

# Analysis of Computer Network Information Based on "Big Data"

**Tianli Li**

City Institute, Dalian University of Technology, Dalian, 116600, China

xinhua@dlut.edu.cn

**Abstract.** With the development of the current era, computer network and large data gradually become part of the people's life, people use the computer to provide convenience for their own life, but at the same time there are many network information problems has to pay attention. This paper analyzes the information security of computer network based on "big data" analysis, and puts forward some solutions.

## 1. Introduction

The development of information technology has gradually provided great convenience for the people's life and provided technical support for the safe production of the enterprise. At the same time large data provide these facilities, but there will also be a corresponding information security issues which should be resolved in a timely manner, so strengthen the computer network information security is very necessary.

## 2. The concept and characteristics of large data

In 2012, one paper in the New York Times column has written: "The 'Big Data Age' has come." And the sociology professor Gary King in Harvard University has said: "Big Data Age is a revolution, it is a huge data resources, so that many fields began to quantify the process, including the academia, business or government, all areas will begin this process." Large data refers to the huge amount of data or massive data, it is a huge quantity, complex structure, a large number of data composed of data collection, with knowledge services that can be integrated data sharing, cross-multiplexing the formation of intellectual resources. The data volume is very large, the data structure is complex, it is as shown in Figure 1, its' mainly including structured data, semi-structured data and unstructured data, data types, video, audio, geographic information, network log and so on. Various types of data processing capacity requirements are further high. However, the value of large data density is very low, you need to use the cloud computer data processing and application which can extract valuable information. Cloud computer processing speed is very fast, with the timeliness feature. It can do rapid analysis and dealing with the data.



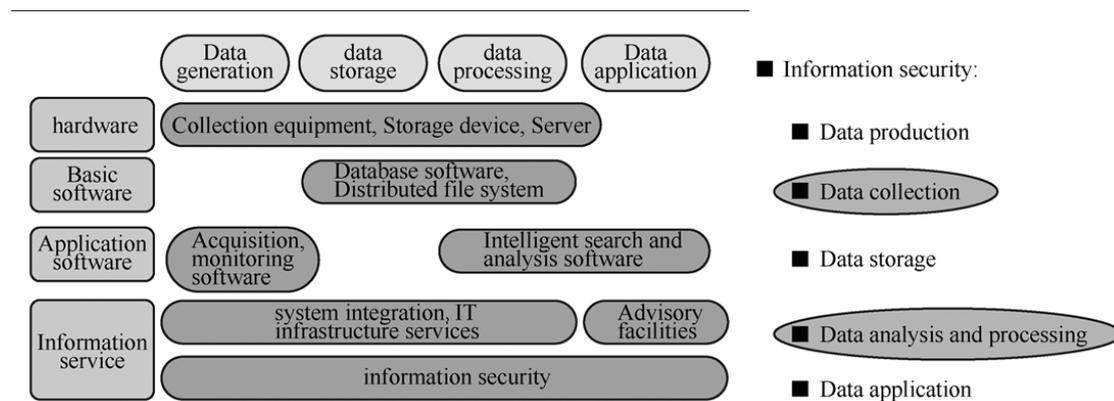


Figure 1, The generation of large data

### 3. The data storage and transmission

In the computer network system, the data storage and transmission is one of the most important part of the information data storage and data flow at the same time, we need to do a good job of security, the current era of computer network security is also in a high demand. First, the encryption of the file, the file can be encrypted to effectively enhance the security of computer network information, data confidentiality and so on. In order to avoid data theft and destruction, in the transmission process of data, we use a digital signature to do the encryption protection, to ensure the safety of data transmission process [1].

In the encryption general data uses two signature technology, divided into line encryption and end to put an end to encryption. Line encryption is mainly providing security protection for the transmission process. End-to-end encryption is the application of encryption software in the transmission process, ensure the security of information transmission process the contents of the file will set a password, information transmission is completed, the information receiver needs to be encrypted, and then get the text, complete the data transmission.

#### Network Security and Protection

In the computer network security, the network account security management is very important, we have to find the impact of security factors, the implementation of internal security protection. Network accounts are the main site of the account, personal chat account, an online banking account, mail account, etc., these accounts must be attached to the safety management, so as to effectively ensure the safety of computer network information. The security of the account, first of all users need to have the security concept when use the account, pay attention to their account and password, enhance the complexity of the password and reduce the possibility of password leakage. Set the password can add some symbols, case, numbers and other factors to enhance the complexity of the password, and update the password every time, enhance the security of the network account. Maintenance of computer network information security, must make a success of network virus prevention and control work to prevent aphids, Trojans and worms and other viruses. First of all, to regularly maintain the computer software, if found software system vulnerabilities must immediately solve the problem, but is required to upgrade the program for the software system to automatically, enhance the software control and system functions. But also through the use of the router's security policy to protect against illegal intrusion, to prevent data transmission in the transmission process of the virus. In addition, to strengthen the external network access, its dynamic encryption processing, set the access permissions, the use of passwords, digital signature means to verify the identity of visitors, and often change the password, thereby improving the personal and corporate computer network security performance. On the other hand, to improve network technology, strengthen the network to fight the virus's ability, but also need to uninstall the software which is not commonly used for computer anti-virus regularly, install high-performance anti-virus software to avoid the network by the virus erosion.

## 4. The rational application of the software

### 4.1. The application of data processing

In today's economy and society data processing and scientific computing cannot be separated from computer network information technology, such as astronomical research, scientific experiment, agricultural production, military exercise, farmland water conservancy facilities and medical services, all need data processing applications. The data processing system can record, sort and calculate the data sent by the input device in time, and process the data into the new information. The advantage of the data processing system is that it can manipulate a large number of complex data of the same nature and accurately calculate the data.

### 4.2. The impact of computer network information technology on enterprise management

At present, the enterprise management specification is inseparable from the computer network information technology support, as shown in Figure 2, in the application of computer networks, design and development projects and programs, financial management, human resources management, marketing situation monitoring, production structure, office automation and so on, they will be applied to the computer network information technology. The computer network information technology applied to the enterprise management, can smooth the normal operation of enterprises, improve the economic efficiency of enterprises, improve the management level of enterprises [4]

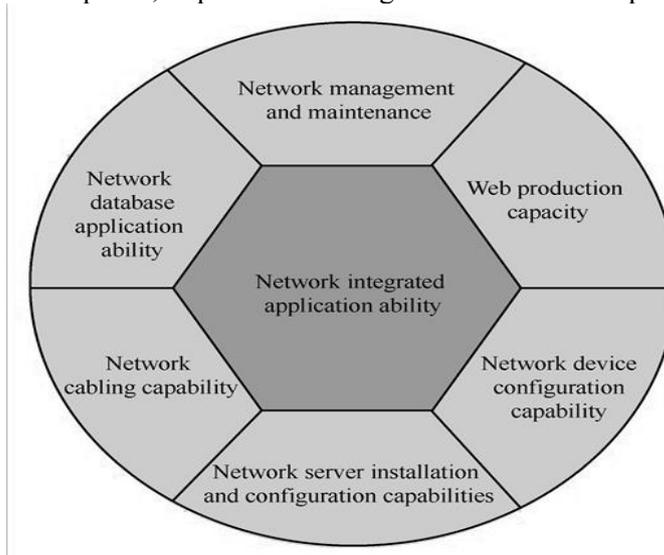


Figure 2, The requirements of using computer network software

### 4.3. Improve the quality of computer-aided technology

The development of computer network information technology has effectively improved the quality of computer aided technology. After the continuous research of researchers, computer aided engineering, computer aided manufacturing and computer aided design are realized to optimize the design, the work and processing system which has reached the highest end. At present, the overall design system composed of high quality software and hardware has been widely used in aviation, electronics, manufacturing, construction, machinery and other related departments. Improve the quality of computer-aided technology, optimize the degree of automation and design quality, and promote the development of new products and development, in line with the full realization of the requirements of modernization.

### 4.4 Promote the development of artificial intelligence

Artificial intelligence is the most advanced subject of computer network information technology in research and application. The emerging and rational of this discipline marks a new stage of social

progress. At present, the field of artificial intelligence is very extensive, including the analysis of the scene, identify the simulation, understand and generate natural language, prove the automatic theorem, design automatic procedures, the development of expert systems, research and development robot.

#### *4.5 Computer network information technology to facilitate the transmission of information*

Computer network technology covers a wide range, effectively shortening the distance between the world, to achieve the dream that " A bosom friend afar brings distance near ". American Albert has advocated the establishment of information on the highway, government departments, literary units, home networks, banks, shops, schools, libraries, factories, railways, mines, tourist attractions, scientific research departments of the computer network. The proposal put forward by the high attention , through the continuous efforts of scientific research personnel, to achieve the idea of the construction of information technology highway. At present, many modern information transmissions is the computer network information technology play a role, for example , with the network, remote friends and family chat , we can collect or query the required information,the ATM machine can deposit money,do bank transfer, we can take the high elevator, watching the video with the network or listening to the audio , the teacher can give lectures on the Internet and so on. Computer network information technology to facilitate the transmission of information, and it has brought a lot of convenience to people's lives and work [2] .

### **5. The application of computer network information based on the "big data" in the enterprise**

#### *5.1. Construct enterprise information security production under the "big data"*

Large data gradually come to our life, people's life appeared a lot of the things like the Internet, chips, terminals and so on, at the same time information technology applications to the enterprise also has played a lot of role in the support of big data gradually, the enterprise's security management is gradually replaced by new technology, for example, wireless sensor technology will be applied to the detection of internal air inside the factory, in order to achieve the Internet of things of the enterprise factory .

*5.1.1. Enterprise factory networking.* The system positioning technology and frequency identification combined with the device sensor will feedback the situation of the mine through the enterprise network real-time monitoring of the actual situation under the factory to achieve the purpose of sharing information, which is the application of corporate networking. Enterprise staffs analyze the information passed back for the factory in many cases which can help them have a very intuitive understanding, such as a variety of gas content, the status of factory workers, the operation of the equipment and other information, the information and analysis to the monitor, they all can effectively avoid the emergence of security problems, and in order to achieve the long-term stability of the purpose of safe production.

*5.1.2. Enterprise cloud computing.* The current cloud computing development prospects are very good, especially the strong support of the current academic and market environment make its development space is more broad. The process of obtaining information is more costly, cloud computing for the traditional computer improvement is very large. The cloud computing technology is also applied to the enterprise industry, including underground environment monitoring data, underground production rate, the preservation of these data needs very large storage equipment. The current cloud computing teacher technology is gradually developed under the new technology of the calculation and the grid background. The core function lies in the analysis of large amounts of data and processing, storage, so it has a very big advantage in the application of cloud computing among enterprises, but also provide a more solid foundation for enterprise safety production of the future. Enterprises need to pay attention to the detection and early warning in the production process, in order to collect large amounts of data to detect the production of the internal environment, we must first collect information monitoring data,the ambient temperature humidity, air flow and other types of information in the enterprise factories, equipment information, including real-time data of various machines.

*5.1.3. Large enterprise data.* In general, the higher the sampling frequency of the enterprise plant, the larger the data capacity is required. For these informations, it is necessary to dig out the valuable information, you can use large data technology in the production of enterprises, to improve the accuracy of monitoring and early warning effectively. Enterprise large data mainly rely on the factory within the various monitoring equipment to pass the data information, including temperature, humidity, equipment, these aspects of the operation of the information, after a large data analysis and comparison, it is able to detect problems and take action in response.

## 5.2. The Application of Information in Enterprise Safety Production under "Big Data"

*5.2.1. Data perception.* Monitoring the production environment, space, access to information perception, including temperature, humidity, equipment, the operation of these data; monitoring the operation of electrical equipment, such as a variety of electrical equipment, power, voltage fluctuations, equipment operating stability in enterprise factories, equipment operating temperature and other data; the staffs have each person's positioning, working status, communication and so on, in order to collect and process a variety of data.

*5.2.2 Information transmission.* The transmission means to transmit the received data onto the cloud computing which stored in the cloud platform for data transmission, processing, storage; information transmission mainly depends on the network terminal interface and the perception of information transmission system to achieve the purpose of monitoring information sharing in the factory. In the process of information transmission there is a temporary function of storage information, encountered much data, when the network is slow or lost connection, it can effectively avoid the loss of information, the data will be stored in the information transfer layer [3].

*5.2.3. Cloud computing storage.* Enterprises in the safe production process, cloud computing storage has played a significant role in the application of production safety information which can effectively protect the enterprise's long-term stable production safety, in the enterprise production information construction which has a very important role. It is composed of communication adaptation module, hardware module, data module and middleware layer module. To achieve cloud computing is mainly in the middleware layer function, that is, building with the management of enterprise information virtual resources, including data computing, storage, network resources.

*5.2.4 Application services.* The senior management, in enterprise need to use the application service layer when they make a decision, the project is mainly used for analyzing large data, including a production environment, space, the access to information and other data. Analysis of daily data to ensure that the various departments of enterprises can obtain the latest production conditions, for the feedback of the production situation, the enterprise environmental data analysis and comparison. In the process of obtaining enterprise data also need identity authentication and authority authentication, which can effectively reduce the vital information leaked out of the enterprise. Many large enterprises can provide huge amounts of data. The use of large data onto the data processing and analysis, can significantly decrease the production process of the emergence of security incidents. And because the scope of the enterprise is relatively large, the data involved will be very much, so managers need to carry out a deeper level of development, so as to ensure more accurate early warning information, that the data has more high quality and completion.

## 6. Concluding remarks

All in all, the current era have very large dependence on large data, and the computer network information security issues have got people's attention gradually. We use the computer network to facilitate the life, but we also need to pay attention to the network information security under large data at the same time, to achieve reliable data information transmission, to truly facilitate people's life and enhance the operational efficiency of enterprises. Computer network information security and stability operation, needs to apply security technology to enhance the efficiency of computer networks while ensuring the safety of information dissemination.

**References**

- [1] Chai Xiaowei. Computer network information security under large data age [J] .Computer & Network, 2016,42 (17): 52-53.
- [2] Lei Bang-lan, Long Zhang-hua.Study on Computer Information Security and Protection Based on Large Data Background [J]. Network Security Technology & Applications, 2016 (5): 56-56.
- [3] Wang Qian, Pan Chen. Based on large data age under the network security vulnerabilities and preventive measures analysis [J]. Network Security Technology and Application, 2017 (2): 77-77.
- [4] Yang Xu, Zhang Ming, Liu Yanqing, etc. Based on large data network behavior analysis and early warning [C] // National Information Security Level Protection Technology Conference .2014.
- [5] Wang Dongfang, Ju Jie. Research on computer network information security and protection strategy in large data age [J]. Wireless Internet Technology .2015