

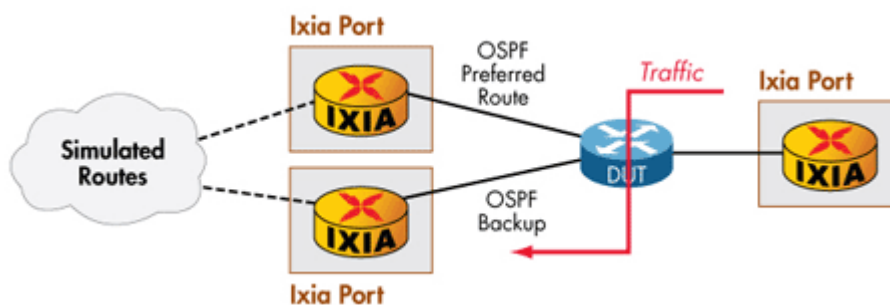


Routing/Bridging Test Suites

Ixia's IxAutomate Routing and Bridging test suites provide pre-defined, automated tests for nearly all of the common IP routing and bridging protocols. IxAutomate offers test suites for OSPF, BGP, ISIS, and the Spanning Tree/Rapid Spanning Tree protocols for bridge/switch testing.

IxAutomate's Routing/Bridging suites generally consist of three tests:

- A Performance test- is a combination test designed to measure both the control plane and the data plane of the DUT simultaneously.
- A Convergence Test-is a control plane test designed to measure the convergence time of a routing or bridging protocol after a failed link or network component.
- A Route Capacity Test: is a control plane test designed to measure the maximum number of routes that the Device Under Test can handle.



Example OSPF Convergence Test topology

Routing/Bridging Suite Descriptions

BGP Test Suite:	
Performance Test	The BGP Performance test will setup user defined routes and topology, then measure no-drop throughput and latency between port advertised ports.

	<p>This test will characterize the performance of the DUT by emulating the pre-defined numbers of external or internal BGP routing sessions and routes. The data plane test will then follow to determine maximum throughput and latency. Results include throughput, latency.</p>
Convergence Test	<p>The Convergence test measures the ability of a DUT to switch between preferred and less-preferred routes when the preferred routes are withdrawn and re-advertised.</p> <p>Two external or internal BGP sessions are established and a user definable number of routes are then advertised into the DUT. One set of routes is preferred over the other via BGP metrics. During the test preferred routes are withdrawn and convergence time is measured. Results include convergence time.</p>
Route Capacity Test	<p>The BGP Route Capacity test determines the maximum number of routes the DUT can store in its routing table.</p> <p>The test establishes external or internal BGP sessions and advertises a predefined number of routes to the DUT. To insure that the DUT has received these routes a data packet is sent per route. A step value is defined so that the test can iterate. The test continues until the DUT fails to handle the advertised number of route prefixes. Results include the maximum routes DUT will support.</p>
OSPF Test Suite:	
Performance Test	<p>The OSPF performance test will setup user defined routes and topology, then measure no-drop throughput and latency between advertised ports. This test will characterize the performance of the DUT by emulating the pre-defined numbers of OSPF routing sessions and routes (intra-area, inter-area, external routes are selectable). The data plane test will then follow to determine maximum throughput and latency. Results include throughput, latency.</p>
Convergence Tests	<p>This OSPF Convergence Test measures the ability of a DUT to switch between preferred and less-preferred routes when the preferred routes are withdrawn and re-advertised. Two OSPFv2 or v3 sessions are established and a user definable number of routes are then advertised into the DUT. One set of routes is preferred over the other via OSPF metrics. Traffic begins transmitting towards the routes; at this time the preferred routes are withdrawn and convergence time is measured as the</p>

	time it takes to begin receiving traffic on the less preferred port. Both IPv4 and IPv6 are supported. Results include convergence time.
Route Capacity Test	The OSPF Route Capacity test determines the maximum number of routes the DUT can store in its routing table. The test establishes OSPFv2 or v3 sessions and advertises a predefined number of routes to the DUT. To insure that the DUT has received these routes a data packet is sent per route. A step value is defined so that the test can iterate. The test continues until the DUT fails to handle the advertised number of route prefixes. Both IPv4 and IPv6 are supported Results include maximum routes DUT will support.
ISIS Test Suite	
Performance Test	The ISIS Performance test will setup user defined routes and topology, then measure no-drop throughput and latency between advertised ports. This test will characterize the performance of the DUT by emulating the pre-defined numbers of ISIS routing sessions and routes (level 1 and 2 are supported). The data plane test will then follow to determine maximum throughput and latency. Results include throughput, latency.
STP/RSTP/MSTP Test Suite	
Convergence Test	The STP/RSTP convergence test sets up the user defined topology, subsequently measuring the convergence time by swapping STP metrics on a blocked port so that it transitions to forwarding. There are three user selectable causes of convergence: root cost, root priority, and link down. Also, standard STP parameters can be manipulated to see how they affect convergence time. Configurable parameters include STP, RSTP or MSTP, root bridge priority, forward delay and maximum age timer manipulation. Results include convergence time.



Routing/Bridging Specifications

Tests	Protocol				Port Mapping				Traffic Flow		Pass Criteria			
	Layer 2-MAC	IP	IPv6	VLAN	One-to-One	One-to-Many	Many-to-One	Mesh	Bidirectional	Unidirectional	Throughput	Latency	Convergence	Max. Routes
BGP														
Route Capacity		✓			✓					✓				✓
Route Convergence		✓				✓				✓			✓	
Performance		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
OSPF														
Route Capacity		✓	✓		✓					✓				✓
Route Convergence		✓	✓			✓				✓			✓	
OSPF Convergence		✓	✓			✓			✓				✓	
OSPF Performance		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Bridge Suite														
STP/RSTP Convergence	✓					✓				✓			✓	
ISIS Suite														
Performance		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

Requirements

- Windows 2000 or XP client PC with a minimum of 512 meg of RAM
- Linux/Unix client support- command line only
- TCL 8.3 or 8.4
- XM12, XM2, Optixia X16, Optixia XL10, IXIA 1600T, IXIA 400T, IXIA 250
- At least one Ixia Load Module: Gigabit TXS Family, LSM10G Family, LSM1000XMV16, LSM1000XMS12/R12, LM622ATM/POS, MSM 2.5G (OC-48c), MSM10G, LM10GE700F1, LM10GE700F1-P. LMOC48C3 and SR.
- IxOS 4.10 or higher (IxOS 4.10 will require IxRouter 4.10)
- IxNetwork 5.0 SP2 patch2 or higher
- Some features listed above may require only the latest versions of IxOS and IxNetwork

Product Ordering Information

928-0101

All in one software bundle

928-0104

Routing/Switching Bundle: includes Framework GUI, BGP, OSPF, ISIS, and Bridging suites

928-0200

IxAutomate Framework GUI

928-0240

BGP-4 Test Suite

928-0241

OSPF Test Suite

928-0242

ISISv4/v6 Test Suite

928-0260

Bridging Test Suite

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