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Anuta ATOM* Network Automation Solution Builds Smart Networks

ATOM software delivers a closed-loop automation solution that delivers assurance, analytics, and orchestration for multivendor networks to improve network throughput and reliability, simplify administration, and contribute to data security.

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5G, internet of things (IoT), and other emerging communications technologies have the potential to dramatically increase the number of devices connecting to the network and to increase the data consumption per user. Network automation solutions are evolving to address the resulting increase in network complexity. These network conditions create a need to move towards self-learning, self-healing smart networks. Intel® Network Builders ecosystem partner Anuta Networks* has developed ATOM* to help organizations smoothly integrate these new network technologies to their networks.

Network Expansion Increases Management Challenges

New streaming services and internet of things (IoT) applications are grabbing headlines, but buried in the details is the impact these new technologies are having on the network. Bandwidth-intensive, real-time services like streaming video, online video games, and augmented reality/virtual reality (AR/VR) consume massive amounts of bandwidth and require low latency. Emerging IoT applications use relatively little bandwidth per device but typically have very large numbers of connected devices, which creates connectivity complexity.
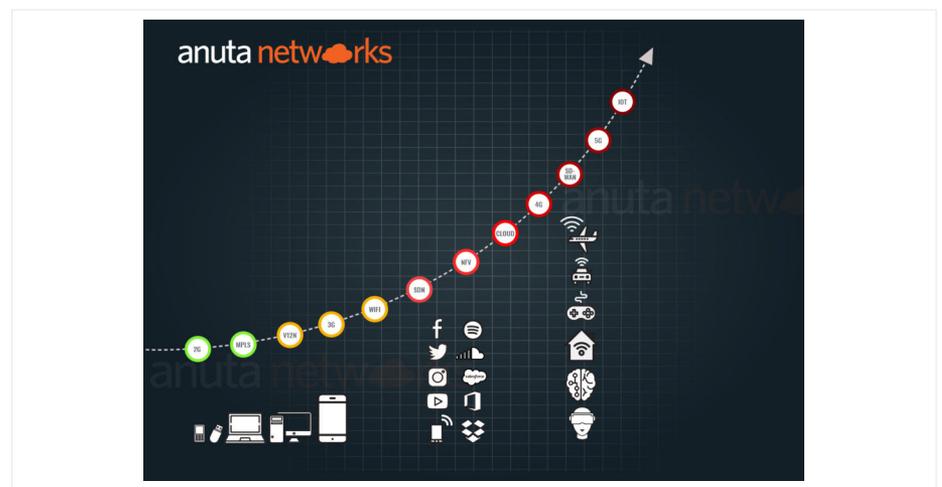
Figure 1. Illustrates the new network applications and functions that are adding complexity to the network and also how the network has evolved from 2G and MPLS to 5G to respond to this changing environment.[1]

Additionally, advanced network capabilities enabling greater mobility are needed to facilitate business policies that support network access for traveling workers or those working from home, or that allow workers to connect their own tablets, smartphones, and other devices.

Automation of network management tasks can help enterprise and communication service provider (CommSP) networks to support bandwidth, connectivity, and mobility challenges. One approach is automation through scripts or point solutions, but these typically target only a small part of the network, have limited scalability, and are insufficient to manage and monitor a complicated, enterprise network. Network-wide automation solutions must provide both a scalable bird's eye view of the entire network and the capability to drill down to manage and monitor a particular device.

ATOM: Analytics and Closed-Loop Automation for Multivendor Networks

ATOM is a closed-loop, intent-based management system that can automatically onboard and provision new and existing devices, maintain and upgrade images and services on the device, detect and remediate violations from a pre-defined baseline behavior, collect and display detailed network insights, as well as recognize patterns and self-heal after identifying the issues.

ATOM is modular, extensible, scalable, and cloud-native software platform based on microservices that can be independently scaled-up and scaled-down based on network conditions. ATOM can be plugged into any Kubernetes* environment and can be deployed on premises or on leading public cloud services. The microservices architecture uses containers that reduce the overall system footprint and provides extensive ability to scale to a large number of devices.

ATOM can configure complicated IP VPN, E-Line, and VPLS services. To configure, maintain service state, and enforce compliance on those services, network administrators can create service models in ATOM. These models are created specific to the customer use-case. Figure 2 shows the ATOM dashboard tracking hardware vendor devices in the network, number of services per tenant, devices and collection profiles, assurance profiles, and telemetry alerts and actions.
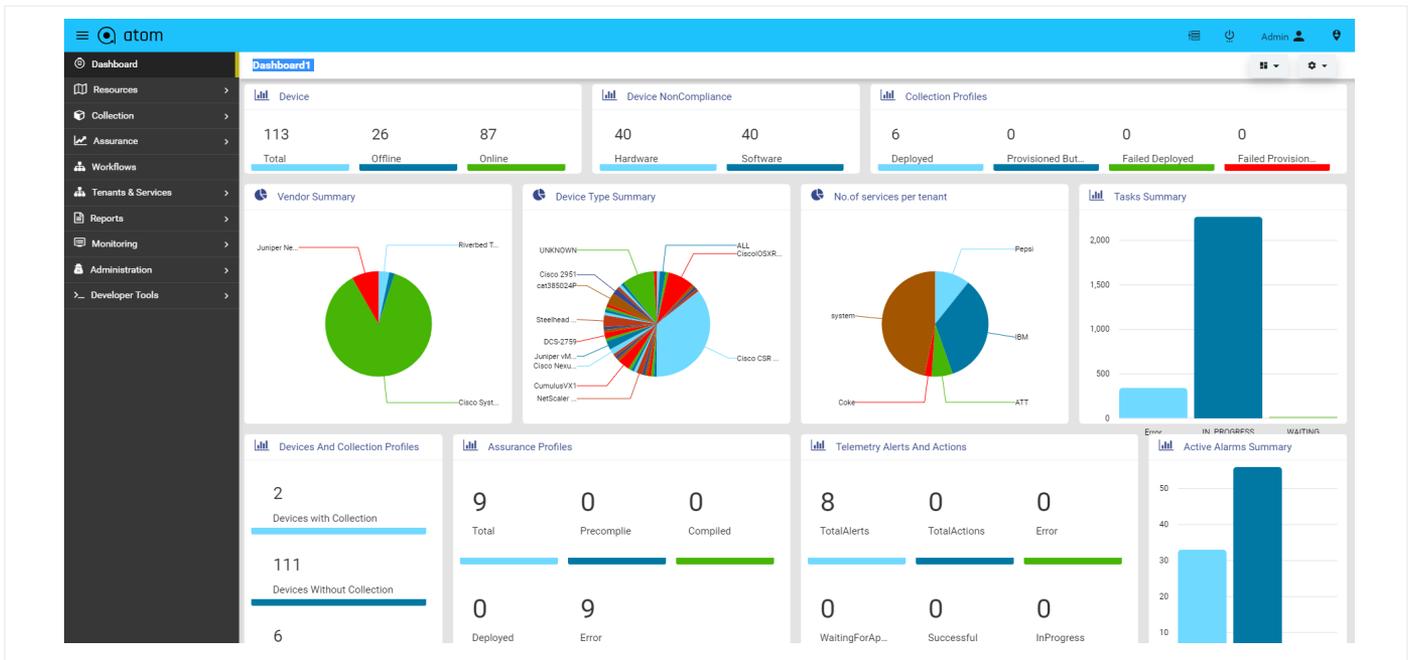

Figure 2. ATOM management GUI.

Key platform functions include:

Zero-Touch Provisioning: ATOM works as an Open Plug & Play (PnP) server that automatically provisions a newly connected device with a customer-developed configuration. ATOM can also automate the maintenance and upgrading of software images on devices.

Workflow and Low Code Automation: Low code automation is a programming environment for application software creation using graphical user interface (GUI)-based configuration instead of computer programming. ATOM provides an intuitive graphical design capability to design, deploy, and execute simple or complicated network operations and procedures. It allows the administrator to configure pre-checks, post-checks, and approval flow.

Telemetry & Network Analytics: Anuta's ATOM uses model-driven telemetry (MDT) to help organizations collect detailed network data from connected devices and generates in-depth insights that will help the enterprise or CommSP to deliver innovative applications and solutions. MDT is an alternative to interrupt-driven telemetry and allows administrators to instruct the device on exactly what data to collect and how frequently. ATOM can collect network data from a variety of sources, including streaming telemetry, simple network management protocol (SNMP), SNMP Traps and Syslog. The diverse data format of each source is normalized by ATOM to provide a single consistent and uniform view to the administrator.

The open source Grafana* analytics visualization software (see Figure 3) is packaged as part of ATOM to view historical data and observe patterns that can provide insight on network trends. Organizations can use open APIs to utilize machine learning and artificial intelligence (AI) platforms with ATOM to generate business insights from the network element configuration and operational state.

Figure 3. Grafana dashboard example.

Closed Loop Automation: Network administrators can use the data collected by ATOM to define baseline behaviors for their network and set remediation actions to be initiated on any violation of any of these behaviors. ATOM's correlation engine constantly monitors and compares the collected data with the baseline behavior to detect any deviations. On any violation, the pre-defined remediation action is triggered in order to maintain network consistency. The solution simplifies troubleshooting by providing the context of the entire network. Customers can define key performance indicators and corrective actions to automate SLA compliance.

Multivendor Support: Anuta ATOM supports network devices from more than 45 vendors and automates use cases including data center automation, intercloud, micro-segmentation, security as a service, load balancing as a service (LBaaS), campus/access, branch/WAN, IP/MPLS edge, virtual CPE, and NFV. Using the ATOM software development kit (SDK), customers or partners can add additional devices from other manufacturers.

ATOM Manages Tata SD-WAN Project

Tata Communications (TCL)* has deployed Anuta ATOM in its IZO* branded SD-WAN service, which is available in 130 countries and 2,000+ cities. Tata's IZO service delivers reliable MPLS combined with cost-effective broadband internet in order to reduce WAN charges compared to an MPLS-only WAN.

The project with ATOM involved 15,000 hybrid customer premises equipment (CPE) devices in the first phase with the plan to support up to 125,000 CPEs by 2021. ATOM helps with on-boarding new clients, which previously required a technician to enter as many as 400 instructions into complex CLIs from four different vendors. The manual processes were cumbersome and caused errors and inconsistencies. With ATOM, configuring a single CPE could be done from a

Benefits of Anuta ATOM Platform

- Single source of truth through multivendor support and scalability
- Device discovery and PnP help accelerate deployment
- Operational expenditure reduction through templated service models and ongoing monitoring and remediation
- Easy to access device visibility and network health with in-depth analytics
- Consistent network behavior and improved uptime with closed-loop automation
- Automated security policy enforcement and compliance management
- Workflow automation with tight integration to ticketing/billing and other entities

single screen with much less complexity and in much less time. In addition, end users are now able to self-administer changes from a self-service portal that are automatically implemented via ATOM.

ATOM Developed on Intel® Xeon® Scalable CPU for Performance

Anuta developed ATOM on Intel® Xeon® Scalable processor-based servers, which provide the compute performance required for the software in addition to software compatibility with other Intel® CPUs that enables seamless deployment on a wide range of servers that might be used in network elements and servers throughout the network.

3

Intel Xeon Scalable processors deliver data center processing performance. These processors feature an open architecture that scales and adapts with ease to handle the demands of emerging applications. The platform provides a future-ready foundation for agile networks that can operate with cloud economics, be highly automated and responsive, and support rapid and more secure delivery of new and enhanced services.

Conclusion

There is an urgent need for a next-generation holistic automation framework that can scale and automate the entire multivendor network and provide meaningful insights to improve security and reduce latency. Anuta ATOM provides vendor agnostic, scalable platform that integrates with majority of the existing infrastructure to accelerate network deployment, reduce operating expenditures, provide excellent visibility, and minimize service level agreement violations.

About Anuta Networks

Anuta Networks is a leading provider of web-scale on-prem and cloud network automation and assurance software for the branch, campus, data center, and service provider-managed multivendor enterprise networks. Anuta ATOM analytics and closed-loop automation platform enables customers to accelerate network services. Anuta ATOM offers complete lifecycle service orchestration and telemetry for the physical, virtual, and hybrid multi-cloud networks thus allowing customers to leverage their investments in existing network infrastructure and transition them seamlessly to Intent-Based SDN and NFV environments. Headquartered in Silicon Valley, Anuta Networks is a Gartner Cool Vendor* and Best of VMworld* award winner three times in a row. Follow Anuta Networks on the web at: www.anutanetworks.com.

About Intel® Network Builders

Intel Network Builders is an ecosystem of infrastructure, software, and technology vendors coming together with communications service providers and end users to accelerate the adoption of solutions based on network functions virtualization (NFV) and software defined networking (SDN) in telecommunications and data center networks. The program offers technical support, matchmaking, and co-marketing opportunities to help facilitate joint collaboration through to the trial and deployment.