Multi-Core Guardian DRC Benchmark Results

Guardian DRC is multi-threaded to perform parallel processing on multi-core / multi-CPU machines. Multi-threading reduces the CPU processing time proportional to the number of CPU cores. This benchmark investigates the improvements in performance of this parallel processing on the latest high-performance workstations.

The benchmark was performed on Windows XP. Guardian DRC reads and writes many intermediate files during runtime on a hard disk. This disk I/O significantly affects the total performance of the DRC processing for this benchmark. The priority of memory usage to system cache for writing to disk was set by the user, and CPU usage was kept to 100% during the processing. The target design data contained 1.69M MOSFET transistors.

Use of multi-CPU cores significantly reduces the processing time. Guardian DRC ran 1.9x faster on dual-core and 3.1x faster on quad-core as compared to a single-core run time. This is a much better result as compared to multi-CPU parallel processing. Silvaco has years of experience in parallelization on multi-core and multi-CPU machines. This result demonstrates our technical leadership.

The comparison between old generation machines and the latest ones show 2.9x improvement in speed. The newest 4 core machines show speed improvements of 7.9 times over old single-core machines. As a result, DRC processing time can be easily improved by using the latest high-performance multi-core / multi- CPU machines.

The Spring 2007 baseline release of Guardian DRC also demonstrates 1.4 times speed improvement over older versions.

All of these elements make Guardian DRC perform close to competing hierarchical DRC products although Guardian DRC is still flat. Guardian DRC provides an excellent low-cost and sufficient performance alternative solution to otherwise very expensive commercial products.