Construction of a Network Security System for a College of Education in Thai Nguyen

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***Abstract*—This thesis explores the construction of a network security system for a College of Education in Thai Nguyen, Vietnam. It covers the fundamentals of computer networks and information security, including network types, security principles, and various security solutions. The work discusses firewall types and their functions, as well as the implementation of security measures at the endpoint. The thesis concludes that while the system addresses current security needs, it acknowledges limitations due to time and practical knowledge constraints. The study highlights the importance of a multi-layered security approach and the use of Cisco technologies for network security.**

***Index Terms*—network security, firewall, Cisco, security measures, endpoint protection, access control**

I. Introduction

The thesis provides an overview of computer networks and information security, discussing network types, security principles, and security solutions. It aims to construct a network security system for a College of Education in Thai Nguyen, addressing the increasing security risks in the digital age. The study covers the fundamentals of network security, including network types, security principles, and the implementation of security measures at the endpoint [1]. Related earlier ICTU undergraduate theses provide context for this English summary [4].

II. Methods

The methods section covers the theoretical aspects of network security, including network types, security principles, and firewall configurations. The author discusses static and dynamic packet filtering, circuit-level firewalls, application layer firewalls, and the Cisco PIX technology. The implementation of security measures at the endpoint, such as using IronPort and Cisco NAC devices, is also discussed. The thesis emphasizes the use of Cisco Security Device Manager (SDM) for AAA configuration and the importance of maintaining network security through continuous monitoring and reporting [1].

III. Results

The results show that various firewall types can filter and control network traffic, with static packet filtering and dynamic packet filtering being particularly effective. The thesis also highlights the importance of implementing security measures at the endpoint, such as using IronPort and Cisco NAC devices. The implemented functions include static and dynamic packet filtering, as well as the use of IronPort and Cisco NAC devices for endpoint protection [1].

IV. Discussion

The discussion focuses on the implementation of security measures, including the use of Cisco Security Device Manager (SDM) for AAA configuration and the importance of maintaining network security through continuous monitoring and reporting. The author emphasizes the need for a multi-layered security approach to effectively protect network resources. The study highlights the importance of using Cisco technologies for network security, such as the Cisco PIX technology and the use of IronPort and Cisco NAC devices for endpoint protection [1].

V. Conclusion

The thesis concludes that the constructed security system addresses current needs but acknowledges limitations due to time and practical knowledge constraints. The author emphasizes the importance of continuous monitoring and reporting to maintain network security. The study highlights the use of Cisco technologies, such as the Cisco PIX and NAC devices, for effective network security. While the system is comprehensive, it requires ongoing evaluation and improvement [1].

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References

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