Data security in cloud accounting systems: modern approaches and risks

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Abstract.
The article discusses modern approaches and risks associated with data security in cloud accounting systems. The main security threats are discussed, as well as strategies and technologies to overcome them. Author examines the issue of data security in cloud accounting systems, describing modern approaches to data security, the main risks and measures to reduce them. Recommendations for ensuring data security in cloud accounting systems are also provided.

Keywords:
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backup
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anomalies in user behavior
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data protection measures

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In today's world, cloud-based accounting systems are becoming increasingly popular due to their availability, efficiency, and convenience. However, at the same time, the number of risks associated with data security increases. The main security threats in cloud accounting systems include unauthorized access, data loss, viruses and malware, as well as compatibility and standardization issues.

Modern approaches to ensuring security in cloud accounting systems include the use of strong authentication, data encryption, regular backups, as well as the use of security standards and privacy policies.

The market of cloud technologies is developing every year, and therefore, there are more and more solutions provided by various companies. All solutions can be divided into 3 models:

- IaaS - infrastructure as a service.
- PaaS - platform as a service.
- SaaS - software as a service.

At every enterprise, accounting plays an important role in maintaining the process. IT companies often use the most advanced technologies, but the activity of accountants is not automated. The main problem is the installation and maintenance of complex software solutions that need constant updating. Also, to work in the software provided, it is necessary for the staff to have the appropriate knowledge, without which it is impossible to master the installed program [1].

More and more representatives of the public services market, retail and wholesale trade, as well as the financial sector are giving their preference to automating their activities through the introduction of cloud technologies. Cloud accounting is an accounting program located on a remote server. To use the program, the user only needs to configure access to the Internet, and installation of additional software is not required [2]. Cloud accounting is intended not only for sole proprietors, but also for large companies operating on all tax systems presented. The target audience is still individual entrepreneurs and companies with a staff of up to 100 people, since according to analytical studies, this target audience is most likely to introduce new technologies and automate their activities [3].
Advantages of using cloud accounting services:
- the ability to use the services of outsourcers or accounting specialists working remotely. This solution makes it possible not to hire a permanent employee and allocate a budget for paying a permanent salary to a new employee;
- to perform accounting, you only need access to the Internet, which allows you to work for several companies at the same time.
- there is no need to manage software updates, as the service provider assumes this responsibility. This also applies to changes in legislation. Cloud accounting helps you keep up to date with all changes, as it has direct interaction with the global Internet.
- low maintenance cost. Due to the absence of costs for physical media and licenses, which are required when using other software products, the price of using cloud accounting is reduced.
- high data protection against damage, loss and hacking.

Key features supported by cloud accounting services:
- reflection of sales and purchase transactions with the ability to generate invoices, invoices and invoices, including support for this function in the mobile application;
- calculation of wages, taxes on social security and insurance premiums. The program provides an opportunity to create an employment contract, dismissal orders, and other documents for human resources management.
- accounting for the movement of inventory items and fixed assets;
- the ability to generate payment documents and then send them to the Bank;
- formation and submission of reports to the tax authorities. The program has a built-in tax calendar, which allows the user not to miss the tax periods established by law and not to receive penalties;
- ability to integrate with other services, such as CRM. This feature is associated with the presence of an open external API.
- automated operations (export and import of bank documents, automatic entry of counterparty data, etc.).

Currently, cloud accounting systems are becoming
increasingly popular among companies of various scales. They offer a convenient and efficient accounting and finance solution, providing access to data from anywhere in the world. However, along with the convenience of using cloud systems comes a number of risks associated with data security.

### Data security in cloud accounting systems: modern approaches and risks

<table>
<thead>
<tr>
<th>1. Centralized data storage:</th>
<th>Cloud accounting systems store data on remote servers, ensuring a high level of availability and continuous operation of the system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Risk of unauthorized access:</td>
<td>Hackers can try to break into the system and steal confidential data about the company's finances or its customers.</td>
</tr>
<tr>
<td>3. Encryption and authentication methods:</td>
<td>To protect against data security threats, you need to use modern encryption methods and multi-level authentication systems.</td>
</tr>
<tr>
<td>4. Risk of information leakage:</td>
<td>Employees of the company may accidentally or intentionally transfer confidential data to third parties, which can lead to serious consequences for the business.</td>
</tr>
<tr>
<td>5. Training of employees on safety rules:</td>
<td>Regular training of employees on security rules will help prevent data leaks and raise awareness of the risks.</td>
</tr>
<tr>
<td>6. Protection against malicious software:</td>
<td>Using antivirus software and updating it regularly will help protect your system from malware.</td>
</tr>
<tr>
<td>7. The importance of data security:</td>
<td>Data security in cloud accounting systems plays a key role in ensuring the reliability and integrity of a company's financial information.</td>
</tr>
<tr>
<td>8. Risk mitigation measures:</td>
<td>To minimize risks, it is necessary to strictly control access to data, conduct regular training of employees, and use modern data protection methods.</td>
</tr>
<tr>
<td>9. Trust of clients and partners:</td>
<td>Ensuring data security will help maintain the trust of the company's customers and partners and prevent potential threats to the business.</td>
</tr>
</tbody>
</table>
Data security in cloud accounting systems plays a key role in ensuring the reliability and integrity of a company's financial information. To minimize risks, it is necessary to use modern encryption methods, strictly control access to data, and conduct regular training of employees on security rules. This is the only way to ensure data security and maintain the trust of customers and partners.

**Online accounting department of the My Business service**

Initially, the service was created as an accounting assistant to simplify the management of accounting enterprises, the target audience of which was considered only small businesses that use the simplified tax system.

The service made a sharp leap in development in 2013, releasing a full-fledged version of cloud accounting, suitable not only for small companies, but also for large and medium-sized ones. Today, the version is gaining more and more popularity in the market compared to similar services [4].

The My Business cloud accounting program includes the following set of sections:
- calculation and accounting of wages;
- help system;
- submission of electronic reporting and document management to state management bodies, such as the Federal Tax Service, the FIU, Rosstat and the Federal Tax Service;
- advising and providing training for accounting users;
- assistance in preparing the registration of sole proprietors and LLCs.

The main feature of the system is the built-in question-and-answer format, which provides not only advice, but also recommendations for solving issues in various areas.

The advantage of the system is the constant updating of materials on maintaining accounting statements, which ensures that the information provided in the service is up-to-date. The service is constantly updated and takes into account changes in legislation, comments on laws or regulations of tax authorities, pension funds, and statistical funds [5].

The service has a pricing policy that depends on the following parameters of the organization: the form of ownership (sole proprietor, LLC, etc.), the tax scheme (USN,
To get acquainted with the service's features, a three-day trial period is provided.

The main task of accountants is to provide reports. The service performs this function for free. Government agencies receive reports from users of the service without violating deadlines [6].

The main advantage that distinguishes the service from its competitors is holding events for training accountants. The service includes webinars for training and advising accountants online.

**Elb Service**

The Elba solution was developed by SKB Kontur, an IT service provider that has long established itself in the accounting IT services market.

The creators of the service focused on a specific target audience

- individual entrepreneurs. The service provides the possibility of multi-user mode, working with primary documents and working with invoices. It is suitable for such forms of ownership as sole proprietors and LLCs that operate under the simplified taxation system (STS) and the Unified Imputed Income Tax (UTII) system.

Despite the fact that the system is mostly intended for entrepreneurs, LLC companies are given the opportunity to generate accounting statements based on the results of the year based on the data entered into the system on the financial activities of the enterprise (only reporting, the service does not provide full accounting reports) [7].

Elba provides an opportunity to:

- management of work with employees: establishment of salary, bonuses, district coefficient, etc.
- formation of payment documents for paying taxes and contributions
- coordinating the user's reporting deadlines to regulatory authorities, such as the Federal Tax Service, FIU, etc.
- ability to create reconciliation reports with the Federal Tax Service and suppliers.

The system independently accounts for transactions when UTII, etc.), and the number of employees.
creating documents and specifying the types of transactions, and then builds accounting statements based on all the data at the end of the year, first showing the data in the current - balance sheet and offering to do a number of actions that complete the business activity in the year.

The service is charged depending on the range of services provided: economy, business, and premium. The functionality includes the following features: electronic reporting, online accounting, and accounting services. Depending on the tariff, the number of functions included in the service increases [8].

The service has high-level technical support, which makes it stand out from other cloud accounting services.

Competitive advantages of the service:
- the service provides an individual tax calendar and sends reminders by email and SMS, which allows the user not to miss the deadline for submitting reports to the tax authorities;
- technical support with the participation of lawyers, which provides timely assistance to all users;

The developer of the service is a company that has established itself in the market as one of the best suppliers in the field of IT services for 25 years of activity.

The main disadvantage of the service is its high-cost relative to other options on the market. A high level of technical and legal support compensates for the cost.

Kontur service «Accounting department»

Kontur service Accounting was developed by SKB Kontur, as well as the «Elba» service, but the main difference is that this service provides more opportunities for accounting, which expands the target audience.

The service has a fairly large list of features.
«Contour Accounting» allows you to manage the personnel system of the enterprise. The service automatically calculates the salary of each employee of the company at the beginning of a new billing month. The transfer only requires confirmation from the user [4].

The service supports calculating sick, vacation, or business trip expenses by analyzing employee data specified by the user. Also, one of the advantages is the import of
reference books from the 1C system: reference books of counterparties, nomenclature and fixed assets, personnel and calculation data about employees.

The service is intended for the following users: organizations based on OSNO, USN and UTII, and entrepreneurs based on USN and UTII. The system provides the ability to work with primary documents:
- invoices.
- service acceptance certificates.
- advance reports;
- payment orders.
- accounting information.

«Contour.Accounting « like all cloud services supports multi-user mode with a role model. Roles such as chief accountant, primary documentation accountant, director, and operator are available [6].

The service supports generating and sending reports to regulatory authorities without any updates or additional settings. The system always has up-to-date reporting forms and dates for submitting accounting documents.

Integration with a particular bank is one of the most common wishes of online accounting users. Currently, data exchange between systems is possible if there is a business current account in the bank. This makes it possible to receive payments coming to the current account in the system, as well as outgoing payments made on behalf or for other reasons [9].

The labor-intensive process of traditional manual accounting has been automated, computer programs have become widespread, and it seems that accounting work has been simplified to the limit. Nevertheless, the development of the Internet has contributed to the opening of a new stage in accounting technology, in which the accounting program is a service on the Internet. The basis of such programs is the so-called cloud computing, from which the name «cloud accounting» comes.

Many cloud accounting services are beginning to develop towards integration with RBS systems of Banks, which allows you to automate the work of accounting in the enterprise and reduce the time spent on accounting.

After integration, information from the bank is updated
in the accounting department with the frequency set in the service, for example, at 2 o'clock, which allows you not to download individual statement files and not to start documents manually. Created payment orders in the accounting department can be sent directly to the bank for further signing [10].

Special cloud services help you keep proper accounting records, submit reports, transfer taxes, draw up invoices, invoices, invoices and contracts. Due to integration with the Internet bank, the bank statement is automatically imported into the accounting program. Another advantage of integration is the automation of outgoing payments: payment orders generated in the program are reflected in the Internet bank, where the client only needs to confirm the payment in one click.

Having studied the subject area and the cloud accounting services presented on the market, the optimal requirements were formulated, which are presented below.

The accounting service should be organized on the basis of a cloud-based SaaS (software-as-a-service) model. To use the service, the user only needs an Internet connection.

A mandatory point for integration is that the cloud accounting provider has an open external API. The service's API must provide the following functions:
- user authorization
- synchronization of Bank statements with the Bank's RBS system at the server-server level;
- synchronization of payment orders with the Bank's RBS system at the server-server level.

In addition to the cloud accounting service, integration involves systems such as the Abanking Identity Server module and the RBS provider.

Abanking Identity Server is a licensed component of the Abanking unified front-end RBO system, selected as a vendor for delivering a front-end solution for Internet Banking [9].

iSimple, an RBS service provider, was chosen as the backend solution.

The list of features of the cloud accounting service is implemented only if the accounting service is integrated with the «Abanking Identity Server» module and there is an SSO server on the side of the iSimple RBS system.
User authorization is implemented based on the SSO: OpenID Connect standard. OpenID Connect is a specification that organizes the process of OAuth 2.0 data exchange between credential providers and verifiers without having to enter numerous data required for OAuth implementation. A standard example of implementing the specified authorization standard is considered to be authorization on the site using an account in Google, that is, the user does not enter new authentication data on a third-party service, but uses already known data from another service [11].

In case of integration into the bank's RBS in the cloud accounting system, authorization will be performed using data from the Internet Banking system.

Figure 15 shows the process of system interaction during SSO authorization.

![Diagram of the SSO authorization process](image)

As part of the integration, the Internet Banking data must be synchronized with the data in the cloud accounting system. When switching to the Online Accounting service, the user should be shown an up-to-date statement at the current time. The request must be made by the accounting service, in which the «Abanking Identity Server» module synchronously returns a statement for the desired client.

While working, the user should be able to create payment orders in cloud accounting. When switching to Online Banking,
the client sees the created documents in the transaction history and has the opportunity to sign them and immediately send them to the Bank [10]. With the development of cloud computing technologies and the increasing use of cloud services in accounting, the issue of data security is becoming more urgent.

Modern approaches to data security in cloud accounting systems include the use of data encryption, multi-level user authentication, regular backup of information, monitoring data access, and detecting anomalies in user behavior. In addition, cloud service providers often apply protection measures against DDoS attacks, viruses, and other threats. However, despite all efforts to ensure data security, the use of cloud accounting systems is not without risks. One of the main risks is the possibility of unauthorized access to data by intruders. In addition, there is a risk of leakage of confidential information, as well as the possibility of denial of service or data loss due to failures in the cloud system.

To reduce data security risks in cloud accounting systems, companies can take a number of measures. It is important to update your software regularly and use strong passwords to access your data. It is also necessary to train employees on security rules and monitor their actions when working with data.

In conclusion, data security in cloud accounting systems plays a key role in maintaining the confidentiality and integrity of a company's financial information. Modern approaches to data security help minimize risks, but it is important not to forget about the need for constant monitoring and improvement of the data protection system.

Thus, data security in cloud accounting systems is an important aspect that requires constant attention and effort. Despite the existing risks, modern approaches and technologies allow us to effectively deal with threats and ensure reliable data protection.

References:
INFORMATION AND WEB TECHNOLOGIES