PROLAC:
A LANGUAGE FOR PROTOCOL COMPILATION

by

EDDIE KOHLER

Submitted to the

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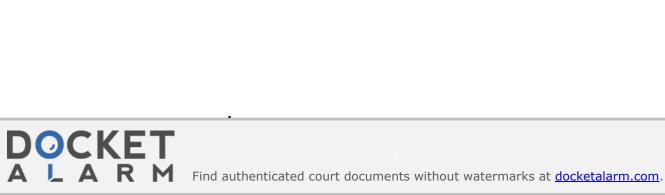requirements for the degree of Master of Science

ABSTRACT

Prolac is a new statically-typed object-oriented programming language designed for
implementing network protocols. Prolac is designed to make protocol specifications
readable to human beings, and thus more likely to be correct; easily *extensible* to
accommodate protocol enhancements; and *efficient* when compiled.

We present an overview of the Prolac language and a discussion of issues and prin-
ciples in its design, as well as a preliminary language reference manual. The *prolacc*
optimizing protocol compiler is also described. A prototype TCP specification is pre-
sented that is both readable and extensible; experience with the specification suggests
that, even untuned, Prolac overhead is negligible on normal networks.

Thesis Supervisor: M. Frans Kaashoek
Title: Associate Professor of Computer Science

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