IxNetwork™ – Network Topology Testing and Traffic Analysis

As networks converge into a single network infrastructure that is used to carry voice, video, data, and wireless traffic, it is critical to use leading-edge test systems to assess functionality, scale, and performance. IxNetwork provides wire-rate traffic generation with service modeling that builds realistic, dynamically-controllable data-plane traffic. IxNetwork offers the industry's best test solution for functional and performance testing by using comprehensive emulation for routing, switching, multi-protocol label switching (MPLS), IP multicast, broadband access, authentication, carrier Ethernet, data center bridging (DCB), and software defined networking (SDN) protocols. IxNetwork scales to handle the most powerful devices and largest networks.

IxNetwork offers the customization and flexibility to meet the wide range of requirements necessary for testing complex network topologies with thousands of network devices. It emulates millions of routes and reachable hosts and can customize millions of traffic flows to stress data plane performance. Powerful graphical user interface (GUI) wizards and grid controls allow simplified creation of sophisticated traffic flows. Its enhanced real-time analysis and statistics are capable of reporting comprehensive protocol status and detailed per-flow traffic performance metrics.

IxNetwork introduces Ixia's next-generation protocol framework that brings multi-protocol visibility to a new level. It offers an industry-first high-level summary of port- and protocol-state and the ability to drill down to and control any port, all from a single, visual interface (see diagram).

- Fast and efficient configuration of network emulation
- Improved scaling and efficiency
- Flexible protocol stacking to emulate realistic use cases
- Easier use-model with visual representative of test topology and protocol states
- Granular per session control and drill-down view
- Per session learned info and per session failure info for improved diagnostic
- Improved traffic generation flexibility with tagged protocol elements
- Real-world Traffic Mix with AppLibrary
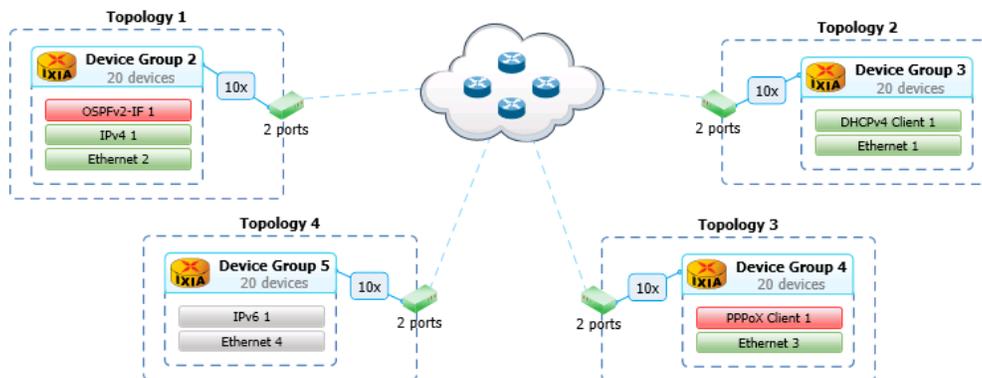
Multi-protocol visibility with protocol drill-down and control

Key Features

- Easy-to-use protocol and traffic wizards emulate complex networks with the widest selection of layer 2 (L2) and L3 protocols and traffic profiles

- Dynamic traffic support, with the ability to change rate and frame size on the fly, pre-defined packet header field, and dynamically-updated MPLS and PPP traffic without stopping and restarting

- Advanced measurements, including four latency modes, delay variation (jitter), inter-arrival time, sequence checking, misdirected packets, packet loss duration, and Rx rates

- Streamlined workflow that exposes all configuration options in context-sensitive ribbons and contains an overview summary of ports, protocols, and traffic with detailed views

- Collaborative resource management with Resource Manager – divide and conquer large, complex test topologies, compare resource versions and configuration changes, merge resources with easy-to-use wizards

- Statistics viewer providing summary-level, group-level, and per-flow statistics with sophisticated results filtering and sorting powered by Flow Detective™, enabling real-time analysis

- Virtual server and cloud testing through virtual test ports

- Quickly and easily record interactions with IxNetwork and save these recordings as tests for later use with Macro Recorder

- Multi-field ingress tracking to track flows based on multiple user-defined fields

- Multi-egress tracking provides a unique ingress/egress results view that compares sent traffic with received traffic, so as to accurately verify what DUT packet field modifications; QoS remarking is easily verified

- Ability to add custom formulas in any statistics view

- Powerful reporting with one-click report generation, data analysis, custom report and template builds, customizable charts and graphs, in PDF or HTML formats

- QuickTests for industry-standard test methodologies, including RFCs 2544, 2889, and 3918, and ITU-T Y.1564

- Full automation support for IxNetwork functions, including low-level and high-level TCL, Perl, and Python, and Ruby and REST API; as well as easy one-click automation using ScriptGen
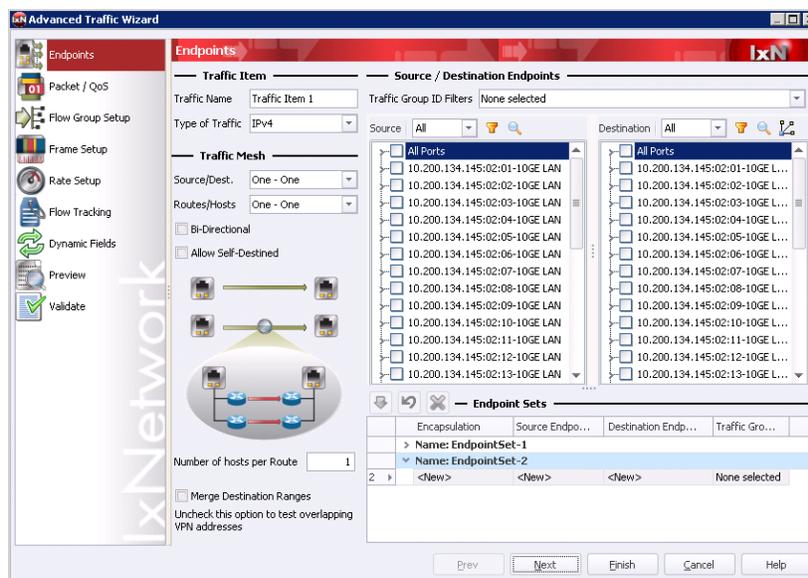
Advanced Traffic Wizard

IxNetwork on IxVM

IxNetwork builds large-scale emulated network and complex traffic topologies using real-world routing and switching. IxNetwork's large library of L2-3 protocols allows advanced testing of multicast scenarios using IGMP, convergence testing for measuring outage duration during live migration, and LACP.

Protocols

IxNetwork emulates a wide variety of protocols using Ixia'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 Ixia 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.
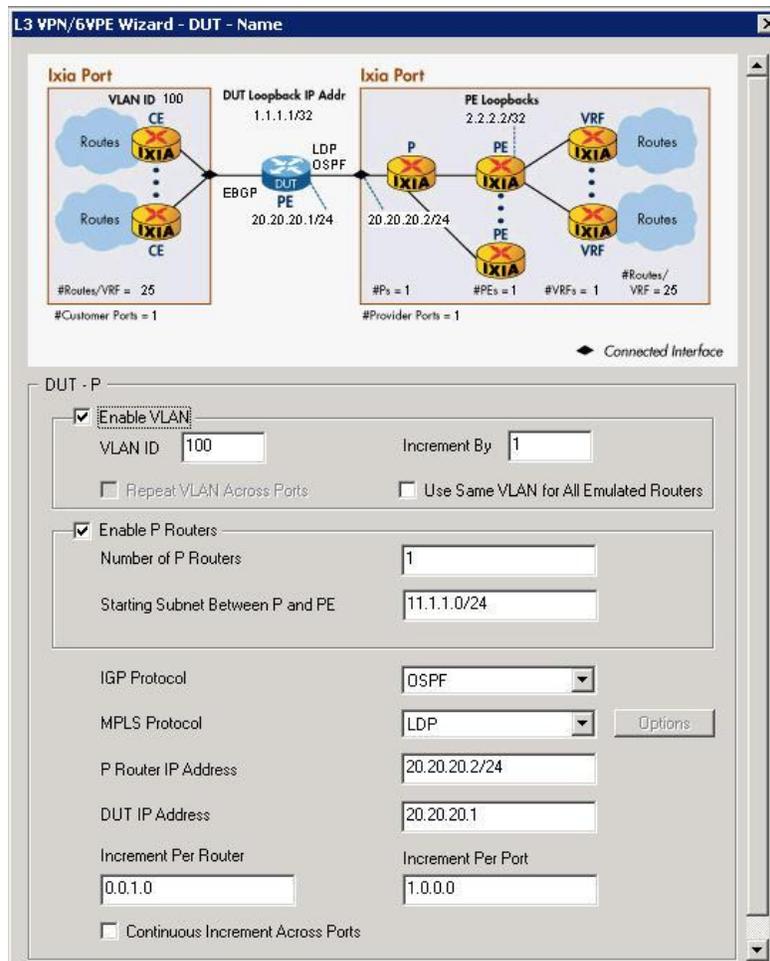
Protocol Configuration Wizard

Supported Protocols[1]

	Protocol	Standard
Routing	RIP, RIPng	RFC 1058, RFC 2453
	OSPFv2/v3	RFC 2328, RFC 2740
	ISISv4/v6	ISO/IEC 10589
	EIGRP, EIGRPv6	Cisco proprietary
	BGP-4,BGP+	RFC 1771, RFC 2545
MPLS	RSVP-TE	RFC 3209, RFC 4974, RFC 5151
	RSVP-TE P2MP	RFC 4875
	LDP/LDPv6	RFC 5036, RFC 3478, RFC 7552, draft-ietf-mpls-ldp-v2-00
	mLDP	draft-ietf-mpls-ldp-p2mp-11 draft-ietf-mpls-mldp-in-band-signaling-02
	Labeled BGP	RFC 3107
	PWE	RFC 3916, RFC 4385, RFC 4447, RFC7473
	L3 MPLS VPN, 6VPE, RT-Constraint	RFC 2547bis, RFC 4364, RFC 4684
	Inter-AS VPN Options A, B, C	RFC 2547bis
	MPLS-TP	RFC 5654 RFC 5860 RFC 5921 RFC 5586 RFC 6371 RFC 6378 RFC 6426 RFC 6428 RFC 6478 draft-ietf-mpls-tp-loss-delay-00 draft-bhh-mpls-tp-oam-y1731-06

	Protocol	Standard
	MPLS OAM	RFC 4379: detecting MPLS data plane failures RFC 5884: bidirectional forwarding detection (BFD) for MPLS label switched paths (LSPs) RFC 5085: pseudowire virtual circuit connectivity verification (VCCV), a control channel for pseudowires RFC 5885: BFD for the pseudowire VCC
	Multicast VPN: GRE, mLDP, RSVP-TE P2MP	Draft-Rosen/RFC 6037 RFC 6514
	EVPN, PBB-EVPN	RFC 7432 RFC 7623
VPLS	6PE	RFC 4798
	BGP auto-discovery with LDP FEC 129 support	draft-ietf-l2vpn-signaling-08 RFC 4447
	VPLS-LDP	RFC 4762 draft-ietf-l2vpn-signaling-08
	VPLS-BGP	RFC 4761
High-Availability	BFD	draft-ietf-bfd-base
IP Multicast	IGMPv1/v2/v3	RFC 1112, RFC 2236, RFC 3376
	MLDv1/v2	RFC 2710, RFC 3810
	PIM-SM/SSM, PIM-BSR	RFC 2362, RFC 4601
	Multicast VPN, VPNv6	IETF draft-rosen-l3vpn-mvpn draft-ietf-l3vpn-2547bis-mcast-07.txt (RSVP-TE P2MP Support) draft-ietf-l3vpn-2547bis-mcast-bgp-05.txt (A-D route 1,3,4,5,7)
Switching	STP/RSTP	IEEE 802.1D/802.1W
	MSTP	IEEE 802.1s
	PVST+/RPVST+	Cisco proprietary
	Link Aggregation (LACP)	IEEE 802.3ad
	LLDP	IEEE 802.1AB

	Protocol	Standard
Carrier Ethernet	Link OAM	IEEE 802.3ah-2004 Clause 57
	CFM	IEEE 802.1ag-2007
	Service OAM	ITU-T Y.1731-2006
	PBT/PBB-TE	Nortel Standard/IEEE 802.1Qay
	ESMC	ITU-T G.8264/Y.1364 SyncE
	PTP	IEEE 1588-2008 (version 2) G.8265.1 Telecom Profile, G.8275.1
	E-LMI	MEF 16
Broadband	ANCP	draft-ietf-ancp-protocol-02 draft-ietf-ancp-framework-05 RFC6320
	PPPoX	RFC 1332, 1661, 2516, 4241
	DHCPv4 Client/Server DHCPv6 Client/Server	RFC 2131, 2132, 3046, 3203, 3527, 5107 RFC 3315, 3363, 3646, 3736, 4580, 4649, 6221
	L2TPv2	RFC 2661
	Radius attributes for L2TP	RFC 2865
	IPv6 Autoconfiguration (SLAAC)	RFC 4862
	IPTV	IGMP - RFC 1112, RFC 2236, RFC 3376 MLD - RFC 2710, RFC 3810
	AMT	IETF draft-ietf-mboned-auto-multicast-12
Authentication	802.1x	IEEE 802.1x
	WebAuth	Cisco and HP implementations
	Cisco NAC	Cisco proprietary

	Protocol	Standard
Data Center	Priority flow control	IEEE 802.1Qbb
	FCoE/FIP	T11 FC-BB-5
	LLDP/DCBX	CIN 1.0/Pre-CEE, IEEE Baseline 1.01/ CEE, IEEE 802.1Qaz
	VNTAG/VIC	Cisco proprietary
	TRILL	RFC6325 RFC6326 RFC6327
	SPBM	IEEE 802.1aq
	VEPA	802.1Qbg draft 2.1
	VXLAN	RFC7438 (IPv4 VTEP)
	EVPN VXLAN	RFC 7432 draft-ietf-bess-evpn-overlay-01 draft-ietf-bess-evpn-inter-subnet-forwarding-01
SDN	OpenFlow	ONF v1.0/v1.3.1
	ISIS Segment Routing	draft-ietf-isis-segment-routing-extensions-02.txt
	OSPF Segment Routing	draft-ietf-ospf-segment-routing-extensions-05 draft-ietf-ospf-prefix-link-attr-13
	BGP Link State (BGP-LS)	draft-gredler-idr-bgp-ls-segment-routing-extension-02 draft-ietf-idr-ls-distribution-13
	PCEP	RFC 5440 draft-ietf-pce-stateful-pce-13 draft-ietf-pce-pce-initiated-lsp-05 draft-ietf-pce-segment-routing-05 draft-ietf-pce-lsp-setup-type-03 (Segment Routing LSP only)
Audio Video Bridging	SRP	IEEE 802.1Qat
	gPTP	IEEE 802.1AS
	Layer 2 AVB Transport Protocols	IEEE 1722

Traffic[1]

IxNetwork supports sophisticated traffic generation that is tightly integrated with the control-plane protocols.

- Basic Traffic Wizard, Advanced Traffic Wizard, and Quick Flow groups support simple to complex traffic creation
- 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
- 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
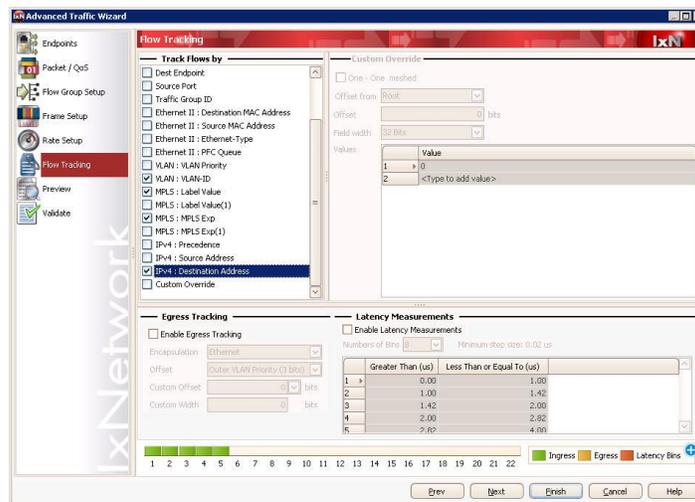
Multi-Field ingress tracking

Traffic Wizard Features

Feature	Specification
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)

Feature	Specification	
Traffic Profile	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
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	
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

Traffic Measurements

| 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

IxNetwork AppLibrary

Feature	Specification
Application Simulations	300+, and growing monthly
Application Simulations per Port	50
Ports Supported	128
Traffic over Protocol Emulations	Yes
Supported Load Modules	• XMVDC • NGY-NP/NGY-NG • Xcellon-Flex AP • Xcellon-Flex AP Combo • Xcellon-Lava/Xcellon-Lava NG • Xcellon-Multis • IxVM

Test Results

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.
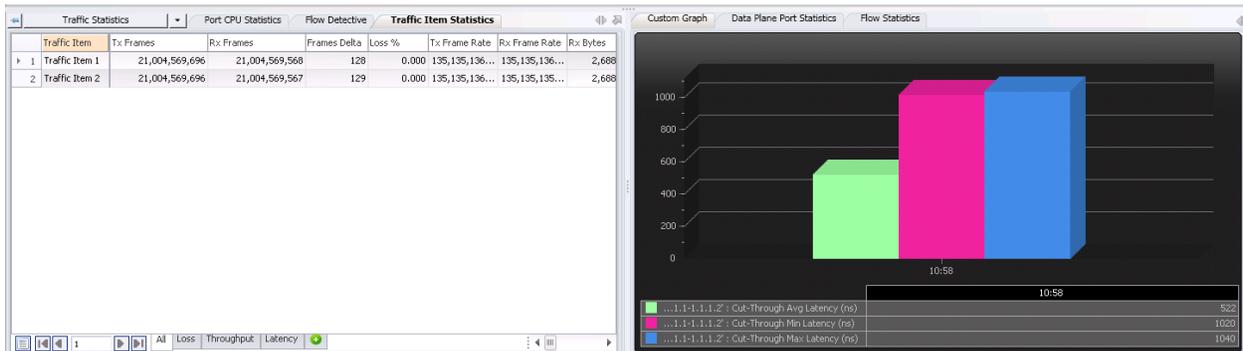
Statistic views

Statistics

| 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

Streamlined Workflow

The new GUI greatly reduces clutter by organizing actions into context-sensitive ribbons. It only shows you enabled protocols in the configuration tree, as opposed to everything that is supported by the application. The configuration options exposed in the GUI are context sensitive, and you only see the options based on the element in the navigation tree you are on.
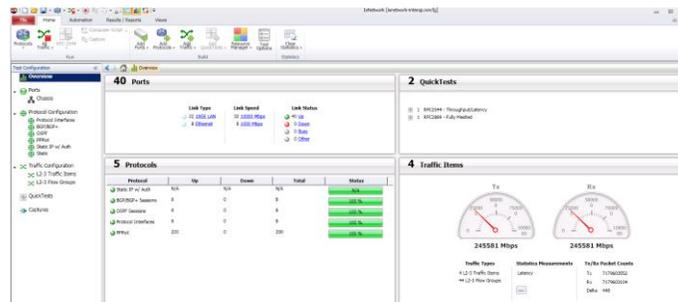
Streamlined workflow

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.
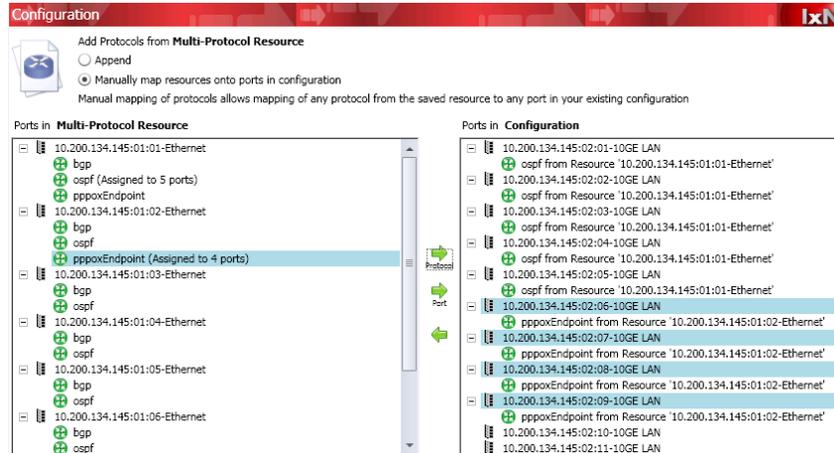
Resource Manager

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.

IxReporter

Building a test-results report requires test data. IxReporter 2.0 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.
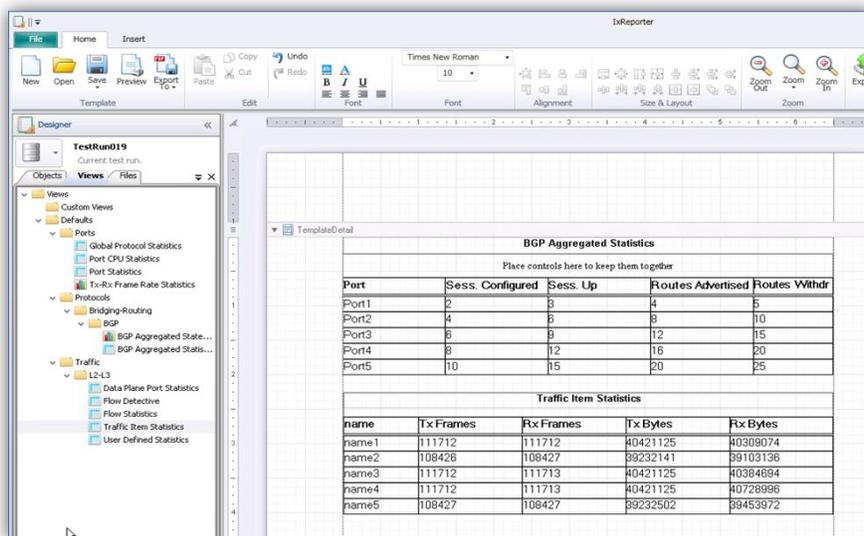
IxReporter

Automation

IxNetwork provides powerful GUI-based automation with the Test Composer and QuickTests. It also has a robust feature set for GUI-to-script and API-based automation.

- Test Composer provides a GUI-based solution to automate test actions
- QuickTests provides standards-based test methodologies, as well as a custom mode for user-defined performance tests
- ScriptGen provides an easy, one-click GUI-to-script automation solution, as well as a GUI to watch running tests
- IxNetwork provides a full-featured API for automated testing

IxNetwork's automation is simplicity at its best. Test scenarios are set up using IxNetwork's step-by-step GUI, and then a single button-press generates a TCL 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.

Automation Options

Request	Easy-to-Use	IxNetwork
"I just need a test that can stress my DUT"	QuickTests	Configurable, packaged tests
"I just want to capture what I'm doing in the GUI"	Macro Recorder	Click-thru test automation
"I need to build tests, but I need help with the scripting"	Composer	Test development environment
"I need control, but I don't want to learn the Tcl API"	Tweakables	GUI driven configuration
"I need low-level control of the test tool"	Tcl, Perl, Python, Ruby, REST API	Total access to the configuration

Automation Features

Feature	Test Requirement	Detail
QuickTests	Scalability	- Easy-to-use, configurable, pre-packaged tests - Benchmark network performance with RFC-based test methodologies - Generate detailed reports of results
Macro Recorder	Functionality	"Click-thru automation" means no more scripting - Rapid capture of manual test cases - Capture steps that cause a failure for reproducibility
Composer and Tweakables	Regression	- Detailed control over test execution without Tcl expertise - Complete access to the Tcl API with easy UI - Edit "Macro Recorded" steps for customization of GUI captured events
Low-level and High-level APIs	Functionality and regression	- For Tcl scripting experts - One-click GUI to Tcl script conversion available (Scriptgen) - Complete access to and control over test configuration

Macro Recorder

With Macro Recorder in IxNetwork 6.00, users can quickly and easily record their interactions with IxNetwork and save these recordings as tests for later use. A user simply turns on the recorder just before they begin the series of steps and interact with the GUI just as they normally do. When done, they stop recording. Macro Recorder captures the GUI interactions during the process and can replay the steps over and over again – saving a lot of time.
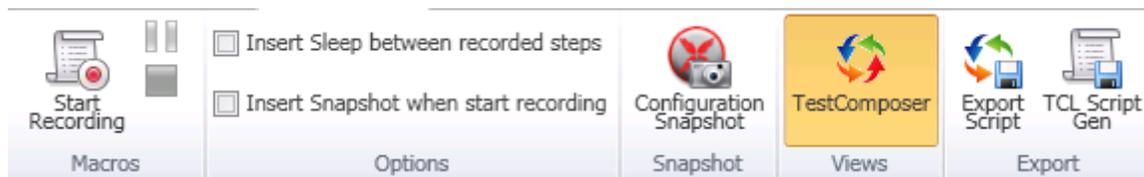

Macro Recorder

The user can choose to capture the time in between GUI clicks during the recording so that the pace of the commands is the same when the scenario replays. The user can also choose to take a snapshot of the configuration they are using so that the scenario always starts from the exact same condition as was originally configured.

QuickTest

An important requirement of network device characterization is measuring throughput, latency, frame loss, and back-to-back rates as defined in RFC 2544. Automated tests use the traffic flows set up by the traffic wizard to perform tests, varying rates and sizes as necessary. QuickTest features include:

- End-to-end wizards for easy step-by-step configuration of test input and parameters
- Ability to run background traffic to load the DUT
- Integration with the ViperCore traffic and statistics engine
- Ability to run RFC test methodologies over routed topologies
- Ability to run strict RFC tests or allow users to customize any configured traffic property after the wizard runs
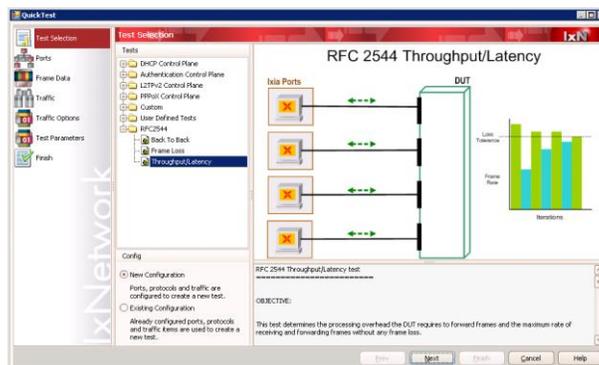
QuickTest end-to-end wizards

QuickTest Features

Test Types	Tests
RFC 2544 Tests	Throughput and latency, frame loss, back-to-back
RFC 2889 Tests	Address Cache, Address Rate, Broadcast Rate, Congestion Control, Frame Error Filtering, Fully Meshed, Many to One, One to Many, Partially Meshed
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
Control Plane Tests	Session setup rate, session capacity
OpenFlow	Failover Performance, L2 Address Learning, L3 Address Learning, Switch Flow Table Capacity
Custom Tests	Continuous run, fixed duration run, incremental, throughput (binary search)
User-Defined Tests	Event Scheduler

Built-In Data Capture and Analysis

Internet protocols are complex – multi-protocol emulations even more so. IxNetwork includes a built-in tool that 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, with the ability to display protocol ladder diagrams. IxNetwork allows you to trigger and filter control and data plane packet captures based on user-defined packet field.

Product Ordering Information

930-2056

IxNetwork, Base Software PLUS

INCLUDES; 930-1999 Base Software, Layer 2-3 Performance Test Application, Supports Traffic Generation and Analysis; 930-2022 RFC 2544 and Custom Integrated Tests over Advertised Topologies; 930-3900 IxNetwork Floating Client Framework, 930-3921 Floating DUT CLI Integration, 930-3922 Floating DUT SNMP Integration 930-3923 Floating DUT SYSLOG Integration; Includes Media Kit

930-2076

IxNetwork, Base Software PREMIUM

INCLUDES: 930-1999 Base Software, Layer 2-3 Performance Test Application, Supports Traffic Generation and Analysis; 930-2022 RFC 2544 and Custom Integrated Tests over Advertised Topologies; 930-3900 IxNetwork Floating Client Framework, 930-3903 Floating IxReporter Designer, 930-3921 Floating DUT CLI Integration, 930-3922 Floating DUT SNMP Integration 930-3923 Floating DUT SYSLOG Integration; Includes Media Kit

Routing & Switching

930-2004

IxNetwork, Optional Software, Multicast Emulation, includes IGMPv1/v2/v3, MLDv1/v2, PIM-SM/SSMv4/v6, and Multicast VPN support; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2005

IxNetwork, Optional Software, BGP4 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)

930-2007

IxNetwork, Optional Software, BGP4 Emulation with additional IPv6 support; REQUIRES 930-2005 BGP4 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)

930-2008

IxNetwork, Optional Software, OSPFv2 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)

930-2009

IxNetwork, Optional Software, OSPFv3 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)

930-2010

IxNetwork, Optional Software, IS-IS 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)

930-2011

IxNetwork, Optional Software, IS-IS Emulation with additional IPv6 support; REQUIRES 930-2010 IS-IS 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)

930-2012

IxNetwork, Optional Software, RIPv2 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)

930-2013

IxNetwork, Optional Software, RIPng IPv6 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)

930-2017

IxNetwork, Optional Software, STP/RSTP 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)

930-2018

IxNetwork, Optional Software, MSTP Emulation; REQUIRES 930-2017 STP/RSTP 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)

930-2020

IxNetwork, Optional Software, EIGRP 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)

930-2023

IxNetwork, Optional Software, BFD Emulation for use with OSPF, BGP, or ISIS; REQUIRES either 930-2008 OSPFv2 Emulation, OR 930-2009 OSPFv3 Emulation, OR 930-2005 BGP4 Emulation, OR 930-2006 BGP4 Emulation with Layer 3 MPLS/VPN & Multicast VPN Support, OR 930-2007 BGP4 Emulation with IPv6 support, OR 930-2010 IS-IS Emulation, OR 930-2011 IS-IS Emulation with IPv6 support. REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2035

IxNetwork, Optional Software, LACP IEEE 802.3ad Protocol 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)

930-2051

IxNetwork, Optional Software, Protocol emulation over IEEE 802.3ad (LACP); REQUIRES 930-2035 LACP IEEE 802.3ad Protocol 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)

930-2055

IxNetwork, Optional Software, Spanning Tree protocol emulation per VLAN (PVST); REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076) AND 930-2017 STP/RSTP Emulation

BUNDLES

930-2001

IxNetwork, Optional Software Bundle, IPv4 Routing Protocols; includes 930-2005 BGP-4 Emulation, 930-2008 OSPFV2 Emulation, 930-2010 IS-IS Emulation, 930-2012 RIPV2 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)

MPLS

930-2002

IxNetwork, Optional Software Bundle, IPv6 Routing Protocols; includes 930-2007 BGP4 with IPv6 Support, 930-2009 OSPFv3 with IPv6 Emulation, 930-2011 IS-IS IPv6 Support, 930-2013 RIPng 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) and 930-2001 Optional Software Bundle, IPv4 Routing Protocols; includes Media Kit

930-2006

IxNetwork, Optional Software, BGP4 Emulation with additional Layer 3 MPLS/VPN, VPLS & Multicast VPN Support; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)and 930-2005 BGP4 Emulation; includes Media Kit

930-2014

IxNetwork, Optional Software, MPLS RSVP-TE 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)

930-2015

IxNetwork, Optional Software, MPLS LDP Emulation, includes Layer 2 MPLS VPN and VPLS support; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2036

IxNetwork, Optional Software, MPLS P2MP RSVP-TE 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) and 930-2014 MPLS RSVP-TE Emulation

930-2052

IxNetwork, Optional Software, LDP extension to support FEC 129; REQUIRES 930-2005 BGP Emulation, 930-2006 BGP ext to support MPLS L3VPN/L2VPN/VPLS, 930-2015 LDP 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)

930-2053

IxNetwork, Optional Software, BGP Extension for NG mVPN with RSVP-TE P2MP; REQUIRES 930-2005 BGP Emulation, 930-2006 BGP ext to support MPLS L3VPN/VPLS, 930-2014 RSVP-TE Emulation, 930-2036 RSVP-TE P2MP 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)

930-2061

IxNetwork, Optional Software, MPLS-TP emulation; REQUIRES either 930-2032 Y.1731 protocol emulation or 930-2023 BFD protocol 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)

930-2062

IxNetwork, Optional Software, MPLS-TP APS Protocol State Coordination 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) and 930-2061 MPLS-TP emulation

930-2080

IxNetwork, Optional Software, MPLS mLDP Emulation; REQUIRES 930-2015 MPLS LDP 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)

930-2081

IxNetwork, Optional Software, BGP Extensions for NG mVPN with mLDP; REQUIRES: 930-2004 Multicast Emulation 930-2015 MPLS LDP Emulation 930-2080 MPLS mLDP Emulation 930-2005 BGP Emulation 930-2006 BGP extensions to support MPLS L3VPN/VPLS; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2094

IxNetwork, Optional Software, MPLS OAM Ping and Traceroute; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076), and 930-2015 MPLS LDP Emulation or 930-2014 MPLS RSVP-TE Emulation

930-2095

IxNetwork, Optional Software, BFD over MPLS LSP; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076), and 930-2020 BFD Emulation, and 930-2015 MPLS LDP Emulation or 930-2014 MPLS RSVP-TE Emulation

930-2096

IxNetwork, Optional Software, VCCV Ping and BFD VCCV; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076), and 930-2020 BFD Emulation, and 930-2015 MPLS LDP Emulation or 930-2014 MPLS RSVP-TE Emulation, and 930-2006 BGP Extension to support BGP VPLS or 930-2052 LDP extension to support FEC 129

930-2097

IxNetwork, Optional Software, LISP MS/MR and xTR 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)

930-2102

IxNetwork, Optional Software, BGP Extension to support EVPN and PBB-EVPN Emulation; REQUIRES 930-2005 BGP Emulation AND 930-2006 BGP Extension to support MPLS L3VPN/L2VPN/VPLS; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2115

IxNetwork, MPLS LDPv6 Emulation includes Layer 2 MPLS VPN and VPLS support; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

BUNDLES

930-2003

IxNetwork, Optional Software Bundle, MPLS VPN; includes 930-2006 Layer 3 MPLS/VPLS Support, 930-2014 RSVP-TE Emulation, 930-2015 LDP 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)and 930-2001 Optional Software Bundle, IPv4 Routing Protocols; includes Media Kit

930-2057

IxNetwork, Optional Software Bundle, Basic MPLS Bundle (L2 VPN/VPLS, L3 VPN, Multicast VPN (draft-rosen)); INCLUDES; 930-2001 IPv4 Routing Bundle 930-2002 IPv6 Routing Bundle 930-2003 MPLS VPN Bundle 930-2004 Multicast Bundle; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2064

IxNetwork, Optional Software Bundle, MPLS-TP Bundle; INCLUDES: 930-2023 BFD emulation 930-2032 ITU-T Y.1731 emulation 930-2061 MPLS-TP emulation 930-2062 MPLS-TP APS 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)

Broadband Access & Authentication

930-2024

IxNetwork, Optional Software, PPP and L2TPv2 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); operates with Optional Software 930-2027 Generic Control Plane Tests

930-2025

IxNetwork, Optional Software, 802.1x 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); operates with Optional Software 930-2027 Generic Control Plane Tests

930-2026

REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076); operates with Optional Software 930-2027 Generic Control Plane Tests

930-2028

IxNetwork, Optional Software, Web Authentication 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)

930-2037

IxNetwork, Optional Software, ANCP 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)

930-2038

IxNetwork, Optional Software, Radius Attributes for L2TP; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2045

IxNetwork, Optional Software, DHCPv4/v6 Server 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)

930-2046

IxNetwork, Optional Software, DHCPv4/v6 Client/Relay Agent 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)

930-2047

IxNetwork, Optional Software, Dual-stack PPPoX emulation; REQUIRES: IxNetwork Base PLUS (930-2056) OR IxNetwork Base PREMIUM (930-2076), 930-2024 PPP and L2TPv2 Emulation Software

930-2065

IxNetwork, Optional Software, Dual-stack PPPoX over L2TPv2 emulation; REQUIRES 930-2024 PPP and L2TPv2 Emulation Software; REQUIRES pre-existing 930-1999 Base License OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2067

IxNetwork, Optional Software, IGMP/MLD 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)

930-2079

IxNetwork, Optional Software, Session Aware Traffic; REQUIRES pre-existing 930-1999 Base License OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2100

IxNetwork, Automatic Multicast Tunneling (AMT) Emulation; REQUIRES: 930-2056 Base Software; AND 930-2067 IGMP/MLD Emulation or 930-2004 Multicast Emulation

930-2108

IxNetwork, Protocol emulation over EoGRE; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

BUNDLES

930-2048

IxNetwork, Dual-stack over DHCPv6-PD over PPPoX Bundle; INCLUDES: 930-2024 PPP and L2TPv2 emulation, 930-2045 DHCPv4/v6 Server emulation, 930-2046 DHCPv4/v6 Client and Relay Agent emulation, 930-2047 Dual-stack PPPoX emulation, and 930-2065 Dual-stack PPPoX over L2TP 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)

930-2058

IxNetwork, Broadband Bundle; INCLUDES: 930-2024 PPP/L2TP emulation, 930-2027 Control Plane Tests for PPP/L2TPv2, 802.1x, and NAC, 930-2037 ANCP Protocol emulation, 930-2045 DHCPv4/v6 Server emulation, 930-2046 DHCPv4/v6 Client and Relay Agent emulation, 930-2047 Dualâ?"stack PPPoX emulation, 930-2065 Dual-stack PPPoX over L2TP 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)

930-2059

IxNetwork, Optional Software Bundle, DHCP Bundle; INCLUDES; 930-2045 DHCPv4/v6 Server Emulation; 930-2046 DHCPv4/v6 Client and Relay Agent 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)

930-2090

IxNetwork, Optional Software Bundle, IPTV Test Basic Bundle; INCLUDES; 930-2407 IPTV QuickTests; 930-2067 IGMP/MLD 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)

930-2091

IxNetwork, Optional Software Bundle, IPTV Test Advanced Bundle; INCLUDES; 930-2407 IPTV QuickTests; 930-2067 IGMP/MLD Emulation; 930-2046 DHCPv4/v6 Client/Relay Agent Emulation 930-2024 PPP and L2TP 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)

Carrier Ethernet

930-2032

IxNetwork, Optional Software, Ethernet CFM IEEE 802.1ag and ITU-T Y.1731 Protocol 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)

930-2033

IxNetwork, Optional Software, PBB-TE 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)

930-2040

IxNetwork, Software Option, Ethernet Link OAM (IEEE 802.3ah Clause 57) 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)

930-2041

IxNetwork, Software Option, Two Way Active Measurement Protocol (TWAMP) RFC 5357 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)

930-2070

IxNetwork, Optional Software, IEEE 1588v2 (PTP) 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)

930-2073

IxNetwork, Optional Software, ITU-T SyncE (ESMC) Protocol 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)

930-2075

IxNetwork, Optional Software, ELMI (MEF 16) 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)

BUNDLES

930-2034

IxNetwork, Software Bundle, Carrier Ethernet; includes 930-2032 and 930-2033; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2501

IxNetwork, Optional Software Bundle, Timing Protocols Bundle; INCLUDES: 930-2070 IxNetwork, Optional Software, IEEE 1588v2 (PTP) Emulation; 930-2073 IxNetwork, Optional Software, ITU-T SyncE (ESMC) 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)

Data Center

930-2039

IxNetwork, Software Option, Fibre Channel over Ethernet (FCoE) 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)

930-2042

IxNetwork, Software Option, Data Center Ethernet IS-IS (DCE IS-IS) 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)

930-2043

IxNetwork, Optional Software, DCBX emulation, includes IEEE 802.1AB Link Layer Discovery Protocol emulation of mandatory functions; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2049

IxNetwork, Optional Software, FCF Emulation; REQUIRES purchase of a supported 10GE load module with FCoE option enabled; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2074

IxNetwork, Optional Software, FC N_Port 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)

930-2078

IxNetwork, Optional Software, VIC Client Emulation; REQUIRES 930-2043 DCBX 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)

930-2084

IxNetwork, Optional Software, SPBM (Shortest Path Bridging MAC-in-MAC); REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2093

IxNetwork, Optional Software, IxNetwork, Optional Software, VEPA (Virtual Edge Port Aggregator), IEEE 802.1Qbg EVB (Edge Virtual Bridging); REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2098

IxNetwork, Optional Software, TRILL (Transparent Interconnect of Lots of Links) 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)

930-2099

IxNetwork, Optional Software, FC F_Port 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)

930-2103

IxNetwork, Optional Software, VXLAN Emulation; Supports functional and performance testing of VXLAN Gateways; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

BUNDLES

930-2504

IxNetwork, Optional Software Bundle, FCoE QuickTest Bundle; INCLUDES; 930-2043 IxNetwork DCBX Emulation 930-2039 IxNetwork FCoE Emulation 930-2405 IxNetwork Quick Test FCoE Performance Test Suite; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2506

IxNetwork, Optional Software Bundle, FCoE and FC QuickTest Bundle; INCLUDES; 930-2043 IxNetwork DCBX Emulation 930-2039 IxNetwork FCoE Emulation 930-2074 IxNetwork FC N_Port Emulation 930-2405 IxNetwork Quick Test FCoE Performance Test Suite; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2508

IxNetwork, Optional Software Bundle, FCoE and FC QuickTest Bundle with FCF Emulation; INCLUDES; 930-2043 IxNetwork DCBX Emulation 930-2039 IxNetwork FCoE Emulation 930-2074 IxNetwork FC N_Port Emulation 930-2049 IxNetwork FCF Emulation 930-2405 IxNetwork Quick Test FCoE Performance Test Suite; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2510

IxNetwork, Optional Software Bundle, DCB Performance QuickTest Bundle; INCLUDES; 930-2043 IxNetwork DCBX Emulation 930-2039 IxNetwork FCoE Emulation 930-2049 IxNetwork FCF Emulation 930-2405 IxNetwork Quick Test FCoE Performance Test Suite; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

SDN

930-2104

IxNetwork, Optional Software, OpenFlow Controller Emulation, provides functional and performance testing for OpenFlow Switch; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2105

IxNetwork, Optional Software, OpenFlow Switch Emulation, provides functional and performance testing for OpenFlow Controller; REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2114

IxNetwork, IS-IS Segment Routing 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), and 930-2010 IS-IS Emulation, and 930-2011 IS-IS v6 Emulation

930-2116

IxNetwork, Optional Software, BGP Link State (BGP-LS) Emulation; REQUIRES 930-2005 BGP4 Emulation, AND/OR 930-2007 BGP v6 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)

930-2117

IxNetwork, Optional Software, OSPFv2 Segment Routing Emulation; REQUIRES 930-2008 OSPFv2 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)

930-2118

IxNetwork, Optional Software, Path Computation Element Communication Protocol (PCEP) 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)

Recommend with: 930-2114 ISIS Segment Routing, OR 930-2117 OSPFv2 Segment Routing, OR 930-2116 BGP Link State Emulation

BUNDLES

930-2107

IxNetwork, OpenFlow Emulation Bundle; INCLUDES: 930-2104 OpenFlow Controller Emulation; 930-2105 OpenFlow Switch 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)

930-2518

IxNetwork, Segment Routing Bundle; INCLUDES; 930-2114 IxNetwork IS-IS Segment Routing; 930-2116 IxNetwork BGP Link State (BGP-LS); 930-2117 IxNetwork OSPFv2 Segment Routing; 930-2118 IxNetwork Path Computation Element Communication Protocol (PCEP); REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

Audio/Video Bridging

930-2113

IxNetwork, Optional Software, AVB Protocol 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)

Quick Tests

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 QuickTest; OpenFlow Benchmarking test; Flow Table Capacity, Flow Learning Rate, Flow Failover Test; REQUIRES IxNetwork OpenFlow Emulation License (930-2077) AND pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

Other

930-2600

IxNetwork, Optional Software, Network Impairment Simulation Software for ImpairNet, REQUIRES pre-existing 930-1999 IxNetwork Base license OR new purchase of either IxNetwork Base PLUS (930-2056) or IxNetwork Base PREMIUM (930-2076)

930-2601

IxNetwork, Optional Software, Extended delay up to 600ms for EIM10G4S ImpairNet, REQUIRES 930-2600 Network Impairment Software

930-2602

IxNetwork, Optional Software, Packet Modification for ImpairNet, REQUIRES 930-2600 Network Impairment Software

930-2603

IxNetwork, Optional Software, Accumulate and Burst for ImpairNet, REQUIRES 930-2600 Network Impairment Software

932-0102

Analyzer, Optional Software, Media (Audio/Video) Analysis tools for IxLoad and IxNetwork

932-0200

IxReporter - Designer with IxNetwork Templates, Optional Floating Client Software, Enables 5 concurrent client users

BUNDLES

930-2044

IxNetwork, Software Bundle, Test Composer DUT Control; Includes: 931-3921 Floating DUT CLI Integration - Advanced test automation using the DUT CLI interface, 931-3922 Floating DUT SNMP Integration - Advanced test automation using the DUT SNMP interface, and 931-3923 Floating DUT SYSLOG Integration - Advanced test automation using the DUT SYSLOG interface; REQUIRES 930-3900 Base Software

---

[1] Not all IxNetwork protocols are supported on IxVM.