

CREATING DATA CENTERS USING CLOUD TECHNOLOGIES

Mamarajabov Odil Elmurzaevich*TDPU named after Nizami**Associate professor of the Department of Information Technologies*

Annotation: The choice of cloud technologies is one of today's important tasks of training specialists who are active in the information or digital society.

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Using cloud technologies does not require capital expenditures for creating and maintaining data centers, purchasing servers and network equipment to create IT infrastructure. There is also no need to purchase and install expensive software, or regularly update platforms and systems. Cloud computing providers can take care of all these costs. As a result, the workload of technical staff is reduced, which allows the same scientific staff to be involved in other projects that are beneficial to the institution:

Consultation and innovation. Due to the flexible nature of cloud services, an organization has the opportunity to gradually increase the volume of services used without significant investments. During peak usage periods (e.g., during sessions), there is no need to plan for additional data capacity, as cloud services can scale automatically and almost instantaneously;

Availability. According to Internet service providers, cloud services are always available. This is very convenient for all participants in the learning process, as they can access learning opportunities virtually at any time and are not tied to the institution's local information and learning resources. As a result, this saves a lot of time. In addition, the possibility of continuous use removes barriers to distance learning, for example, in remote areas where the learning process can be affected by time differences. The high availability of educational resources has a positive impact on the rating of an educational institution; Integrate such technologies into the local IT infrastructure. For example, Google has claimed to have increased energy efficiency by 80 times when using cloud technologies (Google Apps for Education);

Meet the needs of end users. Cloud technologies are even more beneficial for end users. It is very convenient when data is available from anywhere and on any device with an Internet connection (personal computer, smartphone, tablet, etc.). Users do not have to worry about creating a backup of their data, because it is stored securely in the cloud. Cloud infrastructure guarantees data security. While we are talking about a standard office suite that is freely available to educational institutions and can be used to perform a wide range of tasks, users do not have to spend money on purchasing software and time installing and updating it on their computers. The only program that requires updating is a web browser, which teaches you to focus on the main tasks. In any educational field, the main task of educational institutions is to focus on teaching and scientific research. The use of cloud technology reduces the costs of deploying and maintaining applications used in work.

According to a regular study on cloud services, higher education institutions use cloud technologies for 25% of computing power, 29% for organizing university activities, and 31% for storing information.

In this case, universities use and implement various technologies related to the cloud. In order to study the problem at a scientific level, we must first understand what cloud technology is.

The possibilities of integrating these cloud models into the university's educational process are summarized as follows:

The IaaS model consists of an operating system and software; Its service provides the user with fundamental computing resources, including network processing and storage systems, and other resources for deploying and using various applications. In this way, the user manages the main components of the cloud, but does not manage the operating system.

The PaaS model allows you to rent a platform for developing and deploying applications. This model is a service provided over the Internet, consisting of software, an operating system, and a data center. Typically, this platform relies on specialized programming languages such as Java or Python and uses hardware to develop the software first. The SaaS model allows for the use of off-the-shelf applications because the provider hosts the service on a cloud infrastructure. Applications are available through various devices or through thin client interfaces such as web browsers or software interfaces, which offload large amounts of data processing tasks to the server. The user does not directly manage the underlying cloud infrastructure, networks, and servers in this model. Today, SaaS offerings range from specialized industry-specific projects to consumer applications such as e-books. This type of platform is of great interest to the learning process in higher education.

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