Methods of Construction of Overline Infrastructures in the Cloud Environment

Yevhen Laptii[1]

Vitalii Tkachov[2]

[1] Kharkiv National University of Radio Electronics, 14 Nauky Ave, Kharkiv UA-61166, Ukraine, yevhen.laptii@nure.ua

[2] Kharkiv National University of Radio Electronics, 14 Nauky Ave, Kharkiv UA-61166, Ukraine, vitalii.tkachov@nure.ua

Abstract: *The aim of the work is to develop a system for automatic deployment, configuration, and monitoring of web applications with the most popular cloud providers such as (Amazon, Google, Microsoft). The system interacts with a web application whose server part is written in python (flask). This server uses other tools such as Terraform, Ansible, Docker, Grafana, Influxdb, Telegraf, and others.*

Keywords: *Clouds, Monitoring, Configuration manager, Web-based.*

I. Introduction and Problem Statement

Living in a digital world makes the use of web resources much easier. Web resources are used in various spheres of life from entertainment to health care. The web resource should be available to the end user at all times, except possibly scheduled maintenance periods [1]. The development process should be lightning fast to save not only the company's money but also to stay ahead of competitors in the market [2]. To date, many people have faced problems that require a certain level of technical training. One such problem is the need to quickly and securely deploy your web application for further monitoring and development.

This article is focused on facilitating certain stages of development and maintenance of web applications.

The aim of the work is to develop a system for automatic deployment, configuration, and monitoring of web applications with the most popular cloud providers such as (Amazon, Google, Microsoft). Based on the given goal, the following tasks of attestation work were defined:

II. Proposed Solution

The solution to the issue is the development of a convenient and flexible application that gives everyone the opportunity to deploy their application in popular cloud providers and also gives an opportunity to observe the critical metrics of the application.

For such a complex application, it was necessary to split it into several parts:

1. Deploying the application to the cloud
2. Flexible configuration of the environment
3. Monitoring
4. Management
5. Simple interface for communication of all these components, as well as a beautiful and convenient solution for the end user.

When analyzing the market for deploying an application in the cloud, there were two absolute favorites in the market for such solutions as Terraform and CloudFormation. After a detailed analysis, the choice fell on Terraform because it has what CloudFormation does not.

These are support for multiple clouds, CloudFormation can only work with Amazon Web Services (AWS), while terraform can also be used in Amazon Web Services (AWS), Google Cloud Platform (GCP), Microsoft Azure, Alibaba Cloud, Oracle Cloud Infrastructure.

After deploying the infrastructure in the cloud, the user needs to prepare the environment for use. Ansible was perfect for this solution.

To monitor critical application metrics, we will use a flexible and well-established solution like TIG. TIG metrics will further help you analyze the application. The popular Shellinabox utility will traditionally be used for management.

Since all these components must interact with each other, the server side of the application is written in python, specifically the Flask mini framework. Bootstrap is responsible for the front-end, which allows the client not to think about the controls to interact with the application in a complex manner.

III. Conclusions

The developed solution is designed as a web application that combines a simple graphical user interface, support for the required functionality and the possibility of its expansion.

The use of the proposed complex will provide flexibility and convenience in monitoring and deploying the application.

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