ABSTRACT

The management of modern network infrastructure faces challenges due to the complexity of using devices from various vendors (multivendor). Manual network administration processes, such as configuration via Command Line Interface (CLI) and separate monitoring, have proven to be inefficient, time-consuming, and prone to configuration errors (human error). This situation directly hinders the scalability and response speed of network operations teams in maintaining service reliability. Therefore, the absence of a centralized platform capable of automating provisioning and monitoring processes simultaneously is the primary issue that needs to be addressed.

To address this challenge, this research developed an integrated system for provisioning and monitoring multivendor devices based on a microservice architecture. This solution utilizes Ansible to automate the configuration provisioning process via the Secure Shell (SSH) protocol and uses the Prometheus, SNMP Exporter, and Blackbox Exporter technology stack to perform real-time network performance monitoring. All system functionalities, including Ansible playbook execution and monitoring data visualization through the Grafana dashboard, are integrated into a centralized web application interface built using the Django framework and running on the Docker containerization platform.

The results of the system implementation show that the provisioning process on Cisco and MikroTik devices can be automatically executed with just a few clicks through the web interface. The monitoring system can accurately display critical metrics such as CPU utilization, interface traffic, and device latency on the visual dashboard. Additionally, the notification system successfully sends proactive alerts to Telegram when the target device is unreachable. Thus, it can be concluded that the integration of provisioning automation and monitoring within a centralized platform based on a microservice architecture effectively enhances operational efficiency and reliability in multivendor network management.

Keywords: Ansible, Microservice Architecture, Network Automation, Network Monitoring, Provisioning