Mid Project Proposal
On
Computer Networks
Course Code: CSE3634

Team Name: Binary Wing

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Project Name: Traffic Generator, Sink, and Hub Network Implementation

Introduction:
Our project involves the implementation of a Traffic Generator, a Sink, and a Hub. Computer networks have become an integral part of modern-day communication, and they rely on various components and devices to transmit data and information between different nodes. In this project, we aim to design and implement a simple network topology that will allow us to generate and capture network traffic using a Traffic Generator and Sink, respectively. The Hub will act as a central point where all the data will converge and distribute to the connected devices. The primary objective of this project is to demonstrate how these devices work together to facilitate efficient communication within a network. Through this project, we hope to gain a better understanding of the practical aspects of network design and implementation while exploring the role of each device in a typical network topology.

Motivation
The motivation behind implementing the Traffic Generator, Sink, and Hub network project is to gain practical knowledge and experience in designing and implementing a simple computer network. This project provides an opportunity to explore the roles of different network devices and components, such as Traffic Generators, Sinks, and Hubs, and how they work together to facilitate efficient communication between nodes. Through this project, we can gain hands-on experience in network design, configuration, and troubleshooting, which are essential skills for network engineers and IT professionals. Additionally, this project allows us to understand the importance of traffic generation and traffic capture in network performance analysis and optimization.

Overall, the project provides a valuable learning experience that can help prepare us for real-world network implementation and management scenarios.

Background

To understand the background of the Traffic Generator, Sink, and Hub network project, it is essential to have a basic understanding of computer networks. A computer network is a collection of interconnected devices that communicate and exchange data using various network protocols. Networks can range from small local area networks (LANs) to large wide area networks (WANs) that span across continents.

To facilitate communication between different devices in a network, various components are used, including network interface cards (NICs), switches, routers, and hubs. Each of these components serves a specific purpose in a network and is essential for effective communication.

In this project, we will focus on the Traffic Generator, Sink, and Hub devices. A Traffic Generator is a device that generates network traffic for testing, analysis, and optimization purposes. A Sink is a device that captures network traffic, allowing for analysis and optimization of network performance. A Hub is a network device that connects multiple devices in a network and facilitates communication between them. Understanding the roles of these devices and their interactions is critical for designing and implementing effective computer networks. This project aims to provide a hands-on experience for learning about these devices and their functions and how they work together in a network topology.

Potential Outcomes

Upon completion of the Traffic Generator, Sink, and Hub network project, we can expect to achieve several outcomes, including:

1. Understanding of network design and implementation
2. Hands-on experience in network configuration: We will have the opportunity to configure and troubleshoot network devices, including Traffic Generators, Sinks, and Hubs. This experience will be invaluable in preparing us for real-world network implementation and management scenarios.
3. Understanding of traffic generation and analysis: By implementing the Traffic Generator and Sink devices, we will gain a better understanding of traffic generation and capture in network performance analysis and optimization. We will learn how to generate and capture network traffic using tools such as Wireshark and analyze the traffic to identify performance issues.
4. Practical experience in programming: To generate and analyze network traffic, We need to develop applications using programming languages such as C++.

This experience will help us develop our programming skills and enable us to apply these skills to other projects in the future.

Conclusion:

The Traffic Generator, Sink, and Hub network project provides a hands-on learning opportunity for those interested in computer networks. Upon completion, we can expect to gain practical knowledge and experience in network design, configuration, traffic generation and analysis, and programming. These skills are valuable for anyone pursuing a career in network engineering or IT.