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Application of Virtual Private Network Technology in University Network Information Security

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Application of Virtual Private Network Technology in University Network Information Security

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Abstract. With the rapid progress of network technology, people gradually increase the coverage of the network. Network technology integration in all aspects of people's lives. Information has become everyone's important property. Many schools begin to pay attention to information security. In this process, people found some main measures of network security protection[5]. The application of campus security information protection based on virtual private network technology has become a hot topic of experts. This paper describes the characteristics of virtual private network. Finally, this paper puts forward some suggestions on campus information protection.

Keywords: Virtual Private Network, Campus Network, Information Security

1. Introduction

The rapid progress of science and technology accelerates the development of network technology. The Internet has been integrated with all aspects of our life. The Internet has become an indispensable part of our life. However, the development of network has two sides. It can bring us convenience. It can also bring us some harm. Network information security has become a hot topic in today's era. Many network engineers try to solve these problems. Many campuses begin to pay attention to information security measures. Many educators participated in this research.

However,network information security management is a very complex task. Traditional management methods can not meet the needs of today's network. With the rapid development of network, there are more and more loopholes in campus network[2]. On this basis, experts put forward the virtual private network technology. This technology is also known as VPN remote operation network technology. This kind of network can form an independent LAN. This paper mainly introduces the characteristics of virtual private network and its main technology (see Figure 1). This paper puts forward the application strategy of VPN Technology in campus network information security.

2. Analysis of the characteristics of virtual private network technology

2.1. Blocked cyberspace

In order to quickly solve the problem of network security, people find that the research of common network characteristics is not worth it. People study the security of some special networks. People found the main application problems of campus network. Therefore, we can design the campus network as a closed space. This kind of space is also called local area network. Virtual private network technology is equivalent to the gate of this space. You need a special password to enter this space.

2.2. Higher network security

The restriction of the closed network space makes it impossible for people outside the school to enter the campus network. Students on campus can surf the campus network. However, when students leave school, they must log in VPN to access the campus network. If there is a problem with the student's computer network, VPN will restrict the student's login. This kind of protection measures improve the security of the network. It is even more effective than traditional network security management.

Figure 1. The popularization of network security education should be a compulsory course for college students

2.3. Less money

In the past, in order to solve the problem of campus information security, people spent a lot of money to build firewall. However, there are many loopholes in the new firewall. Hackers outside the school can easily find these loopholes[1]. Information security measures need to spend a lot of money, but no excellent effect. The capital requirement of virtual private network technology is very small. This kind of low price closed space management can improve the network security.

2.4. Higher application value

The appearance of LAN makes people see the value of network enclosed space. VPN technology is an upgraded version of LAN technology. The performance of computer equipment required by VPN technology is very low. Experts believe that VPN technology will have high application value. Its development prospect cannot be underestimated. Virtual network technology has many advantages.

The core competitiveness of network security is its powerful strength.

3. Analysis of the main technologies of VPN

3.1. Data encryption technology

Data encryption technology is the core technology of virtual private network. LAN is a kind of closed network space. Encryption is a lock in this space. People outside the school must know the password of the lock before they can enter the closed cyberspace. If there is no encryption technology, firewall vulnerabilities will still be exposed in the field of vision of hackers. A lot of campus internal data information will be intercepted.

3.2. Network data tunnel technology

In the real network world, there is no data channel without vulnerability. It is impossible to build a completely stable data channel. The tunnel technology used in virtual network can package network data into packets. This process can also be understood as the data packaging process of LAN. This technology is called data tunneling technology. The transmission of data packets in the data channel is relatively safe.

3.3. User authentication technology

In fact, this technology is more common. Many social software have identity authentication technology. This technology can identify the corresponding login users. Through identity authentication technology, we can find the user's personal information[3]. This technology can avoid the problem of illegal landing. When the identity authentication technology detects illegal login, it will limit the process of illegal login. After that, it issues a warning.

3.4. Key management technology

Data encryption technology and key management technology belong to the same system. His main technology is skip. Key management can protect the LAN password from being leaked. Real time key management process can also be implemented. The system will automatically change the LAN password in a specific period of time. This way can be a good obstacle to the social hackers outside the school network attacks. It can complete the process of data dissemination safely.

4. Application analysis of virtual private network technology in university network information security

4.1. Network operation of main campus and sub Campus

Campus virtual local area network is the communication system between each campus. Although every LAN is closed. The main campus of the unified campus is connected with the local area network of the sub campus**Error! Reference source not found.**. Through virtual private network, simple information sharing can be completed between campuses. Users of different campuses do not need specific authentication process to log in. Campus internal network information can be optimized and improved.

Table 1. Evaluation of the application of virtual private network technology in university network information security

Security management	Related technologies	Safety level
Network operation	Network connection between campuses	High
Network connection	Remote login	Medium
Library management	Electronic Library	High
Campus management	Informational management	Medium

4.2. Network connection between students and campus network

Virtual private network is also called remote access network. It can limit where users can use the network. Students can use the campus network at will inside the campus. Students can't log in to the campus network directly after they go out of the campus. Students must have the key to log in to the virtual private network. On this basis, students' remote login to the campus network will also be restricted by the application. Students are generally not able to use special information sharing functions.

4.3. Application of Campus Library Based on virtual private network

The resources of university library are very rich. The library contains a lot of literature data. A lot of library resources include research data of university professors. Therefore, the school attaches great importance to the data security of campus library resources[8]. Through virtual private network technology, campus library can be transformed into e-book archives. And this file is also a closed cyberspace.

4.4. Safe campus information management

Traditional network management has space limitation. The campus can not use mass data transmission. Some data will be intercepted during transmission. With the help of virtual private network technology, the data transmission channels inside the campus increase a lot of paths. Campus information management will become more simple. Fortunately, the campus information management based on LAN is also very safe.

5. The main measures of the application of virtual private network technology in university network information security

5.1. Strengthen the management of computers in Campus

Many universities have internal computer systems. They also have a fixed computer room. Although the computer system is a local area network, the network virus can still spread in this network. Therefore, colleges and universities must strengthen the internal computer security management. Students are not allowed to insert their own U disk into the campus computer. Students are not allowed to use computers in the school to log on to external unsafe websites.

5.2. Key management of virtual network technology

Many schools set the student's user name as the student number. Each student can set the password of network login according to their own needs. Many different passwords cause the pressure of the secret room management of the virtual network technology in the school to increase[7]. This situation may lead to the collapse of the school network system. The school can set the number of students' login password. Both four digit and six digit passwords are acceptable.

5.3. Improve students' awareness of information security

In fact, many students like to log on to external unsafe websites. Some students don't even know that they have logged into the campus intranet. The virus of off campus websites takes students' smart phones as carriers. When students log in to the campus network again, these viruses will enter the internal LAN. Therefore, colleges and universities must improve students' awareness of information security and the awareness of discovering potential security risks.

5.4. The improvement of pressure resistance ability of VPN Technology login system

When students are about to choose courses, they will log on to the campus information portal. Therefore, the pressure resistance ability of VPN Technology landing system has been tested. VPN Technology in many schools will be severely damaged. Many school network systems may even collapse[4]. Schools must improve the ability to withstand pressure of landing system. The school should let VPN technology smoothly bear the load of a large number of users.

6. The practical significance of the application of virtual private network technology in university network information security

6.1. Avoid campus information security accidents

In real life, the problem of information security can not be alleviated. Information theft is very common in our life. Many schools lost a lot of literature data. As we all know, literature data is the core secret of the school. The loss of data is a major accident of school information security. Using virtual private network technology, we can greatly avoid campus security information security accidents.

6.2. Publicity of network security education

We found that many students do not pay attention to network security education. Students' personal information has been stolen repeatedly[9]. This is what we should pay attention to. This also shows that students' awareness of information security is not high. Schools should provide perfect network security education for students. Through virtual private network technology, schools can ensure information security. Through this technology, schools can provide students with network security education in disguise.

6.3. Development trend of virtual private network

The relationship between virtual private network and local area network is close. In order to better

solve the problem of campus information security, experts realize the importance of local area network and virtual network. Many scholars think that the future prospect of virtual private network is infinite. The internal structure of a closed cyberspace can be changed. The network speed of internal cyberspace can also be changed. This is also the future development direction of virtual network.

7. Conclusion

With the rapid progress of our society, network information has become an important part of our life. Through virtual private network technology, we can improve the stability and security of campus internal network. There is no doubt that this is a huge discovery. We should continue to explore the future application value of VPN technology.

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