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Embedded Ethernet-Based Portable Network Protocol Analyzer: A Design Report

by
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April 25, 2007

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EXECUTIVE SUMMARY

The purpose of this document is to present the results and findings for the Network Statistics Analyzer Senior Design project. The report includes a research and design overview, as well as detailed commentary on the hardware, software, and system design aspects of the project, along with project management information.

The project began in the fall semester of 2006 and continued through the spring semester of 2007 as a Senior Design Project for the Senior Design classes of CPET 490 and CPET 491. The project was identified and planned in the first session and further planned in the second session, along with being implemented.

The project attempts to solve the problem of performing network packet capturing in situations that require a portable device or situations in which a physically small, discreet device is attractive for performing such operations. Traditional packet capturing is done on dedicated computers that are usually statically located both physically and logically, in terms of network connectedness.

The project aims to solve the technical problem through the use of a self-contained, self-powered, physically small and discreet embedded Ethernet device that is programmed to carry out packet capturing functions.

Because of the nature of network packet capturing software and methods in general, necessary considerations must be given to legality issues of privacy and freedom of speech. Results of research into these concerns are included in the report.

The development process for this project has resulted in the conclusion that it is possible to have a packet capture device that is self-contained, self-powered, portable, and discreet while also being within legal operating limits.

Keywords: Embedded Ethernet, Rabbit Semiconductor, RCM4000, Dynamic C, Packet sniffer, Network analyzer, Protocol analyzer, Ethernet sniffer

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