Fast and Flexible Mach-based Systems

This project's goal is to develop an operating system that provides a much higher degree of flexibility than do traditional systems, and to use that added flexibility to circumvent the performance/functionality tradeoffs that thwart traditional highly-decomposed, microkernel-based operating systems. Important components of this work are a module management service, adaptive specialization, lightweight and decomposed Mach kernel functionality, aggressive exploitation of interprocess sharing, and efficient distributed shared memory. We will maintain backward compatibility where practical, and freely distribute an unencumbered version of the entire system.

Project Members

- Jay Lepreau
- John Carter
- Gary Lindstrom
- Steve Ackerman
- Guru Banavar
- Steve Clawson
- Bryan Ford
- Mike Hibler
- Linus Kamb
- Dilip Khandekhar
- Jeff Law
- Sean O'Neill
- Doug Orr
- Paul Roberts

Papers

- Mach-related papers
- Flex-related papers
- DSM-related papers

Available Software

- **Mach:** a major component of the overall project is an improved Mach kernel.
- **PA Mach/Lites/4.4-lite system:** a snapshot of freely distributable PA-RISC source and binaries, in the form of a bootable, self-hosting Mach4, Lites, and 4.4-lite system for the hp700. In the future this code will be integrated with the Mach4 and Lites releases.
- **Quarks:** a portable and efficient distributed shared memory system. **Not yet available:** due January 15, 1995.
- **Goofie:** developed by the Mach Shared Objects project, *goofie* creates portable object descriptions from C++ class declarations. In the future, Goofie may be used by the Flex project to

enable system-provided polymorphic functions.
- **PA-RISC GNU tools:** we maintain the GNU language tools for HP's PA-RISC architecture, and provide the latest versions, in both source and HP-UX binary forms.

Related Utah Projects

- The Mach Shared Objects Project
- Communication Memory Architectures. ARPA-funded project getting underway to design and implement a 64-processor scalable multiprocessor architecture. Web pointer soon.

Support

The group's research in operating systems and related language work is sponsored by grants from ARPA, Hewlett-Packard, and NSF. The Center for Software Science is a Utah State Center for Excellence.

Job Openings

- Research staff/postdocs.
- Student fellowships and research assistantships.
- Administrative and technical assistant.

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