



Intel® Dynamic Tuning Technology (Intel® DTT), Client Version 8.6

8.6.10401.9906 WHQL Version for Win10 RS3/RS4/RS5/19H1

Release Notes

September 2019



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Revision History

Package Definition	Intel® Dynamic Tuning Technology Software Package Revision	Release Date
Production Version (PV/PR1)	8.4.11000.6436	July, 2018
Production Version (PR2)	8.5.10100.6838	September, 2018
Production Version (Win10RS5)	8.5.10103.7263	December, 2018
WHQL Version (Win10RS3/RS4/R5)	8.6.10300.8974	April, 2019
WHQL Version (Win10RS3/RS4/R5/19H1)	8.6.10400.9366	May, 2019
WHQL Version (Win10RS3/RS4/R5/19H1)	8.6.10401.9906	July, 2019

Intended Audience

The target audiences for the release notes are OEM/ODM platform thermal and hardware engineers, BIOS and system software engineers, component ingredient (WiFi PSM, WWAN, NVMe Storage, Camera) procurement and design engineers.



1 Introduction

1.1 Supported Operating Systems

This package supports following Operating Systems.

- Microsoft Windows* 10 x64 Edition RS3
- Microsoft Windows* 10 x64 Edition RS4
- Microsoft Windows* 10 x64 Edition RS5
- Microsoft Windows* 10 x64 Edition 19H1

Note: This is the information for validated platforms at ingredient level. For a complete list of supported hardware and operating systems, please refer to platform BKC or contact your Intel representative.

1.2 Supported Hardware

- Comet Lake platforms
- Whiskey Lake platforms
- Amber Lake platforms
- Ice Lake platforms
- Coffee Lake platforms

Note: This version of Intel® Dynamic Tuning Technology only supports Intel Mobile Platforms. This is the information for validated platforms at ingredient level. For a complete list of supported hardware and operating systems, please refer to platform BKC or contact your Intel representative.

1.3 Supported BIOS

Please refer to the BKC to get the latest version.

1.4 Supported EC

Please refer to the BKC to get the latest version.

1.5 Supported Intel® Graphics Driver

Please refer to the BKC to get the latest version.



1.6 Supported Collaterals

- Intel® Dynamic Tuning Technology 8.x BIOS Specification#613332
- 2019 Intel® Dynamic Tuning Configuration Guide#607821
- Intel® Dynamic Tuning Feature Enabling Guide#572349
- Intel® Dynamic Tuning De-commissioning LPM, CMP, cTDP Policies Technical Advisory#598735
- Intel® Dynamic Tuning Decommissioning IA-P/T State GFX P State Control Technical Advisory WW13, 2019#610760
- Intel® Dynamic Tuning Radio Frequency Interference Mitigation (RFIM) Policy Enabling and Validation White Paper#613280



2 *Installation and Configuration Guide*

2.1 Intel® Dynamic Tuning Technology 8.x Software Stack Installation Guide

2.1.1 BIOS Setup Guide

Please make sure Intel® Dynamic Tuning Technology is enabled in your BIOS setup menu.

- 1) Reboot the system and enter BIOS setup screen.
- 2) Go to "Intel Advanced Menu".
- 3) Enter "Power & Performance", then "CPU – Power Management Control" page.
 - a. Make sure "Intel(R) SpeedStep(tm)" is enabled.
 - b. Make sure "Turbo Mode" is enabled.
- 4) Enter "Thermal Configuration ", then "Intel(R) Dynamic Tuning Configuration" page.
 - a. Enable "Intel(R) Dynamic Tuning".
 - b. Most everything will be pre-configured, so change settings as desired.
- 5) Save and Exit.



2.1.2 Intel® Dynamic Tuning Technology Software Stack Installation

- 1) Install the Chipset and Graphic driver.
- 2) Unzip the Intel® Dynamic Tuning Technology and find the install folder "Driver".
- 3) Run the setup.exe from within the folder. This will install Intel® Dynamic Tuning Technology 8.x software that is needed on production systems. Any utilities including testing / debug tools for OEMs use will not be installed in this operation.

2.1.3 Driver Behavioral Considerations

- Windows service Wudfpf.sys is not loaded in the beginning, and sometimes might cause Intel® Dynamic Tuning Technology device INT3400 unable to be loaded at the first time. Windows will try to load the driver again once Wudfpf.sys is loaded. There will be a warning event (ID: 219) found in event viewer, WUDFRd failed to load Intel® Dynamic Tuning Technology device. If the driver is installed successfully, the message could be ignored.
- If you are considering upgrading the Intel® Dynamic Tuning Technology driver on systems out in the field to 8.6.10401.9906 or newer and also want to make policy configuration changes then there are a couple of situations where extra care should be taken to ensure the upgrade works as desired.
 - You want to upgrade the driver on systems that were originally configured using any version of 8.3, 8.4, or 8.5 and the policy configuration for the system is not being updated in any way alongside or after the driver upgrade, via Windows Update or otherwise:
 - No extra care will be required since 8.6.10401.9906 or newer is backwards compatible with older policy configuration data.
 - You want to upgrade the policy configuration on systems that were originally configured using version 8.4.11000.6436 --OR-- using any version of 8.3, 8.4, or 8.5 where the name of the INT3400 device is something other than "IETM".
 - Follow these steps in order to ensure that proper configuration transition is achieved when upgrading the Intel® Dynamic Tuning Technology driver with policy configuration changes:
 - i. Upgrade the driver on the desired system to the new version (8.6.10401.9906 or newer).
 - ii. Export the configuration without any changes made.



- iii. Include the exported configuration into the BIOS of the system.
- iv. Make any desired policy configuration changes in the Observation Tool as desired and export when finished.
- v. Include the exported configuration with changes into the BIOS of the system.



3 Tools Support

Table 1. Tool Support

Feature	Description
Intel® Dynamic Tuning Technology Configuration Tool	<p>Intel® Dynamic Tuning Technology Configuration Tool is provided to monitor and test Intel® Dynamic Tuning Technology 8.x functionality for OEMs development / system validation use.</p> <p>After installing the Intel® Dynamic Tuning Technology 8.x software stack, the user can run the tool and observe the policies, participants and temperature changes. Capture all the settings as one file.</p> <p>Note: This package doesn't contain non-production use files. The tool is not included in the package, please contact your Intel representative to get it. (Collateral ID : 1022972)</p>



4 Feature Set – New to this release

- Certificated with Windows* 10 RS3/RS4/RS5/19H1
- RST Asynchronous Event Notification for storage. (Only available with Intel RST driver 17.5 and DTT 8.6.10401.x or later drivers with Asynchronous Event Notification support.) Validated with Passive 2/Critical Policy. Not available with Adaptive Performance (AP) policy.
- DPPA Passive Policy 2 tuning tool added to the UI install package for CML supported. In Passive Policy 2 tab the tuning assistant is visible by default.

- Features Supported:
 - Policies: Active 2, Critical, Passive 2, Adaptive Performance, Virtual Sensor, Power Boss + Math, UVTH (ICL only), PID, RFIM (ICL only)
 - Participants: Processor, Virtual Sensors, Display, Charger, Fan, Power, Generic sensors, Storage, Dynamic Participants



5 Issues – Fixed in this Release

Table 2. Fixed Issues

Reference No:	Description
2207560607	<p>Critical policy no longer trips S3/S4 after tripping S3 or S4 once.</p> <p><u>Root Cause:</u> There exists the possibility in the code that the system resume event could be discarded and not handled by DTT (a.k.a. DPTF) during S3 or S4 exit.</p> <p><u>Solution:</u> Fix the code.</p>
2204034047	<p>[RCR]Thermal excursion management through Asynchronous Event Notification to Intel DTT (a.k.a. DPTF). The latest DTT driver 8.6.10400.9366 can support AEN, But the temperature reading is not aligned with RST driver.</p> <p><u>Root Cause:</u> The storage device does not support fractional temperatures in Kelvin, the fractional bit when rounded up and converted to Celsius will always be "x.8". (Temp_K - 273.2 → Temp_C).</p> <p><u>Solution:</u> Round the reporting temperature to always favor a higher temperature rather than risk reporting as a lower temperature for the trip points.</p>
1607207106	<p>Known OS Issues on 19H1 with DTT driver v8.6, Yellow Bang [Intel R Dynamic Tuning Processor Participant] observed during S3/S4 cycling.</p> <p><u>Root Cause:</u> It is a crash in the Microsoft USBPMAPI.DLL.</p> <p><u>Solution:</u> Workaround for driver yellow bang issue by disabling use of Microsoft UCM interface until the issue is resolved in OS, and DTT can detect fixed interface/OS version.</p>



6 *Issues – Known in this Release*

Table 3. Known Issues

Reference No:	Description	Impact	Workaround
2206851825	AP is unable to change min/max P-States while T-States are enabled	AP does not correctly set the upper and lower P-States when T-States are enabled.	P-State and T-State control on CPU with Intel® Dynamic Tuning Technology is not recommended. Instead use HW P-State control (Refer to Intel® Dynamic Tuning Decommissioning IA-P/T State GFX P State Control Technical Advisory WW13, 2019#610760 for details).
2208181058	Event Viewer Application Error ID 17 encountered during Hibernate test	No functional impact	Ignore the message
2208133363	[Configuration Tool] Startup.dv gets copied to a secondary location which does not get deleted while uninstalling the tool.	The UI service setting might remain if the file did not delete properly.	Ensure to manually delete the startup.dv under DriverData folder after uninstalling tool.