

Introduction

- OpenSHMEM is an effort to create a standardized SHMEM library for C , C++, and Fortran
- OpenSHMEM is a Partitioned Global Address Space (PGAS) library and supports Single Program Multiple Data (SPMD) style of programming
- SGI's SHMEM API is the baseline for OpenSHMEM Specification 1.0
- One-sided communication is achieved through **Symmetric variables**

- globals

C/C++: Non-stack variables

Fortran: objects in common blocks or with the **SAVE** attribute

- dynamically allocated and managed by the OpenSHMEM Library

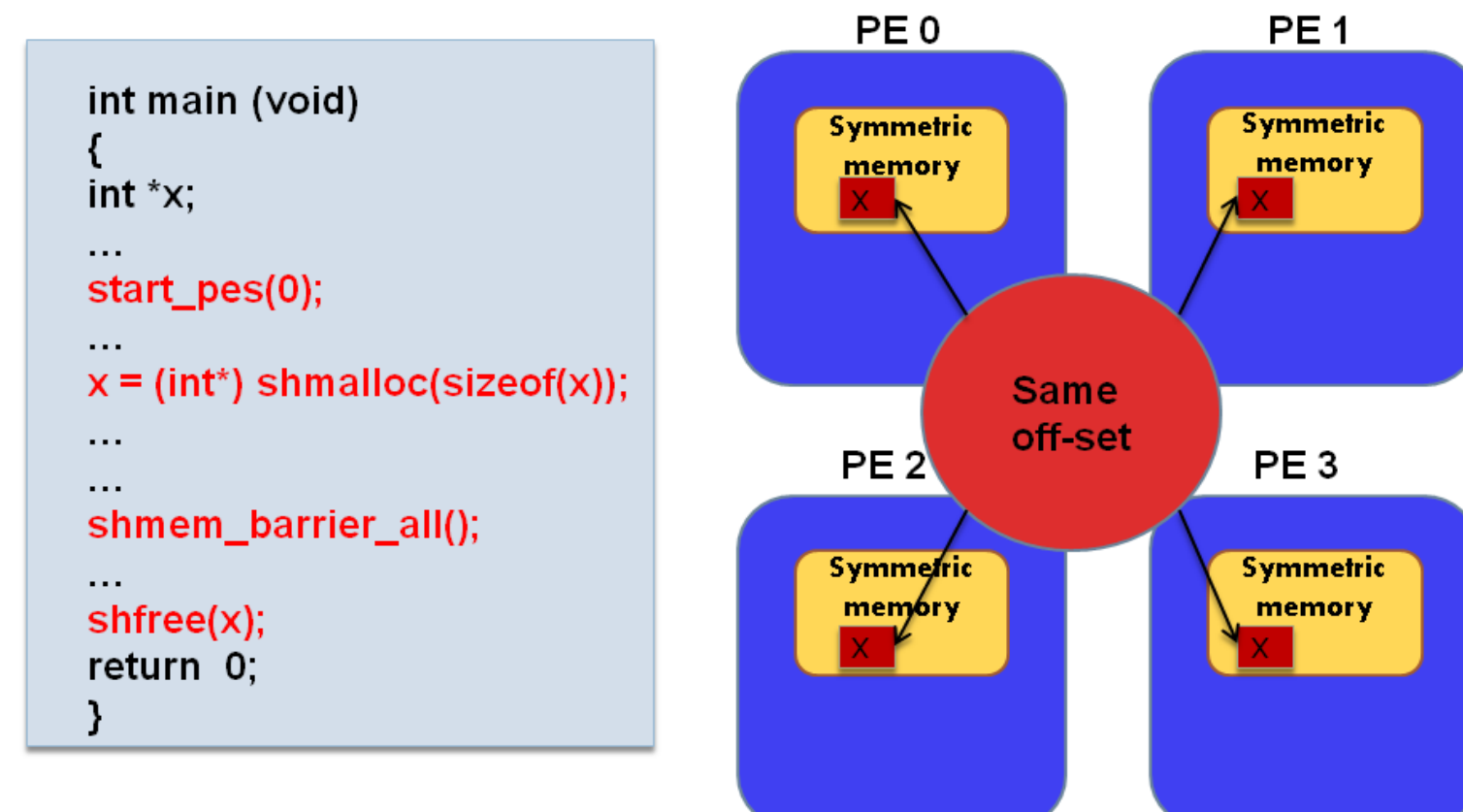


Figure 1. Dynamic allocation of symmetric variable 'x'

OpenSHMEM API

- OpenSHMEM Specification 1.0 provides support for data transfer operations, collective and point-to-point synchronization mechanisms (barrier, fence, quiet, wait), collective operations (broadcast, collection, reduction), atomic memory operations (swap, fetch/add, increment), and distributed locks.
- Open to the community for reviews and contributions.

Current Status

- University of Houston has developed a portable reference OpenSHMEM library.
- OpenSHMEM Specification 1.0 man pages are available.
- OpenSHMEM mailing list for discussions and contributions can be joined by emailing openshmem-join@email.ornl.gov
- Website for OpenSHMEM and a Wiki for community use are available.

<http://www.openshmem.org/>

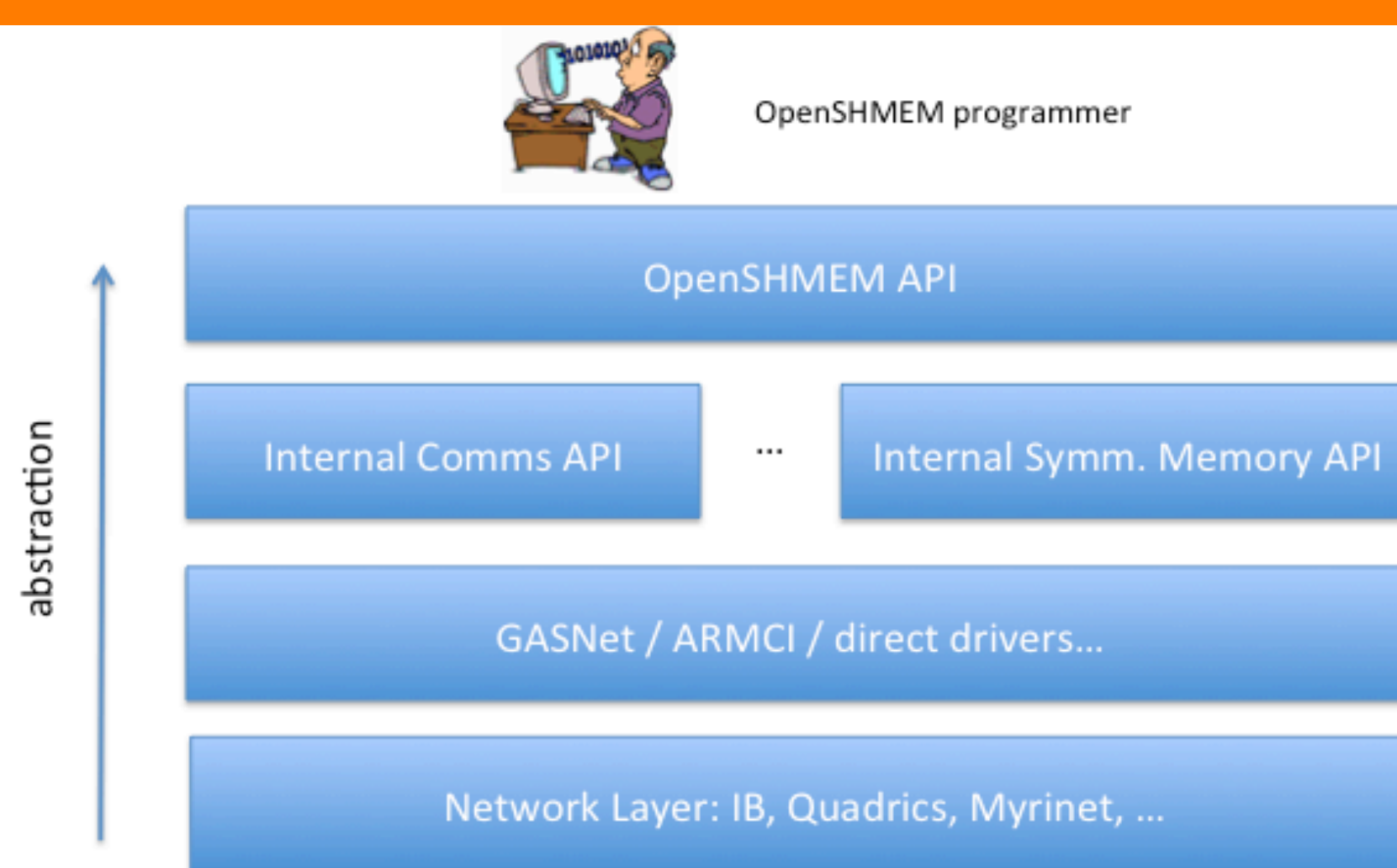


Figure 2. University of Houston Implementation

Future Work and Goals

- Develop OpenSHMEM Specification 2.0 with co-operation and contribution from the OpenSHMEM community
- Discuss and extend specification with important new capabilities
- Improve on the OpenSHMEM reference implementation by providing support for scalable collective algorithms
- Explore innovative hardware platforms