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SOLUTION BRIEF

Mavenir's Cloud-Native Automation

MAVscale™

Simplify 5G network deployment, save operational expenses, and accelerate time-to-market, using Mavenir's Cloud-Native Automation solution that enables end-to-end automation of 5G network functions' deployment and life cycle management. The solution is an integral of the Mavenir MAVscale™ portfolio enabling more intelligent, automated, and programmable networks to address the challenges of growing network complexity in 5G and beyond.

Executive Summary

As network operations become increasingly complex in 5G and beyond, the need for end-to-end network automation solution has become vital for communication service providers (CSPs).

Mavenir's Cloud-Native Automation solution offers end-to-end automation of 5G network functions' deployment and life cycle management. The Cloud-Native Automation solution accelerates the transition to 5G by introducing easy and faster deployment, eliminating human errors, and enabling easy scaling and flexibility.

This fully automated solution from Mavenir enables an on-demand network that CSPs can scale up or down as needed. Multiple network elements can be activated simultaneously, reducing 5G network deployment time from multiple days to a matter of hours, thereby accelerating time-to-market and maximizing return on investment.

KEY BENEFITS

- Faster 5G rollout for accelerated time-to-market, reducing deployment time by 92%
- Reduced operational costs, eliminating 80% of the manual labour for network deployment and operations
- Improved efficacy with error-free automated processes
- Ease of scaling and flexibility with future-proof cloud-native solution
- Reduced downtime and maintenance window
- Real-time monitoring of complex 5G deployments and operations

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Growing network complexity is a challenge for CSPs

Until 4G, telco services provision primarily catered to services accessed by people, with operational processes built around human behavior. Traditionally, Communication Service Providers (CSPs) typically perform maintenance activities during nighttime hours when people are asleep, with capacity planned around an analysis of population densities and known commuter routes, and anticipated traffic peaks based on consistent human behavior, such as busy hours and holidays.

But for 5G and beyond, networks are required to deliver services to a fast-growing array of non-human devices with varying requirements in terms of bandwidth, latency, and usage patterns. Telco operations to support such a heterogeneous set of services are therefore set to grow progressively complex.

CSPs need more intelligent, programmable, and automated Networks

To cater the needs of demanding and complex services of 5G and beyond, CSPs need more intelligent, automated, and programmable networks. Such a network shall:

- Utilize a Kubernetes cloud built with high performance compute, networking, and storage capabilities
- Evolve Operations, Administration and Management (OAM) from a stove-pipe model – where the EMS of each domain is plugged into the OSS – to fully cloud-native operations, which are horizontal, application-agnostic and support easy integration to other systems
- Employ cloud-native functionality and tools to increase automation – reducing the time, cost, and human error in executing operations
- Leverage AI/ML to gain deeper insights into network behavior – improving the end-user experience and optimizing network resources

End-to-end (E2E) automation is a necessity, not an after thought

Network automation has become a necessity rather than a nice-to-have feature for communication service providers (CSPs). Operational rollouts must be faster but need to be done with fewer people-hours and human-errors – factors causing inefficiency and rework that must be reduced, while reducing the skill set required to operate the network. Network deployments must take an end-to-end approach and automate the network functions and the cloud infrastructure.

Mavenir’s Cloud-Native Automation: Solution Overview

Mavenir’s Cloud-Native Automation solution is a key component of the Mavenir MAVscale™ portfolio – enabling more intelligent, automated, and programmable networks to address the challenges of growing network complexity in 5G and beyond.

This solution is enabled by Mavenir Digital Cloud Automation (MDCA), which operates based on GitOps principles and enables automation of Day-1 initial deployment of Network Functions (NFs), and day-2 life cycle management operations such as upgrades and rollbacks. The solution provides full-stack automation capabilities, which include, infrastructure automation, NFs Automation, and pipeline automation. Its Git-based model enables full version control with history and automatic traceability of current and past deployments, upgrades, and rollbacks - with enhanced security and validation through Continuous Delivery/Deployment (CD) pipeline.

Mavenir’s Cloud-Native Automation solution automates the deployment of the 5G network, handling every step of the process, such as setting up the Kubernetes clusters, installing container-as-a-service (CaaS) and platform-as-a-service (PaaS) components, implementing Mavenir's management layer, and deploying all the required 5G network functions.

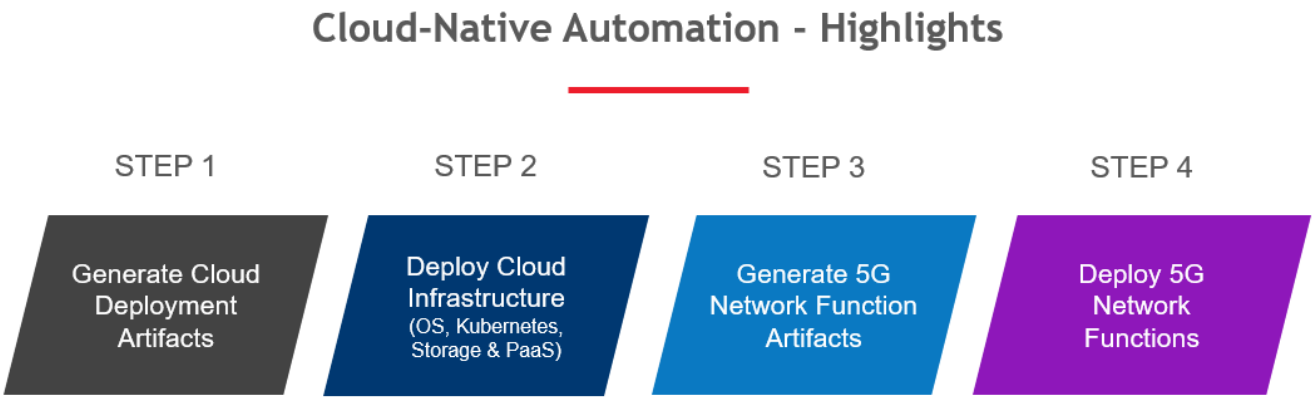

Figure 1: End-to-end (E2E) Automation of Cloud-Native 5G Network Deployment

The solution allows real-time monitoring of deployment progress, providing complete transparency and control and ensuring that it is done right in the first time. It also supports different types of deployments to suit networks of different sizes and business needs – go from tens to hundreds of sites with minimal incremental efforts and easily adapt the network layout to address specific business needs. With this future proof solution, CSPs can simplify their 5G deployments and eliminate human errors by automating cloud-native 5G network deployments.

Key Features

- **End-to-end fully automated, cloud-native solution:** Mavenir provides an end-to-end fully automated solution that simplifies the deployment of a 5G network, offering efficient automation to accelerate the transition to 5G. Mavenir's Cloud-Native Automation solution provides one-touch automation GUI for telcos to manage day-0, day-1, day-2 operations efficiently and seamlessly. With Mavenir's easy-to-onboard tool, **CSPs experience an error-free deployment that is highly flexible and easily scalable**.

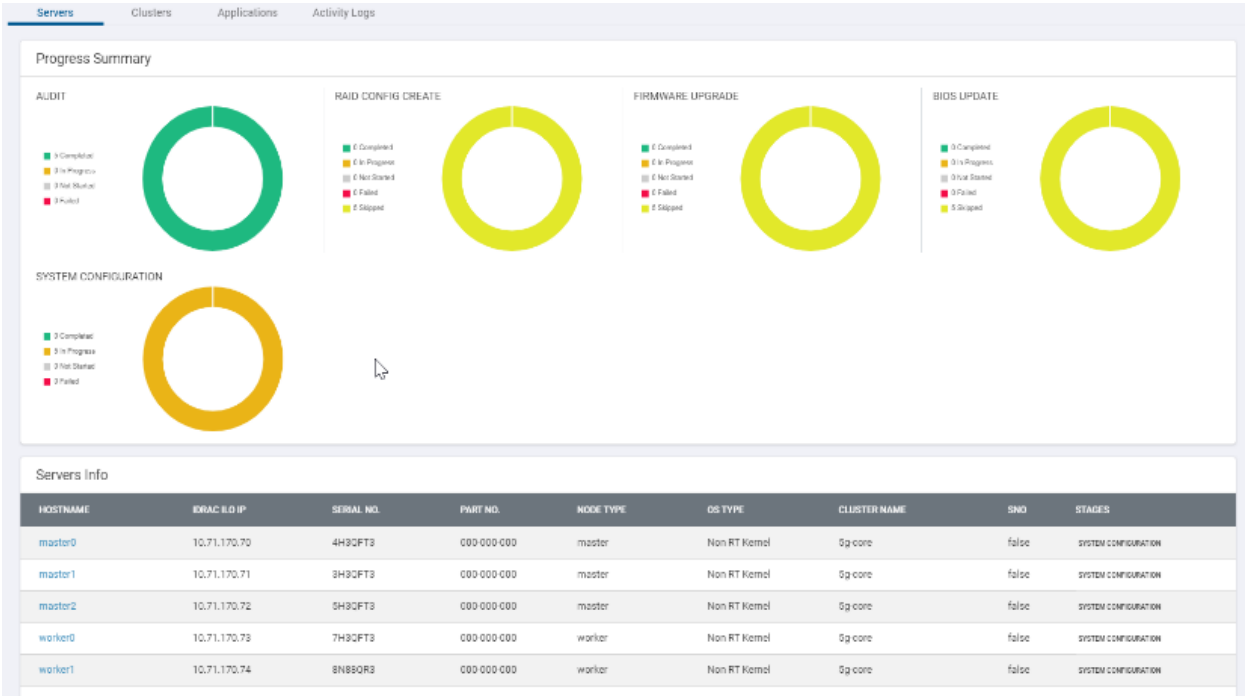

Figure 2: Single GUI for simultaneous deployment of servers, clusters, and applications

- **Single GUI for simultaneous deployment of servers, clusters, and applications:** This solution helps in the simultaneous deployment of servers, clusters, and applications with a single GUI that can manage up to 3,500 workload clusters involving the 5G RAN, Core, and IMS. The tool supports one-click deployment where the necessary version-controlled inputs containing the configuration of the data centres, clusters, and applications are ingested, triggering a state-controlled transition of simultaneous steps ending with a fully configured network function that is ready to handle network traffic. This deployment approach **reduces the deployment time from multiple days to just a few hours**.

- **Cloud-native solution built on proven Kubernetes stack:** As deployment models evolve at a rapid speed, it is imperative the solution adapts practices that allow greater synergies between development and operations to achieve rapid delivery. Mavenir's Cloud-Native Automation solution, built on a proven Kubernetes stack, makes this a

seamless experience to the telcos**, and significantly reduces the time taken from concept, to design, code, and finally deploy it on site.**

- **Unified framework providing all necessary tools:** The solution brings **infrastructure automation capabilities with seamless integration to other cloud ecosystem functions** such as RedHat ACM, Dell BMO, and AWS TNB. The workflows across NFs and infrastructure are orchestrated by workflow engines such as Argo Workflow and Jenkins using Open APIs.

- **Continuous Integration (CI) and Continuous Delivery/Deployment (CD):** The solution **automates software delivery process**, where back-office systems such as Jira and Testing Frameworks are incorporated into the overall workflow.

Business Value Delivered to CSPs

- **Reduce deployment time:** Mavenir's Cloud-Native Automation slashes cluster deployment time by 92% by fully automating the installation of the Cloud, from OS, K8s (Red Hat OCP-based) to application NFs from days to just within a couple of hours.

- **Reduce operational costs and improve efficacy:** Mavenir's Cloud-Native Automation eliminates 80% of the manual labour for network deployment and operations by automating complex server provisioning and cluster configuration tasks. It eliminates human errors and enables cluster management with a less-skilled workforce.

- **Future-proof, cloud-native solution offering ease of scaling and flexibility:** A single deployment of the MDCA in an automation cluster can manage the deployment of diverse 5G nodes, including RAN, Packet core, and IMS workloads, across the edge, region, and central cloud.

- **Reduced downtime and maintenance window:** The solution offers GitOps-based automated software upgrades and rollbacks of the Cloud (OS, K8s, and storage clusters) and the 5G network functions, boosting network availability and uptime, less frequent maintenance windows and more time to innovate.

- **Real-time monitoring of complex 5G deployments and operations activities:** 5G deployment is complex, involving a mix of public, private, and on-prem clouds. Mavenir Cloud-Native Automation solution can manage these diverse environments under a single user interface, providing real-time monitoring of the entire deployment and operations activities, offering complete transparency and control of the deployment, and ensuring it is done right in the first time.

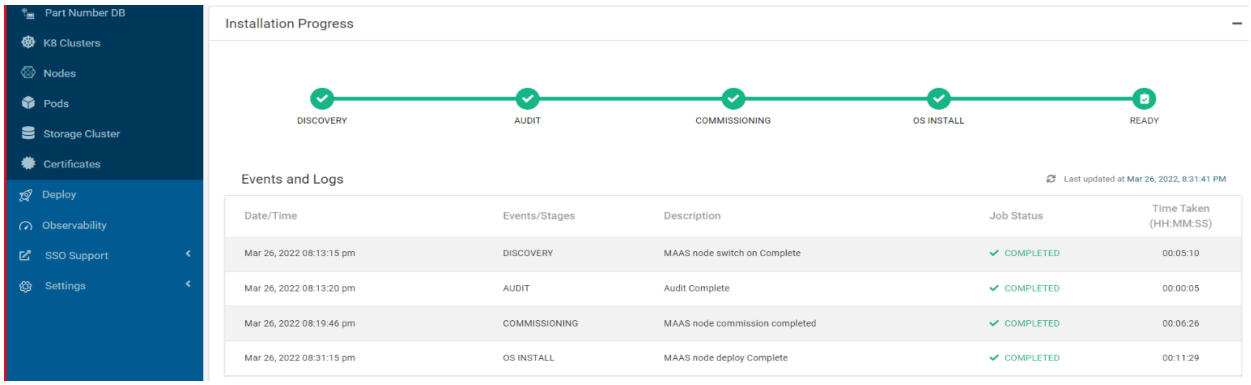

Figure 3: Real-time monitoring of installation progress, events, and logs

About Mavenir

Mavenir is building the future of networks and pioneering advanced technology, focusing on the vision of a single, software-based automated network that runs on any cloud. As the industry's only end-to-end, cloud-native network software provider, Mavenir is transforming the way the world connects, accelerating software network transformation for 300+ Communications Service Providers in over 120 countries, which serve more than 50% of the world’s subscribers.

For more on Mavenir products and solutions please visit our website at www.mavenir.com