SPIRENT TESTCENTER

UNICAST ROUTING BASE PACKAGE FOR IS-IS

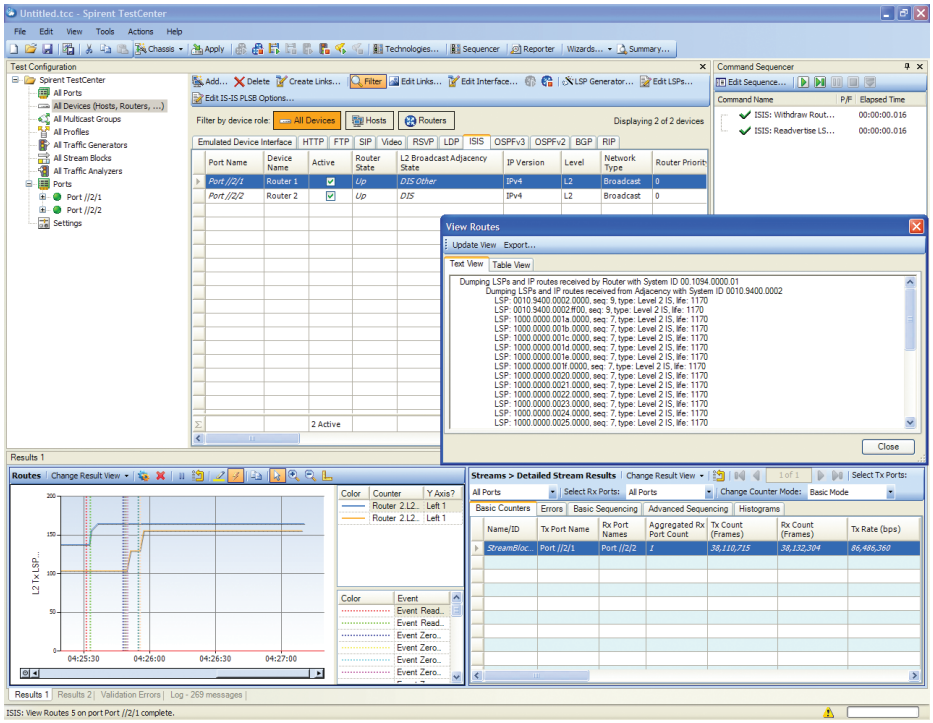
The Unicast Routing Base Package is a Spirent TestCenter component that enables network equipment manufacturers, service providers and large enterprises to quickly evaluate and troubleshoot routing functionality, performance and scalability of any routing device or network.

APPLICATIONS

- Defining IS-IS scale testing with the most IS-IS routers and LSPs per port
- Configure large, multi-protocol, multi-area IS-IS network topologies
- Evaluate router performance under typical or extreme traffic load conditions for minutes, hours, days or weeks of testing
- Simulate realistic network stress
- Test network availability routing features for Layer-2 PLSB, IPv4 or IPv6 networks

Spirent TestCenter's Unicast Routing Base Package supports IS-IS for IPv4 and IPv6 routing, and integrates them with BGP, OSPF and RIP to emulated real-world network topologies. Combine the Unicast Routing Base Package with the MPLS or Multicast Base Packages to test an infinite variety of realistic network topologies.

This package is an integrated component of Spirent TestCenter™ and works with other Spirent TestCenter components providing concurrent support for all key network protocols, including MPLS, BFD, DHCP, QoS, Multicast, and wire-rate IPv4 and IPv6 data-plane traffic.



UNICAST ROUTING BASE PACKAGE FOR IS-IS

FEATURES & BENEFITS

- Supports the IS-IS protocol for IPv4, IPv6, PLSB instances and ISID
- Run multiple protocols concurrently on each port to test scalability and protocol functionality in the same test
- Quickly build hundreds or thousands of emulated routers with any combination of LSPs with the Router Wizard and LSP Generator the number of LSPs created based on the number of IPv4 and IPv6 routes created is displayed in the wizard
- Simulate real network conditions and see results on demand any time during a test without starting and stopping the protocols or traffic
- Log the real-time exchange of control-plane messages and view IS-IS events and LSP routes in real time, seeing messages sent from the Spirent TestCenter port, or as received from the DUT
- Quickly build traffic between traffic endpoints behind emulated routers, integrating traffic with routing
- Disable Hello message padding on established IS-IS sessions to increase the stress on the DUT
- Support for bi-directional capture and real-time decoder (BPK-1029A); view protocol events as they occur
- Each router has its own configurable timers and LSP values which enables functional testing based on adjacency type
- Test over any supported media and encapsulation with support for Ethernet, ATM, and SONET media types and all associated encapsulations
- View routes advertised by the IS-IS neighbor router per emulated router and optionally save the routes to a file (txt or csv) for later analysis with the View Routes command
- Configure routers with customized timers, IS-IS options, DIS election settings, network types and TE
- ISIS enhancements:
  - Support for PDU level authentication at Interface, Area and Domain levels
  - Support for jumbo ISIS frames (Jumbo LLC EtherType = 0x8870)

TECHNICAL SPECIFICATIONS FOR IS-IS

- LSP generator quickly configures complex topologies including tree, grid, full-mesh, ring or hub-and-spoke networks
- Emulate Level-1, Level-2, or Level-1/Level-2 routers with wide and narrow metrics over broadcast and point-to-point networks
- IS-IS support for point-to-point adjacencies over broadcast networks with support for the 3-way handshake Adjacency state and counters shown on a per neighbor basis with summaries available
- Support for IS-IS DIS elections with DR priority
- Configure multiple areas per emulated router
- Graceful Restart Helper and Restartermodes with configurable timers
- Support for P2MP-TE node capabilities exchange with new TLVs
- Activate, deactivate, and reactivate IS-IS routers and LSPs to build scalability tests that add objects over time
- Router Configuration Options: IP version (includes dual-stack), level, Network Type, Router Priority, System ID, Enable BFD, Authentication (None, Simple, or MD-5), Password, MD-5 Key ID, Up to 3 areas, Metric mode (Narrow, Wide, or Both), Level-1 and/or Level-2 wide and narrow metrics, TE router ID, Level-1 TE parameters, Level-2 TE parameters, Hello Interval, Hello Multiplier, PSN Interval, Flood Delay, LSP Refresh Time, Hello Padding, Retransmission Interval timers, LSP size, Graceful Restart T1 Timer and Remaining Time timers, Enable View Routes, and Enable PLSB
- PLSB Options include: PLSB Instance TLV Type, PLSB ISID Address TLV Type, and PLSB NLPID
- Interactive and Command Sequencer events include: Start or stop IS-IS, Establish IS-IS, Advertise IS-IS, Stop or Resume Hellos, Set or Clear Overload Bit, Zero Age LSPs, Remove LSP Neighbor, Re-advertise LSPs, Withdraw Routes and Restart Router
- Integrated with both versions of IS-IS and BFD for convergence and scalability testing include interactive BFD commands: Admin Up or Down, Stop and Resume PDUs, Enable or Disable Demand Mode, Initiate Poll, and Set Diagnostic State and per router BFD results
- Integrated data-plane traffic enables usersto send, receive, inspect and accumulate statistics at wire-rate, allowing users to test data-plane outer convergence and network high availability features like BFD andGraceful Restart—users can monitor the affects that router configurations have upon traffic and QoS classes in real time
- Detailed per-router IS-IS protocol and point-to-point state counters including: Router state (Not Started, Idle, Init, Up, GR, and GR Helper), 3-way P2P Adjacency State (Not Started, Init, Up, and Down), Neighbor System ID Learned, Neighbor Extended Circuit ID Learned, Adjacency Level (L1, L2, or L1/L2), TX/RX PtP Hello Count, TX/RX L1 LAN Hello Count, TX/RX L1 LSP Count, TX/RX CSNP count, TX/RXPSNP Count, TX/RX L2 LAN Hello Count, TX/RX L2 LSP Count, TX/RX L2 CSNP Count, and TX/RX PSNP Count

TECHNICAL SPECIFICATIONS FOR IS-IS (CONTINUED)

- Detailed per-router IS-IS protocol and broadcast state counters including: Router State (Not Started, Idle, Init, Up, GR, GR Helper), Broadcast Broadcast Adjacency State (Not Started, Idle, Init, Up and Down), Adjacency Level (L1, L2, or L1/L2) TX/RX PtP Hello Count, TX/RX L1 LAN Hello Count, TX/RX L1 LSP Count, TX/RX CSNP count, TX/RX PSNP Count, TX/RX L2 LAN Hello Count, TX/RX L2 LSP Count, TX/RX L2 CSNP Count and TX/RX PSNP Count
- Per test, port, and router IS-IS protocol and LSP summaries for each IS-IS LSP type include: number of IS-IS ports per test, number of IS-IS routers per test, number of active IS-IS routers per port and test, number of LSPs configured
- Summary statistics for the number of IS-IS routers in the following states Up, Down, Idle, Init, GR and GR Helper

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 IntelPentium 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

- 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
- Pentium® or greater PC running Windows® XP Professional SP2 with mouse/color monitor required for GUI operation (See Minimum PC Requirements section)
- BPK-1001A/B required for packet generator/analyzer features
- BPK-1006A/B required for MPLS testing
- BPK-1024A required for Conformance Test Suites
- BPK-1029A required for real-time capture/decode feature
- BPK-1066A required for BFD protocol testing
- BPK-1069A required for PLSB testing
- BPK-1075A required for PBB/PBT testing
- TPK-1029 required for IS-IS IPv4 protocol conformance testing
- TPK-1030 required for IS-IS IPv4 protocol conformance testing
- WAN-2003A and SFP-4002A personality module required for ATM testing

ORDERING INFORMATION

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

Unicast Routing Base Package A—Supports up to 10 emulated routers per port: BPK-1004A

Unicast Routing Base Package B—Supports up to the maximum supported emulated routers per port: BPK-1004B

RELATED STANDARDS

- Draft-ietf-bfd-v4v6-1hop-06.txt—Describes BFD operation for single hop protocols
- Draft-ietf-isis-igp-p2p-over-lan-06.txt - Point-to-point operation over LAN in link-state routing protocols
- Draft-ietf-isis-ipv6-02—Describes the use of routing IPv6 with IS-IS
- ISO/IEC 10589—Base IS-IS specification
- RFC 1195—Integrated IS-IS
- RFC 3373—Three-Way Handshake for Intermediate System to Intermediate System (IS-IS) Point-to-Point Adjacencies
- RFC 3567—Intermediate System to Intermediate System (IS-IS) Cryptographic Authentication
- RFC 3784—Describes traffic engineering extensions for IS-IS
- RFC 3847—IS-IS Graceful Restart (Restart signaling)
- RFC 4971 - Intermediate System to IS-IS Extensions for Advertising Router Information

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.

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