

DGMonitor: a Performance Monitoring Tool for Sandbox-based Desktop Grid Platforms

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Abstract

Accurate, continuous resource monitoring and profiling are critical for enabling performance tuning and scheduling optimization. In desktop grid systems that employ sandboxing, these issues are challenging because (1) subjobs inside sandboxes are executed in a virtual computing environment and (2) the state of the virtual computing environment within the sandboxes is reset to empty after each subjob completes.

DGMonitor is a monitoring tool which builds a global, accurate, and continuous view of real resource utilization for desktop grids with sandboxing. Our monitoring tool measures performance unobtrusively and reliably, uses a simple performance data model, and is easy to use. Our measurements demonstrate that DGMonitor can scale to large desktop grids (up to 12000 workers) with low monitoring overhead in terms of resource consumption (less than 0.1%) on desktop PCs.

Though we developed DGMonitor with the Entropia DCGrid platform, our tool is easily integrated into other desktop grid systems. In all of these systems, DGMonitor data can support existing and novel information services, particularly for performance tuning and scheduling.

Keywords: *Performance monitoring and profiling, sandboxing techniques, distributed computing.*