# UGS NX Performance on HP Workstations with Multiple Processors

## Tech Tips

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## Summary

Dual-core and multi-processor HP workstations can deliver significant performance advantages when you use specific UGS NX computational operations on some models[1].

## Background

As models get more complex, the demand for system resources increases. Both Intel and HP have offered multi-processor workstations for years, but most entry-level and mid-range workstations offered a single processor. Intel began to address the need for more computational power with Hyper-Threading Technology[2] a few years ago. Unfortunately, overall UGS NX performance was often degraded with Hyper-Threading Technology enabled. The next step for more computational power was dual-core processors. Dual-core processors implement two CPUs on a single piece of silicon, or die. This single die plugs into the same socket as a single-core processor.

UGS NX supports Symmetric Multi-Processing (SMP) in the Parasolid library. When UGS NX SMP is enabled, UGS NX takes advantage of workstations with more than one CPU for the following operations: mass properties, silhouettes, facet shading, Boolean operations, and hidden line rendering.

UGS NX SMP is disabled by default. If you have a system with more than one CPU, you can enable SMP by setting the environment variable `UGII_SMP_ENABLE` to 1. To do this in Microsoft® Windows® systems, right-click My Computer and select Properties, Advanced, and the Environment Variable tab. On UNIX® systems, the environment variable is listed in `$UGII_ROOT_DIR/.ugii_ env` or set in your environment.

## Results

The HP UPH benchmark[3] demonstrated SMP performance improvements on the operations mass properties and silhouettes running Microsoft Windows XP Professional Service Pack 2. Both tests loaded a complex UGS NX part. For the mass properties test, an analysis of all solid bodies was processed. For the silhouette test, the model was set to wireframe with edges visible and "Silhouettes" enabled. The view was then refreshed and the time was measured.

**HP UPH Benchmark**
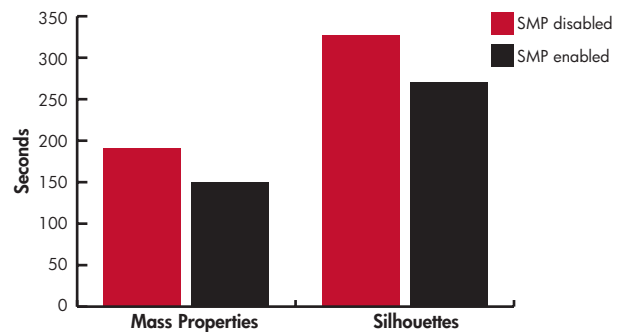


**HP xw4300 test configuration**
- Dual-Core Intel® Pentium® D Processor 940/ 3.2 GHz, 4 MB L2, 800 MHz FSB, EM64T
- NVIDIA FX1400
- 2 GB memory

## Conclusion

HP and UGS internal benchmarks show some operations achieving as much as a 30% performance boost by using dual processors when SMP is enabled in UGS NX. As with any performance increase, the amount of improvement depends on the particular part and operation performed. Our internal measurements show similar results when comparing dual-core with dual-processor workstations. Both dual-core and dual-processor workstations provide the additional CPU power that UGS NX with SMP enabled can utilize. Performance is comparable if the processor speed is the same.

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[1] Dual/Quad Core is a new technology designed to improve performance of multithreaded software products and hardware-aware multitasking operating systems and may require appropriate operating system software for full benefit. Not all customers or software applications will necessarily benefit from use of this technology.

[2] Hyper-Threading Technology (HT Technology) requires a computer system with an Intel® Processor supporting HT Technology and an HT Technology enabled chipset, BIOS, and operating system. Performance will vary depending on the specific hardware and software you use. See www.intel.com/products/ht/hyperthreading_more.htm for more information including details on which processors support HT Technology.

64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. See www.intel.com/info/em64t for more information.

[3] HP UPH is an internal HP benchmark.