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User Preference Based Environment Provisioning in Cloud

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Abstract

Background/Objectives: The main aim of this project is to check the compatibility of the web application with the cloud service composition and to build a virtual machine (Instance) for deployment and various preferences of users (User Input). **Methods/Statistical Analysis:** Self configurable virtual environment is designed with openstack. User can select the server configuration from the application front end. Java layer will be used to check user pefered configuration with the images available in cloud repository. Jcloud Api will be interact with openstack to configure and start the server. Application provided by the users will be automatically deployed on the cloud server configured. Cloud service providers wants the users to provide the configuration details of server and charge them according to the configuration per hour. Proposed framework request the user to enter the cost and suggest the servers available for the cost provided. **Results:** Proposed framework will save more cost spent on cloud Infrastructure, since the users get their servers for the cost they specify. Moreover automated application deployment in the framework makes the application deployment on the server simple and easy.

Keywords: Application Deployment on Cloud Environment, Cloud, Environment Provisioning, IAAS, Pay as You Use, Technical Challenges

1. Introduction

Cloud computing is almost used in all the business but it is tough for non-expert users to deploy their services faultlessly[1] illustrated the provisioning of virtual machines based on the user requested time and cost and also autoscaling of the same based on the utilization of the provisioned instances[1] have presented a coordinated dynamic resource provisioning and scheduling approach that is able to maximize number of application execution within their deadlines and budget[6] to deploy application on the cloud various, services component are available and compatible component needs to chosen. Load on the server is unpredictable so the chosen cloud service should be scalable as per the load. Server Environment should be able to Auto scale up and down based on the load. Load balancer will be used to traffic the load between the servers when there are multiple servers available to manage the load[12] before deploying the application on cloud it is to be noted that the deployment environment is compatible and needs to be cross validated and compared with varoius other service providers[5]. Analyse the challenges of configuring infrastructure in cloud. Security, availability, support and cost are the major issues in cloud.

In order to overcome the challenges, deep knowledge about cloud set up is required[7] analysed various resource provisioning techniques identified and the merits and demerits of the same. One of the techniques they have suggested is "Dynamic provisioning in multi-tenant service". Here Adaptive power-aware virtual machine provisioner is used for provisioning dynamically from the resource pool[2] describes about the priority

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algorithm which will be used to select the based option available based on the assigned priority[3] new method of allocating resource with minimum wastage and providing maximum profit in resource allocation model, users send service request or task to be executed on cloud environment.selection of the resources plays main role in environment provisioning the resources are key for application deployment. From the list of available resources priority based and preference based algorithm will select the resources for environment provisioning in cloud[13] cloud services are used mainly to reduce the cost spent on the services when used directly. Advantage of cloud services is cost and it might become a disadvantage when it is not utilized properly. Next step will be to deploy the application automatically on the server selected[14] when user choose cloud environment performance and flexibility will be given more importance. When an application is accessed from cloud environment priority requirement will be given to performance[16]. When it comes to IAAS it involves lot of architectural, configuration and security details to be selected for launching a server in cloud environment which makes it a big challenge for users to prefer cloud services. Select the right image from the list based on the user input and then application will be deployed on the server and then user will be able to access their application on the cloud environment. Once the Infra structure is configured, next comes the Application deployment. Now main challenge will be on compatibility of the application and cloud environment[19] analysed and provided an abstract on the problem related to resource allocation. performs massively parallel search to find a solution that meets all the specified objectives. Proper utilization of the resources will save cost, energy and also provides an efficient application[18] discuss on the security of the data stored on cloud. Data are stored on cloud to save cost and also to make it always available for the application, since cloud service providers offer multi zone availability. Security measures for the data on cloud is important concern[18]. Discussion on the security configuration on cloud infrastructure[4] guides to set a virtual environment and[8] discuss on best practise to be followed to set a virtual environment[9] explains about the general resource allocation methods in cloud. We can use this algorithm to select the best resource for the available configuration[10]. When using service components on cloud, users expect the environment to be with high speed. In real time application, major importance is on speed and availability[15] discuss on the Grid security Authentication on cloud environment[17] need of cloud computing in electronic and print clusters, SME Clustering concept is used to study and configure the cloud environment[11] discuss deeply on the use and benefits of Cloud computing that can be achieved by migrating the on premisses environment on cloud Infrastructure.

2. System Analysis

The essential thought behind the proposed framework is to use the cloud service more cost effeciently and also let non technical user to use the cloud environment. Deploying a web application in cloud is a complex task for the naïve user. Using this application user can build their own instance based on their requirements. Web applications dependencies are available, the only thing is user has to select their web application dependencies based on his/her preferences. Since cloud service is upcoming field in market we are able to see less techincal support available in market, this kind of framework will let the business choose cloud option with out much fear on support on technology to deploy the application on cloud. We suggest a solution which will simplify using cloud service for the users, based on their preferences like RAM, Storage, time within the Project cost.

Users can create a cloud environment for the cost they specify instead of going for paying for the infrastructure they provide, which will largely reduce the cost and also fear of the users to go for cloud infrastructure. Biggest challenge in creating a framework for application deployment is to create a self configuring environment and deploy the application on it. Selection of this composition is a complex task and also we suggest ranking system to priorties the best option available.

Architecture of the framework represent (Figure 1) three layers in which user interface layer will be user friendly which will make user comfortable with accessing cloud environment. Basic details like cost, server infra details and application complexity details will be optained from user and the same will be used in analyzing and processing the request. The java layer will include all the business validation and algorithm analysis to rank the best instance for the user input. Once the user confirms the instance then it will be activated and made available for requester to access it. Then dynamic deployment will be facilitated by which user will also be able to deploy their application on cloud environment.

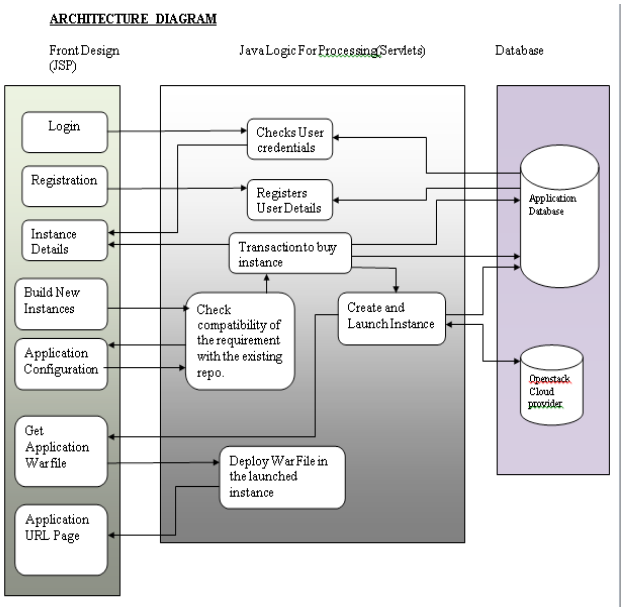

Figure 1. Architectural representation of the framework.

2.1 User Preference Based Ranking Algorithm

Userinput: Details entered by user includes budget,OS,DB, Webserver.

Appweight: Complexity of the application as entered by user.

Imageconf: List of image and configuration details in cloud repository.

Case1: User enter cost and configuration details

Check: Compare user input and available image

If (image match){

If(more than one image){

Rank the image with lowest cost as rank1 and others with the subsequent ranks based on cost.

}else{

Rank the available image as rank1 and suggest the user.

}

}else{

User needs to try different combination of input.

}

Case 2: User enter only cost

Check: Compare the user cost and available image cost.

If (image match){

If(more than one image){

Rank the image with lowest cost as rank1 and others with the subsequent ranks based on cost.

}else{

Rank the available image as rank1 and suggest the user.

}

}else{

User needs to try different combination of input.

}

3. Implementation

Aim of this proposal is to create an environment to deploy application which is auto configuring and with various components. Considering the deployment requirements of a web application, it should include application servers, security frameworks (e.g. firewall), web servers, database storage andhard disk storage devices.

Creating a complex application environment setup is costly, complex and error prone. Virtual appliances on cloud, provides solution to these problems. Cloud service providers create and configure servers and environments with required configuration details like operation system, software configurations as per user requirement. Therefore we are proposing a framework which provision an environment for the end user to host their application in cloud. We are getting the user requirements and validating the same. We then check whether it is feasible to provide the infrastructure services for the customer's web application. We are trying to provide an infrastructure within the customer expectation like Project cost and launch virtual instance to host the customer's web application.

To create a cloud repository, i.e. resource pool based on which the users requirement will be compared, we are using Openstack as a cloud service provider. First we have virtualized our environment using Virtual Box and launched Ubuntu image over it. In the installed Ubuntu image, we have installed Openstack. Openstack has different components needed to bring up and manage virtual instances on a physical hardware. Using Openstack, we are provisioning the virtual instances based on the user requirements and we are deploying the web application mentioned by the user. The compatibility algorithm

that we suggest compares the user requirement with the resources available in resource pool. If sufficient resources available, it checks for the application dependencies and checks for the same in the resource pool. If all the need cloud services are available, it will launch an instance using the Openstack API.

The customer's web application will then be deployed in the launched virtual instances. We present an application URL to the customer to access the application. Thus the customer's application can be easily deployed and managed in a private cloud environment using Openstack.

- User will login to the system and get the give their requirement with the option available we here make the system will simple option to the user so that they will not face any techinical difficulty in accessing the application (Figure 2).
- Priority and user preference based algorithm will analyse user input and compare the existing options provide ranking and give the user best Instance availble in the cloud repository.
- Cloud reposiroty will have collection of images with various combination. With API's selected insatance will be launched and application will also be deployed on the server. (Figure 3) Most frequently used image details will be dispalyed on the application, so the user can use that image instead, they selecting their own configurations.

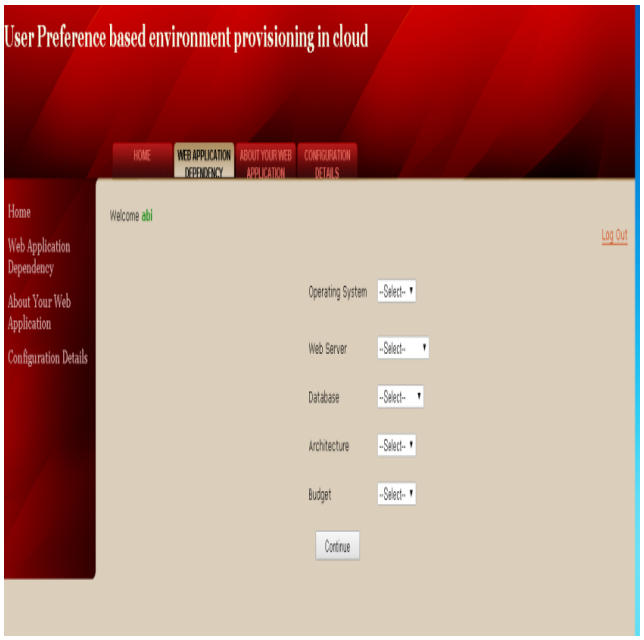

Figure 2. User Interface to get input from user - cost and configuration details.

Figure 3. Most frequently used Images displayed as advertisement.

User will be requested to enter the Basic Details as mentioned in the sample date (Figure 4). If user are not comfortable to enter the configuration they can directly enter cost and search for the images available for that cost. They can choose one image from the suggestion.

Screen 1 Input	
Cost	1000 $
OS	Linux
Webserver	Tomcat
Database	Mysql
Architecture	32 bit
Screen 2 Input	
Application Complexity	High
Screen 3 Input	
RAM	512 MB

Figure 4. Sample input for the Application/Framework.

4. Performance Evaluation

The recommended scheme is used to get the cost from user and suggest the best avilable server instead of configure the server and pay for its infrastructure and also user can buy a better server with the cost avilable with them. This will increase the utilization of the cloud environment especially for small business, who are not ready to spend more on IT Infrastructure cost. Cost is the biggest advantage of cloud service sometimes the same advantage will become a biggest disadvantage if not used in a proper way. Cost is biggest challenge in cloud service when we use it without proper knowledge.

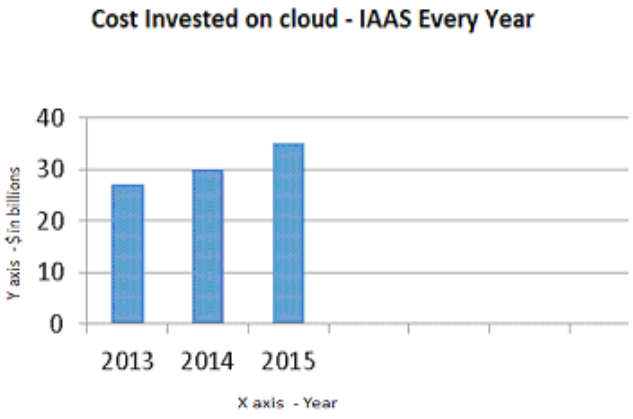

Figure 5. Graph representation of cost spend on IAAS on cloud per year.

(Figure 5) give the details of cost spent on Cloud Infrastrcture as a Service every year. With our suggestion of framework we can reduce more cost spent on Cloud Infrastructure.

5. Conclusion

With this proposed framework, users with less technical knowledge can handle the cloud server and deploy their application on cloud. Also users can save cost spent on cloud service by choosing cloudinfrastructure with the suggested framework.

Currently we are concentrating on provisioning of servers in cloud infrastrusture based on user preference, future enhancement of this Paper will be to include other resources like database, harddisk, and also to make this framework more effecient to handle complex applications.

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