



Spirent TestCenter Multicast Routing Base Package

Product Overview

The Multicast Routing Base Package is a Spirent TestCenter System component that helps service providers, large enterprises and network equipment manufacturers quickly evaluate and troubleshoot multicast routing protocol and forwarding behavior and performance in devices and networks. It supports emulation of the most common multicast routing protocols, PIM-SM and PIM-SSM.

Multicast traffic is increasing in importance as collaborative services and broadcast media become more prevalent in the network, but the impact of this traffic can have on existing traffic is significant, particularly as QoS is implemented.

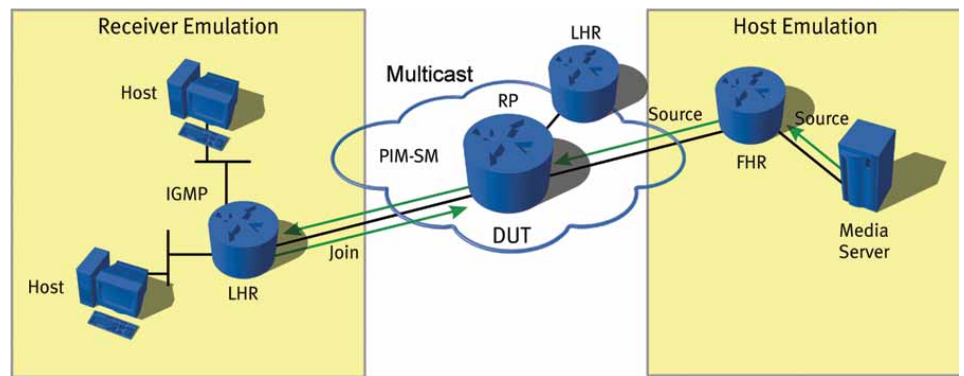
As these services become more common, the filtering capabilities of PIM-SSM will migrate to become mainstream requirements. Multicast evaluation requires a user to consider the impact of multicast on the entire system, because the resource requirements are significant and the impact on existing, well-behaved traffic can be detrimental. By providing interactive control and displaying real-time results, this package helps users measure performance and diagnose issues associated with multicast and its integration with traffic and unicast routing protocols.

Because it is an integrated component of Spirent TestCenter, this package can work together with other TestCenter components to deliver easy, consistent Tcl support for all key metropolitan and enterprise protocols, including spanning tree, VLAN, DHCP, QoS, multicast, IPv4/IPv6 and routing. TestCenter includes RFC-based benchmarking methodologies for Layer 2 and Layer 3. Each TestCenter module supports multiple users and hot swapping.

Applications

Spirent TestCenter customers use the Multicast Routing Base Package to quickly set up large multicast-routed

networks on all ports with data plane traffic going from each source to each receiver router, and to advertise networks to the device or network under test. The package helps them to evaluate key functional parameters of devices combining multicast routing with unicast routing and data forwarding capability with unicast, multicast and QoS-marked traffic.



Customers can use the package's Flap Schedule and real-time graphs to evaluate over time key performance parameters of multicast-enabled routers in response to common undesirable events on the network control plane. They can verify the ability of switches and routers to manage users joining and leaving multicast groups over extended periods, perform comparative analysis of

GET IT DONE FASTER WITH Spirent TestCenter

- Support for PIM-SM and PIM-SSM routing protocols
- Works concurrently with unicast routing and host registration for complete multicast testing
- Integrated Flap Schedule allows for fail-over and convergence testing over short or extended times
- Integrated performance and functional test modes
- Dual stack IPv4 and IPv6
- Mix L2, L3, unicast, multicast, QoS and routing traffic
- Real-time results
- Easy, full-featured Tcl automation
- Multi-user and hot-swappable interface modules

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switches and routers as multicast traffic devices and re-qualify multicast functionality and performance after software or firmware upgrades.

Benefits

- *Improve product or service reliability*—quickly and economically emulate very large, realistic multicast networks and find issues in the lab before a service is deployed
- *Reduce cost*—perform complex tests with a single platform and single application
- *Increase productivity*—Reduce the learning curve with an easy-to-use GUI complete with configurable views for setup and results
- *Reduce time to test*—Troubleshoot even large-scale test configurations without leaving the application environment
- *Real world network emulation*—Emulate multiple protocols and schedule real-time events to perform negative and long-term stability testing
- *Filtering verification*—Verify and evaluate filtering performance of the router or network under test
- *Testing the transition*—Test the migration of routed networks from IPv4 to IPv6 under realistic deployment scenarios using dual-stack IPv4 and IPv6 routing emulation and traffic generation

Key Features

- PIM-SM and PIM-SSM
- IPv4 and IPv6 support
- Concurrent operation with Unicast routing protocols
- Mixed traffic types
- All common attributes are dynamically configurable
- Integrated traffic generation for emulated groups
- Event log displays exchange of protocol messaging

PIM Emulation Features

- Emulate hundreds of PIM routers per port
- Emulate First Hop Routers (FHRs), Last Hop Routers (LHRs), and Rendezvous Points (RPs)
- VLAN ID or VLAN stack for each emulated PIM router
- Configurable hello interval, hold time, and priority
- Configurable join/prune delay and hold time
- Join (*,G), (S,G) or (*,*,RP) multicast groups
- Configurable message frequency
- Bootstrap messages
- Predefined flap events for functional and negative testing

Related RFCs

- RFC 2362—Protocol Independent multicast—sparse mode
- Draft-ietf-pim-sm-v2-new-11—PIM-SM version 2

Test Results

The Multicast Routing Base package provides both real-time and final test results using spreadsheets and graphical formats. These results can be exported in comma separated value (.CSV) file format or HTML for spreadsheet or browser-based analysis and reporting.

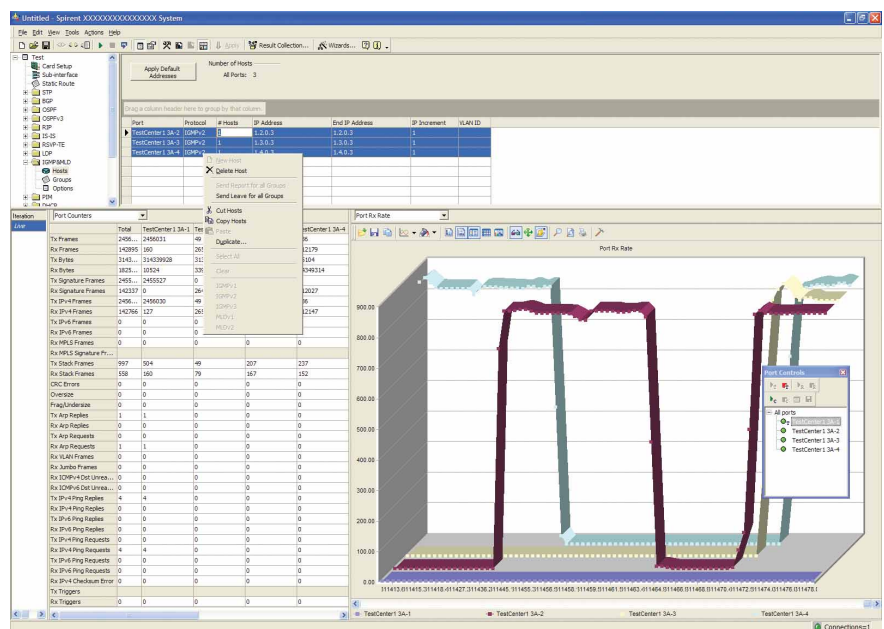
Real-time Test Results

These results can be displayed by port, by stream, by predefined tracking options (including prefix length, VPN, ToS, protocol and destination TCP/UDP port) or by user-defined groups.

- Receive frame rate graph
- Percentage of expected frame rate graph
- Average latency graph
- Detailed counters with min/ave/max latency and in/out of sequence
- Status for each emulated protocol session
- Detailed counters for each emulated protocol session
- Event log to provide detailed protocol messaging for user-selected ports and protocols

Final Test Results

- 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
- Per-stream frame analysis including frames sent, received, and lost, as well as stray frames and latency
- Final detailed port counters



- Final TX/RX statistics including TX/RX frame count, lost frames, % lost, min/ave/max latency, in/out of sequence
- Final latency distribution
- All graphs have flap events integrated
- Capture and export to decoder functionality

PIM-SM Real-time and Final Results

- Sent/received hellos
- Sent/received joins
- Sent/received prunes
- Sent/received register messages
- Sent/received bootstrap messages
- Group information
- Neighbor counts

Flap Schedule

- Create up to 64 steps with configurable time delays
- Flap through all the steps once or continuously cycle
- Each step can have multiple events
- Events include a combination of physical, protocol, and traffic conditions such as link down/up, traffic on/off, or simulating route flapping via a route withdraw and subsequent re-advertisement

Supported Modules

Module	Description
CPR-1001A	10/100/1000 Copper RJ-45, 8 Port
EDM-1001A	10/100/1000 Dual Media, 4 Port
FBR-1001A	1G Fiber SFP, 8 Port
XFP-1001A	10G XFP, 1 Port
CPR-2001A	10/100/1000 Copper RJ-45, 8 Port
EDM-2001A	10/100/1000 Dual Media, 4 Port
FBR-2001A	1G Fiber SFP, 8 Port
CPR-2002A	10/100 Copper RJ-45, 8 Port
XFP-2001A	10G XFP, 1 Port

Requirements

- An SPT-2000A Spirent 2U chassis and controller or SPT-5000A Spirent 5U chassis and controller with the appropriate hardware modules
- Pentium™ or greater PC running Windows® 2000 SP4 or XP SP1/1A/2 with mouse/color monitor required for GUI operation
- Automated operation requires Pentium™ or greater PC running Windows® 2000 SP4 or XP SP1/1A/2, Red Hat Enterprise Workstation Linux 3.0 or SUN Solaris

Ordering Information

BPK-1005A	Multicast Routing Base Package A
BPK-1005B	Multicast Routing Base Package B

Benchmark Test Package

Other related Spirent TestCenter software

BPK-1001A	Packet Generator and Analyzer Base Package
BPK-1002A	STP/RSTP/PVST+ Base Package
BPK-1003A	IGMP/MLD Host IP Multicast Base Package
BPK-1004A/1004B	Unicast Routing Base Package
BPK-1006A/1006B	MPLS/LDP/RSVP-TE Base Package

Part numbers ending in “A” indicate a limited-performance version; those ending in “B” indicate the full performance version.

Spirent Global 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.spirentcom.com/gs or contact your Spirent sales representative.

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