

# Application Analysis of Virtual Technology in Campus Network Security

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**Abstract :** With the rapid development of network information technology, the current local area network has been changed from exchange LAN to LAN shift, especially the exchange technology based virtual network development, welcomed the new technology and the challenge. The application of virtual technology in the campus network, in particular, can enrich the teaching content and form, greatly improve the teaching quality of education and level, but has certain security hidden danger. This paper focuses on the application of virtual technology in campus network security.

**Keywords :** Virtual Technology; Campus Network; Safety; Application Analysis

Along with the facilities of the campus network in our country and higher requirements on the application of virtual technology, most of the college campus network opened a id self service, but the development of virtual technology in our country is still at primary stage of development, since the self-service system lacks of security, stability, and fails to safely use for the campus network. In the following, the application of virtual technology in the campus network thinking is discussed.

## 1. Security problems of the campus network application

First, campus network security management problems. Specifically a variety of hardware equipment, software system has a different degree of vulnerability, instability, in short, is to allow unauthorized users access to campus network. Lawlessness makes some lawless elements through the campus network can take advantage of things, this is the flaws of the campus network system, which is inevitable, but if we can strengthen management by effective management measures, the security of campus network operation can be improved.

Second, the causes of campus network security problems. At present, there are many factors that cause the campus network security problems, such as campus network Linux, software and hardware equipment security vulnerabilities. Another example is the existence of security loopholes in computer systems or hardware and software facilities, allowing hackers to take advantage of the opportunity. Another, it is considered that with the rapid development of network information technology, most students have not yet established a correct cognition of Internet knowledge, lack of awareness and ability to maintain computer system security, and lack of prevention in the operation process, which increases the security risk of campus network. In addition, the transmission of computer viruses, infectious is very strong, which also greatly increases the security risk of campus network.

## 2. The application of virtual technology in campus network security

First, at this stage, the vast majority of campus network construction has used virtual technology, and the application of virtual technology has the following characteristics: Firstly, storage virtualization. Secondly, network virtualization. Thirdly, server virtualization and so on. Among them, memory virtualization is mainly formed by network sharing. Network virtualization is mostly realized by using routers and other devices. Server virtualization is mostly realized by using XenServer, Hyper-V, VMware and other technologies to effectively connect with virtual machines.

Second, in the process of using virtualization technology in campus network, the most important point is to realize the server system virtualization, specifically, is to realize the dynamic management of physical resources, and the use of network hardware

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facilities to transfer campus network information. The most typical is the abstract management of hardware devices, disks, central processing units, etc. From the perspective of a large number of practices, server virtualization can break through the limitations of traditional time and space, and actively transform the traditional network resources of a server into multiple network servers, so as to continuously improve the efficiency and level of resource utilization, and continuously improve the efficiency and level of server application through virtual technology. Generally speaking, XenServer, Hyper-V, VMware and other technologies are used to strengthen the simplified management of the system, and multiple virtual machines are established to improve the application efficiency and level of virtual machines in the physical server. However, there are many applications of virtual technology in campus network, so we should pay attention to writing different language programs when designing the system structure. For example, Java, PHP and other degrees of popularity. In the application of virtual technology in database system, attention should be paid to importing SQLServer, MySQL and other programs. In the application of parameter collection, attention should be paid to the independent physical server to collect all kinds of data in the virtual machine at a high level, so as to continuously improve the security of campus network.

Third, the active use of virtual storage technology. As we all know, colleges and universities have a great variety of information, network storage space has a greater demand, especially the increase of electronic books, student archives information, network storage space pressure. Despite the rapid development of various cloud storage technologies at present, this cloud storage mode has a greater effect on individuals, but the application in the campus network requires a large investment, and the network storage and sharing operability is poor. Most universities use the way to add servers to enrich the storage capacity, but there are problems such as low utilization rate and difficult capacity expansion. Based on this, it is very important to make full use of virtual storage technology to improve the utilization rate of storage space, and pay attention to realize intelligent management and automatic cleaning, so as to realize real-time sharing of big data.

Fourth, play the role of network virtualization. In the process of building, configuration should be given to improvement of network equipment, and the physical equipment the client connection port, conditions allow cases virtual multiple devices to a device, and unified process virtual machine through the centralized network system software and hardware resource data. During the period of network virtualization, we should realize the interconnection of multiple devices, in order to exercise unified network management and scheduling of these devices. In the current campus network construction process, the most widely used network virtualization technology is intelligent elastic architecture and virtual switching system.

Fifth, pay attention to play the role of campus network VALN. Virtual technology is most used in the campus virtual local area network, specifically, the use of equipment to achieve regional coverage of the campus network, and improve the efficiency and level of virtual work. VALN technology can use the physical server to achieve logical partitioning, and for calculators with the same requirement instruction to achieve the same attribute processing. However, due to the deep variation of the client, different physical network segments occur frequently in the VALN workstation. The introduction of network virtualization technology can ensure that the internal thin traffic will not be transferred, thus improving the efficiency and level of traffic utilization, saving equipment costs and reducing the difficulty of management. In the new situation, IP multicast, network layer and MAC address are most widely used when VALN port is set up.

### **3. The campus network virtual machine simplification and network security application**

First, improve operability. Under the new situation, the business department of colleges and universities should use Veritas software and tie the multiple servers to the same thermal environment, so that when running on the server, there is a perception application if the primary server hardware and software mistakes. It can prevent the problems such as application downtime, and it is very important to the network to apply in the data center of colleges and universities. We should pay attention to improve the level of service. However, in order to create a high availability cluster, the university data center should be prepared and managed more than twice.

Second, realize the automatic management of the equipment. To the application of virtual technology in the campus network, many server programs achieve automatic management, which is conducive to strengthening the management of the main system to the sub-system. In order to improve the management efficiency and level, we should pay attention to the configuration of a server into an independent Windows 2008 server as a virtual management server, and improve the operability, automation level, as well as centralized management. In the new situation, the application of distributed services based on virtualization plays a vital role in the data center, which can effectively service efficiency and level, and ensure the security of services.

Third, we should pay more attention to improve the campus network security, especially to take advantage of stable and

efficient antivirus software to maintain system security, on the same website layout of avoid by all means the same site development environment, such as hacking, virus invasion problem, which can avoid server damage risk, and prevent the server issue has been paralyzed. Another, strengthen the maintenance and management of the campus network environment prevents data theft or damage caused by all kinds of virus invasion, so that confidential files are made public. In addition, regularly update and upgrade the system to ensure the security of campus network, but also to optimize the efficiency and level of virtual technology application, and maximize the expansion of server service projects.

Fourth, deploy firewalls. A firewall is set between the campus network and the external network to build a perfect security guarantee. The server is placed on the firewall, the internal and external networks are separated on both sides of the firewall, and the internal network port is connected to the switch, so that only the campus public services can be accessed. For example, FTP, WWW and so on. First of all to ensure that the internal network resources are not illegal access or damage, timely track and audit campus network security accidents.

#### **4. Conclusion**

To sum up, with the application of virtual technology in campus network, the efficiency and level of network application have been greatly improved. Under the new situation, university staff should correctly recognize the problems in the construction of campus network security, and pay attention to all-round, multi-angle play a role of virtual technology in the application of the campus network security and value, so as to improve the campus network in the virtual machine simplified and effective network security, and make full use of the virtual technology to maintain secure and stable operation of the campus network. We should create a good environment for the network running for the majority of teachers and students, and consolidate the network for the healthy development of higher education infrastructure.

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