# Truthful Bidding for Cloud Resources based on Competitive Cloud Auction, Costing and Depreciation

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***Abstract—****Today's cloud computing world, selecting a truthful cloud resource is fundamental to highly competitive business dynamics. Although there are many primary topic to discuss in Cloud community, Truthful bidding for cloud resources will also be one of the interesting area to discuss in this paper. First, we will list the open comments that were recommended by the members of the group in LinkedIn discussion on "Truthful bidding for cloud resources based on competitive cloud auction, Costing and Depreciation". Then we would like to look at the primary recommendations from cloud professionals, and the corresponding reasons for this is that most people managing different resources and they are looking for different feature sets in Cloud based service and like to make their functionality availability in almost all the time. Hence we will also discuss the most popular aspects of cloud auction, Costing and Depreciation is, what they offer, and why they are considered for effective selection and Management of Cloud.*

***Keywords—*** *Cloud Computing, (IaaS) Infrastructure as a service, (SaaS) Software as a Service and PaaS (Platform as a Service);*

## I. INTRODUCTION

Cloud computing is the approach of delivering IT services over the Internet and emerging as a promising technology to offer services pay-as-you-go basis [1]. The elastic property of cloud enables customer to scale up or down the resources based upon the requirements dynamically and reduces up-front IT investment significantly [2]. Cloud computing promises to cut the operational cost and capital costs and more importantly let IT departments focus on strategic projects instead of keeping the data center running [3]. In essence, cloud computing is a construct that allows user to access applications that actually reside at a location other than the user's system or other internet connected devices [4] [5]; more often this will be a distant datacenter. The data center is a collection of servers where the user subscribed application is housed [6].

## II. A COUPLE OF PROBLEMS WITH THIS ANALYSIS:

**Problem:** Using reserved instances would push the EC2 figure down 30-40% (and like the dedicated option, provide further cost savings in years 2 and 3). A dedicated cluster of this size would likely consume 50-100% of one employee's time, which adds at least

another $50k to that side of the ledger. We can't assume that the marginal increased technical management cost is zero.

**Analysis:** We think this is a false economy. We're just paying our provider to employ people that are capable of fixing these problems instead of in-housing them. By and large, if we manage physical, owned infrastructure the same way we manage cloud resources. That is: automated configuration, monitoring, and deployment. The vast majority of the time it's the same process. We just need to make sure that our instrumentation is sufficient to notice when things aren't running correctly and remove machines from service until someone can figure out what happened. This could be in the form of an outside tech or in house support. Either way, at clusters of this size a loss of one, or even 5 machines should not be the difference between everything working and a colossal systems failure.

## III. CHALLENGE AND SOLUTION

Poor cloud Auction and untruthful bidding model will degrade the Business, Today the growth of heterogeneous consumers and multiple providers in the market is tremendous in nature. Hence we will discuss what is the most popular aspects of truthful bidding is, Cloud auction methods are, what they offer, and why they are considered for effective selection and Management of Cloud".

## IV. TRUTHFUL IN BIDDING CLOUD RESOURCES AND COMPETITIVE CLOUD AUCTION:

What is this truthful bidding cloud resources and how it affects the competitive business edge that we speak of? We suggest keeping a list of areas of improvement.

Based on this case study what we would work on, or get our team to work on, is an improvement which has the greatest value and therefore the highest priority for the team. Here are what we think to be some common ones from cloud:

1) There is a powerful economic force behind this simple model: providing and consuming cloud computing services generally allows to have far more

efficient resource utilization, compared to self-hosting and data center type of hosting

2) Amazon's S3 service just provides disk space, and it doesn't care who uses it or where they are located in the world. Certainly Google's office tools (and Microsoft's web offering) offers a service, not a particular machine, which will look after your application needs. Again, you can create and work with a spreadsheet but you don't know where that spreadsheet is stored, or which machine it runs on - just that it's available when you want it.

3) The web site development model does tend to be amenable to running in a cloud because many parts of the system are inherently parallel. However, there are various design decisions you could make that would limit the amount of parallelism that could be achieved, though. You can still run such a program in a cloud but it won't get nearly the kind of benefit that a highly parallel application would.

4) The technologies that you are talking about can be used to create highly parallel applications, but this isn't automatic, you still have to understand what you're doing.

5) Cloud computing is about hardware-based services (involving computing, network and storage capacities), where:

6) Services are provided on-demand; customers can pay for them as they go, without the need to invest into a datacenter.

7) Hardware management is abstracted from the customers.

8) Infrastructure capacities are elastic and can easily scale up and down.

## V. REAL WORLD CLOUD COMPUTING – COSTING AND DEPRECIATION

Assets have "lifetimes", which is to say that if we are using something in our business venture; it will eventually be "used up." In the case of computers they don't generally break but historically they get faster and can do more for the same amount of power approximately, historically doubling in performance every 18 months or so but now more like every 30 months or so. When an asset is "used up" we are going to have to replace it to keep your business running. So we're going to 'buy it again'. Do you remember what was 'hot' in the PC business in 2006? Sure we do, go to blekko.com and type 'site:pcworld.com /date=2006' and one of the results is "Hot technology in 2006". Looks like 750G drives, and "the fastest desktop chips we've ever tested, the Intel Core 2 Duo." So if you had bought gear in 2006 you would probably have machines based on the Core

2 Duo architecture which is pig dog slow compared to a decent i5 or i7 motherboard today. Guess what? We need to buy new machines to stay competitive or as this is a web enterprise at least 'add' machines to stay competitive.

Consider an alternate strategy, let's say there was a company that had a credit card that charged no interest and had a 60 month (5yr) payment plan (kind of like some car deals I guess). If the payment is 1/60th of the price of the gear each month, then that is clearly a bill that we pay every month. Now at the end of 5 years we "own" our equipment outright, except its 5 years old. In a real world Problem suppose we are getting a gigabit link with a competent IP-transit provider will be on the order of 3 - 5K$/month. That's 1000mbits 24/7 not limited by how many bytes We push through it & a switch and router for our rack stacks will be on the order of $15K (that's a couple of 48 port GbE switches and a Cisco router (or equivalent))

We really need to understand the depreciation costs. As our equipment ages we will need to replace it (if only to keep on supported platforms). $100K + $30K for servers + $15K for networking gear are $145K of gear. If we squeeze all, then we can out of it and only replace it in 5 years then We can do a 5 year straight line depreciation so add about $30K/year to our costs for depreciating the old gear. On the storage array, if We want 10TB of raid protected storage with the MD1220 We need 24 600GB SAS drives [1] which comes in at $23K each (not $12K) (We have two of those and We again have $10K/yr depreciation).we probably want a service contract, something like onsite in 4 hours or if we're a bit more laid back in 24hrs. That will add another $150K/year. But we are sure that we can get the sales guy to knock off a bunch as it's probably a list price vs. 'what we can get it for' kind of deal. We pretty much have to add in either the cost of a tech or half the cost of one of our operations employees to run this setup. Ideally we have two people at half time so that we can structure vacations for them. So put it down as one full time sys-admin and one full time tech, implemented as anywhere between 2 and 4 people. Don't forget to include the cost of their office space, their health plans, and their laptops. Also we need to include travel time and travel expense. So most things can be 'lights out' but many exceptions to that rule exist. If we can drive to the data center from home then we're better off than if we have to fly there and check into a hotel. All that being said, it's an important exercise to run through and figure out the costs since it is our own money that we are spending. And AWS does get some economies from being able to fractionalize things like sys-admin resources.

Depreciation is a way of capturing a "future" expense in today's revenues. If we are profitable,

even after including your depreciation costs, then we should be 'banking' those costs so that in five years when our gear needs to be replaced or added too, we've got the capital we need to do that. If on the other hand we aren't profitable when we include depreciation when the time comes to replace your gear we won't have the money (capital) to do that, and we will either have to raise money, go into debt, or fade into obscurity with increasingly out of date gear. The bottom line is that rather than being "an accounting trick," including depreciation in your cost structure helps you understand the total cost of owning, and operating, a bunch of gear which is powering your business.

## VI. LEASE HARDWARE COSTING

That's a big "might," and it adds significantly to the cost. If we are buying all brand-name Dell or HP, we expect it would be relatively easy to get a low interest rate without much hassle. However, if we also buying different brands of network hardware and, say, rolling our own high-performance storage it's another matter. We've found that the big cost is up front, which is why it's daunting many companies to make the change. What we find less comprehensible is the desire to "move to the cloud" from an existing full-stack infrastructure, as if replacing aging server hardware costs more than paying Amazon.

## VII. COLOCATION

We're ignoring the financial aspect of when that money needs to be paid. With AWS it's billed gradually over the lifetime of the servers (and if we have too many, we can easily reduce overhead with relatively little lost value.) Buy those servers, and we either have to pay up front or commit to a lease that may have breakage costs. Additionally, if our service is growing at a material rate, there are inefficiencies around when we choose to turn on extra hardware. With colocation, we're probably going to do groups of machines at once (say once a quarter) and attempt to predict how many you'll need (naturally erring to the high side.) With cloud, we can provision new machines at any time as needed. It's great to do a set piece calculation and say colocation is cheaper, but we're ignoring the realities of doing business that plans change regularly. That flexibility is one of the primary benefits of using cloud services.

The metaphor that we can describing here is that sometimes we need a traditional hotel, sometimes we need an extended-stay hotel, sometimes we want to rent an apartment, and sometimes we want to buy a house. It all depends on where we want to be and for how long. Right now, we're in the extended-stay hotel phase. It doesn't mean that people who buy their own homes or stay in traditional hotels are doing it wrong.

And also remember this, normally vendor tie support cycle to depreciation cycle so we cannot get new parts or support unless you pay them heavily. Nothing is black or white, when we start to have

services that are i/o intensive, the colocation is a good option especially that we can easily control or tweak the underlying hardware. On the other hand, if we start with a small scale service and we don't have a large distributed data-storage "cloud hosting" is often simpler and cost effective.

## VIII. INFRASTRUCTURE INVESTMENT FOR SERVER RACK, SPACE, POWER AND COOLING COST

Another real world Problem that will bite us is that while we can "fit" all this gear in a 40U rack we can't put enough power into that rack at a cooling facility to run it. The servers are 750W machines, so let's say we put a 120V/30A circuits into your rack, we can really only draw about 25A before people complain so you have about 3KW/circuit available. A 'normal' cooling facility will offer us 2 per rack. So with 750W servers you can run 8 machines per rack. We'll probably not run them that hard and can get away with maybe 12 per rack. But with 54 totals servers that is going to be 5 racks minimum and maybe 6. (Remember our switch and router will take power too). Either way we're looking at 24 - 30 'circuits' for this space and those are probably about $500/month each so another $12-15K/month in 'power + cooling' charge.

## IX. DISCUSSION AND CONCLUSION

Hope this helps, Cloud is a powerful commodity for competitive business so it's worth using it wisely. We think that this can be a best contribution for professional and research members, to inspire the team and define directions and area of improvement for their business. It was more of a comparison of the two extreme ends of the spectrum "Truthful bidding for cloud resources vs. competitive cloud auction, Costing and Depreciation" that is main reason we analyzed the user comments in detail. Therefore success in Cloud will come to organizations that leverage the Cloud in the right direction and have the ability in understanding and selecting the right Trending Tools and Technology, Security, Performance and deeper understanding of Business dynamics, Costing model and Depreciation factors. This move will ensure that the providers will deliver on the promises that meet the business expectation.

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