

Spirent TestCenter™

Bidirectional Forwarding Detection Base Package

Spirent TestCenter Bidirectional Forwarding Detection (BFD) Base Package is the industry's most complete protocol test solution, helping NEM and service provider testers evaluate the performance of BFD-enabled network devices by emulating the BFD protocol and its interaction with control-plane routing protocols and data-plane traffic or in control plane independent mode for static testing.

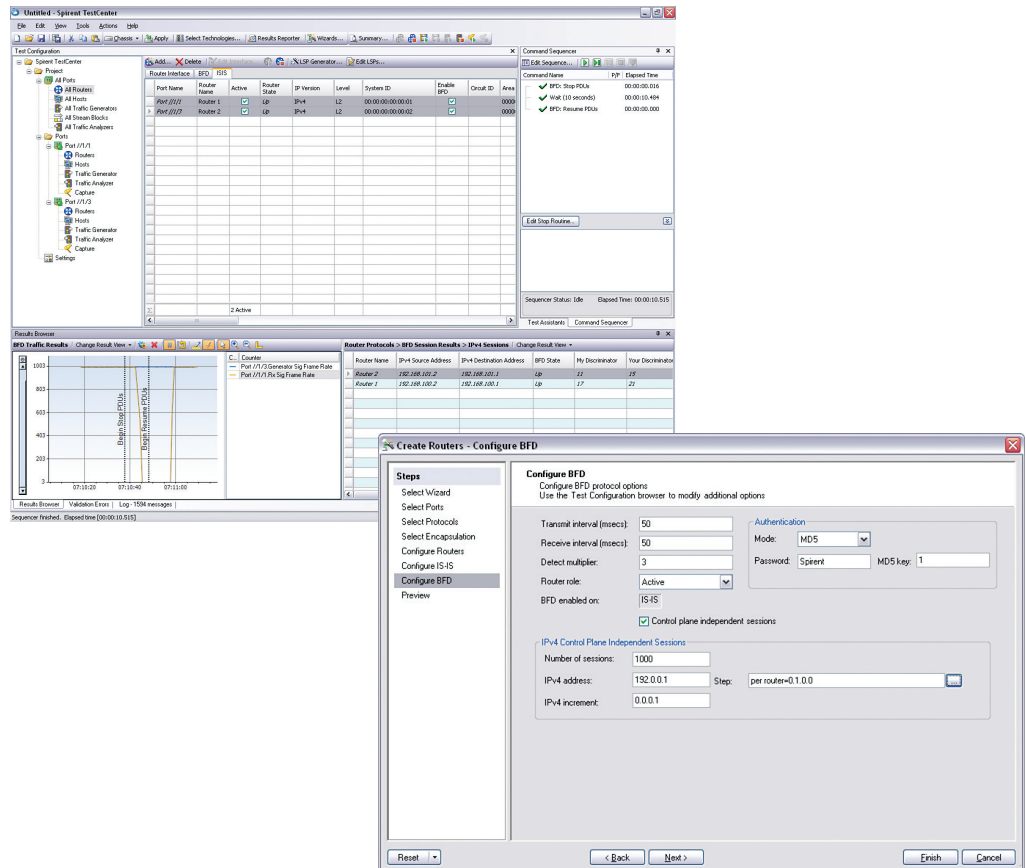
Applications

- Stress test BFD-enabled device forwarding performance and scalability while running routing protocols with BFD, and data-plane traffic
- Verify BFD protocol functionality with key Unicast and MPLS protocols in realistic network topologies and traffic
- Simulate high availability network topologies to test new network designs prior to implementation
- Qualifying new code for network devices prior to implementation with long-term, protocol testing

Spirent TestCenter's Protocol Dependent BFD protocol emulation works with other routing protocols to communicate link and protocol state transitions. This allows network testers to view protocol performance during network events such as protocol, route, link flap events or network over-subscription. Protocol dependent BFD configuration is automatic with single-click activation.

In Control Plane Independent mode, static BFD sessions can be created independent of routing sessions for static or policy routing functional protocol testing, and protocol scale testing. Static sessions are configured in blocks and optionally learn discriminator values.

The BFD Base Package is also integrated with other Unicast and MPLS protocol base packages high-availability protocols like Graceful Restart to provide realistic protocol emulation for network failover test.



The screenshot displays the Spirent TestCenter interface with several windows open:

- Test Configuration:** A table showing BFD sessions for two routers.

Port Name	Router Name	Router State	Active	Router	IP Version	Level	System ID	Enable BFD	Cost ID	Area
Port 1/1/2	Router 1	UP	<input checked="" type="checkbox"/>	UP	IPv4	L2	00:00:00:00:00:01	<input checked="" type="checkbox"/>	0000	0000
Port 1/1/2	Router 2	UP	<input checked="" type="checkbox"/>	UP	IPv4	L2	00:00:00:00:00:02	<input checked="" type="checkbox"/>	0000	0000
- Router Protocols > BFD Session Results > IPv4 Sessions:** A table showing active BFD sessions.

Router Name	IPv4 Source Address	IPv4 Destination Address	BFD State	My Discriminator	Your Discriminator
Router 1	192.168.100.2	192.168.200.1	UP	27	27
Router 2	192.168.100.2	192.168.200.1	UP	27	27
- Result Browser:** A graph showing BFD traffic results over time, with a legend for 'Port 1/1/2 Control Plane Rate' and 'Port 1/1/2 Rx Sig Rate Rate'.
- Create Routers - Configure BFD:** A configuration dialog box for BFD.
 - Configure BFD:**
 - Transmit interval (msec): 50
 - Receive interval (msec): 50
 - Detect multiplier: 3
 - Router role: Active
 - BFD enabled on: IS-IS
 - Control plane independent sessions
 - Authentication:**
 - Mode: MD5
 - Password: Spirent
 - MD5 key: 1
 - IPv4 Control Plane Independent Sessions:**
 - Number of sessions: 1000
 - IPv4 address: 192.0.0.1
 - Step: per router=1.0.0
 - IPv4 increment: 0.0.0.1

Features & benefits

- Quick and easy to use integrated wizards support all Unicast and MPLS routing protocols
- Support for IPv4 and IPv6 protocols over a variety of interface encapsulations
- Support for all Unicast and MPLS routing protocols
- Integrated with graceful restart; allows for advanced convergence testing
- Interactive commands and results test timers, flag values and diagnostic codes lets users test scalability and protocol functionality in the same test
- Support for Ethernet, ATM, and SONET media types and all associated encapsulations allows testing over any media type or encapsulation supported by Spirent TestCenter
- Support for up to 400 BFD sessions on 1 port at 3.33 ms transmit interval

Technical specifications

- Integrated wizards support all Unicast and MPLS routing protocols
- Support for IPv4 and IPv6 or dual stack
- Multiple sessions per router
- RIPV1, RIPV2 and RIPng
- OSPFv2 and OSPFv3
- IS-IS
- BGP4, MP-BGP (single and multi-hop)
- LDP and RSVP-TE
- Integrated with Graceful Restart for high availability and convergence testing
- Simple and MD-5 authentication
- Active/passive mode
- Asynchronous or demand mode with interactive polling
- Integrated packet generator/analyzer uses BFD frame templates which allow you to send custom BFD messages modifying any field in the header for functional testing.
- Configurable timers include: Transmit Interval, Receive Interval, Echo Receive Interval and Detect Multiplier
- BFD echo configuration, echo response and results
- Real-time capture of BFD and other routing protocol packets
- Support for Ethernet, 10-Gigabit Ethernet, VLANs, Stacked VLANs (Q-in-Q), POS (SONET or SDH) with HDLC or PPP encapsulation, GRE and L2TP tunneling
- Send interactive diagnostic codes: No Diagnostic, Control Detection, Time Expired, Echo Function Failed, Neighbor Signaled Session Down, Forwarding Plane Reset, Path Down, Concatenated Path Down, Admin Down and Reverse Concatenated Path Down
- Two BFD test modes: Control Plane Independent and Protocol Dependent test static or fate-driven BFD sessions
- BFD Event Logging displays Detailed BFD States including: Admin Down, Down, Init and Up
- Displays PFCADM flag bit results
- Control plane independent session settings include: Source and Destination IPv4 Address, Source and Destination IPv6 Address, Number of Sessions, Increment (in IP format), Enable My Discriminator, My Discriminator and My Discriminator Increment
- Interactive commands per BFD router or per routing protocol
- Interactive commands include: Start and Stop Control Plane Independent BFD, Admin Up, Admin Down, Enable Demand Mode, Disable Demand Mode, Initiate Poll, Stop PDUs, Start PDUs and Set Diagnostic State
- Command sequencer support for all interactive commands including support for sequence loops to create repetitive stress tests

Technical specifications (cont'd)

- Activate, deactivate, and reactivate BFD routers and control-plane independent sessions to build scalability tests that add objects over time
- Per-router results counters including: Router Name, BFD Sessions Up, BFD Sessions Down and TX/RX BFD packets
- Per-session results counters including: Router Name, IPv4 or IPv6 Source Address, IPv4 or IPv6 Destination Address, BFD State (Up, Init, Down, and Admin Down), My Discriminator, Your Discriminator, BFD Diagnostic Code, BFD Control Bits (PFCADM), Transmit Count, Receive Count, Transmit Interval, Received Desired Minimum Receive Interval, Received Required Minimum Echo Receive Interval
- Summarized protocol session statistics per test, port and router including: BFD Up, BFD Down, Up Count, Init Count, Down Count and Admin Down Count
- Min detect time: 10 ms
- Min transmit time: 10 ms
- Two modes of operations supported—Normal mode and GenTx mode. For high scale operations, BFD must run in GenTx mode to support 3.3 or 10 ms intervals on 100s of BFD sessions on 1 port

Supported modules/platforms

- Supports all Spirent TestCenter™ test modules and personality cards
- Series 2000 modules provide higher performance than Series 1000 modules; contact your Spirent representative for details
- BPK-1004A/B supports all Spirent TestCenter test modules and personality cards. BPK-1004B should be used with Series 2000 test modules.
- WAN-2003A and SFP-4002A personality module required for ATM testing

System requirements

Minimum PC, UNIX, or Linux Requirements by System Size

- For Small Port System (2-25 ports)
 - Minimum Requirement: 2.4 GHz Intel Pentium 4 processor (or equivalent), 512 MB RAM and 10 GB of free disk space
 - Recommended System: Intel Core™ 2 Duo E6300 processor (or equivalent), 2 GB of free RAM, and 10 GB of free disk space
- For Medium Port System (26-75 ports)
 - Minimum Requirement—3 GHz Intel Pentium 4 processor (or equivalent), 2 GB of free RAM, 15 GB of free disk space
 - Recommended System: Intel Core 2 Duo E6400 processor (or equivalent), 4 GB free RAM, 100 GB of free disk space
- For Large System (76 ports and above)
 - Minimum Requirement: Intel Core 2 Duo E6400 processor (or equivalent), 3 GB free RAM, 100 GB free space on hard drive
 - Recommended System: Intel Core 2 Duo E6600 processor (or equivalent), 4 GB of RAM, 100 GB of free disk space

Spirent TestCenter hardware 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 10/100/1000Mbps 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)
- Operating systems supported: Windows XP SP2, Windows 2003 Server (32 bit), RedHat EL3 and EL5, Solaris 8.0 and 10.0
- BPK-1004A/B required for Unicast protocol testing
- BPK-1006A/B required for MPLS protocol testing
- BPK-1001A/B required for packet generator/analyzer features
- BPK-1029A required for real-time capture/decode feature

Spirent services

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at www.spirent.com or contact your Spirent sales representative.

Ordering Information

Bidirectional Forwarding Detection (BFD) Base Package A: BPK-1066A

Related standards

- Draft-ietf-bfd-base-06.txt—Describes basic BFD operation
- Draft-ietf-bfd-generic-03.txt—Describes BFD application
- Draft-ietf-bfd-v4v6-1hop-06.txt—Describes BFD operation for single hop protocols
- Draft-ietf-bfd-multihop-05.txt—Describes BFD operation for multihop protocols

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