anuta netw⬤rks

ATOM: Assurance, Automation, Monitoring and Orchestration for Multi-Vendor Networks

Introduction

Worldwide network operation teams and product owners are facing intense demands to turn on differentiated services at a faster rate while keeping the network stable and to automatically recover from failures to ensure SLAs. Further complicating matters, operators are burdened with legacy infrastructure, broken processes, limited visibility and shrinking budgets.

Anuta ATOM uniquely addresses these pain points and delivers a modular, extensible, scalable and cloud-native software platform that enables enterprises and service providers to rapidly design and provision network services, collect real-time telemetry, display deep network analytics, ensure compliance and provide service assurance for multi-vendor physical and virtual infrastructure. With ATOM, networking teams can deliver services faster, eliminate human errors, avoid security violations, reduce OpEx and meet SLAs with exceptional high availability.

Product Overview

Anuta ATOM is a highly scalable cloud-ready platform for network orchestration & monitoring. Anuta ATOM combines the best of model-driven architecture with latest technologies in microservices and analytics to deliver one of the industry's most scalable platforms. The closed-loop assurance in ATOM opens exciting new opportunities to transform today's sluggish networks into intelligent and responsive networks of the future.
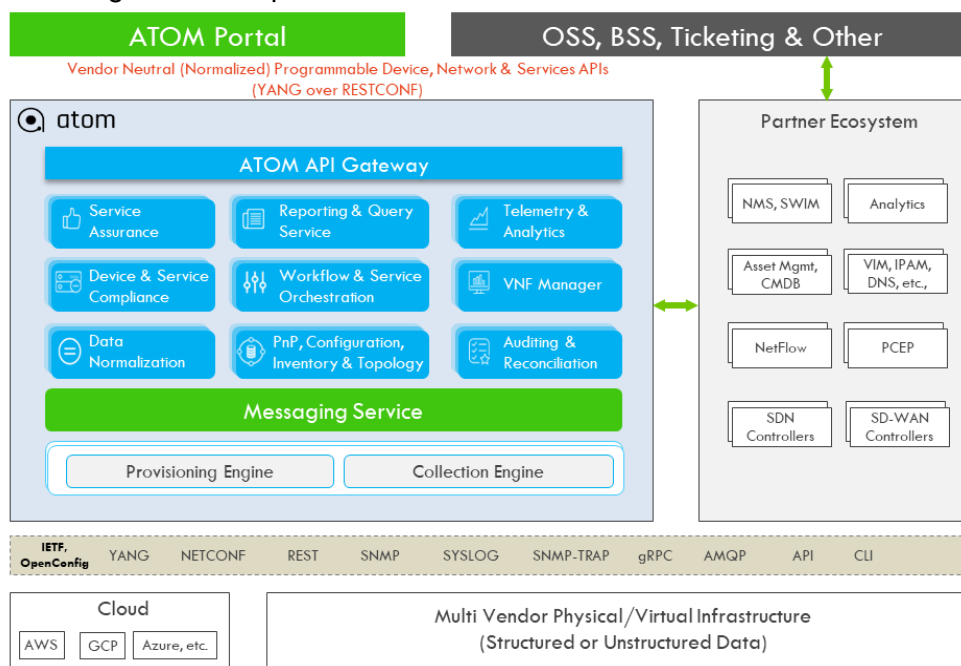

Figure 1. Anuta ATOM Architecture

Anuta ATOM includes an SDK for ease of developing applications using a sophisticated description language, query interface, and other productivity tools. Anuta ATOM is containerized and can be deployed to manage Small, Medium or Very large-scale networks in private, public and hybrid cloud environments.

Features and Benefits

Features	Benefits
Network Orchestration & Assurance for 45+ vendors	One of the broadest industry coverage models
Horizontally scalable to 1 million+ devices	Investment protection for the future demands of IoT and other massive scalability requirements
Streaming Telemetry using Google Protocol Buffers	Open standards approach in multi-vendor environments
Network Monitoring with Real-time Analytics	Allow IT administration to course correct immediately to ensure a higher & consistent QoS
Dockerized to run on any cloud infrastructure including AWS, Azure, GCP	Customer deployment flexibility
Microservices based architecture with High Resiliency and Auto-Scale	Efficient scalability and reliability
A powerful DSL to define KPIs and corrective actions	Based on specific customer requirements
Flexible low monthly pay per use pricing plans	Minimize business risk with financial security

Supported Platforms

Anuta ATOM is validated with 150+ platforms from 45+ vendors. For the full list, visit: https://www.anutanetworks.com/managed-devices/

Vendor	Physical	Virtual	SDN
A10		vThunder	
Alcatel Lucent	7950, 7705		Nuage VSP
Arista	7000, 7500		
Brocade	VDX 6700, 6900, 8770, Fast Iron, Big Iron	Vyatta 5400, 5600, SteelApp	
Checkpoint	Provider-1, Secure GW, 4K, 12K, 13K	R77 Virtual GW	

Cisco	ASR, ISR, CSR, Nexus 1-9K, Cat 2k-4K, ASA, FWSM, ACE, WSA	vASA, Virtual WSA, CSR1000v, vWAAS	ACI and APIC
Citrix	NetScaler MPX, SDX		
Huawei	NE40E-X8, NE40E-X3		
Juniper	MX-80, 240,480,960; QFX, EX 4200, 8200, ISG, SRX	vSRX, vGW	Contrail
Palo Alto Networks	PA Series	VM Series	
Radware	5412XL	ADC-VX	
Riverbed	Stingray, Steelhead Physical	Steelhead Virtual	
VMware		vShield Edge GW, dVS, vCenter	NSX*

Scalability & Deployment Spec.

	SMB (< 1K Devices)	Small (5K Devices)	Medium (50K Devices)	Auto Scale (50K – 1M+ Devices)
Deployment Type	Embedded	Distributed, Multi-Node	Distributed, Multi-Node	Distributed, Multi-Node
Software Distribution	Virtual Machine or Docker			
Self-Healing & Resilient, HA	No	Yes	Yes	Yes
Multi-Tenancy, RBAC/NACM	Yes	Yes	Yes	Yes
Disaster Recovery	No	Yes	Yes	Yes
Cloud Ready	Private Cloud, Public Cloud - AWS, Google Cloud Platform, Microsoft Azure			
Total System Footprint	32GB RAM 4 vCPUs 100GB HDD	600GB RAM 80 vCPUs 1.5 TB HDD	1.0 TB RAM 120 vCPUs 1TB HDD 1.1 TB SSD	Varies per the Performance and Throughput requirements
Other Deployment Requirements		Logging, Messaging, Time-Series DB		
Throughput & Metrics		KPIs can be tuned. The system will scale and as required to meet the KPIs.		

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Detailed Features list

Network Services:

❖ Application Delivery in Private Cloud
❖ FWaaS, LBaaS
❖ CPE: Physical, Virtual and Hybrid
❖ IP/MPLS backbone - L2 VPN, L3 VPNs
❖ Cloud Interconnect
❖ Segmentation in Campus Networks
❖ Data Center Interconnect
❖ IETF YANG models, OpenConfig models

Network Functions:

❖ VLAN, VXLAN, Virtual Port Group
❖ Firewall, NAT- Physical & Virtual
❖ Load Balancer- Physical & Virtual
❖ WAN Optimizer- Physical & Virtual
❖ VRF
❖ Virtual Router
❖ Web Security, Proxy
❖ MPLS L3 VPN, IPSec VPN, DMVPN
❖ RIP, OSPF, ISIS, BGP
❖ STP, VPC, MC-LAG
❖ EtherChannel

Resource Management:

❖ Resource Discovery
❖ ZTP, RMA, Network Plug and Play
❖ Topology Discovery
❖ Active Device Monitoring
❖ Config Management
❖ IPAM
❖ Resource Pools
❖ Resource Audit Log
❖ Software Image Mgmt (SWIM/SMU)

Orchestration:

❖ Service Design
❖ Service Chaining
❖ BPMN 2.0 compatible Workflow
❖ Service Deletion
❖ VNF Manager- OpenStack, vCenter
❖ Capacity Forecast
❖ Dynamic Service Provisioning
❖ Service Alerts
❖ Logical and Physical View
❖ Support for TOSCA and YANG models

Telemetry:

❖ Model-driven Collection
❖ Protocol Buffers
❖ Interface Counters
❖ Integrates with InfluxDB, ELK Stack
❖ Sensors – BGP, Interface
❖ Query time series DB for past events and KPIs
❖ Integration with Grafana

Analytics:

❖ Device Reports
❖ Query operational data
❖ Visualization with Grafana
❖ Time Series DB
❖ Top-10 anomalies in given time range
❖ Troubled Devices
❖ Tenant-specific alarms
❖ Map L1, L2 failures to service outages
❖ Predictive analytics with ML*

Assurance:

❖ Compliance Validation
❖ Service Validation
❖ DSL for custom KPIs and actions
❖ Define baseline behavior and correct deviations
❖ Monitor BGP neighbor flapping
❖ Security Threat Management
❖ Monitor WAN interface for Jitter, Packet loss, Utilization.
❖ Traffic migration from primary to secondary
❖ Automatic config backup per KPI

System:

❖ VM or Docker Image
❖ Scalable Server & Agent Model
❖ Role Based Access Control
❖ Kubernetes based Cluster Management
❖ Multi-Site & DR
❖ Java SDK
❖ API Gateway & Load Balancing
❖ Application Tracing
❖ Dynamic & Customizable UI