OpenSHMEM Project Update

OpenSHMEM BOF
SuperComputing ‘11
Tony Curtis, University of Houston
OpenSHMEM Project Update

• Acknowledgement
  – This work used the facilities of the Oak Ridge National Laboratory Extreme Scale Systems Center funded by the Department of Defense
OpenSHMEM Project Update

• Introduction
  – Project Goals
  – The OpenSHMEM library/API
• Validation and Verification
• Outreach
• OpenSHMEM extensions
OpenSHMEM Project Update

• Introduction
  – Project Goals
    • Reference Implementation of library
      – On top of GASNet
      – Portable
      – Observable (can trace internal behavior)
      – Platform for future API enhancements

• Vendors implement specification for their hardware/solutions
OpenSHMEM Project Update

• Introduction
  – Project Goals
  • Specification
    – Current 1.0 replicates SGI SHMEM (baseline)
    – Future 1.x, 2.x, ...
      » Take new ideas from community
      » OpenSHMEM org. approves changes
      » Reference implementation is test-bed
OpenSHMEM Project Update

• Introduction
  – Project Goals
  • Outreach
    – Conferences
    – Tutorials

http://www.openshmem.org/
OpenSHMEM Project Update

• Validation and Verification
  – Feature tests
    • Check consistency of API and semantics
      – Data transfer (static and dynamic symmetric var.)
      – Barrier
      – Broadcast
      – Collects
      – Accessibility
      – Locks
      – Reductions
      – Synchronization

Verified on SGI Altix
OpenSHMEM Project Update

• Validation and Verification
  – Performance test
    • Checks scalability of operations
      – Put, get
      – Barrier
      – Broadcast
      – Collects
OpenSHMEM Project Update

• Validation and Verification
  – In the next release of V&V
    • Test corner cases
    • Test undefined behavior
    • Tests with different active sets combinations for collectives
    • Add OpenSHMEM benchmarks
OpenSHMEM Project Update

• Official Website
  – Hosted at UH.
  – Updated with new content.
• Forums
  • Bulletin board style interaction with the community.
• Wiki
  • OpenSHMEM knowledge base.
OpenSHMEM Project Update

• Community Mailing List
  – mailto:openshmem-join@email.ornl.gov
  – Mailing list for all things OpenSHMEM.
  – Provides the majority of feedback we receive.
  – It will be moved to the OpenSHMEM domain in the future.
OpenSHMEM Project Update

• Conferences
  – PGAS 2011 (UH/Rice hosted)
    • We presented an OpenSHMEM tutorial.
      – OpenSHMEM cheat sheets were given out during the tutorial.
    • We interacted with other OpenSHMEM groups and individuals working with the PGAS model.
    • Obtained access to other systems on which to run SHMEM code.

http://pgas11.rice.edu/
OpenSHMEM Project Update

• Conferences
  – SC11
    • PGAS Booth (#124)
      – Presenting the OpenSHMEM poster and booth duty.
    • Flyers
      – A flyer to be given out at SC11.
OpenSHMEM Project Update

• SHMEM extensions and a book
  – Proposed extensions include
    • Non-blocking memory allocation (synch. later)
    • Regular namespace (shmem_*)
    • Non-blocking put/get (per-comms. handles)
    • More collectives
    • User-defined reductions
    • Interaction with other models
    • Better “sub-team” definition
      – Regular, strided active sets -> communicator-like teams
    • Thread safety?