

Fall in Cloud Computing Rates

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Abstract— The problem of pricing the cloud for clients' usage has been an issue since the invention of cloud computing. The basic problem for pricing arises because, as soon as the cloud vendors set a price for their customers, new vendors in the market try to come up with a cheaper price for the cloud. Many papers have done a comparative study of the prices for cloud storage and have found that prices are decreasing on a gradual scale. This review paper deals with the comparative study of different cloud vendors, reason behind the decrease in the prices of cloud storage and benefits from new cloud rates. The cloud prices are calculated using a flat rate for storage and a usage rate for network. The pricing of the cloud has affected electronic businesses in many ways.

Keywords—cloud computing, cloud storage, sustained use discounts, Google Compute Engine, iCloud

I. INTRODUCTION

Businesses, both large and small, use cloud computing today either directly (e.g. Google or Amazon) or indirectly (e.g. Twitter) instead of traditional on-site alternatives. There are a number of reasons why cloud computing is so widely used among businesses today. One of the reasons is that one does not have to manage it. This is unlike on-site hosting, where the price of deploying applications in the cloud can be less due to lower hardware costs from more effective use of physical resources.

II. HISTORY

In the 1960's, businesses were booming internationally and the idea of providing computational services worldwide became a necessity. Before the rise of cloud computing, businesses managed all their IT on-site using in-house servers and computer rooms[1]. Prior to the internet revolution, the on-premise model was the default - but much has changed in the last quarter of a century. The evolution of the cloud gives businesses of all sizes the opportunity to reduce the amount of money they spend on hardware, software and associated infrastructure. Companies which embrace cloud computing do not face the same start-up or maintenance costs. By outsourcing elements of their IT function to the hosted services provider, they are able to switch to an investment model based upon operational expenditure.

The cloud computing service was first introduced during the 1990s by salesforce.com and was aimed at enterprises using CRM applications. In 2002, Amazon launched AWS (Amazon Web Services), which rapidly became the market leader in public cloud computing using the Amazon EC2 (Amazon

Elastic Compute Cloud). The end of the 90s and beginning of the 2000s were a great time to find or invest in an internet-based company. Cloud computing had the right environment to take off, as multi-tenant architectures, highly prevalent high-speed bandwidth and universal software interoperability standards were developed during this time.

III. PRICE CALCULATION

At the start of cloud computing, very few companies gave it a try for their businesses. Due to high prices, the demand was not as high as expected, thus, underestimating its potential to develop. Due to a lack of companies or businesses, the prices of cloud storage were eventually reduced to attract as many businesses as possible. The cloud storage providers introduced their own set of monthly/yearly plans in order to be competitive in the market. Google Cloud Storage pricing is based on a flat rate for storage and a usage rate for network. Project storage usage and bandwidth usage are calculated in gigabytes (GB), where 1 GB = 2³⁰ bytes[2].

Standard Storage (GB/Month)	Durable Reduced Availability (DRA) Storage (GB/Month)		
\$0.026	\$0.02		

Network			
Monthly Usage	Network (Egress) - Americas and EMEA* Destinations (per GB)	Network (Egress) - Asia-Pacific Destinations (per GB)	Network (Ingress)
Data Transfer to Cloud services in the same Region	Free	Free	Free
0 - 1TB	\$0.12	\$0.21	
Next 9TB	\$0.11	\$0.18	
Next 90TB	\$0.08	\$0.15	
Additional Data Transfer	Contact us	Contact us	

Figure 3.1[3]

IV. DECREASE IN CLOUD COMPUTING RATES

Many small-scale businesses worry about renting computer power from Amazon and other cloud companies as they are too expensive. Though the cloud is a great way to get a start-up off the ground or run a website where the daily traffic ebbs and flows, the voices say, there are other times when it is far cheaper to just buy your own computer hardware. Google introduced a new pricing scheme that provides discounts if you use a consistent amount of computing power over the course of the day[4]. Google now claims that on 'Compute Engine', prices will automatically drop by 53 percent on virtual machines that you use 24 hours a day, seven days a week, over the course of a month. Google

calls them “sustained-use discounts,” and they address the very problem that cloud customers have most complained about in the past. If their cloud workloads are consistent, the customers say that it makes more economic sense to buy and operate their own machines[5].

Some companies have multi-million pound IT budgets, while others have just a few thousand pounds to spend on the technology they need. Either way, money that can be saved on IT infrastructure and services can be reinvested in another area of the business.

Businesses of all sizes can use cloud computing to achieve cost savings.

Larger businesses gain the flexibility to add or remove IT services according to demand, reflecting peaks and troughs in the market. They can quickly provide new tools and programs to employees, across multiple sites, without a lengthy deployment process.

Smaller companies perhaps have the most to gain - they no longer have to over-stretch their budgets developing their IT infrastructure. They can simply subscribe for advanced IT services - those which would previously have been beyond their means - and access them over the internet.

Google has launched ‘Drive for Work’, its premium \$10/month version of Google Drive (file storage and synchronization service provided by Google, released on April 24, 2012) which can provide unlimited storage and a couple of additional enterprise features[6].

Google Apps for Education users “only” got 30GB of free space for their accounts. That, too, was probably enough for most students, but the price of storage is quickly trending to zero.

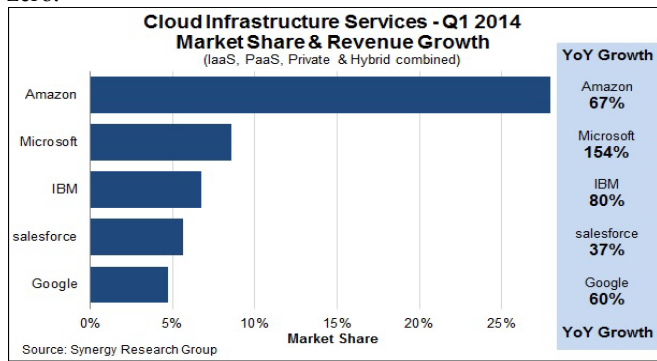


Figure 4.1[7]

V. COMPETITION BETWEEN APPLE, AMAZON & GOOGLE

Apple:

Apple has dropped prices for data storage on iCloud. The company announced the changes in conjunction with the release of a new set of iPhones and new mobile operating systems, iOS 8 and OSX 8 Yosemite.

The new pricing was eclipsed by the announcements of the iPhone 6, iPhone 6 Plus, and by Apple Pay, a mobile payment platform that allows users to pay with their smartphones. There was also the unveiling of the Apple Watch. But the changes are significant in view of similar moves in cloud storage by competitors.

Under the new pricing plan for iCloud storage shown on the iCloud homepage, 5GB remains free. The rest of the pricing under the new plan is as follows:

- 20GB is now \$0.99/month
- 200GB is now \$3.99/month
- 500GB is now \$9.99/month and
- 1TB is now \$19.99/month

Google:

The company reduced prices by 32 percent across its Google Compute Engine, which offers raw virtual machines for running just about any software. It made a similar reduction on Google App Engine, a service that automatically runs and manages your software applications but asks that you build these applications in rather specific way. And it lowered prices by about 68 percent on Google Cloud Storage, a means of storing data, and by about 85 percent on Google Big Query, which lets you analyze larger amounts of data.

Amazon:

Amazon says -pay only for what you use. There is no minimum fee. Estimate your monthly bill using AWS Simple Monthly Calculator. The prices listed are based on the Region in which your instance is running. AWS Free Tier includes 750 hours of Linux and Windows t2.micro instances each month for one year. To stay within the Free Tier, use only EC2 Micro instances[8].

Cloud Service	Storage	Cost per Month
Apple iCloud	50 GB	\$8.33
Box	100 GB	\$5.00
Dropbox Pro	1 TB	\$9.99
Google Drive	1 TB	\$9.99
Microsoft OneDrive	100 GB	\$1.99
SugarSync	1 TB	\$55.00
Microsoft Azure	1 TB	\$68.00
Amazon S3	1 TB	\$85.00

Figure 5.1[9]

CONCLUSION

By 2020 the cloud computing market is forecast to exceed \$241billion. Cloud pricing is growing more complex each month. As cloud IaaS (Infrastructure as a Service) vendors change prices and introduce new services, cloud users are finding it increasingly difficult to project their cloud costs. Over a period of time, there were price reductions in cloud services provided by AWS, Google Compute Engine, Windows Azure, and Rackspace Cloud. As the onslaught of changes in cloud pricing continues, now is a great time to update your forecast of cloud costs for the years to come.

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