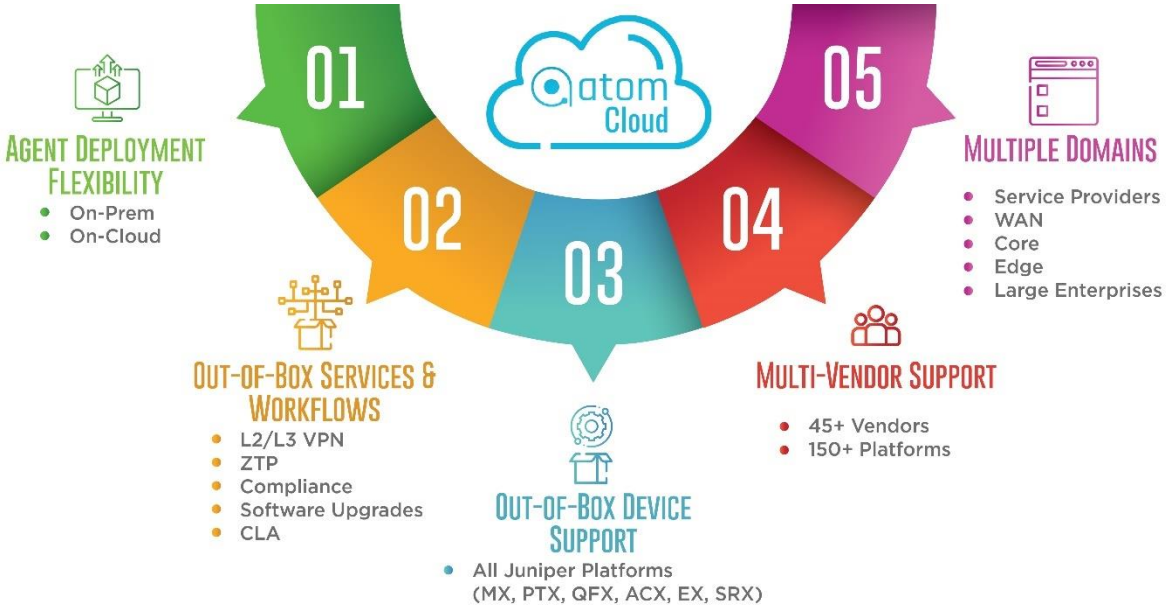
ATOM Cloud: Automation, Monitoring & Assurance as a Service for Multi-Vendor Networks

Introduction

Worldwide network operations teams are facing intense demands to deploy differentiated services at a faster rate while keeping networks stable and automatically remediated. Further complicating matters, operators are burdened with legacy infrastructure, broken processes, limited visibility, and shrinking budgets. Network management solutions deployed on-premises also typically involve deployment and installation hassles leading to delayed ROI.

Anuta Networks ATOM Cloud uniquely addresses these pain points and delivers a scalable, secure and an intuitive Software-As-A-Service (SaaS) platform. Enterprises and service providers alike can subsequently rapidly design and provision network services, leverage crowdsourced analytics, ensure compliance, predict possible violations, and provide service assurance for multi-vendor physical and virtual infrastructure. With ATOM Cloud, networking teams can onboard devices and users rapidly, deliver services faster, eliminate human errors, prevent security violations, and scale as they grow. The end result is a reduction of OpEx, elevated customer experience and SLA compliance that delivers with exceptional high availability.

The ATOM platform also provides the industry's first comprehensive and integrated software-as-a-service platform for multi-vendor automation, orchestration, and monitoring of network devices, services, and workflows.



Product Overview

ATOM Cloud is a secure and intuitive software-as-a-service platform for service orchestration, workflow automation, configuration, and compliance management & network monitoring. ATOM combines a best of breed model-driven architecture that incorporates the latest technologies in microservices and analytics to deliver one of the industry's most flexible and extensible platforms. Low-Code Automation in ATOM also opens exciting new opportunities to transform today's sluggish networks into intelligent and responsive ones in the future.

The ATOM Cloud platform is hosted in the Amazon Web Services public cloud and is massively available - across America, Europe, and the Asia Pacific regions. Physical and virtual devices in customer networks can connect to ATOM Cloud via ATOM Agents. The Agents can be deployed on customer premises or in the cloud for the ultimate degree of flexibility and workflow need (See ATOM Cloud Agent).

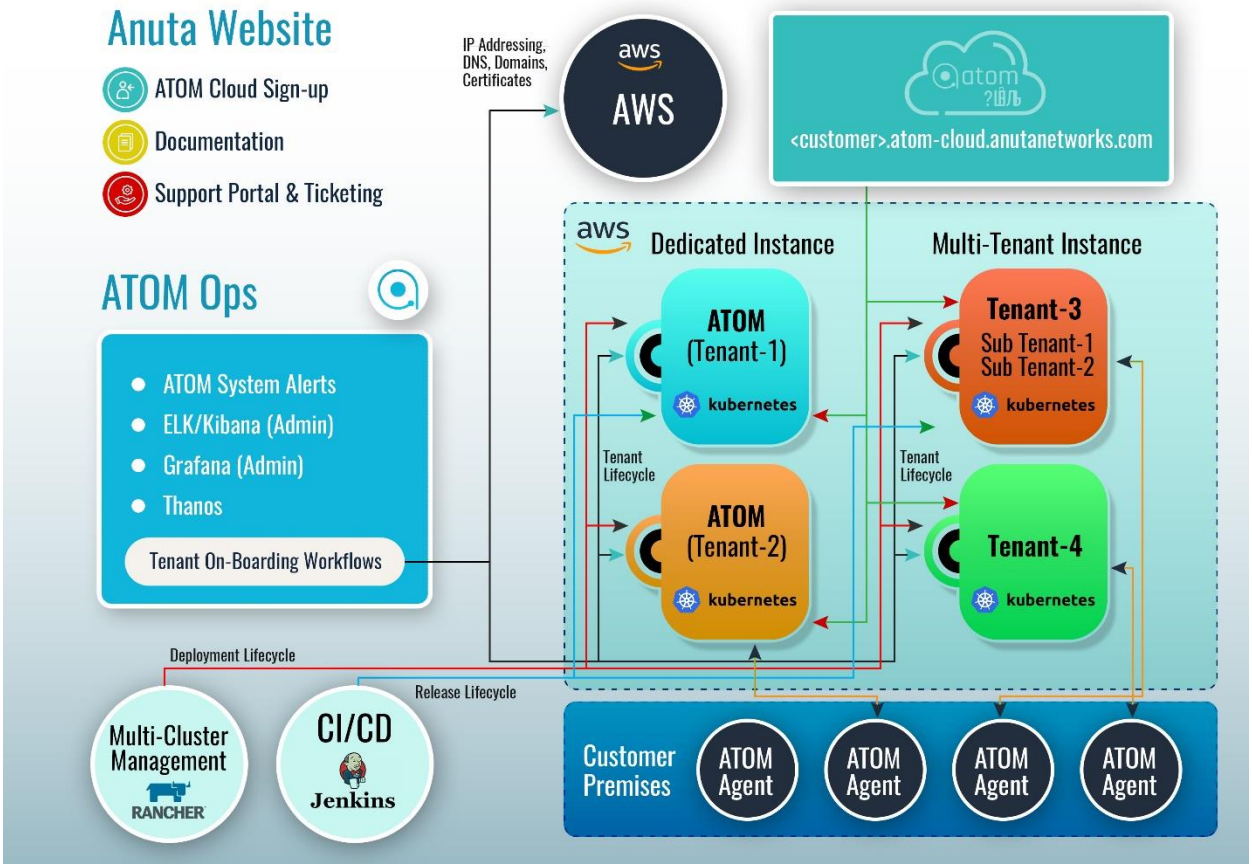


Figure 1: ATOM Cloud Architecture

Features and Benefits

Features	Benefits
Network Orchestration & Assurance for 45+ vendors	One of the broadest industry coverage models
Manage thousands of 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
Deploy ATOM Agents on VMs or containers on premised or on cloud	Customer deployment flexibility
High availability and resiliency of 99.999%	Efficient scalability and reliability
Crowd source analytics and predictive assurance	Receive customized suggestions on improvement of your network
Hundreds of out-of-box workflow and service model templates	Enhanced time to value
A powerful framework to define KPIs and corrective actions	Trigger and Define custom actions for automated troubleshooting
Flexible low monthly pay per use pricing plans	Minimize business risk with financial security

Security

ATOM Cloud is compliant to SOC2 and GDPR standards. It provides best in class security that includes safety, availability, integrity, confidentiality, and privacy for all data - whether at rest or in transit. Customers can be onboarded into a shared or dedicated infrastructure as well. The nature of ATOM Cloud's shared instance provides comprehensive multi-tenant capabilities to facilitate complete data privacy, segregation, and isolation.

The ATOM platform also supports granular role-based access control across all platform features, including inventory management, workflow automation, service orchestration, and compliance management. ATOM integrates with LDAP, AD, and TACACS servers for user authentication and authorization. ATOM also provides single-sign-on (SSO) capabilities. Regular internal and external audit of security, penetration, and vulnerability of the platform ensures that no security holes go undetected.

Security Categories	ATOM Features
Physical Data Security	ATOM Cloud relies on AWS to provide flexible and secure cloud infrastructure which align with IT best practices
	All data centers that run the ATOM Cloud platform are secured and monitored 24/7
	Physical access to AWS facilities are strictly limited to select internal cloud staff
Instance and Network Security	Every microservice runs inside a well-defined Docker container that allows specific levels of access to select controllers
	The company's network is segmented using security groups, VPCs, and ACLs in AWS
	Resiliency and disaster recovery to ensure high availability

Customer Data Security	Complete data segregation and isolation through comprehensive Multi-Tenancy capabilities
	ATOM Cloud is compliant to GDPR standards ensuring complete privacy of customer data
	All data – whether in rest or transit- is encrypted with TLS
	Dedicated containers for each tenant as per requirement
Agent Security	ATOM Agents , deployed on your premises, are designed with maximum security considerations
	All communication to and from agents is TLS encrypted
	All agents connecting to ATOM cloud are authenticated uniquely to the tenant to prevent any rogue connections
Access Management	Granular role-based-access-control for all features including the UI
	Integration with LDAP, TACACS+ and AD for an enhanced user security
	Support for SSO with OAuth or SAML
Security Standards and Compliance	ATOM Cloud is compliant with SOC2 and provides security, availability, integrity, confidentiality, and privacy.
	Regular penetration and vulnerability testing ensures the platform is secure
	Periodic security and vulnerability checks by external agencies and consultancies for enhanced security

For an in-depth understanding of ATOM Cloud security provisions, please visit https://anutanetworks.com/security-umbrella-for-your-data/.

ATOM Cloud Agent

ATOM Cloud uses agents to connect to physical or virtual network devices on customer premises. A single agent can manage up to 1,000 customer devices. The agents can also communicate with customer devices using a variety of protocols (see table below). ATOM Cloud agents can also be deployed on-premise or on-cloud using a simple procedure initiated via the ATOM Cloud GUI.

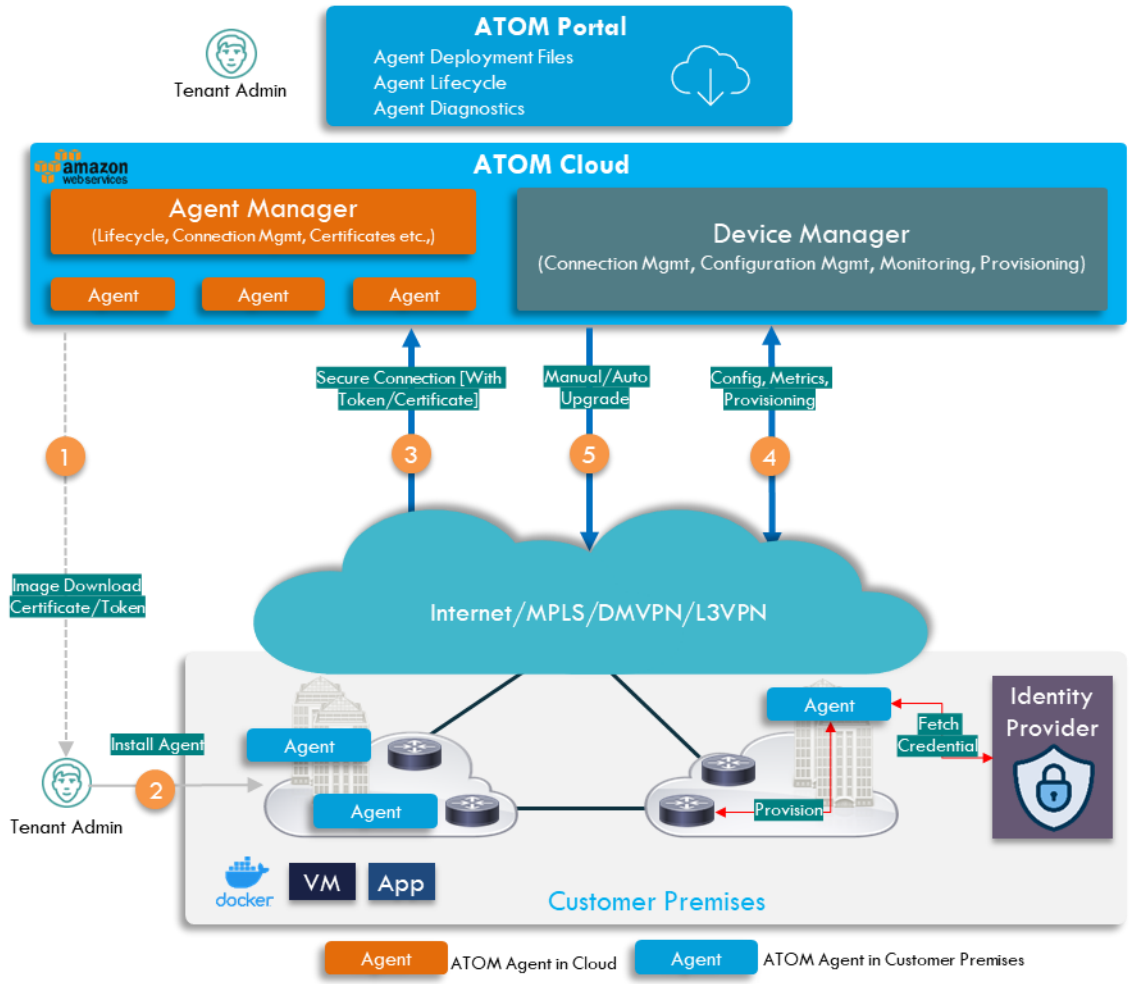


Figure 2: ATOM Cloud Agent Lifecycle

Administrators can download the agent image directly from the ATOM cloud UI for simplicity. The ATOM Cloud GUI also provides a step-by-step procedure to deploy and configure local or remote agents. Upon installation, every agent securely registers with the ATOM Cloud Agent Manager. The agent manager manages and automates the entire lifecycle of the local and remote agents that include manual or automated upgrades, configuration provisioning and periodic data collection.

ATOM Agent Feature	Details
# of devices supported per agent	Up to 1,000 (Depends on use case complexity)
Supported Communication protocols	CLI (SSH, Telnet), NetConf/Yang, API
Supported Collection protocols	SNMP, SNMP Traps, Telemetry, Syslog
Deployment Options	On customer premises or On-cloud
Agent image formats	OVA, Docker Containers
Agent security	See Security Section

Extensibility

Out-of-Box Templates:

ATOM Cloud provides several out-of-box workflow templates and service models to help customers get started instantly. Administrators and operators can easily drag/drop and extend prebuilt libraries to suit their specific business needs. Workflows and service models are developed using industry standards including BPMN2.0 and YANG. Some of the popular out-of-box workflows and service models include the following:

Popular Out-of-Box Workflows	Popular Out-Of-Box Service Models
Software upgrade for JUNOS, IOSXR, IOSXE platforms	IETF L2 VPN with native and openconfig models

Network migration from IPV4 to IPV6	IETF L3 VPN with native and openconfig models
Prechecks and Postchecks such as available disk space, device reachability, configuration sanity etc.	IETF EVPN with native and openconfig models
Zero touch provisioning for greenfield onboarding of network devices	ACL and QoS management
Configuration restoration and RMA procedures	Application Delivery

ATOM Cloud SDK

The ATOM platform includes a Software Development Kit (SDK) for ease of developing custom or extending existing applications and device adaptors. The SDK is provided free of charge to all Anuta Networks customers. Please refer to the API & SDK Guide for more details.

Supported Platforms

The ATOM solution is validated against infrastructure and devices that span 150+ platforms from 45+ vendors. The following is a sample. 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		
ATT		Vyatta 5400,5600	
Brocade	VDX 6700, 6900, 8770, Fast Iron, Big Iron	SteelApp	
Checkpoint	Provider-1, Secure GW, 4K, 12K, 13K	R77 Virtual GW	
Cisco	ASR, ISR, CSR, Nexus 1-9K, Cat 2k-	vASA, Virtual WSA, CSR1000v, vWAAS	ACI and DNAC

	4K, ASA, FWSM, ACE, WSA		
Citrix	NetScaler MPX, SDX		
Huawei	NE40E-X8, NE40E-X3		
Juniper	MX-80, 240,480,960; QFX, EX 4200, 8200, ISG, SRX , ACX	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*

ATOM Cloud Licensing

ATOM Cloud has been licensed to enable customers to start easily and expand rapidly.

Essentials Tier

Network management and Basic Monitoring

- **Device Discovery**
  - CDP/LLDP
  - Openconfig and Native device models
- **Configuration Management**
- **Compliance Management (Out-of-box)**
  - Report generation
  - No Remediation
- **Workflow Automation (Out-of-box)**
  - ZTP / PnP
  - Device Upgrade (SWIM)
  - RMA
  - Node/LineCard Restart/Replacement
- **Monitoring**
  - SNMP & Syslog
- **API capabilities**
- **Integrations (Out of box)**
  - IPAM , LDAP

Professional Tier

Advanced Automation & Monitoring

- **All Features in Standard Tier**
- **Compliance Management (Custom)**
  - Compliance Policy Builder
  - Scheduled Report Generation
  - Manual/Automated Remediation
- **Workflow Automation**
  - All Out-of-box workflows including network (IP stack) migration, l2vpn prechecks
  - Workflow Designer
- **Service Orchestration (Out-of-box)**
  - including IETF based L2vpn, L3vpn, Evpn
- **Monitoring**
  - Telemetry
- **Closed-Loop Automation (Out-of-box)**
- **Security Features**
  - RBAC
- **Integrations (Out-of-box)**
  - Service Now, Federos,

Enterprise Tier

Customization with Advanced Security

- **All Features in Advanced Tier**
- **Device NED (Custom)**
  - Device NED development SDK
- **Service Orchestration (Custom)**
  - Service Model SDK
- **Closed-loop Automation (Custom)**
  - CLA Builder
- **Advanced Security Features**
  - Security Templates
- **Integrations (Custom)**
  - 50 Man hours of free PS support for integrations
- **Dedicated Customer Care representative**

Visit this page to learn more on ATOM Cloud licensing. Contact your sales representative for more details.

Detailed Features list

Network Services:

- Application Delivery in Private Cloud
- FWaaS, LBaaS
- CPE: Physical, Virtual and Hybrid
- IP/MPLS backbone - L2 VPN, L3 VPNs, EVPNs
- Cloud Interconnect
- Segmentation in Campus Networks
- Data Center Interconnect
- IETF YANG models, OpenConfig models
- Zero touch provisioning
- Network Migration
- Software upgrades
- Configuration standardization
- 24x7 Compliance enforcement

Service 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
- Several out-of-box service models
- SDK to create and modify models

Low Code Automation

- End-to-end method of procedure automation
- BPMN2.0 based Intuitive Workflow designer
- Pause and resume workflows
- Workflow versioning and deployment flexibility
- Monitor and troubleshoot workflows
- Several out-of-box workflows Numerous pre-built adaptors
- Integrate with Service Now, BMC Remedy and other ITSM Solutions
- Integrate with external IPAMs including Bluecat and Infoblox

Configuration Management

- Manual and periodic configuration retrieval and archival
- Configuration management for CLI (SSH/Telnet) and Yang/Netconf devices
- Configuration tagging
- Configuration restoration
- Configuration drift identification and remediation

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)

Compliance Management:

- Automated Service and Device compliance enforcement
- Configuration standardization
- Custom Configuration policies and profiles for CLI and Yang/NetConf devices
- Manual or automated non-compliance remediation
- Compliance policy chaining
- Comprehensive and detailed reports

Assurance:

- Compliance Validation
- Service Validation
- DSL for custom KPIs and actions
- Define baseline behavior and correct deviations
- Monitor BGP neighbor flapping

Telemetry:

- Model-driven Collection
- Protocol Buffers
- Interface Counters
- Integrates with InfluxDB, ELK Stack

Analytics:

- Device Reports
- Query operational and performance data

- Security Threat Management
- Monitor WAN interface for Jitter, Packet loss, Utilization.
- Traffic migration from primary to secondary
- Automatic config backup per KPI
- Predictive Assurance*

- Sensors – BGP, Interface
- Query time series DB for past events and KPIs
- Integration with Grafana

- Enhanced visualization with various charts and widgets Visualization
- Time Series DB
- Top-10 anomalies in given time range
- Troubled Devices
- Tenant-specific alarms
- Map L1, L2 failures to service outages
- Crowd sourced analytics*
- Predictive analytics with ML*

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

System:

- Local and Remote agent deployment flexibility
- Role Based Access Control
- SDK to extend device support
- API Gateway & Load Balancing
- Application Tracing and monitoring for admins
- Dynamic & Customizable UI