

(DISTRIBUTED FILE SYSTEMS IN AN AUTHENTICATION SYSTEM/

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Dedicated

To my wife Jan, who watched over the homestead while I was
away at school and to my two children, Trey and Emily. Also,
acknowledgement to my major professor Dr. Rich A. McBride
for his help and suggestions.

**THIS BOOK
CONTAINS
NUMEROUS PAGES
WITH DIAGRAMS
THAT ARE CROOKED
COMPARED TO THE
REST OF THE
INFORMATION ON
THE PAGE.**

**THIS IS AS
RECEIVED FROM
CUSTOMER.**

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"DISTRIBUTED FILE SYSTEMS IN AN AUTHENTICATION SYSTEM"

1. INTRODUCTION

With regard to distributed databases¹, the issues of how to provide: user authentication for privacy and security, optimization of response times, and integrity of data are of rising concern in the computer industry. As an example, an automatic-teller-machine system provides authentication of the user and protection against illegal accesses to any user's bank account records. The proper user is verified by means of a personal card and his special code or password. If the password is correct, the system permits protected transactions on his account. The transactions are protected in that software mechanisms are provided to ensure the integrity of the user's bank records. All transactions and possible errors are recorded. Also, the transactions are carried to completion without an inconvenience to the user.

The Electronic Transfer Act in 1980 was passed to protect users against various losses from errors and unauthorized use [Fernandez 81]. However, even with governmental protections, if the user was not confident that the system provided authentication, reliable transactions, and fast response times, the system would not be useful.

1.1 SYNOPSIS

Using these ideas of authentication and a distributed file system, a secret mail facility was designed and implemented on the UNIX² operating system by a two member team. The implementation was written using the C-Programming Language [Kernighan 78].

1. Historically the terms distributed database and distributed file system have been used synonymously, though this usage is in error [Martin 81]. Throughout this paper the more appropriate phrase term file system will be used, but I will use database terminology where applicable.

2. *UNIX is a Trademark of AT&T Bell Laboratories