TITLE
Dealing with cloudy days: managing cloud services across IaaS providers in Python

TYPE
Industry Uses

LANGUAGE
English

AUDIENCE LEVEL
Intermediate, interesting in cloud service developments

DURATION
Prefer 45 minutes regular talk

ABSTRACT
With the scope of cloud services grow from local to worldwide, the need of hosting cloud services across IaaS providers emerged. This brings new challenges to cloud services monitor and managements. The Ccloud is our solution to provide a unified user interface for cloud service managements across IaaS providers. Moreover, the Ccloud serves as an automation service management utility that greatly improves the efficiency and minimizes the possible operation errors.

DETAIL DESCRIPTION
Reasons and problems of using multiple IaaS providers
Since country regulations play an important role in IaaS services, hosting worldwide cloud services inevitably result in running the service on different IaaS providers.

However, running cloud services across IaaS providers would involve dealing with different IaaS structure, utilities and API. This could get things complicated and messy when the service scale grows large. Service operation team requires new generation automation tools to help service managements.

Why Ccloud
A well-designed automation cloud service deployment tool not only increases the efficiency of deployments and maintenances, but also significantly reduces the chances of human error.

Traditionally, server management relies on IT automation tools such as Ansible or Salt to help reduce performing routine jobs during server deployment. They work well when parallel run batches of commands on virtual machines from one IaaS provider. But the script complexity would dramatically increase when virtual machines from different IaaS providers joined.

Moreover, different IaaS providers tend to build their unique management utilities. This introduces additional effort when operation team intends to monitor and maintain services. After surveyed different solutions, we decided to build our own utility, which provides a universal interface across different IaaS provider.

What Ccloud does
The Ccloud covers most of the frequently used functionally for maintaining cloud services, from cluster deployment to virtual machine status check and service update.

Taking the advantage of 'glue language' property of Python, the Ccloud runs the utilities from different IaaS providers, and return a clean and universal user interface to the service management team. The users can easily define the clusters they need in a Json formatted configuration file. The Ccloud will then translate the commands from users to the specified IaaS provider utilities.

CLI (command line interface) vs SDK (software development kits)
IaaS providers usually support both CLI and SDK for automation tools developments. After trying on both of them for a while, we consider using SDL would be a better choice. The advantage of using CLI is that it came with built-in basic input verification that would prevent some human errors. But these verifications came with the cost of longer execution time. Eventually, we decided to implement the input verification by our own to maximize the efficiency of the Ccloud.

OUTLINE

1. Intro (8 min)
    1. Who we are
    2. Why run across IaaS providers
2. Why Ccloud (10 min)
    1. Importance of cloud service management automation tools
    2. Shortage of traditional cloud service management automation tools
    3. Purpose of Ccloud
3. What Ccloud provides (15 min)
    1. The structure of Ccloud
    2. Define the cluster in the configuration files
    3. Functionalities provided by Ccloud
4. Using CLI or SDK? (5 min)
5. Q&A (7 min)