Designing a Computer Network for the Thác Bà Hydropower Plant

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***Abstract*—This thesis focuses on the design and implementation of a computer network for the Thác Bà Hydropower Plant. The author reviews basic concepts of computer networks, including types of networks, services, and devices. The study outlines the network design process, including analysis, traffic flow evaluation, and cost calculation. The author also discusses security measures and physical cable layout. However, due to time constraints, the implementation was limited to a model and virtual software application, without real-world deployment. The network design aims to support data storage, exchange, and information sharing, ensuring information security and providing services based on the global IP protocol. The author acknowledges the limitations of the project and plans to continue learning about network management and Windows Server 2003.**

***Index Terms*—computer network, hydropower plant, WAN, LAN, security**

I. Introduction

The introduction covers fundamental knowledge of computer networks, such as basic concepts, types of networks, and essential services. It also introduces network devices and basic knowledge of Wide Area Networks (WAN) and their connection technologies. The author reviews various types of networks, including Local Area Networks (LAN) and Wide Area Networks (WAN), and discusses the importance of network services such as file sharing, printing, and remote access. The introduction also highlights the need for secure and reliable network infrastructure in the context of the Thác Bà Hydropower Plant, emphasizing the role of network design in supporting business, administrative, and management objectives. [1]

II. Methods

The methods section details the network design process, including analysis, traffic flow evaluation, and cost calculation. The author also discusses security measures and physical cable layout. The design was implemented using a model and virtual software application. The author first conducted a thorough analysis of the existing network infrastructure, identifying key requirements and constraints. Traffic flow was evaluated to ensure efficient data transmission, and cost calculations were performed to determine the feasibility of different design options. Security measures were discussed, including the use of firewalls and encryption to protect sensitive data. Physical cable layout was also considered to ensure reliable connectivity between network devices. [1]

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III. Results

The results are limited due to time constraints. The author only built a model and implemented it on virtual software, without real-world deployment. The network design included a Local Area Network (LAN) for internal use, a Wide Area Network (WAN) for external connectivity, and a security framework to protect against unauthorized access. The author also developed a plan for IP address allocation and physical cable placement. However, due to the virtual nature of the implementation, the author could not conduct a comprehensive evaluation of the network's performance or security. The author acknowledges the limitations of the project and plans to continue learning about network management and Windows Server 2003. [1]

IV. Discussion

The discussion highlights the importance of a computer network for the Thác Bà Hydropower Plant, emphasizing the need for data storage, exchange, and information sharing. The network is designed to ensure information security and to provide services based on the global IP protocol. The author also mentions the need for detailed network design and optimization for specific agencies. The author notes that the virtual implementation did not allow for a thorough evaluation of the network's performance and security. However, the author believes that the design provides a solid foundation for future real-world deployment. The author also emphasizes the importance of ongoing learning and development in network management and Windows Server 2003. [1]

V. Conclusion

The author concludes that the internal network was designed to meet various business, administrative, and management objectives. The network design also supports the integration of information systems within the company and the industry. The author acknowledges the limitations of the project and plans to continue learning about network management and Windows Server 2003. The author believes that with more time and resources, a more comprehensive and practical implementation could be achieved. The author also emphasizes the importance of continuous learning and improvement in network design and management. [1]

References

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