The Design of OA System Border Security Architecture Based on Security Isolation and Information Exchange Technology

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Abstract. According to the characteristics of OA system, the paper designs the protective system of network application boundary security isolation based on OA. The advanced security isolation exchange technology is applied to the OA system to protect the internal network security, and form full protection system architecture.

Introduction

In recent years, with the rapid development of the information construction, the OA system arises and develops rapidly [1]. In the construction of OA system, it is essential to exchange information among the internet, enterprise extra-net and enterprise intranet. With the rapid development of OA, there is increasing pressure in the network security problems. To solve the problems of the enterprise office internal security problem, a security information infrastructural platform should be built to provide a good running environment for OA. Both the traditional firewall and intrusion detection technology can provide security protection to some certain extent. However, they just are passive defenses, and not good ensuring security protection [2-5]. In this case, security isolation and information exchange technology is arising, which is an active defense system based on exists technology. It can meet the urgent information exchange requirement between the enterprise intranet and extra-net, and the different security level networks [6-9].

Security isolation and information exchange technology

Security isolation and information exchange technology realizes the communication isolation between different security level networks, and provides security information exchange and share, in which all of the communication realizes data ferry under blocking network protocols. Meanwhile, the "network protocol-security isolation and exchange protocol-network protocol" can filter most loophole attack base on network protocol to realize protocol isolation between the intranet and extra-net. The system often is arranged in different security level networks to intercept the transmission data package, parse data package, and extract the "pure data" without connection information. Through refract isolation technology, in the first place, the system exchange "pure data" according to flow direction of the data package between the intranet and extra-net; then, it reconstructs connect information by data to exchange information between two different security level networks.

The constitution of security isolation and information exchange system is shown as Fig.1.

Fig.1 The constitution of security isolation and information exchange system

The position of security isolation and information exchange system

Security isolation and information exchange technology can be applied between different security level networks, which mainly is used in: (1)between different security levels of networks; (2)between different security areas of same network; (3)between the network with physical isolation and secret network; (4)between the enterprise network and internet. Specific deployment locations as are shown as follows.

Security isolation and information exchange system is applied between the different security levels networks, which is shown in Fig.2.

Fig.2 The application in different security level networks

Security isolation and information exchange system is applied between the different security areas of same enterprise network, which is shown in Fig.3.

Fig.3 The application in different security area of the same network

Security isolation and information exchange system is applied between the network with physical isolation and secret network, which is shown in Fig.4.

Fig.4 The application in the network with physical isolation and secret network

Security isolation and information exchange system is applied between the intranet and internet, which is shown in Fig.5.

Fig.5 The application in intranet and internet

The apply position of security isolation and information exchange system in the OA system

In the design of OA system, the function of security isolation and information exchange system is protecting intranet of OA system. Therefore, security isolation and information exchange system should be in the intranet and extra-net border. In the network architecture of OA system, the inside machine links OA extra-net that belongs to untrustworthy network by the border protection module; the outside machine links the office area that belongs to trusted network by the identity authentication module to preserve and handle the important internal information. First, the inside machine preserves and handles the request from extra-net, then, the inside machine submits it to outside machine, and receives present data from the office area data analysis server. From data transmission analysis, the inside machine uses fixed form to handle exchange data with office area data, which should belong to data transfer boundary; from the network architecture, the inside machine that belongs to the same network connects the OA extra-net directly. Therefore, the border between the inside machine and outside machine network is the border between the trust network and untrustworthy network.

As a device of the intranet depth security, security isolation and information exchange system should be installed between the OA system extra-net and intranet, which is border of the network data exchange. In the design framework of OA system, according to data exchange\network architecture, the position of security isolation and information exchange system is the border where is between inside machine and OA internal network. Specific deployment as is shown in Fig.6.

Fig.6 The position of security isolation and information exchange system

Conclusions

According to the characteristics of an OA environment, the paper constructs the security network border security isolation protection system. The study can apply to specific office environment system, realize security management of office internal network, improve security and controllability greatly, and promote the healthy development of the OA system construction.

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