Research on the Systematization of Computer Accounting Information Based on Internal Control

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Abstract. With the rapid development of computer technology, global informatization has become the general trend of human development. Network computer accounting information system has brought convenient and fast information services to human beings, and has become an important guarantee for the development of enterprises. However, due to the characteristics of computer network, such as openness, interconnection and infinite space-time, the problem of network computer accounting information systematization has become very prominent, and security control is particularly important. It is the basic guarantee for the normal operation of the network computer accounting information system to recognize these security problems and take necessary preventive techniques and countermeasures. This paper discusses the security control of computer accounting information system based on network in the aspects of operating system control, database management, application program, etc., and introduces the authority system of SQL server.

Keywords: Network, Computer Accounting Information System, Security Control

1. Introduction
With the rapid development of IT technology, online transactions are becoming more and more common, and e-commerce will be gradually popularized1-2. Once all the original documents of an enterprise are in digital format and electronic, they are easy to be modified or even forged without leaving any trace, which will certainly strengthen the dependence of the enterprise on the online notarization institution, and the information fidelity of the electronic documents will be particularly important3-4. But at present, the relevant technology is not fully mature, and the corresponding laws and regulations are not perfect, which will cause great difficulties to the system security control. Network accounting adopts highly electronic transaction mode, which brings new changes to data correctness, transaction and its track. The original voucher is automatically generated and stored in the computer when the network business is transacted5-6. The whole process of the transaction is established, calculated and maintained on the electronic media, and a large number of data entry and transactions take place outside the enterprise. The main form of storage is web page data, which can only be read in computer and corresponding programs. Due to the automatic and efficient use of computers, the number of staff is reduced, and various procedures are combined and executed by computers. Therefore, the next business can not be confirmed and controlled by several posts in the manual way, which becomes a security risk of internal control.
The birth and application of network accounting system, while bringing convenient and quick information service to human beings, also brings many security problems due to its own characteristics of openness and resource sharing. Therefore, it is very important to strengthen the system security control and prevention. The 21st century is a networked information age. As an information system of management information, it has realized the effective management of information collection, processing, storage, retrieval, etc.

2. Information system control

Layers of firewalls can be set up inside and outside. The outer firewall is mainly used to restrict the external access to the host operating system. The inner firewall is mainly used to logically isolate the connection between the accounting system and the external access area, and restrict the external illegal access to the intranet through the access area.

ISO, the international organization for standardization, defines several levels of network interconnection reference models in the open interconnection standard, which are transmission layer, data link layer and physical layer. Different network layers have different functions. Accordingly, different security mechanisms and services need to be provided at each layer (Figure 1).

![Figure 1. Network security service level model](image)

3. Systematic control of computer accounting information

It has greatly changed the application mode of the former computer system and expanded the operation environment of the system. Thus, the work of risk prevention and control mechanism is undergoing profound changes. The main internal control points of this accounting system are shown in Figure 2.

Given the sample data set:

\[ D = \{x_1, x_2, \ldots, x_n\}, \quad x_i \in R^d, i = 1, \ldots, n. \]

Assume that the first sample is labeled as \( \varepsilon = (x_1, x_2, \ldots, x_l) \), corresponding label \( \eta = \{y_1, y_2, \ldots, y_l\} \).

\[
\begin{align*}
    d_i(x, x_j) &= \sqrt{(x_i - x_j)^T A (x_i - x_j)}, \\
    d_i(x, x_j) &= \sqrt{(x_i - x_j)^T A (x_i - x_j)} \\
    &= \sqrt{(x_i - x_j)^T L^T L (x_i - x_j)} \\
    &= \sqrt{(Lx_i - Lx_j)^T (Lx_i - Lx_j)}
\end{align*}
\]
3.1. Operating system control

It is not only the basis of hardware and software, but also the interface between user and computer.

In addition to selecting the operating system products with higher security level as far as possible and constantly improving the version, the "access control and privilege management" and other options of the "computer resource authorization table system, log audit system" can be mainly used in the management control. In addition, the "safe kernel technology" can be used to remove the part of the operating system kernel that may cause security problems, so as to make the system more secure. For example, the Solaris Operating System puts the static password in an implicit file to enhance the systematization.

3.2. Database management system control

Accounting data is generated along with the production and operation activities of an enterprise, which is the basis of a rich business strategy. It comes from a wide range of sources, with a large number of characteristics of systematization, continuity, periodicity and multiple utilization. The accounting data of computer accounting information system is managed and controlled by the database management system. Database management system (DBMS) must provide the security of accounting data "integrity, concurrency control and database recovery and other data protection capabilities" to ensure the security, reliability and integrity of accounting data.

The threat of database systematization mainly comes from two aspects: one is the illegal access to the database by people inside and outside the system; the other is the physical damage caused by system failure, misoperation or man-made damage. In view of this situation, accounting data resource control can mainly adopt the reasonable definition of application sub mode, such as accounting data resource authorization table system, data backup and recovery system.

Semantic integrity is to prevent legitimate users from entering non semantic data when using digital screen. The main control steps are shown in Figure 3. Transaction integrity is to prevent the mutual interference of 1 between multiple transactions and "control the concurrent operation of multiple transactions" to ensure that after the system fails, the data can be recovered from the error state to the state of consistency of slurry logic. The most commonly used technologies for data backup and recovery are data dump and log files.
3.3. Network security control
In the computer accounting information system, many data are highly sensitive. "Therefore, the encrypted storage and transmission of data is particularly important. Integrity, confidentiality and reliability, provide transparent encryption channel to ensure the safety of data transmission. Network encryption technology is one of the most important technologies to ensure network security, and its core is cryptographic algorithm. Generally speaking, the cryptosystem can be divided into public key cryptosystem and single key cryptosystem. Firewall technology is also a tool to improve network security. The security control of firewall includes: Controlling the insecure service, controlling the access to special quiet point, centralized security protection, recording and counting the access of network.

4. SQL server user permission control instance
In any computer accounting information system, the user calls the corresponding function module through the system function menu to realize the operation of data. Therefore, from the application point of view, "controlling the user's access to system functions also controls the user's access to information, greatly improving the information systematization. The technical measure of the information system at the application level is the information system user access technology realized by software, and its theoretical essence is the system function authorization. "That is to say, only the authorized user can access every function of the system and the authorized user cannot use it.

The following takes SQL server, a popular relational database management system, as an example to introduce the settings of its permission system.

The permission system of SQL server identifies four types of users: system administrator, database owner, database object forgiver and other users of database (see Figure 4).
4.1. System administrator privileges (SA)
SA is a "super user" that is not restricted by the permission system.

4.2. Database owner rights (DBO)
In all its own databases, it has the right to do anything, such as: recover database and transaction log; delete database; grant and revoke statement permission, establish object, use object, etc.

4.3. Other users
Some specific permission users are granted by the above three, for example, dboo can grant the permission of select table to user user1.

The hierarchical setting of the permission system of SQL server effectively limits the access right of users to data, thus ensuring the security of data to a certain extent.

5. Conclusion
The maintenance of hardware shall be strengthened to prevent the loss of accounting information due to computer failure; in case of emergency, the key hardware equipment can be backed up by dual system. In addition, the computer room shall fully meet the technical conditions of fire prevention, water-proof, anti-theft, rat proof, constant temperature, etc. if necessary, electronic door lock, fingerprint check, computer control personnel access and other preventive control means can be used; the power supply lines used for power and lighting in the computer room shall be separated from the power supply lines of the computer system, UPS uninterruptible power supply, anti radiation, anti electromagnetic interference and other equipment shall be equipped, the structured wiring shall be used as far as possible to install the network, and signs shall be set at the position where underground cables are buried for prevention; the storage medium used for data backup shall be moisture-proof, dust-proof and antimagnetic, and the long-term storage medium of magnetic medium shall be regularly transferred for storage, etc. The application of internal control has greatly changed the environment of computer accounting information system. On the one hand, it enhances the management function of the system, on the other hand, it increases the risk of security control. In order to ensure the systematic operation of computer accounting information, we should combine theory with practice and take effective measures from many aspects.

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