

## Integration of the PENNANT mini-app into the Pavilion Test Harness

The Los Alamos National Laboratory (LANL) High Performance Computing (HPC) support teams test end-user applications on production Department of Energy (DOE) National Nuclear Security Administration (NNSA) supercomputers. LANL implements the FLAG physics application to carry out radiation-hydrodynamics simulations for research in fields such as crater impacting. PENNANT is an unstructured mesh physics mini-app, designed for advanced architecture research, that incorporates mesh data structures and implements physics algorithms adapted from FLAG intended to simulate some of its memory access patterns. Like various other mini-apps, PENNANT serves as a proxy application to FLAG for tuning and optimization efforts. Due to PENNANT's small size, respective to FLAG, it's lightweight and practical nature also make it valuable for evaluating new hardware and programming models for unstructured mesh physics applications. Even so, manual testing of PENNANT's supported build configurations is time consuming. LANL's Pavilion Test Harness addresses this issue by enabling the creation of portable, abstract test definitions. This project focuses on building a Pavilion test to verify that PENNANT builds and runs on bare-metal LANL production systems while analyzing its performance and portability. Harnessing PENNANT under Pavilion supports continuous development and integration for developers and captures performance profiles for support teams to use in continuous application monitoring. Future work will involve comparing bare-metal performance with containerized performance using Charliecloud, LANL's in-house container build and runtime environment.