

Microsoft Azure v/s Amazon AWS Cloud Services: A Comparative Study

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ABSTRACT: Cloud computing is a pay as you go model that holds the potential of eliminating the requirement of setting up high cost and complex IT infrastructure. It provides flexible and scalable resources for easy access and development through portable devices. In cloud computing the entire data depends upon the networked resources, which can be shared over the internet.

Amazon Web Services and Microsoft Azure are often regarded as the leading infrastructure as a service clouds. In this paper, we have given brief details of Amazon and Microsoft Azure Cloud and it is very difficult to decide one cloud service provider from these two. In this paper we compare Amazon AWS and Microsoft Azure which will help in taking decision for choosing one Cloud Service Provider.

KEYWORDS: Amazon AWS, Azure, Cloud Computing, Cloud Service Provider

I. INTRODUCTION

Cloud computing depends on sharing required resources rather than having local servers or personal devices to do some type of applications. Cloud computing is comparable to grid computing, a type of computing where unused processing cycles of all computers in a network to tackle and solve problems too hard for any stand-alone machine [5]. It provides needed resources which can be shared over internet [2]. A personal cloud storage service allows synchronizing their local information with server in the cloud. They have gained the popularity among many of the computer users after the companies started providing easy access and efficient storage space on effective pricing. More and more people are subscribing to these cloud storage services affordable with the prices and services provided by the companies [6]. In Amazon Web Services (AWS) the most central and well-known of all the services arguably include "EC2" Amazon Elastic Cloud Compute and "S3" Amazon Simple Storage Service.

Officially since 2006, Amazon Web Services (AWS) is completing its 10-year anniversary. Some may say that old, while others would say that Amazon took that time to build an excellent head start over its competition. One of those competitors, Microsoft Azure was introduced in 2010. But by this time had Amazon already had a strong lead in providing cloud services? Microsoft doesn't think so, clearly, and has been building its infrastructure as a service (IaaS) offering out from AWS' shadow ever since. Both are popular and leading Cloud Service Providers [3].

These companies are both global titans and also popular with the resources to make their respective cloud services as robust and expand them as they want. With server farms the size of actual farms, both are equipped to meet the needs of enterprises of any size. But while the question: "So which of the two is better for my business?" is a simple one, the answer may be a little more complicated [7].

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II. FEATURE AND SERVICES

Selecting one from these two will come down to the wants and needs of each individual customer, and the workloads they are running. Sometimes organisations will use both providers within different parts of their operations, for different cases. May be there are various factors that separate the approaches of the two firms, which can help users decide which is right for them. It is important looking at the services offered by the two firms. Both AWS and Azure offer similar capabilities to some extent, along the lines of compute, storage and networking [4].

They both share common elements of a public cloud such as self-service and instant provisioning, auto scaling, security and some management services. Both companies are also investing to meet needs for new cloud services. This has resulted in more mature analytics offerings. For example, support for Hadoop clusters are provided by both AWS (Elastic Map Reduce) and Azure (HD Insight). Both AWS and Microsoft have added machine learning tools and a number of features targeted at the many number of Things, while customers can choose either cloud to variously build an app or even create high performance computing environment according to their needs.

Meanwhile the recent surveys proved, with both providers supporting Docker services. Microsoft has also been creating its own Hyper-V container technology that it will run in on-premise data centres as part of its forthcoming Windows Server 2016 release [8].

MICROSOFT & AMAZON IN CLOSE RACE FOR WINDOWS HOSTING

An internet site named Netcraft posted an article showing that Microsoft is slightly more than Amazon in a website hosting of Windows. The numbers are close with Netcraft listing 23,400 web-facing Windows computers at Microsoft and 22,600 at Amazon. According to Net craft regular analysis and their statistics, with a 50 percent growth rate in Azure websites since 2013, both Amazon and Microsoft each have "just over 1 percent of the market." While that number is not huge it still makes Amazon and Microsoft the two largest Windows hosting companies in the world, although Netcraft states, "the market is still fragmented."

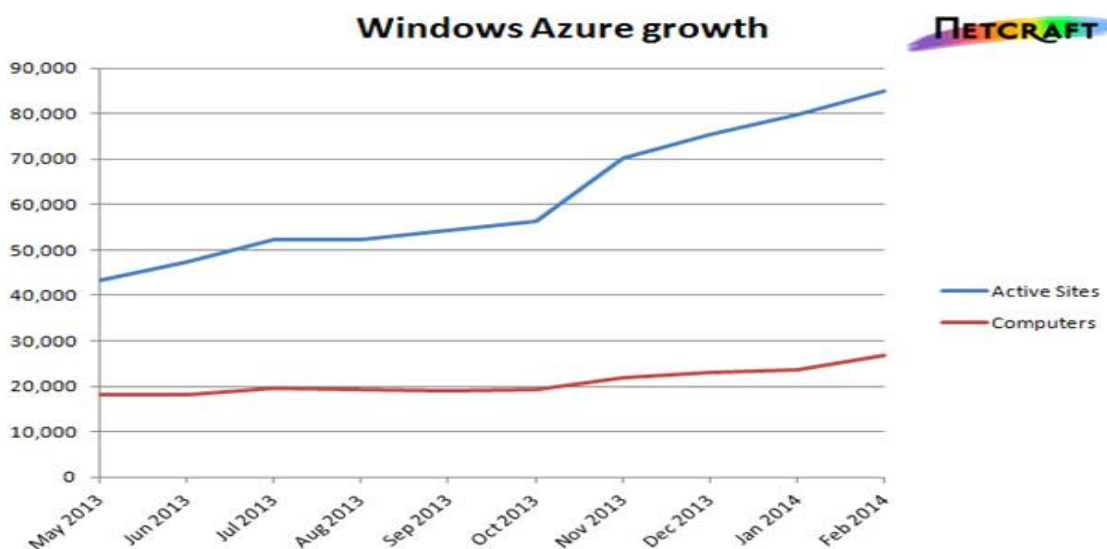


Fig.1 Netcraft chart showing web-facing Windows computers hosted by Amazon and Microsoft

In a Microsoft Trends blog, Chris Woodill, representing the Netcraft post mentioned the potential for growth by saying, "The analysis currently represents only 1% of the world's Windows based public facing web sites. Imagine the potential improvement for Azure to dominate such a market."

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III. PROS AND CONS

Although Amazon in many aspects has shortfalls as a part of Forrester's scoring, it still rates high in most aspects of its services, and is generally better than other cloud service providers. Also, Azure rates higher than AWS in certain areas such as development and testing tools. And Microsoft already has a strong footing within an organization. Windows Server, System Centre and Active Directory are the key Microsoft on-premise systems Azure links well with. Both AWS and Azure have PaaS capabilities; this is strength of Microsoft's. One of the disadvantages is a series of outages in recent months and years. Gartner analyst Lydia Leong has recommended considering disaster recovery capabilities away from Azure for critical applications hosted in the cloud.

AWS VS. MICROSOFT AZURE FOR BIG DATA



	
<ul style="list-style-type: none"> • Machines are individually accessible • Need proper mapping of internal machine names, domain names, and network file • Internal domain names automatically labeled as "localhost" rather than individual machine domain name • EBS storage is sufficiently fast for big data • More mature environment for big data 	<ul style="list-style-type: none"> • Machines grouped into "cloud service" and respond to the same domain name but different ports • More memory allowance • Automation and user-friendly interface may be lacking • Less margin for error • Standard storage has difficulties for big data. Premium Storage (if available) is required • Less mature for big data, but improving

Fig.2 The explosion of big data in recent years has led cloud computing giants into constant races to deliver the best-of-breed cloud big data solutions for business needs. Amazon Web Services (AWS) has long been known for its scalability, agility, and affordability, while Microsoft Azure has risen to compete as a powerful, versatile enterprise-class cloud platform [9]

Azure can be somewhat restrictive in comparison but AWS provides users with many options for supporting other platforms. Azure might not be the best solution if you want to run anything other than Windows Server. Microsoft claims to have open source platforms, but it currently provides 'limited' support for Linux operating systems [8].

IV. ADVANTAGES

The Amazon Web Services has 2 important services such as S3 and EC2 and here we compare Ec2 with Azure as they are of similar service providers.

ADVANTAGES OF AMAZON EC2 (Elastic Cloud Compute)

- At least at the starting EC2 is cheaper. For about \$40 per month one can get an instance and running EC2 Windows 2008 R2 Server.
- EC2 is familiar. The advantage of EC2 is it's like having your own Windows Server without owning the hardware. EC2's biggest strength is that it is conceptually simple. Anyone who had never used Virtual software is going to be able to have what it does immediately.

ADVANTAGES OF MICROSOFT WINDOWS AZURE

- EC2 is costlier than Azure. Azure has really zero maintenance. You just implement your application and Microsoft will take care of your software.

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- The cost to maintenance is also more in Amazon EC2 compared to Azure. The issue is the cost and it is hard to calculate.
- Scalability is excellent in Windows Azure. There are many chances to this application to have many users and consume a huge amount of data. If it satisfy these features Windows Azure is as simple as changing a value [4].

V. WHICH CLOUD SERVICE TO CHOOSE?

CHOOSE AMAZON WEB SERVICES IF YOU REQUIRE:

- efficient scalability and automation offerings
- locally and globally available
- a robust application
- the most reliable feature set
- various levels of security

CHOOSE MICROSOFT AZURE IF YOU ARE:

- invested in Microsoft
- accepting scalability limitations
- using Azure PaaS or Office 365
- wanting to use just a single provider
- needing other plan for AWS
- Benefiting by using it financially [11].

PRICE COMPARISON

	MS Azure	Amazon EC2
Instance Name	Extra Large VM	M1 Extra Large
Memory	14GB	15GB
Processors	8 x 1.6GHz	8 EC2 Compute Units *
Cost per hour	\$0.64	\$0.73
Cost per month ^	\$460.80	\$524.16

* 1 EC2 unit equates to 1-1.2Ghz of processing power, per Amazon.
^ Based on a 720hr per month cycle.

Fig.3 Price Comparison of MS Azure and Amazon EC2
Based on tests run between Nov 2012 and Jan 2013:

- **Speed:** Azure was 56 percent faster than Amazon's S3.
- **Availability:** Azure was 25 percent faster than Amazon's S3 in response time, which was second best in test run

The scalability is the only area where Amazon was able to top Azure, but only with the difference of 1.3. "Not only did Microsoft outperform the competition significantly during the raw performance tests, it was the only cloud storage platform to post zero errors during 100 million reads and writes", the report says. While Amazon was a strong second place contender, Nasumi clearly believes that Microsoft's Azure service is efficient about taking the lead in all cloud storage and service providers, and staying best of the rest [7].

VI. CONCLUSION

Cloud computing is based on the demand access to virtualized IT resources that are housed outside of your range, while you can share it with different services however use it easily in addition to that you can subscribe for this service with an inexpensive monthly fees, and navigate the web smoothly that has many features. The cloud service provider offers services of cloud computing such as Storage as a Service (Saas), Infrastructure as a Service (Iaas), and Platform as a service (Paas) so on. The present leading Cloud Service providers are Amazon and Azure. In this paper we listed

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Features, Services, Advantages, and Disadvantages etc. comparing both of them. This paper outlined a survey in cloud computing service providers Amazon and Azure, focusing on the long list services provided by these companies. We still have more work to do; we hope this paper will be considered as a starting point identifying opportunities for future.

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