AutoOps

GitHub URL : https://github.com/sdaiproject/SDAI-Project

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Abstract

Based on our wide industry experience, I observed that setting up a reliable, scalable modern Azure data platform was the need of the hour to generate meaningful business insights and at the same time a tedious and time consuming task, which in turn prompted the idea of this innovation. Most of the time, the data stakeholders, analysts, scientists, engineers, spent their valuable time manually configuring the data platform and troubleshooting the issues instead of focusing on business values. So to address the aforementioned issue, I decided to design and develop this project as a one stop solution which focuses on bringing maximum automation and intelligence into Azure data platform journey starting from provisioning, deployment, test and validation, to monitoring with machine led intelligence support along with cost optimization.

Objective :

In this project we will implement automatic provisioning of cloud services using open source tools like in Microsoft Azure, Monitoring the deployed platform.This project helps to predict and auto-resolve the anomalies which occur in Azure platform without any human intervention using advanced machine learning algorithms.

Features :

❖ **Auto Deployment :** provisioning of cloud services like Data factory, synapse analytics, storage account, function apps, webapps, Data lake,etc,

manually takes a lot of time. Instead If we provision these services through terraform code we can save lots of time.

❖ **Monitoring Platform** : We will monitor the azure data services that are present in the platform by configuring the diagnostic settings for each and every particular service.

❖ **Anomaly collection** : As soon as something wrong happens in the azure data platform we will be able to collect the anomaly details like what is the exact cause of the issue, what is the source of the issue,etc..

❖ **Auto Resolution** : We will collect all those anomaly details and feed that data to machine learning algorithms which will return the proper resolution steps in order to resolve the issue automatically without human intervention. Resolution can happen in minutes, before the business is impacted.

Technologies : To develop the project we need

- Azure Cloud
- Terraform
- Azure DevOps
- Machine learning algorithms in Python

References :

Azure services provisioning :
https://registry.terraform.io/providers/hashicorp/azurerm/latest/docs
https://learn.microsoft.com/en-us/azure/developer/terraform/create-resource-group?tabs=azure-cli

Monitoring Platform :
https://learn.microsoft.com/en-us/azure/data-factory/monitor-configure-diagnostics

Anomaly collection :

https://azure.microsoft.com/en-us/products/monitor/?&ef_id=CjwKCAjwkaSaBhA4EiwALBgQaGm8JUQOspelUXCgoo4MarCy1R05w2VDOYdRli2kt1VubKiIoFXvqxoC_5IQAvD_BwE:G:s&OCID=AIDcmm5edswduu_SEM_CjwKCAjwkaSaBhA4EiwALBgQaGm8JUQOspelUXCgoo4MarCy1R05w2VDOYdRli2kt1VubKiIoFXvqxoC_5IQAvD_BwE:G:s&gclid=CjwKCAjwkaSaBhA4EiwALBgQaGm8JUQOspelUXCgoo4MarCy1R05w2VDOYdRli2kt1VubKiIoFXvqxoC_5IQAvD_BwE#overview

Auto Resolution :

https://www.dynatrace.com/monitoring/platform/aiops-report/?utm_source=google&utm_medium=cpc&utm_term=aiops%20platform&utm_campaign=us-aiops-aiops&utm_content=none&gclid=CjwKCAjwkaSaBhA4EiwALBgQaG-LykFPSfzMOdYCuUlSO_gzBuF9lWqplSPjEO3ij3Xo2CH0joKGnhoC0zEQAvD_BwE&gclsrc=aw.ds