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STUDY OF THE USE OF THE REST API INTERFACE OF A MIKROTIK NETWORK DEVICE TO PERFORM NETWORK MANAGEMENT AUTOMATED TASKS ON A NETWORK SIMULATED SCENARIO.

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Abstract. This work presents the study of the use of the REST API interface of MikroTik. The performance of network automation tasks based on this interface is evaluated qualitatively using a general-purpose programming language (Python) in a network simulation scenario (GNS3).

Introduction. Every day, tons of data travel through the networks because of the explosion of technology like Cloud Computing, IoT, and new mobile network technologies. This increment of services generates different requirements from a network. This increment means new configurations, addition or remotion of network elements, and so on. Network operators need to deal with these service-driven requests in the fastest way possible. To fulfill this, network teams need to be more efficient in their daily tasks. Network devices, which have more than just the traditional management interfaces like Command-Line Interfaces (CLIs), for example, Application-Programming Interfaces (APIs), allow network teams to achieve the desired efficiency by relying on the concept of Network Automation

MikroTik is a vendor that recently has provided a REST API interface to its Operative System (OS), RouterOS, on its version 7. Until now, operators that wanted to automate a task with a MikroTik device had to deal with the traditional API or CLI that the OS has. Now, they can start using the new REST API, which was a highly requested feature in the community of this vendor, and they can experience the benefits of the REST architecture. However, information, such as implementations about this REST API is scarce.

This work will present the audience with examples and results of using this interface in automated network management tasks executed in a simulation scenario, which, in future research, can be extrapolated and implemented in real-life scenarios.

Main part. The network management tasks considered for implementation will be backup configuration and reporting, which are two desirable candidates for network automation from an industry perspective. In addition, these tasks allow us to show relevant features of a REST API, such as speed, granularity to achieve resources, and suitable data format.

To make tasks automated, we will develop a programming logic that will use the REST API in Python to complete them. Python is one of the most popular programming languages in the network industry, which will make our code easy to read, understand and implement for the interested audience.

For simulating the MikroTik device, we will run the Cloud Hosted Router (CHR), a virtual machine with RouterOS developed by the same vendor, into the network emulator GNS3. This software is a widely known open-source emulator that does not require powerful workstations to run network topologies.

Finally, we will present a qualitative evaluation of the fulfillment or not of the tasks using the REST API.

Conclusions. The results of this work will allow the audience in the fields of research and industry to get a closer view of the functional work of the REST API interface. The code developed in this work may serve as a basis for more complex applications related to Network Automation.

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