Analysis of Information Security Protection of Power System Computer Network

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Abstract. With the development and progress of society, the national grid power system is playing an increasingly important role. However, in the operation of the power system, the hidden dangers of computer network information security are gradually increasing, which may threaten the safety and reliability of the operation of the power system. Therefore, it is important for the staff to take reasonable measures to protect the security of computer network information. This paper mainly analyzes the computer network information security problem of the national grid power system, and expounds the importance of the information security protection of the power system computer network and proposes reasonable protective measures.

Keywords: Power System, Computer Network Information Security, Problem, Protective Measures

1. Introduction

China's science and technology information technology continues to advance and develop, information technology has gradually entered our work and life, and in the power system, the application of computer network information is becoming more and more common. The power system through the computer network has greatly improved the work. Benefits, achieve data transfer, data concentration and data sharing \[1-3\]. This paper expounds the importance of computer network information security in current power systems. By analyzing the current status of computer network information security management, this paper proposes an optimization strategy for power system computer network information security.

With the continuous economic and technological transformation of China's society, the development system of the power industry has been continuously reformed, and the scale of social industry and domestic electricity consumption has become larger and larger. Power information systems are increasingly used in power companies \[4-5\]. The application of computer network information brings great convenience to the power supply efficiency of the power system. Therefore, the security of the network system also affects the transformation and maintenance of the power system. Once the computer network information of the power system is damaged or missing, it will be given Society brings incalculable losses. With the continuous development of urbanization, the state pays more attention to the safety management of computer network information of power systems.
2. Existing problems in the work of computer network information security in power systems

(1) Low security awareness
With the popularization of network information, modern enterprises need a lot of network information personnel to work, manage and learn through the network, but a large part of the staff does not pay attention to the security of network information, and they have security awareness. Relatively weak. The network effect should be a problem that power system enterprises must pay attention to in their work. However, for the security requirements of network information, the management and security fields of enterprises have not done their jobs, and the network information security of enterprises has been threatened. In the work, whether it is a professional or an ordinary user, there is a sense of luck in the heart. There is no awareness of active response and active prevention. The national security awareness is relatively weak, resulting in a very low resilience and resistance to cybersecurity.

(2) Information security management institutions and systems are not perfect
After the power company uses the network information technology, it first needs to set up a special information department to set up the posts that belong to the network information and the corresponding standard system. The current power companies do not have the responsible departments for information, and some are only one or two emergency\[^6\]. Personnel, usually doing other work in other departments, neglecting information management problems and security issues in daily work.

(3) Internal risks of power companies
According to the national regulations, the network is divided into two parts, the internal network and the external network, and the two networks are separated by physical isolation. The current internal network and the external network are unreasonable. For example, the selected core switch is unreasonable. Because most of them now only use one two-layer switch to ensure the equal network status of users, but for the security system, only through the system to solve this problem.

(4) Virus invasion
Computer viruses were born with the birth of computers and are the number one enemy of computer network systems. Once a computer virus has a wide impact, it will cause significant losses to the information security of power companies. After a computer is infected with a virus, it will cause network communication to block, destroy the data and files in the computer system, and cannot be repaired. Therefore, virus intrusion is very scary for enterprises.

3. Suggestions on strengthening computer network information security in power systems
Under the background of informationization, it is important to realize computer network informationization in power system. At the same time, the security and reliability of computer network informationization cannot be guaranteed. It has a negative impact on the stable operation of the power system, so computer network information security protection is necessary (Figure 1).
Figure 1. Computer network information security protection measures

(1) Pay attention to network security

Security is very important for computer network information. Therefore, it is first necessary for power companies to strengthen the safety knowledge training of all computer network staff, fundamentally improve the level of network information security technology for computer staff, and strengthen their professional comprehensive capabilities. We will continue to strengthen information security personnel and implement the information security responsibility system in detail. People will have rules to follow and have laws to follow in their daily work. When working in cooperation with other units, a confidentiality agreement is signed, and security personnel regularly conduct security check and management on computer network information, timely handle the discovered security risks, and ensure network information security of the power system.

(2) Guarantee the security of the information database

Information database security refers to the organization of data leakage, data changes, and data corruption caused by incorrect operation bits. The database system is one of the important parameters of network information security. It becomes meaningful to protect the security information security protection of the power system database. Database security control mainly includes: user indication and verification, access control, auditing, data encryption, view protection and so on.

(3) Protection against virus intrusion

Power companies must strictly prevent the management information system and security system from using the same server, and need to arrange and arrange the disease prevention for many servers and work sites. In the office network, who knows anti-virus software, prevents messages with viruses from being transmitted and spread through the office network to the power system.

(4) Enhance firewall interception capability

Firewall is a technical barrier used to organize hackers and viruses to invade network security. Designing anti-virus software in the computer network of the power system, and then adding firewall software, is considered a relatively weak protection measure to effectively prevent hackers and viruses from invading. System backups and checks are also required on a regular basis. At present, the firewall is divided into three types: filtering firewall, proxy firewall, and double-homed firewall. The filtering firewall mainly operates at the network level to complete the filtering of information. The proxy firewall can also be called an application layer network management level firewall, which mainly filters routers and proxy servers. A two-hole firewall is used to collect data from one network and then transfer it to another network.

(5) Establish a power system security emergency plan

Real-time monitoring work in the internal and external networks of the power system to evaluate the data environment of the power system. If the obtained value is lower than the safety index of the
normal range, a security warning is required to notify the information security department to search for potential security problems in time. Clean up to minimize safety hazards. Establish a complete safety emergency plan. After the problem occurs, quickly find the cause. Firstly, it is excluded whether it is caused by the wrong operation of the internal personnel. It is determined that the accident caused by the external factor needs to be reported to the superior personnel, and the equipment range isolation work is targeted to narrow the fault. The scope, even for the safety of the surrounding equipment, to prevent accidents from expanding, causing the entire data network of the power system. The consequences of the threat to the security of the power system are very serious. In important cases, it is necessary to promptly notify the public security organs to intervene to assist the work. After the fault is effectively controlled, the system resumes work immediately, and strives to restore the normal operation of the equipment in the shortest time, and increases the security accident protection to prevent the second attack.

4. Conclusion
With the continuous development of information technology, the security requirements of computer network information are constantly changing, and the computer network information of power system is facing more security problems. The computer network information security of the power system is related to the efficiency of the power enterprise, and also related to the production and life of people in the society. Therefore, it is very important to do relevant information security protection work. The network security protection of computers is mainly aimed at the destruction of network systems in the way of network viruses, criminals and hackers. Therefore, only by strengthening the protection and controlling the occurrence of faults, can the security of the computer network information of the power system be effectively guaranteed. Effectiveness.

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