

anuta networks

JUNIPER AND ANUTA AUTOMATE WORKFLOWS FOR NETWORK TRANSFORMATION

Roll out services faster, enable feedback loops, and assure services with a low-code automation framework

Challenges

New technologies such as 5G, Wi-Fi 6, IoT, and edge computing have significantly increased network complexity. Operators are facing a massive challenge in managing, monitoring, and troubleshooting devices and services, leading to noncompliant and unstable networks.

Solution

The joint Juniper/Anuta automation solution gives organizations the unique ability to rapidly design and provision network services, gain visibility into applications and services, and ensure SLA compliance as well as service assurance for multivendor infrastructure.

Benefits

- Faster service rollout, greater productivity, and elevated customer experience
- Lower downtime, meantime to repair, and OpEx costs
- Secure and policy-compliant networks

With the evolution of new technologies, rapid multivendor adoption, and rising use case intricacies, automating sophisticated modern networks is an ordeal. Task-based automation, accomplished with heavy scripting tools and pointed solutions, has outlived its utility. Organizations require a low-code automation framework to rapidly develop and execute a complete end-to-end method of procedure (MOP) in order to provide service orchestration capabilities.

To meet this challenge, Juniper Networks has partnered with Anuta Networks to enhance its existing automation portfolio, which includes Junos® telemetry interface (JTI), Contrail® HealthBot, Juniper Networks® NorthStar Controller, and NorthStar Planner. The Anuta Networks ATOM platform provides a comprehensive low-code workflow automation framework, which allows network operators to automate processes for deploying, managing, and monitoring network devices and services. ATOM automates the complete life cycle of network services across the plan, design, deploy, operate, and optimize steps.

ATOM includes a simple and intuitive workflow builder for drag, drop, and design. The simplicity of ATOM's workflow builder lets network operators automate everything from the simplest to the most complex procedures. Its workflow automation and service orchestration framework introduces agility and flexibility, enabling network operators to automate use cases customized for their specific business needs.

The Challenge

Network Workflow Automation and Service Orchestration

Most organizations struggle to automate stateless and complex MOPs such as software upgrades, network troubleshooting, or network migrations because traditional automation consists of siloed pointed solutions that require heavy scripting.

It is equally challenging to develop and manage customized stateful network services that require complex life cycle management, service discovery, and multitenancy capabilities. Organizations have, therefore, embraced task-based automation where few specific tasks in a procedure are automated. Task-based automation cannot scale to today's rapidly growing multivendor networks and rising use case complexity, leading to an increase in manual processes, human errors, and nonstandard and noncompliant configurations across the network.

End-To-End Visibility

Real-time network monitoring is essential to immediately detecting and remediating performance issues. Yet many organizations have multiple specialized monitoring solutions catering to a multivendor environment, consisting of devices with varied capabilities and creating multiple challenges.

If the data is collected and stored by many different tools, you end up with multiple data lakes. Correlating that data across multiple vendor solutions to determine the root cause of an issue becomes a tedious, time-consuming process. Also, integrating and managing multiple tools to comprehend dispersed information and automatically initiate corrective actions is equally challenging.

Automated Remediation

To ensure business continuity and service-level agreement (SLA) adherence, enterprises and service providers must respond swiftly to critical network issues and failures. Without a framework for continuous monitoring and automated remediation, operators lose precious time when analyzing and debugging the network. Network administrators need a platform that enables them to write essential performance and compliance policies, monitors their multivendor multidomain networks, and automatically remediates any policy violations.

In short, a comprehensive network automation solution is critical to ensure service delivery, availability, and performance within a multidomain network infrastructure.

The Juniper Networks and Anuta ATOM Solution

Anuta ATOM works with HealthBot Network Analytics and NorthStar Controller, enabling numerous advanced use cases. Working together, the solution gives organizations the unique ability to automatically onboard multivendor greenfield and brownfield devices and services, manage and orchestrate network services such as L2/L3 VPN, Ethernet VPNs (EVPNs), etc., monitor end-to-end networks, enforce uniform configuration and compliance policies for the entire network, and automatically troubleshoot and remediate any network faults.

The Anuta ATOM platform is agentless and combines the best of model-driven architecture with the latest microservices and analytics technologies to deliver one of the industry’s most scalable platforms. Closed-loop assurance opens exciting new opportunities to transform today’s sluggish networks into the intelligent and responsive networks of the future.

The joint Anuta/Juniper solution provides a modular, extensible, scalable, and cloud-native software platform that enables network operators to rapidly design and provision network services, collect real-time telemetry, display deep network analytics, ensure compliance, and provide service assurance for multivendor physical and virtual infrastructure.

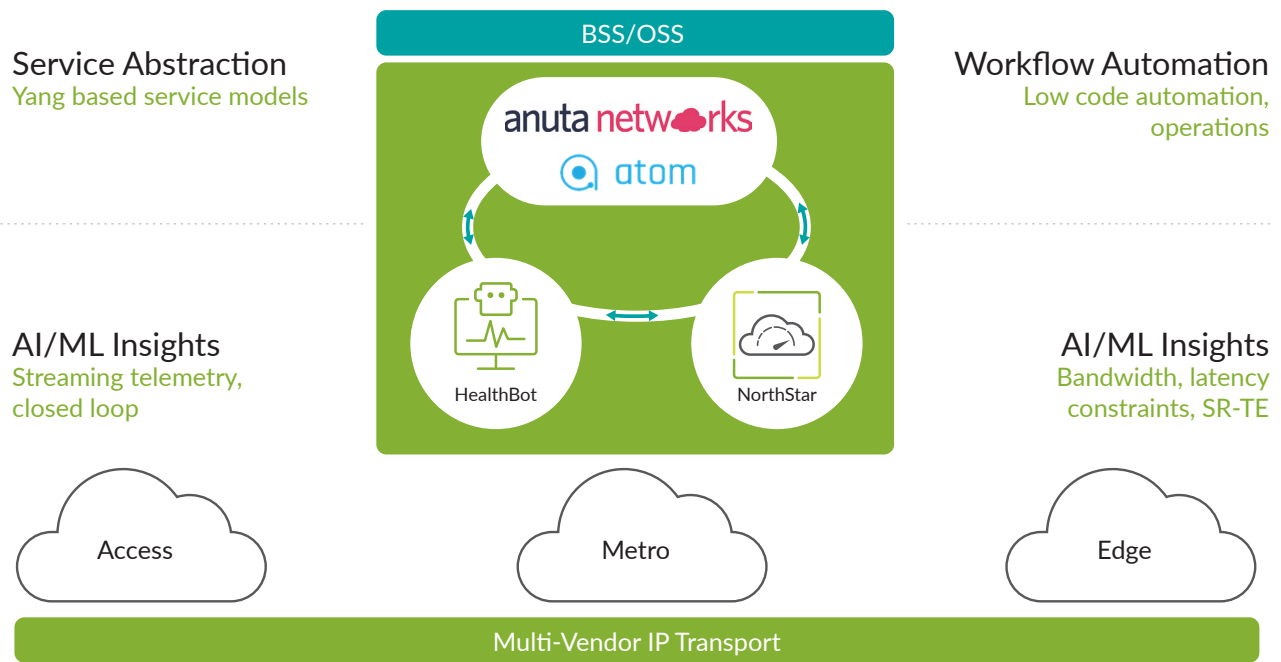


Figure 1: Anuta Networks and Juniper Networks joint solution

The ATOM Workflow Automation Engine consists of many components, including configuration management, inventory management, stateful model-driven and stateless CLI-based provisioning engine, exec-show command engine, and performance inventory. The ATOM Workflow Automation Engine features open APIs and integrates with operations and business support systems (OSS/BSS), network management system (NMS), software-defined network (SDN) controllers, Configuration Management Database (CMDB), IP address management (IPAM), syslog/NetFlow collectors, and many others.

Juniper’s network automation portfolio complements ATOM, providing streaming telemetry, data collection and management, ML-powered analytics, and transport control solutions. This newly combined automation portfolio will allow network operators to efficiently achieve their business objectives with a comprehensive solution that simplifies the planning, design, deployment, operation, and optimization of their networks and services. As a result, teams will be able to deliver services faster, eliminate human error, introduce standardization, automate MOPs such as router software upgrades, and optimize customer experience with exceptionally high availability.

As network operators look to overcome the challenge of growing complexity, the joint Juniper/Anuta network automation solution will provide them with the following capabilities and benefits:

- Simplified design, deployment, and management of network infrastructure and services, which increases efficiency, shortens delivery times, and improves the overall service experience
- Service assurance with automated health monitoring, ML-powered analytics, and automated workflows for closed loop, autonomous automation
- Institutionalized automation with DevOps and continuous integration/continuous delivery (CI/CD) practices, which provide the ability to standardize and automate MOPS while offering the flexibility for customization, enhancement, and differentiation
- Capacity planning enabling offline scenario planning and network analysis before implementing changes in the network, which can be used for unexpected situations
- Improved network security and performance with automated device onboarding, configuration, and compliance auditing and remediation

Feature	Description
Data collection	HealthBot’s data collector collects device, network, and service data using multiple data collection options such as the Junos telemetry interface (JTI), SNMP, system logging, and standards-based OpenConfig telemetry, to name just a few. As a result, HealthBot is able to aggregate large volumes of time-sensitive telemetry data, providing a multidimensional view across networks and services, translating real-time analytics into actionable insights.
Playbooks	HealthBot playbooks define how the data collected by HealthBot will be analyzed. Playbooks can be applied to data collected from specific devices or device systems, as well as to network device groups and services. Within the playbooks, network operators can leverage machine learning. For example, HealthBot playbooks can leverage ML algorithms to provide anomaly detection and predictive analytics. The playbooks can also assign data analysis outcomes to triggers, such as a green, yellow, or red, which can be used to drive specific intent-based actions.
ML-powered analytics	HealthBot leverages machine learning to provide anomaly detection and prediction, track data/event correlation, and simplify and streamline root cause analysis.
Low-code workflow automation	Anuta ATOM provides an intuitive graphical interface to design, develop, and execute complex or straightforward network operations and procedures. The powerful interface allows network administrators to describe business intent along with key performance indicators and take corrective actions on violations.
Service orchestration	ATOM service orchestration capabilities enable network operators to create and manage network services such as L2VPN, L3VPN, EVPN, etc., with the service modeled and customized using the IETF YANG framework. ATOM provides brownfield discovery and complete life cycle management of network services, and it supports OpenConfig and IETF models for L2/L3 VPN services. Service models support atomic transactions and can be invoked by the low-code workflow for a complete stateful and stateless automation.
Calculation, provisioning, and management of IP/MPLS and short reach paths	NorthStar Controller calculates, provisions, and manages IP/MPLS and SR paths based on user-defined constraints such as bandwidth and latency. It includes the ability to provision fully redundant paths through a network, dynamically manage large traffic loads, manage traffic flows to and through network peering sites, and automatically load-balance traffic across peer sites to mitigate congestion and reroute traffic when end-user SLAs are at risk.
Out-of-the box workflows and adaptors	ATOM provides numerous out-of-the-box workflow templates for most common network operations and troubleshooting activities. These templates are highly customizable and can be easily modified to suit your needs. Templates cover a wide range of use cases, from simple L2/L3 provisioning to complicated OS upgrades.
Reusable libraries	ATOM workflow automation provides an extensible and modular low-code framework, enabling administrators to break down complicated workflows into smaller, simpler subroutines or libraries. The libraries are independent low-code blocks that can be imported into any workflows.
Analytics and closed-loop automation	Anuta ATOM collects essential network and device information from multivendor infrastructure to develop deep analytics and reports. Network administrators can define key performance indicator (KPI) metrics and corrective actions to automate SLA compliance.

Feature	Description
Configuration and compliance management	Anuta ATOM offers a robust framework to easily define complex network and security policies. It enforces around-the-clock compliance by automatically detecting violations and taking corrective actions. The platform regularly archives and preserves device configurations. Anuta ATOM detects any unauthorized changes made on devices and enforces reconciliation procedures automatically.
Scalable cloud-native platform	Anuta ATOM is containerized and can be deployed on premises or in public, private, hybrid, or multiclouds, including AWS, Azure, and Google Cloud Platform (GCP). The modular architecture reduces ATOM's footprint by allowing administrators to install components relevant to their use cases. The microservices architecture provides resiliency and high availability for the platform.
Extensible platform	The joint Juniper and Anuta solution is open and extensible. The products within the portfolio leverage REST APIs for integration with OSS/BSS and ticketing systems, as well as compatibility with other tools and applications such as YANG models for ease of configuration, standards-based Path Computation Element Protocol (PCEP) for provisioning, and multiple different telemetry and data collection interfaces. Anuta ATOM and the Junos operating system both have software development kits (SDKs) supporting the ongoing DevOps movement.
Multivendor support	The joint Juniper-Anuta solution provides multivendor support for routers, switches, firewalls, load balancers, IT service management (ITSM) solutions such as ServiceNow and Jira, OSS/BSS, and ticketing billing solutions, among others.
Role-based access control (RBAC) and multitenancy	The Anuta ATOM Platform supports role-based access control and multitenancy, which allows the customization of privileges to various functions in ATOM.

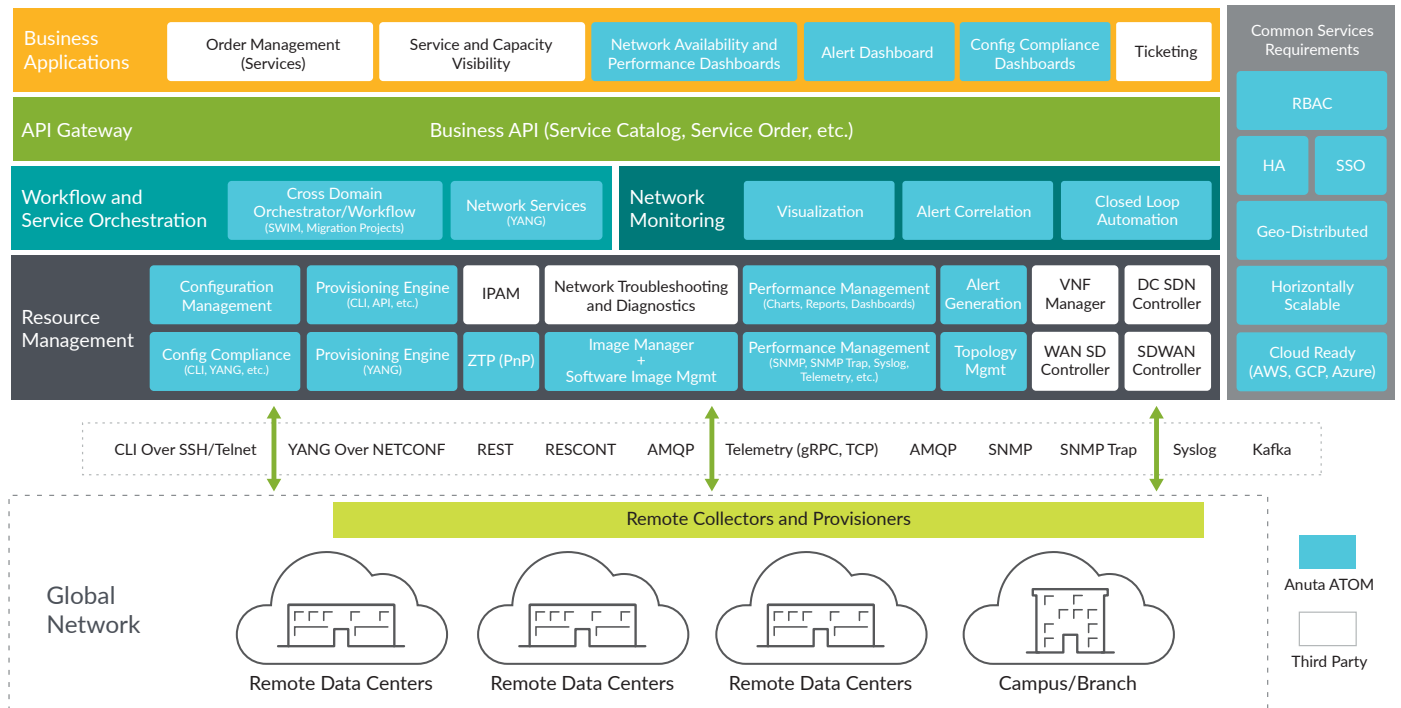


Figure 2: Network automation ecosystem with Anuta ATOM

Solution Components

Anuta ATOM

Anuta ATOM is a microservices-based scalable software platform that provides closed-loop automation and service orchestration by leveraging low-code workflow for provisioning, management, monitoring, and assurance of multivendor networks and services.

The ATOM platform is an open and extensible platform and supports REST APIs for integration with network ecosystems such as IPAMs, OSS/BSS, and ticketing systems. ATOM workflow automation provides an intuitive and graphical low-code framework, enabling administrators to break down

complicated MOPs into smaller, simpler subroutines or libraries. The platform is containerized and can be deployed on premises or in public, private, hybrid, or multiclouds, including AWS, Azure, and GCP.

HealthBot

HealthBot is Juniper's network health and diagnostic solution, providing consistent and coherent operational intelligence across network deployments. Integrated with JTI and standards-based OpenConfig telemetry, HealthBot aggregates large volumes of time series telemetry data and provides a multidimensional view across the network and applications, translating real-time analytics into actionable insights.

NorthStar Controller

Juniper Networks NorthStar Controller simplifies, optimizes, and automates the provisioning, management, and monitoring of segment routing and IP/MPLS flows across large networks. Network operators use NorthStar Controller to optimize network infrastructure through proactive monitoring, planning, and explicit routing of large traffic loads, dynamically based on user-defined constraints.

NorthStar Planner

Juniper Networks NorthStar Planner is a network planning solution that provides concise, in-depth views of a routed network in an intuitive graphical format, helping network managers to optimize time, bandwidth, and network resources. The planner can forecast the impact of network growth or realignment, while planning tools help you dynamically create explicit routing paths using a global view based on user-defined constraints.

Summary—End-to-End Monitoring, Service Orchestration, MOP Automation, Compliance Enforcement, and Closed-Loop Automation

The Anuta ATOM platform, along with HealthBot, NorthStar Controller, and NorthStar Planner from Juniper, provides a perfect solution for end-to-end monitoring, service orchestration, and MOP automation. This joint solution enables network operators to design, develop, and manage a variety of network services, allowing them to define various complex configuration and compliance policies and ensuring constant enforcement of all policies across the network.

Next Steps

To ease solution procurement, Anuta's automation products are available through Juniper Networks.

To learn more about Juniper and Anuta's joint solution, please visit Juniper's Solutions Partner Page at www.juniper.net/us/en/dm/anuta-networks-partnership/.

About Anuta Networks

Anuta Networks is a leading provider of web-scale on-premises and cloud network orchestration and assurance software for branch, campus, data center, and service provider networks. Headquartered in Silicon Valley, Anuta Networks is a Gartner Cool Vendor and Best of VMworld award winner three years in a row.

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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