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INNOVATIVE FEATURES OF USE CLOUD TECHNOLOGY.

Андрущак І.Є., Марценюк В.П. Інноваційні особливості використання хмарних технологій. У статті розглянуто можливості використання хмарних технологій, окреслені перспективи переходу у майбутньому до хмарної мережі та показані основні переваги і недоліки їх впровадження.
Ключові слова: хмарні технології; хмарне обчислення; ІТ – інфраструктура; програмне забезпечення; інформаційна система; провайдер.

Андрущак И.Е., Марценюк В.П. Инновационные особенности использования облачных технологий. В статье рассмотрены возможности использования облачных технологий, обозначены перспективы перехода в будущем к облачной сети и показаны основные преимущества и недостатки их применения.
Ключевые слова: облачные технологии; облачное вычисление; IT-инфраструктура; программное обеспечение; информационная система; провайдер.

I.Ye.Andrushchak, Martsenyuk V.P. Innovative features of use cloud technology. The article discusses the possibilities of using cloud technologies, outlines the prospects for the future transition to a cloud network and shows the main advantages and disadvantages of their implementation.
Key words: cloud technology; cloud technology; IT-infrastructure; software; information system; provider.

Formulation of the problem. In recent years, so-called cloud computing (cloud computing) is gaining in popularity. This term has been used in the world of information technology since 2008. Eric Schmidt, General Manager of Google, was the first person to pronounce the word cloud computing.

Almost all modern features of cloud computing, their comparison with electricity and the use of private, public and public models were presented by Douglas Parkhill in the book The Challenge of the Computer Utility, in 1966. According to other sources, cloud computing dates back to the 1950s, when scientist Herb Grosch argued that the whole world would work at terminals controlled by about 15 large data centers [1].

Setting up tasks. 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 less costs By switching traffic to optimal use of channels, they were able to use the network more efficiently. The cloud symbol was used to indicate the delineation between the user and the supplier.

Amazon has played a key role in the development of cloud computing, by upgrading its data centers, which, like most other computer networks, use only 10% of their power at a time, in order to ensure the reliability of a load jump. Upon learning that the new cloud architecture provides significant internal efficiency improvements, Amazon has launched new cloud computing research for external customers and launched Amazon Web Service (AWS) based on distributed computing in 2006. 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.

The following models provide services with the help of a cloud:

- Software as a Service (SaaS) Examples of software as a cloud-based service are Gmail and Googledocs.

- platform as a service (PaaS) For example, GoogleApps provides online business applications that access through an Internet browser while software and data are stored on Google's servers.

- infrastructure as a service (IaaS) The largest players in the infrastructure market are Amazon, Microsoft, VMWare, Rackspace and RedHat. While some offer more than just an infrastructure, they combine the goal of selling basic computing resources.

A general characteristic of companies that build their cloud-based products is the certainty that the Internet is able to meet the needs of users in data processing.

And today there is confidence that the best way to prepare for the latest IT-technologies is to put these same technologies into the educational process.

Many works of domestic, Russian and foreign authors are devoted to network technologies and the use of social services in the Internet. Unlike the above-discussed works of network services, cloud computing allows you to use both the service and software, data, and even computers.

Analysis of recent researches and publications. Recent studies have shown that the use of cloud computing to organize work in Ukraine more than 30% of Ukrainian companies will use cloud technologies after 3 years. Such a forecast was made by partners of Microsoft Ukraine during a survey conducted at the company's partnership conference on October 17. Moreover, more than half of them believe that by 2015 the share of companies in Ukraine that will use cloud solutions will be even higher - 40% or more. At the same time, partners point out that customers are most concerned about data security in the cloud - this is underlined by almost 90% of the respondents [2].

According to the estimates of global companies, cloud technologies determine the development of the IT industry in the next 5-8 years and 80% growth of the global IT market will fall on the share of "clouds".

According to the research, the cloud market of Ukraine is at the stage of the formation of demand and accumulation of the primary experience of consumption of cloud decisions. This suggests the minimum level of knowledge of end users about cloud computing and low level of technology penetration.

Thus, 47% of IT-surveyed respondents consider their knowledge of cloud-based solutions to be superficial, and 88% of surveyed managers are completely unaware of cloud-based services. The research was focused on medium and large enterprises of financial, telecommunication, retail, logistics and manufacturing industries, since these are the main consumers of IT services in Ukraine.

Plans for using cloud solutions by Ukrainian enterprises, as well as intensive technology development by IT companies, create a market potential that will provide an exponential growth characteristic of the cloud markets of developed countries by 2015-2016. More than a third of surveyed IT services are planning to use cloud solutions, and 75% of them are going to begin to use in 2014.

Basic material presentation. The experience of using modern cloud technologies in business applications opens up a perspective way to use them in the educational and social spheres. In particular, the development of cloud services for the study of information systems and technologies is realized by well-known companies "1C", "Parus", "BuchSoft", etc., which remain the leaders in the market of information systems. At the same time, it is necessary to provide not only cloud services for companies, but also to create and develop free cloud services for obtaining skills of work with information systems for students of different specialties.

Providers of cloud-based solutions allow you to rent computing power and disk space through the Inter-net. The benefits of this approach are accessibility (the user pays only for the resources that he needs) and the ability to flexibly scale. Customers are relieved of the need to create and maintain their own computing infrastructure.

Experts estimate that the use of cloud technologies in many cases can reduce costs by two to three times compared with maintaining its own developed IT-structure.

"Cloud" opens up a new approach to computing, in which neither equipment nor software is owned by the company. Instead, the provider provides the customer with a ready service.

Young "Startups", which require large computational resources to serve users, often can not afford to create and operate their own data center, often resort to "clouds".

One of the first widely available cloud Internet services was e-mail with a web interface. In this case, all data is stored on remote servers, and the user accesses their emails through a browser from any computer or a sufficiently powerful mobile device.

The market for cloud technologies is growing rapidly. It actively offers services for both individuals and corporations. According to IDC, the average annual growth rate of the global cloud services market from 2013 to 2016 will be 26.4%, which is five times higher than the growth rate of the IT industry as a whole.Today, 70% of organizations in the world are already either using cloud technologies or are exploring this issue. According to the survey, 25% of respondents are ready to go to the clouds in order to reduce IT costs. But this is in the future. Today there is still a lot of questions and uncertainty among customers, which requires developers and their partners new solutions, concerted action and serious communication on the market.

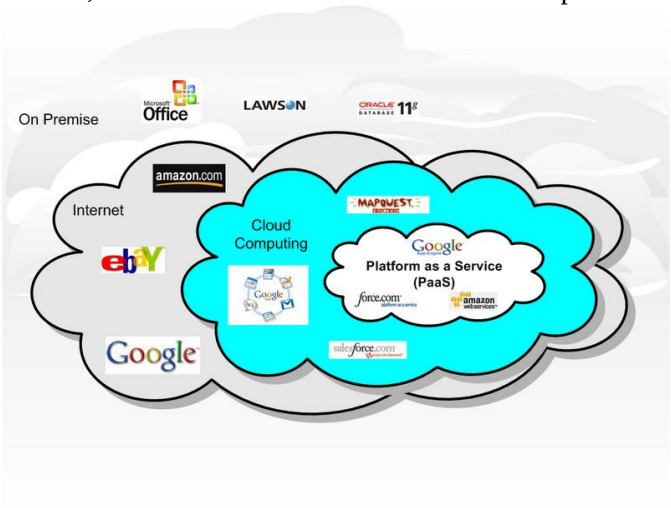
The use of cloud technologies gives a number of advantages over traditional IT technologies:

- An organization can more effectively manage its use;
- computing resources;
- increased IT-infrastructure management;
- simplifies the management of the continuity of the organization, thanks

The concept of virtual machine back-up and migration systems reduces the cost of IT infrastructure, such as the computing resource park, electricity, and staff serving this infrastructure.

- do not need powerful computers;
- Less cost of software purchases and its systematic upgrade;
- unlimited amount of data storage;
- availability from different devices and no binding to the workplace;
- ensuring data loss protection and performing many types of training activities, monitoring and evaluation, online testing, openness of the educational environment;
- saving of funds for the maintenance of technical specialists (Dr.1).

The general advantage for all users of cloud technologies is that access to the cloud can be not only from a PC or a laptop, but also from a netbook, a smartphone, a tablet, as the main requirement for access is the availability of the Internet, and for the software " clouds "uses the power of the remote server.



Dr. 1. Cloud technology

Experts estimate that the use of cloud technologies in many cases can reduce costs by two to three times compared with maintaining its own developed IT-structure. Also, the main advantage of the use of these technologies is the ability to quickly adapt to changes in the environment of any institution, which is now very relevant in the context of the rapid development of all branches of science and technology [3].

Thanks to the growing popularity of cloud technologies for educational institutions, there are new opportunities for managing the learning process.

It is evident that there are important arguments for translating computer infrastructure into educational institutions into the cloud. For example, standard applications that are widely used in education (word processor, spreadsheet editor, graphic editor, email, etc.) will always be relevant, especially when using clouds.

The vast majority of educational institutions are just beginning to introduce cloud technologies into the learning process and include relevant disciplines for their study. If we analyze pedagogical works, we can conclude that there is a lack of research on the use of cloud computing in the educational process [4].

In addition to the obvious advantages in favor of using cloud technologies, it is also worthwhile to note some disadvantages. The main disadvantage is their small distribution, but these technologies are only beginning to spread in Ukraine. One of the major drawbacks is sometimes the need to access the high-speed Internet. The rapid increase in the number of Internet service providers and the continuous improvement of the quality of Internet services would have to solve this problem, but there may be shortages in service or problems with providers, which may lead to the suspension of the work of departments or entire enterprises in a short time. Also, the disadvantages of cloud computing can be attributed to the limited functionality of software when working with them over the Internet.

However, there are some security issues that cloud providers can store important information for years on their servers, and cyber-criminals - to intercept information. Of course, large cloud providers use all possible means to provide maximum security of information and invest in developing new, even more effective means of protection, but still it is not necessary to store or transfer sensitive documents to the cloud. An interesting fact is that US companies are not often concerned about the security of their own information, while enterprises in Ukraine, Russia, and a number of other countries with a high share of the shadow market identify this as a major issue in the spread of cloud technologies.

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Cloud technology is the ability to access data without installing special applications on the device. All the necessary support is provided by the servers to the users. But whether you have to pay for this remote access to the data or not, it depends directly on the queries.

Cloud technology is a technology that provides Internet users with access to computer resources of the server and the use of software as an online service, that is, if there is an Internet connection then it is possible to perform complex calculations, to process data using the power of the remote server [5].

What services can we get?

1. Use of software.

2. Software as a Service (SaaS) - provides access to an integrated platform for developing, testing, and supporting various projects.

3. Infrastructure as a Service (IaaS) - Represents a virtualization computer infrastructure that includes operating systems and system software, as well as the hardware part of the server.

4. Desktop (a Desktop (as a Service) (DaaS)) - A user can personalize his workplace and thereby create a set of software for his work.

In general, this technology has both pros and cons. It is quite economical and expedient for organizations, corporations, firms. It does not require significant resources on your device (such as a PDA, tablet, smartphone, netbook or computer), but it is demanding about Internet access.

This means that you must have an uninterrupted high-speed Internet.

Another disadvantage is that although service providers try to work online for an entire time, there are always cases when the server can be offline and then access to your services will be inaccessible.

The technology of cloud computing and the educational platform implemented on its basis allow the most efficient use of available software and hardware resources of the school, gymnasium, and students get the opportunity to apply in practice the most advanced computer technologies.

It is very beneficial for young enterprises to use cloud-based servers. They will not have to worry about buying their server hardware, spend on building a local network, hiring sysadmins. Simply select one of the cloud servers, which is ideal for the size of the memory, number of clients and other characteristics, and pay once a month a subscription fee.

Cloud technology is the ability to access the necessary information through a regular browser from anywhere on the planet. Workability will no longer worry the client, since it is followed by those who are paid by the user for cloud storage. Such systems are in demand from corporate users who need to set up a document flow in the enterprise network.

For ordinary users who simply do not want to clog the computer with superfluous information, there are free cloud servers, which will be quite enough [6].

This type of service enables users to quickly deploy, products that allow the safe use of web technologies, email security, and the security of a local system, which allows users of this service to save on deploying and maintaining their own security system.

Classification of cloud services.

Currently, there are three categories of "clouds":

- public;
- private;
- hybrid.

The public cloud is an IT infrastructure used by many companies and services at the same time. Users of these clouds do not have the ability to manage and serve this cloud, all responsibility for these

issues lies with the owner of this cloud. A subscriber of the offered services can become any company and the individual user. They offer an easy and affordable way to deploy web sites or business systems with large scalability, which in other solutions would not be available. Examples: Online Services Amazon EC2 and Simple Storage Service (S3), Google Apps / Docs, Salesforce.com, Microsoft Office Web. A private cloud is a secure IT infrastructure that is controlled and exploited in the interests of a single organization. An organization can manage a private cloud on its own or entrust this task to an external contractor. The infrastructure may be located either in the premises of the customer, or from the external operator, or partially in the customer and in part from the operator. The ideal variant of a private cloud, this cloud is deployed on the territory of the organization, serviced and controlled by its employees.

A hybrid cloud is an IT infrastructure that uses the best quality of a public and private cloud when it comes to solving a given task. Often such a type of cloud is used when an organization has seasonal activity periods, in other words, once the internal IT infrastructure fails to cope with the current tasks, part of the capacity is transferred to a public cloud (for example, large volumes of statistical information that in the raw form do not represent values for the enterprise), as well as to give users access to enterprise resources (to the private cloud) through a public cloud.

First, confidential data transmitted through cloud storage can be intercepted by hackers. The quality of the Internet connection should be very high. In case of interruptions to the Internet, it will be impossible to access data in "clouds". At the same time, large enterprises still need a system administrator to set up data transfer.

If a customer wants to save and prefer a cheaper server, then he will have to deal with disability issues. Cheap cloud storage facilities are not very good hardware infrastructure, which regularly encounter problems, and their fixes take a lot of time.

Cloud technology is a paradigm that involves remote processing and storage of data. This technology provides users of the Internet, access to computer resources of the server and use of software as an online service. That is, if there is a connection to the Internet then you can perform complex calculations, process data using the power of the remote server.

In addition, some analysts predicted the appearance of cloud computing problems in 2010. For example, Mark Anderson, head of the industry-specific IT publication StrategicNewsService, believed that because of the significant influx of users of services using cloud computing (for example, Flickr or Amazon), the cost of errors and leakage of information from such resources increases, and in 2010 they had big "catastrophes of type of failure, or safety-related disasters" occur [7].

Conclusion. The Ukrainian cloud market, unlike the US or EU markets, is currently in the "latent phase" of development - the formation of demand and accumulation of the primary experience of cloud consumption consumption - but according to unanimous expert forecasts already in 2015-2016, it will show the exponential growth characteristic for cloud markets in developed countries. The repeated increase in the market in the coming years will lead to the emergence of a new specific and significant sector of the Ukrainian economy and infrastructure.

Nowadays there is a gradual migration of educational services with the help of modern information and communication technologies and information resources in the cloud, which will lead to the rapid introduction of these services in education and social sphere.

The introduction of cloud technologies is a new trend in emerging computer technology and needs further research.

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