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CLOUD COMPUTING PLATFORMS: COMPARATIVE ANALYSIS

Cloud computing is an information technology (IT) paradigm that enables ubiquitous access to shared pools of configurable system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a public utility.

“Cloud” is a metaphor for the Internet that hides all technical details. According to IEEE (The Institute of Electrical and Electronics Engineers), published in 2008, "Cloud computing is a paradigm in which data is constantly stored on servers on the Internet and temporarily cached on the client side, for example on personal computers, gaming consoles, laptops, smartphones, etc." [3].

The term "cloud" itself comes from telephony, because telecommunication companies, which until the 1990s offered mainly dedicated point-to-point transmission schemes, began to offer virtual private networks (VPNs) with comparable quality of service, but with much lower costs. By redirecting traffic to achieve optimal use of channels, they were able to use networks more efficiently.

Here are some examples of cloud services: Mail services, Webpages hosting, Computer games servers, Data storage and analyze services.

Cloud computing software and infrastructure are made available to users according to the following business models: Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS) [2].

Since its launch in 2006, the concept is deeply ingrained in a variety of IT industry segments and has become increasingly important in practice. In early 2008, Eucalyptus became the first open-source API to deploy a private cloud. At the beginning of 2008, OpenNebula was the first open source project to deploy private and hybrid clouds.

Cloud computing platforms.

A large number of companies provide cloud computing services around the world: from regional firms to international companies. The biggest «players» on this market are: Google Cloud Platform, Amazon Web Services and Microsoft Azure.

Table 1.

Cloud platforms

	Amazon Web Services	Microsoft Azure	Google Cloud Platform
Created in, year:	2006	2010	2011
Number of services:	70	60	50
Number of data centers:	14	38	6
Market share, %:	31%	11%	6%

Table 2.

Popular cloud computing services

	Google Cloud Platform	Amazon Web Services	Microsoft Azure
Virtual machines	Compute Engine	EC2	Virtual Machines
Webpages hosting	App Engine	Elastic Beanstalk	Cloud Services
Container	Container Engine	EC2 Container	Container Service

systems		Service	
Databases	Cloud Bigtable	DynamoDB	CosmosDB
Data analyzing	BigQuery	Redshift	SQL Database
Data processing	Cloud Functions	Lambda	Functions
Big Data	Cloud Datastore	DynamoDB	Cosmos DB
Data storage	Storage	S3	Blob Storage

The cloud computing services mentioned above offer trial periods. Typically, the trial period lasts 1 year [1].

Given the multitude of cloud platform offerings and the robust level of service that they provide, we can conclude that cloud computing has become an important technology in today's IT world and its role is likely to grow in the future.

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