



Intel® Thunderbolt™ 3 Windows DCH SW Quick Reference Guide

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Overview

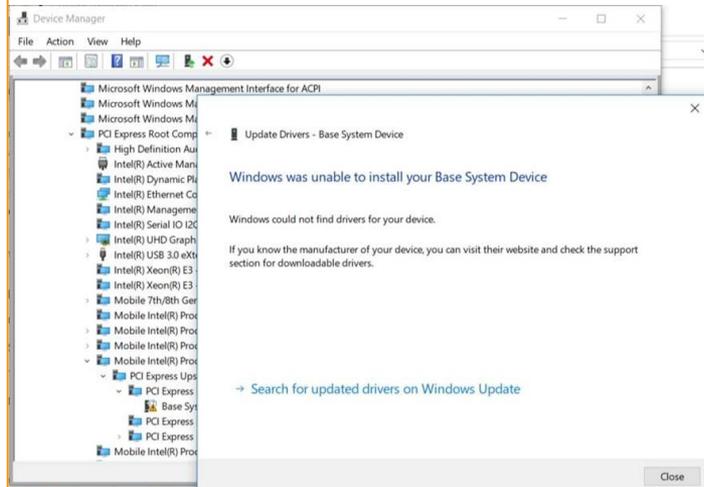
- ❑ [Prerequisite](#)
- ❑ [Installation](#)
- ❑ [Device Connection](#)
- ❑ Uninstallation
 - a. [Command Line](#) **OR**
 - b. [Manual Method](#)
- ❑ [Thunderbolt Control Center Overview](#)
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Prerequisite

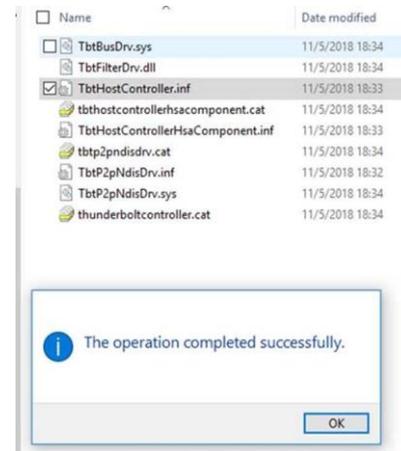
Supported Operating Systems: Windows® 10 64-bit RS4 and RS5.

NOTE: TBT DCH SW cannot be installed for RS3 and prior Windows® OS as shown below:

- Update Driver through Device Manager is blocked



- For manual Installation (by right-clicking and choosing "Install"), OS says operation completed successfully; **however, driver is not actually installed**



Control Center App Installation Considerations

1. Thunderbolt™ Control Center App sideload installation is for engineering testing only. Sideloaded Control Center App is not for production or end-user installation.

2. For Preloading the Control App, please apply the package from following location:

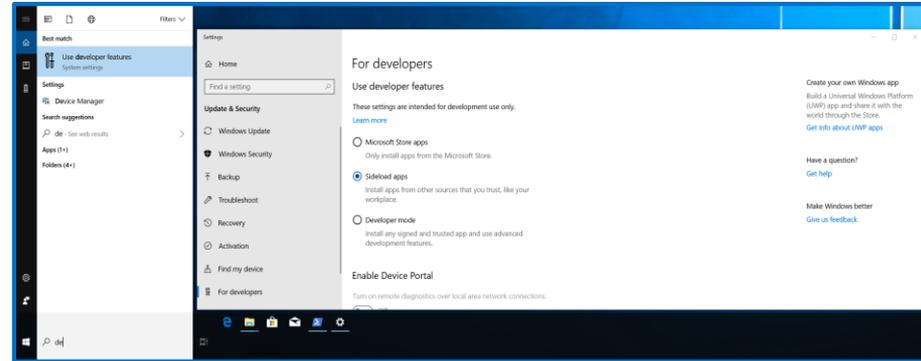
ControlCenter => ThunderboltControlApp.appxupload_Windows10_PreinstallKit.zip

3. End-user Control App installation/update is done through Microsoft Store and requires Microsoft user account and access to internet connection.

Installation

❖ **Important:** Systems with Windows® RS4 must be connected to internet for installing Control App.

1. **Open settings => update and security => For developers, and select *Sideload apps** option.**
2. Start command line (CMD) as administrator.
3. Execute the following command in CMD from the root package folder:
 - **Install driver only:** `.\Setup.bat`
 - **Install driver and Control App:** `.\Setup.bat appInstall`
4. Upon completion of the installation, success** or failure message will be displayed.
5. A log file **TBT_Install.log** will also be generated.



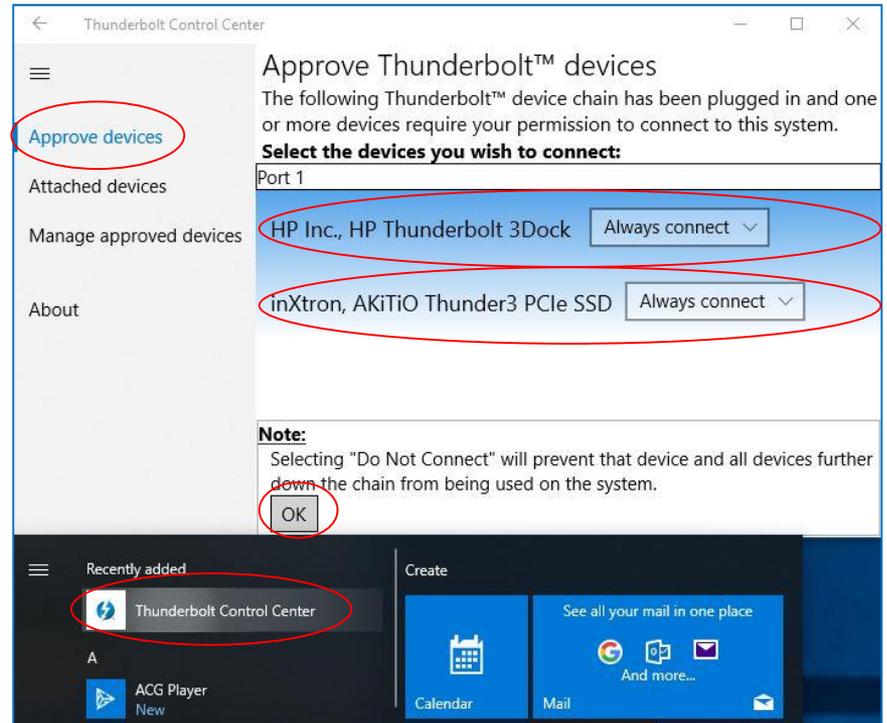
* **Refer to** [Control Center App Installation Considerations](#)

****On RS3 and prior Windows® OS, driver installation will not be successful even if the pop-up notification might say otherwise.**

```
Administrator: Windows PowerShell
PS C:\Users\Administrator\Desktop\TBT_UMD_SW_Rev43> .\Setup.bat appInstall
Thunderbolt driver already installed on host.
Thunderbolt installation finished successfully.
PS C:\Users\Administrator\Desktop\TBT_UMD_SW_Rev43>
```

Device Connection

- Approve Thunderbolt™ device connected
 - i. Connect a Thunderbolt™ device
 - ii. Open *Thunderbolt Control Center* on Windows Apps
 - iii. Select **Approve devices** and choose the option to connect – “*Connect only once*” or “*Always connect*”



Uninstallation—Command Line (1/2)

- ❖ You will need **devcon.exe** utility on the target computer to use command line option for uninstallation.

To get **devcon.exe**:

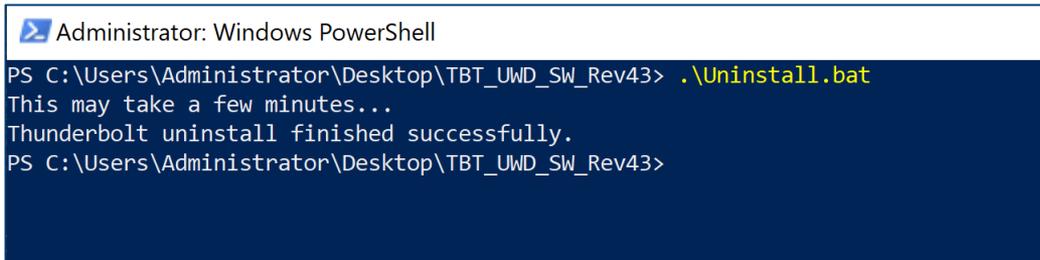
1. Navigate to <https://docs.microsoft.com/en-us/windows-hardware/drivers/download-the-wdk>
2. Download the WDK from step 2.



3. Install the WDK (on a different PC).
4. After the WDK installation is done, navigate to C:\Program Files (x86)\Windows Kits\10\Tools\x64 to find **devcon.exe**.
5. Copy devcon.exe to C:\Windows\System32 folder.

Uninstallation—Command Line (2/2)

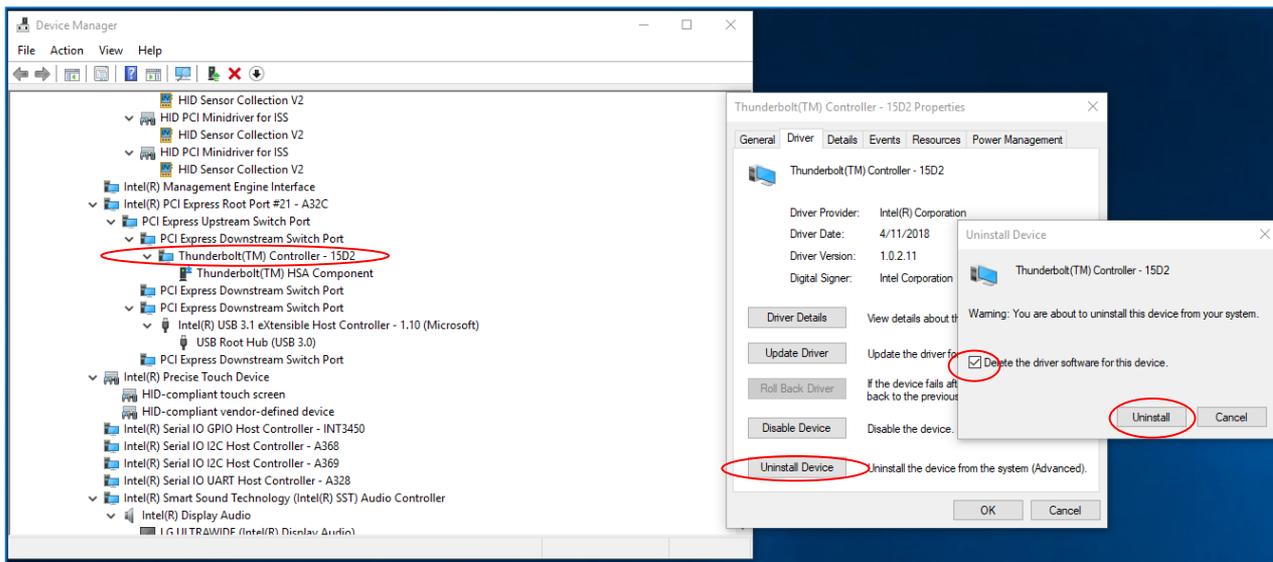
1. Start command line (CMD) as administrator.
2. In CMD, navigate to the root package folder and execute ***Uninstall.bat***.
3. A console message will inform whether the uninstallation was successful or failed.
4. A log file (TBT_Uninstall.log) will be created in the same folder.



```
Administrator: Windows PowerShell
PS C:\Users\Administrator\Desktop\TBT_UWD_SW_Rev43> .\Uninstall.bat
This may take a few minutes...
Thunderbolt uninstall finished successfully.
PS C:\Users\Administrator\Desktop\TBT_UWD_SW_Rev43>
```

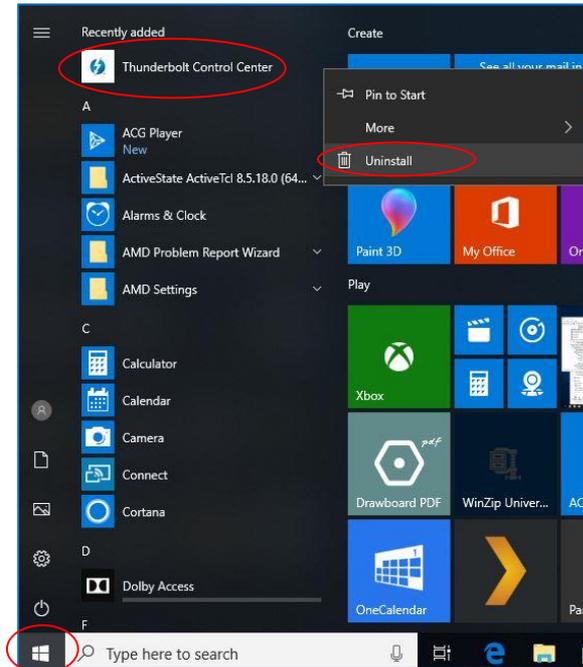
Uninstallation—Manual Method (1/2)

- For manual Thunderbolt™ DCH SW driver uninstallation
 - Open Device Manager and expand the device tree
 - Right-click **Thunderbolt™ Controller** => **Properties** => on the new window, select **Uninstall Device** => Check **“Delete the driver software”** => **Uninstall**



Uninstallation—Manual Method (2/2)

- Control App uninstallation
 - i. Open Windows Apps from the Start menu
 - ii. Right click **Thunderbolt Control Center** => **Uninstall**

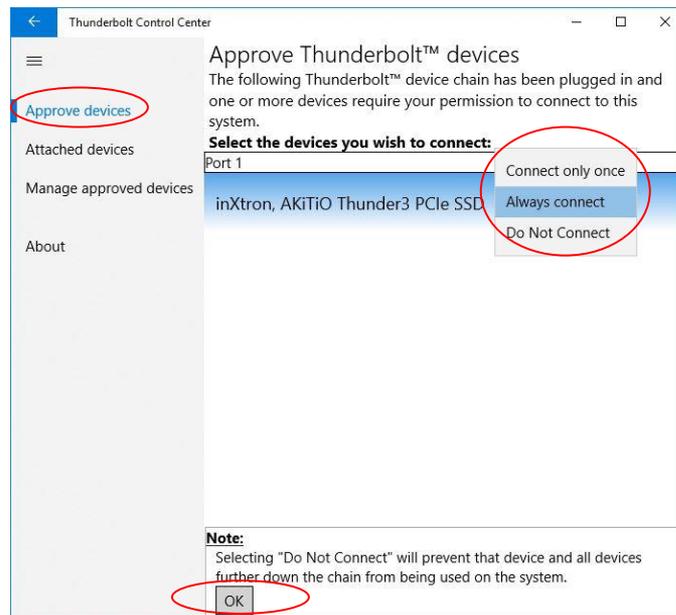


Thunderbolt Control Center Overview (1/5)

- *Thunderbolt Control Center* provides following menus:
 - [Approve devices](#)
 - [Attached devices](#)
 - [Manage approved devices](#)
 - [About](#)

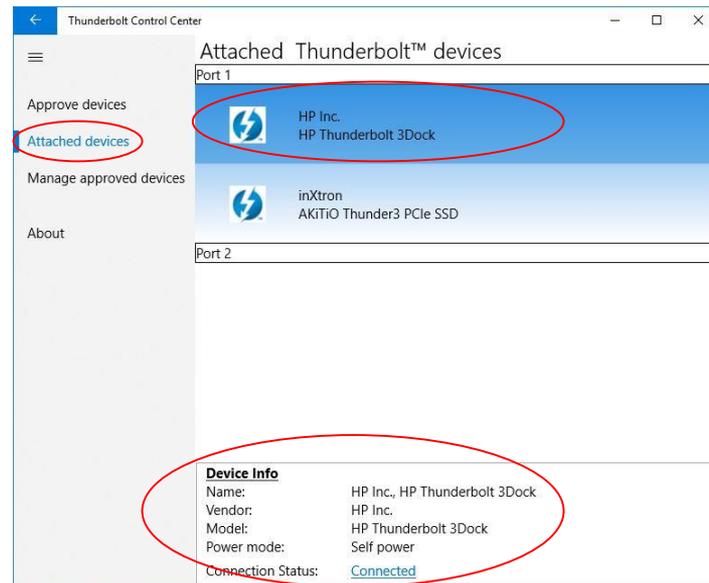
Thunderbolt Control Center Overview (2/5)

- **Approve devices**: This shows attached Thunderbolt™ devices and the option to approve/reject their connections.
- After a selection, click “OK” to confirm.



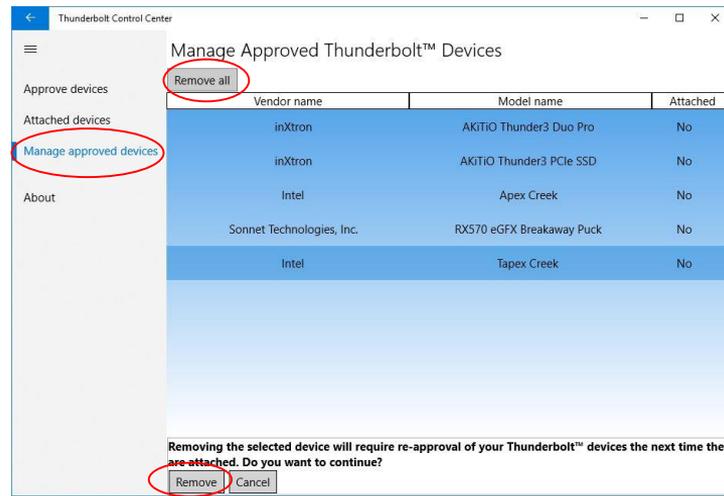
Thunderbolt Control Center Overview (3/5)

- **Attached devices**: This shows Thunderbolt™ devices connected to Port 1 and Port 2 of the host controller
 - Select a device to find out its information



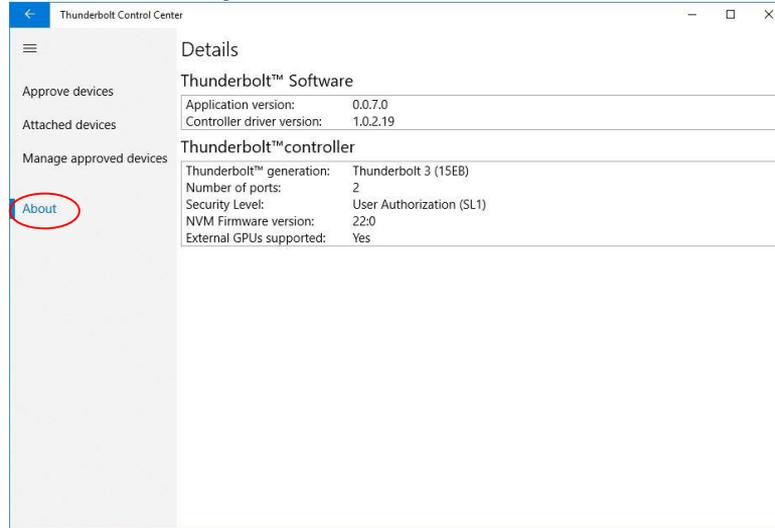
Thunderbolt Control Center Overview (4/5)

- **Manage approved devices**: This shows the list of Thunderbolt™ devices that have been approved as **“Always connect”** on the **Approve devices**. Also, the user has an option to **Remove** the pre-approved devices.



Thunderbolt Control Center Overview (5/5)

- **About**: This shows the application version, driver version, along with other Thunderbolt™ controller specific information such as *security level*, *NVM version*, and *number of ports*.



SW Trace (1/3)

A. Common Trace: Common trace is used for all scenarios except when a reboot is involved.

1. Run *Trace.bat* as an administrator to start the SW trace
 - DON'T PRESS ANY KEY AT THIS POINT!
 - A directory will be created (e.g. TBT_LOG_2018-08-02_11-27-54.63 It will store the log and additional files)
 2. Run the scenario you wish to log.
 3. Press any key when you wish to stop logging.
- ❖ **NOTE: All files in the directory are important for analysis, so don't delete any of them.**

RS4_44 > Drivers > Debug > ThunderboltTrace

Name	Date modified	Type	Size
DumpDriverInfo.bat	11/18/2018 1:31 AM	Windows Batch File	1 KB
Elevate.bat	10/25/2018 1:58 PM	Windows Batch File	1 KB
filever.exe	10/25/2018 1:58 PM	Application	13 KB
GetVersions.bat	10/25/2018 1:58 PM	Windows Batch File	1 KB
ReadMe.txt	10/25/2018 1:58 PM	Text Document	3 KB
StartBootTrace.bat	11/15/2018 1:58 PM	Windows Batch File	2 KB
StartTrace.bat	11/15/2018 1:58 PM	Windows Batch File	2 KB
StopBootTrace.bat	10/25/2018 1:58 PM	Windows Batch File	1 KB
StopTrace.bat	10/25/2018 1:58 PM	Windows Batch File	1 KB
ThunderboltDriverSnapshot.exe	11/18/2018 1:40 AM	Application	35 KB
Trace.bat		Windows Batch File	1 KB
wpp.guids		GUIDS File	1 KB

Open
Edit
Print
Run as administrator
Import to Grammarly
Protect with RMS >
7-Zip >
CRC SHA >

Drivers > Debug > ThunderboltTrace > TBT_LOG_2018-09-22_1-11-29.31

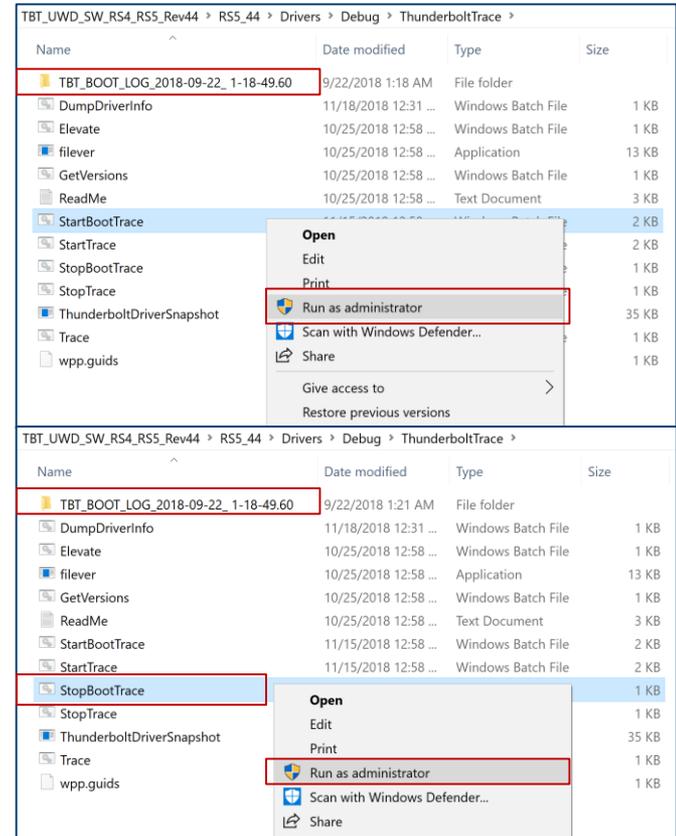
Name	Date modified	Type	Size
TbtAppLauncherComServer.exe.info	9/22/2018 1:11 AM	Text Document	1 KB
TbtBusDrv.sys.info	9/22/2018 1:11 AM	Text Document	1 KB
tbtLog.etl	9/22/2018 1:11 AM	ETL File	328 KB
ThunderboltService.exe.info	9/22/2018 1:11 AM	Text Document	1 KB

SW Trace (2/3)

B. Reboot Trace: The common trace is stopped when the machine reboots. Therefore, the machine needs to be configured to collect logs at boot.

1. If the "pre reboot" info is not required continue to step 3.
2. Run common trace (as described above). It will collect some of the "pre reboot" logs until the logging system is stopped.
3. Run *StartBootTrace.bat* as administrator.
4. Reboot.
5. After reboot, run *StopBootTrace.bat* as administrator.

❖ **Note:** If you don't run *StopBootTrace.bat*, the system will start logging again the next time you boot.



SW Trace (3/3)

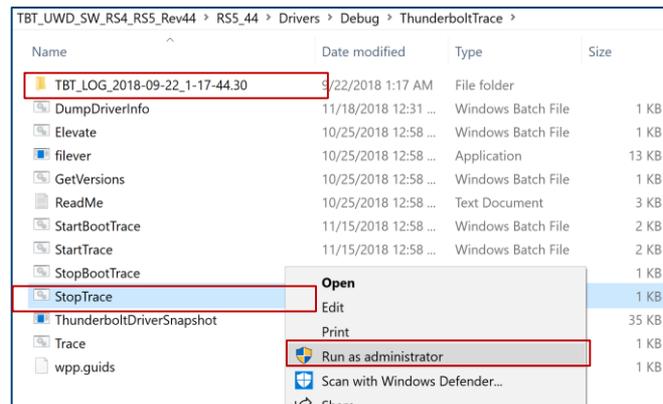
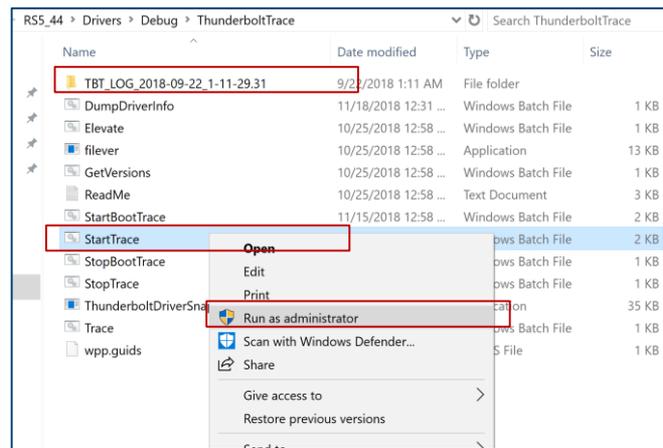
C. Regression Tests:

- ❑ Multiple Cycles **without** Reboot: Do the following for every cycle:

1. Call *StartTrace.bat* at the beginning of the cycle
2. Call *StopTrace.bat* at the end of the cycle.

- ❑ Multiple Cycles **with** Reboot: Do the following for every reboot cycle:

1. Call *StopBootTrace.bat* (it will not have any affect in the first cycle because no reboot log session is opened, but it won't cause any damage).
2. Call *StartBootTrace.bat*
3. Call *StartTrace.bat* (for logging until the reboot).



Other Considerations

1. Installing Thunderbolt™ DCH SW without uninstalling Thunderbolt™ non-DCH SW will result in malfunction of the non-DCH Thunderbolt™ driver.
2. Devices that are approved as “**Always Connect**” on Thunderbolt™ non-DCH SW will be automatically connected when the new Thunderbolt™ DCH SW is installed.
 - Select **Manage approved devices** on *Thunderbolt Control Center* to check the list of devices that have been pre-approved.

Other Considerations (Cont.)

3. Connect the system to internet if you see “*A Prerequisite for an install could not be satisfied*” error message during Control App installation on Windows® RS4 systems.

```
Administrator: Windows PowerShell
PS C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation> .\Setup.bat appinstall
Installing app ctrl.
Transcript started, output file is TBT_Install.log
Dependencies Found
C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltControlApp_1.0.1.0_x64\Dependencies\x64\Microsoft.NET.Native.Framework.2.1.appx
C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltControlApp_1.0.1.0_x64\Dependencies\x64\Microsoft.NET.Native.Runtime.2.1.appx
C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltControlApp_1.0.1.0_x64\Dependencies\x64\Microsoft.VCLibs.x64.14.00.appx
Add-AppxPackage : Deployment failed with HRESULT: 0x80073CFD, A Prerequisite for an install could not be satisfied.

Deployment Add operation with target volume C: on Package AppUp.ThunderboltControlCenter_1.0.1.0_x64_8j3eq9eme6cctt from: (ThunderboltControlApp_1.0.1.0_x64.appx) failed with error 0x80073CFD. See http://go.microsoft.com/fwlink/?LinkId=235160 for help diagnosing app deployment issues.

NOTE: For additional information, look for [ActivityId] ccaaf4d7-4620-0007-6a02-abcc2046d401 in the Event Log or use the command line Get-Appxlog -ActivityID ccaaf4d7-4620-0007-6a02-abcc2046d401

AT C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation\appxinstaller.ps1:17 char:13
    Add-AppxPackage -Path $PackagePath -DependencyPath $Depen ...
    ~~~~~
+ CategoryInfo          : NotSpecified: (C:\Users\TbtLab...0.1.0_x64.appx:String) [Add-AppxPackage], Exception
+ FullyQualifiedErrorId : DeploymentError,Microsoft.Windows.Appx.PackageManager.Commands.AddAppxPackageCommand

Transcript stopped, output file is C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation\TBT_Install.log
Thunderbolt installation finished successfully.
PS C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation>
```

Other Considerations (Cont.)

4. To install the Control App, the system must be on a Sideload or Developer mode

```
Select Administrator: Windows PowerShell
PS C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation> .\setup.bat appInstall
Installing app ctrl.
Transcript started, output file is TBT_Install.log
Dependencies Found
C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltControlApp_1.0.1.0_x64\Dependencies\x64\Microsoft.NET.Native.Framework.2.1.appx
C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltControlApp_1.0.1.0_x64\Dependencies\x64\Microsoft.NET.Native.Runtime.2.1.appx
C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltControlApp_1.0.1.0_x64\Dependencies\x64\Microsoft.VCLibs.x64.14.00.appx
Add-AppxPackage : Deployment failed with HRESULT: 0x80073CFF, To install this application you need either a Windows
developer license or a sideloading-enabled system.

Deployment of package AppUp.ThunderboltControlCenter_1.0.1.0_x64_8j3eq9eme6cct with package origin Unknown failed
because no valid license or sideloading policy could be applied. A developer license
(http://go.microsoft.com/fwlink/?LinkId=233074) or enterprise sideloading configuration
(http://go.microsoft.com/fwlink/?LinkId=231020) may be required.

NOTE: For additional information, look for [ActivityId] ccaaf4d7-4620-000a-dafb-aacc2046d401 in the Event Log or use
the command line Get-AppxLog -ActivityID ccaaf4d7-4620-000a-dafb-aacc2046d401

At C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation\appxInstaller.ps
1:17 char:13
+         Add-AppxPackage -Path $PackagePath -DependencyPath $Depen ...
+ ~~~~~
+ CategoryInfo          : NotSpecified: (C:\Users\TbtLab...0.1.0_x64.appx:String) [Add-AppxPackage], Exception
+ FullyQualifiedErrorId : DeploymentError,Microsoft.Windows.Appx.PackageManager.Commands.AddAppxPackageCommand

Transcript stopped, output file is C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation\TBT_Install.log
Thunderbolt installation finished successfully.
PS C:\Users\TbtLab\Desktop\ThunderboltSwRelease_2018-07-19_1.0.2.32_WHQL-v2\ThunderboltUwdInstallation>
```

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