OOKAMI PROJECT APPLICATION

Date: 02/17/2021

Project Title: OpenSHMEM

Usage:

- Testbed

Principal Investigator: Tony Curtis

- University/Company/Institute: Stony Brook University
- Mailing address including country:

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Institute for Advanced Computational Science,
Stony Brook University,
Stony Brook,
NY 11794-5250,
USA
```

- Phone number: (631) 632-4629
- Email: anthony.curtis@stonybrook.edu

Names & Email of initial project users:

- Tony Curtis <anthony.curtis@stonybrook.edu>
- Wenbin Lu <wenbin.lu@stonybrook.edu>
- Howard Pritchard <howardp@lanl.gov>
- Max Grossman <max.grossman@gatech.edu>

Usage Description:

We are developing software related to the Partitioned Global Address Space (PGAS) programming model OpenSHMEM, in particular an implementation of the library using the UCX communication substrate, its supporting software ecosystem/components, extensions to the model, and the use of OpenSHMEM in conjunction with other programming models, e.g. OpenMP and MPI.

Our Ookami usage is also intended to explore usage of SVE vectorization and other processor-specific features to improve library efficiency.

References:

- `http://www.openshmem.org/`
- `https://www.openucx.org/`

Computational Resources:

- Total node hours per year: estimate 1000
- Size (nodes) and duration (hours) for a typical batch job: there are generally no typical jobs, can range from 2-full size nodes during development testing. Runs often range from a few seconds to an hour (e.g. running extensive test-suites).
- Disk space (home, project, scratch): 40GB, 4TB, 4TB

Personnel Resources:

None anticipated.

Required software:

Probably none extra.

If your research is supported by US federal agencies:

- Agency: Los Alamos National Laboratory
- Grant number(s): 367958

Production projects:

Production projects should provide an additional 1-2 pages of documentation about how

1. the code has been tuned to perform well on A64FX (ideally including benchmark data comparing performance with other architectures such as x86 or GPUs)
2. it can make effective use of the key A64FX architectural features (notably SVE, the high-bandwidth memory, and NUMA characteristics)
3. it can accomplish the scientific objectives within the available 32 Gbyte memory per node