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# SECURITY MONITORING IN CLOUD NETWORKS

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**Annotation:**Cloud technologies are very important for enterprises today, offering efficient ways to store and use data. However, the presence of security risks in cloud networks and the need to protect these systems is also increasing. This thesis analyzes the main methodologies and tools for security monitoring in cloud networks, as well as provides recommendations for optimizing cloud security monitoring systems.

**Keywords:**cloud technology features, cloud technology advantages, cloud technology disadvantages, infrastructure services -IaaS, platform services -PaaS, application services -Saas.

Cloud technologies are a key enabler in today's modern infrastructures, and they greatly assist organizations in storing their data, managing network resources, and expanding their business. Cloud services provide users with high levels of flexibility, efficiency and cost-effectiveness. However, with the proliferation of cloud systems, new security threats are emerging. Security monitoring remains essential to effectively combat threats and protect systems in cloud networks. In this thesis, the role of security monitoring systems in cloud networks, methodologies, tools and their effectiveness are analyzed in detail. Specificity of security risks in cloud networks. Security issues are of particular importance in the construction and use of cloud networks. Cloud systems are often connected to the Internet, making them an attractive target for cyberattacks. Security threats can be of the following main types:

Data Loss and Theft: Data stored in the cloud can be stolen or lost if not properly secured. This situation puts a lot of business and personal information at risk.

DDoS attacks (Distributed Denial of Service): DDoS attacks targeting cloud systems prevent services from running by limiting the availability of servers.

Login Vulnerabilities: Weaknesses in cloud infrastructure, misconfiguration, or weak passwords can weaken security. This allows potentially malicious attackers to gain access to the system.

The human factor in security: Many security risks are caused by inadvertent user mistakes, such as using weak passwords or exposing confidential information.

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Therefore, effective monitoring systems are necessary to ensure security in cloud networks. With the help of security monitoring systems, it is possible to counter these threats, monitor the system in real time and identify potential errors.

**The main tasks of security monitoring**

The main task of security monitoring is to quickly respond to threats that occur in the network and ensure continuous operation of the system. The following main mechanisms are used to perform these tasks:

Network traffic monitoring: In cloud systems, users' data transmission and retrieval processes constitute network traffic. Monitoring systems monitor this traffic in real time and help detect unknown activity.

Log monitoring: All network activity generates logs. With the help of these logs, evidence is collected about changes and threats that occur in the system. Monitoring systems analyze logs and identify vulnerabilities.

Take action: When a security threat is detected in the network, monitoring systems automatically take action (eg blocking the network, removing malware).

**Cloud Security Monitoring Tools.**

There are several tools available to provide security monitoring in cloud networks. Some of them are:

Intrusion Detection Systems (IDS): These systems are used to detect unknown or suspicious activity on a network. IDS monitors the network and detects threats in real time.

Intrusion Prevention Systems (IPS): IPS systems work like IDS, but they automatically respond to detected threats, such as blocking malicious access from the network.

Cloud Access Security Broker (CASB): CASB manages access and provides security for cloud services. This tool monitors all activities between users and systems connected to the cloud.

Security Information and Event Management (SIEM): A SIEM system analyzes security incidents and events in real time. These systems are an important tool in combating threats in cloud networks.

**Evaluating the effectiveness of security monitoring**

When evaluating the effectiveness of security monitoring systems, the following indicators are taken into account:

Accuracy: The monitoring system must be able to accurately and effectively detect threats.

Speed of response: Once the system detects threats, a quick response is required.

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Implementation of measures: Once the monitoring system detects threats, it should be effective in blocking or preventing malicious activity.

In conclusion, it should be noted that the role of cloud technology in our lives is deepening day by day. Until now, many scientific works on cloud technology have been carried out. Cloud technology is a distributed data processing technology, which aims to provide computer resources and capabilities to the user as an Internet service. Security monitoring systems are important in cloud networks. As demand for cloud services increases, so do security threats. By ensuring that monitoring systems work effectively, these threats can be combated, systems protected, and users' data protected. Network security can be enhanced by optimizing security monitoring systems, using new technologies, and implementing advanced methodologies.

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