

Multiple Optimization Services in Cloud Computing for Customers

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Abstract: This paper presents a unique multiway model for reducing the cost of cloud services to the customer. The producers are usually providing buyers cloud computing varied info system services. The cloud services comprise totally different functionalities at varied prices, and varied responsibility. Thus the customer's main motto (based on the literature) is to increase the usage, and decrease their prices and issues. Since usage price and issues are totally different dimensions, down side the matter is actually a multi-objective improvement problem. The existing one doesn't address the multi model nature. It deals with meeting all the requirements of customer. Associate improvement model conferred and illustrated. The article conjointly demonstrates the benefits gained by the improvement model on a enforced exploitation of the dynamic cloud design over the normal cloud design.

Keywords: Cloud Computing, optimization, Dynamic CC Design, Delivery models, Price, Utility, Risk

I. INTRODUCTION:

In the past, organizations managed their computing resources within their geographical borders. Within the last years a lot of organizations moved their servers outside their firms' borders, to Service providers (P) WHO take responsibility of varied computing activities managing the computing resources and facilitating these services. Doing so, organizations face new risks and issues that they need to meet within the past. [1] claim that organizations sought to build changes within the production processes, process new risk management procedures, and dynamic their IT management processes. CC services are being employed by four forms of organizations: public, community, hybrid and personal [2]. Public organizations find their computing resources within their geographic borders or outside it, at the cloud services providers' website, once considering problems with privacy, security, simple production and monetary. Community services are geared toward a bunch of buyers WHO have similar interests, shopping for resources from one external service provider. Hybrid services alter buyers' victimization of their internal resources in parallel to outside providers. Non-public customers, principally find resources at the providers' website. CC providers assign their resources that they provide to varied buyers, attempting to create a complete safe separation of information and processes happens to totally different organizations. Consumers' shopping for selection of CC services doesn't seem to be straight forward. Providers are generally providing buyers cloud computing variables services, troublesome for comparison. These services incorporate totally different functionalities at variable prices, and ranging dependability. The reform the customer's main objectives maximization of their utility, and reduction of their prices and risks. Since utility, value and risks are totally different dimensions, drawback the matter is basically a multi-

objective improvement problem. Printed analysis doesn't address the multi objective nature of the matter. This text deals with optimizing consumers' call, however at an equivalent time maintaining every of their objectives' concerns. The article reviews the noted models addressing one objective improvement call. During this article, a unique multi objective improvement model bestow and illustrated. The article conjointly demonstrates the benefits gained by the improvement model on a enforced victimization of the dynamic cloud design. It demonstrates as follows: Area 2 provides static and dynamic design and. Area 3 analyses customer's problems. Area 4 covers price improvement, Area 5 analyses utility improvement. Area 6 analyses risk improvement. Area 7 emphasizes the Multi model improvement designed here. Finally, Area 8 consummates and provides future code application (software).

II. ARCHITECTURE:

An architecture of the CC consists of three models in addition to functions supporting CC services. Figure I describe static CC design. The functions of every layer area unit as follows:

A. Software (Software Service)

User can access databases and application software's on demand or need of users. It makes user not to install the software on their own systems instead can be used in cloud on rental basis.

B. Platform (Platform Service)

Platform as a service (Platform) is service in which a third-party vendor provides hardware and software tools. A Platform provider manages the hardware and software on its own [infrastructure](#). As a result, Users need not to install in-house hardware and software to develop or run a new application.

C. Infrastructure (Infrastructure Service)

It includes networking infrastructure services, data storage and computing services. The Infrastructure provider also provides the services to accompany those infrastructure components. The services are like billing, monitoring, accessing, security, [backup](#), replication and recovery.

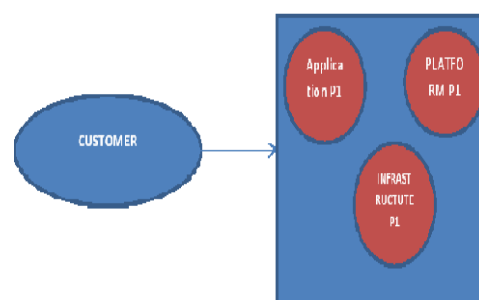


Fig.1. Architecture of Cloud with Single Provider

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Multiple Optimization Services in Cloud Computing for Customers

Service providers provide their services in bundles. A buyer shopping for an application service can need to use the platform service and infrastructure services given by the P. A buyer wants to shop for a platform service can need to use jointly the providers' infrastructure services. The lumping apply for both buyers World Health Organization would like to consume services from completely different Ps. Consistent with [3], nowadays, sure providers use to run applications running on alternative providers' infrastructure, however the buyer is blind to the current separation of platforms whereas shopping for his service from one single P. The lumping apply limits free economic process from competitive during this kind of services, forcing customer to acquire services they'll get from alternative providers in cheaper costs. As an example, a buyer might get a platform service from P1, however the underlying infrastructure service from a P2, that sells the suitable infrastructure service cheaper than P1. Consistent with [4], within the future, application are going to be designed as well as modularity which is able to change running components of the applying on completely different Ps' platforms. Ref. [3] states that the cloud computing design is a reference of the CC3 models' design. CC parts are a unit loosely coupled, therefore enabling the event of standard application that change distribution the applying among many Ps. [5] jointly claim that applications happen to completely different models can be done on different geographical locations. Ref. [6] takes that abstract hardware and permit transfer of application to alternative machines, provided by completely different infrastructure providers.

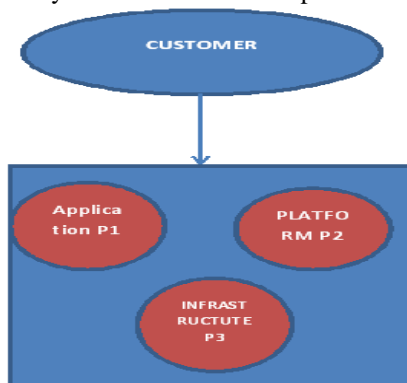


Fig.2. Cloud Service Architecture with Multiple Providers. It goes with the reviews direction prepared in [7] cloud services on a dynamic design. Consistent with the dynamic design a buyer is ready to use software services exploitation P1 resources and buy platform or infrastructure services from alternative service providers. Implementation of the dynamic design need technical standards of the interfaces, that allows to improve ability of applications. Following those style designs can change property among left and top services, therefore removing the process. [7] demonstrate the benefits achieved in aspects of consumers' price and utility improvement, [8] supported the dynamic branch of knowledge model. Figure II presents the dynamic CC design. Arrows describe services equipped by underlying models.

III. Aspects

Ref. [9] found that many companies use CC static technology that provides them a capital potency. The inventors found that not only design but also the security should be associated with it also provides a capital.

An analogy of two models of CC design shows some differences in a future model. Ref. [11] found that organizations take care of value savings because it is the main motto, Even though research is done at small amounts changes will be more in the respective area. The main key point of risk is due to untransparency of services provided by the cloud providers. Many researchers studied the open issue [12]. In one review, buyers need not take any permission to see the infrastructure, therefore, partial results will be obtained [13]. Researchers found the different models which provide transparency, therefore, risks can be reduced [14]. So many providers will come forward to check with the problems [15]. Price minimization in shopping for selections lacks issues of the immense benefits of the CC model. Many companies' experts using CC utilities..

4. Improvements At Price: The survey describes two principal rating models. The rental model is that the in style model, and therefore the second no-bargain model [16]. Within the rental model buy take all the resources which are available on a cloud on the rental basis [17]. There is no constraint for the users to use limited sources instead there will be an agreement to use certain volumes of resources. Within the no-bargain model, the buyer will pay for the resource they used. This model provides billing monthly or yearly the buyer will the service. The user has to pay the amount even though he has not used the resource. Researchers state that the rental model is a higher model to free the market from competition and also assigning the resources economically [18]. They found that the rental model is that the current trending CC. Some buyers bill high amounts for a no-bargain even though not used [19]. [20] Includes giving assistance for the buyers who find the confusions caused by the highest capacity in case of high workloads. Researchers got 2 forms: irrational economic irrational call. [21] found that buyers are a unit paying an extra amount in a very no-bargain model. [22] World Health Organization studied states that the no-bargain biased selections were influenced by fund argumentations, whereas the rental biased selections were influenced by the productions' flexibility motivation. Providers give different types of rates like providing fewer volumes of resources for low cost, taking high charge for high volumes of resources [23]. Ref. [8] proposes a structure that provides the table with the features.

IV. Viability Improvement

There is a unit numerous procedures facultative utility examination of different administrations and item, similar to Cluster Analysis and third-dimensional Scaling (MDS) [25]. Conjoined examination could be a procedure that licenses to explore looking for exchange offs issues among focused item [26]. The strategy makes utilization of a technique analyzing the attributes of each item, reproducing and anticipating purchasers' issues while examination totally unique item. An examination that utilized conjoined investigation procedure depict in found that the premier impacting CC looking for choices' attributes were nature of administration and lock-in impediment. Analysts found that data security could be a consider CC reception issues [27].

Ref. [28] states that purchasers region unit moving from mechanical to support arranged issues in their CC appropriation issues. In a very overview [29], analysts found that the purchasers referenced six trait levels: (1) suppliers' name, (2) required aptitudes, (3) movement technique, (4) rating tax, (5) esteem contrasted with inward answer and (6) purchaser support. Security is Associate in nursing embracing obstruction to CC administrations. Ref. [29] World Health Organization utilized conjoined examination, found that suppliers' name was the characteristic with the absolute best relative significance of twenty 6th, relocation technique was the second with twenty first significance. Esteem has been discovered fourth having 16 PF relative significance. Analysts World Health Organization examined administration traits affecting on CC selection, discovered seven groups of characteristics: money related result, ease of use, adaptability, trademark, side worth, property and clients' help [30]. To close, there didn't discovered single rundown of properties, nor one in understanding technique for utility correlations dynamic environment, anyway inadequate with regards to esteem and hazard issues.

V. Risk Accumulation

Hazard evaluation inside the CC space is an issue managed seriously in writing [32] [33]. Specialists express that security dangers territory unit among the biggest hindrances to reception cloud administrations.

This article centers around security dangers since this hazard class could be a noteworthy substance of CC reception, while not restricting consensus of the arranged model. Security as a subgroup of the re-appropriating issue region unit an extravagant investigation Pace, that specialists still don't appear to most likely completely catch its propelled nature [34]. Ref. [35] States that overseeing security dangers is acquiring extra progressed, and a lot of distributions encapsulate proposition focusing on the varying cloud security threats.

Cloud security covers numerous classes. Ref. [36] reviewed the investigation productions on cloud security issues, known the basic thoughts fundamental vulnerabilities and dangers, and characterized them as pursues: virtualization segments, multi-occupancy, cloud stage and programming framework, information re-appropriating, learning stockpiling security and institutionalization and trust. Ref. [37] conjointly characterized security dangers to a couple of sorts: Multiple Users, base administration and Single motivation behind administration.

VI. THE MULTI WAY AUGMENTATION MODEL

This segment dissects the CC customer elective as a multi-dimensional model and proposes an organized way to deal with dispose of options and select the best decision.

There are a unit 3 fundamental goals that a CC client looks to enhance once choosing specialist co-op:

- 1) greatest utility
- 2) borderline value
- 3) marginal hazard

The entirely unexpected components of those targets territory unit partner degree deterrent inside the gratitude to type a simple model for higher intellectual procedure (predominantly option of specialist organization and a heap of administrations). While making an interpretation of everything to money is plausible – it's commonly abstract

and much from right. A comparable may be a aforementioned a couple of fitness operate.

We start improvement calculations exploitation the primary learning of each measurement (naming quality, utility and hazard) that was figured steady with its Specific attributes. Esteem figured concurring [7], utility registered predictable with [8], and risk scores computed consistent with [31].

We as of now blessing the multi target improvement demonstrate in 2 plans of action. first the instance of packaged administrations of every one of the 3 models inside which an organization purchases all CC administrations from one single specialist organization, authorized on this CC configuration as portray in Fig. I. Second, the plan of action of a free market – choosing the best supplier per layer, among all Ps. This plan of action is implemented on the dynamic CC configuration as portray in Fig. II. • The case of bundled services of all 3 models.

A. Services with Cloud Delivery Models

CC has 3 basic models (framework, stage, programming), and in this manner the Ps generally attempt and group their administrations inside and out the models hence on beyond any doubt the purchaser to them through and through the 3 models. Amid this case, the customer must contemplate and pick just 1 of the varying potential Ps. Assume we have n Ps to think about: all offers a heap of administrations that contributes an utility to the purchaser, with related dangers, for a given esteem. In this way, examination n Ps is finished by correlation their n focuses. It's essential to the point that we tend to build up the component to change correlations.

On the contrary hand, in the event that we tend to accept the free monetary procedure can change getting administrations for each layer severally from the contrary layer, we may should rehash the choice between N suppliers.

The first qualities zone unit protected, and will be utilized if vital). This methodology holds 3 separate measurements for the correlation (dissimilar to making an interpretation of the objective to something like one wellness work, or to money related esteem).

The technique functions as pursues: for each measurement, we tend to resize the best execution to be ten, and hence minimal execution to be five. The contrary scores zone unit at that point inserted there in shift. We tend to then preclude suppliers having most exceedingly bad execution in any measurement. This strategy for decision out or disposing of Ps continuestill the last one is left.

The following example illustrates the instructed techniques. Table one includes the first values of utility, value and risk score for 5 Ps.

provisional	Usage per year	Price per year	Liability per year
p1	6	120000	12
p2	10	80000	13
p3	9	50000	10
p4	15	150000	16
p5	7	40000	8
p6	3	70000	15
p7	4	30000	6
p8	8	60000	9

Table I. Data

Multiple Optimization Services in Cloud Computing for Customers

provisional	Usage per year	Price per year	Liability per year
Capital	10	30000	6
sub capital	3	150000	16
Scope	4	80000	8
Max	15	15	15
Minimum	3	3	3
Proportion	2	10000	1

Table II. Computational Data

provisional	Usage per year	Price per year	Liability per year
p1	6.89	7.55	6.35
p2	6.2	7.81	12.1
p3	10.3	8.3	5.01
p4	5.33	13.25	14.44
p5	6.37	9.35	11.23
p6	3.33	1.25	8.52
p7	6.32	4.88	16.12
p8	5.57	2.45	3.98

Table III. Range

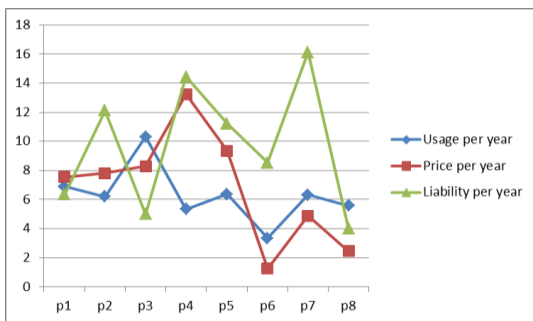


Fig.3. Graphical way ps
From Figure.III

It is observed that p6 is low in the case of price and liability, and therefore is removed. P8 is low in case of Liability. Now again the comparison among the remaining is as follows.

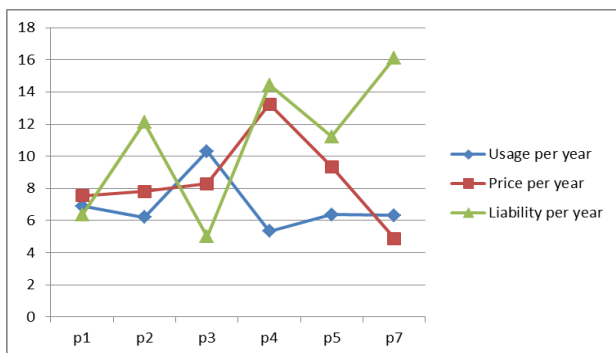


Fig.4. Graphical way Filtered p's

It is observed that p7 shows the low stage in price and then removed.

P3 shows the low stage in case of Liability. So it is removed. p4 shows the low stage in usage and then removed.

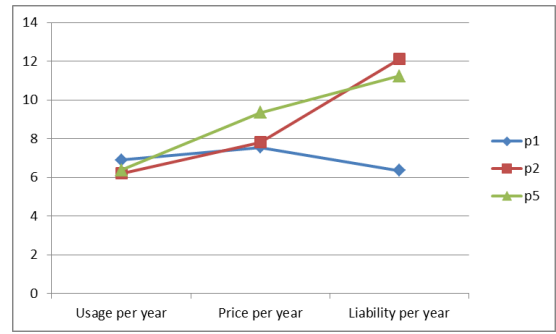


Fig.5. Graphical way of all p's

It is observed in the Fig.5 that p1 shows the down time so it is removed. Now among p2 and p5, p5 is the best option because it shows the up time in all aspects.

B. Choosing Producer per model:

The follow of Ps clubbed together and dictate an alternative and a contract with a single P. In distinction to the bundled services, free markets forces ought to alter customers acquire services in every model.

provisional	Usage per year			Price per year			Liability per year		
	SAAS	PAAS	IAAS	SAAS	PAAS	IAAS	SAAS	PAAS	IAAS
p1	2	3	4	20000	20000	35000	4	3	2
p2	3	2	2	20000	12000	15000	3	4	3
p3	2	3	4	20000	14000	45000	2	5	4
p4	3	4	3	25000	25000	65000	4	8	5
p5	3	2	2	10000	30000	15000	4	6	3
p6	2	4	4	10000	40000	10000	3	5	7
p7	3	3	5	15000	20000	35000	3	4	9
p8	2	2	3	25000	20000	20000	2	3	5

Table IV. Splits the table into three tables which provides computations of three models.

C. Computation of SOFTWARE P:

provisional	Usage per year	Price per year	Liability per year
p1	2	20000	4
p2	3	20000	3
p3	2	20000	2
p4	3	25000	4
p5	3	10000	4
p6	2	10000	3
p7	3	15000	3
p8	2	25000	2

provisional	Usage per year	Price per year	Liability per year
p1	15.01	8.68	3.33
p2	16.02	6.78	8.25
p3	5.05	9.52	6.52
p4	8.03	15.55	12.45
p5	6.52	8.35	11.36
p6	3.8	12.25	9.46
p7	15.52	8.44	10.03
p8	10.11	6.55	3.98

Table V. Data of SOFTWARE P

Table VI. Range of SOFTWARE

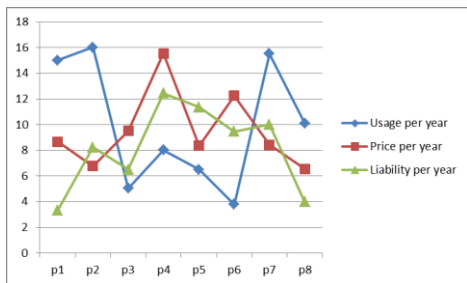


Fig.6.Comparison of SOFTWARE data on range
It is observed that p1 and p8 has low liability point, p3,p5 and p6 has low usage point,p7 has low price point. Thus p2 is not being removed and it is the good choice.

D. Computation of PLATFORM P:

provisional	Usage per year	Price per year	Liability per year
p1	3	20000	3
p2	2	12000	4
p3	3	14000	5
p4	4	25000	8
p5	2	30000	6
p6	4	40000	5
p7	3	20000	4
p8	2	20000	3

provisional	Usage per year	Price per year	Liability per year
p1	10	7.6	2.3
p2	10	10	10
p3	5	8.5	6.4
p4	15	10	12.36
p5	10	10	11
p6	10	6.5	10
p7	5	10	8.6
p8	15	9.6	15

Table VIII.Data of PLATFORM P
Table VIII. Range of PLATFORM

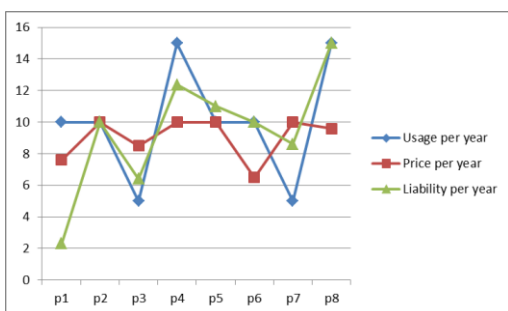


Fig.7.Comparison of PLATFORM data on range
From the above figure it is observed that p1,p3 and p7 has low range in liability point,p3and p7 has low level in usage point and so on. Thus p8 is not removed at all aspects.p8 is best choice.

E. Computation of INFRASTRUCTURE P:

provisional	Usage per year	Price per year	Liability per year
p1	3	20000	3
p2	2	12000	4
p3	3	14000	5
p4	4	25000	8
p5	2	30000	6
p6	4	40000	5
p7	3	20000	4
p8	2	20000	3

provisional	Usage per year	Price per year	Liability per year
p1	9	6.6	5.6
p2	15	12.4	10
p3	10	7.5	3.3
p4	5	15	10
p5	15	10	11
p6	25	10	10
p7	15	10	15
p8	10	10	7.9

Table IX.Data of INFRASTRUCTURE P

Table X. Range of INFRASTRUCTURE

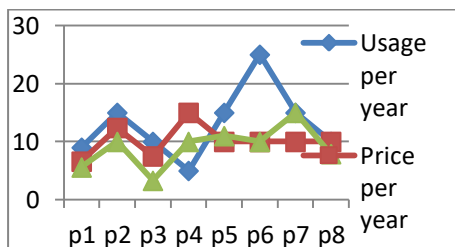


Fig.8.Comparison of INFRASTRUCTURE data on range

It is observed that p6 is meeting the highest requirements.so p6 is the best choice.

By taking best of three models the table is as follows

provisional	Usage per year			Price per year			Liability per year		
	SAAS	PAAS	IAAS	SAAS	PAAS	IAAS	SAAS	PAAS	IAAS
p2	3			10000			4		
p6			3			20000			4
p8		3.5			10000			2	
Total Usage 9.5 Total price 40000 Total Liability 10									

Table XI. Data of Each Delivery Model After optimization

SOFTWARE-p2,PLATFORM-p6,INFRASTRUCTURE-p8
Thus comparing the three models the result obtained as the best results for a single p.

VII. CONCLUSION:

This paper concentrates on the considerations in customer’s perspective.Reducing the price is the first consideration, increasing the usage is the second consideration and reducing the risk is the third consideration. Thus this paper provides multiple optimization services.The proposed one uses dynamic model which makes the customers to use services based on several aspects.Each one has different way of finding the best to be used.

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Multiple Optimization Services in Cloud Computing for Customers

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