



Spirent TestCenter™ STP/RSTP BASE PACKAGE

Convergence is creating a new generation of integrated network devices and services that are much more complex than ever before. The resulting increased complexity, scarcity of testing skills and architectural shortcomings in current test systems are hurting the ability of manufacturers to ship products on time at escalating quality levels and slowing service providers' ability to deploy networks that get Quality of Experience (QoE) right the first time.

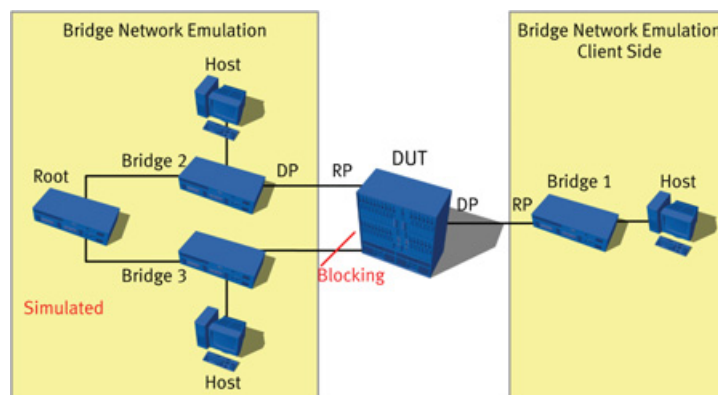
INCREASE PRODUCTIVITY: GET THERE FASTER WITH SPIRENT TESTCENTER

- Spirent TestCenter's STP/RSTP base package provides a true stack-based solution for spanning tree, rapid spanning tree and per-VLAN spanning tree
- Allows spanning tree versions to be run concurrently with each other, and with other protocols, to test the protocol's behavior in a realistic system environment
- Simulates millions of unique Layer 2 hosts to populate the DUT's MAC address table
- Provides real-time statistics and graphical result screen presentation to support accurate characterization of transient conditions
- Control-plane capture of transmitted and received protocol messaging, optional real-time decode package (BPK-1029A), and the capability to save and export to protocol decodes for detailed troubleshooting and analysis
- Tests with Layer 2 and Layer 3 broadcast, multicast and unicast traffic with varying traffic loads
- Integrated Layer 2 traffic wizard
- Integrated Analyzer with the unique HyperFilters™ technology enables users to receive, inspect and accumulate statistics at wire rate based on up to five fields in each received frame per port.

Spirent can help you address this challenge with Spirent TestCenter 2.0 with its innovative Inspire Architecture™. Now you can create and execute more complex test cases in less time with the same resources – and scale tests higher while debugging problems faster. The results: lower CAPEX and OPEX, faster time to market, greater market share and higher profitability.

Underlying protocols such as spanning tree affect network performance, especially networks carrying delay-sensitive traffic like VoIP and video. Spirent TestCenter's STP/RSTP Base Package enables users to evaluate the impact different versions of spanning tree protocol (STP) have on convergence times, forwarding performance and overall reliability. While the appropriate protocol messaging is emulated, Layer 2 data traffic is generated to verify the device under test's (DUT) port state and corresponding data forwarding performance under a variety of transient and steady-state conditions.

The STP/RSTP Base Package is a Spirent TestCenter system component that helps network equipment manufacturers, large enterprises and Metro-Ethernet service providers to quickly evaluate and troubleshoot spanning tree behavior and the performance of devices on enterprise and Metro-Ethernet networks.



Because it is an integrated component of Spirent TestCenter, this package works with other TestCenter components to deliver easy, consistent TCL support for all key metropolitan and enterprise technologies including spanning tree, 802.1q tagging VLAN, DHCP, QoS, multicast, IPv4/IPv6 and routing. Spirent TestCenter provides optional RFC-based benchmarking methodologies for Layer 2 and Layer 3 performance. Each TestCenter module supports multiple users and hot swapping.

This software package leverages Spirent's new Inspire Architecture which dramatically increases productivity and reduces overall time-to-test.

APPLICATIONS

The Spirent TestCenter STP/RSTP Base Package evaluates the functionality of spanning tree implementations in bridges, switches and routers. It can evaluate key performance characteristics under typical or extreme traffic load conditions for minutes, hours or days with concurrent spanning tree messaging. If you need to determine the scalability and reliability of a spanning tree design or implementation, this package provides the information you need without resource and time commitments of a system deployment.

Enterprises and service providers obtain detailed, objective performance information on vendor offerings while equipment manufacturers streamline product development cycles by testing with the STP/RSTP Base Package. Service providers who offer spanning tree solutions to multiple customers in a converged environment use the product to anticipate potential cross-impact. This package also provides a

comparative analysis of the performance of different versions of spanning tree while testing interoperability in mixed-version environments.

BENEFITS

- *Improve product/service reliability:* Scalable protocol emulation allows the user to emulate very large networks and find issues in the lab before a service is deployed
- *Reduce cost:* Comprehensive protocol support allows the user to test with a single platform and single application
- *Increase productivity:* Reduce the learning curve with an easy-to-use GUI incorporating logical layout, configuration wizards and configurable views for setup and results. Spirent's new Extreme Automation™ provides easy one-step GUI to Script support via export to TCL.
- *Reduce time to test:* Test and configuration wizards allow quick setup; capture functionality, protocol messaging and live status views support easy troubleshooting without Spirent TestCenter's unique DebugOnDemand™ capability allows users to capture bidirectional control plane traffic without leaving the application environment – even in large scale test configurations
- *Real-world network emulation:* Emulate multiple protocols and schedule real-time protocol events

TECHNICAL SPECIFICATIONS

STP/RSTP Features

- Emulate multiple bridges on a single LAN segment
- Root bridge emulation
- Non-root bridge emulation
- Topology simulation emulating a root bridge behind a non-root bridge
- Test and verify root bridge election
- Verify the device under test's capability to process BPDUs
- Change STP timing parameters including: Hello, Max Age, Forward Delay and Hold Count timers

Port Name	Router Name	Port Id	Bridge Id	Root Id	Designated Bridge Id	Tx BPDUS	Rx BPDUS	Tx BPDU Flag	Rx BPDU Flag	Tx TC-bit Set	Rx TC-bit Set
Port //3/1	Bridge 1	0x0001	80-00-00-00-10-00-10-01	10-00-00-00-10-00-10-11	80-00-00-00-10-00-10-01	33	0	0x00	0x00	17	0
Port //3/2	Bridge 2	0x0002	80-00-00-00-10-00-10-02	10-00-00-00-10-00-10-11	80-00-00-00-10-00-10-01	0	33	0x00	0x00	0	17

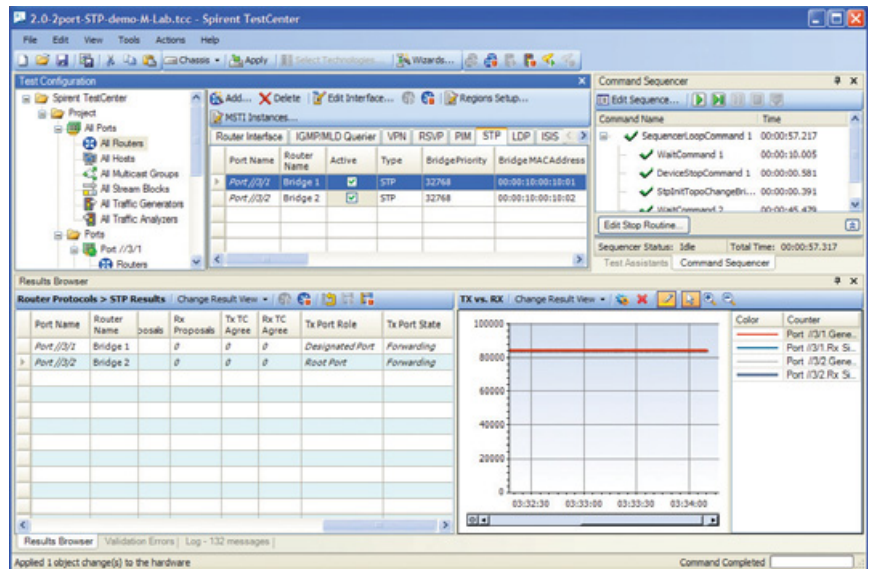
Spanning Tree detailed results

- Stop and start transmitting BPDUs to verify that the DUT changes port roles
- Stop and start bridges and bridge ports interactively or in an automated test environment using the Command Sequencer
- Send STP topology change notifications (TCN) messages to flush the device under test's MAC address table interactively or automatically via the Command Sequencer
- Monitor BPDUs exchange with real-time log
- Support for bi-directional control-plane capture and integrated support for optional real-time decoder (BPK-1029A) enables deep functional troubleshooting
- Port state emulation
- Port role emulation
- Test the spanning tree protocol algorithm (STA)
- Simulate topology changes to verify redundant paths
- Verify STP/RSTP convergence
- Emulate RSTP point-to-point link type for full duplex Ethernet
- Test RSTP's backwards compatibility with STP

KEY MEASUREMENTS/STATISTICS

STP/RSTP Results Per Emulated Bridge

- Port ID
- Bridge ID
- Elected Root ID
- Elected Regional Root ID
- Designated Bridge ID
- TX/RX BPDUs
- TX/RX BPDUs Flag
- TX/RX TC-bit Set
- TX/RX TC Ack
- TX/RX TCNs
- TX/RX Proposals
- TX/RX TC Agree
- TX/RX Port Role
- TX/RX Port State
- VLAN ID



Easy to use Graphical User Interface

RELATED STANDARDS

- IEEE 802.1D, 2004, Spanning Tree Protocol
- IEEE 802.1W, Rapid Spanning Tree Protocol
- IEEE 802.1Q, 2003, VLAN Tagging

SUPPORTED MODULES

Series 2000 modules provide higher performance than Series 1000 modules; contact your Spirent representative for details.

BPK-1002A supports all Spirent TestCenter test modules and personality cards.

REQUIREMENTS

- Pentium® or greater PC running Windows® XP Professional SP2 with mouse/color monitor required for GUI operation. See Minimum PC Requirements section.
- One Ethernet cable and one 10/100/1000 Mbps Ethernet card installed in the PC
- A SPT-2000A Spirent 2U Chassis and Controller, SPT-5000A Spirent 5U Chassis and Controller or SPT-9000A Spirent 9U Chassis and Controller
- Operating system languages supported: English, French, German, Italian, Japanese, Korean, and Chinese (traditional and simplified)

MINIMUM PC REQUIREMENTS

- Small Port System: 1-25 ports
 - 2.4GHz Pentium 4 or equivalent with 512MB of free RAM and 10GB of free disk
- Medium Port System: 26-75 ports
 - 3GHz Pentium 4 or equivalent with 2GB of RAM and 15GB of free disk space
- Large Port (75+ ports)
 - E6400 Intel® Core™ 2 Duo or equivalent with 3GB of RAM and 100GB of free disk space

ORDERING INFORMATION

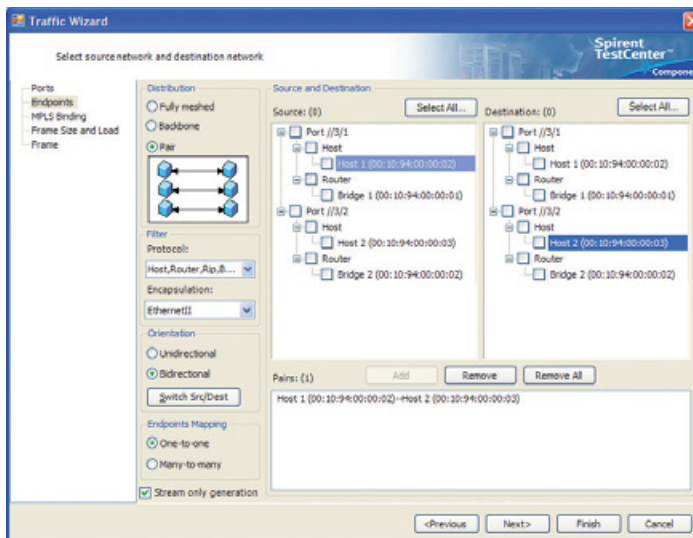
Part numbers ending in “A” indicate the standard performance version; those ending in “B” indicate the high performance version.

STP/RSTP Base Package A (P/N BPK-1002A)

Related Spirent TestCenter Software

PRODUCT	PART NUMBER
Packet Generator and Analyzer Base Package	BPK-1001A/B*
Multiple Spanning-tree Base Package A	BPK-1014A
Spirent TestCenter Enhanced Capture and Decode Base Package	BPK-1029A

* Indicates a required package



Integrated Traffic Wizard with Ethernet encapsulation option

SPIRENT GLOBAL SERVICES

Spirent Global Services optimizes your productivity with Spirent TestCenter over a broad range of technologies:

Professional Services

- Test lab optimization: Test automation engineering services
- Service deployment and service-level optimization: Vendor acceptance testing, SLA benchmarking, infrastructure and security validation
- Device scalability optimization: POC high-scalability validation testing

Education Services

- Web-based training: 24 x 7 hardware and software training
- Instructor-led training: Hands-on methodology and product training
- Certifications: SCPA and SCPE certifications

Implementation Services

- Optimized new customer productivity with up to three days of on-site assistance

Visit www.spirent.com/gs or contact your Spirent sales representative.



Spirent Communications Inc.
1325 Borregas Avenue
Sunnyvale, CA 94089 USA

SALES AND INFORMATION

sales-spirent@spirent.com
www.spirent.com

Americas

T: +1 800.SPIRENT
+818 676.2683

Europe, Middle East, Africa

T: +33 1 6137.2250

Asia Pacific

T: +852 2511.3822