Trenza Performance Studies

The Trenza performance study product/service is targeted to support application users and developers to assess an applications performance under differing architectures, software environments and run environments. We know that hardware and software environments differ drastically in HPC centers and local clusters. The ability to assess the build process across various compilers, accelerators and related drivers is a complex undertaking. The ability to optimize resource use on a given node and across a network and file system adds a second layer of complexity with interaction of the system resource scheduler adding a third.

The toolbox for studies includes the Trenza Survey collector/analytics framework as the core assessment tool as well as other appropriate tools. Survey is a new generation, high-level, light-weight tool for HPC application performance metric collection. This was originally conceived to provide a broad collection and reporting tool with less impact than the more in-depth performance tools. Survey is a multi-platform Linux tool which targets collection of high-level performance metrics and analysis of applications running on both single node and large-scale platforms, including the Cray platforms. In-depth tools will also be used when appropriate during the studies.

Study Approach

We bring a team approach to a study project. Our team's expertise ranges from software systems to interaction with hardware components. We have expertise in spack build systems, library integration, metric analysis and much more. This provides a holistic approach where discussion and assessment is done across a team.

We follow a study template that we have developed that starts with understanding the issue that the user is facing, identifying the tasks and resources needed and scoping a study plan to complete the study. This initial scopying step will provide the basis for the study contract and identify the tasks, resources and timeframe.

The type of studies that we undertake range from a short term (weeks) concerted effort to provide build and run options to long term study contracts (months) where we serve a component to a deployment or integration team and provide performance assessment, comparative studies or system impact assessments.

Another service we provide is integration of our survey tool into Continuous Integration (CI) or testing frameworks. We have found that integration of our survey tool into the development or testing process provides insight of performance impacts that may normally not be noticed if tests results are binary (pass/fail). See survey tool capabilities for reference to capabilities.