SERVICE-CENTRIC OPERATIONS WITH ROUTING ACTIVE TESTING SOLUTION BRIEF

Detect And Fix Network Problems Before End Users Notice, With A Self-Service Solution That Tests And Monitors Any Network Service.

Challenge
Service assurance is limited by traditional, reactive monitoring systems. Inadequate service validation frustrates network teams and end-users alike. Assurance solutions today need visibility and control over experiences, not simply network connections.

Solution
Juniper Routing Active Testing transforms operations from a model in which we monitor devices and infrastructure to one where we focus on service quality and experiences. It provides the power to identify, mitigate, and resolve issues before they impact the end-user.

Benefits
- Proactively measure end-user experience on the data plane
- Know user experience, don't simply estimate it
- Test and verify new services or changes even with no active users
- Test and monitor with native test agents in Juniper ACX and [PTX routers](#)
- Locate and resolve performance issues before customers are impacted
- Confirm that network resource capacity can support business objectives

The Challenge

Enterprises and [service providers](#) that manage their own transport ([WAN](#) or core) networks support use cases that are intolerant of less than flawless connections. Whether it's low latency connectivity in financial services, massive bandwidth in advanced research networks, or highly resilient enterprise VPNs; the assurance of these use cases must start with testing and monitoring the end-user experience, on the data plane.

Most networks' data plane testing and monitoring capabilities are either non-existent or lacking in usability and functionality. More than 60% of user-impacting problems are not discovered by network operations teams. Instead, the problems are discovered by end-users or not discovered at all. Substandard monitoring leads to failed service deployments and changes, unstable services, and lengthy outages. With programmability becoming more extensive in modern networks, leading to more frequent changes and greater complexity, the need to address this challenge is urgent.

The Solution

Juniper® Routing Active Testing (formerly Juniper Paragon Active Assurance) is designed to be easy to use, flexible enough to support testing and monitoring of any network service, and pervasive (with testing and monitoring from any location in the network). Enterprise and service provider customers use Routing Active Testing from [Juniper Routing Director](#) (formerly Juniper Paragon Automation) to continually measure and monitor end-to- end service quality from an end-user perspective. This lets service operators deliver more resilient service quality by detecting problems proactively, often before they impact user experience. If user-impacting issues do arise, operators can rapidly locate, prioritize, and resolve them.

Figure 1: An example of a monitoring dashboard in Routing Director

The solution performs active testing using synthetic Layer 2 to Layer 7 traffic on the data plane to provide true service performance visibility from an end-user perspective. This is

fundamental to shifting from today's infrastructure- and device-centric approach to a service-centric operations model with Routing Active Testing.

Routing Active Testing from Juniper Routing Director is a user-configurable active test and monitoring solution for physical, hybrid,

and virtual networks. It validates application and service performance at the time of service delivery and throughout the life of the service so that network changes are always tested and service quality is continually monitored.

Features and Benefits

Capability	Business Benefit
Automatically measure end-to-end service quality for each configured service, including: • VoIP mean opinion score (MoS) • Microsoft Office service connectivity • Two way active measurement protocol (TWAMP) latency • Round trip time (RTT) delay • HTTP connectivity • DNS response times	Deliver the service levels guaranteed to each customer and confirm quality of experience (QoE).
Automatically monitor the end-to-end service chain, including segments of the service chain that you don't own or control.	Quickly locate and fix issues along the end-to-end service chain that lead to jitter and packet loss. Quickly identify and escalate problems originating from third-parties.
Automatically notify network engineers or third-party systems (via API) when performance thresholds are crossed.	Focus on resolving customer-impacting problems first. Enable proactive customer, user, and third party engagement.
Automatically issue "birth certificates" after every service configuration change	Ensure that service quality remains available and consistent after each configuration change with no manual effort required.
Leverage one user-configurable capability for assurance of all IP services, such as SD-WAN, global VPNs, wholesale transport services, VoIP, IPTV, and more	Reduce assurance system OPEX, avoid duplicate functionality and simplify issue correlation and root-cause analysis.
Programmability and cloud-native deployment with a single platform	Easily onboard solution and integrate into IT/OSS systems.

Solution Components

Service-centric operations can be implemented in your network by integrating Routing Active Testing with your existing network and service assurance solution.

The core component of Juniper Routing Active Testing is a cloud-native multi-tenant control center. It provides a user-friendly web

portal GUI where operations staff can run on-demand tests and view real-time and aggregated results as well as KPIs and SLA monitoring metrics. The control center includes a feature-rich API that allows external operations support systems (OSS) and network functions virtualization (NFV) orchestrators to easily automate distributed activation tests or monitoring scenarios.
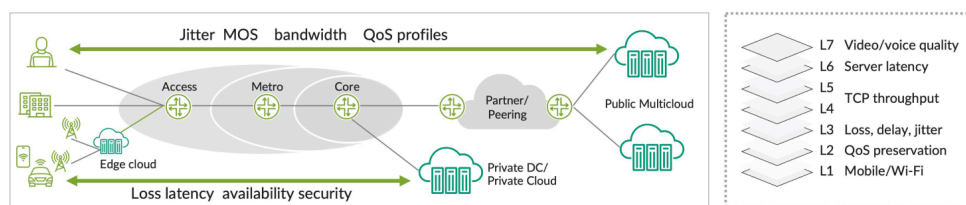

Figure 2: Routing Active Testing end-to-end service chain performance monitoring

Test agents may be placed in strategic locations across your network for continuous quality monitoring. They may also be installed on demand for temporary purposes, such as activation testing of newly deployed services. Test agents are available in several formats: as software to be run as a virtual machine on a hypervisor; as a container application; or as a software appliance for installation on dedicated x86 hardware, and available for all public clouds.

The Juniper Routing Director software-only approach to flexible and automatable assurance makes the solution suitable for physical, hybrid, and virtual environments—either on-premises or in public clouds. This provides a next-generation assurance solution suitable for any network topology and use case today, and for dynamic, software-driven networks of the future.

Router-native test agents

New models of [Juniper routers](#), such as the [ACX](#) and [MX series](#) of routers, come with Routing Active Testing agents built-in, so you can immediately increase the granularity of your active monitoring and testing insights without having to manually install test agents. Your router effectively becomes a powerful sensor that seamlessly interacts with the Routing Active Testing control center as soon as you connect it.
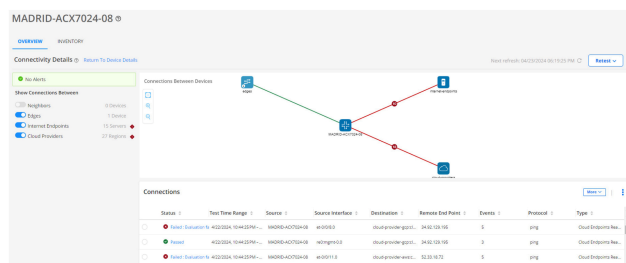

Figure 3: An ACX router with native test agent that can actively monitor and test connections

Measure what matters most

To build a truly differentiated service management capability you need to put the services in the center. With service-centric operations through Routing Active Testing, enterprises and communication service providers effectively track service level objectives and SLAs as monitored with active service quality testing measurements.

Juniper Routing Active Testing lets you measure what matters directly by performing active testing using synthetic L2-L7 traffic on the data plane that delivers true service performance visibility from an end-user perspective. This gives service operations a highly effective solution to identify, understand, troubleshoot, and resolve issues before they impact services and customer experience.

Proven in over 200 customer deployments worldwide, the Juniper service-centric operations solution is already in production with many mobile operators, business service providers, and global enterprises. Leverage Routing Active Testing within our full Juniper Routing Director portfolio for experience-driven automation across the entire network lifecycle.

Next Steps

- Read our white paper: [Service Assurance in the 5G and Cloud Era](#) to learn more about the shift from the device-centric model to service-centric operations with Routing Active Testing.
- See our [Juniper Routing Director](#) datasheet for product information.

Contact your Juniper account representative to schedule a demo today!

About Juniper Networks

Juniper Networks believes that connectivity is not the same as experiencing a great connection. Mist™, [Juniper's AI-native networking platform](#), is built from the ground up to leverage AI to deliver exceptional, highly secure, and sustainable user experiences from the edge to the data center and cloud. Additional information can be found at [juniper.net](#) or connect with Juniper on [X](#) (formerly Twitter), [LinkedIn](#), and [Facebook](#).