

# On the application of virtual machine technology in the teaching of computer network security in Higher Vocational Education

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**ABSTRACT.** *With the rapid development of information technology, computer has been applied and popularized in various fields of society, which is also a higher requirement of computer network security teaching. Virtual machine technology has become an indispensable part of teaching, which can make the cost investment in teaching be effectively solved. At the same time, the application of virtual machine technology can make students learn Enthusiasm has been mobilized, and teaching effectiveness is more obvious.*

**KEYWORDS:** *Virtual machine technology, Higher vocational computer, Network security teaching*

## 1. Introduction

In the Internet era, people pay more attention to the problems related to computer network security, which to a certain extent makes the demand for talents in this field larger and the standards higher. As far as the current situation is concerned, some colleges and universities in higher vocational education have applied virtual machine technology, and the use of technology has greatly promoted the development of the field [1].

## 2. The Actual Situation of Security Teaching in Computer Network Security of Higher Vocational Education

In the process of continuous development of computer technology, it is gradually used in various fields, but also causes security problems in the network, which gradually attracts people's attention. In the process of computer development, there are a lot of problems related to network security, but also brought a relatively large loss. In this context, the actual demand for network security personnel is relatively large. However, in terms of the current social development, there are few security technical talents. In order to meet the actual teaching needs, some vocational colleges have set up courses related to network security. In the study of network security problems, it will involve the problem that files are infected by Trojans or viruses, which makes the operation and maintenance of the computer room more difficult. However, if the teaching can not be carried out in the computer room, the implementation of network security teaching will need to reconfigure the teaching equipment, which will be a relatively large income for higher vocational colleges, which will make the school bear a greater economic burden. Therefore, in the process of network security teaching, teaching practice is often difficult to carry out effectively. In this process, it is difficult for students to truly master the technology, and their practical ability will be relatively lacking.

## 3. Application Strategy of Virtual Machine Technology in Computer Network Security Teaching in Higher Vocational Education

### 3.1 Building a Good Teaching Environment

In order to make the virtual machine technology effectively used in the network security teaching, the school should increase the investment of human, financial and material resources in relevant aspects, and then make the experimental environment in the network continuously perfect. Therefore, higher vocational colleges should install software related to this, so that the system can be continuously improved when using the virtual machine, and the operating system can match with the computer, so as to create good conditions for the effective connection of the network, so that the virtual machine can give full play to its own functions and effectiveness

when using, and the overall teaching effect can be greatly improved.

### ***3.2 Set the Number of Virtual Machines Reasonably***

In the application of virtual machine in teaching, the actual situation should be taken as the basis and standard, and its quantity should be set reasonably to prevent the waste of hardware resources due to the excessive quantity. Generally speaking, setting two virtual machines in teaching can meet the training needs [2]. If there are too many virtual machines, the actual running speed of the system will be greatly affected, which is not conducive to the effective teaching. At the same time, when setting up the virtual machine, it needs to install the corresponding software, use the network bridging method to integrate the virtual machine into the network, so that the computer simulation network environment can be reproduced, and the actual learning needs of students can be fully met. In addition, the design of the virtual machine needs to occupy a large amount of memory, so when selecting the computer room, it needs to ensure that the corresponding configuration of the computer room is sufficient to prevent the system from getting stuck in teaching.

### ***3.3 The Combination of Virtual Machine and Teaching Content***

In the application of virtual machine, the main teaching content should be taken as the main body, so that students can flexibly use virtual machine technology. For example, when teaching the use of hacker tools and tools, teachers can use multimedia to introduce the tools used by hackers when they invade, the corresponding knowledge principles, use methods, tool types, hazards and other aspects to students. Then use the virtual machine technology to demonstrate the actual operation. The demonstration needs to be carried out step by step, so that students can have a clearer understanding and understanding of the operation process of hacker using tools. With the help of virtual machine, students will better understand the characteristics and use of virtual machine [3]. After the demonstration, teachers need to play back the teaching content properly according to the teaching feedback given by students in learning, strengthen the explanation of key and difficult contents, so as to make the overall teaching more targeted and practical. In addition, teachers can guide students in teaching, so that students can be connected with their own life in learning, explore and think about hacker attacks, so that students' enthusiasm for network security can be aroused, and more energy can be put into learning.

### ***3.4 The Combination of Virtual Machine and Network Experiment***

Network experiment is an important part of teaching, which has a direct impact on the quality of network security teaching. However, in the traditional teaching, the safety teaching is often hindered in different ways, which makes it difficult to carry out the safety experiment normally. Therefore, the number of students' experiments is difficult to be fully guaranteed. From the point of view of maintenance and management of network equipment, students are required to carry out relevant network experiments in the form of groups in learning, which to a certain extent affects the independence of network experiments. Students with poor learning ability and practical ability are difficult to get better development, thus greatly reducing the effect of network experiments in use [4]. The application of virtual machine can build a more real network environment for students, ensure the independence of students in learning, and ensure the effect of students in learning. For example, in the study of hacker attack experiment, students can combine their own interests and hobbies to make independent choice of relevant practical software. In this case, the experiment will be more diverse, and students can also get better development in the aspect of personalization.

### ***3.5 Training Students' Ability of Virtual Machine Maintenance and Assembly***

In order to help students to strengthen the knowledge of computer network security, teachers can guide students to maintain and assemble virtual machines, so that students' practical ability can be comprehensively improved, and then computer security can be better defended. In order to fully cultivate the ability of maintenance and assembly, the school needs to improve the installation conditions of software and hardware, and install the image software so that the files can be restored at any time [5]. At the same time, in order to make students have a deeper understanding of installation knowledge, it is necessary to organize them to learn relevant knowledge and classify them, so as to create good conditions for virtual machine installation. In addition, the virtual machine can be used to install various software to prevent students from damaging the computer during learning.

#### 4. Key Points in Virtual Machine Teaching

Compared with the students in Colleges and universities, the students in higher vocational colleges are relatively low at the starting point, while the current society has higher and higher requirements for the computer application ability of college students, which requires teachers to improve teaching methods, mobilize students' initiative and enthusiasm in learning, and enhance students' practical application ability of computers. For the computer network security, it involves a lot of content, especially in the theoretical knowledge. In the traditional teaching mode, teachers are regarded as the center. In this case, many students are not interested in computer learning, their independent consciousness and creativity are limited, and students' main position in learning is difficult to give full play to [6]. In terms of the current computer teaching, it is mainly carried out in the computer room. The school will manage the computer room in a unified way. After the computer is shut down, the data in the computer room will be deleted or recovered, so that the data stored in the computer can be cleared, and its security and stability can be guaranteed. This is mainly because the virtual system used in the network will not conflict with the operating system in the computer room, and will not affect the course. The application of virtual machine technology can simulate and demonstrate the environment needed in the network security teaching, and enrich the teaching means. When teaching the principle content, students can practice in person to help students strengthen the understanding and absorption of the principle.

#### 5. Conclusion

In a word, virtual machine technology is a relatively advanced technology. The application of virtual machine technology in the teaching of computer network security can create good conditions for the orderly development of teaching and ensure the normal use of computers. It can specifically solve the problem of the lack of practical ability of current students in learning.

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