

PROOF Performance Measurements Using PROOF Benchmark Suite

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PROOF (Parallel ROOT Facility) is an extension of ROOT enabling interactive analysis in parallel on clusters of computers or a many-core machine. PROOF has been adopted and successfully utilized as one of main analysis models by LHC experiments including ALICE and ATLAS. ALICE has seen growing number of PROOF clusters around the world, CAF at CERN, SKAF in Slovakia, GSI/FAIR at Darmstadt being the main ALICE PROOF service farms. KIAF at KISTI is also planning on PROOF farm service in 2011.

The PROOF benchmark suite is a new utility suite of PROOF to measure the performance and scalability of PROOF. The primary goal of benchmark suite is to determine the optimal configuration parameters for a set of machines to be used as PROOF cluster.

The suite measures the performance of the cluster for a set of standard tasks, CPU-intensive task and IO-intensive task which are 2 distinctive styles of analysis in typical HEP application, as a function of the number of effective processes. From these results, indications about the optimal number of concurrent processes can be derived. For large facilities, the suite should also give indications about the optimal number of sub-masters into which the cluster should be partitioned.

Site administrators of PROOF cluster can use the suite to measure the performance of the cluster and optimize the configuration of their cluster. PROOF developers can also utilize the suite to help them measure, identify problems and improve their software.

Performance of PROOF cluster measured with the benchmark suite will be presented including real use cases at ALICE experiment.

Primary author: Dr RYU, Sangsu (KISTi Korea Institute of Science & Technology Information (KIS))

Co-author: Dr GANIS, Gerardo (CERN)

Presenters: Dr GANIS, Gerardo (CERN); Dr RYU, Sangsu (KISTi Korea Institute of Science & Technology Information (KIS))

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