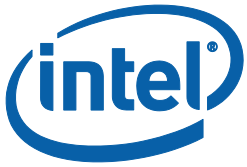

Processor Frequency Display Mismatch in Windows* System Properties

Technical Advisory Document

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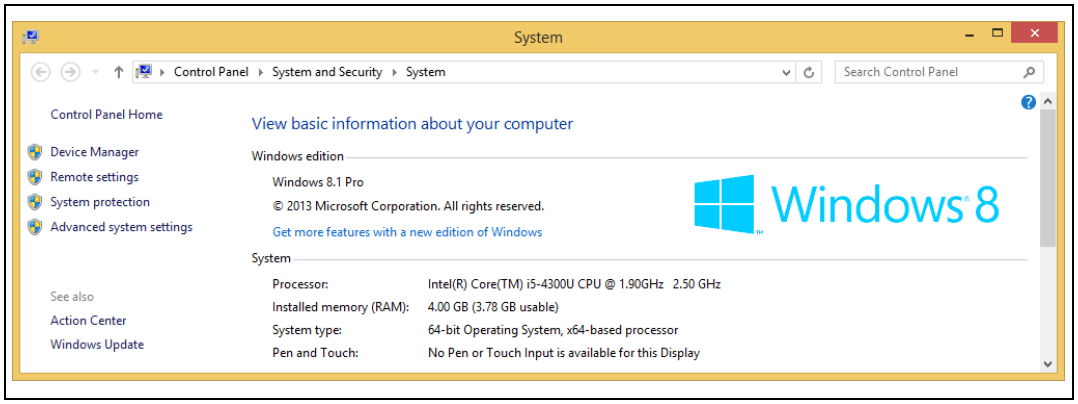
Revision 1.0

Contents

1 Introduction

On some Intel processors in certain system implementations, the frequencies seen under the Windows system properties will not match. This is understood behavior in Windows* 7 and Windows* 8



Example: Intel® Core™ i5-4300U CPU @ 1.90GHz 2.5GHz

1.1 Affected Processors

Some Intel® 3rd Generation and 4th Generation Core™, Pentium®, and Celeron® Processors that support Configurable Thermal Design Power (cTDP) will show this behavior.

1.2 Root Cause Description

The first frequency shown is text included in the processor brand-string, unique for each SKU and programmed at manufacturing by Intel. The second frequency is populated by Windows, and is generated based on a Microsoft* algorithm using certain hardware and BIOS parameters. A mismatch may be present on systems with processors that support cTDP. The first frequency shown in the brand-string is associated with the Base frequency at TDP of the processor, as defined in the processors data sheet. The second frequency will align with the processors highest supported cTDP point frequency as defined in the processor engineering design specification.

If the part does not support a configurable TDP point that is higher than the Base TDP, the numbers will match.

1.3 Resolution

This is understood behavior for the configurable TDP feature and is only a cosmetic issue. This mismatch in frequency does not affect how Windows* manages the processor frequencies, how the processor Intel® Turbo Boost Technology™ function operates, or performance of the processor.

Intel does not plan any fixes to this mismatch in frequencies.

§

2 Appendices

2.1 References

- Processor Data Sheets
  - Mobile 4th Generation Intel® Core™ Processors Family (H and M Processors)
    - https://www-ssl.intel.com/content/www/us/en/processors/core/4th-gen-core-family-mobile-m-h-processor-lines-vol-1-datasheet.html
  - Mobile 4th Generation Intel® Core™ Processors Family (U and Y Processors)
    - https://www-ssl.intel.com/content/www/us/en/processors/core/4th-gen-core-family-mobile-u-y-processor-lines-vol-1-datasheet.html
  - Mobile 3rd Generation Intel® Core™, Pentium®, and Celeron® Processors
    - http://www.intel.com/content/www/us/en/processors/core/3rd-gen-core-family-mobile-vol-1-datasheet.html?wapkw=3rd+gen+core+data+sheet
- What exactly is a P-State?
  - http://software.intel.com/en-us/blogs/2008/05/29/what-exactly-is-a-p-state-pt-1/
- Intel® Turbo Boost Technology Introduction
  - http://www.intel.com/content/www/us/en/architecture-and-technology/turbo-boost/turbo-boost-technology.html?wapkw=turbo

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