Brooks E. Davis
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Engineer and computer scientist specializing in networking and high performance computing research, development, and deployment. Other interests include analyzing and optimizing system scalability from the perspectives of performance and manageability. Long term contributor to open source software including the FreeBSD, the Ganglia Cluster Monitor, and Sun Grid Engine projects with contributions ranging from adding kernel features to providing training on the use of tools.

Education
B.S. in Computer Science with Distinction and Honors, Harvey Mudd College, Claremont, CA. 1998.

Work experience
The Aerospace Corporation, El Segundo, CA, 2008 - present. Senior Engineering Specialist. Technical Computing Services Subdivision. Lead architect for high performance technical computing infrastructure including cluster-, SMP-, and GPU-based HPC computing platforms and high performance storage in support of engineering applications. Support users in analyzing and optimizing the performance of their distributed, parallel applications. Lead architect for Aerosource, a multi-project project management system and version control system which serves as the primary repository for unclassified source code. Software development as required to support these systems including userspace programming in C, Ruby, Perl, Python and shell on FreeBSD and Linux systems as well as FreeBSD kernel programming including increasing the per-process supplemental group limit.

The Aerospace Corporation, El Segundo, CA, 1998 - 2008. Engineering Specialist. Computer System Research Department. Range of HPC and network research efforts including implementing Aerospace's first large HPC cluster, design and implementation of a parallel version of a collision avoidance code for launch vehicles and resident space objects, deployment of active networks and Globus test infrastructure, network intrusion detection, and support for high latency network links. Kernel development to support this work included revamping the network device creation infrastructure and implementing variant symlinks.

Harvey Mudd College/The Aerospace Corporation, Claremont, CA, 1997 - 1998. Clinic project. Research of networking intrusion detection technologies as part of a four-credit two-semester course with Aerospace as the project sponsor.

Harvey Mudd College, Claremont, CA, 1994 - 1998, ~15hrs per week. Student System Manager (system administrator) for the primary email and shell system.

Attachmate Corporation, Bellevue, WA, summer 1997. Software Test Intern.

Intel Corporation, Hillsboro, OR, summer 1996. Co-op Engineer. Software testing related to ASCI Red, the worlds first TeraOps SuperComputer. Implemented part of the C version of the MPI test suite.

Intel Corporation, Hillsboro, OR, summer 1994, 1995. Intern in IT and system assembly groups.

Open source software experience
The FreeBSD Project. Source committer since 2001 and ports committer since 2005. Major points of emphasis include network interface implementation, configuration, and management and support for high performance computing (HPC) cluster management. Work on network interfaces has included refactoring the core network interface data structures, extending APIs for managing and monitoring interfaces, and refining the userspace network configuration process. HPC work has focused improving the scalability and manageability of large clusters, and porting common HPC tools to FreeBSD including schedulers, monitoring tools, message passing APIs, and high performance SSH.

FreeBSD Core Team member 2006 - present. One of nine elected leaders of the FreeBSD project. Currently leading the efforts to convert the FreeBSD toolchain to clang, LLVM, and ELF Tool Chain.

FreeBSD Google Summer of Code mentor and administator. In 2005, 2007 - 2009, and 2011 I mentored a total of 6 students, one of whom became committer. I a have also acted as the lead project administrator for three years (2009 - 2011) which involves recruiting mentors and students, tracking student progress throughout the program, and ensuring that mentors live up to their obligations.

Ganglia Cluster Monitor. Developer 2003 - present. Completed FreeBSD support by bringing monitored metrics to parity with the Linux port.

Sun Grid Engine. Developer 2003 - 2010. Supported and enhanced FreeBSD port. Improved to portability and manageability in complex environments.

Presentations and publications

B. Davis, *Improving system management with ZFS.* Proceedings of AsiaBSDCon 2011, Tokyo, Japan, March 2011 (also presented at BSDCan 2011 and EuroBSD 2011).

B. Davis, *Porting High Performance Computing Tools to FreeBSD.* Proceedings of AsiaBSDCon 2010, Tokyo, Japan, March 2010 (also presented at EuroBSDCon 2009 and BSDCan 2010).

B. Davis, *Promoting Open Source Methods at a Large Company.* Keynote at FOSDEM 2010. Brussels, Belgium, February 2010.

B. Davis, *Isolating Cluster Jobs for Performance and Predictability.* Proceedings of AsiaBSDCon 2009, Tokyo, Japan, March 2009 (also presented at EuroBSDCon 2008 and BSDCan 2009).

B. Davis, *Using FreeBSD to Promote Open Source Development Methods.* Proceedings of AsiaBSDCon 2008 (also presented at EuroBSDCon 2007 and AsiaBSDCon 2008).

B.Davis, M. AuYeung, J. Matt Clark, C. Lee, J. Palko, M. Thomas, *Reflections on Building a High-performance Computing Cluster Using FreeBSD.* Proceedings of AsiaBSDCon 2007 (also presented at BSDCan 2007, MeetBSD 2007, and NYCBUG, March 2008).

B. Davis *The Challenges of Dynamic Network Interfaces.* Proceedings of EuroBSDCon 2004.

B. Davis, M. AuYeung, G. Green, C. Lee, *Building a High-performance Computing Cluster Using FreeBSD.* Proceedings of BSDCon 2003. The USENIX Association.

Training

B. Davis, *Building Clusters With FreeBSD.* Half-day tutorial at BSDCan 2006, EuroBSDCon 2006 and 2007, and AsiaBSDCon 2007.

Honors

Dean's List 1995 - 1997

Eagle Scout

Memberships

ACM

Sage

USENIX

Background

US Citizen

Active Secret Clearance