

The text "Data Center Support" is centered in white on a blue background that features a perspective view of server racks in a data center.

Data Center Support

High Precision Event Timers– Lenovo ThinkSystem

December 2017

Abstract

The article describes how to enable or disable the High Precision Event Timer in the BIOS. We will also describe how to tune configurations for the Applications which need a high-resolution timer in Windows.

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Contents

Introduction 4

Command to modify HPET 4

Tuning the Application 4

Appendix 5

Reference 5

Introduction

Intel® and Microsoft® announced the hardware timer called High Precision Event Timer (HPET) in 2005. Traditional timers, such as the Programmable interval timer (PIT) or the real-time clock (RTC), are supported in prior operating systems such as Windows NT® or Windows ME®. This article provides some parameters for application tuning.

Command to modify HPET

HPET is a hidden option in the UEFI menu and the default value is enabled. Users need to download the OneCLI (<https://support.lenovo.com/us/en/solutions/Invo-tcli>)

For **Thinksystem**:

Enable / disable the HPET:

```
onecli config set DevicesandIOPorts.ACPIHPETSupport enable/disable --imm  
USERID:PASSWORD@iMMIP --override
```

Tuning the Application

The HPET setting is within the ACPI table in UEFI. We recommend that you change the operating mode in UEFI to **Maximum Performance**. In some cases, you also need to change the power setting to **performance** in Windows system.

The HPET is fully supported in Windows Vista and Windows 2008 (and later versions). Depending on the application requirement, users may need to disable the HPET to decrease the Deferred Procedure Call (DPC) latency. Other users may need to enforce Windows to use the HPET to get the high-resolution timer. Different programs or applications may need different type of counters.

The command to control the HPET in Windows is:

```
bcdedit /set useplatformclock true
```

The command to disable the HPET in Windows is:

```
bcdedit /deletevalue useplatformclock
```

After modifying the value, restart Windows to active the function.

There are four UEFI combinations for tuning the Application as shown in this table:

Windows setting	UEFI setting – HPET enable	UEFI setting - HPET disable
Windows use platformclock true	HPET high performance	APIC (Advanced Programmable Interrupt Controller)
Windows use platformclock False	TSC (time stamp counter) + HPET	TSC + APIC

Lenovo recommends that you test the four UEFI combinations and determine the best configuration for the Application.

Appendix

When users develop the application which needs high-resolution timers in Windows, refer to the following link to get the sample code.

[https://msdn.microsoft.com/en-us/library/aa964692\(v=vs.85\).aspx?cs-save-lang=1&cs-lang=vb#code-snippet-1](https://msdn.microsoft.com/en-us/library/aa964692(v=vs.85).aspx?cs-save-lang=1&cs-lang=vb#code-snippet-1)

Reference

1. <https://www.intel.com/content/dam/www/public/us/en/documents/technical-specifications/software-developers-hpet-spec-1-0a.pdf>
2. <http://www.windowstimestamp.com/description>

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