

Low Code Automation

Workflow and Closed-loop for even the most complex use cases like OS upgrade



What is Low Code Automation

Simply put, Low-Code Automation is a visual development of automation use-cases. Traditional methods of designing automation use-cases involve heavy scripting. Low code automation simplifies the entire process by providing an easy and intuitive drag-and-drop interface.

Programmable networks are essential for a comprehensive automation platform. They bring in much needed agility and

flexibility in the automation framework to cater to use-cases specific to the business.

It makes it very easy for non-technical operators to design and develop complex workflows by abstracting complicated and tedious application and infrastructure programming. Low-code automation helps administrators create new use-cases and modify existing use-cases in a fraction of time that it otherwise takes with traditional programming methods.

Why Low-Code is gaining popularity?

Improve productivity

The drag-and-drop functionality of low-code automation framework enables administrators to rapidly create and modify use-cases and respond to changing environments without any latency or process-halts.

Enhance Security and Compliance

Low-code automation provides an easy and intuitive interface to define and update security and compliance policies such as HIPAA, SOX, PCI and other organisational policies. It allows administrators to implement changes rapidly to be well prepared to address any threats.

Elevate Customer Experience

Low-code automation frameworks help in monitoring and enforcing baseline network behaviour and SLA requirements. By abstracting the underlying complexity, this automation enables administrators to adapt to a lot of dynamic network needs. It helps to reduce network errors and MTTR considerably.

Why Low-Code is gaining popularity?

View network as a single entity

Network process frequently interact with business processes. For e.g. opening a ticket in ServiceNow may trigger some network operation. Low code automation makes integrations across entire network easy. It allows administrators to focus on use case rather on network operations.

Chop operating costs

Low-code automation enables network architects and operators to create and deploy new use-cases easily. It reduces time to configure and accelerates application deployment. Administrators can quickly modify compliance policies and harden security rapidly. Low code is essential to reduce operating costs.



Low Code Automation in Anuta ATOM Platform

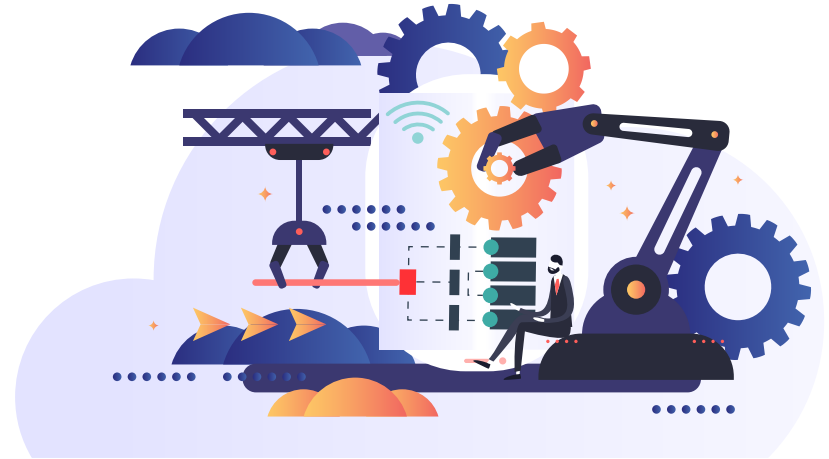


BPMN Based workflow automation

ATOM leverages BPMN 2.0 for low code automation and simplifies the design of self-service workflows with a GUI. Create simple and complex workflows easily with drag and drop interface.

The ATOM workflow Automation engine consists of many components including Configuration Management, Inventory Management, Stateful Model Driven & Stateless CLI based Provisioning engine, Exec-Show command engine, and Performance Inventory.

The ATOM Workflow Automation engine has open APIs and integrates with OSS, NMS, SDN Controllers, CMDB, IPAM, Syslog / NetFlow Collectors and many others.



ATOM Workflow - The real low code framework

Customizable Templates

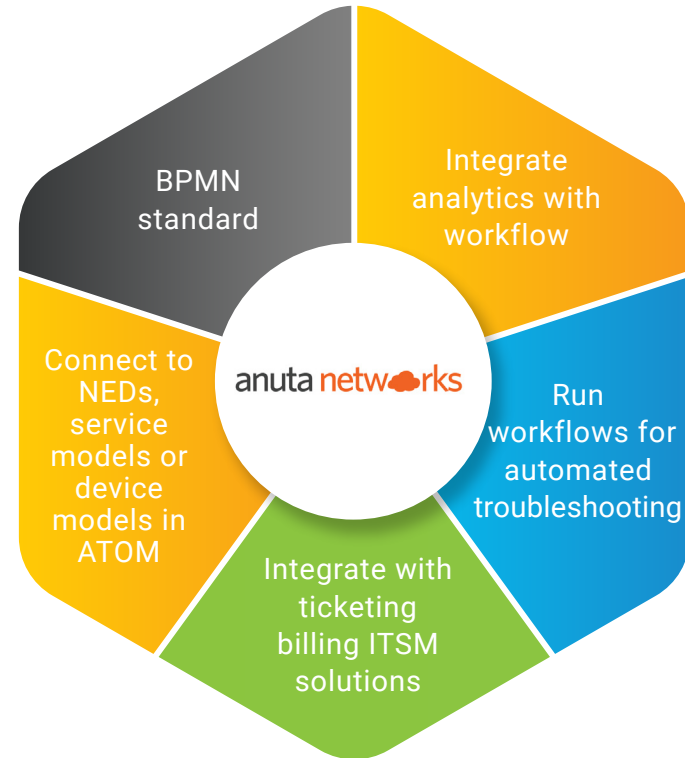
ATOM provides tens of default templates for most common network operations and troubleshooting activities. These templates are extremely customizable and can be easily modified to suit your requirements. The templates cover a wide spectrum of use cases - from simple use cases such as L2/L3 provisioning to complicated ones like an OS upgrade. (Use cases are covered in following slides).

Reusable Libraries

ATOM workflow automation provides an extensible and modular low code framework. It enables administrators to break down complicated workflows in smaller simpler subroutines or libraries. The libraries are independent low code blocks. Any workflow can include these libraries and incorporate their functionality.

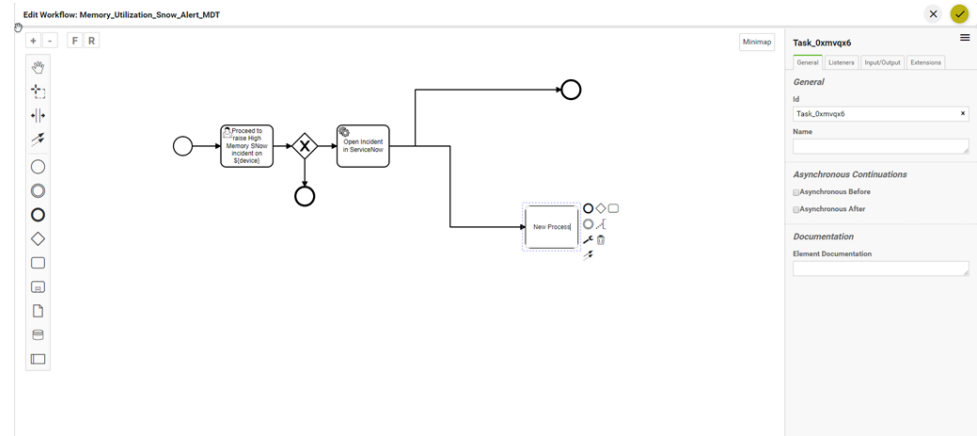
Benefits of Anuta ATOM

Low Code Automation



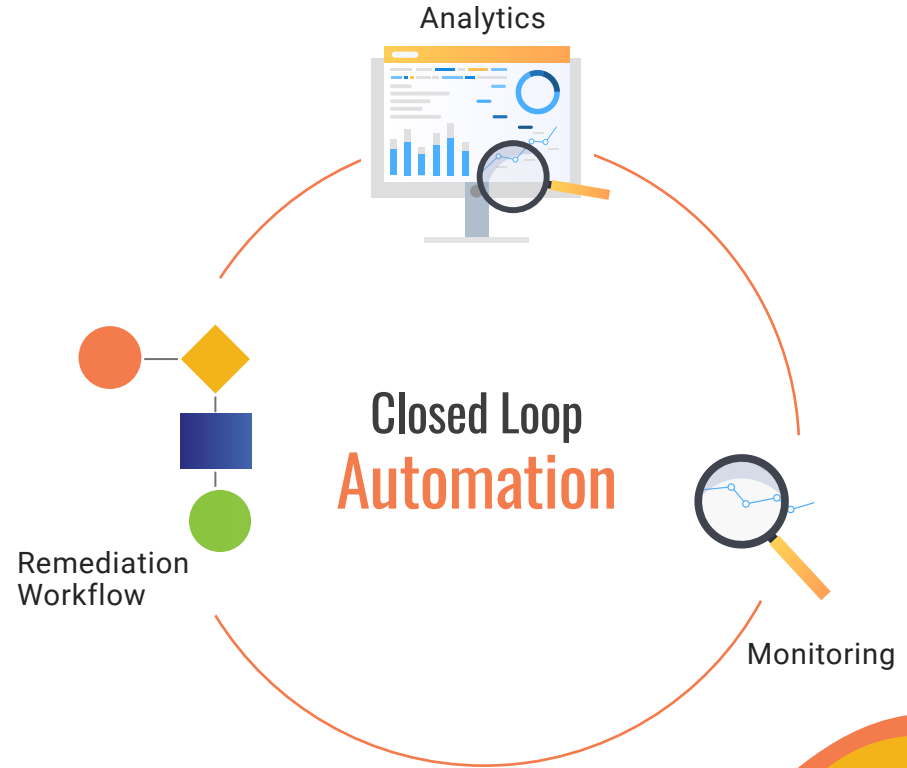
Easily customize default workflows

- Use ATOM workflow builder to extend or modify pre built workflows
- Customize workflows to suit your specific environment



Enable Closed-Loop automation

- ATOM workflow automation integrates with ATOM CLA to provide end-to-end automation
- Enable feedback loops to monitor baseline behaviour and run workflow automatically on violation



Essential Low Code Use Cases



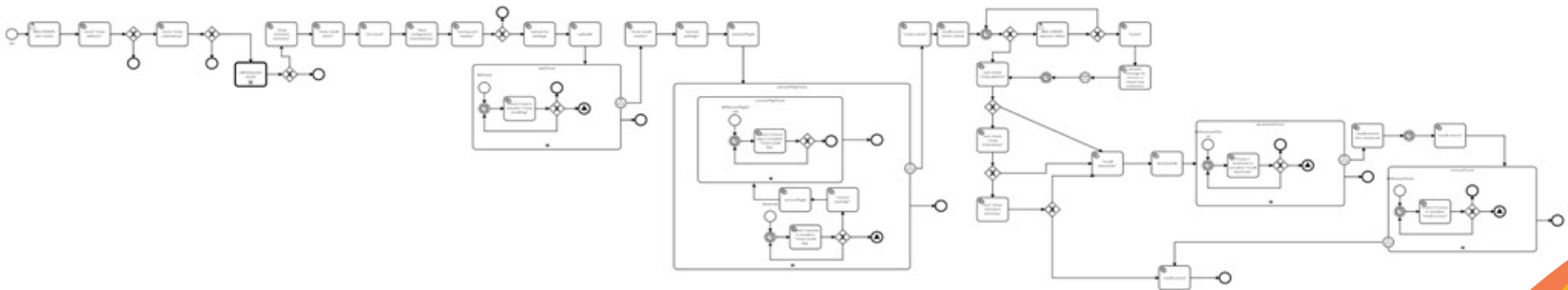
Workflow Automation



Device OS Upgrade

This workflow runs OS upgrade procedure for IOS XR.
Similar workflows can be created for any platform.
Workflow performs

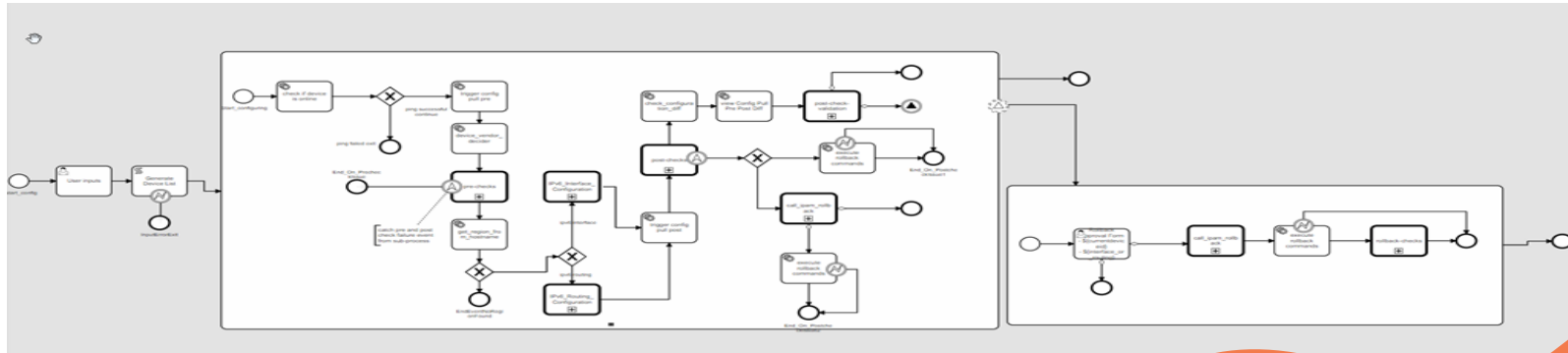
1. Prechecks - disk space check, os version
2. Approval - Integrates with serviceNow and waits for user approval before progressing
3. Form inputs - devices, location of binaries
4. Nested Workflows - Disk space checks
5. Upgrade
6. Post -checks
7. Rollback



Device OS Upgrade

Often organisations need to run a 1 time project. Consider a scenario where a organisation want to transition to IPV6 from IPV4. The above workflow converts IPV4 addresses to IPV6 for multi-vendor devices. It performs the following

1. User inputs - ipv6 configuration parameters
2. Pre-checks - device status, interface status
3. Transform ipv4 to ipv6
4. Post checks - Validate changes & Rollback on any errors
5. Display modified commands and wait for administrator approval
6. On approval, commit changes

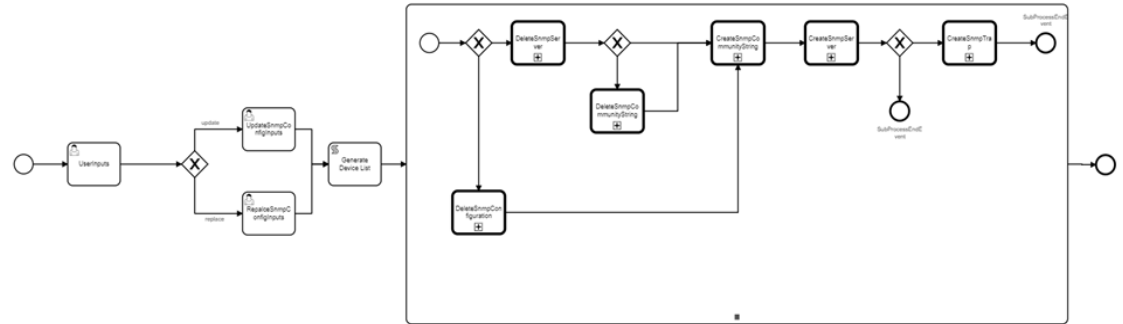


SNMP Standardization

Devices are configured different and thus have non-uniform SNMP Strings. Uniform SNMP strings are essential for consistent monitoring. This workflow standardizes SNMP strings and corrects strings that do not match criteria

Workflow performs

1. Form inputs - list of devices, SNMP string
2. Check to see if SNMP string has to be updated or replaced
3. Run appropriate workflow

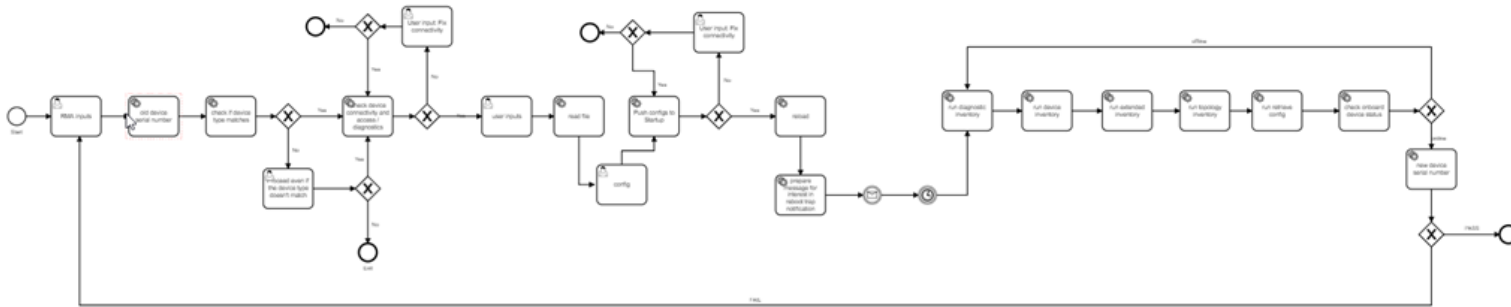


RMA

RMA allows businesses to monitor, track, exchange and upgrade existing devices. Automating this periodic activity saves significant troubleshooting hours.

Workflow performs

1. Receive inputs on the device type, details and other information
2. Check connectivity and access and perform diagnostics
3. Push startup configs and fix connectivity if required
4. Run post checks and receive new serial number

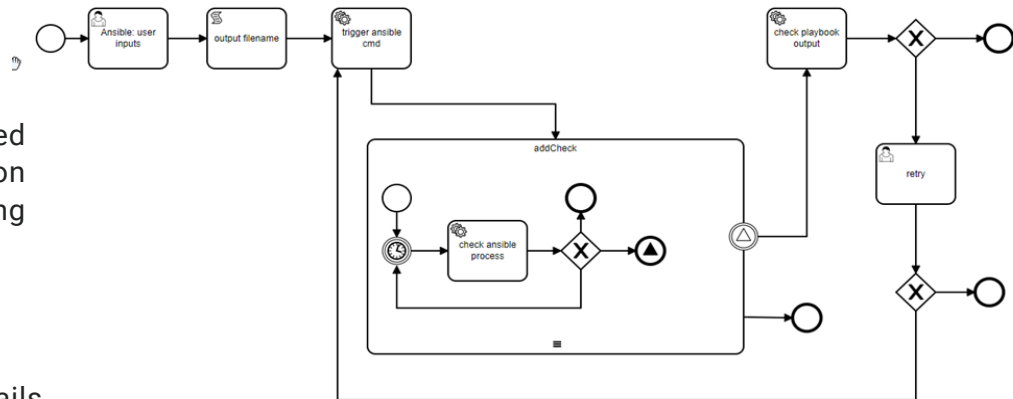


Execute Ansible Playbooks

Many organisations have some pointed and siloed automation using ansible. ATOM's workflow automation integrates with ansible and enables reuse of existing ansible playbooks.

In this workflow

1. ATOM requests user to enter ansible playbook details
2. Workflow then runs the ansible playbook
3. Checks for ansible playbook completion and displays the output
4. In case of failure, ATOM retries playbook execution

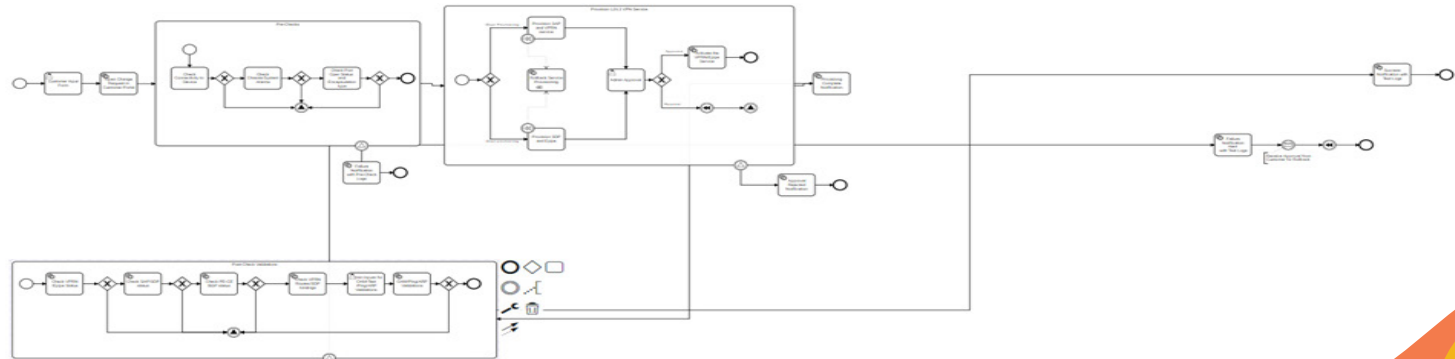


L2 & L3 VPN Deployment

Deploying L2 and L3 VPN services is a typical and tedious requirement for any service provider. It often takes several days and weeks to plan, deploy and validate

the services across multi vendor networks. Workflow simplifies this process by automating the entire method of procedure (MOP).

This workflow receives essential inputs from user. It then runs pre-checks to verify device status and port operational status. Any failure is logged and alerted. Workflow then provisions L2 and L3 VPN. Post checks are run next and any errors trigger a rollback procedure. Workflow also integrates with ServiceNow to perform business processes.



Network Troubleshooting



Configuration Compliance

Compliance to various industry, regulatory and organisational policies require consistent configurations, continuous checks and instant remediations.

Low code compliance enforcement with ATOM

1. Define standard configurations to be present
2. Define corrective actions on violation
3. Schedule periodic compliance checks

Highest Severity	Violations	Name / IP	Policies & Rules													
			BGP TT	OSPF D	ACL un	Disable	Disable	Disable	SSH un	Enable	Enforce	Standar	Standar	Standar	Enable	Remove
<input type="checkbox"/>	Critical	15 172.16.5.46	100%	100%	100%	50%	100%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	4 172.16.5.164	NA	NA	NA	NA	NA	NA	NA	NA	100%	100%	100%	100%	NA	NA
<input type="checkbox"/>	Critical	8 172.16.22.104	100%	NA	100%	NA	100%	100%	NA	100%	NA	NA	NA	100%	NA	NA
<input type="checkbox"/>	Critical	1 172.16.5.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	100%	NA	NA	NA	NA
<input type="checkbox"/>	Critical	4 172.16.3.40	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	NA	NA	NA	100%
<input type="checkbox"/>	Medium	1 172.16.5.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100%
<input type="checkbox"/>	Critical	17 172.16.3.41	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	NA	NA	NA	100%
<input type="checkbox"/>	Critical	2 172.16.5.48	100%	100%	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	15 172.16.5.44	100%	100%	100%	50%	50%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	16 172.16.5.47	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	1 172.16.5.83	NA	NA	NA	NA	NA	NA	100%	NA	NA	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	16 172.16.3.44	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	14 172.16.3.46	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	15 172.16.22.102	100%	100%	100%	50%	100%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	13 172.16.3.33	100%	100%	100%	50%	50%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	15 172.16.3.49	100%	100%	100%	50%	50%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	15 172.16.22.101	100%	100%	100%	50%	50%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	16 172.16.3.43	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	15 172.16.22.103	100%	100%	100%	50%	50%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	15 172.16.5.45	100%	100%	100%	50%	50%	100%	100%	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	2 172.16.3.42	NA	NA	NA	100%	NA	NA	100%	NA	NA	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	14 172.16.3.38	100%	100%	100%	50%	50%	100%	✓	100%	100%	NA	NA	NA	NA	NA
<input type="checkbox"/>	Critical	2 172.16.3.45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100%
<input type="checkbox"/>		0 172.16.22.97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

BGP Flap Remediation

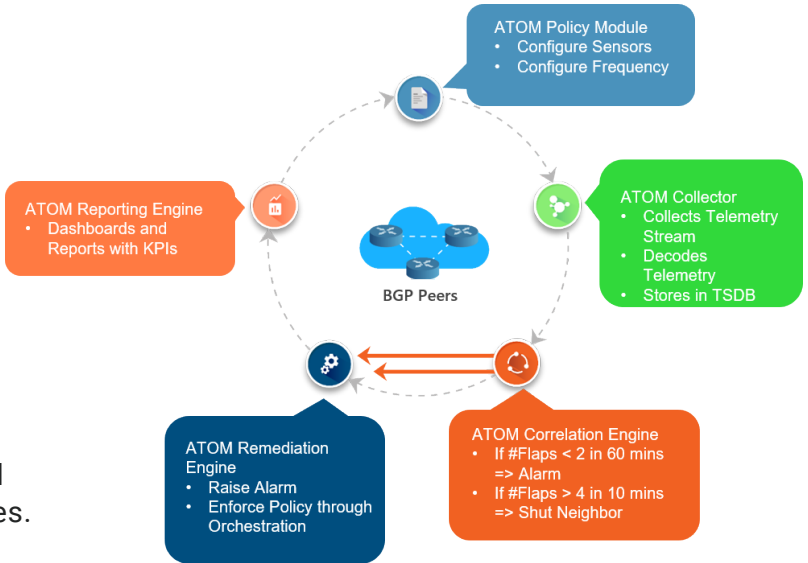
Low code can be used for complex troubleshooting scenarios as well. Using ATOM DSL

We can define complex baseline behaviours. Such as identify and remediate bgp flaps

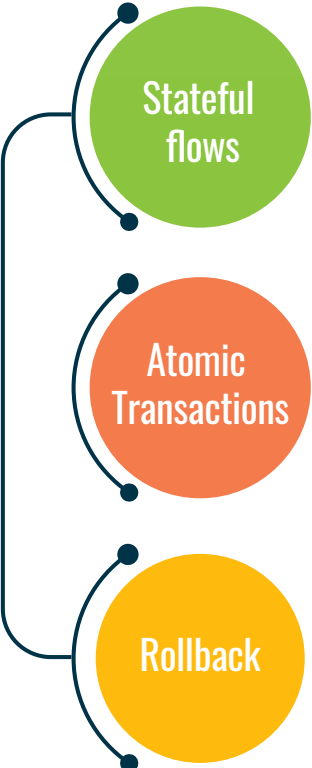
1. Customize out-of-box workflows to shutdown neighbors to suit your network. Out of box “shutdown neighbor,” workflow performs 2 actions.
 1. If there are more than 5 flaps in 1 hour, then ATOM notifies administrators through ATOM dashboards/ServiceNow/BMC Remedy or any other ITSM solution
 2. If there are more than 10 flaps in 1 hour, then ATOM not only notifies administrators but also shuts down the neighbor on approval from the administrator.
2. Define CLA Policy

BGP Flap Remediation

- A. Condition: Using ATOM DSL, define a condition to check if BGP state changes to anything other than established more than 5 times in 1 hour
- B. Action on violation: Run "shutdown neighbor" workflow
- 3. Configure SNMP to receive the BGP peer state. The data is analyzed every 1 minute for a sliding window of 15-minute data to avoid spikes.
- 4. CLA engine checks every hour for the number of changes to BGP peer state
- 5. Based on the number of BGP flaps, an appropriate workflow is triggered.



Limits of Low Code Workflow Automation



ATOM workflow automation is excellent in performing stateless tasks. However, networks often require stateful flows. For e.g. while adding a new VLAN, automation engine has to verify if it's an update procedure to an already existing VLAN or a completely new VLAN. Both network operations have different syntax. It's important to know the previous state of network operation.

Consider a scenario where you are configuring more than 1 network device. Say a loadbalancer, firewall and router for application delivery. If any one device configuration fails, the remaining devices are left with stale configurations. To enforce atomic transactions, i.e. either all are configured or none is configured, automation requires more than mere workflow automation.

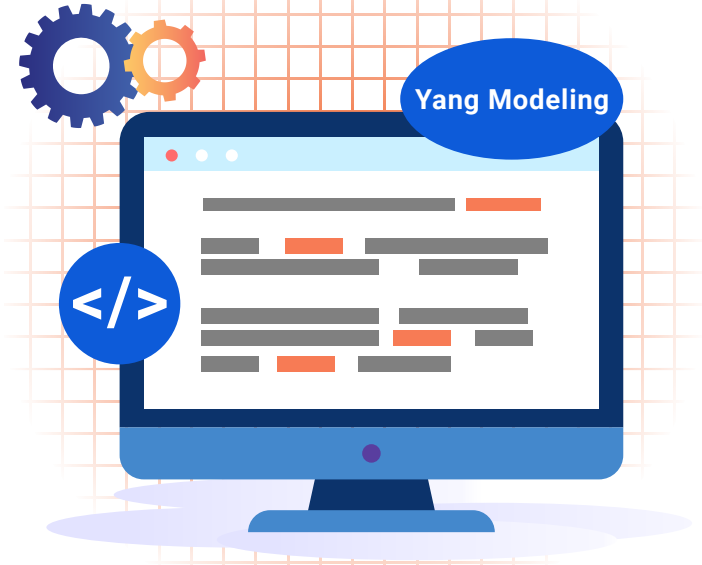
Often while configuring more than one transactions or more than 1 device simultaneously, some transactions may fail. This leads to stale entries in the network. Low code workflow automation cannot provide flexible rollback methods to rollback to original network state in case of failures.

ATOM Service Models to Rescue

ATOM provides, stateful, atomic and transactional flows with the help of service models. Using IETF Yang language, administrators can create powerful, extensible and flexible service templates. The service models can be utilized to order services for a multi-vendor and multi-domain network. ATOM SDK provides all the essential tools to create, verify and deploy service models.

Sample use cases

1. Application delivery - configure a 3 tier application delivery model
2. Firewall automation - create and deploy uniform multi-vendor firewall policies
3. Day0 configuration - Define model day0 configuration to be applied to any device that newly plugs in to the network



A decorative graphic in the top left corner consisting of overlapping orange and yellow circular and wave shapes.

The Ultimate Flexible Platform!

Service Models provide stateful and atomic transactional capabilities. ATOM low-code automation provides you with the benefit of complete workflow automation. Together you receive an ultimate flexible platform that provides you all the ammunition needed for any kind of an use case.

A vertical orange line separating the left and right sections of the slide.

Contact us for a
FREE DEMO
on ATOM's Low Code
Automation framework