

OOKAMI PROJECT APPLICATION

Date: 11/22/2022

Project Title: Julia on A64FX

Usage:

Testbed

Production

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Usage Description:

On this machine we will use Julia, which is a high-level dynamic language, based on LLVM. Thanks to its compiler, Julia can achieve high-performance and take advantage of SVE instructions on the A64FX CPU.

Computational Resources:

Total node hours per year: 15,000

Size (nodes) and duration (hours) for a typical batch job:

Disk space (home, project, scratch):

Personnel Resources (assistance in porting/tuning, or training for your users):

Required software:

If your research is supported by US federal agencies:

Agency:

Grant number(s):

NSF (grants OAC-1835443, OAC-2103804, AGS-1835860, and AGS-1835881), DARPA under agreement number HR0011-20-9-0016 (PaPPa), and Department of Energy, National Nuclear Security Administration under Award Number DE-NA0003965.

Production projects:

Production projects should provide an additional 1-2 pages of documentation about how (a) the code has been tuned to perform well on A64FX (ideally including benchmark data comparing performance with other architectures such as x86 or GPUs)

(b) it can make effective use of the key A64FX architectural features (notably SVE, the high-bandwidth memory, and NUMA characteristics)

(c) it can accomplish the scientific objectives within the available 32 Gbyte memory per node