Journal of Contemporary Issues in Business and Government Vol. 27, No. 2,2021
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

IMPORTANT FACTORS AFFECTING MODERN CLOUD TECHNOLOGIES USING IN EDUCATION

Kurbanov Zafar Mamanazarovich
Senior Lecturer, Department of Applied Mathematics, Karshi State University,
zafarkurbanov2472@gmail.com
Ayupov Ravshan Hamdamovich
Professor of "Modern Information Technologies"
at the University of World Languages of Uzbekistan, ayupovrx@gmail.com

ABSTRACT

Cloud solutions are promising directions among modern technologies using in education. Many companies today are gradually moving their business processes including education business to the cloud or preparing to move to it. Cloud technology was one of the ideas that first emerged in the end of 1980s when scientists were talking about the concept of distance education. One of the main reasons for implementing this concept was the high cost of computers and software in the case of using systems without using of cloud technologies in distance education. Therefore, the idea of connecting several employees to a common cloud processor at the same time was considered. Implementation of cloud computer technologies began in 1990s, and the first economically successful solution was released around 2000s. In the case of using cloud computer capabilities customers could purchase the software power needed to perform the calculations. The second major factor influencing today's clouds is the ability to connect to a global network for everyone in everywhere. The basic principle of this technology is that users can access services from anywhere in the world.

Key words:

Cloud technologies, factors, networks, social clouds, special clouds, public clouds, global network, history of cloud technologies.

1.INTRODUCTION

The first processors and their users were usually housed in one building. Local area networks operated in the United States until the late 1950s. In 1960, scientist Joseph Carl Robnett proposed the creation of a global network of Liklider computing centers. Development began on the ARPANET in 1966. In the early 1990s, it became the main Internet. A new network has developed. As the number of services on the new network has increased, so has the number of users. This required more and more computing power.In these circumstances, the history of cloud technology moved to the second stage. The third important factor in the history of cloud technology has been the virtualization factor, which means that users need digital systems that can start and stop working at any time, regardless of the specific equipment. This concept was first implemented experimentally in 1966, and a commercial version was introduced by IBM in 1972. Modern x86

Journal of Contemporary Issues in Business and Government Vol. 27, No. 2,2021
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

virtualization features were added to Intel processors in 2005 (VT-x) and AMD processors in 2006 (AMD-V). It's hard to say who and when the term "cloud" appeared. With the development of the Internet, online services have become widespread - to distinguish them from desktop applications that need to be installed on a computer, they have come to be called SaaS (Software as a Service).

Changes in the Internet have had two important consequences. First, as the number of developers grew rapidly, it was necessary to simplify the process of deploying new software. This is how the idea of PaaS (platform as a service) came about. The first such service was Zimki, launched in 2006 (the first public platform as a service was Zimki, launched by London-based Canon Europe company Fotango). In 2008, Google introduced the App Engine. It later became Google's cloud platform. Second, some Internet companies have become very large and have a very large amount of computing power. They needed this huge amount of computing power during the busiest times, such as when shopping in online stores. However, for the most part, not all facilities were needed and the business began to transfer it to third parties - which led to the creation of the IaaS (infrastructure as a service - "infrastructure as a service"). Amazon Web Services became the first IaaS service in the cloud today.

2.METHODOLOGY

Microsoft launched a similar Azure service in 2010, and Google launched the Google Compute Engine in 2012 [1]. Other companies soon realized the potential of the cloud and took part in the race, but Amazon, Microsoft and Google are still leading the way. Most of today's cloud solutions are the result of many years of work in a particular field.They have been internally tested before mass launch. An interesting example is Google Spanner - the first and so far the only continuously linked database with a guaranteed solid consistency. It is used to keep the whole Google advertising system running. Most of today's cloud solutions are the result of many years of work in a particular field. They have been internally tested before mass launch. An interesting example is Google Spanner - the first and so far the only continuously linked database with a guaranteed solid consistency. It is used to keep the whole Google advertising system running. In general, cloud computing seeks to automate as many aspects of development as possible [2]. This minimizes the amount of code required, the environment settings, and the likelihood of errors. Let's talk about cloud technology in more detail. Here are the definitions of cloud technologies, cloud computing. Cloud technologies are processing technologies through the distribution of digital data. With its help, computer resources are provided to the user as an online service. The programs run and display the results in a web browser window on the local computer. The essence of cloud technologies is to provide users with remote access to services, computing resources and applications via the Internet. The term "cloud" is used as an image of a complex infrastructure in which all technical details are hidden. Cloud computing is a data processing technology. The term "cloud computing" applies to any service provided over the Internet [3]. It provides the user with computer resources and capabilities as an Internet service. This provides the user with the infrastructure, operating system, and software on which they run. According to an IEEE (Institute of Electrical and Electronics Engineers) document published in 2008, "Cloud computing is a paradigm in which data is permanently stored on Internet servers and temporarily stored by the client, such as on personal computers, game consoles. , laptops, smartphones, etc. Compared to the

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

traditional approach, cloud services allow us to manage large infrastructures, serve different user groups within the same cloud, as well as fully connect to a cloud service provider. When providing a cloud service, the type of payment that is paid for each person is applied. Typically, one minute or one hour of resource use is taken as a unit of working time. When estimating the amount of data per unit of measurement, a megabyte of stored data is obtained. In this case, the user pays for the full amount of resources he has used in a certain amount of time. In addition, the cloud infrastructure allows the user to "raise" or "lower" the maximum limits of allocated resources, using the flexibility of the service provided, if necessary. The service provider will be responsible for all installation, troubleshooting, infrastructure expansion, and more.

Cloud data storage is an online storage model. In it, the data is stored on many servers distributed over the network and is made available to customers, mainly third-party clients. Unlike a model purchased or leased specifically for this purpose to store data on its own dedicated servers, the number of servers or any internal structure is not visible to the customer at all. The data is stored and processed in what is called a cloud, which represents a single large virtual server from a client perspective. Physically, such servers may be located on different continents, far apart. Clouds can be open or private. There is a certain classification of cloud services, so these categories of "clouds" are divided as follows [4]:

• A private cloud is an infrastructure designed for use by a single organization, including multiple consumers (e.g., units of a single organization). A private cloud can be owned, managed, and managed by the organization itself, as well as a third party (or a combination of them), and it can exist both within and outside the jurisdiction of the owner.

• Public cloud is an infrastructure designed for free use by the general public. The public cloud can be owned, managed and managed by commercial, scientific and government organizations (or any combination thereof). The shared cloud is physically owned by the service provider.

• Hybrid cloud - This type has the main advantages of both of the previous options. Such "cloud" is often used by organizations with seasonal operating cycles, i.e. when there is not enough IT infrastructure, part of the power goes to cloud technologies.

• Community cloud is a type of infrastructure designed to be used by specific customers of organizations with common functions. A shared cloud can be owned (managed) by a cooperative (jointly owned) and managed by one or more public organizations or a third party (or any combination thereof) and can exist both within and outside the owner's jurisdiction.

3. RESULTS END DISCUSSION

Also known as "cloud services", these Internet services can be divided into three main categories [5]:

1) Infrastructure as a Service (IaaS - Infrastructure as a Service)
2) Platform as a Service (PaaS - Platform as a Service)
3) Software as a Service (SaaS - Software as a Service)

In addition, Sales Cloud is a cloud-based CRM system and Collaboration Cloud is a data exchange and collaboration service. Let's take a look at each of these cloud services separately [6].

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

IaaS (infrastructure as a service) - infrastructure for rent (e.g. virtual servers and virtual network). The client can install any software and applications. IaaS is based on virtualization technology, which allows the user of the equipment to divide it into parts that meet the current needs of the business, thereby increasing the efficiency of using the available computing power. The user (company or software manufacturer) only has to pay for server time, disk space, network bandwidth, and other resources required for performance. In addition, IaaS provides the client with full management functions on a single integrated platform.

PaaS (platform as a service) - can be considered as a ready-to-run virtual platform, consisting of one or more virtual servers with installed operating systems and specialized software. Most cloud providers offer a wide selection of cloud environments that are ready for the user to use (e.g. a web server or database). The client manages the software, the provider manages the operating system. PaaS As a built-in platform for web application development, testing, deployment and support, the entire list of web application development, testing and deployment operations can be performed in a single integrated environment and thereby eliminates the cost of supporting individual stages.

SaaS (software as a service) - the concept allows you to use the software as a service and implement it remotely over the Internet. This approach allows you not to buy a software product, but to use it temporarily when needed (e.g., email or another office application). The client uses the program, the provider manages the basic settings of the program. The SaaS concept allows you to use the software as a service and implement it remotely over the Internet. This approach allows you not to buy a software product, but to use it temporarily when needed. In the SaaS model:

- the application is adapted for remote use;
- multiple clients can use the same program;
- payment for the service is charged as a monthly subscription or based on the total amount of transactions;
- program support is already included in the payment;
- The software can be updated seamlessly and transparently to employees and customers.

From the perspective of software developers, the SaaS model allows the customer to effectively deal with unlicensed use of software because they do not have the ability to store, copy, and install the software.

The Sales Cloud platform is part of the CRM system proposed by Salesforce [7]. The Sales Cloud platform is built specifically for vendors. Because this is our most popular product, many people say “Salesforce” when referring to the Sales Cloud platform. In short, Salesforce Sales Cloud is a cloud-based CRM platform that stores customer and sales data in one place. Salesforce Sales Cloud is available in four different editions with different sizes and reasonable prices to support business needs. It is different from other Salesforce Cloud platforms, but can be connected to them: Marketing Cloud Service Cloud, Community Cloud and Analytics Cloud.

CRM customer relationship management - means customer relationship management. CRM is a strategy that defines a company’s interactions with customers in all organizational

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

aspects: it is advertising, sales, delivery and customer service, designing and manufacturing new products, billing, and so on. This strategy is based on the following conditions [8]:

• There is a single database and a system where all information about all cases of customer interaction is immediately posted and available at any time.

• Synchronous management of multiple communication channels (i.e., there are organizational procedures governing the use of data in this system and in each department of the company).

• Continuously analyze customer data and make appropriate organizational decisions, such as ranking customers according to their importance to the company, developing an individual approach based on customers 'specific needs and requests.

Collaboration Cloud is a method of sharing and co-authoring computer files using cloud computing. Through this, documents are uploaded to a central "cloud" for storage, which can then be accessed by others. Cloud collaboration technologies allow users to upload, interpret, and collaborate on documents, and even make changes to the document itself as the document evolves. Based on the above, we believe that the main advantages and opportunities of cloud services for the education system are [9]:

- You don't have to buy expensive computers and accessories to store the information you need to organize distance or e-learning, because everything is stored "in the cloud".
- The process of working in the computer learning circuit is much improved and effective, because in the learning process, cloud technology remotely controls applications, so there is a lot of space on the computer, which can be used for other purposes.
- Every year, maintenance problems are significantly reduced as the number of physical servers is constantly declining and the software is constantly updated.
- The cost of purchasing the app is greatly reduced because the app only needs to be purchased once for the "cloud" and that's all, and sometimes you can even order it for rent.
- The amount of data stored in cloud technologies is not limited. In most cases, the volume of such services is in the millions of gigabytes.
- Software is updated automatically, so there is no need to follow this, as in downloaded programs. • The cloud-based learning platform can be used on any operating system, as applications are accessed through web browsers.

New cloud technologies always give you access to e-learning materials and the necessary documents, because the most important thing is the availability and quality of Internet services. Good security is ensured and effective protection against data loss is provided, as the data sent is automatically saved and copies are sent to backup servers. Now let's talk about some of the disadvantages of using cloud services in the educational process. In our view, we can include the following:

• Access is not possible without an Internet connection, and if it is not, then it is possible to work only with documents downloaded to a computer. It should be noted that for the distance learning process, the Internet connection must be fast and high quality.

• The cloud service can run more slowly when transferring much larger amounts of data than a built-in training program.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

• The fact that you have to pay for a number of services can have a negative effect on students.

When implementing the learning process using cloud technologies, the education system using computers and the Internet will need to improve and simplify the process of performing a number of educational tasks. Cloud technologies can be used in higher and secondary education for the following purposes:

• Organize staff collaboration on important documents, such as annual plan, sample program, work program, and syllabi. Each of them is responsible for a specific part of these documents, and if necessary, all users can leave comments about the document being developed and fill in some information.

• In order to carry out general project work, the teacher can deliver assignments to students, share responsibilities and review reports, and comment where appropriate. Cloud technology can also be used to create an electronic diary and transfer any written assignments. This is a great choice for kids who go to home school or miss classes for some reason

• Microsoft Live @ edu and Google Apps Education Edition are one of the most widely used cloud service systems currently used in education. They are cloud web applications that provide students and teachers with the tools they need to improve interaction and collaboration.

Another option for using cloud services is to move education management systems to the cloud. Transferring support for such systems to external providers makes sense for educational institutions that are unable to purchase and maintain expensive hardware and software. If we consider the use of Microsoft cloud technologies for educational institutions, it means that Microsoft Office 365 combines a set of web services distributed on a subscription basis under the "application + services" scheme. It provides access to a variety of applications and services based on the Microsoft Office platform, email, communication and document management functions. Microsoft Office 365 Education allows you to take full advantage of cloud services, increase student and staff productivity, and save time and money. The main features of Microsoft Office 365 include cloud versions of Lync Online with the ability to organize video conferencing, and it provides SharePoint Online, Office Web Apps and Exchange Online for free. Office 365 Education combines the power of Office desktop applications with the online versions of the next generation of Microsoft communications and collaboration services. Office 365 is very easy to use and is managed with reliable security and management. Windows Azure is another type of cloud service provided by Microsoft that can be used in the learning process. Windows Azure is a cloud-based partner for Windows Server. However, if you purchase and install Windows Server on servers in your local data center, then the Windows Azure platform is located in Microsoft data centers and appears as a platform for developing and running applications. With the help of the Windows Azure in Education platform, teachers have the opportunity to incorporate one of the most innovative and fast-growing technologies into their teaching process, both theoretically and in practice. There are three main ways to use the Azure platform to solve university problems:

1. Education

• use Windows Azure to solve practical problems that arise during the learning process;

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

• use of Windows Azure cloud technologies in project development and course work;

• when performing large and complex calculations that require large computing resources;

• When using Linux or Windows-based virtual machines in the cloud.

2. Research work

• processing and use of large data sets for research and development programs;

• use the ability to migrate your server cluster to the cloud;

• perform tasks such as simulating scientific experiments;

• Use of innovative technologies for research and development programs.

3. Information and training portals

• working together on educational projects;

• in the personal cabinet of the student / employee / teacher;

• In the implementation of the distance learning process;

• when creating new mobile applications or expanding existing applications;

• when conducting training events and webinars.

4. CONCLUSION

The organization of the educational process in universities and secondary schools based on modern cloud technologies means a new and effective way of innovative educational process, which in turn is a modern digital learning. means the organization of the process, an innovative methodology that is an alternative to current traditional methods, and it creates opportunities such as individual learning, group teaching, and interactive lessons. The main advantage of using cloud technologies in education is not only to reduce the cost of purchasing the necessary software, radically increase the efficiency and improve the quality of the educational process, but also to prepare professors and students to work and live in a modern information society.

REFERENCES

1. Ayupov R.H., Tursunov S.Q. Ракамли технологиялар: инновациялар ва ривожланиш истикболлари. Монография, Тошкент, ТДПУ, Нодирабегим нашриёти, 2020 йил. - 376 бет.
2. Gulyamov S.S., Ayupov R.H., Xotamov I. Raqamli iqtisodiyot sohasida kadrlar tayyorlashning dolzarb muammolari. O'zR Prezidenti huzuridagi Davlat boshqaruvi akademiyasining Jamiyat va boshqaruv jurnali, 2020 №2 (88), 76-85 betlar.
3. Simon Birk Hartmann, Lotte Qulleq Nygaard Braae and others. The Potentials of Using Cloud Computing in Schools: A Systematic Literature Review. TOJET: The Turkish Online Journal of Educational Technology – January 2017, volume 16 issue 1. 190-202 pages. http://www.tojet.net/articles/v16i1/16117.pdf
4. Tuncay Ercen. Effective use of cloud computing in educational institutions. Procedia: Social and behavioral sciences. Volume 2, Issue 2, 2010, Pages 938-942. https://doi.org/10.1016/j.sbspro.2010.03.130

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.168

5. Yinghui Shi, Harrison Hao Yang, Zongkay Yang, Di Wu. In book: Hybrid Learning. Theory and Practice (pp.116-128). Trends of Cloud Computing in Education. https://www.researchgate.net/publication/300398429_Trends_of_Cloud_Computing_in_Education/
6. Elena Krelja Kurelovik, Sabina Raco and others. Cloud computing in education and student's needs. Conference: Information & Communication Technology Electronics & Microelectronics (MIPRO), 2013 36th International Convention. https://www.researchgate.net/publication/261424656_Cloud_computing_in_education_and_student's_needs
7. Kurbanov Z.M.Cloud technologies: review and application.Журнал Вестник науки и образования. №4(58), Часть 1, 2019 г.
8. Kurbanov Zafar Mamanazarovich. The role of cloud texnologies in life. Academicia: An International Multidisciplinary Research journal. Vol.10,Issue 6, june 2020. Doi:10.5958/2249-7137.2020.00675.8
9. Qurbonov Zafar Mamanazarovich. My Drivedan amaliy ishlarda foydalanish. Texnika fanlari jurnali. **№**6, 2018, 3-son. http//dx.doi.org/10.26739/2181-9696-2020-6-9.

ogy of Egypt / Egyptology, *17*(6), 13908-13920. Retrieved from