Application of Routing and Access Control Lists in Designing a Hierarchical Network Model for the Department of Information Technology - Thai Nguyen University

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***Abstract*—This thesis explores the application of routing and Access Control Lists (ACLs) in designing a hierarchical network model for the Department of Information Technology at Thai Nguyen University. The author delves into the fundamental concepts of routers, routing protocols, and ACLs, providing a comprehensive understanding of their roles in network security and management. The study uses Packet Tracer software to configure and implement these concepts, resulting in a successful project completion. However, the thesis does not include specific numerical evaluations of the implemented functions, focusing instead on the practical application and configuration of routing and ACLs.**

***Index Terms*—routing, ACLs, network design, Packet Tracer, hierarchical network, network security**

I. Introduction

The introduction highlights the increasing importance of network security and management in the context of modern information technology. It emphasizes the complexity of network security and the need for various solutions, particularly the roles of routers and ACLs in managing network access and security. The author discusses the challenges faced in designing a secure and efficient hierarchical network model, which is crucial for the Department of Information Technology at Thai Nguyen University. The study aims to provide a thorough understanding of routing and ACLs, enabling the design and implementation of a robust network infrastructure [1]. Related earlier ICTU undergraduate theses provide context for this English summary [4], [5]. Published books on the methods and subject of this project provide context for this English summary [6].

II. Methods

The methods section details the study of routing and ACLs, including static and dynamic routing, and the configuration of ACLs. The author uses Packet Tracer software to apply these concepts in designing a hierarchical network model. The project involves several tasks, such as configuring routers, setting up routing protocols, and implementing ACLs to control network access. The author follows a structured approach, starting with an overview of routers and their components, then moving on to routing protocols and ACLs. The implementation process is documented step-by-step, providing a clear understanding of the practical application of these concepts [1].

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III. Results

The results section describes the successful completion of the project, with the author gaining a thorough understanding of routing and ACLs, and their practical application in network design. The hierarchical network model was successfully configured using Packet Tracer, and the author was able to implement various ACLs to control network access. However, the thesis does not provide specific numerical evaluations of the implemented functions, focusing instead on the practical application and configuration of routing and ACLs [1].

IV. Discussion

The discussion section outlines the achievements of the project and suggests future research directions. The author successfully completed the project, gaining a comprehensive understanding of routing and ACLs, and their practical application in network design. The hierarchical network model was successfully configured, and various ACLs were implemented to control network access. The author acknowledges the limitations due to time constraints and suggests that future research should focus on integrating the findings with related studies to fully design and build network systems. The project provides a solid foundation for further exploration in network security and management [1].

V. Conclusion

The conclusion reiterates the successful completion of the project and acknowledges the limitations due to time constraints. The project successfully demonstrated the application of routing and ACLs in designing a hierarchical network model, providing valuable insights into network security and management. The author emphasizes the need for further research to fully integrate the findings with related studies and build comprehensive network systems [1].

References

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