Argonne NATIONAL LABORATORY

MPICH: A High Performance Open-Source MPI Implementation

SC12 Birds of a Feather Session

U.S. DEPARTMENT OF ENERGY

Schedule

- MPICH Past (Rusty Lusk)
- MPICH Present and Future (Pavan Balaji)
- Presentations from developers, partners and collaborators
  - Cray (Duncan Roweth)
  - Microsoft (Fab Tillier)
  - Intel (Bill Magro)
  - IBM (Mark Atkins)
- Wrap up

Goals of the MPICH project

- Be the MPI implementation of choice for the highest-end parallel machines
  - **4 out of top 5** and **8 out of top 10** fastest machines in the November 2012 Top500 list use MPICH-based implementations
- Carry out the research and development needed to scale MPI to exascale
  - Optimizations to reduce memory consumption
  - Fault tolerance
  - Efficient multithreaded support for hybrid programming
  - Performance scalability
- Work with the MPI Forum on standardization and early prototyping of new features

MPICH-Based Implementations on the Highest End Machines

Several vendors and other groups use MPICH as the basis for their own MPI implementation

- Cray XT, XE and XK series
- IBM for Blue Gene
- Intel MPI
- Microsoft MPI
- Myricom MPI
- OSU MVAPICH2 for InfiniBand
- University of British Columbia

Collaborators/Partners

- Lead Development Teams
  - Argonne
  - University of Illinois
- Core MPICH developers
  - Cray
  - IBM
  - INRIA
  - Intel
  - Microsoft
  - Queen's University, Canada
  - University of British Columbia
- Derivative implementations
  - Myricom
  - Ohio State University
- Other Collaborators
  - Absoft
  - Pacific Northwest National Laboratory
  - QLogic
  - Totalview Technologies
  - University of Utah

Developer, Partner and Collaborator Presentations

New Website

www.mpich.org

Acknowledgements

- Thanks to the following for equipment loans
  - Intel
  - Microsoft
  - Myricom
  - QLogic

- And to the following for financial support
  - Department of Energy
  - Microsoft

Questions or Comments?