

Intel® Thunderbolt™ Release Notes for Thunderbolt Windows DCH Software

Release Notes - NDA

April 2020

Revision 70

Intel Confidential



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Audience

This document intended for use by OEM software developers, test and validation engineers, and system integrators.



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Revision History

Revision Number	Description	Revision Date
1.0.2.6	Pre-Alpha release for ICL-U	March 2018
1.0.2.9	Engineering release for Thunderbolt Windows DCH SW	April 2018
1.0.2.12	Engineering release for Thunderbolt Windows DCH SW	April 2018
1.0.2.13	Engineering release for Thunderbolt Windows DCH SW	May 2018
1.0.2.19	Engineering release for Thunderbolt Windows DCH SW	June 2018
1.0.2.26	Engineering release for Thunderbolt Windows DCH SW	July 2018
1.0.2.31	Engineering release for Thunderbolt Windows DCH SW	July 2018
1.0.2.32	Production release for Thunderbolt Windows DCH SW	July 2018
1.0.2.36	Production release for Thunderbolt Windows DCH SW	August 2018
1.0.2.37	Production release for Thunderbolt Windows DCH SW	September 2018
1.0.2.38	Production release for Thunderbolt Windows DCH SW	September 2018
1.0.2.39	Production release for Thunderbolt Windows DCH SW	October 2018
1.0.2.40	Production release for Thunderbolt Windows DCH SW	October 2018
1.0.2.41	Production release for Thunderbolt Windows DCH SW	October 2018
1.0.2.42	Production release for Thunderbolt Windows DCH SW	October 2018
43	Production release for Thunderbolt Windows DCH SW	November 2018
44	Production release for Thunderbolt Windows DCH SW	November 2018
45	Production release for Thunderbolt Windows DCH SW	December 2018
46	Production release for Thunderbolt Windows DCH SW	December 2018
47	Production release for Thunderbolt Windows DCH SW	January 2019
48	Production release for Thunderbolt Windows DCH SW	January 2019
49	Production release for Thunderbolt Windows DCH SW	January 2019
50	Production release for Thunderbolt Windows DCH SW	February 2019
51	Production release for Thunderbolt Windows DCH SW	February 2019
52	Production release for Thunderbolt Windows DCH SW	February 2019
55	Production release for Thunderbolt Windows DCH SW	March 2019
56	Production release for Thunderbolt Windows DCH SW	March 2019
57	Production release for Thunderbolt Windows DCH SW	April 2019
58	Production release for Thunderbolt Windows DCH SW	April 2019
59	Production release for Thunderbolt Windows DCH SW	April 2019
59.1	Production release for Thunderbolt Windows DCH SW	April 2019



59.2	Production release for Thunderbolt Windows DCH SW	May 2019
59.3	Production release for Thunderbolt Windows DCH SW	May 2019
59.4	Production release for Thunderbolt Windows DCH SW	May 2019
59.5	Production release for Thunderbolt Windows DCH SW	June 2019
59.6	Production release for Thunderbolt Windows DCH SW	June 2019
60	Production release for Thunderbolt Windows DCH SW	August 2019
61	Production release for Thunderbolt Windows DCH SW	August 2019
62	Production release for Thunderbolt Windows DCH SW	September 2019
63	Production release for Thunderbolt Windows DCH SW	November 2019
64	Production release for Thunderbolt Windows DCH SW	November 2019
65	Production release for Thunderbolt Windows DCH SW	December 2019
66	Production release for Thunderbolt Windows DCH SW	December 2019
67	Production release for Thunderbolt Windows DCH SW	January 2020
68	Production release for Thunderbolt Windows DCH SW	January 2020
69	Production release for Thunderbolt Windows DCH SW	March 2020
70	Production release for Thunderbolt Windows DCH SW	March 2020



1 Introduction

1.1 Scope of Document

This document is the release notes for the Thunderbolt™ Windows DCH Software.

1.2 Acronyms

Term	Description
TBT	Thunderbolt
HR	Host Router
EP	End Point
AIC	Add-In Card
PR	Port Ridge (Thunderbolt)
FR	Falcon Ridge (Thunderbolt 2)
AR	Alpine Ridge (Thunderbolt 3)
TR	Titan Ridge (Thunderbolt 3)
YFL	Yosemite Falls (Thunderbolt 3)
DP	Display Port
CM	Connection Manager
LC	Link Controller
P2P	Peer-to-Peer
TCC	Thunderbolt Control Center
THC	Thunderbolt Host Controller Driver (DCH driver)
iTBT	Integrated Thunderbolt

1.3 Supported Operating Systems

Windows® 10 64-bit 19H1 Windows® 10 64-bit RS5 Windows® 10 64-bit RS4 Windows® 10 64-bit RS3	Base driver Shared product ID: 400015079 Submission ID: 1152921505689529595 Extension Shared product ID: 400015080 Submission ID: 1152921505689529596
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1.4 Supported Thunderbolt Controllers

Ice Lake U/Y ES1

JHL6540/6340 Series - "Alpine Ridge"

JHL6240 Series - "Alpine Ridge LP"

JHL7540/7340 Series - "Titan Ridge"

1.5 Release Overview

The release can be downloaded from **Intel VIP** (<https://platformsw.intel.com/>).

Note: A username and password are required to access the website and to log in. The user must have an account created for access.

Note: The *Setup.bat* batch file placed on the root folder can be used to install the driver on all the systems.

Note: For installation instructions and usage, refer to **Thunderbolt Windows DCH SW Quick Reference Guide** added to this release kit.

1.6 Versioning

Starting from release #42 the versioning structure has changed in order to decouple the driver version and the release version.

From now on, an incrementing number will define the release version. The release notes shall contain the versions of all ingredients.



1.7 Versions

Release #	Ingredient-Version
70	Driver: 1.41.873.0 Control Center (HSA): 1.0.23.0 SDK: 1.12 Install Scripts: 1.0.0.6
69	Driver: 1.41.848.0 Control Center (HSA): 1.0.22.0 SDK: 1.12 Install Scripts: 1.0.0.6
68	Driver: 1.41.823.0 Control Center (HSA): 1.0.22.0 SDK: 1.11 Install Scripts: 1.0.0.6
67	Driver: 1.41.803.0 Control Center (HSA): 1.0.20.0 SDK: 1.11 Install Scripts: 1.0.0.6
66	Driver: 1.41.789.0 Control Center (HSA): 1.0.20.0 SDK: 1.11 Install Scripts: 1.0.0.6
65	Driver: 1.41.780.0 Control Center (HSA): 1.0.20.0 SDK: 1.11 Install Scripts: 1.0.0.6
64	Driver: 1.41.769.0 Control Center (HSA): 1.0.18.0 SDK: 1.11 Install Scripts: 1.0.0.6
63	Driver: 1.41.767.0 Control Center (HSA): 1.0.18.0 SDK: 1.11 Install Scripts: 1.0.0.6
62	Driver: 1.41.750.0 Control Center (HSA): 1.0.18.0 SDK: 1.11 Install Scripts: 1.0.0.6
61	Driver: 1.41.733.0 Control Center (HSA): 1.0.18.0 SDK: 1.10 Install Scripts: 1.0.0.6
60	Driver: 1.41.729.0



	Control Center (HSA): 1.0.18.0 SDK: 1.10 Install Scripts: 1.0.0.6
59.6	Driver: 1.41.648.5 Control Center (HSA): 1.0.16.0 SDK: 1.9 Install Scripts: 1.0.0.6
59.5	Driver: 1.41.648.4 Control Center (HSA): 1.0.16.0 SDK: 1.9 Install Scripts: 1.0.0.6
59.4	Driver: 1.41.648.4 Control Center (HSA): 1.0.14.0 SDK: 1.8 Install Scripts: 1.0.0.6
59.3	Driver: 1.41.648.3 Control Center (HSA): 1.0.14.0 SDK: 1.8 Install Scripts: 1.0.0.6
59.2	Driver: 1.41.648.2 Control Center (HSA): 1.0.14.0 SDK: 1.8 Install Scripts: 1.0.0.3
59.1	Driver: 1.41.648.1 Control Center (HSA): 1.0.14.0 SDK: 1.8 Install Scripts: 1.0.0.3
59	Driver: 1.41.648.0 Control Center (HSA): 1.0.14.0 SDK: 1.8 Install Scripts: 1.0.0.3
58	Driver: 1.41.645.0 Control Center (HSA): 1.0.14.0 SDK: 1.8 Install Scripts: 1.0.0.3
57	Driver: 1.41.644.0 Control Center (HSA): 1.0.13.0 SDK: 1.7 Install Scripts: 1.0.0.3
56	Driver: 1.41.636.0 Control Center (HSA): 1.0.13.0 SDK: 1.7 Install Scripts: 1.0.0.3
55	Driver: 1.41.631.0 Control Center (HSA): 1.0.13.0



	SDK: 1.7 Install Scripts: 1.0.0.3
52	Driver: 1.41.613.1 Control Center (HSA): 1.0.13.0 SDK: 1.7 Install Scripts: 1.0.0.3
51	Driver: 1.41.613.0 Control Center (HSA): 1.0.13.0 SDK: 1.7 Install Scripts: 1.0.0.3
50	Driver: 1.41.592.0 Control Center (HSA): 1.0.12.0 SDK: 1.7 Install Scripts: 1.0.0.3
49	Driver: 1.41.592.0 Control Center (HSA): 1.0.10.0 SDK: 1.7 Install Scripts: 1.0.0.2
48	Driver: 1.41.592.0 Control Center (HSA): 1.0.9.0 SDK: 1.7 Install Scripts: 1.0.0.2
47	Driver: 1.41.587.0 Control Center (HSA): 1.0.8.0 SDK: 1.7 Install Scripts: 1.0.0.1
45	Driver: 1.41.565.0 Service: 1.41.536.0 Control Center (HSA): 1.0.6.0 SDK: 1.6 Install Scripts: 1.0.0.1
44	Driver: 1.41.536.0 Control Center: 1.0.6.0 SDK: 1.6 Install Scripts: 1.0.0.1
43	Driver: 1.41.513.0 Control Center (HSA): 1.0.6.0 SDK: 1.6 Install Scripts: 1.0.0.1



2 Features Supported

Supported = ✓ Limited Support = ⚠ Not Supported = ✖

Technology	Support
SW/Pre-Boot ACL	✓
Sx States	✓
RTD3	✓
Thunderbolt device connection	✓
Thunderbolt networking (P2P)	✓
Thunderbolt Security Level	✓
Thunderbolt Host Firmware update	✓
Thunderbolt Device Firmware update	✓
Command line installation procedure using HSA side loading	✓
Auto approve devices on native security enabled systems	✓

2.1 Best Known Configuration

For the latest Client Based Platforms Best Known Configuration (BKC), please contact your platform CE.



3 New Features—RCRs

RCR #	Change Info	Affected Component	Status
1307236686	CM FW to SW indication for USB4 devices	Thunderbolt Bus Driver	Implemented in driver version 1.41.873.0
1307234562	Non powered S4 entry on TGL	Thunderbolt Bus Driver	Implemented in driver version 1.41.873.0
1607597652	MUP 3.0 requirement for driver/application package	Thunderbolt Software Package	Implemented in package version 1.41.873.0
1306962856	Add a field to the closed driver API, to indicate if the NVM shared with PD	Thunderbolt Firmware update SDK	Implemented in SDK version 1.12
1307313906	Driver health indicator capabilities	Thunderbolt Bus Driver	Implemented in driver version 1.41.848.0
1306951840	VPro support during S5	Thunderbolt Bus Driver	Implemented in driver version 1.41.823.0
1306460668	Software configures NHI to not to clear its ISR on read and uses Interrupt Status Cancel Register (ICS) to clear each Interrupt status individually	Thunderbolt Bus Driver	Implemented in driver version 1.41.823.0
1306638777	Disable L1 on TR TBT upstream bridge if networking driver data path is configured	Thunderbolt Bus Driver	Implemented in driver version 1.41.780.0
1306950488	Disable PCIE tunneling for USB4 systems	Thunderbolt Bus Driver, Thunderbolt Control Center	Implemented in driver version 1.41.780.0 And in 1.0.20.0 respectively.
1306995749	Change DCH logic for sending Go2SX command on apple boot camp configuration	Thunderbolt Bus Driver	Implemented in driver version 1.41.769.0
1306826635	[DCH] Driver should use NVM versions for hosts and devices from CM instead of reading it from NVM	Thunderbolt Bus Driver	Implemented in driver version 1.41.767.0
1306640261	DCH TBT SW: enable RTD3 flow on ICL based controllers for boot camp	Thunderbolt Bus Driver	Implemented in driver version 1.41.729.0
1306618728	Add DCH driver pre-checks for pre-boot ACL content retrieved from CM FW	Thunderbolt Bus Driver	Implemented in driver version 1.41.729.0



RCR #	Change Info	Affected Component	Status
	Redesign P2P connection flows	Thunderbolt Bus Driver, Thunderbolt P2P NDIS Driver	Implemented in driver version 1.41.729.0
	Support Goshen Ridge NVM access and FW update	Thunderbolt Bus Driver	Implemented in driver version 1.41.648.3
	Expose correct number of ports for Ice Lake host controller (query enabled ports from BIOS)	Thunderbolt Bus Driver	Implemented in driver version 1.41.648.3
	Limit Ice Lake <i>GOTO</i> Sx wake dependency with BIOS to S4 only <ul style="list-style-type: none"> S3 Wake is controlled by the user (via PM tab, no change) S4 Wake is controlled by the user (via PM tab) only if S4 wake is enabled in BIOS. S5 is always no wake (no change). 	Thunderbolt Bus Driver	Implemented in driver version 1.41.645.0
	Support PoFX for Ice Lake	Thunderbolt Bus Driver	Implemented in driver version 1.41.644.0
	Support IMR valid ACPI method	Thunderbolt Bus Driver	Implemented in driver version 1.41.613.0
	Support iTBT Boot camp	Thunderbolt Bus Driver	Implemented in driver version 1.41.613.0
	Minimum driver version in HSA to be the latest driver version – 1.41.592.0	Thunderbolt Control Center	Implemented in TCC version 1.0.12.0
	Added support for multi-controller host	Thunderbolt Control Center	Implemented in TCC version 1.0.9.0
	Added security-level info in UWP app to reflect DMA Kernel Protection	Thunderbolt Control Center	Implemented in TCC version 1.0.9.0
	Updated samples to use the exceptions thrown from <i>FwUpdateDriverApi</i>	Firmware update SDK	Implemented in SDK version 1.7
	Provided exceptions class <i>FuDrvApiException</i> from the <i>FwUpdateDriverApi</i>	Firmware update SDK	Implemented in SDK version 1.7
	A new exception <i>UNSUPPORTED_OPERATION</i> is thrown when restricted methods are used on ICL.	Firmware update SDK	Implemented in SDK version 1.7
	Added support for ICL	Firmware update SDK	Implemented in SDK version 1.7
	Added logger and option to inject it to the closed driver API	Firmware update SDK	Implemented in SDK version 1.7
	Improved status progress update in host to include the time wait for power cycles	Firmware update SDK	Implemented in SDK version 1.7
1305945253	Removed unmanaged code usage from SDK	Firmware update SDK	Implemented in SDK version 1.7



RCR #	Change Info	Affected Component	Status
	Enabled YFL NVM read access	YFL based platforms (Ice Lake)	Implemented in version #44
	Driver supports CM RTD3 Veto	iTBT platform with FW that support CM RTD3 Veto	Implemented in version #44
	Limit drivers to Windows 10 RS4 and above	Thunderbolt Drivers (host controller, host controller extension & NDIS P2P)	Implemented in version #43
	Compile the Firmware update SDK using .Net 4.5.2	Firmware update SDK	Implemented in SDK version 1.5
	Firmware update SDK, to provide the API as a sample. The sample utilizes a new interface – <i>FwUpdateDriverApi</i> to connect to the DCH driver.	Firmware update SDK	Implemented in version 1.0.2.39
	YFL Restoring DMA registers after sleep	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.39
	Setting default GOTO Sx to WAKE (YFL only)	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.39
	Setting default GOTO Sx to no wake (YFL only)	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.38
	Adding more YFL device ID's (ICL, TGL and ADL) to host controller driver	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.37
	Introducing auto connect feature.	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.36
	Adding support for GOTO SX (YFL only).	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.36
	Service unregisters com server when stopped.	Thunderbolt Service	Implemented in version 1.0.2.36
	Block host controller FW update when there is another application connected to the driver.	FW update SDK Thunderbolt Host Controller Driver	Implemented in version 1.0.2.36
	Added 2 new exceptions (0x22A, 0x22B).	FW update SDK	Implemented in version 1.0.2.36
	All SDK components will be marked with the same version equal to the SDK version.	FW update SDK	Implemented in version 1.0.2.36
	Enhanced error-handling policy.	FW update SDK	Implemented in version 1.0.2.32
	HSA deployment via MSFT store readiness.	Thunderbolt Host controller driver Thunderbolt Control center	Implemented in version 1.0.2.32
	Enabled plug event delay for AR and TR before FW update power cycles.	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.31
	Add w/a for firmware update for native OS.	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.30
	RTD3 workaround for YFL.	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.30
	Adding IOCTL_DBG_QUERY_DEBUG_INFO for Ten Lira (solve finding BAR when device is in RTD3)	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.30



RCR #	Change Info	Affected Component	Status
	Production signed with EDSS certificate	Thunderbolt Control Center	Implemented in version 1.0.2.30
	New MSFT Signed SCCD	Thunderbolt Control Center	Implemented in version 1.0.2.30
	Changed PFN due to use of EDSS certificate	Thunderbolt Control Center	Implemented in version 1.0.2.30
	Localization strings update	Thunderbolt Control Center	Implemented in version 1.0.2.30
	Event queues acquire/release flow update	Thunderbolt Control Center	Implemented in version 1.0.2.30
	Deleting dangling inter domain shortcuts	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.29
	Refined RC files for service and com server	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.29
	Add workaround for YFL E1 BSOD (avoiding interrupt lock when RX ring is empty).	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.28
	Adding support for device I2C and read NVM	Thunderbolt Control Center	Implemented in version 1.0.2.27
	Blocked driver dump for the official release (SDL requirement).	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.26
	Opened read NVM, I2C access for the official release (TCM/SDK requirement)	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.26
	Modified CRC32 to match FW CRC32	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.24
	Disabled Debug interfaces for release configuration as a part of SDL	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.23
	Moved from test to formal custom capability, sccd, and PFN.	Thunderbolt Control Center	Implemented in version 1.0.2.21
	Implemented changes needed to support new driver handling of event queues.	Thunderbolt Control Center	Implemented in version 1.0.2.21
	Opened the driver for multiple applications while limiting the events queue for a single application at a time.	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.21
	Added safe-mode event which gets fired when the driver detects that CM is in safe mode	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.19
	Added support for multi-message firmware event	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.19
	Added support for sending a device-connected toast if upstream is rejected	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.19
	Added localized string tables	Thunderbolt Control Center	Implemented in version 1.0.2.19
	Added consideration for safe mode, toast, and notification, on TCC	Thunderbolt Control Center	Implemented in version 1.0.2.19



RCR #	Change Info	Affected Component	Status
	Added P2P icon to attached devices page on TCC	Thunderbolt Control Center	Implemented in version 1.0.2.19
	Added SL2, SL3 and SL4 support for PCI device end	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.18
	Added SDK support (I2C access, Read NVM)	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.18
	Removed support for device FW Update (limited to AR / TR), which was a feature supported through Thunderbolt Control Application	Thunderbolt Control Center	Implemented in version 1.0.2.18
	App name changed from Thunderbolt Control Application to Thunderbolt Control center along with the User Interface	Thunderbolt Control Center	Implemented in version 1.0.2.18
	Added support for reading NVM (for SDK)	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.17
	Added Localization support on Thunderbolt Control Application	Thunderbolt Control Center	Implemented in version 1.0.2.17
	Added support to host controller FW update	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.14
	Added firmware update support for TBT older generations (1 & 2) endpoint devices	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.14
	Changed Toast notification message and display time: - The notification is now: "New Thunderbolt™ device has been connected. Click here to approve the device." - Changed persistence time to 25 sec	Thunderbolt Control Center	Implemented in version 1.0.2.13
	Added more info to the "About" section of the settings page of Thunderbolt Control Application: Driver Version, Driver build date and time, FW version (currently supported only for TR)	Thunderbolt Control Center	Implemented in version 1.0.2.13
	Added option to remove all devices from ACL with a button click in Thunderbolt Control Application	Thunderbolt Control Center	Implemented in version 1.0.2.13
	Added support for device FW Update (limited to AR /TR), a feature supported through Thunderbolt Control Application	Thunderbolt Host Controller Driver And Thunderbolt Control Center	Implemented in version 1.0.2.13
	Modified app launch .com server to be WinRT	Thunderbolt Control Center	Implemented in version 1.0.2.9
	Removed toaster from the .com server and replaced it with a WinRT AppServiceConnection interface	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.9
	Added auto connection support for software ACL and Pre-Boot FW ACL	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.8



RCR #	Change Info	Affected Component	Status
	Moved the component .inf to the host controller driver installation	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.8
	Driver signals the application launcher only when SL is greater than 0	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.8
	Added control application launcher service and .com server	Thunderbolt Control Center	Implemented in version 1.0.2.7
	Removed reset host interface for all platforms	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.6
	Refined D0 exit flow	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.6
	Added RTD3 support	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.4
	Changed D0 exit flow for Ice Lake only	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.2
	Changed force power flow	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.1
	Added support for Alpine Ridge controllers	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.0
	Added support for Sx states	Thunderbolt Host Controller Driver	Implemented in version 1.0.2.0
	Added support for Ice Lake platform	Thunderbolt Host Controller Driver	Implemented in version 1.0.1.0
	Drivers support SL0 and SL1	Thunderbolt Host Controller Driver	Implemented in version 1.0.0.0
	Demo application supports approve/reject device (approve always is not supported)	Thunderbolt Control Center	Implemented in version 1.0.0.0
	P2P is partially supported (no handshake, therefore can only connect to DCH)	Thunderbolt Host Controller Driver	Implemented in version 1.0.0.0
	Added support for Titan Ridge controller	Thunderbolt Host Controller Driver	Implemented in version 1.0.0.0



4 *Issue Status Definitions*

This document provides sightings and bugs report for Intel® Thunderbolt Windows DCH SW. At the time of a milestone release, this report will be distributed with the Intel® Thunderbolt Release and will provide information on new issues and the status of old issues (replacing the Release Notes document).

Fixed Issues: This category will only display closed issues within the current Intel® Thunderbolt release. After each release, old issues will be dropped down to the "Archive" section and then new closed issues will take its place back up top for the next release. If an issue is posted in this section, it will indicate that the issue has been verified and fixed within the one that is being released.

Known Issues: This category will display all Known Issues since the initial release and will remain in this section until fixed or noted otherwise. "Known Issues" are still under investigation and may or may not be root caused.

Archive – Fixes in Previous releases: This category will display all closed issues that were closed in their respected release#. This section will serve as a history of fixed issues.

Sightings listed in this document apply to the Thunderbolt Windows DCH SW unless noted otherwise in this document or in the sightings tracking systems.



4.1 Fixed Issues in this Release

Issue Fixed in Release #	Title	Details
70	When PCIe tunneling is disabled, show teaching tip for the user.	<p>Sighting #: 1307378024</p> <p>Affected Component: Thunderbolt Control Center.</p> <p>Impact: No clear message regarding PCIe tunneling disable.</p> <p>Fix: Added teaching tip for the user. When hovered over the question button, it shows tip explaining what a PCIe tunneling disable mean.</p>
70	Remove external GPU supported from HSA	<p>Sighting #: 1307381032</p> <p>Affected Component: Thunderbolt Control Center.</p> <p>Impact: Redundand message "external GPU supported" is displayed in the about window of Thunderbolt Control Center.</p> <p>Fix: Remove the External GPU supported strings, as it is supported on all modern platforms.</p>
70	PCIe tunneling option should be hidden on ICL systems.	<p>Sighting #: 1307252948</p> <p>Affected Component: Thunderbolt Control Center.</p> <p>Impact: Redundand message "pcie tunneling enabled" is displayed in the about window of Thunderbolt Control Center.</p> <p>Fix: Remove the PCIe tunneling status on the ICL systems.</p>
70	KMOD_EXCEPTION_NOT_HANDLED on unplug after cold boot.	<p>Sighting #: 16010838872</p> <p>Affected Component: Thunderbolt Bus Driver.</p> <p>Impact: BSOD is noticed when unplug the p2p right after cold boot.</p> <p>Fix: Add checks for null and locks in the PDO (Physical Device Object) class, so during disable there will not be a null access.</p>
70	Driver events to telemetry fixes after release 69	<p>Sighting #: 1307432062</p> <p>Affected Component: Thunderbolt Bus Driver.</p> <p>Impact: Events from driver to Event log are not clear enough.</p> <p>Fix: Change the event IDs to be in the following format 0x9001, 0x9002, 0x9003, etc ... Added RTD3 entry and RTD3 exit events.</p>



4.2 Known Issues—To Date

Issue Known in Release #	Title	Details
42	Issue with running other applications, which communicate with TBT DCH driver, while updating FW for Host	Sighting #: Affected Component: Impact: The Firmware Update SDK will throw an exception on Host firmware update, in case there is an application that concurrently communicates with the driver.
1.0.2.32	Pre-load HSA requires network connectivity in order to succeed in Windows® RS4	Sighting #: 1305833580 Affected Component: Thunderbolt™ Control Center Impact: This issue is in debug with Microsoft. VSO ID #18605410 may be referenced if needed.



4.3 Archive—Fixes in Previous Releases

Issue Fixed in Release #	Title	Details
69	Firmware update status is always the same	Sighting #: 1307275915 Affected Component: Thunderbolt bus driver. Impact: FW update on GR device always finishes with the same status. Fix: Stop reading NVM on device connected to get the NVM version. Instead do it only when it is needed.
68	FW update error with DCH driver	Sighting #: 1307151768 Affected Component: Thunderbolt bus driver. Impact: FW update on devices failed. Fix: Increased the timeout from 100ms to 500ms for block write operation.
68	Thunderbolt DCH SW cannot be installed on systems with Maple Ridge Universal Serial Bus (USB) Controller	Sighting #: 1307124837 Affected Component: Thunderbolt bus driver. Impact: Driver installation failure on systems with MR, when it is configured with DMA class code for USB4. Fix: Add support for different hardware ID for MR in the INF.
68	Add support TGL B step to the base inf.	Sighting #: 1307215248 Affected Component: Thunderbolt bus driver. Impact: No support for TGL B step and on. Redundant inf for TGL A0 was used. Fix: Added support for TGL B step, removed TGL A0 inf. Now use TbtHostController.inf to install driver on TGL and others.
68	Bugcheck 0 on reboot with driver verifier and debugging enabled - TbtBusDrv	Sighting #: 2209875034 , 1608908056 Affected Component: Thunderbolt bus driver. Impact: Cannot run HLK on TGL A0. Fix: Move interrupt allocation to later stage, where the real resources provided are known. Use only provided interrupt resources without assuming they are MSix and all valid.
68	TBT app will not show connected TBT device normally after resume from MS/S4	Sighting #: 1507570730 Affected Component: Thunderbolt Control Center. Impact: The application stops showing its views properly after S4/MS. Fix: Do not release the communication with driver (Custom Device) if it is not needed. The only time the release will happen is when the application is closed.
68	Random port numbers seen in the Thunderbolt control Centre app	Sighting #: 1707040806 , 1608619083 Affected Component: Thunderbolt Control Center. Impact: The Thunderbolt application shows wrong port numbers. Fix: Enumerate ports of a controller differently, based on its PCI Serial number.



Issue Fixed in Release #	Title	Details
68	No device is shown in HSA in case of fast unplug/plug	<p>Sighting #: 1809316233</p> <p>Affected Component: Thunderbolt Control Center, Thunderbolt bus driver</p> <p>Impact: The Thunderbolt application (HSA) does not show the device in case of fast unplug and plugging the device back. This issue is seen in non-rtd3 platforms.</p> <p>Fix: Close the application early when the driver is about to be removed.</p>
68	Unexpected port/controller number is displayed	<p>Sighting #: 1807445361</p> <p>Affected Component: Thunderbolt Control Center</p> <p>Impact: Wrong port numbers shown in the Thunderbolt application (HSA) in case of platform change but same windows.</p> <p>Fix: Detect platform change using UWP API and reset controllers mapping.</p>
67	Thunderbolt is blocking pkg c state entry no-device-attached after Sx Cycling - TBT DMA stuck	<p>Sighting #: 2209860687</p> <p>Affected Component: Thunderbolt bus driver.</p> <p>Impact: Thunderbolt Driver blocks entry to low CPU states, lower than C3.</p> <p>Fix: Memory allocation should be explicitly requested by the driver from the BIOS upon S4 exit - only needed on A-step.</p>
66	Two stage inter domain disconnect together with L1s enable makes CM not responsive.	<p>Sighting #: 1307088469</p> <p>Affected Component: Thunderbolt bus driver.</p> <p>Impact: CM becomes not responsive on driver disable during P2P traffic. The issue can exist only on TR based systems.</p> <p>Fix: Usage of one stage disconnect interdomains instead of two stages.</p>
66	BSOD (0xD1) occurs during file copy, unplug the cable of TBT Peer to Peer Networking.	<p>Sighting #: 1507634159</p> <p>Affected Component: Thunderbolt bus driver.</p> <p>Impact: BSOD on disconnect P2P during traffic under certain conditions.</p> <p>Fix: On release, TX buffers need to lock transmit lock to prevent nullify TX buffers list, while TX is actively working on them.</p>
65	P2P throughput is very low	<p>Sighting #: 1606913021</p> <p>Affected Component: Thunderbolt bus driver.</p> <p>Impact: Low P2P throughput. P2P file transfer is around 400Mbps instead of 4-8Gbps or greater.</p> <p>Fix: Disable L1 on PCI upstream bridge, When P2P connection is established.</p>
65	System will BSOD when flash NVM FW with BME dock	<p>Sighting #: 1306970417, 1507519418</p> <p>Affected Component: Thunderbolt bus driver.</p> <p>Impact: Yellow bang and BSOD on HR FW update on some TR based systems.</p> <p>Fix: When Host controller is removed, stop the command sender and flush the command queue. Thus, prevents deadlock which was the cause of this issue.</p>



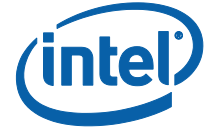
Issue Fixed in Release #	Title	Details
65	Docking cannot be detected in BIOS pre-boot menu Shutdown and Restart from OS in SL1 mode	Sighting #: 2209672241 , 1307001203 Affected Component: Thunderbolt bus driver. Impact: Devices aren't available at preboot menu. Fix: Fix typo, which made the driver to not support preboot ACL.
65	TBT docking will lose function after docking is attached to the system and then restart under SL2 with NVM39	Sighting #: 1608809297 Affected Component: Thunderbolt bus driver. Impact: Approved device is not connected after restart. Fix: The issue is with CM, which discards a packet from the driver if it came too fast after a previous command. The fix is to add a delay of 2ms after each command.
64	Driver appends a device to the topology which is rejected by the FW	Sighting #: 1306955986 Affected Component: Thunderbolt bus driver. Impact: Misleading connected status in HSA in SL4 first depth. The second device is also displayed, which is unexpected. Fix: Report tunneled for the first depth device to HSA. Block devices starting from the second depth from entering topology.
63	Thunderbolt APP doesn't POP up after hot plug then cold boot	Sighting #: 1507224529 Affected Component: Thunderbolt bus driver, Thunderbolt Service. Impact: Thunderbolt application has no reaction after the system cold boot. Fix: In the service, on user login, get all the devices which require approval and send a toast for each one of them.
63	No notification (toast) is seen while Thunderbolt controller (CM FW) is in safe mode.	Sighting #: 1306356294 Affected Component: Thunderbolt bus driver, Thunderbolt Service. Impact: No toast is seen while the host controller is in safe mode. Fix: In the service, on user login, if host is in the safe mode, send the toast.
63	Connection status "Not connected" displayed in SL4 on first depth instead of "Connected" status	Sighting #: 1306186099 Affected Component: Thunderbolt bus driver. Impact: Misleading status is displayed regarding the first depth device in SL4. Fix: Report tunneled status to HSA in such a case.
63	BSOD noticed during power stress test	Sighting #: 1507470766 Affected Component: Thunderbolt bus driver. Impact: BSOD noticed after a problem with CM ready. Fix: If driver context is not started, meaning CM is not ready.



Issue Fixed in Release #	Title	Details
62	Support P2P ring allocation via BIOS pre allocated memory	<p>Sighting #: 1306766044</p> <p>Affected Component: Thunderbolt Peer to Peer communication.</p> <p>Impact: P2P is blocked due to VTD bug.</p> <p>Workaround: Uses BIOS allocated memory for TBT rings. The driver is required to use this memory for P2P data path rings.</p>
62	DCH support for TDT ring allocation via BIOS pre-allocated memory	<p>Sighting #: 1306765876</p> <p>Affected Component: TDT.</p> <p>Impact: TDT cannot allocate rings.</p> <p>Workaround: Uses BIOS allocated memory for TBT rings. The driver is required to use this memory for TDT rings.</p>
62	Add Microsoft DFX opt-in support for the Intel Thunderbolt driver	<p>Sighting #: 1406986249</p> <p>Affected Component: Thunderbolt Bus Driver.</p> <p>Impact: Thunderbolt Bus driver is required to support DFX.</p>
62	Thunderbolt FW Update Utilities Do Not Support Strong Naming	<p>Sighting #: 2207434597</p> <p>Affected Component: Thunderbolt SDK.</p> <p>Impact: SDK and TBT C# dlls don't support strong naming.</p>
62	SDK Utilities, <i>HostUpdateSupported</i> function wrong return value for unsupported host controllers	<p>Sighting #: 1306804151</p> <p>Affected Component: Thunderbolt SDK.</p> <p>Impact: The <i>HostUpdateSupported</i> function returns wrong value for unsupported host controllers.</p> <p>Fix: The Utilities is updated, therefore the <i>HostUpdateSupported</i> function will return "true" only for the known controllers and "false" for unknown controllers.</p>
60	Displays "Value cannot be null" during GR device FWU	<p>Sighting #: 1306646690</p> <p>Affected Component: Thunderbolt Firmware Update SDK.</p> <p>Impact: Displays "Value cannot be null" during GR device FWU.</p> <p>Fix: An exception is thrown on attempt to update NVM for GR.</p>
60	TR Dock cannot be recognized in Thunderbolt Control Center when attached to TBT port of the system.	<p>Sighting #: 1507223810</p> <p>Affected Component: Thunderbolt Bus Driver</p> <p>Impact: Driver ignored a device connected notification during entry to RTD3.</p>
60	DCH topology shows incorrect topology when unplugging devices just after running TL commands and no new enumeration is possible	<p>Sighting #: 1807467061</p> <p>Affected Component: Thunderbolt Bus Driver.</p> <p>Impact: Driver failed to send commands to CM. Therefore, DCH topology shows incorrect topology when unplugging devices just after running TL commands and no new enumeration is possible.</p>
60	Device enters error state when FWU of device failed on authorization	<p>Sighting #: 1306363167, 1306417354</p> <p>Affected Component: Thunderbolt Bus Driver.</p> <p>Impact: End point representation in the driver is in error state, when FW update fails.</p>



Issue Fixed in Release #	Title	Details
60	No Thunderbolt Control Center functionality when Legacy Thunderbolt SW is installed	Sighting #: 1306465331 Affected Component: Thunderbolt Control Center Impact: Control Center could not access the driver due to admin security privileges left from the legacy software.
60	P2P Connectivity issues during Sx state	Sighting #: 1607017007 Affected Component: Thunderbolt P2P Impact: P2P connection is getting disconnected when Two Port concurrency (P2P+Storage) is connected to both SUT1 and SUT2 during Sx state.
60	Sporadic peer to peer connectivity issues	Sighting #: 1607127405 Affected Component: Thunderbolt P2P Impact: Sporadically peer to peer connection is directing to "Documents" folder when hot plugged/unplugged in S0 state.
60	Peer to Peer connection is not establishing sporadically after resuming from Sx state	Sighting #: 1507109245 Affected Component: Thunderbolt P2P Impact: Sporadically peer to peer connection is not established (3 out of 5) after resuming from Sx state.
60	No inter domain connection upon booting from S5 to S0 state while CIO connected	Sighting #: 1306464272 Affected Component: Thunderbolt P2P Impact: No inter domain connection is noticed when booting from S5 state to S0 state while CIO is connected.
60	RTD3 support info is incorrect when TCM is reading it from TBT DCH	Sighting #: 1607548218 Affected Component: Thunderbolt Bus Driver Impact: The RTD3 capability is not properly displayed in TCM.
60	Successful FW update message is shown regardless of an actual failure	Sighting #: 1306584434 Affected Component: Thunderbolt Bus Driver Impact: Success message status is shown by FW update SDK, regardless of authentication status after the image update on GR.
60	Device grayed out in FW Update Tool	Sighting #: 1807870882 Affected Component: Thunderbolt Firmware Update SDK. Impact: Cannot perform FW update through TGL as the device is grayed out in FW Update Tool.
60	Timeout message during FWU with 2 or more devices connected	Sighting #: 1306420947 , 1507228520 Affected Component: Thunderbolt Firmware Update SDK. Impact: An Exception is thrown during HR FW update. Fix: The timeout for the whole FW update process is increased from 30 sec to 1 min.
60	KDP status hyperlink disappears on tab refresh	Sighting #: 1306513812 Affected Component: Thunderbolt Control Center Impact: The Kernel DMA Protection (KDP) status line disappears randomly on tab refresh.
60	Note section in approve page is displayed while VTd is enabled	Sighting #: 1306274178 Affected Component: Thunderbolt Control Center Impact: Note section in approve page is displayed while VTd is enabled (auto connect is enabled).



Issue Fixed in Release #	Title	Details
60	No space between Thunderbolt (TM) and controller on "Details" section in TCC	Sighting #: 2207412879 Affected Component: Thunderbolt Control Center Impact: No Space is noticed between Thunderbolt(TM) and controller on "Details" section in the Thunderbolt Control Center app.
60	The point of the NVM FW version number is a colon	Sighting #: 2207412993 Affected Component: Thunderbolt Control Center Impact: The point of the NVM FW version number is a colon (39:0), which is displayed in the Thunderbolt Control Center app. Fix: Replaced the colon ":" with the dot ".".
60	"Manage approved devices" is cutoff of Portuguese/Spanish/French language	Sighting #: 2207413043 Affected Component: Thunderbolt Control Center Impact: "Manage approved devices" is cutoff of Portuguese/Spanish/French language in Thunderbolt Control Center app.
60	Information for user "approval not needed" in SL3 and SL4	Sighting #: 1306191606 Affected Component: Thunderbolt Control Center Impact: Confusing note is displayed Fix: Note field has been removed for SL3 and SL4 (Security Level) in Thunderbolt Control Center app.
59.6	Intel Thunderbolt driver v1.41.648.1 has slow response to Tenlira connection	Sighting #: 1507239349 Affected Component: Thunderbolt Bus Driver Impact: Intel Thunderbolt driver v1.41.648.1 has slow response about 30 sec to Tenlira connection.
59.5	Application Interfaces in TBT Application disappears after immediately Screen ON operation	Sighting #: 2207270278 Affected Component: Thunderbolt Control Center Impact: No info is displayed after Screen ON operation. Fix: The fix is to not stop communication with the driver and not to clean the UI on the enter background event.
59.5	Missing device information when restoring HSA from task bar	Sighting #: 1306435866 Affected Component: Thunderbolt Control Center Impact: Under the device information in the Thunderbolt devices menu, the attached device is not selected (marked) and the device information is not displayed.
59.5	Thunderbolt Control Center presents incorrect Security Level	Sighting #: 1306461318 Affected Component: Thunderbolt Control Center Impact: Thunderbolt Control center presents incorrect Security Level -No security instead of Kernel DMA Protection.
59.5	Thunderbolt Controller disappears from the "Details" menu after waking from S3 state	Sighting #: 1306448128 Affected Component: Thunderbolt Control Center Impact: Thunderbolt Controller disappears from the "Details" menu after waking from S3 state.
59.5	Timeout message during FW update with 2 or more devices connected	Sighting #: 1306420947 Affected Component: Thunderbolt Firmware update SDK Impact: An exception is thrown during HR firmware update, if more than one device is connected.



Issue Fixed in Release #	Title	Details
59.5	SDK_UNKNOWN_CHIP Error 0x211 observed during GR device FW update	Sighting #: 1507161532 Affected Component: Thunderbolt Firmware update SDK Impact: An exception is thrown on attempt to update NVM for GoshenRidge.
59.5	FWU tool status string description does not fit the app frame	Sighting #: 1306436141 Affected Component: Thunderbolt Firmware update SDK Impact: In case of long error message on firmware update it does not fit the application frame.
59.4	Sporadically P2P enumeration is not established while hot plugging during Sx cycles/Warm Reset.	Sighting #: 1607207544 Affected Component: Thunderbolt Peer to Peer. Impact: Sporadically fails to connect. Therefore, P2P enumeration is not established in the device manager while <i>hot plugging</i> during the Sx cycles /Warm Reset.
59.4	P2P connection sporadically fails to enumerate after Sx cycles & Warm Reset.	Sighting #: 1607096526 Affected Component: Thunderbolt Peer to Peer. Impact: Sporadically fails to connect. Therefore, P2P enumeration is not established in the device manager <i>after Sx cycles and Warm Reset</i> .
59.4	Thunderbolt Control Center (TCC) displays incorrect Security Level	Sighting #: 1306461318 Affected Component: Thunderbolt Bus Driver, TCC Impact: Wrong security level is displayed in the Thunderbolt Control Center– It displays <i>No security</i> instead of <i>Kernel DMA Protection</i> .
59.3	Read NVM of GR device returns "zero"	Sighting #: 1807470898 Affected Component: Thunderbolt Bus Driver. Impact: Cannot access GR NVM for the read.
59.3	uninstall.bat in DCH SW release package cannot uninstall TBT driver correctly with OS RS5 Chinese version.	Sighting #: 1507176725 Affected Component: Thunderbolt Bus Driver. Impact: Cannot uninstall driver correctly on RS5 Chinese version. Fix: The uninstall script is updated to work on RS5 Chinese version.
59.2	SUT hangs with SYSTEM_THREAD_EXCEPTION_NOT_HANDLED (7e) pointing to TbtBusDrv while running S4 cycle sporadically	Sighting #: 1607168137 Affected Component: Thunderbolt Bus Driver. Impact: BSOD is observed on S3 cycles. Sporadically the SUT hangs with <i>SYSTEM_THREAD_EXCEPTION_NOT_HANDLED (7e)</i> pointing to TBT kernel mode driver, <i>TbtBusDrv</i> while running S4 cycle.
59.2	BSOD 0x50 (PAGE-FAULT-IN-NONPAGED-AREA) occurs after ME commit in the factory process	Sighting #: 1507180730 Affected Component: Thunderbolt Bus Driver. Impact: BSOD 0x50 during NVM read (device or host controller).
59.1	Yellow bang observed sporadically in HID Sensor Collection V2 while running S4 cycle.	Sighting #: 1607156100 Affected Component: HID sensor devices Impact: Thunderbolt driver yellow bang causes HID filter drivers to crash.



Issue Fixed in Release #	Title	Details
59	System hangs during S4 cycle	Sighting #: 1607168137 Affected Component: HSA Impact: ICL SUT gets hang sporadically at PC:00CS pointing to Thunderbolt bus driver while running S4 cycle.
58	HSA minimum driver version fixed to be 1.41.484.0	Sighting #: 2207210101 Affected Component: HSA Impact: : HSA could not install drivers from MS store for driver versions upto 1.41.587.0
58	HSA sideload installation failure	Sighting #: 1409237293 Affected Component: HSA Impact: HSA fails to install in sideload mode and issues an error " <i>Microsoft.NET.Native.Framework.2.1 not found</i> " Fix: Updated the directory with necessary dependencies.
58	SDK running on x64 failure	Sighting #: 2207210814 Affected Component: SDK Impact: SDK runtime failure when running on x64 forced system.
58	SDK NVM version format issue	Sighting #: 1306371107 Affected Component: SDK Impact: Incompatability with certain OEM tools. It displays incorrect FW version.
58	Thunderbolt DCH SW installation script failure during setup new driver on top of previous driver	Sighting #: 1306366539 Affected Component: Installer Impact: Failure to install Thunderbolt DCH SW driver version-57 on top of previous driver.
57	Bugcheck 0x9f on restart flow when disabling YFL0/1 while P2P connected	Sighting #: 1306336659 Affected Component: Thunderbolt bus driver Impact: Failure to disable the driver when P2P is connected, which leads to BSOD 0x9F when resetting the machine.
57	Sporadic failure to connect P2P with GR device	Sighting #: 1306292285 Affected Component: P2P connection on Goshen Ridge Impact: Sporadic failure to connect P2P with GR device and no " <i>disconnect_im_connection</i> " notification is observed after disconnect P2P.
57	P2P connection fails after hard reset	Sighting #: 1606838693 Affected Component: P2P Impact: In P2P scenario after Hard Reset, the connection is not established in one SUT and neither is the connection enumerated in the Device manager.
56	Symbols mismatch or not found	Sighting #: 2206560785 Affected Component: Thunderbolt symbols Impact: Symbols for ThunderboltService.exe and TbtFilterDrv.dll are mismatched or not found during symbols check.
55	BSOD during CS cycle	Sighting #: 1607036882 Affected Component: Thunderbolt Bus Driver Fix: Sporadic BSOD <i>DRIVER_POWER_STATE_FAILURE</i> is observed during CS cycle



Issue Fixed in Release #	Title	Details
55	Observing BSOD on port swapping in P2P during Sx	Sighting #: 1607041098 Affected Component: Thunderbolt Bus Driver Impact: After port swapping in P2P Scenario, BSOD "System thread exceptional handling" is observed during Sx states
55	Safely Remove Hardware and Eject Media show TBT Controller	Sighting #: 2206719792, 1507048524 Affected Component: Thunderbolt Bus Driver Impact: Thunderbolt host controller appears in the Safely Remove Hardware list even when no TBT device is present
52	INF declarative check is getting failed for TBT driver	Sighting #: 1606876492 Affected Component: HSA Component INF Impact: TBT driver failed to pass INF Verification tool check.
51	Thunderbolt controller App shows an error pop up while performing restart with TBT devices connected as an end point device.	Sighting #: 1606900087, 1306139244 Affected Component: Service and Toast launcher Impact: Error popup is shown to the user while performing restart with TBT devices connected as an endpoint device.
51	No enumeration of AR/FR device with TBT UWD driver rev44 on SL2	Sighting #: 1506993764 Affected Component: Thunderbolt Bus Driver Impact: On SL2, AR/FR devices are not able to connect.
51	TBT Peer-to-Peer auto re-connect is not happening after restart cycles	Sighting #: 1606925250, 1507008673 Affected Component: Thunderbolt Bus Driver Impact: TBT peer to peer auto re-connect is not happening after restart
51	Sporadically, TBT3 devices are not enumerating after restart	Sighting #: 1606886060 Affected Component: Thunderbolt Bus Driver Impact: Devices might not be connected after restart
51	Symbols are not included for <i>TbtControlCenter</i> , <i>ToastLauncher</i> and <i>ThunderboltService</i>	Sighting #: 2206560785 Affected Component: Drivers, Service and Toast launcher Fix: Missing <i>TbtControlCenter</i> , <i>ToastLauncher</i> and <i>ThunderboltService</i> is fixed.
51	NVM FW version shows "unknown" in Thunderbolt controller App after wake from Sx	Sighting #: 1306174429 Affected Component: Thunderbolt Control Center Fix: The NVM FW version displays "unknown" in the <i>About</i> window in <i>Thunderbolt controller App</i> after wake from sleep.
51	No "user approval and notes" information needed in SL3/SL4.	Sighting #: 1306186096 Affected Component: Thunderbolt Control Center Impact: Redundant note appears for SL3/SL4 in the "Approve Devices" window.
50	Close application on driver down	Sighting #: 2206604473 Affected Component: Thunderbolt Control Center Impact: On non-RTD3 platforms, keeping control center open may cause driver yellow bang Introduced in 1.0.9.0



Issue Fixed in Release #	Title	Details
50	Managed Approved Devices window doesn't refresh upon device(s) plug/unplug	Sighting #: 1306174448 Affected Component: Thunderbolt Control Center Impact: User experience
50	Device connected in HSA but not approved prevents D3 entry	Sighting #: 1306186095 Affected Component: Thunderbolt Control Center Impact: No D3 entry when a device is connected but not approved.
50	No user approval information needed for SL3, SL4.	Sighting #: 1306186096 Affected Component: Thunderbolt Control Center Impact: Users might be misled to thinking that they can approve devices on these levels.
50	"Do not connect" option doesn't block all devices further the chain from being added to ACL list	Sighting #: 1306171558 Affected Component: Thunderbolt Control Center Impact: Users might be misled to thinking that if they changed parent to not approve, this cancel other downstream approvals.
50	Fix pre-boot ACL issue	Sighting #: 1507033134 Affected Component: Thunderbolt Control Center Impact: The user choice of a device to <i>always approve</i> is not saved through G3.
49	App refresh issue on device disconnect	Sighting #: 1306165489 Affected Component: Thunderbolt Control Center Impact: App isn't refreshing device info section after device disconnection
49	App missing P2P info	Sighting #: 1306165493 Affected Component: Thunderbolt Control Center Impact: Missing connected peer info/title in app while P2P is established
49	App issue with multiple device connect	Sighting #: 1306168007 Affected Component: Thunderbolt Control Center Impact: App prevents connecting more than one device at once.
49	App issue with saving device connection type	Sighting #: 1306168048 Affected Component: Thunderbolt Control Center Impact: Swapping between device connection types saves only the first selection.
49	App crash on device connect with VT-d disabled	Sighting #: 1306168130 Affected Component: Thunderbolt Control Center Impact: App crashes upon device connection with VT-d disabled
49	App refresh issue on device plug/unplug	Sighting #: 1306168133 Affected Component: Thunderbolt Control Center Impact: App display does not refresh upon device plug/unplug
48	Symbols missing	Sighting #: 2206560785 Affected Component: Service & Toast Launcher Impact: Symbols were missing in TBT DCH Rev 44 for <i>TbtAppLauncherComServer</i> and <i>ThunderboltService</i>



Issue Fixed in Release #	Title	Details
48	No popup in SL2 host implementation	Sighting #: NA Affected Component: Thunderbolt Toast Launcher, Thunderbolt Control Center Impact: No toast when user connects SL1/SL0 end- point to SL2 host.
47	Shutdown from command line resulting CATERR	Sighting #: 1306144770 Affected Component: iTBT based platform Impact: CATERR in shutdown (S5) from command line. YFL based system may enter cat error when shutdown from command line
47	Application crashes	Sighting #: 1306136852 Affected Component: Thunderbolt Control Center Impact: Application crashes ~20 seconds after plugging of 12 devices.
47	UWP app not refreshing issue	Sighting #: NA Affected Component: Thunderbolt Control Center Impact: UWP app isn't refreshing upon plug/unplug affecting user experience.
47	No popup in SL2 host implementation	Sighting #: NA Affected Component: Thunderbolt Toast Launcher, Thunderbolt Control Center Impact: No toast when user connects SL1/SL0 end- point to SL2 host.
46	TBT App toast not showing up in system without VC++ components	Sighting #: 2206346043 Affected Component: Thunderbolt Toast Launcher Impact: No toasts when installed on clean system (without VC++ redistributables). The issue is addressed by C++ base service & toast launcher com server replaced with C# service and toast launcher utility.
46	Warm reset on YFL causing CATERR	Sighting #: 1305951801 Affected Component: Thunderbolt Bus Driver Impact: CATERR "PKGC_WATCHDOG_HANG_C2R_DN_WT_IOSF_BLOCK MCA" observed during warm reset on YFL host controllers.
45	Fix end-point enumeration after S4	Sighting #: 1606821485 Affected Component: Thunderbolt Bus Driver Impact: End points don't enumerate after S4
44	Fix for sporadic Thunderbolt bus driver BSOD during reboot	Sighting #: 2206284057, 1506942689 Affected Component: Thunderbolt Bus Driver Impact: Sporadic BSOD was observed during reboot without TBT device connected.
43	Fix interrupt storm on ICL platform	Signring #: 1606748765, 1606747811 Affected Component: Thunderbolt Bus Driver Impact: Ice Lake platform suffered from sporadic interrupt storm when exiting D3 that eventually led to DPC watchdog BSOD.



Issue Fixed in Release #	Title	Details
43	Fix CATERR in Ice Lake restart flow when host controller is in RTD3	Sighting #: Affected Component: Ice Lake platform Impact: When machine was restarted while the host controller was in RTD3, a catastrophic error occurred.
43	Fix BSOD in device add flow.	Sighting #: 2206165421 Affected Component: Thunderbolt™ Driver Impact: Driver causes a BSOD if device add flow fails (seen in stress tests).
43	Fix missing legacy Thunderbolt Peer to Peer shortcut	Sighting #: 2007564044 Affected Component: Legacy Thunderbolt Software Impact: Legacy thunderbolt software did not show the P2P shortcut when connected to a universal thunderbolt software.
43	Fix UWP HSA – Always show port titles	Sighting #: Affected Component: Thunderbolt™ Control Center Impact: In the approve devices view, the port titles appeared only in case there are devices under it.
1.0.2.41	iTBT auto-wake in S5 fix	Sighting #: Affected Component: Impact: Fixed iTBT auto-wake in S5
1.0.2.40	Disable D3-hot for iTBT	Sighting #: Affected Component: Impact: iTBT platform experience CATERROR in reset flow when the thunderbolt controller is in D3.
1.0.2.39	SDK future driver API version support	Sighting #: Affected Component: Impact: The SDK will be compatible with future driver API versions.
1.0.2.39	Changed GOTO_Sx default configuration to wake	Sighting #: Affected Component: Impact: GOTO_Sx default configuration is reverted to WAKE.
1.0.2.39	TenLira hardware access fix	Sighting #: Affected Component: Impact: Fixed TenLira enabled hardware access flow that was broken in version 38.
1.0.2.39	iTBT NVM access in the driver	Sighting #: Affected Component: Impact: NVM access is now enabled in iTBT CM FW, so the driver can access it.
1.0.2.39	Installation fixes	Sighting #: Affected Component: Impact: <ol style="list-style-type: none"> 1. Certification is installed if required. 2. The driver is installed only in case its version is greater than the one currently installed on the machine. 3. Add support for MUP.



Issue Fixed in Release #	Title	Details
1.0.2.38	Changed GOTO_Sx default configuration to NO_WAKE	<p>Sighting #: 1305909590, 1305910808, 1305754013, 1305864588</p> <p>Affected Component:</p> <p>Impact: GOTO_Sx is set to NO_WAKE to fix the following HSD's:</p> <ol style="list-style-type: none"> 1. 1305910808 / 1305909590 - System throws CATERROR (Force_PG_POK) on Sx Entry with TBT2 devices. 2. 1305754013 - System wake from Sx after unplugging TR device. 3. 1305864588 - TBT link is reset after fast bring up the flow as driver always sent WAKE.
1.0.2.37	Bus driver debug info fix	<p>Sighting #: 1305914578</p> <p>Affected Component:</p> <p>Impact: Bus driver failed debug info IOCTL query even if debug interfaces enabled.</p>
1.0.2.36	TBT pop-up timing fix	<p>Sighting #: 1605303853</p> <p>Affected Component: Thunderbolt™ Host Controller Driver</p> <p>Impact: TBT2 device takes 55 seconds until bringing up TBT Pop-up.</p>
1.0.2.36	TBT2 devices list	<p>Sighting #:</p> <p>Affected Component: Thunderbolt™ Host Controller Driver</p> <p>Impact: Updated TBT2 missing supported devices list.</p>
1.0.2.36	iTBT P2P	<p>Sighting #:</p> <p>Affected Component: Thunderbolt™ Host Controller Driver</p> <p>Impact: Fixed iTBT P2P connection issue.</p>
1.0.2.36	Legacy device read NVM	<p>Sighting #:</p> <p>Affected Component: Thunderbolt™ Host Controller Driver</p> <p>Impact: Fixed read NVM for devices that do not support read NVM. Initially, it took a long time to read NVM for legacy TBT2 devices, due to timeouts.</p>
1.0.2.36	Device info IOCTL in RTD3	<p>Sighting #:</p> <p>Affected Component: Thunderbolt™ Control Center</p> <p>Impact: The TBT UWP Application was showing N/A in About window in case the driver was in RTD3. So, fixed the device info IOCTL when the driver is in RTD3</p>
1.0.2.36	FW notification during host update	<p>Sighting #:</p> <p>Affected Component: Thunderbolt™ Host Controller Driver</p> <p>Impact: When the driver is updating host controller firmware, discard FW notifications. This is to fix the issue where while the device is connected, host firmware update was failing.</p>



Issue Fixed in Release #	Title	Details
1.0.2.36	AR FW update timeout	Sighting #: Affected Component: Thunderbolt™ Firmware Update SDK Impact: Fixed FW update timeout in AR with FW that supports long plug event delay.
1.0.2.36	FW update timeout	Sighting #: Affected Component: Thunderbolt™ Firmware Update SDK Impact: Fixed timeout issues during FW update.
1.0.2.32	UpdateFirmware method limitations in SdkTbtController	Sighting #: Affected Component: Thunderbolt™ Firmware Update SDK Impact: 1. It will not throw any exception in case of Authentication failure. 2. After running the method, G3 must be performed.
1.0.2.32	Inability to close driver handles in SDK	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Driver is not responsive after FW update SDK keeps driver handles opened, effectively preventing driver unload
1.0.2.30	NVM read for non DWORD aligned offset	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed the issue with no SDK support to read non DWORD aligned NVM offset.
1.0.2.30	Release event queue issue	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: UI is not updated correctly on PM scenarios
1.0.2.30	Fix query firmware update for end point	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: no SDK support for TBT endpoints image update
1.0.2.30	Read_I2C command	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: No SDK support for <i>read_I2C</i> command for TBT endpoints
1.0.2.30	UI refresh fixes	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: UI is not refreshed correctly after on PM scenarios



Issue Fixed in Release #	Title	Details
1.0.2.29	Driver hang after FW command timeout	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Driver hang after device disconnect during device image update
1.0.2.29	Inter-domain shortcut redirection	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: UI shortcut to the remote machine doesn't work
1.0.2.27	Application launcher com server registration	Sighting #: Affected Component: Thunderbolt™ Control Center Impact: missing toast notifications
1.0.2.25	Fast shutdown toast bug fix	Sighting #: Affected Component: Impact: Fixed issue with no toast occurring after fast shutdown.
1.0.2.22	Event queue handling bug fix	Sighting #: Affected Component: Thunderbolt™ Control Center Impact: Fixed issue with new event queue handling.
1.0.2.22	D0 exit bug fix	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Inconsistency in commands send during D0 exit was fixed.
1.0.2.22	No toast bug fixes	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed a bug where there was no toast after reboot.
1.0.2.21	BIOS and platform RTD3 inconsistency fixes	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed driver not responsive issue when RTD3 was enabled in the platform but disabled in the BIOS.
1.0.2.20	Daisy chain intermittent issue fixes	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed intermittent issue when connecting a chain of six devices.
1.0.2.20	Stress BSOD fixes	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed the issue of stress BSOD when the device was connected during sleep/wake.
1.0.2.19	RTD3 Enter behavior	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed reject EP and approve after controller enters RTD3.



Issue Fixed in Release #	Title	Details
1.0.2.19	TCC scrollbars issue fixed	Sighting #: Affected Component: Thunderbolt™ Control Center Impact: Fixed scroll bars for all pages on TCC
1.0.2.19	TCC incorrect device connection issue	Sighting #: Affected Component: Thunderbolt™ Control Center Impact: Fixed attached devices page showing incorrect device connection status.
1.0.2.16	Inter-domain connection issue fix	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed inter domain connection issue when a peer is disabled or reset.
1.0.2.16	TenLira RTD3 related fix	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed TenLira disable HW on RTD3 enabled systems.
1.0.2.15	Approve multiple end-point issue fix	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed approve PCI end-point issues with more than one device.
1.0.2.14	P2P fixes for iTBT	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed broken P2P on Integrated Thunderbolt™.
1.0.2.13	Hang when sleep in D3	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed the issue of hang in host controller driver on sleep when the device is in RTD3.
1.0.2.12	Idle power state malfunction	Sighting #: 1604912287 Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed idle power state machine resumed to its idle state when it was not supposed to.
1.0.2.11	Intermittent endless device connection issue	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed intermittent endless "device connected" in service.
1.0.2.11	Service start issue	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed service start issues after reboot.
1.0.2.11	BSOD after resource rebalancing	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed BSOD when resource rebalancing occurs during FW command flow (usually get route string).



Issue Fixed in Release #	Title	Details
1.0.2.10	RTD3 entry issue	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed RTD3 entry flow (driver did not reset DMA).
1.0.2.5	RTD3 flow	Sighting #: Affected Component: Thunderbolt™ Host Controller Driver Impact: Fixed RTD3 flow issue.



5 *Related documentation*

- Thunderbolt™_Windows_DCH_SDK_Guide.pdf
- Thunderbolt™_Windows_DCH_SW_Quick_Reference_Guide.pdf