

CONSTRAINTS ON THE DEVELOPMENT OF CLOUD COMPUTING SERVICES

Д. С. Сержанова
TUIT NF, Assistant

ANNOTATION

This article discusses the main types of cloud computing services and their descriptions. Presents the main factors of cloud computing in modern areas of advanced information technology and some advantages for users as well as the supporting factors for the development of Cloud Computing services.

Ключевые слова: Cloud computing, облако, датацентр, SaaS, PaaS, IaaS.

Among the constraining factors in the development of Cloud Computing services are the following:

- security and data protection;
- reliability of services;
- high delays in data transmission;
- distrust of service providers;
- the need to reorganize the activities of IT departments.

Security and data protection

One of the main problems when using Cloud Computing services is to ensure the security of the services provided. The fact that the infrastructure of the cloud data processing network is removed from the user leads to the latter's following concerns.

Data ownership – does the service provider really store user data and not use it for its own purposes?

Data Access – Will users be able to access the data or use the data itself without notifying the service provider?

Compliance with the relevant rules and regulations for data storage – can the service provider ensure the security and control over the information created within the framework of Cloud Computing services and stored on its servers at the proper level?

The Cloud Computing service provider must ensure that other users do not have access to information, that authentication and authorization tools are not available, and that the following types of information are confidential:

- personal information;
- information containing trade secrets;
- information about the company's users;
- corporate data;
- medical information;
- financial statements;

To meet user requirements, service providers apply the following measures:

Description of the means of information security at the conclusion of the contract - while service providers must guarantee the use of the methods specified in the contract to ensure information security.

Safety audit – analysis of the quality of the applied methods of ensuring safety. Both physical testing and hardware testing can be carried out. In addition, such checks may be carried out by third-party companies.

Certification – Service providers often use certificates of safety, such as in the USA – SAS70 Type 2, ISO/IEC 27001:2005, HIPAA or PCI DSS, as well as certificates of compliance with the guiding principles SOX (Sarbanes-Oxley Act).

Use of standards – ensuring compliance with standards of safety of Cloud Computing services, for example, developed by the Cloud Security Alliance (CSA).

Use localized solutions. Companies such as Akamai, Amazon and Google use localized solutions to solve a number of problems that arise when storing data remotely.

Cloud Computing services use security systems, providing internal security at the necessary level, especially for large and growing companies that combine external and internal data centers. Most Cloud Computing service providers consider providing a high level of information security a necessity.

For large Cloud Computing service providers, such as Amazon and IBM, information security is the main goal of the development of these services. At the same time, we are developing our own solutions, which provide for both software and hardware implementation.

In addition, when accessing Cloud Computing services, users have access to their own means of ensuring information and data security, including data encryption.

Also now, in different countries of the world, the authorities, together with government agencies, are beginning to address the issue of information security. One example is the establishment by the European Commission of research centers, such as ENISA (European Network and Information Security Agency), as well as the US FTC (Federal Trade Center). Together with the United States, the Safe Harbor bill was developed, which provides for the protection of data of multinational companies.

Reliability of services

Interruptions in access to Cloud Computing services are more likely than failures in the operation of corporate local networks. Service providers most often do not guarantee uninterrupted access to services. However, Cloud Computing services are becoming increasingly reliable. Thus, according to Google, the readiness and fault tolerance of cloud data processing networks is estimated at 99.9%, which is able to meet the requirements of most companies. Many companies do not require a readiness level of 99.99% or higher, system uptime and night data backup, because such requirements lead to additional costs.

Examples of fault tolerance of cloud data networks

Service Provider: Google (Google App)

Type of service: SaaS

Fault Tolerance Level: 99.9

Service Provider: Amazon

Type of service: IaaS

Fault Tolerance Level: 99.9

High latency in data transmission

There are a number of applications offered to users where the use of Cloud Computing services can significantly affect the quality of the service.

Currently, the use of the Internet is increasing in order to reach real-time video and audio content, as well as the popularity of online games, access to which is provided with the help of cloud data processing technologies that require the use of significant computing resources.

At the same time, the range of terminal equipment available to users is expanding rapidly, from large-screen terminals, often with 3D support, connected to powerful computers and a fixed broadband network, to mobile phones with much smaller screens and lower performance. Content delivery Within the framework of these services and its display on various terminals, especially in real-time mode, is a complex task due to the need to transcode the data.

Such applications in the process of use over the resources of several cloud data processing networks, which affects the efficiency of the data transmission network and increases latency.

In the process of data transfer, each cloud data network introduces delays of tens of milliseconds, which, currently, makes it impossible to use online applications within the framework of Cloud Computing services.

REFERENCES

1. Borisova G.B., Lukyanov A.S. Analytical report "Cloud Computing services as one of the key directions of development of the communication services market. Features of implementation and the current state of the market". 2010s
2. Serzhanova D.S. "Features of the use of cloud computing and the provision of data transmission services". Republican Scientific and Technical Conference. Tashkent 2021
3. <http://www.miritec.com/service/data-processing-center> Cloud computing expo.com/
4. Introduction to Cloud Computing // INTUIT NOU | Training Course | Introduction to Cloud Computing : [Electronic resource]. – Access mode: <http://www.intuit.ru/studies/courses/673/529/info>