6.2 Suggestions for Future Research

We have indicated topics for future research during the course of this dissertation and briefly summarize the important ones again.

The determination of the complexity of the distributed minimal spanning tree algorithms is an interesting subject for future research. The factors that influence the complexity are the degree of parallelism, the asynchrony of internode communication, the number of signals transmitted, the length of signals, the overhead of using a broadcast routing scheme to deliver signals to nodes in the same fragment, and the data structures representing the fragment state and edge information. All these factors are not independent of each other. We believe that simulation under various conditions may be an appropriate way to determine the complexity of such algorithms. The suitability of the various information gathering schemes by the master node must also be determined. The reinitialzation protocol in the adaptive algorithm was very simple. More esoteric protocols may be developed with additional properties that make the algorithm more robust. In general, the design of robust distributed algorithms is an important topic for future research, as well.

The design of reliable broadcast protocols analogous to reliable interprocess communication protocols is a very important subject for future research. The structure of such protocols is determined by the application and the reliability of the underlying broadcast routing algorithms. Efficient subgroup broadcast routing algorithms must also be designed since global broadcast routing has large overhead in large

multi-purpose communication subnets. Restricted multi-destination addressing must be investigated further, since it appears to be a good compromise for both subgroup and global broadcast routing.

The performance evaluation of the broadcast routing algorithms in the presence of background traffic, interference by packets of the same broadcast, and complex cost measures must be performed. We have not assumed that the links of the subnet can have different dollar costs, and that a user may wish to minimize not delay and number of packet copies, but the dollar cost of performing broadcast. The suitability of using regular graphs as ideal networks must be examined further, as the process of converting a given network topology into a regular graph may be a useful design heuristic.

The design of distributed file systems has many open problems. There are problems related to naming conventions, search algorithms, maintenance of consistency between duplicate copies of files, automatic creation of duplicates for efficiency and reliability purposes, and automatic file migration. The distributed file migration algorithm of Appendix E must be investigated in greater detail, to see how well it performs its optimization under different request patterns and network topologies. The algorithm for maintaining consistency between duplicate data bases [Thomas76] must be investigated for efficiency and ease of implementation. Efficient and reliable techniques for performing synchronization between processes in a distributed environment must also be developed. The design of such file systems will make it possible to reference large distributed data bases, and make it possible to design

systems that can be easily expanded. We hope to see the development of general purpose distributed operating systems.

APPENDIX A

DETAILED TABLE OF CONTENTS

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.