



How to Improve the Reliability of Computer Network Operation

Xiaoxia Lu

Yangzhou Hospitality Institute, Yangzhou 215126, Jiangsu, China.

How to cite this paper: Xiaoxia Lu. (2022) How to Improve the Reliability of Computer Network Operation. *Advances in Computer and Communication*, 3(2), 53-56. DOI: 10.26855/acc.2022.12.001

Received: October 28, 2022

Accepted: November 25, 2022

Published: December 30, 2022

***Corresponding author:** Xiaoxia Lu, Yangzhou Hospitality Institute, Yangzhou 215126, Jiangsu, China.

Abstract

With the progress of society and the improvement of technology, computer technology has been widely used in various fields. And the increasing popularity of computer networks has led to higher requirements for office automation, intelligence and management information. At the same time, the reliability of computer network operation is an important criterion to measure the overall technical level and management ability of a region. So consider how to improve the reliability of computer network operation, which is a hot issue of current research and development. At present, China's science and technology is not mature enough and people's awareness of it is low, so in order to make the computer network operation more safe, reliable, stable and efficient, it is necessary to strengthen the research on computer equipment and reliability issues. This paper mainly discusses the main factors affecting the reliability of computer networks and the effective countermeasures to improve the reliability of computer network operation in practice.

Keywords

Computers, Network, Improving performance, Reliability

1. Introduction

With the development of computer networks, their applications are becoming more and more widespread and play an important role in life. Therefore, it is necessary to raise the awareness and attention to the reliability of computer network operation, which is of great significance in promoting the stable and rapid growth of China's social economy, maintaining national security as well as safeguarding people's lives and properties from infringement. The first is to provide a good environment for the construction of the national economy. The second can ensure the national economy to develop steadily and quickly. The third can protect personal information, not to disclose the privacy of others, etc. These are determined by the reliability of computer network operation.

2. The main factors affecting the reliability of computer networks

2.1 Computer Network Equipment and Transmission Equipment

Computer network equipment and transmission equipment are used to exchange information under certain environmental conditions to achieve communication, which is characterized by reliability, stability and dynamism. Computer network work is mainly for the processing of various data files and the storage of relevant information during transmission, which has certain requirements. First of all, it is necessary to ensure that the computer equipment is reliable and safe. The second is to be able to transmit information quickly and accurately to meet the needs of users. Finally there is a need to ensure to a certain extent that the system is stable and can operate properly. Computer

network equipment and transmission systems are important factors affecting the reliability of computer network operation, so when carrying out maintenance work, it is important to focus on the inspection of equipment, data and lines, as well as testing the stability of their performance [1]. For example, in some special cases, it is necessary to use special communication channels to exchange information and remote control functions, and it is not possible to directly replace or reinstall a new network for the failure problems that occur in some specific applications, which must take the necessary measures to ensure that the computer network can operate efficiently and improve the reliability of the whole system, so that the overall operation level can be effectively improved.

2.2 Computer Network Management System

Computer network management system refers to the scientific and reasonable planning of software and hardware of computer application system, so as to effectively improve its operational reliability and security, then provide reliable and efficient services for users. In practice, due to various factors, most enterprises in China lack a complete set of standardized and operable technical means. Therefore, a perfect and sound computer network management system must be established to ensure the smooth realization of this goal. Computer network management system is composed of system administrators, operators and maintenance staff. In the daily work, the computer network management system needs to be formulated according to the actual situation and implemented through certain procedures. But due to the lack of perfect and effective regulations and normative documents to restrain, leading to some unscrupulous elements to take advantage of the loopholes to seek benefits, and then there are many violations, such as incomplete user data information, customer data discarded or lost, etc. These are serious obstacles to the normal operation and development of computer network work [2].

2.3 Computer Network Topologies

Computer network topology is the connection between the nodes of a computer system by means of communication, and the ability to perform functions on them in different situations. On the one hand, there is information exchange. It is necessary to ensure that the actors and other relevant participants are connected to each other during the whole operation process. On the other hand, there is physical isolation and logical separation. All devices, data, etc. within the system must be strictly designed before they can be operated and used. The computer network topology connects the various nodes in a certain way to form a whole. In this structure, each node is a part that operates independently. Since there are differences and independence between different regions, so when multiple users access the same place at the same time there will be different performance and data information of characteristics cannot be effectively transmitted and exchanged. In addition, if a region or some equipment fails to resume normal operation immediately, it can lead to the whole network paralysis or even cause system collapse [3].

3. Effective Measures to Improve the Reliability of Computer Network Operation

3.1 Improve Network Device Performance

Computer networks are affected by various factors during operation, such as environment, equipment failure, etc. Therefore, it is very important and necessary to improve the reliability of computer network system. Reliability of computer network means repairing the problems that occur in the daily work of computer equipment to ensure that the whole network can be used normally. For some large server rooms, the operating environment is complex and easily damaged. So to improve the hardware performance, we must strengthen the maintenance and upgrade of software, and also ensure that there is no human error or failure in the process of system data transmission [4]. First of all, the network equipment should be reasonably designed and optimally configured. Secondly, according to the actual situation, corresponding measures should be formulated to ensure that the whole machine is in good condition when working. Finally, it should also strengthen the construction and development of hardware performance and software technology, and continuously improve the computer application capabilities in the daily operation process, so that it has a high degree of security, stability and reliability. In addition, the maintenance of the network system should be strengthened to improve the ability of computer applications and reduce the quality of the entire network operation due to failure [5].

3.2 Improve Network Management Technology

The reliability of computer network operation refers to the ability of computer network systems to ensure safe and

reliable information transmission after being subjected to external interference. The level of network management technology has a profound impact on the whole enterprise and even the country. First of all, it is necessary to improve the importance of managers and staff for hardware facilities, and it is necessary to carry out regular maintenance activities and maintain the equipment well. Secondly, to strengthen the staff's ability to use computer software and data resources in the daily operation process. Lastly, it is necessary to formulate perfect, reasonable, effective and feasible rules and regulations to regulate the behavior of relevant personnel to avoid unnecessary errors and improve the efficiency of staff.

Computer network management technology refers to the function of collecting, organizing and classifying data, and it mainly includes network structure design and optimization, as well as network equipment operation reliability assessment. In practice, it should be started from two aspects [6]. On the one hand, it is to strengthen the internal hardware performance of the server. Since there are differences in the quality of services provided by different manufacturers, in order to improve the development capability and stability of the server software system, it is necessary to constantly update and upgrade the computer hardware and software products to keep them in normal use and meet the needs of customers, and enhance the processing and analysis of data, so as to improve the reliability of network operation. On the other hand, it is to strengthen the performance testing of various hardware in the network, so as to improve the reliability of computer system operation. The first is to ensure the quality of data transmission. The second is to ensure that the information transmission process can be completed effectively. The third is to focus on the detection of the operation status of network communication equipment and improve the analysis and processing ability of fault situations.

3.3 Designing A Multi-level Network Structure

When designing a computer network system, different levels of users and differences in user requirements for equipment should be taken into account. In the process of computer network operation, we can solve it by multi-level structure design. The first is to take different channels for communication between different users. The second is to reasonably allocate each module, such as the host, which is mainly responsible for information data transmission and processing and system software maintenance, and the routing protocols need to be optimized and improved to some extent to achieve the best results. Finally, the whole network structure should be optimized to ensure that the whole system can be stable and efficient operation and long-term operation, so that the network can have good stability, reliability and scalability [7].

Designing a multi-level network structure is the goal of achieving reliability optimization of computer systems. When carrying out the actual engineering construction, it is necessary to analyze the interconnection and coordination relationship between each subsystem and module, so it is necessary to follow certain principles to determine a reasonable design plan and method to achieve the optimal effect. It is also necessary to develop a plan that meets the requirements of different users and effectively improves the operational efficiency according to their needs. Finally, the appropriate communication methods and transmission devices are selected and the corresponding network structure system is established according to the design specifications. In computer systems, the subsystems are interconnected, coordinated and interact with each other, so in the design of computer network systems, we have to configure them reasonably according to the usage requirements of different users. In the actual operation process, several factors should be considered, such as whether the communication protocols and transmission methods can meet the needs, whether the network topology is reliable and secure, and how to maintain the interconnection between communication lines and devices [8]. This series of related issues need to be further studied and solved, we must make a detailed analysis of the specific situation and then make the corresponding treatment plan, so as to ensure the safe and reliable operation of the whole system.

4. Conclusion

At present, computer technology has been widely used, and it plays an important role in various fields. However, at the same time there are also some problems, such as a high failure rate of network systems, poor information security and a series of problems seriously restrict the further improvement of China's economy and national defense construction cause. This paper addresses these situations to strengthen the maintenance management system and equipment configuration work, improve the level of hardware to ensure the normal operation of the data transmission process and the quality of information communication, enhance the professional quality of network operation and maintenance personnel as well as business ability, improve the reliability of equipment operation, reduce the problem

of failure in the process of data transmission, so that the entire social information security is effectively guaranteed.

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