

## **TAU Parallel Performance System**

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The TAU parallel performance system delivers robust, integrated, portable, and open technology for performance analysis of parallel applications on large-scale, leadership-class HPC machines. Through advances in application-specific performance evaluation, scalable performance tools, multi-experiment performance data management, performance data mining, and programming environment integration, TAU helps application developers be more productive in achieving their development and optimization goals. In addition, the TAU project is making important advances in kernel-level performance monitoring that can identify OS actions influencing delivered performance.

The need for optimal performance on leadership-class systems drives the requirements for performance tools at the high end of parallel computing. Integrated tools for detailed instrumentation, measurement, and analysis of parallel programs are demanded by application developers to understand performance and guide tuning strategies. TAU system provides integrated instrumentation, measurement, and analysis capabilities in a cross-platform implementation, plus additional tools for performance data management, data mining, visualization, and interoperation. In addition to the important advances in TAU's core technologies, the project has developed strong interactions with the SciDAC PERI, TASCs, and FACETS projects in support of TAU's use in terascale applications and systems.

TAU has been ported to the leadership class facilities at ANL (IBM BG/L, BG/P, SiCortex), ORNL (Cray XT3 and XT4), LLNL (Linux cluster, AIX, BG/L), and NERSC (Linux, AIX). TAU has been applied to evaluate the performance of Hydra, Mesquite, Epism, Truchas, Shivano, Aries, Miranda, GCRM, Nimrod, Flash, WRF, Kull, AORSA2D, S3D, GTC, CFRFS, Uintah, MFIx, Gyro, CCSM, CAM, MFDn, Eulag, and AutoDock3 projects.

The poster will highlight the architecture of the TAU performance system and its components for program analysis, performance monitoring, parallel trace generation and analysis, and kernel level performance instrumentation. It will also highlight the use of TAU for performance evaluation studies conducted for the GTC and S3D PERI projects.

