TestCenter™

Multicast Routing Base Package

As collaborative services and broadcast media become more prevalent, Multicast traffic loads increase and stress the capabilities of traditional IP networks and next generation MPLS networks. QoS technologies can help network designers to plan, design, test, and implement scalable, secure, highly available Triple Play networks. PIM-SSM filtering capabilities also aid in limiting the impact that Multicast traffic groups have on mission critical network traffic.

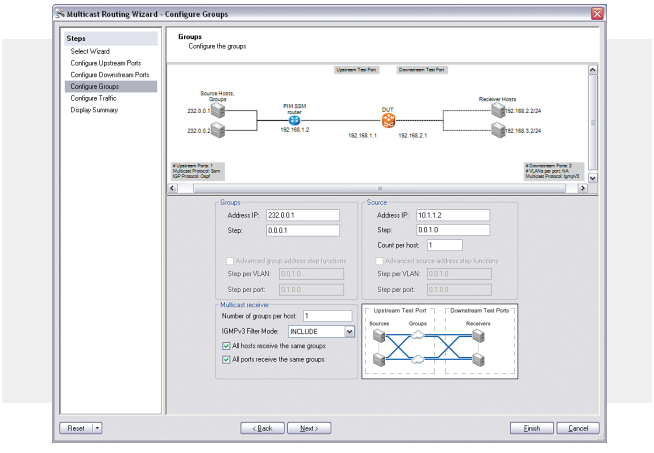
Applications

- Evaluate key performance parameters of routers or networks under typical or extreme traffic load conditions for minutes, hours and days
- When integrated with the Unicast Routing Base Package, quickly set up large Multicast network topologies on all ports with Multicast traffic going to each network advertised from all transmitting ports
- Using the Command Sequencer and real-time graphs with integrated events, users can evaluate key performance parameters of routers or networks while responding to common undesirable network events on the control plane
- Combine with the Unicast and MPLS base Packages to test GRE-based Multicast VPN or Next Generation Point-to- Multipoint Traffic Engineering (P2MP-TE)

The Multicast Routing Base Package is a VIAVI TestCenter component that helps service providers, large enterprises and network equipment manufacturers quickly evaluate and troubleshoot Multicast routing protocols, forwarding behavior, and performance in devices and networks. The VIAVI base package supports emulation of the most common multicast routing protocols, PIM-SM and PIM-SSM for IPv4 and IPv6 Multicast traffic.

Proper Multicast product evaluation requires a user to consider the impact Multicast traffic will have on protocols and the entire network. Resource requirements are significant, and the impact to existing traffic can be detrimental. TestCenter's Multicast Routing Base Package helps users measure network performance by providing interactive control while displaying realtime results upon Multicast protocols and traffic. Users can also perform diagnostics associated with Multicast's integration with traditional Unicast traffic and routing protocols.

As an integrated component of TestCenter, this package works with other TestCenter components to deliver easy, consistent TCL support for all key metropolitan and enterprise protocols: spanning tree, 802.1p VLAN tagging priority, IPv4 and IPv6 DSCP QoS, Unicast IPv4 and IPv6 traffic and Unicast routing.



Features & Benefits

- Support for dual-stack IPv4 and IPv6 in all routing emulation and traffic generation allows users to test the migration of routed networks from IPv4 to IPv6 under realistic deployment scenarios
- PIM-SM and PIM-SSM Multicast routers supports the most common Multicast routing protocols
- Concurrent operation with Unicast routing protocols; run multiple Unicast and Multicast protocols concurrently on each port
- All common attributes are dynamically configurable to easily build complex topologies
- Multicast Routing Wizard quickly builds hundreds or thousands of emulated routers
- Interactive commands to Stop and Start individual emulated routers send diagnostic commands and start and stop sending control-plane messages; interactive control of routers allows users to simulate real network conditions and see results on demand any time during a test without starting and stopping the protocols or traffic
- Interactive commands to flap (withdraw or age-out, and readvertise) individual routes or route blocks or by route type
- Use the Command Sequencer with TCL scripts to send SNMP commands, get SNMP data, configure the device under test, run entire test and generate pass/fail results; advanced command sequencer capabilities allow users to extend TestCenter to meet their test needs
- Log the real-time exchange of control-plane messages and test over any media type or encapsulation supported by TestCenter
- Integrated data-plane traffic enables users to send, receive, inspect and accumulate any mix of Unicast or Multicast statistics at wire-rate; wire rate performance testing of mixed traffic simulates real network conditions
- Integrated with traffic wizard to quickly build traffic between traffic endpoints behind emulated routers, and integrates any type of traffic with Multicast routing
- Log displays bi-directional exchange of protocol messaging; view protocol events as they occur
- Support for L2TP and GRE tunneling on a per router basis for testing over any supported tunnel mode

Technical Specifications for PIM

- Emulate hundreds of PIM routers per port
- Emulate First Hop Routers (FHRs), Rendezvous Points (RPs), and simulate Last Hop
- Full Bootstrap Router (BSR) emulation
- Join (*, G), (S, G) or (*, *, RP) Multicast groups
- Activate, deactivate, and reactivate PIM routers and groups to build scalability tests that add objects over time
- Configurable router options: PIM Mode (PIM-SM or PIM-SSM), DR Priority, IP version (IPv4 or IPv6), Generation ID Mode (Fixed, Incremental, or Random), Hello Interval, Hold Interval, Hello Hold Time, Join/Prune Interval, Join/Prune Hold Time timers, enable BiDir Hello, Enable BSR and configure Bootstrap Message Interval, and upstream IP neighbor address
- Configure global PIM options: Enable Prune delay and set LAN prune delay and override timers, and pack group records and set triggered hello delay, message rate, and message interval
- Configurable Multicast group options: Group Address, Group Count, RP Address, Join Source, Join Prefix, Enable Pruning, Prune Source, Prune Prefix
- Generation ID modes include: fixed, increment or random
- Interactive and Command Sequencer PIM events: Start or Stop PIM, Stop or Resume Hellos, Stop or Resume Joins, Send Joins or Prunes, Increment Generation ID, and Stop, Resume, or Send Boot Strap Messages (BSMs)
- Detailed per-router PIM protocol and state counters including: Router State (Not Started, Started, Stopped, Hello, or Neighbor), TX/RX Hellos, TX/RX Join/Prunes, TX/RX Registers, TX/RX Register Stops, TX/RX Asserts, TX/RX Candidate RP Advertisements, TX/RX Bootstraps, TX/RX (*,G) Groups, TX/RX (S,G) Groups, TX/RX (*,*,RP) Groups, TX/RX (S,G,rpt) Groups, Number of Neighbors

Supported Modules/Platforms

Supported on current TestCenter Platforms

TestCenter Requirements

- BPK-1001A/B required for packet generator/analyzer features
- BPK-1003A/B required for IGMP/MLD host and router query testing
- BPK-1004A/B required for Unicast Routing Testing
- BPK-1024A required for Conformance Testing

Ordering Information

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

Description	Part Number
Multicast Routing Base Package A Supports up to 10 emulated PIM routers per port	BPK-1005A
Multicast Routing Base Package B Supports up to the maximum emulated PIM routers per port	BPK-1005B

Related Standards

- RFC 2362—Protocol Independent Multicast-Sparse Mode
- Draft-ietf-pim-sm-v2-new-11—PIM-SM
- Draft-rosen-vpn-mcast-06,07 and 08.txt - Multicast VPN RFC 4875 - Extensions to RSVP-TE for P2MP LSPs

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