Open MPI
Join the Revolution

Jeff Squyres
Indiana University

http://www.open-mpi.org/

Technical Contributors

- Indiana University
- The University of Tennessee
- Los Alamos National Laboratory
- High Performance Computing Center, Stuttgart
- Sandia National Laboratory - Livermore

MPI From Scratch!

- Developers of FT-MPI, LA-MPI, LAM/MPI
  - Kept meeting at conferences in 2003
  - Culminated at SC 2003: Let’s start over
  - Open MPI was born

Jan 2004  SC 2004  Today  Tomorrow
Started work  Demonstrated  Released v1.0  World peace

MPI From Scratch: Why?

- Each prior project had different strong points
  - Could not easily combine into one code base
- New concepts could not easily be accommodated in old code bases
- Easier to start over
  - Start with a blank sheet of paper
  - Decades of combined MPI implementation experience

MPI From Scratch: Why?

- Merger of ideas from
  - FT-MPI (U. of Tennessee)
  - LA-MPI (Los Alamos)
  - LAM/MPI (Indiana U.)
  - PACX-MPI (HLRS, U. Stuttgart)

Layered Software

- OMP
- ORTE
- OPAL
- Operating system

Open MPI

Layered Software
Layered Software

- OMPI
- ORTE
- OPAL
- Operating system

Open Run-Time Environment (ORTE)

- Parallel job control
  - Native launching and monitoring parallel jobs
  - rsh/ssh, SLURM, PBS/Torque, BProc, Xgrid
  - *Nothing to do with MPI*
- Rich set of hooks for tools
  - Open MPI's internal tools (e.g., mpirun)
  - External tools: Greg's parallel debugger

Current Status

- v1.0 released immanently (see web site)
- Much work still to be done
  - More point-to-point optimizations
  - Data and process fault tolerance
  - Support more run-time environments
  - New Fortran MPI bindings
  - More external tools
  - ...
- *Come join the revolution!*