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VM Source Assigned Procedure in Numerous Multiple Supply Using Clouds Computing

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ABSTRACT

Cloud providers stipulate a variety of resources such as CPUs, memory, and storage in the form of Virtual Machine (VM) occurrence which is then allocated to the users. The users are charged based on an on-demand model, and their payments should be strong-minded by taking into account both their incentives and the incentives of the cloud providers. These provisions of cloud services make a service market, where users can dynamically pick services based on such attractive norm as price and class. A perceptive model of a service market is a reverse auction. In the first price auction, however, a service that is cheaper and provides better quality is not necessarily selected. Auction markets can incarcerate such incentives, where users name their own prices for their requested VMs. This causes unwanted outcomes both for users and cloud providers. We intend an auction-based online mechanism for VM provisioning, share, and pricing in clouds that deem several types of resources. Our proposed online mechanism makes no theory about future demand of VMs, which is the case in real cloud settings. The proposed online mechanism is summoned as soon as a user places a request or some of the allocated resources are released and become available. The mechanism assigns VM instances to selected users for the period they are requested for, and ensures that the users will continue using their VM instances for the entire requested period. In addition, the mechanism determines the payment the users have to pay for using the assigned resources. We prove that the mechanism is incentive-compatible, that is, it gives incentives to the users to reveal their actual requests. We investigate the performance of our proposed mechanism through extensive experiments.

Key Words: Cloud computing, Online truthful mechanism, Dynamic pricing, Resource allocation

I. INTRODUCTION

Currently, several technologies such as a grid computing and cloud computing among them, are converging towards federated sharing of computing resources. In these distributed systems, resources are commodities and users can both consume and contribute with shared resources. In cloud computing, resources are provided over through Internet on-demand, as a service, without the user having knowledge of the underlying infrastructure. Public clouds are the available to all users, while they private clouds use similar infrastructure to be provide services for users within an organization. At the present, several companies such as a Amazon, Rack space Cloud, and Nirvanix[1][7], provide computing and storage services, using pay-per-use fixed the pricing, and new capabilities, such as a .NET and database services are expected on the near future. Cloud computing usage is increasing both in breadth, such as the number of resource types offered, and in depth, such as the number of resource providers. within increasing the number of cloud users, it is expected than more providers will been offer similar services. Furthermore, with interoperability between different providers, users will able to use the same service across clouds to improve scalability and reliability. In this context, the objective of federated clouds, a topic of recent interest, is to integrate resources from different providers such that access is transparent to the user [1].

II. RELATED WORK

Masahiro Tanak, Etal, The on-demand provisions of cloud services create a service market, where users can dynamically select services based on such attractive criteria as price and quality. An intuitive model of a service market is a reverse auction. In the first price auction, however, a service that is cheaper and provides better quality is not necessar-

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ily selected. This causes undesirable outcomes both for users and service providers. A possible solution is the Vickrey-Clarke-Groves (VCG) mechanism, where the dominant strategy for a service provider is to report the true cost of his service. In spite of this desirable property, implementing the VCG mechanism for service composition suffers from computational cost. The calculation of payments to service providers based on the VCG mechanism requires iterative service selection, even though each service selection can be NP-hard. Approximation algorithms cannot be applied because approximate solutions do not assure the desirable property of the VCG mechanism. Thus, we model VCG payments for service markets and propose a dynamic programming (DP)-based algorithm for service selection and VCG payment calculation. The algorithm solves service selection in quasi-polynomial time and gives an exact solution. Moreover, we extend it and focus on the iterative service selection process for VCG payment calculation to improve its performance. Our series of experiments show that our algorithm solves practical scale service composition [2].

Lena Mashayekhy, et al,. Cloud providers provision their various resources such as CPUs, memory, and storage in the form of Virtual Machine (VM) instances which are then allocated to the users. The users are charged based on a pay-as-you-go model, and their payments should be determined by considering both their incentives and the incentives of the cloud providers. Auction markets can capture such incentives, where users name their own prices for their requested VMs. We design an auction-based online mechanism for VM provisioning, allocation, and pricing in clouds that consider several types of resources. Our online mechanism makes no assumptions about future demand of VMs, which is the case in real cloud settings. The online mechanism is invoked as soon as a user places a request or some of the allocated resources are released and become available. The mechanism allocates VM instances to selected users for the period they are requested for, and ensures that the users will continue using their VM instances for the entire requested period. In addition, the mechanism determines the payment the users have to pay for using the allocated resources. We prove that the mechanism is incentive-compatible, that is, it gives incentives to the users to reveal their actual requests. We investigate the performance of our mechanism through extensive experiments [3].

III. EXISTING SYSTEM

The VCG-based mechanism suffers from computational complexity [2].

The service provider earns profit only if he successfully sets his service's price cheaper than the others and his service is selected. If he fails to do so, he loses profit even when the actual cost of his service is cheaper and its quality is better than the his competitors. Although the best price for the service provider is one that is slightly lower than the others, such information is impossible to know. This leads to undesirable outcomes for both users and service providers.

A composite service is must be a designed based on abstract services, which only defines is interface. An executable service is called as a concrete service, which is bound to the abstract service at the runtime[2].

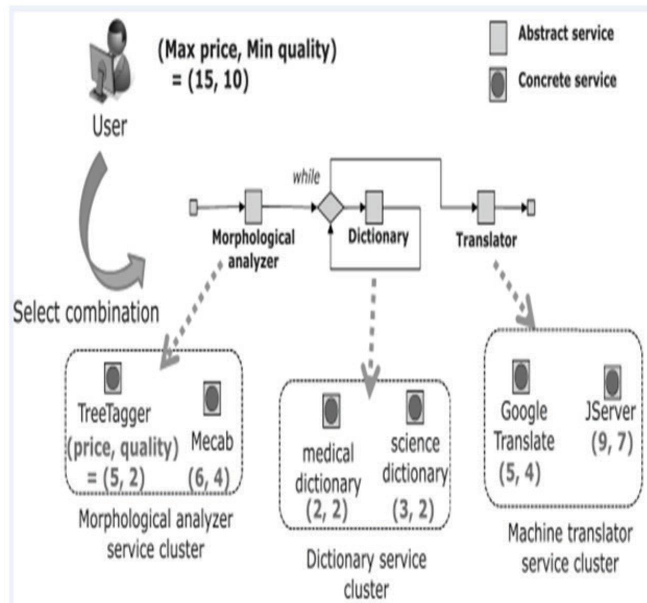

Figure 3.1: Stakeholders of service composition.

A service provider offers a concrete service at a particular price and quality. A user of a composite service sets the maximum price and the minimum quality of the overall composite service as constraints and selects a combination that satisfies them.

One of the challenges in designing online mechanisms is dynamic pricing.

A price determination function should be consider the incentives of both cloud services providers and users. In doing so, it should increase revenue, facilitate healthy competition among users, and increase the efficiency of a resource usage.

The challenge is how the cloud provider should determine the price to maximize its profit in such as a competitive markets. Mechanism design considers the incentives of the participants when deciding the allocation and payment.

IV. PROPOSED SYSTEM

- The proposed online mechanism is summoned as soon as a user places a request or some of the allocated resources are released and become available. The mechanism assigns VM instances to selected users for the period they are requested for, and ensures that the users will continue using their VM instances for the entire requested period. In addition, the mechanism determines the payment the users have to pay for using the assigned resources. We prove that the mechanism is incentive-compatible, that is, it gives incentives to the users to reveal their actual requests. We investigate the performance of our proposed mechanism through extensive experiments.

- Assume a federated cloud resource market where rational users can both provide (sellers) and utilize resources (buyers). Rational users represent either an individual or an organization.
- Interoperability provides the buyers with uniformity and elasticity. Thus, a buyer request for a large number of resources can be met by more than one seller.
- A completely new model of utilizing the computing SaaS with the ability to perform parallel computations using large pools of virtual machines (VMs).
- The SaaS, provided by these cloud vendors, allow any user to provision a large number of compute instances.
- VMs are manually instantiated, configured and maintained by cloud users.

Algorithm 1 VM-Map Mechanism(Event, A,P) [3]

1: $t \leftarrow$ Current time

2: $Q_t \leftarrow \{\hat{}\_i | i \in U$, i has not been allocated$\}$

3: $\tilde{Q}_t \leftarrow \{\hat{}\_i | i \in U$, (i has been allocated) $\wedge$

(its job has not finished yet)}

4: **for all** $i \in U$ **do**

5: **for all** $r \in R$ **do**

6: $\_{ir} = P_{m \in VM} k_{im} w_{mr}$

7: **for all** $r \in R$ **do**

8: $C_{tr} \leftarrow C_r - P_{|\hat{}\_i \in \tilde{Q}_t} \_{ir}$

9: $C_t \leftarrow (C_{t1}, \ldots, C_{tR})$; vector of resource capacities at time t

10: **if** $Q_t = \varnothing$ or $C_t = 0$ **then**

11: **return**

12: $A_t \leftarrow$ -ALLOC(t, Q_t, C_t)

13: $A \leftarrow A \cup A_t$

14: $P \leftarrow P \cup \{\hat{b}_i | (\hat{}\_i, t) \in A_t\}$

15: $P \leftarrow$ -PAY(t, Q_t, A, P, C_t)

16: **return** A,P

The mechanism is given in Algorithm 1 is an event handler, that is, it is invoked when a new user request arrives or some allocated VM instances become available. It takes as input an Event, the current allocation set A, and the payment set P. An Event is either a release of resources or an arrival of a user request. In lines 1 to 8, sets the current time to t .

A. NP Hard Method

- Cloud computing is a rapidly emerging paradigm for computing, whereby servers, storage, content, applications or other services are must be provided to customers over through a network, typically an on-demand, pay-per-use basis on it[2].
- Cloud computing can complement, or in some cases replace, traditional approaches, e.g., owned resources such as servers in enterprise data centers.
- In the field of computational complexity, one measure of the difficulty on a problem is whether it is NP-complete (Non-deterministic Polynomial-time complete). Briefly, such as a designation on signifies that: 1) a guess at the solution may be verified in the polynomial time.
- The time to solve the problem is believed to grow so on rapidly as the problem size grows as to make exact answers impossible to determine on a meaningful time using today's computing approaches.
- The problem is one of a set of such problems that are roughly equivalent to each other in that any member of the set may be transformed into any others member of the set on the polynomial time, and solving the transformed problem would be the mean solving on untransformed one.
- The Figure 4.0 describes and Shows the flow of strategy flow pricing technique used by VCG. VGC economic model helps formulation of VCG efficiently. Figure 4.1. Shows the resource mapping model, it's give the unified model of our architecture.
- Several quality of service parameters can be used to deploy this thesis over a cloud infrastructure.
- Statistical technique to generate the revenue of provider can also be used like Time Series, ANOVA, and Markov Chain etc [5].
- Rewards can be added to pricing strategy to stick with the consumers which uses the services from the past and attract the new consumers[5].
- Service selection model can be enhanced more towards iterative search of service with the VCG mechanisms.

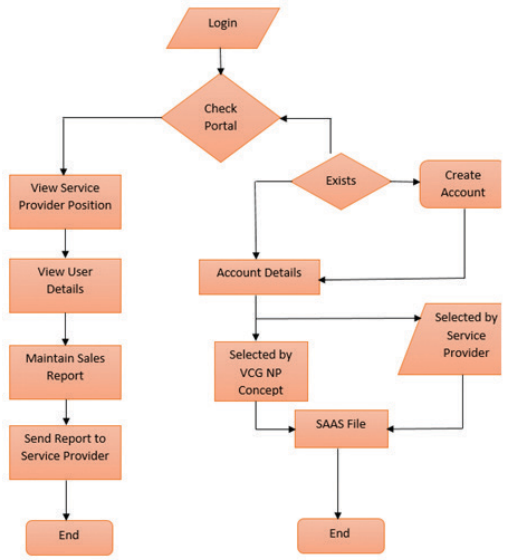

Figure 4.0: Flow graph for proof pricing

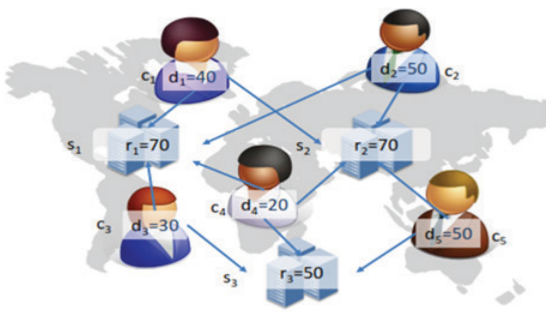

Figure 4.1: Demand & Resources, Connectivity[5]

B. Dynamic Proofing Mechanisms

During the price of cloud resource is usually fixed on the computational mechanism, and the current resource allocation mechanisms cannot adapt to the changeable market properly which is results in the low efficiency of resource utilization.

To address such as a problem, the dynamic pricing resource allocation mechanism is a proposed system. During the resource providers can be changes in prices according to the situation so that our novel mechanism can increase the chances of making a deal and improve efficiency of resource utilization. In addition, resource providers can be improve their competitiveness on a market by the lowering prices, and thus users can obtain cheaper resources in shorter time which would decrease monetary cost and completion time for workflow execution.

Computational efficiency is a major design criteria in the allocation of shared resources. Optimal mechanisms such as combinatorial auctions are not feasible since the winner determination algorithm is NP-complete. Fixed pricing has the advantage of eliminating the payment computation. To determine the time cost of the algorithm used by the proposed mechanism, we analyze the run-time complexity of the winner determination and the buyer and seller payment functions. Without considering queuing time, the total time incurred by our mechanism is then:

- Significant reduction is a required bandwidth and thus costs.
- Offers customers as a significantly stronger guarantee of the data security and authenticity
- Allows cloud data storage services to be expand into the industries requiring much higher security standards.

$$T = T_{wd} + T_p$$

Where Twd is the time taken to determine the winners, and Tp is the time for the payment computation. In conclusion, the complexity of the algorithm used by the proposed framework is a polynomial function of the number of resource types in a request, RT; the number of items requested for each resource type, IRTk ; the total number of published resources[1].

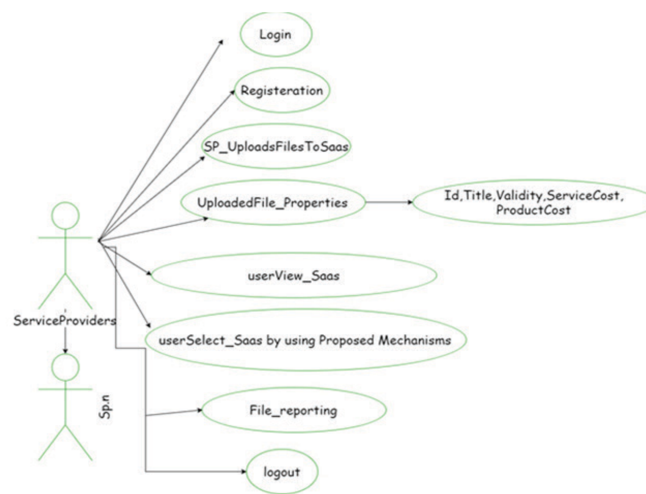

Figure 4.2: Use Case Showing Proposed work [5]

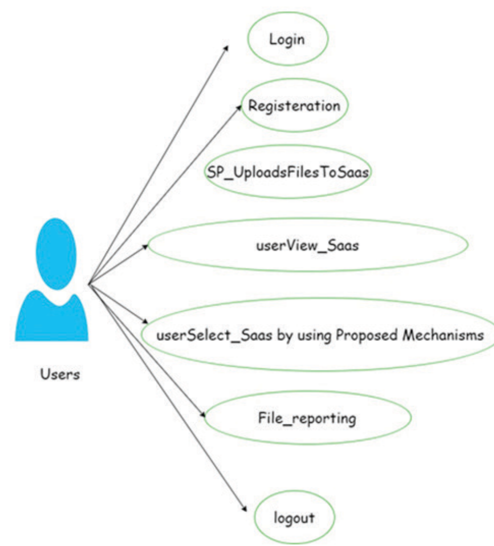

Figure 4.2.1: Users Use Case Model

For simplicity, we use a centralized market-maker to compare the economic and computational advantages of dynamic pricing. A centralized implementation has the advantage of the allowing as a measurement of economic and computational efficiency with a simple setup for a large simulated network.

Moreover, the use of a peer-to-peer substrate such as Free Pastry allows consequently to address is the scalability issue in our future work. Thus, our simulated environment contains one market-maker and 10,000 nodes, where each node can be seller and buyer.

C. Payment function of Maximum -2- satisfiability

This function calculates the critical payment of each user i if her requested bundle is allocated at t. The critical payment of user i is the minimum value that she must report to get her requested bundle at time t. In the maximum-2-satisfiability problem (MAX-2-SAT), the input is the formula on conjunctive normal form with two literals per clause, and their task is to be determining the maximum number of clauses that can be simultaneously satisfied by the assignment. MAX-2-SAT is the NP-hard and it is a particular case of an maximum satisfy ability the problem.

IV. CONCLUSION

The on-request arrangements of a cloud administrations make an the administration market, where is the clients can be powerfully choose administrations based on such a appealing criteria as cost and quality.

The mechanism determines the payment is the users have to pay for using the assigned an resources. We prove that the mechanism is incentive-compatible, it gives incentives to be the users to reveal their actual requests. Investigate the performance of our proposed mechanism is through extensive experiments. The fact that VCG installments have been such as a attractive properties as a system proof-ness. Estimating administrations, they are require iterative administration choice, each of which is NP-hard.

REFERENCES

1. Marian Mihailescu and Yong Meng Teo, titled "Strategy-Proof Dynamic Resource Pricing of Multiple Resource Types on Federated Clouds"ICA3PP10 proceedings of the 10th international Conference on Algorithms & Architechtures for Parallel Processing – Volume Part I Pages 337-350.
2. Masahiro Tanaka and Yohei Murakami, titled "Strategy-Proof Pricing for Cloud Service Composition",IEEE TRANSACTIONS ON CLOUD COMPUTING,VOL 4,Number 3,July - September 2016.
3. Lena Mashayekhy, Student Member, IEEE, Mahyar Movahed Nejad, Student Member, IEEE,Daniel Grosu, Senior Member, IEEE, and Athanasios V. Vasilakos, Senior Member, IEEE, "An Online Mechanism for Resource Allocation and pricing in clouds" IEEE TRANSACTIONS ON COMPUTERS, VOL. XX, NO. X, 2015.
4. Lena Mashayekhy,Mahyar Movahed Nejad, ,Daniel Grosu, Athanasios V. Vasilakos, titled "An Online Mechanism for Resource Allocation and Pricing in Clouds"IEEE TRANSACTIONS ON COMPUTERS, Volume: 65, Issue 4,April 4, 2016.
5. Chetan Chawla, Inderveer Chana, titled "Strategy-proof Pricing Approach for Cloud Market",International Conference on Communication,Information & Computing Technology.(ICCICT-15).
6. "Service Composition" VOL. 4, NO. 3, JULY-SEPTEMBER 2016.
7. W.Vickrey,"Counterspeculation,Auction and Competitive Sealed Tenders," The Journal of Finance, vol. 16, no. 1, pp. 8–37, 1961.