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Campus Network Security Defense Strategy

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Abstract. This paper analyzes the characteristics of campus network and focuses on the key issues of campus network security prevention. The prevention strategies are analyzed from intranet security monitoring, network operation and other aspects, and the structure of campus network security system is designed.

1. Introduction

Now we have entered into the information age. The rapid development of computer science and technology as well as multimedia technology has brought new vitality to the information construction of colleges and universities, which must rely on the campus network. Only the establishment of high-speed, stable, safe and reliable campus network can the application systems of digital information resources, network services, information services and information management system run normally. With the speed development of the Internet and the promotion and application of campus network in the schools, colleges and universities are establishing their own network in order to realize the sharing of resources and expand the popularity of the school. Thus the network security issues become increasingly prominent, and security has become the forefront of network management and implementation.

2. Intranet virus prevention

All sorts of websites and application program result in the transmission of the virus, which causes a serious impact on network security. Students often use files that can be moved simultaneously on the storage device to replicate different calculations which are caused by virus infection. In this paper, the virus security intelligence is divided into leading security solutions, namely, different security strategies for virus will be achieved in three witches of the network convergence layer according to the needs.

By setting the corresponding virus strategy in the switch together with the top network authentication client software, specifically detect specific computer viruses and implementation strategies. When the switch detects the virus, it will quickly switch to the user who releases the message of reminding the user about the anti-virus information, at the same time, the configuration of network administrator is started for the user program. If the administrator set the time of 2 hours, the virus is discovered within 2 hours, the network will be opened to the user again, and then detect the virus; the user must kill the virus and open it for him. If it is not killed, continue to close, and then continue the circle detection with 2 hours as the duration until the virus is killed.

2.1 Intranet security monitoring

The use of online personal access control and tracking security technology products, broadband access, security control and access tracking routing switch integrate firewall security. What you have to do now is to do or not to do. That is the network security access at access point controls the user.

The innovation of network security and the traditional way of thinking overcome the defects of traditional network, namely “outwardly strong but inwardly weak”.

Network monitoring software. Topstar develops its own three-layer switch to realize real-time monitoring of network, including replaying the history records that the device can play, real-time recording screen snapshots of a computer desk, freely choosing the time interval for each record of screen snapshot, monitoring one or more workstations at the same time and other functions.

2.2 Implementation of network operations ----- anti-agent, anti-counterfeiting

Nowadays, in the construction of campus network, schools provide Internet connection for the use of more students, which will greatly consume network resources and bring a great loss to the students. Thus they can use 802.1x extended function and 802.1x client on the three-layer switch to prevent unauthorized users from using the agent software to use services or access network resources from the authenticated port. The user agent, agent relation and agent server detection are used by the client-authenticated agent server. Schools can provide a network port and a user.

As a restless and curious group, the students often take the school network as a test environment to test a variety of network functions, hence, a method can be found in the network resources to control students’ use of network. Use the three-layer switch in the convergence layer and the cooperation between the three-layer switch and client software. Once a fake DHCP server is found, the account will be blocked, so it can not share the network source, and its fake information cannot play any role in the network.

The network provides a unique solution according to the weak link of network security and operation management. Internal network security can prevent illegal users’ campus network technology, which provides a safe network environment for school network.

3. Campus network security system design

According to the characteristics of campus network and the security issues of the network in colleges and universities, we will achieve a certain security in isolation, monitoring and the virus through Cisco anti-virus, early warning system, anti-virus software Cisco network security web version, thus bring school network with safe and practical campus network.

3.1 Deployment of anti-virus wall

The deployment of firewall between intranet and extranet can form an isolation so as to ensure the relative security of network. Access to certain services such as WWW, open e-mail, FTP, DNS and other network users can only use the Internet, which not only protects network resources from unauthorized access or destruction, but also prevents the internal user from using bad external resources. In addition, it is able to track and audit the security incidents.

3.2 Deployment of Cisco network security early warning system

The use of the security system with strong intrusion detection capability will be able to achieve a certain technical security. Adopt a more authoritative security early warning system, access to Cisco center switch to conduct real-time detection of various acts from the external network and campus intranet.

3.3 Deployment of Cisco anti-virus software (web version)

In the realization of virus defense of internal network, you can use a certain strategy to realize the remote installation, intelligent upgrade, remote alarm, centralized management, checking and killing virus and distribution of other security protection functions.

3.4 Topological structure diagram

Campus network security topological structure diagram is shown in Figure 1.

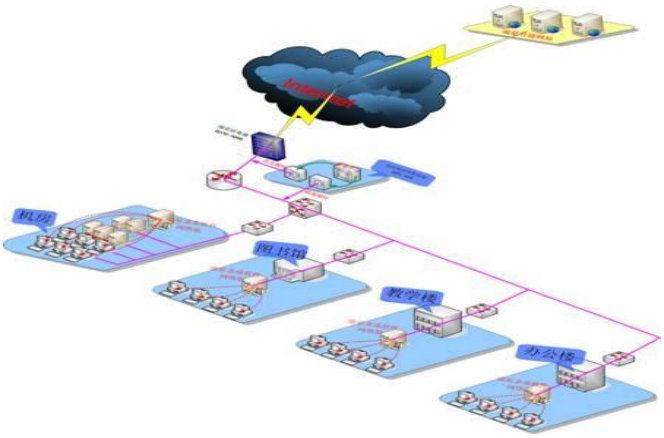

Figure 1. Campus network security implementation plan

3.5 Selected products

(1) Cisco anti-virus software (web version) (2) Cisco anti-virus wall

(3) Cisco network security early warning system

4. Summary

Through the planning and design of safe campus network, it gets more information security without changing the original network structure so as to ensure the security of the school internal network:

(1) The realization of virus prevention and killing of the whole campus network can effectively prevent the spread of the virus in the campus network.

(2) Use firewall to detect the security of the service and reduce the risk.

(3) Controlling the access application of internal and external users will effectively improve the applicability and security of the internal server.

(4) Centralized and unified security management system will be provided. The administrators can develop a unified security strategy for internal and external users through the console.

(5) In real-time recording and statistics, the administrators can carry out certain security operations according to the information in order to achieve the safe operation of the network.

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