

Dynamic Network Monitoring, Visualization, and Control with NorthStar Controller

Overview

Service providers and large enterprises are under increasing pressure to rapidly deploy services while reducing overall expenses. It is no longer economically acceptable to tolerate an idle network infrastructure while passively anticipating future growth needs. Network managers need to adopt an operational model where capacity upgrades are targeted, service-driven, and can adapt dynamically to the ever-changing needs of their customers in real time.

Juniper Networks® NorthStar Controller is a powerful and flexible traffic engineering solution that enables granular visibility into and control over IP/MPLS flows in large service provider and enterprise networks. NorthStar Controller helps network operators optimize their network infrastructure through proactive monitoring, planning, and explicit routing of large traffic loads dynamically, based on specified constraints. This allows operators to run their networks “hotter” while ensuring predictability, resiliency, and service-level adherence. NorthStar Controller leverages IETF and Web protocol standards, ensuring seamless integration into multivendor infrastructure and existing operations and business support systems (OSS/BSS). As the industry’s first multilayer controller that can dynamically interact with transport/optical controllers and reroute IP/MPLS flows, NorthStar Controller helps service providers and enterprises alike adapt to real-time changes in multiple layers.

In particular, NorthStar Controller is highly effective for network monitoring and visualization use cases.

Top Business Challenges

- Gain visibility into the network infrastructure to maximize asset utilization
- Plan and verify new customer services to speed time to revenue
- Validate customer service levels to minimize service-level agreement (SLA) penalties
- Limit and optimize expenditures on service bandwidth growth
- Enable a pay-as-you grow model for introducing new services

Top Technical Challenges

- Obtain an automated view of network topology, label-switched paths (LSPs), links and nodes, and network usage
- Track changes in the network in response to traffic, node, and link events
- Compare actual behavior to network plan
- Develop a network re-optimization plan based on the network’s evolved state
- Manage network complexity (configuration, verification, validation) to prepare for new service introduction
- Troubleshoot network outages and service disruptions

Insertion Points

- Upgrading a network from a static LSP network to a dynamic environment based on IP/MPLS-TE
- Delivering higher network performance with a reduced staff or constrained networking expertise and resources
- Adding a sophisticated system to the management toolkit for visualizing the network, designing and optimizing network resources, and troubleshooting network and service issues

Juniper’s Network Monitoring and Visualization Solution

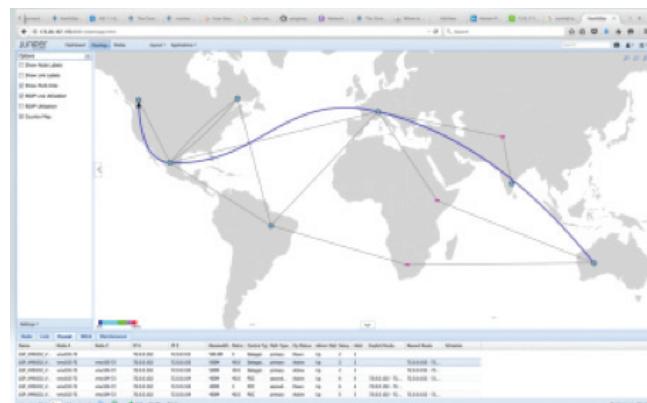


Figure 1. NorthStar Controller topology and LSP visualization



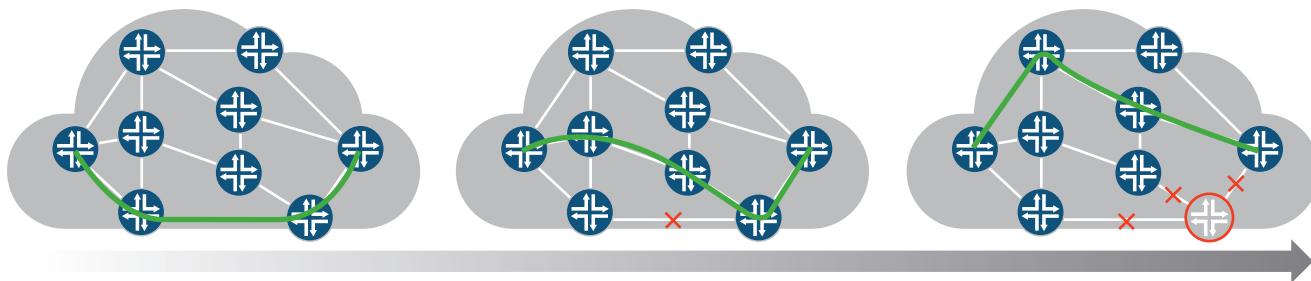


Figure 2. NorthStar Controller network monitoring mode for recording and replaying network events

Juniper Networks NorthStar Controller gives operators a graphical overview of their network topologies with detailed information on the provisioned tunnel paths, including LSP type and attribute as well as LSP primary path, secondary path, and diversity associations. Complete LSP logs are available for further analysis. In addition to the path information, NorthStar Controller gathers and delivers extensive details on each link, including information on reserved and unreserved bandwidth, RSVP utilization, and IP addressing, node ID, and hostname details.

In addition to providing a view of the current network, NorthStar Controller includes a “monitor mode” in which the network and LSP states are recorded and can be played back on a timeline. The operator selects the time and date range to be recorded; network snapshots are taken at regular intervals and do not require a specific event trigger. (The monitoring mode operates passively and does not require NorthStar to have control of any LSPs in the network.) Once a monitoring sequence has been recorded, a user can then view network states over the history of the sequence. In addition to observing the network status evolution, users have access to a number of analysis and planning tools; for instance, they can stop the replay, save a snapshot, and then open the snapshot in NorthStar simulation to perform tunnel design and/or failure simulation and analysis.

Proof Points

- Juniper delivers comprehensive network routing and management capabilities based on Juniper Networks Junos® operating system and NorthStar Controller optimized for IP/MPLS-TE deployments.
- NorthStar Controller is the industry’s most mature and highly developed management platform for network planning, optimization, and visualization.

For More Information

To find out more about Juniper Networks products and solutions, please visit www.juniper.net.

About Juniper Networks

Juniper Networks challenges the status quo with products, solutions and services that transform the economics of networking. Our team co-innovates with customers and partners to deliver automated, scalable and secure networks with agility, performance and value. Additional information can be found at Juniper Networks or connect with Juniper on Twitter and Facebook.

Corporate and Sales Headquarters
Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or +1.408.745.2000
Fax: +1.408.745.2100
www.juniper.net

APAC and EMEA Headquarters
Juniper Networks International B.V.
Boeing Avenue 240
1119 PZ Schiphol-Rijk
Amsterdam, The Netherlands
Phone: +31.0.207.125.700
Fax: +31.0.207.125.701

