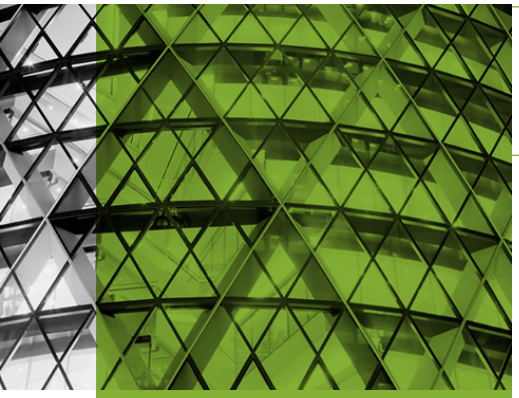


ROUTING DIRECTOR DATASHEET

Product overview

Juniper Routing Director provides a use case-based approach for service providers and large enterprises that own or manage their own WAN networks to quickly deploy advanced WAN automation use cases. With AI-native end-to-end transport and WAN automation, you can:

— Accelerate time-to-market and time-to-revenue

— Improve adherence to SLAs

— Reduce outages and brownouts

— Reduce incremental network TCO

— Reduce MTTK/MTTR

Product Description

Juniper® Routing Director (formerly Juniper Paragon Automation) provides end-to-end transport and wide area network (WAN) automation. It delivers the flexibility and resiliency of a common cloud platform that enables network engineering and operations to leverage modern AIOps. Our use case-based approach to enabling business outcomes simplifies the adoption of intent-based networking across the full device, network, and service life cycle from Day 0 to Day 2.

Routing Director can empower your network operations teams to dramatically boost productivity and increase operational efficiency by freeing skilled staff from repetitive, low-value tasks. Intelligent detection and troubleshooting significantly reduces MTTK and MTTR. Closed loop automation delivers reliable, flawless end user experiences.

Features and Benefits

Routing Director supports service providers and large enterprises that own or manage their own WAN networks to deploy WAN automation use cases, including:

- Device life cycle management
- Network trust and compliance
- Intent-based service orchestration
- Active testing and monitoring
- AI-native device, interface, and routing observability
- Intent-based network optimization
- AI-assisted troubleshooting

With its outcomes-based approach to WAN automation, Routing Director simplifies complex network management with a catalog of holistic end-to-end use cases.

Automated device life cycle management

Routing Director provides automated, consistent, and secure device life cycle management, including: Day 1 and 2 automation of onboarding plans, configuration, updates, compliance audits, software/hardware end-of-life checks, and intelligent monitoring and problem troubleshooting for Day 1 and 2 operations. Inventory is automatically updated.

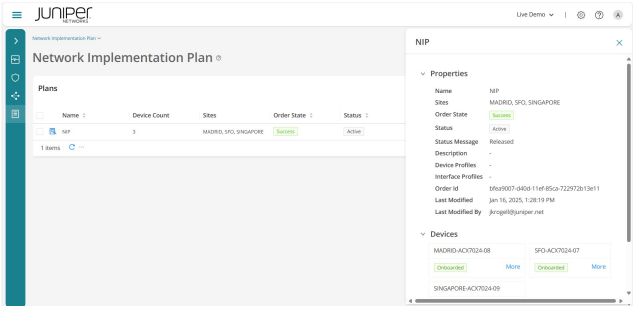


Figure 1: A network implementation plan drives the automation of device onboarding

Guided orchestration design for device onboarding and change management

Routing Director provides a Day 1 and 2 orchestration design application that centers on intent—making intentions reality. During device onboarding, the operator can rely on Routing Director to automate the process. The intent model for device onboarding and orchestration design makes the process elegantly simple and efficient. By reducing the number of steps required and providing intuitive guidance through the process, automation simplifies onboarding new devices and future updates.

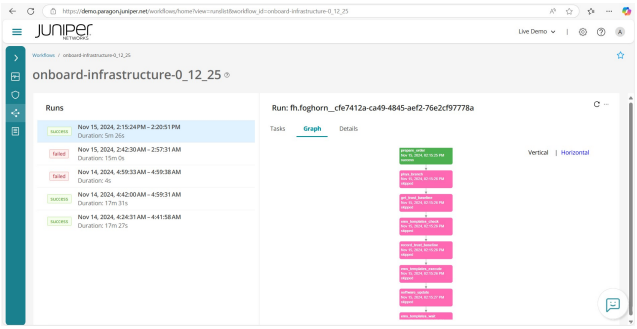
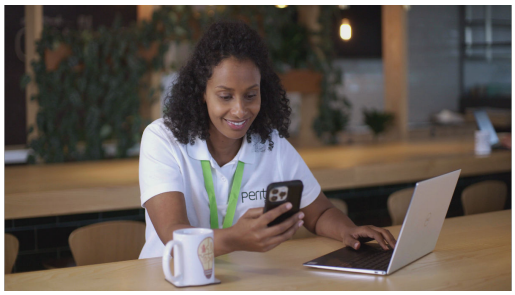


Figure 2: A progress dashboard showing the status of a device onboarding task

Automated, guided device onboarding

Field technicians initiate secure, automated device onboarding after the intents are designed and configuration templates are created. The technician signs on to the field technician application to trigger Routing Director specifically for that device. Routing Director images the latest software, performs secure zero touch configuration and provisioning, checks device health and network performance, and updates inventory so that devices are fully ready for service in minutes.

Meanwhile, at the backend, network operation center (NOC) engineers have full oversight on every onboarding activity happening across the network. Thanks to Routing Director, engineering and operation teams are in sync with the network state in real time. After the field technician completes the work order, the network is ready for Day 1 and 2 operations.



Intent-based service orchestration

Intent-based service orchestration enables accelerated, error-free definition, deployment, and management of the network services that run on customer-managed transport networks by leveraging best practice model-based designs and automated intent-based service provisioning and orchestration. Routing Director includes a purpose-built orchestration engine for this purpose.

Each category of service is provided in the form of a standardized and user-configurable model, including placement and transformation rules. The user only needs to define the Customer Service Intent, and Routing Director automates the entire service creation process from there with a shared workflow engine. This includes defining the network service instance(s), identifying/assigning network resources, committing and verifying device configurations, and creating service monitoring dashboards that process the data plane and device telemetry as needed to visualize performance and trigger remediations to maintain the stated intent.

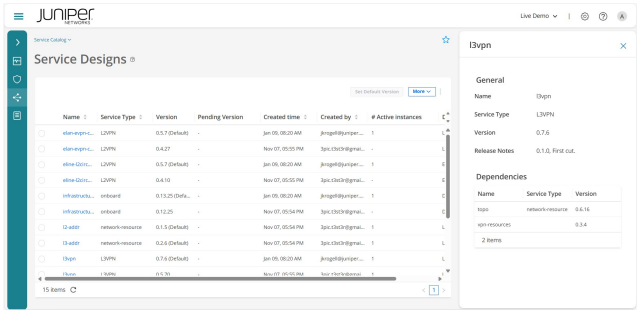


Figure 3: Model-based service designs are maintained under version control and can be deployed as instances by operations teams

Alongside the standard service categories that come with the solution, Routing Director is designed to simplify the creation of custom service models by leveraging widely used templating and modeling languages (YANG modeling language, JINJA templating language, and JQ/JSON based placement and transformation rules).

Automated network trust and compliance management

Routing Director enables automated, consistent, and reliable network trust and compliance by continuously verifying, confirming, and quantifying the trust status of your network, and providing prioritized recommendations to enhance your network's trustworthiness (for example, with software updates or reconfigurations). It measures the risk of integrity impairment and overall trust posture by automatically evaluating hardware and software component integrity versus vulnerabilities identified in SIRT advisories. It assesses compliance against standards and specifications defined by the NIST.

Routing Director provides an intuitive user interface with easy-to-use dashboards, alarms, and notifications on actionable integrity impairments; a network trust score; trust score graphs; and more. This information helps maintain your network integrity end-to-end. Key features and functionality are:

- Trust score calculation based on prerequisite, variable, and reputational factors
- Integration with compliance standards, vulnerability assessments, and more
- Comparative analysis and benchmarking of devices based on trust scores
- Visual representation of trust and compliance scores using graphs and indicators

With a network trust score, you gain a quantifiable measurement that indicates the level of compliance with rules defined in a benchmark document applied to your network.

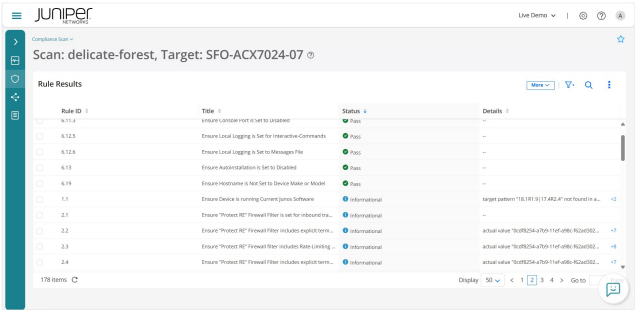


Figure 4: Network trust scans check hundreds of criteria and provides a summary score that can be tracked over time

Device, interface and routing observability

Network engineers rely on the comprehensive observability dashboard from Juniper Routing Director to visualize network health over time across multiple dimensions, including hardware, OS, interfaces, and routing. Combined with AI/ML-driven detection of KPI anomalies and complex events such as blackholes and aggregated health scores, this provides the operator with the ability to quickly detect, prioritize, and investigate issues.

By providing the most relevant, highest priority information first, Routing Director simplifies day-to-day visualization and troubleshooting, avoiding the need to sift through a high volume of events and alerts.

Intuitive, interactive dashboards enable the user to quickly drill down from the aggregate view down to the individual KPI while providing simple to understand information about ongoing issues and how to resolve them.

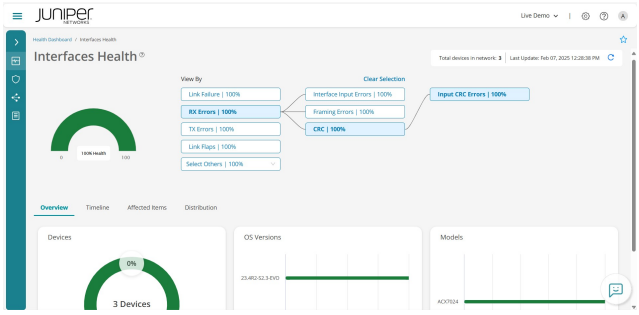


Figure 5: Routing Director provides observability across devices (with telemetry and others), services, and routing

Active Testing

Routing Director's active testing (also referred to as active assurance) use case works by measuring what matters directly: end-to-end service quality. It does this by automating software-based test agents deployed throughout the network to actively send and receive synthetic L2 through L7 traffic on the data plane to simulate an end user. This enables you to continuously measure one-way delay and jitter on the end-to-end customer service and within each of the network segments supporting a service. This allows you to pinpoint potential issues in service delivery. Network operators can then continually and automatically validate performance against objectives. They can detect when customer services do not meet guaranteed performance levels, better locate problems, troubleshoot them, and take corrective actions before experience is impacted.

Active testing accurately measures the delivery of user intent. So, in combination with the intent-based service orchestration engine and network observability, it provides detailed, actionable insights that empower operators to implement informed preventative and remedial actions.

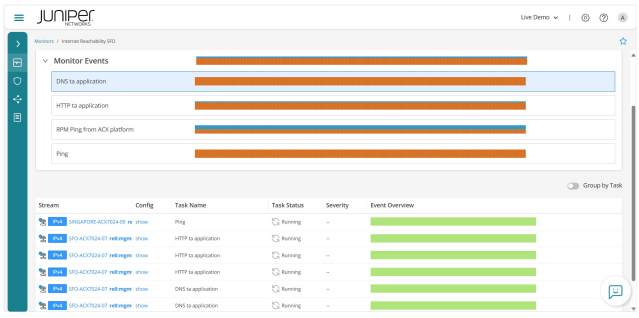


Figure 6: Active testing includes continuous monitoring, as well as multi-step 'one-off' testing on the data plane

Intent-Based Network Optimization

Intent-Based Network Optimization enables the repeatable provisioning of network connections according to user-defined criteria, as well as closed-loop automation by recalculating and reallocating network paths (LSPs) in response to triggers (such as elapsed time, KPI threshold crossings, or external events). The use case allows the separation of highly skilled connectivity design tasks from day-to-day network operations, with engineers designing network intent profiles and maintaining version control, and operations teams provisioning and managing instances of those profiles (allocated to specific services) in-life.

Intent-Based Network Optimization with Routing Director consists of two distinct categories of functionality: profile design and instance management.

Profile design provides the capabilities required to design specific intent and optimization profiles. These profiles specify the criteria and constraints to which the intent should conform and the conditions when the network paths supporting services should be recalculated. Alongside intent profiles and optimization profiles, the user can assign devices in the network to groups (for example, aligned to their roles or to the customers they support).

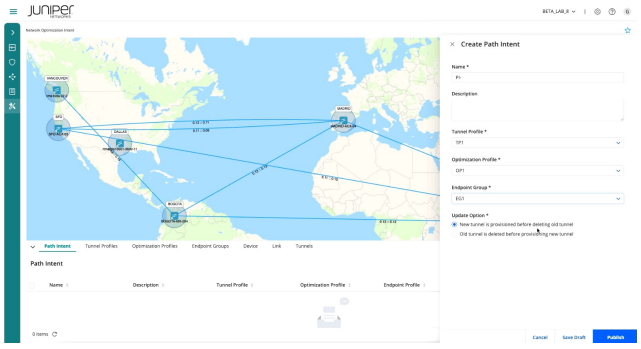


Figure 7: A new path intent can be created by selecting from the available profiles

LLM connector

Operators can leverage their existing LLM investments to enable chat-based investigation and troubleshooting. Routing Director provides function calls with detailed descriptions that customers' LLMs can run when responding to user prompts. Combining these function calls with a huge corpus of publicly available networking documentation lets users quickly investigate ongoing network and service issues, along with possible root causes and recommendations for further investigation, mitigation, and resolution.

LLM Connector provides the flexibility to leverage a range of well-established LLMs that can be self-hosted. It aligns with customers' data security and privacy policies, ensuring that no data leaves their environment.

With a single carefully crafted prompt, users can trigger multiple function calls as part of a single response, automating a complex multi-step analysis in a matter of seconds.

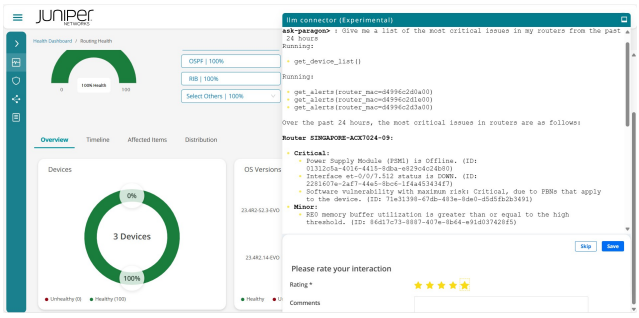


Figure 8: LLM Connector can run multiple function calls to provide real-time information and recommendations

Table 1: Features and Benefits

Feature	Benefit
Integrated active assurance	• Achieve experience-first networking • Deliver high performance services right the first time every time by testing, validating, and monitoring true experience from Day 0.
Intent-based closed-loop automation	• Deliver precise, reliable performance to end users at scale • Design once, deploy many times, even for the most complex and demanding customers and use cases.
AI-native detection and analysis	• Reduce MTTx and maintain flawless experience • Detect anomalies, tough issues, and even root causes with AI/ML while avoiding or mitigating user impact through automated rerouting
AI-native troubleshooting with LLM Connector	• Accelerate root cause analysis with AI • Leverage the power of LLMs to quickly find the needle in a haystack in a fraction of the time with simple, intuitive conversational analysis.

Ordering Information

Please contact your Juniper Networks sales representative for ordering information.

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.

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