



Thunderbolt™ Release Notes For Ice-Lake Integrated Thunderbolt (iTBT) D-Step

Release Notes - NDA

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Revision 76.0

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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
60.0	Initial release for iTBT D-Step	November 8, 2018
61.0	ICL-U/Y iTBT D-step release	January 20, 2019
62.0	ICL-U/Y iTBT D-step release	February 4, 2019
63.0	ICL-U/Y iTBT D-step release	March 7, 2019
64.0	ICL-U/Y iTBT D-step release	March 18, 2019
66.0	ICL-U/Y iTBT D-step release	April 3, 2019
67.0	ICL-U/Y iTBT D-step release	April 11, 2019
68.0	ICL-U/Y iTBT D-step release	April 18, 2019
69.0	ICL-U/Y iTBT D-step release	April 24, 2019
70.0	ICL-U/Y iTBT D-step release	May 1, 2019
71.0	ICL-U/Y iTBT D-step release	May 23, 2019
72.0	ICL-U/Y iTBT D-step release	June 12, 2019
73.0	ICL-U/Y iTBT D-step release	July 12, 2019
74.0	ICL-U/Y iTBT D-step release	August 1, 2019
75.0	ICL-U/Y iTBT D-step release	September 5, 2019
76.0	ICL-U/Y iTBT D-step release	October 10, 2019



1 Introduction

1.1 Scope of Document

This document provides component-level details of the downloaded release and the contents of each folder in the release.

1.2 Acronyms

Term	Description
TBT	Thunderbolt™
HR	Host Router
EP	End-Point
AIC	Add-In Card
LR	Light Ridge (Thunderbolt™)
PR	Port Ridge (Thunderbolt™)
CR	Cactus Ridge (Thunderbolt™)
RR	Redwood Ridge (Thunderbolt™)
FR	Falcon Ridge (Thunderbolt™ 2)
AR	Alpine Ridge (Thunderbolt™ 3)
TR	Titan Ridge (Thunderbolt™ 3)
YFL	Yosemite Falls
ICL	Ice Lake
DP	Display Port
CM	Connection Manager
LC	Link Controller
HDCP	High-bandwidth Digital Content Protection
DB	Delta Bridge – TBT Retimer
P2P	Peer-to-Peer

1.3 Naming Convention

<project name>_<Si stepping>_<image rev>.bin

For example,

<project name>:
YFL, AR, TR, etc.

YFL_D0_Rev1.bin – Yosemite Falls D0 stepping Revision 1



2 Features Supported

Supported = ✓ Limited Support = ⚠ Not Supported = ✗

Technology	Support
Thunderbolt Link 20/40G (Rounded)	✓
Thunderbolt Link 20.3/40.6G (Non-Rounded)	✓
DP Tunnel	✓
PCIe traffic	✓
RTD3	✓
TBT Wake	✓
Sx	✓
Thunderbolt Link Power Management (CLx)	⚠
P2P	✓



3 New Features—RCRs

RCR #	Title	Change Info	Status
72.0	Speed setting for testing purpose	Sighting #: 1807771943 Affected Component: LC Fix: Added support for <i>Force Ports Speed</i> command.	All



4 *Issue Status Definitions*

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

Closed Issues: This category will only display closed issues within the current Intel® TBT 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 Integrated Thunderbolt™ SKUs unless noted otherwise in this document or in the sightings tracking systems.



4.1 Fixed Issues in this Release

Issue Closed in Release #	Title	Details	Affected SKUs
76.0	S0ix wakes while TBT Interdomain is connected	Sighting #: 2209195015 Affected Component: LC Impact: ICL Interdomain (Cross domain) S0ix wakes on sleep. Fix: LC doesn't config wake in LSx during S0ix entry if wake events are cleared.	All
76.0	No DP Tunneling after switching from SW CM to FW CM	Sighting #: 1306821292 Affected Component: CM Impact: When switching from SW CM to FW CM, no DP tunnel due to misalignment in DP resources. Fix: FM CM will clean up the topology configuration made by SW CM before switching to operational mode.	All



4.2 Known Issues—To Date

Issue Found in Release #	Title	Details	Affected SKUs



4.3 Archive—Fixes in Previous Releases

Issue Fixed in Release #	Title	Details	Affected SKUs
75.0	System cannot enter PKG C3 during P2P connection	Sighting #: 1306697139 Affected Component: CM Impact: System cannot enter Package C state during P2P connection. Fix: Increase the number of IM connected request retries from 2 to 10 as defined by Apple's IM doc.	All
74.0	Spurious HPD interrupt with TBT2 monitor after warm reset	Sighting #: 1409349284 Affected Component: DP Impact: Spurious HPD interrupt with Thunderbolt2 monitor after warm reset. Fix: Detection of Interrupt (IRQ) from HW and generate the Interrupt (IRQ) from dp_in to upstream and in case of using TBT 2 monitor, Filter on HPD/IRQ detection.	All
73.0	Displays connected to TBT3 dock blank out while transferring data from TBT3 Storage to SUT	Sighting #: 1807870871 Affected Component: CM Impact: Displays connected to the TBT3 dock blanks out while transferring data from TBT3 Storage to SUT which is connected behind the TBT3 dock. Fix: Workaround for this issue is changing back-pressure threshold due to overrun in CIO Switch.	All
73.0	No inter domain connection notification upon boot from S5 with signed AIC	Sighting #: 1306569411 Affected Component: CM Impact: No inter domain connection notification is sent upon booting from S5 state with signed add in card. Fix: Handling IM not up after S5 state with signed host.	All
73.0	Takes ~20 seconds to configuring GR PCIE tunnel if TR is connected in the middle	Sighting #: 1306506880 Affected Component: CM Impact: It takes ~20 seconds to configuring GR PCIE tunnel if TR is connected in the middle Fix: Fix PCIE path configuration timing from 20 seconds to 2 seconds.	All
73.0	LSM error counter is up after un-plug	Sighting #: 1306183725 Affected Component: CP Impact: LSM error counter is up after un-plug. Fix: Link FSM polling adjustments are made to fix this issue.	All



Issue Fixed in Release #	Title	Details	Affected SKUs
73.0	CM not configuring LR device even in Boot Camp	Sighting #: 1306569746 Affected Component: CM Impact: CM not configuring LR device even in Boot Camp (i.e. TBT1 devices are not enumerating in boot camp) Fix: Fix for LR (TBT 1) device connectivity in boot camp.	All
72.0	Hotplug TBT3 TR dock with Display connected blanks out and flickering on eDP	Sighting #: 1607272295 Affected Component: DP Impact: Display blanks out on external monitor when connected behind TBT3 TR docks with 2 Displays and flickering on eDP when hot plugged in S0 state or during cold boot with Non Transparent LTPPR Driver Fix: Fix DPRX_READ handshake with CM by reducing dependency of AUX order in LTPPR.	All
71.0	TBT-SSD not enumerating in BIOS and EDK shell	Sighting #: 1607124995 Affected Component: CM Impact: Thunderbolt-SSD connected behind the TBT device are not enumerating in BIOS and EDK shell. Fix: Added delay to wait for links to come up before <i>acking</i> connect topology command.	All
71.0	TBT controller does not get in to RTD3 when one of PCIE controllers are in reset state	Sighting #: 2207495926 Affected Component: LC Impact: Thunderbolt controller does not get in to RTD3 even when one of the PCIE controllers are disabled/strapped out. Fix: Add PERST indication to RTD3 entry condition	All
70.0	Cat-error observed during unplug and plug of Tapex card in S3 state	Sighting #: 1607175843 Affected Component: LC Impact: Cat-error observed during unplug and plug of the Tapex card in the S3 scenario. Fix: LC FW will ignore ACK from LSx, if it gets gated with domain reset request.	All
70.0	P2P connection is not enumerating while swapping the ports during S4 cycle with TBT3 Akitio SP storage.	Sighting #: 1607203965 Affected Component: CM Impact: Sporadically P2P connection is not enumerating while swapping the ports during S4 cycle with TBT3 Akitio SP storage. Fix: TBT FW will disconnect the device if the cable_info is cleared during the Link bring up.	All
69.0	Corrupted Vendor/Model names in Device_connected_notification of AR device	Sighting #: 1306400491 Affected Component: CM Impact: Corrupted Vendor/Model names displayed in Device_connected_notification of AR device. Fix: Reads the DWORD aligned buffers from AR device NVM.	All



Issue Fixed in Release #	Title	Details	Affected SKUs
69.0	Device wake configuration	Sighting #: N/A Affected Component: CM Fix: Restoring the device wake configuration back to default during SX entry, in case it was different from default.	All
69.0	Merging fixes to default NVM	Sighting #: N/A Affected Component: CM/LC Fix: Merge latest fixes between binary SKUs.	All
68.0	CATERR observed in S3/S4 cycles on ICL	Sighting #: 1607154750 Affected Component: LC Impact: On an ICL RVP, CATERR's with post codes b503 and b504 are noticed when the system enters the S3 and S4 cycles respectively.	All
68.0	Change presets value	Sighting #: 1409251995 Affected Component: LC Fix: TBT FW is updated in order to adjust the TX presets.	All
67.0	P2P functionality fails during multiple hot plugs in S0 state	Sighting #: 1607134976 Affected Component: DP Fix: Fixed in TBT FW wherein we are increasing the CM Buffer to avoid over-run overrun and IOM FW that has a fix for TC Cold for update Cable Info registers.	All
67.0	USB-C to DP display is not enumerating during S3	Sighting #: 1607094600 Affected Component: CM Fix: Increasing stack size from 0x700 to 0x900.	All
66.0	CATERR on S3/S4 Exit when connected with TR EP + USB3 drive	Sighting #: 1606775814, 1806785026 Affected Component: LC/CM Impact: CATERR is seen during S3/S4 cycles when connected TR dock or Tapex with USB3 drive. Fix: Send Go2SX command to CM only after PCIE RP is in D3 state	All
66.0	CATERR on restart with AR dock + DP	Sighting #: 1606682090 Affected Component: LC/CM Impact: CATERR observed at PC 0000 while performing Restart cycle with Two 4k display connected behind the TBT3 AR dock	All
66.0	Sporadic autowake from S3/S4 fix	Sighting #: 1607081833 Affected Component: LC/CM Impact: Sporadic autowake is observed from S3/S4 cycles with device populated behind the TBT3/TBT2 docks	All



Issue Fixed in Release #	Title	Details	Affected SKUs
66.0	Wake using keyboard/mouse connected behind TBT3 dock	Sighting #: 1606951643 Affected Component: LC/CM Impact: Wake from USB Keyboard/Mouse behind TBT3 docks (AR/TR) is not working from S3/S4 sporadically	All
64.0	Disable CL1	Sighting #: 1306115076 Affected Component: CM Fix: Disable CL1 (only CL0s is enabled) in order to avoid CIO link hang on training after few hours of traffic	All
64.0	RTD3 flow enhancement	Sighting #: N/A Affected Component: CM Fix: RTD3 flow enhancements to improve performance by reducing device flash access.	All
63.0	Support for quick restore	Sighting #: N/A Affected Component: DP Impact: DP OUT would use TPS4 in case LT is performed in HBR3 and max TPS known is TPS2.	All
63.0	PHY TX CTS	Sighting #: N/A Affected Component: DP Impact: Support for test request when AUX request comes in as a burst (reading of 0x201 + some more DPCD registers).	All
63.0	Vendor Specific Register	Sighting #: N/A Affected Component: DP Fix: Fix for the corner case, where LC might change the DP plug state close to C10 entry.	All
63.0	RTD3	Sighting #: N/A Affected Component: DP Fix: Changes made to support RTD3.	All
62.0	DP plug state close to C10 entry	Sighting #: N/A Affected Component: DP Fix: Fix for the corner case, where LC might change the DP plug state close to C10 entry.	All
62.0	RTD3 flow enhancement	Sighting #: N/A Affected Component: CM Impact: Made some RTD3 flow enhancements to avoid conflict in Thunderbolt.	All
62.0	CATERR on USB device Plug/Unplug	Sighting #: 1306170663 Affected Component: LC Impact: When the usb device is plugged/unplugged during S0, CATERR is noticed. Fix: W/A added to address this issue	All



Issue Fixed in Release #	Title	Details	Affected SKUs
61.0	Redundant DP plug events	Sighting #: 1408276904 Affected Component: CP Impact: DP adapter ports on the thunderbolt controller, were sending plug event packets even when no device was connected. Fix: Block redundant DP plug events after C10.	All
61.0	P2P connection	Sighting #: 1305999339 Affected Component: CM Impact: P2P functionality is not working when P2P connection is done during/after Sx cycle. Fix: Addressed by addressing CM-Driver interaction.	All
61.0	CATERR on Sx Entry	Sighting #: 1305909590 Affected Component: LC Impact: System throws CATERR on Sx Entry with TBT Legacy Devices (Port Ridge). Fix: Addressed by Sx transition LC handling.	All