

Brian Barrett

Sandia National Laboratories, P.O. Box 5800, MS 1319, Albuquerque, NM 87185-1319, bwbarre@sandia.gov

- EDUCATION Ph.D. Computer Science, March 2009 (expected), Indiana University.
M.S. Computer Science, August 2003, Indiana University.
B.S. Computer Science, May 2001, University of Notre Dame.
Dept. of Energy High Performance Computer Science fellowship (2001-2003).
- RECENT EXPERIENCE **Limited Term Employee** **Sandia National Laboratories**
October 2007 - present *Albuquerque, New Mexico*
Research into advanced network design, particularly network interface adapters, for message passing. Research and development of large scale graph algorithms as part of the MTGL and PBGL graph libraries. Design of advanced computer architectures capable of supporting large scale graph informatics applications.
- Technical Staff Member** **Los Alamos National Laboratory**
October 2006 - October 2007 *Los Alamos, New Mexico*
Research and development work on the Open MPI implementation of the MPI standard. Focus on enhancements for the Road Runner hybrid architecture system, including high-performance heterogeneous communication.
- Student Intern** **Los Alamos National Laboratory**
Summer 2006 *Los Alamos, New Mexico*
Research and development work on the Open MPI implementation of the MPI standard. Implemented the MPI-2 one-sided specification within Open MPI. Co-developed a high performance point-to-point engine for interconnects that support MPI matching in the network stack. Implemented support for the Portals communication library within the new matching point-to-point engine.
- Research Assistant** **Open Systems Laboratory**
Fall 2001 - Spring 2003, *Indiana University, Bloomington*
Fall 2004 - May 2006
Research work in high performance computing, particularly implementations of the Message Passing Interface (both LAM/MPI and Open MPI). Worked with the Parallel Boost Graph Library development team on extensions to the MPI one-sided interface to improve performance and scalability of the library's graph algorithms. Designed and implemented support for the Red Storm / Cray XT platform, including support for the Catamount light-weight operating system and Portals communication library.
- Programmer Analyst** **Information Sciences Institute**
2003-2004 *University of Southern California*
Member of the Joint Experimentation on Scalable Parallel Processors team, extending large scale military simulation software to more efficiently utilize modern HPC clusters. Co-developed a new software routing infrastructure for the project, increasing scalability and failure resistance.
- Student Intern** **Sandia National Laboratories**
Summer 2002 *Albuquerque, New Mexico*
Worked with the Scalable Computing Systems organization on the parallel run-time environment for the Cplant clustering system. Developed a run-time performance metrics system for the Cplant MPI implementation.
- Student Intern** **Sandia National Laboratories**
Summer 2001 *Albuquerque, New Mexico*

Provided MPI support for the Alegra code development team. Investigated fault tolerance options for large scale MPI applications within the context of LAM/MPI.

SELECTED
PUBLICATIONS

B. Barrett, G. Shipman, A. Lumsdaine. Analysis of Implementation Options for MPI-2 One-Sided. *EuroPVM/MPI 2007*, Paris, France, September 2007.

B. Barrett, R. Brightwell, J. M. Squyres, and A. Lumsdaine. Implementation of Open MPI on the XT3. *Cray Users Group 2006*, Lugano, Switzerland, May 2006.

Edgar Gabriel, Graham E. Fagg, George Bosilca, Thara Angskun, Jack J. Dongarra, Jeffrey M. Squyres, Vishal Sahay, Prabhanjan Kambadur, Brian Barrett, Andrew Lumsdaine, Ralph H. Castain, David J. Daniel, Richard L. Graham, and Timothy S. Woodall. Open MPI: Goals, Concept, and Design of a Next Generation MPI Implementation. In *Proceedings, 11th European PVM/MPI Users' Group Meeting*, Budapest, Hungary, September 2004.

B. Barrett and T. Gottschalk. Advanced Message Routing for Scalable Distributed Simulations. In *Proceedings, Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC)*, Orlando, FL 2004.