

**Carnegie Mellon University**  
**Research Showcase @ CMU**

Computer Science Department

School of Computer Science

1990

# Protocol implementation on the Nectar communication processor

Eric C. Cooper  
*Carnegie Mellon University*

Follow this and additional works at: <http://repository.cmu.edu/compsci>

This Technical Report is brought to you for free and open access by the School of Computer Science at Research Showcase @ CMU. It has been accepted for inclusion in Computer Science Department by an authorized administrator of Research Showcase @ CMU. For more information, please contact [research-showcase@andrew.cmu.edu](mailto:research-showcase@andrew.cmu.edu).

**NOTICE WARNING CONCERNING COPYRIGHT RESTRICTIONS:**  
The copyright law of the United States (title 17, U.S. Code) governs the making of photocopies or other reproductions of copyrighted material. Any copying of this document without permission of its author may be prohibited by law.

# Protocol Implementation on the Nectar Communication Processor

Eric C. Cooper, Peter A. Steenkiste,  
Robert D. Sansom, and Brian D. Zill

September 1990

CMU-CS-90-153

School of Computer Science  
Carnegie Mellon University  
Pittsburgh, PA 15213

*SIGCOMM '90 Symposium on Communications Architectures and Protocols*  
Philadelphia, Pennsylvania  
September 24–27, 1990

This research was sponsored by the Defense Advanced Research Projects Agency, Information Science and Technology Office, under the title "Research on Parallel Computing," ARPA Order No. 7330, issued by DARPA/CMO under Contract MDA972-90-C-0035.

The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressed or implied, of the U.S. Government.

**Keywords:** protocol implementation, high-speed networks

---

### Abstract

We have built a high-speed local-area network called Nectar that uses programmable communication processors as host interfaces. In contrast to most protocol engines, our communication processors have a flexible runtime system that supports multiple transport protocols as well as application-specific activities. In particular, we have implemented the TCP/IP protocol suite and Nectar-specific communication protocols on the communication processor. The Nectar network currently has 25 hosts and has been in use for over a year. The flexibility of our communication processor design does not compromise its performance. The latency of a remote procedure call between application tasks executing on two Nectar hosts is less than 500  $\mu$ sec. The same tasks can obtain a throughput of 28 Mbit/sec using either TCP/IP or Nectar-specific transport protocols. This throughput is limited by the VME bus that connects a host and its communication processor. Application tasks executing on two communication processors can obtain 90 Mbit/sec of the possible 100 Mbit/sec physical bandwidth using Nectar-specific transport protocols.

UNIVERSITY LIBRARIES  
CARNEGIE MELLON UNIVERSITY  
PITTSBURGH, PA 15262-2602

# 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.