The Route Explorer™ Multicast module delivers end-to-end visibility into the advanced network services used for market trading data distribution, broadcast video, multimedia distribution, online education, desktop imaging and other purposes where data must be delivered reliably and simultaneously to multiple receivers. Both Single Source Multicast (SSM) and Any Source Multicast (ASM) routing are supported.

Route Explorer goes far beyond traditional SNMP management tools by providing network operations and engineering teams with real-time and historical views into multicast routing groups, trees, events, latency and variances from baseline conditions. In addition, it provides modeling capabilities to simulate component failures, different multicast traffic volumes and routing changes so that their impact on service delivery is known beforehand. With full visibility into multicast groups, trees and their constituent components, and the ability to use ‘network DVR’ capabilities to view animations of recorded multicast routing operations, network teams can quickly troubleshoot problems that previously would have been hard to find. Proactive management is made possible by reports that highlight anomalous behavior as well as traffic volumes and trends.

The Multicast module is an optional extension to the Route Explorer base product.
Real-Time Monitoring and Visualization

Route Explorer captures multicast data from network routers using collection methods that are optimized for the different router manufacturers. The data includes multicast trees, groups, leaves, and multicast-enabled (PIM) interfaces. Engineers can browse SSM and ASM groups, routers, active and inactive sources, interfaces, neighbors, receivers, etc., and view multicast trees in the context of the entire network. Specific trees can be easily highlighted, showing the source, rendezvous point (RP) and leaf routers. Route Explorer captures and monitors traffic flows for each group and source, as well as performance metrics, including the latency for each hop across a tree.

Anomaly Reporting and Alerting

Triggered by IGP events, Syslog messages, Traps, a built-in timer mechanism, and user requests, Route Explorer checks the status and stability of multicast trees and groups and captures any changes in near real time. Automatic notifications and reports alert network operations and engineering staff to anomalous conditions and failures, such as:

- Routers dropping from trees
- Shortest path tree (SPT)
- Traffic exceeding interface capacity
- Link utilization threshold breaches
- Loss of PIM adjacency
- Unapproved multicast groups
- Reverse path forwarding (RPF) failures
- RP mismatches
- Path changes between a source and any receiver
- Inactive sources
Troubleshooting and Root Cause Analysis

Route Explorer provides a wealth of diagnostic information, in addition to the alerts and anomaly reports described above, to help users isolate and resolve multicast problems quickly. Every multicast event is recorded for all groups and users can replay them for any point in time to see which sources and receivers joined or left a group, what tree shape changes occurred, and if any configuration changes were made.

Reports of event distributions by group show multicast dynamics, and playback animations enable users to view changes to multicast topologies over specific time periods, including trees and tree branches being added or deleted, sources becoming active or inactive, tree shapes changing and trees being partitioned. Route Explorer provides reports that show the impact of network dynamics on group trees and facilitates before and after tree comparisons, enabling engineers to understand, for example, what triggered a change to a tree, what caused a tree to be partitioned, and what condition, such as a link failure, caused multicast churn.
Planning

Route Explorer takes the guesswork out of planning changes to multicast configurations by providing powerful and accurate interactive modeling capabilities using the current network routing topology, not static network configuration data. Network engineers, planners and architects can simulate and view the impact of adding or deleting a multicast group, editing an existing group, such as a changing a source router, RP or receiver, or enabling/disabling PIM on an interface. Error conditions can also be modeled, such as a link or router failure, to see how multicast trees would be affected. In addition, Route Explorer enables different multicast traffic volumes to be simulated to validate network capacity. With these easy, interactive modeling capabilities, misconfigurations can be avoided and optimum multicast configurations achieved without time-consuming and disruptive iterations.

Easily identify source, RP and leaf routers, and the links between them.

See the multicast trees in the context of the entire network and visualize the proximity of the source(s) and RP(s) to the receiver(s).