



The Highly-Scalable Router Performance Tester

TeraRouting Tester™

Product Overview

The SmartBits® TeraRouting Tester (TRT) application provides the first integrated control and data plane routing test that includes system-level configuration and analysis of routed networks. TRT is an easy-to-use application that allows network service providers and network equipment manufacturers to precisely determine the performance of a router under a variety of realistic and worst-case scenarios. TRT exposes the true performance of a router by providing stress testing of the routing software, the data forwarding hardware, and the overall system architecture under both static and dynamic routing conditions. A key strength of the application is its use of a deterministic and repeatable test methodology.

TRT is the first of a new breed of applications to leverage the power of the TeraMetrics™ architecture to achieve a new level of network testing by stressing the data plane and control plane simultaneously.

The TRT Application Is Designed:

- To allow the user to quickly setup large BGP, OSPF, IS-IS, RIP, or MPLS networks on all ports with data plane traffic going to each network advertised from all transmitting ports.
- To evaluate key performance parameters of routers under typical or extreme traffic load conditions for minutes, hours, and days.
- To evaluate key performance parameters of routers over time in response to common, yet undesirable, network events on the control plane using the Event Scheduler and real-time graphs with the integrated events.
- To qualify routers during development, quality assurance, and final regression testing.
- To perform comparative analysis of routers.
- To re-qualify routers after firmware upgrades.

Test Description

TRT includes a routing stack that allows each SmartBits port to act as one or more peer routers to the device under test (DUT). These peer routers establish adjacencies with the DUT to exchange routing information, and in the process, determine basic routing protocol performance. Test data is then transmitted to the advertised routes at user-specified rates to determine the forwarding performance of the hardware. By simulating various network events (such as route, session, and link flaps), TRT then attempts to characterize the DUT behavior under various real-life stress conditions. With TRT, the user is able to determine convergence time by observing the receive rate and the maximum latency over time for both the flapped routes and the stable routes in the router.

IPv4 and IPv6 Protocols

TRT includes support for RIP V1/V2. Support packages for BGP-4, BGP-4+, IS-IS, IS-ISv6, RIPng, MPLS (including VPNs), OSPFv2, and OSPFv3 are available as separate options. TRT supports the testing of dual-stack implementations of IPv4 and IPv6 protocols.

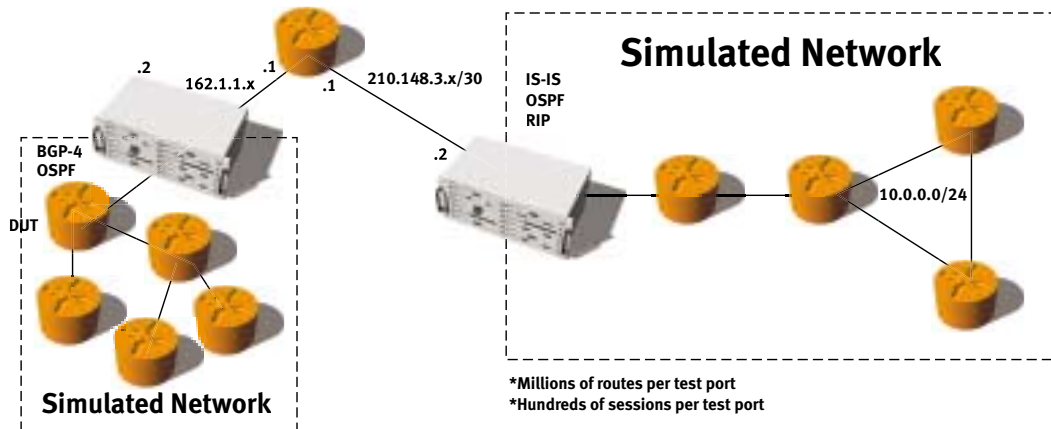
MPLS Testing

TRT provides the most comprehensive MPLS testing support in the industry. Thousands of incoming or outgoing RSVP-TE and LDP tunnels can be created. Full Layer-3 VPNs (RFC 2547bis and 6PE) are supported. Layer-2 VPNs (Martini and VPLS drafts) can also be emulated. Easy-to-use configuration wizards simplify the setup process for complex MPLS features and functions. TRT supports the emulation and testing of Customer Edge (CE), Provider Edge (PE), and Provider (P) routers in an MPLS network.

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*Millions of routes per test port
 *Hundreds of sessions per test port



Analyze | Assure | Accelerate™

TeraRouting Tester applications

Test Results

TRT provides both real-time results and final test results using Excel. Excel allows the user to use all results and graphs in other applications and also allows the user to export to many formats, including HTML.

TRT allows you to select from several tracking methods to track the data plane traffic. Tracking options include:

- Tracking by prefix length (1 to 128)
- Tracking by flap status ("Will Flap" or "Will Not Flap")
- Tracking by route duplication (Duplicates and Non Duplicates vs. Uniques)
- Tracking by user-defined tracking groups

Real-time test results Include:

- Receive frame rate graph: per tracking group, QoS group, protocol, and port
- Percentage of expected frame rate graph: per tracking group, QoS group, protocol, and port
- Average latency graph: per tracking group, QoS group, protocol, and port
- All graphs have flap events integrated
- Port counters with totals and rates
- Routing protocol counters per session, adjacency, or emulated router
- Event log with filtering for specific routing sessions

Final test results Include:

- Final receive frame rate graph from the beginning of the iteration to the end
- Final average latency graph from the beginning of the iteration to the end
- Final routing protocol counters per session, adjacency, or emulated router; final port counters
- Per-stream frame analysis including frames sent, received, and lost, as well as stray frames and latency
- Two-way control plane capture and decode

Key Features

- Easy-to-use GUI provides efficient configuration of routes and traffic
- Interfaces:
 - Supports multiple routing protocols per application, module, and port
 - Supports both Ethernet Copper and Fiber, plus POS (PPP/HDLC)
 - Multiple user support
 - Configure each port for control plane only, data plane only, or both
- Traffic configuration:
 - Optionally use advertised routes for automatic traffic configuration
 - Optionally enable or disable streams
 - Optionally configure IP next protocol and QoS values
 - Optionally configure flows per traffic stream
 - VLAN IDs and priority per traffic stream
 - Filters for automatic traffic configuration
 - Customizable user streams
- Test configuration:
 - Test Duration: Continuous, Time Burst, Frame Burst
 - Load Units: Frames/Second or % of Line Rate

- Burst Size in frames
- Loads: Fixed, Stepped, Random with Min/Max
- Frame Sizes: Fixed, Stepped, Random with Min/Max
- Traffic Start Options: Wait *n* seconds after start of test or after advertisements
- Save configurations as editable scripts for test automation purposes
- Flappings:
 - Create multiple steps with time delays
 - Flap through all the steps once or continuous
 - Each step can have multiple events

Supported Modules

Module	Description
ATM-3451A	ATM OC-3c (STM-1c), 2-port, multi-mode, 1300nm, TeraMetrics
ATM-3451As	ATM OC-3c (STM-1c), 2-port, single mode, 1310nm, TeraMetrics
ATM-3453A	ATM OC-3c/OC-12c (STM-1c/STM-4c), 2-port, multi-mode, 1300nm, TeraMetrics
ATM-3453As	ATM OC-3c/OC-12c (STM-1c/STM-4c), 2-port, single mode, 1310nm, TeraMetrics
LAN-3301A	10/100/1000Base-T Ethernet, Copper, 2-port, TeraMetrics
LAN-3302A	10/100Base-T Ethernet, Copper, 2-port, TeraMetrics
LAN-3306A	10/100Base-T Ethernet, Copper, 4-port, TeraMetrics XD
LAN-3311A	1000Base Ethernet, GBIC, 2-port, TeraMetrics
LAN-3321A	10/100/1000 Mbps and Gigabit Ethernet Fiber, 2-port, TeraMetrics XD
LAN-3325A	10/100/1000 Mbps and Gigabit Ethernet Fiber, 4-port, TeraMetrics XD
LAN-3327A	10/100/1000 Mbps and Gigabit Ethernet Fiber, 1-port, TeraMetrics XD
POS-3505As	POS OC-48c (STM-16c), 1-port, single mode, 1310nm, TeraMetrics
POS-3505AR	POS OC-48c (STM-16c), 1-port, single mode, 1550nm, TeraMetrics
POS-3511A	POS OC-3c/OC-12c (STM-1c/STM-4c), 2-port, multi-mode, 1300nm, TeraMetrics
POS-3511As	POS OC-3c/OC-12c (STM-1c/STM-4c), 2-port, single mode, 1310nm, TeraMetrics
POS-3519As	POS OC-192c (STM-64c), 1-port, 2-slot, single mode, 1310nm, TeraMetrics
POS-3519AR	POS OC-192c (STM-64c), 1-port, 2-slot, single mode, 1550nm, TeraMetrics
XLW-3721A	10GBase Ethernet Optical, XENPAK, 1-port, 2-slot, TeraMetrics

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Requirements

- An SMB-600, SMB-6000B, or SMB-6000C chassis.
- An IBM or compatible Pentium™ PC running Windows® 98/2000/NT/XP, with mouse/color monitor.
- Microsoft Excel 97 or Microsoft Excel 2000.

Ordering Information

SWF-1230A

TeraRouting Tester with RIP software module

SWF-1231A

OSPF software module for TRT

SWF-1232A

IS-IS software module for TRT

SWF-1233A

MPLS software module for TRT

SWF-1234A

BGP software module for TRT

SWF-1235A

IPv6 software module for TRT

SWF-1239A

All available software modules for TRT

SWF-1255A

SMB API and Scripting Automation Interface

SUS-SMB

12-month Software Update Support Service



TeraRouting Tester results windows

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