Innovative: International Multi-disciplinary Journal of Applied Technology
(ISSN 2995-486X) VOLUME 02 ISSUE 05, 2024

OPTIMIZATION METHODS FOR INCREASING THE RELIABILITY OF INFORMATION BASED ON CLOUD TECHNOLOGIES

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Abstract:

Basic approaches, principles and methods are proposed for increasing the reliability of information of a continuous nature based on intelligent data analysis in the form of cloud technologies.

Relevance of the topic. Examples of applied problems solved using data mining (DAM) methods and algorithms in the form of cloud computing are images of electronic documents, image indexing, forecasting exchange rates, analyzing the reasons for growth or decline in sales, and others. All tasks of this kind involve analysis, processing, and increasing the reliability of a large volume of empirical data [1,2].

It was proven in [3-5] that the computational complexity of algorithms for increasing the reliability of information increases exponentially, depending on the volume of data. This leads to the need to use parallel architecture computing tools based on cloud computing.

Research methodology. The mathematical basis, or core of a data processing system or algorithms, is, for example, comparison, comparison of ordered data sets. The algorithms themselves are fairly well known and implemented in various libraries and frameworks. When solving problems, the following actions must be performed: determine what initial data to use, how to normalize and weigh them, what formal data analysis algorithms to use and in what sequence, and also evaluate the quality and reliability of the result obtained [6,7].

The traditional model for organizing computing involves creating an infrastructure: installing and configuring servers, organizing a data storage, organizing a local network connecting the entire infrastructure into a single network, installing and configuring an operating system, necessary system applications such as drivers, .NET platform, Java, third-party system libraries and installation of the necessary application software with which the end user will interact. Following this model, it is necessary to allocate a budget for the acquisition of equipment and software, pay for the work of specialists, and then keep it all up to date [8].

Cloud computing is generally classified according to its service delivery model and according to its deployment model; In accordance with the service delivery model, the following approaches are distinguished: infrastructure as a service (Infrastructure as a Service, laaS); - platform as a service (Platform as a Service, PaaS); software as a service (Softwareas a Service, SaaS).

Most cloud computing services fall into three general groups: infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS).

The LaaS model involves providing only computing resources in accordance with consumer requests.

In laaS, the IT infrastructure (servers, virtual machines, storage, networks and operating systems) is rented from a cloud provider on a pay-as-you-go basis.

The PaaS model improves on the laaS approach and includes an operating system already installed and ready for use.

In the scheme, PaaS refers to cloud computing services that provide an on-demand environment for developing, testing, delivering, and managing software applications.

PaaS makes it easy for developers to quickly create web or mobile applications without having to deal with the underlying server, storage, network, and database infrastructure required for development.

The cloud service provider handles the configuration of capacity planning and server management for the user.

Serverless architectures are event-based, highly scalable, and only use resources when a specific function is invoked or a specific event occurs.

The SaaS model is the most labor-intensive for a service provider, which involves creating its own services and providing constant, simultaneous access to them for many clients.

The SaaS model is also a method of delivering application software over the Internet on demand and usually on a subscription basis. In a SaaS scheme, cloud providers host and manage the software and underlying infrastructure, and handle all maintenance, including software updates and security patches. Users connect to the application over the Internet, usually using a web browser on their phone, tablet, or PC.

In accordance with the deployment model, the following approaches are distinguished: private cloud; public cloud; hybrid cloud.

A private cloud, as a rule, is deployed by an organization for its own needs and does not imply full access to the system for everyone. If necessary, organizing access to a cloud located geographically outside the organization is usually formed through a closed network that is inaccessible from the outside.

Public clouds are owned and operated by third-party cloud providers who provide their computing resources (servers and storage) over the Internet. Microsoft Azure is an example of a public cloud. In a public cloud, all hardware, software and supporting infrastructure are owned and managed by the cloud provider.

The user uses these services and manages his account through a web browser.

Hybrid cloud is a combination of private and public cloud ideologies. On the one hand, it is assumed that you have your own private cloud. At the same time, due to a lack of computing resources or due to the need to gain access to third-party resources, the organization additionally rents services provided by third-party public clouds.

Conclusion

Due to its openness, the public cloud provides the maximum range of opportunities. Organizing a cloud of this level requires significant investments in computing resources, which will be distributed among many clients, and resolving security issues, such as hacker attacks, isolation of user data.

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