anuta netw●rks

Low-Code Automation – Advanced Features

Accelerate Deployments, Eliminate Errors and Remediate Faster.

The avalanche of data traffic is pushing mobile network operators and communication service providers to expand their network footprint. As a result, it's a struggle for thinly stretched operations teams to keep up with innovation, causing bottlenecks due to limited time and staff. It's time to re-think network operations and increase the productivity of existing network operation teams by giving them easy-to-use visual workflow tools to automate repetitive tasks.

Enterprises rely primarily on IT specialists to manage network workflows and keep operations running smoothly. Network workflow automation is a paradigm that simplifies maintenance of virtual and physical network device configurations by removing the manual steps such as logging into routers, switches, load balancers, and firewalls; raising change request tickets to change configurations manually before logging out.

However, the pandemic enforced unprecedented shifts to remote work, making network maintenance and connectivity a new challenge with scattered devices and data centers. The industry has now realized the bigger picture- Workflow Automation is not only a tool for creating an autonomous network but also a strategy to build a future-ready ecosystem. Now is the time for networking teams to leverage the potential of low-code platforms.

Need of the hour

Regardless of automation's diverse capabilities, organizations must remember that one size does not fit all. This is especially true when there is a vast talent shortage and the demands on the networking teams are at an all-time high. Organizations must explore more comprehensive network automation frameworks to ensure that they align with the business needs– fully automated, event-driven, executed in real-time, and completely compliant with the latest Industry standards and expectations.

Anuta Networks ATOM is optimized for the modern multi-cloud environment. It helps to improve workforce productivity by automating tedious and manually repetitive tasks such as setting up devices, applications, and services. It enables non-technical users to quickly build methods of procedures (MOPs) using an intuitive, context-aware, visual workflow. It can monitor health, verify intent, and provide actionable insights and remediations to ensure network uptime. ATOM is also self-configuring and accommodating to address the customers' varying demands and traffic needs.

Future proof your network automation with

Quick Time-to-Market with Intuitive features such as – drag-and-drop interfaces to develop processes faster.

Seamless integration across multiple vendors- 45+vendors, 150+platforms

Ability to self-serve, which gives end-users control to handle IT requests without the need for the service administrator's involvement

Simplified scalability to accommodate demands as your business grows

Value for money by not just minimizing manual operations but also the rapid setup and deployment of applications

Intuitive GUI optimized with reusability, pre-created libraries, and AI/ML.

Re-define Network Orchestration – Low Code Automation

Simply put, low-code/workflow automation is the visual development of automation use-cases. Traditional methods of designing automation use-cases involve heavy scripting with multiple test scenarios. Low code automation simplifies the entire process by providing an easy drag-and-drop policy builder to create workflows for even the most complex use cases like OS upgrades.

Anuta Networks ATOM utilizes an intuitive low-code architecture to rapidly create end-to-end network automation across multi-vendor, multi-cloud, and hybrid infrastructure. This modular approach with self-servicing options allows non-technical operators to build custom workflows by providing pre-designed templates and a user-friendly drag-and-drop model of network devices (both physical and virtual). It also leverages BPMN 2.0 for low code automation and simplifies the design of self-service workflows with a GUI. One compelling outcome is up to a 35% increase in IPv6 migrations.

Designing complex automation processes with an intuitive interface streamlines processes, improves 'time to value,' and creates instant documentation support for any network automation project– fast and error-free. Subsequently, it results in smoother rollouts that leverage the power of next-generation technologies such as 5G, IoT, AI, and more.

ATOM Workflow Feature Highlights

Workflow automation in ATOM accelerates complex Methods of Procedures (MOPs) that span various network elements and software, such as IP Address Management (IPAM) and IT Service Management (ITSM) tools. ATOM also accelerates the synergy of the BPMN engine and the Decision Model and Notation (DMN) standards for greater analytic agility with its advanced workflow features. You can find the detailed discussion of ATOM's basic workflow features in the solution brief-
https://www.anutanetworks.com/wp-content/uploads/2020/02/ebook-low-code-automation.pdf)

1) Out-of-Box Workflows

ATOM includes several pre-built workflows that can be used readily to automate MOPs such as– software upgrades, Zero-Touch Provisioning (ZTP), Switch RMA, bulk configuration updates, pre-and-post checks for VPN services, and more. These workflows also follow best practices from each vendor, thus minimizing configuration errors. The workflows follow BPMN, an open standard, and can be easily extended and customized to match specific environments. ATOM also eases workflow design through an intuitive builder and built-in drag-n-drop interface to construct complex workflows by extending pre-built templates.

ATOM integrates with CI/CD tools such as Git to empower networking teams to release a constant flow of software updates into production to quicken release cycles, lower costs, and reduce the risks associated with development. Active and continuous development in workflows can be achieved through package upgrades in ATOM. For package migration, BPMN files with differences from the current active package will be redeployed as a new version.

2) Reporting for Customizable Workflows

The ATOM platform delivers a deployment-centric view coupled with advanced reporting functionality. For instance, the reporting for a cell-site ZTP workflow includes granular details such as cell site status, SLA per cell site, or failed activities straight to a dashboard. It also provides customizable templates covering a broad spectrum of use cases - from simple use cases such as L2/L3 provisioning to complicated ones like an OS upgrade.

ATOM has always supported granular reporting for these custom workflows so one can view a design in detail. If a workflow involves 15 steps, the ATOM report provides the molecular details of each step, such as its duration, execution status, and whether it matches the expected SLAs. Now network operators are better equipped to manage deployments at scale:

Create custom views by applying filters such as location, tenant, group, date, and more, and pin these views to the dashboard

Can double click into more detail and review granular details for each phase of the workflow

View summary of daily, weekly, or monthly trends of workflow execution status to calculate MTTR, MTBF, and more

Have visibility to a summary of pending, failed, canceled, or completed workflow instances– user actions and associated time logs without opening workflows

## 3) Plug-and-Play Libraries-The ultimate flexible platform

ATOM is packed with a powerful, extensible, and modular low code framework. Users can utilize the independent low code blocks known as libraries to incorporate different functionalities. With ATOM's 350+ reusable libraries, users can drag and drop these elements onto a design canvas and connect them to develop complex MOPs in minutes. The catalog provides simple entries such as RPC calls for issuing show commands to routers and supports complex entries such as BGP alert correlation. The library also delivers sophisticated capabilities such as collecting inventory, archiving configurations, running device diagnostics, reserving IP addresses in Infoblox, opening a ticket in ServiceNow, onboarding a VNF, invoking compliance checks, creating dashboards, and more.

ATOM also allows users to search its extensive catalog using different keywords such as BGP (protocol), Cisco IOS XE RPC (vendor/platform), Telemetry Collection (automation feature), and notifications (ATOM software components), or Graphic for libraries. For convenience, it also supports pin, the most frequently used library on the user dashboard.

Anuta Networks continues to add more libraries as part of the ATOM minor release cadence every three months to expand its pre-built libraries and mitigate the effort to create MOPs.

4) Open API Integration

ATOM's support for Swagger/Open API enables third-party software integration without any incremental developer effort. ATOM, powered by Swagger, auto-discovers APIs and adds them to pre-built catalog entries saving time and effort. ATOM Workflow Automation can integrate with OSS, NMS, SDN Controllers, CMDB, IPAM, Syslog / NetFlow Collectors, etc.
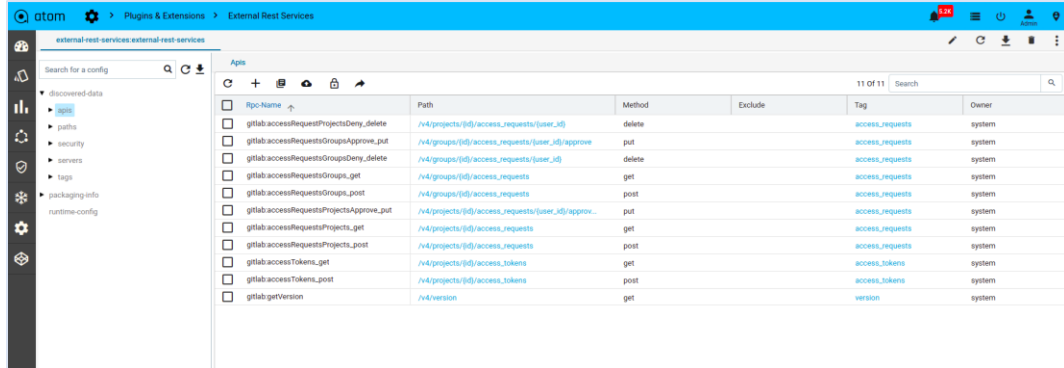
Customers can also connect these libraries with the entirety of ATOM workflow constructs.

ATOM has also been integrated with Atlassian JIRA, Slack, Federos, ServiceNow, Terraform, Ansible, Gitlab, RackN, and Cisco NSO - all validated in customer deployment environments. ATOM's support for open standards such as YANG/NETCONF, REST API, OpenAPI, BPMN, IETF NACM, and CLI/SSH also facilitates Northbound and Southbound Integrations with any 3rd party software of choice. This feature facilitates additional development options for teams, enabling them to expand their capabilities.

5)   Predictive Analytics (AIOps) for Workflow Completion

Along with massive scale workflow execution, ATOM also collects many metrics and generates valuable insights such as:

- *The average duration for individual process definitions or use-cases*
- *Average time spent on a specific task of a particular workflow*
- *Identification of the longest-running task in a process instance*
- *Time spent on user tasks*
- *Analysis of instances executed during a specific period and subsequent creation of a trend chart*

ATOM leverages the power of AI/ML to predict estimated workflow completion time based on the region, location, past data, and more to provide deeper insights into workflows. ATOM also provides the flexibility of integration with existing 3rd party AI/ML products to utilize all the configuration, operational, and event data in generating insights for network operators.

One of Anuta Networks' customers has successfully deployed hundreds of 5G cell sites utilizing a real-time status tracker to monitor the progress of ZTP workflows. It can predict how long a cell site should take for onboarding. In case of any delay, the ZTP workflow automatically opens a ticket in JIRA for the operator to intervene.
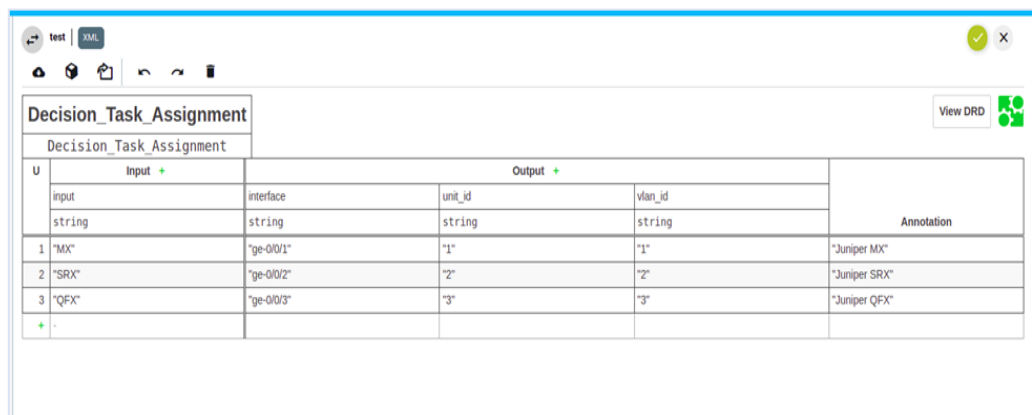
6)   DMN-Decision Model and Notation

ATOM uses the Decision Model and Notation (DMN) capability to optimize workflow and ensure consistent, repeatable decision-making and modeling. DMN is a modeling language and notation for the precise specification of business

decisions and business rules and is easily readable by those involved in decision management. The concept of DMN is also used to avoid overbookings in flights as they approach their scheduled departure. The passenger details act as mini-decision points that can serve as input for other decisions- such as "Is the passenger eligible for upgrades."

Similarly, when multiple conditional inputs are provided to the workflow, the task of providing different inputs based on conditional matching and creating complex logic structures can be exhausting to the network operator. ATOM can eliminate complex logic and code blocks by creating tables through DMN with the required variables based on conditional inputs. The result is a reduction of complexity using intuitive process diagrams that are easier to understand and more resilient to change. This results in a simpler model that can be simulated, tested, and implemented.
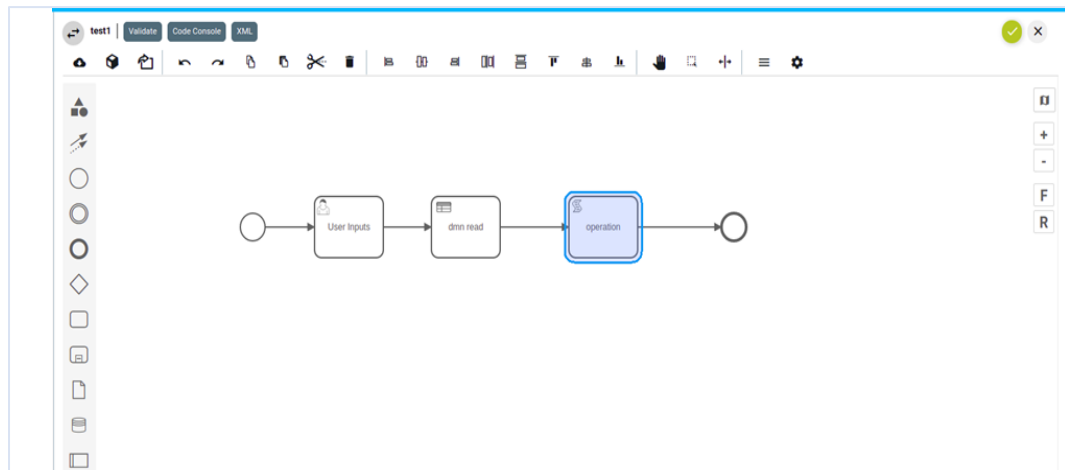
Invoking DMN through ATOM:

STEP 1: When a user provides input in workflow execution, the respective output data will be generated based on the output parameters given
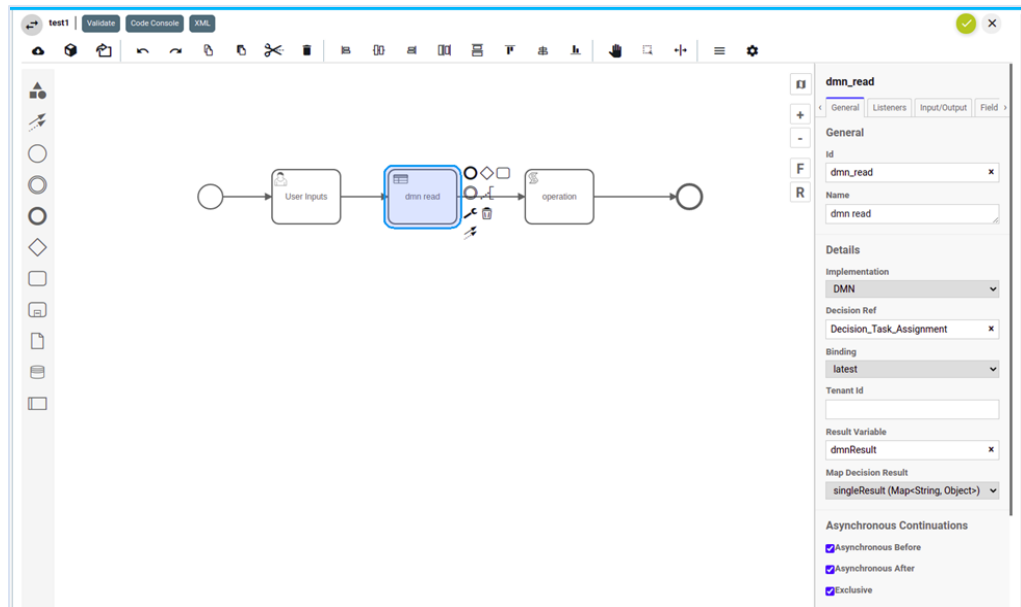

(User task with one input variable)

STEP 2: Create a DMN block inside the workflow and reference the DMN name to fetch the respective output variables based on the input provided.

STEP 3: Next, read and store the DMN table data into a variable that can be accessed later without repeating the process

7) Anomaly and Outlier Detection

Compliance with various industry, regulatory and organizational policies requires consistent configurations, continuous checks, and instant remediations.

But how does one track a throughput metric? It can peak during business hours each weekday when application usage is highest or drop to a local minimum at night and falls to a prolonged lull on the weekend. How can such abnormal metrics be defined and tracked?

Anomaly Detection

Plummeting throughput is a severe issue, but it's often impossible to set threshold alerts to identify its occurrence. The most valuable monitoring metrics are also the most unstable depending on the time, region and situation.

ATOM powered by AI monitors these critical values by analyzing a metric's historical behavior to detect even the slightest of an anomaly with precision. Fluctuations in top-level metrics like Application throughput, web requests, user logins, CPU utilization, and memory utilization can be accurately captured by the anomaly detection algorithm of ATOM. Along with the necessary context for further investigation at one's fingertip for prompt remediation action.

Outlier Detection

It is a non-trivial exercise for many metrics to pre-define what constitutes "normal" versus "abnormal" values – especially for metrics whose baseline value fluctuates over time. Outlier detection can be used in these instances to trigger an alert when a workflow starts reporting errors at an abnormal rate

ATOM evaluates risk using a deployment-centric view, incorporating various factors. Network operators can also quickly identify whether delays are attributable to a slow region or team without choosing a fixed threshold for what constitutes "anomalous" metrics. With the AI in ATOM assisting in recognizing false alarms and minimizing the E's– errors & effort!

8) Remediation

ATOM leverages the immense power of AIOps and predictive network analytics to proactively detect and alert for critical issues before they impact business health. It runs a statistical analysis in real-time on all workflows to determine the baseline and assess whether any workflow deviates significantly from that baseline. Receive prompt notification in email/slack/SNOW or remediate directly using ATOM's closed-loop automation using just a single click!

Conclusion

Every enterprise network automation journey is different; thus, low code can play an essential role in customizing business logic and accelerating the automation process by bridging the skill gap and creating an environment of "self-service."

Anuta Networks can help any enterprise or service provider follow the best practices of low code given its powerful features– an intuitive workflow builder, out-of-box support, and a granular reporting interface. ATOM's advanced low code features facilitate the expansion of any network without the need to add operational staff – it makes existing staff more productive. Be it 5G deployments, router upgrades with pre- and post-checks, or ZTP onboarding for a new device, ATOM can do it all better and more efficiently.

> ## Additional Resources
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> Video-on-demand on Anuta ATOM Deep-Dive demos.
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> **To learn how Anuta Network's ATOM Workflow Automation can help you simplify network provisioning, contact us at** https://www.anutanetworks.com