



CLOUD API Interface of Cloud Platforms

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Abstract: APIs (Application program interface) is a code which allows two software programs to connect with each other. Cross platform APIs for cloud computing are developing the most. This is due to the need of the application developers who combine the structures exposed by various cloud providers, to port the programs from one provider environment to another. Such APIs are allowing these days the association of clouds to an infrastructure level, requiring certain knowledge of programming the infrastructure. We explain a new approach for a cross platform API that turn-up in all cloud service levels. We expect that the utilization of this approach will offer a higher degree of flexibility and vendor independence for Cloud based application. From a pure software engineering point of view there are two API categories presenting operations for a certain resource namely in-process APIs and remote APIs. In addition to software-layer agreement, the API model offered by the cloud provider should scale and support different regions for geographic repetition of operations. Cross-platform cloud APIs provides higher level of abstraction than cloud provider based cloud APIs; which is polished by taking cloud provider specific cloud API calls and making them universal.

Keywords:-Cloud Computing, Cloud APIs ,Cloud Service Models.

I. INTRODUCTION

Cloud computing is a technique which uses computing resources (hardware and software) that are delivered as a service over the network (typically internet). Cloud computing means storing and accessing data or programs over the Internet instead of our computer's memory.

APIs can be understood as the waiter in a hotel who takes our order and communicates the dish to the chef. APIs are also used by many websites like to link the data for example searching total available trains or flights available for booking. Thus API can be understood as the abstraction which helps in communication between two applications.

Cloud Computing and virtualization are two different terms. Without virtualization no Cloud Computing is possible. Virtualization facilitates Cloud Computing. Cloud Computing is emerging today as a commercial infrastructure that eradicates the need for maintaining expensive computing hardware or software. Through the use of virtualization, clouds promises to address with the same shared set of physical resources to large users with different needs. Thus promising to be an alternative to clusters, grids, and supercomputers.

Cloud computing promises to enable on-demand access to a large pool of resources which can be requested promptly and provided with minimal management processes.

Cloud APIs states how software applications or programs interact with the cloud-based platform and where these applications can be deployed. APIs provide ways with which the applications can

request information from the platforms and use their facilities and services. Cloud APIs are currently unveiling its interfaces using Web technologies (such as REST or SOAP based services) or other high level programming languages.

Types of APIs:- Cloud provider APIs and cross platform APIs.

The users and applications are vendor-locked until the immovability problem is solved. Using a cross platform API it is expected the developer of an application look for a common and unified API. The most important yield of this approach is the platform independence. It combines different provider's services, as well as lowering the costs of the application fulfillment.

On the basis of cloud provision models, we can have three cloud APIs categories:-

SaaS Model :- (SaaS) or Software as a Service is the software model in which applications are hosted by a seller or service provider and delivered to customers over a network, typically the Internet.

PaaS Model:- Platform as a Service (PaaS) is a platform for conveying operating systems and connected services over the Internet even without downloads or installation. *IaaS Model*:- Infrastructure as a service (IaaS) involves deploying the equipment used to support operations, including storage, hardware, servers and networking components.

Cross-platform Cloud API and Cloud providers

Now many environments just don't use only one cloud provider or even platform thus reducing the risk of vendor lock in. Need for greater cross-platform compatibility has aroused. More providers are offering universal HTTP and HTTPS API integration thus allowing their customers greater cloud approach and adaptability. Additionally, cross -platform APIs allow cloud renter the ability to access the resources not only from their primary cloud provider, but from others as well; thus saving a lot of time and development energy.

Infrastructure APIs deals with the equipage and configuration of resources. Platform APIs provide a higher abstract level. Thence offering platform capabilities in terms of services. Application ones allow to interface among themselves and extend application running on clouds.

Before hand, the cross platform APIs were produced only and only for infrastructure provisioning model. Schemes of the standardization groups, such as OCCI and UCI and the open source solutions, such as libcloud, jClouds, SimpleAPI, and other commercial ones, such as DeltaCloud etc are designed to interface only with Java, Python or PHP.

Benefits of Cross-platform Cloud API

The benefit of using a cross-platform based cloud API is the ability to access cloud resources on more than one cloud computing platform. This saves a significant amount of time, reduces complexity of the code relatively than implementing multiple cloud based cloud APIs.

II. REQUIREMENTS FOR API AND ITS ARCHITECTURE

API is easy to understand in cloud environment. Every organisation has different expectations from API. The first one should be what any developer uses API for on regular basis that is for methods, functions or procedures hence abstracting the resources in terms of memory usage, changeable, usually sheer, data-structures and opaque pieces of device executable or interpreted code. API is very

convenient for the developer and profitable also.

On the other hand, we also have remote APIs, also in the form of Web services (like SOAP or REST), remote calls (like Sun RPC), message passing (like STOMP), or application dependent protocols (like FTP). These APIs are abstracting the resources as a request agents that communicate based on fully transparent steady data structures . Interoperability is favored over efficiency.the limitation is that the APIs are harder to use.

A survey on the APIs by the IaaS cloud providers (like Amazon) or by the IaaS cloud standards (like OCCI), it is found that they fit completely in the category of remote APIs, and may be a Web services, either SOAP based or REST based. There are several companies or open-source projects which are providing custom bindings for a broad range of programming languages such as PHP,CSS,C. But at the network level there are standardization bodies which are not targeting the efforts in the in-process APIs.

Extending the definition of Cloud computing to include distributed data resources such as the Cassandra clusters from Facebook ,MongoDB and by surveying their networking solutions ,it is analyzed that, they are in the opposite corner of the remoting area .To obtain better performance and advanced features in opposition to interoperability or a common data model than such decisions were taken and as a consequence a standardization process is not even desired.

Google Cloud Vision API

It enables designers and users to understand the content of an image by wrapping powerful machine learning models. It quickly classifies images into various categories and detects individual objects and faces and printed words contained within the images. Metadata on our image catalog, moderate offensive content, or enable new marketing scenarios. It analyzes the images uploaded in the request by the customer, and in upcoming releases, associate with the image storage on Google Cloud Storage. It can even identify mood of a person easily.

FEATURES OF CLOUD VISION API

- Category Detection:-Detection of variety of categories within an image.
- Parental Content Detection:-Detect age violated content in an image.
- Logo detection:-Detects logos within an image of popular products.
- Landmark Detection:-Detects natural as well as man made popular landmarks within an image.
- Optical Text Extraction:-Detect character within
- An image with a broad range of language selections available for automatic language identification.
- Multiple Face Detection:-Detects mood of people and all faces available in the image.
- Conjoined REST API: -Images can be uploaded and associated in future with Google Cloud Storage

III. RELATED WORK

The cloud is needed for APIs only at the infrastructure level. API can be visible in different forms, and two types of APIs identified are:

- I. APIs offered by IaaS cloud service providers allowing users to create and manage cloud resources, and
- II. APIs that allows the description of common behaviors which apply to requests and responses,

resource models that describe data structures used in requests and responses, as well as requests which may be sent to cloud resources, and the responses expected.

All the communications between grains occurs across channels. A more general case was considered in which the components of the platform were able to communicate via resources. The concept of building blocks for cloud computing and the hunch that the application developers were aware how to break the application into the building blocks.

The API architecture that was proposed is just a piece of mOSAIC which grid the evolution of a complete open-source platform allowing the developments of applications availing from multiple cloud providers.

Selecting the Best Platform

It is important to select the right and best API platform for our organization. For our environment to function well there is need for multiple API models for best outputs. The cloud service models and Cloud Computing are very new and there are still many challenges ,such as platform and infrastructure compatibility be an issue. Security is the biggest issue in Cloud. At times applications don't work with a cloud-based API platform. In such cases, it's important to plan out the deployment and ensure that prior to any development all the pieces can interoperate and perform compatibly.

IV. CLOUD APIS IN MARKETS

The need to conjoin with multiple services and platforms has generated the new cloud API market. Leading high-tech trendsetters are striving to meet the new market demands. The ability to join platforms and applications by using APIs is in growing demand as more data and IT environments become scattered. In the race to create a sustainable platform, several market leaders have emerged in the cloud API namely:

- Apache (Citrix) CloudStack
- Amazon Web Services API
- Google Compute Engine
- OpenStack
- VMware vCloud API
- Acquia Cloud API
- Current Weather API
- Rackspace Cloud Files API
- Particle Cloud API
- Simple Cloud API

Apache Cloudstack APIs by Citrix still joins with any underlying hypervisor and supports many other common cloud API models such as AWS, OpenStack and VMware vCloud API.

V. CONCLUSION

The cloud API model continues to grow as many new institutions look for efficient ways to connect their environments together. The ability to have secure, multi-indweller, cloud environments helps to build an infrastructure capable of growth and expansion. In case there is need to efficiently allocate data across the Wide Area Network(WAN) or unprocessed control virtual disk images that resides on different platforms. These cloud APIs can help in achieving greater cloud flexibilities for many organizations.

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