

A Novel Approach for Reassigning Virtual Machines in IaaS Cloud System

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Abstract— Reassignment of virtual machines into clusters is a fundamental endeavor for the considerable organization of cloud resources since it authoritatively impacts the execution of the Service Provider arrange. In this paper, an approach to manage the issue of reassigning virtual machines in IAAS Clouds was proposed. The outstanding A* algorithm is used to handle this masterminding issue by two algorithms, called Direct Move Heuristic (DMH) and Iterative Direct Move Heuristic (IDMH), to associate the space limitation of the A* algorithm. The primary tests ponder thinks about minimal estimated issue illustrations. It hopes to show the relevance of the delineated showing and reviews the capability of the proposed counts. The second preliminary inspect bases on broad evaluated issue events. It reviews the adaptability execution of the IDMH heuristic. Our obtained exhibit an average adaptability execution on issue cases with up to 800 virtual machines.

Key words: Virtual Machines, Clusters, IaaS Clouds, Reassignment, Planning

I. INTRODUCTION

Cloud computing is one of the latest computing era in which individuals/organizations do not need to own large amount of resources to perform complex computation tasks since required computation resources are provided as services over Internet such as Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). The cloud consists of hardware and software in the data center that are accessible through internet. IaaS is a fundamental service model that provides virtual computing resources. Each customer has only one Virtual Machine. Physical machines [PMs] of the cloud are grouped into clusters to provide High Performance Computing (HPC) and/or High Throughput Computing (HTC). There are two purpose, customers pay for cluster computing service for business continuity and service availability and service providers offer cluster computing solutions to increase their reputation indicators.

II. RELATED WORKS

Virtual machines are described in[1]. VMs on the same hardware are isolated from each and other's. They do not interact directly with the real hardware. The latter challenge aims to reduce the cost of the global platform, for example the number of active nodes was reduced. The Problem of bin-packing is to minimize the number of PMs within each cluster to host all VMs[2]. Sequential constraints and cyclic constraints are the attempt to reduce migration overhead. According to payoff function each agent relocates VMs to PMs[6]. Load balancing game and virtual machine placement game were studied to solve the problem. The authors proposed a mathematical model and they solved the problem using optimization software package with up to 350

VMs[7]. Reassigning approach is based on a continues (periodic) observation of the platform workload and resource demands of each VMs[5].

III. THE PROPOSED REASSIGNING VIRTUAL MACHINE IN IAAS CLOUD SYSTEM

The planning problem, which addressed in this paper, could be a new real-life problem from IT sector to assess Artificial Intelligence [AI] algorithms instead of using standard benchmarks from game theory. The well-known A* planning algorithm used to solve this problem. However, due to its space limitation. The two heuristics method were proposed, called DMH and IDMH. The experimental study shows that IDMH has a good performance in terms of success rate and solution quality. Our proposed approach uses Platform-oriented Bin Packing. The application of the Bin Packing solver at platform level minimizes the number of clusters.

IV. ARCHITECTURE DIAGRAM

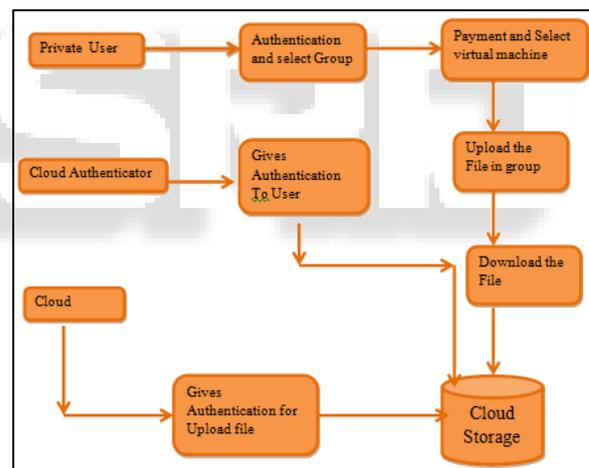


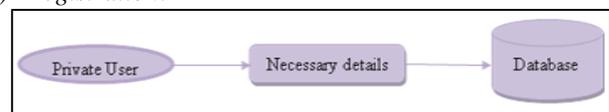
Fig. 1: Architecture diagram

Architecture diagram shows the relationship between different components of the system. This diagram depicts the overall concept of system. Architecture diagram is a diagram of a system, in which the principal parts or functions are represented by blocks connected by lines that show the relationships between the blocks. They are productively used in the engineering world in hardware design, electronic design, software design, and process flow diagrams.

V. MODULE DESCRIPTION

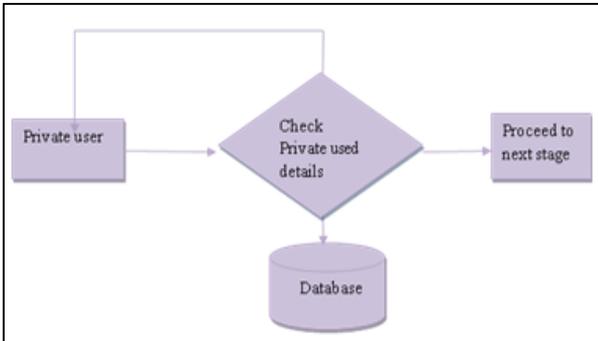
A. Private User:

1) Registration:



If you are the new User going to login into the application then you have to register first by providing necessary details. After successful completion of sign up process, the user has to login into the application by providing User ID and exact password.

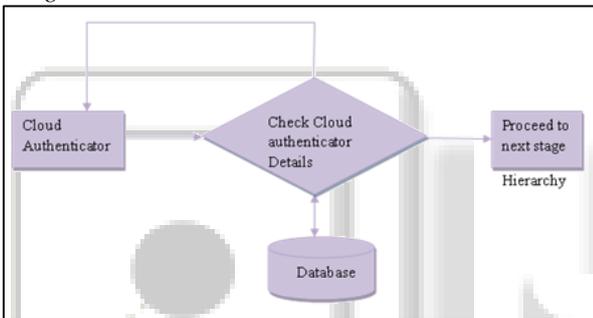
2) Login:



The Private user needs to enter exact user ID and password. If login success means it will take up to Next page else it will remain in the login page itself.

B. Cloud Authenticator:

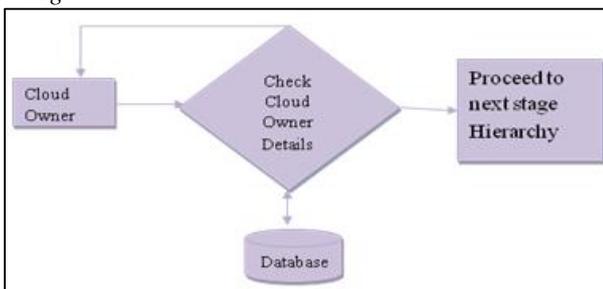
1) Login & Authenticate:



After Successfully Login Authenticator able to check users with details. Customers need to wait for the approval from bankers. If Bankers give approval permission then only it display and Customers goes for next page.

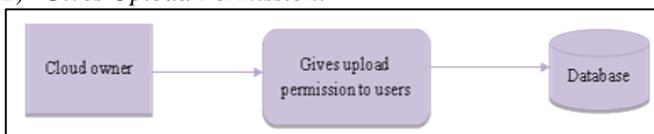
C. Cloud Owner:

1) Login:



The cloud owner needs to enter exact ID and password. If login success means it will take up to Next page else it will remain in the login page itself.

2) Gives Upload Permission:



After Successfully Login cloud owner able to check users with details. Users need to wait for the approval from cloud owner. If cloud owner give approval permission then only it display and user goes for next page.

VI. RESULT & DISCUSSION

The figure 2 shows the login page. The login page contains the userid, password, submit and register. Each and every user who needs private cloud for their usage should register, registration is mandatory to proceed further process.

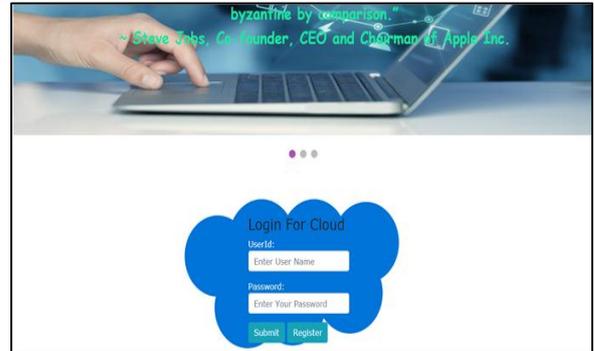


Fig. 2: Login Page

The figure 3 shows the register page of the cloud. User will give their own details, select storage to register. .



Fig. 3: Register Page

The figure 4 shows the allocation of the virtual machine. Selection of ram, rom, cloud group, organization and usage type.



Fig. 4: Allocation of virtual machine

The figure 5 shows the uploading of the file in the cloud. Files are uploaded in a specific group to store.

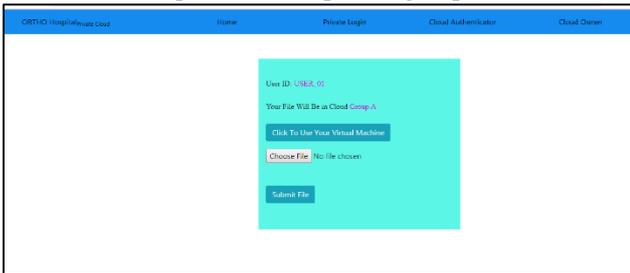


Fig. 5: Upload file

The figure 6 shows the final outcome. The file is downloaded for our usage.

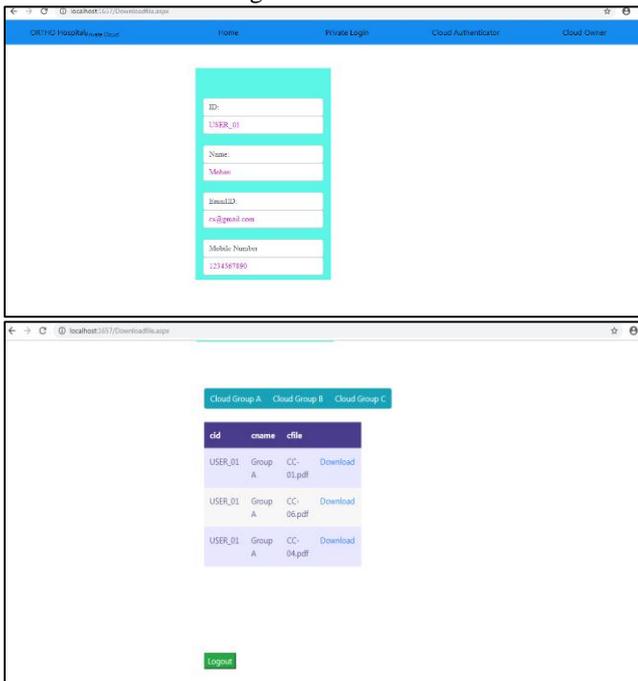


Fig. 6: Download File

VII. CONCLUSION

The planning problem, which addressed in this paper, could be a new real-life problem from IT sector to assess AI algorithms instead of using standard benchmarks from game theory. The well-known A* planning algorithm is used to solve this problem. However, due to its space limitation, there are two heuristics, called DMH and IDMH. The experimental study shows that IDMH has a good performance in terms of success rate and solution quality. In addition, It is found that the presence of additional resources allow the scalability of the IDMH to large sized problem instances with up to 800 VMs. Our future research work will include the integration of the proposed model/algorithms into an IaaS cloud platform to automate the reassignment task. Furthermore, focus on the investigation of the proposed planning approach using other algorithms for further optimization of the objective function.

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