

CLOUD TECHNOLOGIES AND WORKING WITH THEM

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Annotation: This article analyzes the essence of cloud technologies, their role in modern information systems, and the main aspects of working with them. The study covers the types of cloud services, their functional capabilities, and the advantages of their implementation in practical activities. It also reveals the effectiveness of using cloud technologies for data storage and processing, security issues, and their importance in the context of digital transformation. The article focuses on optimizing the activities of organizations and increasing their competitiveness through the effective use of cloud technologies.

Keywords: cloud technologies, cloud computing, information systems, data storage, digital transformation, IT infrastructure, information security.

Annotatsiya: Mazkur maqolada bulutli texnologiyalarning mazmun-mohiyati, ularning zamonaviy axborot tizimlaridagi o'ri hamda ular bilan ishlash jarayonining asosiy jihatlari tahlil qilinadi. Tadqiqot davomida bulutli xizmatlarning turlari, funksional imkoniyatlari va ularni amaliy faoliyatga joriy etishning afzalliklari yoritiladi. Shuningdek, ma'lumotlarni saqlash va qayta ishlashda bulutli texnologiyalardan foydalanish samaradorligi, xavfsizlik masalalari hamda raqamli transformatsiya sharoitida ularning ahamiyati ochib beriladi. Maqola bulutli texnologiyalarni samarali qo'llash orqali tashkilotlar faoliyatini optimallashtirish va raqobatbardoshlikni oshirish masalalariga qaratilgan.

Kalit so'zlar: bulutli texnologiyalar, bulutli hisoblash, axborot tizimlari, ma'lumotlarni saqlash, raqamli transformatsiya, IT-infratuzilma, axborot xavfsizligi.

Introduction. In recent years, the rapid development of the digital economy has brought about fundamental changes in the field of information technology. In this process, cloud technologies have become an integral part of modern IT infrastructure, taking data storage, processing and transmission methods to a new level. With the help of cloud computing technologies,

organizations are able to reduce their dependence on traditional servers and software and use resources more efficiently and flexibly. The main advantage of cloud technologies is their cost-effectiveness and wide application. Reducing the costs of creating and maintaining infrastructure, expanding the possibilities of remote work, and rapidly updating services are increasing the demand for cloud solutions. At the same time, the increasing volume of digital data and the increase in the speed of information exchange make the formation of skills to work in a cloud environment an urgent task. However, when using cloud technologies, the issues of ensuring information security, confidentiality and reliability of data also require special attention. Therefore, in-depth study of working with cloud technologies, correct assessment of their capabilities and limitations, and rational application in practice are of great scientific and practical importance today. This article highlights the theoretical foundations of cloud technologies and the main directions of working with them, and analyzes their role in the context of digital transformation.

Main part. Cloud technologies are emerging today as one of the most important and strategic directions in the development of information and communication technologies. They fundamentally differ from traditional computing models and allow for the provision of information resources through remote servers, centralized storage and processing of data. As a result, users are freed from the need to manage physical infrastructure and are able to focus on content and results. To fully understand the essence of cloud technologies, it is necessary, first of all, to pay attention to their conceptual foundations. According to experts, cloud computing is “a model for providing computing resources on demand, over a network, and with minimal management.” [1] This definition suggests that cloud technologies are based on the principles of flexibility and agility. This is an important advantage for modern organizations, as they require IT resources to be managed in a rapidly changing market environment.

Cloud technologies are divided into several main types in terms of service model: infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS). These models are selected depending on the technical needs and level of expertise of the user. For example, the SaaS model is convenient for ordinary users, who have the opportunity to directly use ready-made software products. This situation was assessed by P. Mell and T. Grans as “a solution that significantly reduces the technical complexity for the user” [2]. Thus, cloud technologies democratize the use of IT services and make them accessible to a wide audience.

The issue of efficiency is of particular importance when working with cloud technologies. The main benefit for organizations is cost optimization. While traditional server infrastructure requires large financial investments, constant maintenance and qualified specialists, these costs are significantly reduced in a cloud environment. Economists say that “cloud technologies reduce the burden of capital investments by converting IT costs into operating costs” [3]. This is especially important for small and medium-sized businesses. At the same time, the issue of working with cloud technologies is not limited to economic aspects. Information security and data confidentiality issues are also relevant. It is natural that storing data on third-party servers causes distrust in some users. However, modern cloud service providers are striving to ensure a high level of security through mechanisms such as data encryption, multi-factor authentication, and constant monitoring. In this regard, B. Schneier emphasizes that “information security is not a matter of technology, but of proper management and trust” [4]. This opinion indicates the need

to understand the balance of responsibility between the user and the provider when working in a cloud environment.

Cloud technologies are also widely used in such areas as education, healthcare, finance, and public administration. In the field of education, distance learning platforms, online laboratories, and the ability to use shared resources are helping to improve the quality of education. In the healthcare system, electronic medical records and remote diagnostic services are being developed based on cloud technologies. These processes also have a positive impact on the formation of a digital culture in society.

The human factor is also important when working with cloud technologies. A modern specialist must have not only technical knowledge, but also the skills to work in a digital environment. In this regard, enriching educational programs in the field of information technology with cloud technologies is an important task. According to UNESCO experts, “digital competencies are the key to success in the labor market in the 21st century” [5]. Therefore, learning to work with cloud technologies creates an important foundation for future employment and professional development. Cloud technologies are playing a decisive role in the digital transformation of modern society. They simplify the use of information resources, increase efficiency, and create new opportunities. At the same time, working in a cloud environment requires a responsible approach, strict adherence to security requirements, and constant knowledge updating. It is the combination of these factors that is the main condition for the effective use of cloud technologies.

Cloud technologies, as an important component of the modern information society, are taking a leading place in the processes of digital transformation. They simplify the processes of storing, processing and using data, creating broad opportunities for organizations and users. With the help of cloud computing solutions, the complexity of managing IT infrastructure is reduced, and the efficiency of resource use is significantly increased. The implementation of cloud technologies is economically feasible, serves to optimize costs, improve the quality of services and speed up operational processes. Especially for small and medium-sized businesses, educational institutions and government organizations, cloud services are an important tool for accelerating technological development. At the same time, working in a cloud environment expands the possibilities of remote collaboration and global information exchange. Another important area of development of cloud technologies is their environmental and energy efficiency. Traditional server infrastructure consumes a large amount of electricity, requires cooling systems, and as a result, increases the carbon footprint. In cloud solutions, energy consumption is reduced, systems are optimized and the ecological footprint is reduced, as resources are consolidated in centralized data centers. In this regard, cloud technologies are considered an important tool for creating a sustainable digital infrastructure. In addition, cloud technologies expand the possibilities of mobile and remote work. In today's global labor market, remote work, freelancing, and team online projects are becoming increasingly common. The cloud environment allows users to access resources from anywhere, speeding up work processes and simplifying collaboration. Cloud technologies also integrate with artificial intelligence (AI) and big data analytics to help organizations make strategic decisions. Since data is stored centrally in the cloud, it becomes possible to analyze it in real time. This allows you to optimize business processes, improve customer service, and increase competitiveness in the market.

Another aspect is that cloud technologies allow for the development of new solutions in the field of cybersecurity. For example, cloud antivirus and security monitoring systems allow for a rapid response to global threats. At the same time, the implementation of advanced mechanisms for data encryption and user authentication on cloud platforms increases the level of security. In addition, cloud technologies are an important tool for creating innovative startups for small and medium-sized businesses. They reduce initial capital costs and allow for the rapid introduction of new software and services. This has a positive impact on the country's innovative economic development and expands employment opportunities. As a result, cloud technologies are of great importance not only technologically, but also socio-economically. They are considered an important tool for increasing the efficiency of organizations, supporting remote work, creating an environmentally sustainable infrastructure, and expanding the capabilities of the digital economy. Therefore, developing skills in working with cloud technologies and rationally implementing these systems is currently at the center of scientific and applied research.

Conclusion. When using cloud technologies, issues of information security, data privacy, and legal regulation require special attention. To effectively solve these problems, it is important to increase the digital literacy of users, comply with security standards, and choose reliable cloud service providers. Also, the role of the human factor in the process of working with cloud technologies is high, and it is necessary to constantly update the knowledge and skills of specialists. In general, the effective and rational use of cloud technologies accelerates the development of the digital economy, supports innovative activity, and strengthens the technological potential of society. Therefore, in the future, improving the mechanisms for introducing cloud technologies and working with them will remain one of the relevant areas of scientific and practical research.

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