

## Pinnacle Application Note Disabling Hyper-Threading

PinApp #04-004  
Issued: August 4, 2004

### Key Notes

1. Hyper-Threading with W2000 is not compatible per Intel's own application note and thus should be disabled

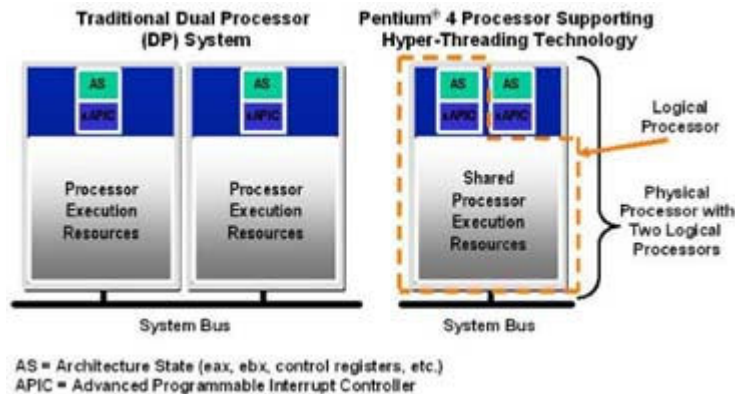
Ref: [http://www.intel.com/support/platform/ht/os.htm?iid=ipp\\_htm+os&](http://www.intel.com/support/platform/ht/os.htm?iid=ipp_htm+os&)

2. Also, Pinnacle has not been designed to leverage Hyper-Threading with Windows XP and thus should be disabled; with Hyper-Threading enabled, system communications can become unreliable

### Excerpts from Intel's Web site

REF: [http://www.intel.com/support/processors/pentium4/pentium4\\_ht.htm#2](http://www.intel.com/support/processors/pentium4/pentium4_ht.htm#2)

Hyper-Threading Technology enables a single physical processor to execute two separate code streams (called threads) concurrently, increasing processor utilization and providing greater throughput and improved performance. Architecturally, the Pentium 4 processor supporting Hyper-Threading Technology consists of two logical processors (see Figure 1), each of which has its own architectural state. The architectural state that is duplicated for each logical processor consists of the data registers, segment registers, control registers, debug registers, and most of the MSRs or Model Specific Registers. Each logical processor also has its own advanced programmable interrupt controller or APIC. After power-up and initialization, each logical processor can be individually halted, interrupted, or directed to execute a specified thread, independently from the other logical processor on the Pentium 4 processor core.



**Figure 1. Comparison of a Pentium® 4 Processor Supporting Hyper-Threading Technology and a Traditional Dual Processor System**

Unlike a traditional dual processor (DP) configuration that uses two separate physical processors (see Figure 1), the logical processors in a Pentium 4 processor supporting Hyper-Threading Technology share the execution resources of the processor core (see Figure 2), which include the execution engine, caches, system bus interface, and the firmware. Hyper-Threading Technology is designed to improve the performance of Pentium 4 processors by maximizing the use of available execution resources in the Intel® NetBurst™ microarchitecture, and exploiting the multi-threaded nature of contemporary operating systems.



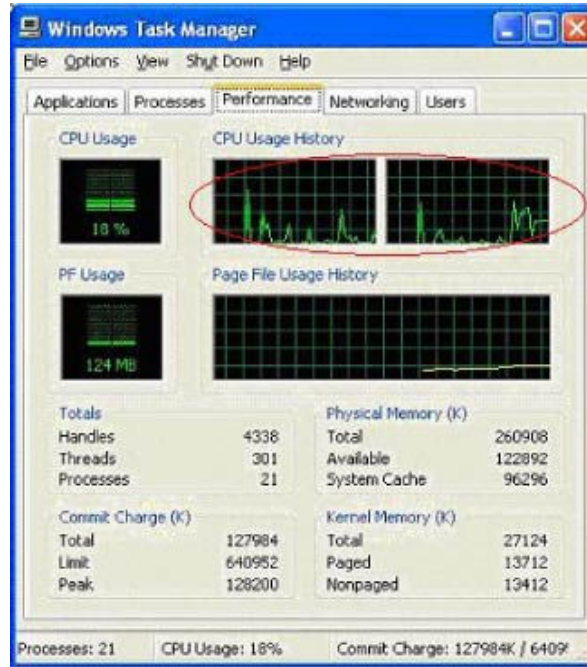


Figure 3. Verifying Hyper-Threading Technology in Windows Task Manager

### Verifying Hyper-Threading Technology in Windows\* Task Manager

Hyper-Threading Technology is enabled if there are two processor listed in Windows Task Manager. Only one processor driver will be installed if Hyper-Threading Technology is disabled in the BIOS settings.

### Disabling

For Intel® Desktop Boards which support Hyper-Threading Technology, Hyper-Threading Technology will be enabled in the BIOS settings by default. To check that Hyper-Threading Technology is disabled for Intel Desktop Boards, enter BIOS settings and select "Disabled" under the Hyper-Threading Technology selection (See Figure 4). If the BIOS supports Hyper-Threading Technology and a Pentium 4 Processor 2.80 GHz (or below) without Hyper-Threading Technology is installed in an Intel Desktop Board, the Hyper-Threading Technology switch will be "grayed-out" and is disabled by default.

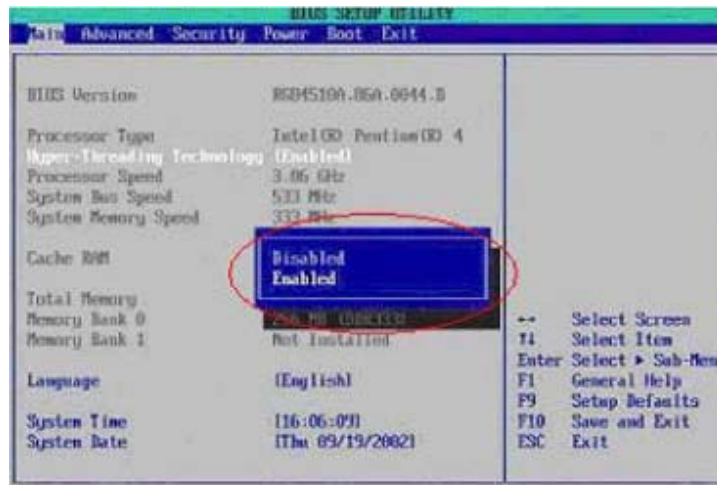


Figure 4. Enabling Hyper-Threading Technology in BIOS Settings for Intel® Desktop Boards

-- END --