuration.



Resource Manager

It also allows users to clearly see changes made to their resources/configurations by using a 'diff' functionality within the application. Using the Resource Manager is a powerful way to collaborate and quickly build expertise with a team.

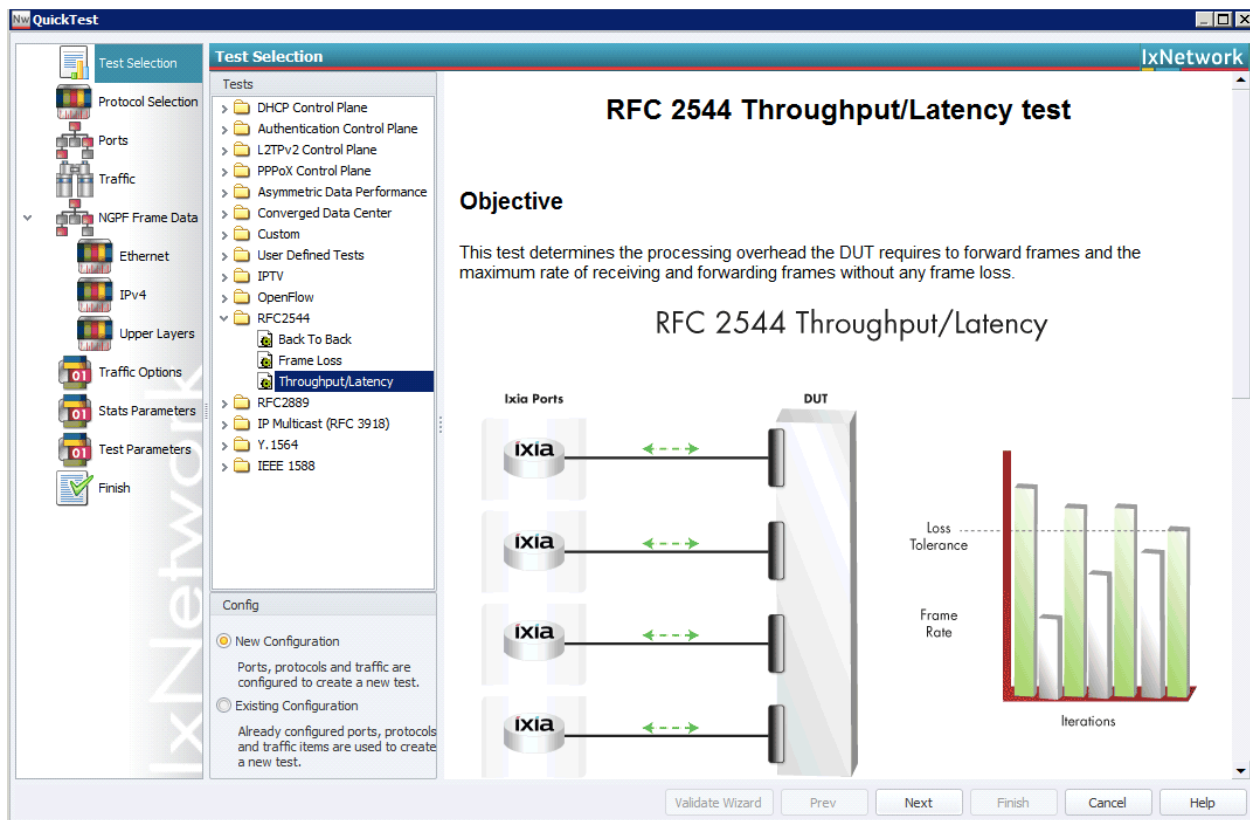
Reports

Building a test-results report requires test data. IxReporter introduces a new database, referred to in the application as an 'object model.' The object model is populated by a testing application (like IxNetwork) with the test configuration parameters and the test results. All of these 'objects' can be included in a report, usually in a table or chart. With this powerful concept, tables and charts can be created, which combine statistics and configuration information as well as have multiple protocols.

Automation

IxNetwork provides powerful GUI-based automation with Test Composer and QuickTest. It also has a robust feature set for GUI-to-script and API-based automation. IxNetwork's automation is simplicity at its best. Test scenarios are set up by using IxNetwork's step-by-step GUI, and then selecting a single button generates a test script. Scripts may be modified and combined in any fashion. When the script is run, the IxNetwork GUI watches the execution—providing real-time statistics and state information.

| Types | Test requirements | Detail |
|-------------------------------------|------------------------------|---|
| QuickTest | Scalability | <ul style="list-style-type: none">Standards-based IETF RFC test methodologies, as well as a custom mode for user-defined performance testsEasy-to-use, configurable, pre-packaged testsGenerate detailed reports of results |
| Macro recorder | Functionality | <ul style="list-style-type: none">'Click-thru automation' means no more scriptingRapid capture of manual test casesCapture steps that cause a failure for reproducibility |
| Test composer and Tweakables | Regression | <ul style="list-style-type: none">GUI-based solution to automate test actionsDetailed control over test execution without Tcl expertiseComplete access to the Tcl API with easy UIEdit 'Macro Recorded' steps for customization of GUI captured events |
| ScriptGen | Regression | <ul style="list-style-type: none">Provides an easy, one-click GUI-to-script generation |
| Low-level and high-level APIs | Functionality and regression | <ul style="list-style-type: none">For Tcl scripting expertsOne-click GUI to Tcl script conversion available (Scriptgen)Complete access to and control over test configurationTcl, Perl, Python, Ruby |
| REST API/ RESTPy/ Robot/API browser | Functionality and regression | <ul style="list-style-type: none">Modern automation technologies like REST APIs, JSON data models, Robot keywords, and the Python programming languageRESTPy enables users to use REST API with built-in Python wrapperAPI Browser enables users to browse IxNetwork API hierarchy and expedites automation by using any language |



QuickTest end-to-end wizards

| QuickTest | Tests |
|---------------------------------|---|
| RFC 2544 tests | Throughput and latency, frame loss, back-to-back; available in QuickTest Web Edition |
| RFC 2889 tests | Address Cache, Address Rate, Broadcast Rate, Congestion Control, Frame Error Filtering, Fully Meshed, Many to One, One to Many, Partially Meshed; available in QuickTest Web Edition |
| RFC 7747 tests | BGP convergence over ECMP benchmark test; available in QuickTest Web Edition |
| RFC 3918 tests | Aggregated Multicast Throughput, Burdened Group Join Delay, Burdened Multicast Latency, Forwarding Latency, Group Join/Leave delay, Mixed Class throughput, Multicast Group Capacity, Multicast Group Pattern Verification, Scaled Group Forwarding |
| IEEE 1588v2 (PTP) | Best Master Selection, Transparent Clock Correction Factor Error, Slave Scalability |
| ITU-T Y.1564 service activation | Service configuration, service performance |
| Asymmetric data performance | Throughput/latency, frame loss |
| IPTV | Channel zapping |
| Converged data center | FCoE Max No Drop Throughput, FCoE Max No Pause Throughput, Cloud Performance |

| QuickTest | Tests |
|-------------------------------|--|
| Broadband control plane tests | Session setup rate and session capacity tests for PPP/L2TPv2, 802.1x, and NAC |
| OpenFlow | Failover Performance, L2 Address Learning, L3 Address Learning, Switch Flow Table Capacity |
| Custom tests | Continuous run, fixed duration run, incremental, throughput (binary search) |

Built-in data capture and analysis

Internet protocols are complex—multi-protocol emulations even more so. IxNetwork’s built-in tool captures control-plane traffic along with line-rate data-plane traffic, merging both into a single capture file. The optional Analyzer module is a sophisticated network analyzer that can display protocol ladder diagrams. IxNetwork allows you to trigger and filter control and data plane packet captures based on user-defined packet field.

Platform Options

Visit [keysight.com](https://www.keysight.com) for more information on IxNetwork platform options

| | |
|------------------|---|
| Virtual platform | IxNetwork Virtual Edition (VE) |
| Chassis | <ul style="list-style-type: none"> XGS12-HSL/SDL/SD Chassis XGS2-HSL/SDL/SD Chassis |
| Fixed chassis | <ul style="list-style-type: none"> AresONE 800GE QSFP-DD800 800/400/200/100/GE AresONE-S 400G 16PHW QSFP-DD 400/200/100/50GE AresONE-S 400G 8PHW QSFP-DD 400/200/100/50GE AresONE-400G QSFP-DD 400/200/100/50GE AresONE-400G OSFP 400/200/100/50GE AresONE-400G High Performance QSFP-DD 400/200/100/50GE NOVUS ONE PLUS 10GE/5GE/2.5GE/1GE/100M |
| Appliances | <ul style="list-style-type: none"> NOVUS ONE 10GE/1GE/100M |
| Load modules | <ul style="list-style-type: none"> K400 QSFP-DD 400/200/100/50GE K400 CFP8 400GE NOVUS High Density QSFP28 100/50/40/25/10GE NOVUS High Density SFP28/QSPF28 100/50/25/10GE NOVUS 10GE/1GE/100M NOVUS 10GE/2.5GE/100M Xcellon-Multis QSFP28 100/50/25GE Xcellon-Multis CFP4 100GE Xcellon-Multis CXP 100/40/10GE Xcellon-Multis QSFP 40/10GE Xcellon-Lava CFP 100/40GE Xcellon-Flex QSFP/SFP+ 40/10GE |

Technology Solutions

Visit [keysight.com](https://www.keysight.com) for more information on IxNetwork technology solutions

- IxNetwork Overview—L2/3 Network Infrastructure Performance Testing
 - IxNetwork Software Defined Networking (SDN) Test Solution
 - IxNetwork Routing and Switching Test Solution
 - IxNetwork MPLS Test Solution
 - IxNetwork Industrial Ethernet Test Solution
 - IxNetwork Data Center Ethernet Test Solution
 - IxNetwork Broadband and Authentication Test Solution
 - IxNetwork MACsec Test Solution
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Product Ordering Information

930-2076

IxNetwork, Base Software PREMIUM

INCLUDES: Base Software, Layer 2-3 Performance Test Application, Supports Traffic Generation and Analysis, RFC 2544 and Custom Integrated Tests over Advertised Topologies, IxNetwork Floating Client Framework, Floating Macro Recorder, Floating DUT CLI Integration, Floating DUT SNMP Integration, Floating DUT SYSLOG

Software bundles

928-0020

IxNetwork Base Software Bundle; Includes: IxNetwork Base, BGP/BGP+, ISISv4/v6, OSPFv2/v3, RIP/RIPng, MPLS LDP/RSVP-TE, IGMP/MLD/PIM, , RFC 2544/2889/3918 QuickTest.

930-3500

IxNetwork Volume SW Package Tier 1, Supports IxNetwork IPv4/IPv6 Unicast/Multicast Routing Protocols, Switching (Layer 2 Protocols), and MPLS VPN protocols

930-3501

IxNetwork Volume SW Package Tier 2. Supports IxNetwork IPv4/IPv6 Routing Protocols, Switching (Layer 2 Protocols), MPLS VPN Protocols, and Carrier Ethernet Protocols

930-3502

IxNetwork Volume Software Package Tier 3. Supports IxNetwork IPv4/IPv6 Routing Protocols, Switching (Layer 2 Protocols), MPLS Protocols, Multicast VPN Protocols, Carrier Ethernet Protocols, Data Center Ethernet Protocols, and Broadband/Authentication protocols

930-9501

IxNetwork Tier-1 FLOATING Subscription license for use with Ixia hardware. Includes all IxNetwork protocols supported in IxNetwork for a duration of 1-Year. Supports low scale control plane

930-9502

IxNetwork Tier-2 FLOATING Subscription license for use with Ixia hardware. Includes all IxNetwork protocols supported, all IxNetwork QuickTests, All Test Automation (Macro Recorder, Test Composer licenses) features and IxReporter for a duration of 1-Year. Supports unlimited scale control plane (not to exceed LM capacity)

930-9503

IxNetwork Tier-3 FLOATING Subscription license for use with Ixia hardware. Includes all IxNetwork protocols supported, all IxNetwork QuickTests, All Test Automation (Macro Recorder, Test Composer licenses) features, IxReporter, ImpairNet and AppLibrary for a duration of 1-Year. Supports unlimited scale control plane (not to exceed LM capacity)

930-2210

IxNetwork, node-locked perpetual license, All Inclusive package for Chassis. Supports all IxNetwork software features with exclusion; Excludes: 930-3461 IxNetwork AppLibrary Slot Bundle, Layer 4-7 Performance Test Application; 930-2135 IxNetwork MACsec emulation. Any optional script package or IxSuiteStore optional test suite is not considered as part of IxNetwork software features

930-2200

IxNetwork, node-locked perpetual license, All Inclusive package for AresONE. Supports all IxNetwork software features with exclusion; Excludes: 930-3461 IxNetwork AppLibrary Slot Bundle, Layer 4-7 Performance Test Application; 930-2207 IxNetwork Encryption test package for AresONE. Any optional script package or IxSuiteStore optional test suite is not considered as part of IxNetwork software features.

930-2201

IxNetwork Basic package for AresONE; INCLUDES: IxNetwork Base, RFC2544/2889/3918 QuickTest

930-2202

IxNetwork Routing, Switching and Carrier Ethernet package for AresONE; Includes Routing, Switching and Carrier Ethernet Protocols; REQUIRES: 930-2201 IxNetwork Basic package for AresONE

930-2203

IxNetwork MPLS and VPN package for AresONE; INCLUDES: Routing, MPLS and VPN Protocols; REQUIRES: 930-2201 IxNetwork Basic package for AresONE

930-2204

IxNetwork SDN package for AresONE; INCLUDES: Routing and SDN Protocols; REQUIRES: 930-2201 IxNetwork Basic package for AresONE

930-2205

IxNetwork Data Center package for AresONE; INCLUDES: Routing, Data Center Overlay and Data Center Ethernet Protocols; REQUIRES: 930-2201 IxNetwork Basic package for AresONE

930-2206

IxNetwork Broadband Access and Authentication package for AresONE; INCLUDES: Broadband Access and Authentication Protocols; REQUIRES: 930-2201 IxNetwork Basic package for AresONE

930-2207

IxNetwork, Encryption Test package for AresONE; INCLUDES: MACsec Emulation; REQUIRES: 930-2201 IxNetwork Basic package for AresONE; Recommend with: 930-3461 IxNetwork AppLibrary Slot Bundle, Optional Software, Layer 4-7 Performance Test Application for additional encryption/decryption capability in Static MACsec emulation

930-2220

IxNetwork, node-locked perpetual license, All Inclusive package for Novus ONE PLUS. Supports all IxNetwork software features with exclusion; Excludes: 930-3461 IxNetwork AppLibrary Slot Bundle, Layer 4-7 Performance Test Application; 930-2222 IxNetwork Encryption test package for Novus ONE PLUS. Any optional script package or IxSuiteStore optional test suite is not considered as part of IxNetwork software features

930-2221

IxNetwork Basic package for Novus ONE PLUS; INCLUDES: IxNetwork Base, RFC2544/2889/3918 QuickTest

930-2222

IxNetwork, Encryption Test package for Novus ONE PLUS; INCLUDES: MACsec Emulation; REQUIRES: 930-2221 IxNetwork Basic package for Novus ONE PLUS; Recommend with: 930-3461 IxNetwork AppLibrary Slot Bundle, Optional Software, Layer 4-7 Performance Test Application for additional encryption/decryption capability in Static MACsec emulation.

QuickTest

930-2022

IxNetwork, Optional Software, RFC2544 and Custom Integrated Tests over Advertised Topologies; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2027

IxNetwork, Optional Software, Control Plane Tests for PPP/L2TPv2, 802.1x, NAC; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2401

IxNetwork, Optional Software, RFC 2889 QuickTest; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2403

IxNetwork, Optional Software, IP Multicast RFC 3918 QuickTest; REQUIRES 930-2067 IGMP/MLD Emulation (or 930-2004 IxNetwork Multicast Emulation); REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2405

IxNetwork, Optional Software; FCoE/FC Performance QuickTest; This QuickTest performs binary and step search to find the max no-drop and no-PAUSE throughput performance of a DCB switch, an FCoE switch, or an FC switch; REQUIRES 930-2039 IxNetwork FCoE-Client Emulation; REQUIRES 930-2043 IxNetwork DCBX emulation if DCBX is required; REQUIRES 930-2049 IxNetwork FCF emulation if FCF emulation is required; REQUIRES 930-2074 IxNetwork FC N_Port emulation if Fibre Channel is required; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2407

IxNetwork, Optional Software, IPTV QuickTests; REQUIRES 930-2067 IGMP/MLD Emulation (or 930-2004 IxNetwork Multicast Emulation); REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2408

IxNetwork, Optional Software, Y.1564 QuickTest; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2409

IxNetwork, Optional Software, Asymmetric Data Performance QuickTest; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2410

IxNetwork, Optional Software, 1588v2 (PTP) QuickTest; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2411

IxNetwork, IxCloudPerf QuickTest; Measures the forwarding performance of a data center switch using simulated data center North-South and East-West traffic profiles; Provides a binary-search test methodology, a timeline test methodology, and a dynamic test methodology; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2412

IxNetwork, OpenFlow Switch Benchmarking QuickTest. OpenFlow Benchmark Test for OpenFlow Switch. REQUIRES IxNetwork OpenFlow Controller Emulation License (930-2104) AND pre-existing (930-1999) IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2424

IxNetwork, Optional Software, RFC 7747 BGP Convergence QuickTest Web Edition; Requires BGP Emulation (930-2005, 930-2007); REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

AppLibrary

930-3461

IxNetwork AppLibrary Slot Bundle, Layer 4-7 Performance Test Application; Enables support for AppLibrary on a single supported load module. It includes the AppLibrary feature and subscription service to access new application flows for one-year period. Requires previous purchase of 930-2056 (IxNetwork Base) or higher bundle

930-3463

IxNetwork AppLibrary Chassis Bundle, Layer 4-7 Performance Test Application. Enables support for AppLibrary on up to 12 supported load modules in a single XM/XG chassis. INCLUDES: The AppLibrary feature and subscription service to access new application flows for one year. Requires: Previous purchase of 930-2056 (IxNetwork Base) or higher bundle

IxNetwork-FT

930-2215

IXIA IxNetwork FT Base (930-2215); Enable IxNetwork FT support for Novus 10G/1G load module family; REQUIRES: 930-2056 IxNetwork PLUS Software, AND additional protocol license as required

TAA compliant

930-5000-T

Ixia TAA Compliant IxNetwork PREMIUM SW. INCLUDES: Base Software, Layer 2-3 Performance Test Application, Supports Traffic Generation and Analysis, RFC 2544 and Custom Integrated Tests over Advertised Topologies, IxNetwork Floating Client Framework, Floating Macro Recorder, Floating DUT CLI Integration, Floating DUT SNMP Integration, Floating DUT SYSLOG

930-5001-T

Ixia TAA Compliant IxNetwork, Volume SW Package Tier 1, Supports IxNetwork IPv4/IPv6 Unicast/Multicast Routing Protocols, Switching (Layer 2 Protocols), and MPLS VPN protocols. INCLUDES: IxNetwork Base PLUS, IGMPv1/v2/v3, MLDv1/v2, PIM-SM/SSMv4/v6, BGP, BGP4 Emulation with additional Layer 2 MPLS/VPN & Layer 3 MPLS/VPN & Multicast VPN Support, BGP4 Emulation with additional IPv6 support, OSPFv2/v3, ISISv4/v6, RIP/RIPng, LACP, Protocol over LACP, BFD, STP/RSTP/MSTP, RSVP-TE, LDP, P2MP RSVP-TE, LDP FEC 129, BGP Extension for NG mVPN with RSVP-TE P2M, mLDP, BGP Extensions for NG mVPN with mLDP, QuickTests RFC 2544/2889/3918, DHCPv4/v6 Client

930-5002-T

Ixia TAA Compliant IxNetwork Volume SW Package Tier 2. Supports IxNetwork IPv4/IPv6 Routing Protocols, Switching (Layer 2 Protocols), MPLS VPN Protocols, Carrier Ethernet Protocols. INCLUDES: IxNetwork Base PLUS, IGMPv1/v2/v3, MLDv1/v2, PIM-SM/SSMv4/v6, BGP, BGP4 Emulation with additional Layer 2 MPLS/VPN & Layer 3 MPLS/VPN & Multicast VPN Support, BGP4 Emulation with additional IPv6 support, OSPFv2/v3, ISISv4/v6, RIP/RIPng, LACP, Protocol over LACP, BFD, STP/RSTP/MSTP, RSVP-TE, LDP, P2MP RSVP-TE, LDP FEC 129, BGP Extension for NG mVPN with RSVP-TE P2M, mLDP, BGP Extensions for NG mVPN with mLDP, QuickTests RFC 2544/2889/3918, Ethernet CFM IEEE 802.1g and ITU-T Y.1731, PBB-TE, Ethernet OAM, TWAMP, IEEE 1588v2 PTP, ITU-T SyncE (ESMC)

930-5003-T

Ixia TAA Compliant IxNetwork Volume Software Package Tier 3. Supports IxNetwork IPv4/IPv6 Routing Protocols, Switching (Layer 2 Protocols), MPLS Protocols, Multicast VPN Protocols, Carrier Ethernet Protocols, Data Center Ethernet Protocols, Broadband/Authentication protocols INCLUDES: IxNetwork Base PLUS, IGMPv1/v2/v3, MLDv1/v2, PIM-SM/SSMv4/v6, BGP, BGP4 Emulation with additional Layer 2 MPLS/VPN & Layer 3 MPLS/VPN & Multicast VPN Support, BGP4 Emulation with additional IPv6 support, OSPFv2/v3, ISISv4/v6, RIP/RIPng, LACP, Protocol over LACP, BFD, STP/RSTP/MSTP, RSVP-TE, LDP, P2MP RSVP-TE, LDP FEC 129, BGP Extension for NG mVPN with RSVP-TE P2M, mLDP, BGP Extensions for NG mVPN with mLDP, QuickTests RFC 2544/2889/3918, Ethernet CFM IEEE 802.1g and ITU-T Y.1731, PBB-TE, Ethernet OAM, TWAMP, IEEE 1588v2 PTP, ITU-T SyncE (ESMC), FCoE, DCBX, PPP/L2TPv2, Dual-stack PPP/L2TP, DHCPv4/v6, ANCP, L2TP Radius, Session Aware Traffic, 802.1X, WebAuth, L2/3 NAC, QuickTest (PPP/L2TPv2, 802.1x and NAC)

930-5004-T

Ixia TAA Compliant IxNetwork, All Inclusive package for Chassis. Supports all IxNetwork software features with exclusion; Excludes: 930-3461 IxNetwork AppLibrary Slot Bundle, Layer 4-7 Performance Test Application; 930-2135 IxNetwork MACsec emulation. Any optional script package or IxSuiteStore optional test suite is not considered as part of IxNetwork software features

930-5005-T

Ixia TAA Compliant IxNetwork, Basic package for Novus ONE PLUS. INCLUDES: IxNetwork Base, RFC2544/2889/3918 QuickTest

930-5006-T

Ixia TAA Compliant IxNetwork, All Inclusive package for Novus ONE PLUS. Supports all IxNetwork software features with exclusion; Excludes: 930-3461 IxNetwork AppLibrary Slot Bundle, Layer 4-7 Performance Test Application; 930-2222 IxNetwork Encryption test package for Novus ONE PLUS. Any optional script package or IxSuiteStore optional test suite is not considered as part of IxNetwork software features

Note: See our IxNetwork technology segment data sheets for protocol emulation part numbers

For more information on Keysight Technologies' products, applications, or services, please visit: www.keysight.com



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