

A Review Paper on Deploying Machine Learning Application On Cloud Computing Environment

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Abstract—Cloud Computing, the impending need of computing as an optimal utility, has the potential to take a gigantic leap in the IT industry, is structured and put to optimal use with regard to the contemporary trends. Developers with innovative ideas need not be apprehensive about non utility of costly resources for the service which does not cater to the need and anticipations. Cloud Computing is like a panacea to overcome the hurdles. It promises to increase the velocity with which the applications are deployed, increased creativity, innovation, lowers cost all the while increasing business acumen. It calls for less investment and a harvest of benefits. The end-users only pay for the amount of resources they use and can easily scale up as their needs grow. Service providers, on the other hand, can utilize virtualization technology to increase hardware utilization and simplify management. In these paper we discuss how we can deploy machine learning application on cloud. Now a day's several cloud provider are available like Google cloud Engine (By Google), Windows Azure (By Windows), Amazon EC2 (By Amazon) etc. There are several step should follow to deploy the source. The deployment of the application on cloud is not much easier their are several conditions through which we can deploy an application.

Keywords: *cloud computing, private cloud, machine learning application, security, ssh.*

I.INTRODUCTION

Cloud Computing can be defined as the novel style of computing where virtualized resources are provided as services on internet which are dynamically scalable[1].cloud computing represents a different way to architect and remotely managing computing resources. It refers to both application delivered as the service over the internet and system software in the datacenters that provide those services .the data centre hardware and software is called cloud[2]. Cloud Computing is a major paradigm shift [3]. Most of the enterprises shifting their applications on to the cloud owing to its speed of implementation and deployment, improved customer experience, scalability, and cost control. Reliability, availability and security are the three greatest concerns for moving on to the cloud [3]. Businesses are running all kinds of applications in the cloud, like customer relationship management (CRM), HR, accounting, and much more. Some of the world's largest companies moved their applications to the cloud with salesforce.com after rigorously testing the security and reliability of infrastructure. Smart phones, laptops, PCS and PDAs can access programs, storage and application development platforms over the internet using cloud computing via services offered by the cloud providers. Virtualization is the key technology that

enables Cloud Computing [3]. Remote hosting took its transformation from renting infrastructure to providing and maintaining Virtual servers sustaining the fluctuations in demand. The big players in cloud computing are Google, Amazon, and, of late, Microsoft and IBM. The early adopter of this technology is Amazon. Amazon began providing Amazon Web Services in 2005, known only to the cognoscenti. Amazon's Web Services is the oldest and most mature of the public cloud service providers. Microsoft Azure represents a major evolution both of operating systems and of Microsoft's overall strategy. While written entirely from the ground up, it benefits from a long, mostly distinguished, and expensive pedigree. Google was a very early proponent of both virtualization and cloud computing.

DEPLOYMENT MODEL ON CLOUD

The deploy cloud computing in several different ways depending upon many factors, such as:

- Where the cloud services are hosted
- Security requirements
- Desire to share cloud services
- The ability to manage some or all of the services
- Customization capabilities

There are four common deployment models for cloud services

1. Public Cloud
2. Private Cloud
3. Community Cloud and
4. Hybrid Cloud

Public Cloud

Available to the general public and owned by a third party cloud service provider (CSP). The computing resources over the internet from a CSP, who shares it resources with other organizations. This is most cost effective deployment model. All services are delivered with consistent availability, resiliency, security and manageability. The benefits

of public cloud reduce and control monitoring over the provider's governance and security.

Private Cloud

It involves a distinct and secure cloud based environment in which only the specified client can operate. However, this type of cloud is only accessible by a single organization providing that organization with greater control and privacy. The features and benefits of the private cloud computing are high security and privacy, more control, cost and energy efficiency, improved reliability and cloud bursting .

Community Cloud

This computing is a collaborative effort in which infrastructure is shared between several organizations from a specific community with common concerns, whether managed internally or by a third party and hosted internally. The costs are spread over fewer users than a public cloud, so only some of the cost saving potential of cloud computing are realized.

Hybrid Cloud

It is an integrated cloud service utilizing both private and public cloud to perform the distinct functions within the same organization. Therefore, an organization can maximizes their efficiencies by employing public cloud services for all non-sensitive operations, only relying on a private cloud where they require it and ensuring that all of their platforms are seamlessly integrated.

II. LITERATURE REVIEW

According to [1], Cloud computing is an emerging technology getting used in every area. Conventional organization use IT infrastructure, which isn't scalable consistent with their requirement. Organizations shifting their workload to cloud for enhancing their performance, scalability and also

for reducing cost. Cloud computing is employed for deploying the hospital management system available anywhere and at any time. Here, the administrator performs the action on three modules i.e. doctor, patient and rooms allocation, where the administrator can view and access the small print . Generally, there are many public cloud computing providers like AWS, IBM Smart Cloud, GCP, and lots of others. This proposed model uses GCP because it is rising cloud computing platform with sorts of services like storage technologies, various quite databases, secure networking technologies, machine learning platforms, computing capabilities and hosting of application.

According to [2], Cloud computing is rapidly becoming a widespread alternative to costly on-premise infrastructures for delivering computing services generally and specifically for data processing services. Bearing this in mind, it's fairly convenient, to propose an architecture for the deployment of knowledge Mining services that might allow the underlying computing platform to be abstracted, leaving out of consideration of the cloud provider, technology or the supporting architecture, and that specialize in service and his flexible description, composition and deployment. For this purpose, a platform for the deployment of knowledge Mining services referred to as OC2DM: Open Cloud Computing data processing has been designed.

According to [3], When an application deployed within the cloud faces changing workload, the services of the appliance need scaling up or down in response. The services run on Virtual Machines (VM) or container instances. Application Providers (APs) choose how the applications are scaled through VM provisioning and thru the location of the services on those VMs. Various drivers guide this deciding . Application performance and price are two such drivers. during this paper, we answer

the question of how APs can meet the performance constraints of their applications while minimizing the value of the running VMs. A VM provisioning problem is formulated which expects to satisfy mean reaction time constraints and minimize the value , where VM-types having different cost rates are used. The proposed solution is predicated on genetic algorithm and bottleneck strength value. For the case study, a choice maker is implemented for an internet application. The proposed solution is compared against an exhaustive search, an easy genetic algorithm and a random search. it's shown that our solution is in a position meet reaction time constraints with near optimal minimization of cost. the answer also leads to better cost than random search and therefore the plain genetic algorithm solution at the expense of slightly longer runtime.

According to [4], so as to look at malicious activity that happens during a network or a system, intrusion detection system is employed . Intrusion Detection is software or a tool that scans a system or a network for a distrustful activity. thanks to the growing connectivity between computers, intrusion detection becomes vital to perform network security. Various machine learning techniques and statistical methodologies are wont to build differing types of Intrusion Detection Systems to guard the networks. Performance of an Intrusion Detection is especially depends on accuracy. Accuracy for Intrusion detection must be enhanced to scale back false alarms and to extend the detection rate. so as to enhance the performance, different techniques are utilized in recent works. Analyzing huge network traffic data is that the main work of intrusion detection system. A well-organized classification methodology is required to beat this issue. This issue is taken in proposed approach. Machine learning techniques like Support Vector Machine (SVM) and Naïve Bayes are applied. These techniques are well-known to unravel the classification problems. For evaluation of intrusion

detection system, NSL– KDD knowledge discovery Dataset is taken. The outcomes show that SVM works better than Naïve Bayes. To perform comparative analysis, effective classification methods like Support Vector Machine and Naive Bayes are taken, their accuracy and misclassification rate get calculated.

III PROBLEM DEFINITION

The cloud is based on the Internet Protocol (IP), so for an application to be considered, it must use IP as its communication mechanism. While there are many protocols that can be run over IP, the use of Transport Control Protocol (TCP) is preferred. It is clear that the security issue has played the most important role in hindering Cloud computing. Without doubt, putting your data, running your software at someone else's hard disk using someone else's CPU appears daunting to many. Well-known security issues such as data loss, phishing, botnet (running remotely on a collection of machines) pose serious threats to organization's data and software because in cloud everytime we connect to the virtual machine a different IP address machine will allocated.

IV PROPOSED WORK

In these we propose an private cloud preferred over others because cloud service is provided by third party providers so for security reason private cloud give better security than others because the connection between user and virtual machine is secured by ssh. And on private cloud we can easily scale the storage and processing power at any time whenever application reuired. The secure, high-availability Web application is up and running. When the application needs to be updated, the virtual machine images can be updated, copied across the development chain, and the entire infrastructure can be redeployed.

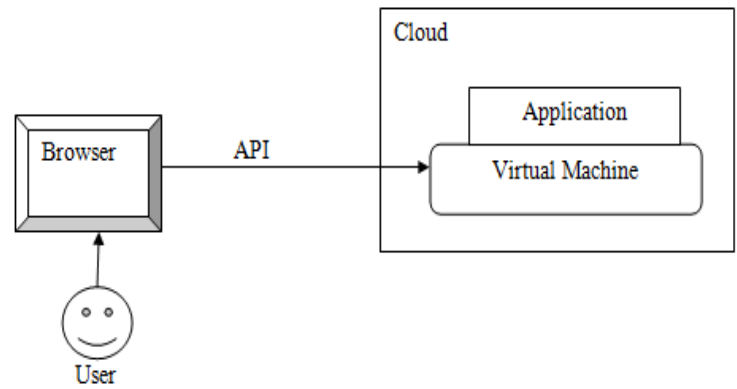


Figure 1. Proposed Block Diagram

Step-1. First user will access the browser and login into the cloud service website.

Step-2. After Successful login a secure ssh connection has been developed between user browser and virtual machine on cloud through API call.

Step-3. We can deploy an machine learning application on virtual machine over cloud.

V CONCLUSION

Cloud computing is a very flexible paradigm for delivering computational power. It means many things to many people. For some it means being able to set up a new start-up company knowing that initial resources will be inexpensive but a sudden increase in demand from users won't make the company a victim of its own success, as has happened in some cases in the past where servers have been unable to cope with demand, and the company loses clients as they become unhappy with poor response times. For other people, cloud computing means easier administration, with issues such as licensing, backup and security being taken care of elsewhere. In other cases, cloud computing means having a powerful computational environment available anywhere that the user can access a web browser.

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