

Using Benchmark Testing to Evaluate Performance of OSCAR Clusters

Quality performance metrics on high performance cluster computers have become vital when trying to quantify the power of these machines. Various measures may be employed to benchmark the performance of a cluster in its differing configurations. Benchmarking produces a measurement of a system's performance for a given configuration that then may be used in comparison with other machines and clusters. While many benchmarks exist, finding a fair and well-tested benchmark that exercises the many components of a cluster is challenging. This work will examine the suitability of the HPL (High Performance LINPACK), HINT (Hierarchical INTegration), and NPB (NAS Parallel Benchmarks) for this task. Additionally, the results of running these benchmarks on the ORNL cluster research environments, TORC and eXtremeTORC, will be presented and analyzed. A final conclusion of this work is to provide a recommendation of a cluster benchmark suitable for inclusion in the OSCAR (Open Source Cluster Application Resources) suite.

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