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1 Driver Setup.

This setup is only needed for ITH-ETW tracing. This will be done once the target is booted with Windows.

Target Intel Trace Hub Driver will be available within the BKC for the specific platform for Intel Internal usage or can be downloaded from: <https://platformsw.intel.com> for Intel External customers.

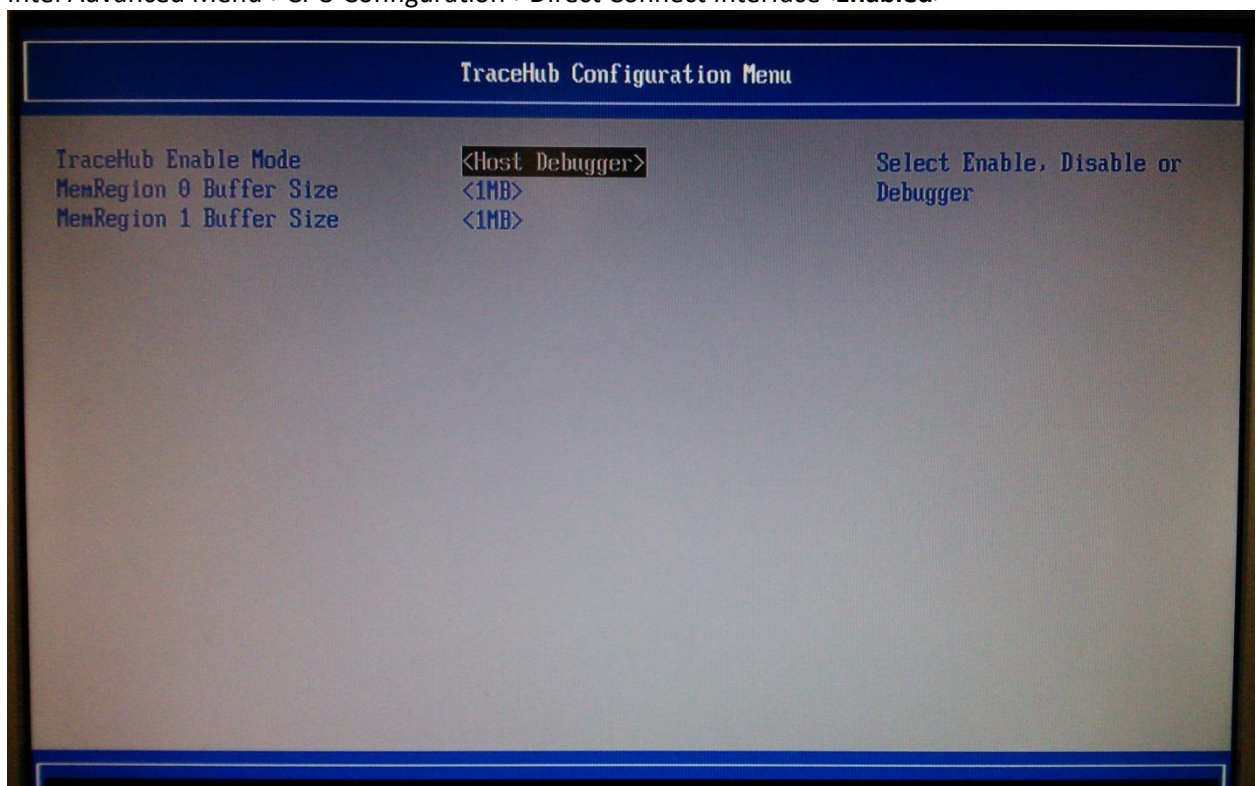
Host and target should be connected with **Ethernet cable directly**. If target is connected to global/lab network then the ETW connection from UI will not work.

1.1 Prerequisites

1.1.1 BIOS Settings

1.1.1.1 SKL/KBL Platform

- Intel Advanced Menu->PCH-IO Configuration->Trace Hub Configuration Menu->Trace Hub Enable Mode <**Host Debugger**>
- Intel Advanced Menu->CPU Configuration->Debug Interface<**Enabled**>
- Intel Advanced Menu->CPU Configuration->Direct Connect Interface<**Enabled**>



Save and exit the BIOS settings.

Note: If you don't have device enabled in BIOS, then driver installation will not be possible.

1.1.1.2 BXT/APL/GLK Platform (Intel Atom-based Platform)

Starting with BXT, for normal usage, ITH is hidden from the OS. Even after BIOS settings are modified to make ITH visible, it will not be accessible from the OS.

In order to make ITH device visible to the OS, the silicon IP needs to be unlocked. Unlocking is a complex process and its details are beyond the scope of this document. However, once the silicon is unlocked and the following BIOS settings are done, ITH will be visible to the OS.

- System Setup → Debug Configuration → NPK Debug Configuration → DCI enable (HDCIEN) → Enabled
- System Setup → Debug Configuration → NPK Debug Configuration → Trace Hub Enable → Host Debugger

For unlocking instructions, please refer to the individual platforms guide.

1.1.2 Packages:

1. [.NET framework 4.5.1](#) needs to be installed prior to driver installation on **Win7**.
2. .NET framework will be available from Windows 8.0 onwards default available with OS installation.

1.2 Driver and Service Installation

The Driver/Service package comes with the following binaries to enable ITH device:

- **ITH.sys**
KMDf mode driver for Intel® Trace Hub Device.
- **RedirectService.exe**
Intel® Trace Redirect Service which is responsible for starting, stopping, capturing, configuring and routing the ETW trace logs to the ITH device.

Depending on the OS (Win7, Win8, Win8.1 or Win10 Desktop) and the HW (SKL or BXT) that you are using, the installation process is slightly different.

IMPORTANT NOTES:
1. The Intel® Trace Redirect Service has been configured to run in a “Delayed Auto-Start” mode in order to speed up the boot up times. It might take about 1-2 minutes after system boot-up to successfully start running and accept connections.
2. The ITH Driver is an ETW based driver and sends various messages during its execution. The ITH manifest is installed during the Driver installation itself.
3. ITH Driver is registered as an ETW provider as “Intel-TraceHub”.
4. If there was an older version of the manifest installed and you are trying to install a new package, you will be asked to reboot your target system.

1.2.1 SKL BKC Package

The SKL BKC Package is a ZIP file with the following content:

[601.7601.6754.62139.zip]		
601.7601.6754.62139	FRE	Folder
Symbols	Install	Folder
Win32	Logs	Folder
Win64	DriverSetupGuide.docx	Microsoft Word Document
Logs	Release_Notes.txt	Text Document






















Purpose of different folders is as given below:

- **FRE**
Contains the INF only version of the driver and service. (64-bit binaries only)
- **Install**
Contains Win32 and Win64 sub-folders which contain the DPInst (Driver Package Installer) based install mechanism. Even INF based install can be used here.
- **Logs**
Contains Log files

Also a Release_Notes.txt and a DriverSetupGuide.docx (this document) are attached here for reference.

1.2.1.1 Installation for Windows-7

The folder contents within the FRE and Install\Win32 and Install\Win64 are as shown in the next table.

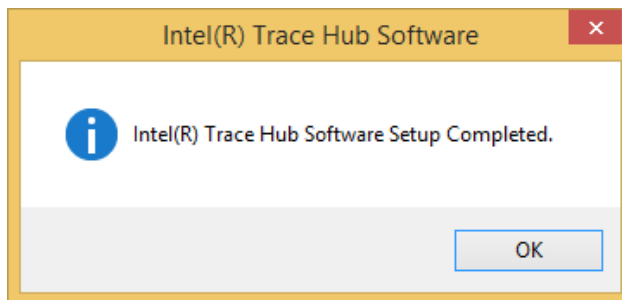
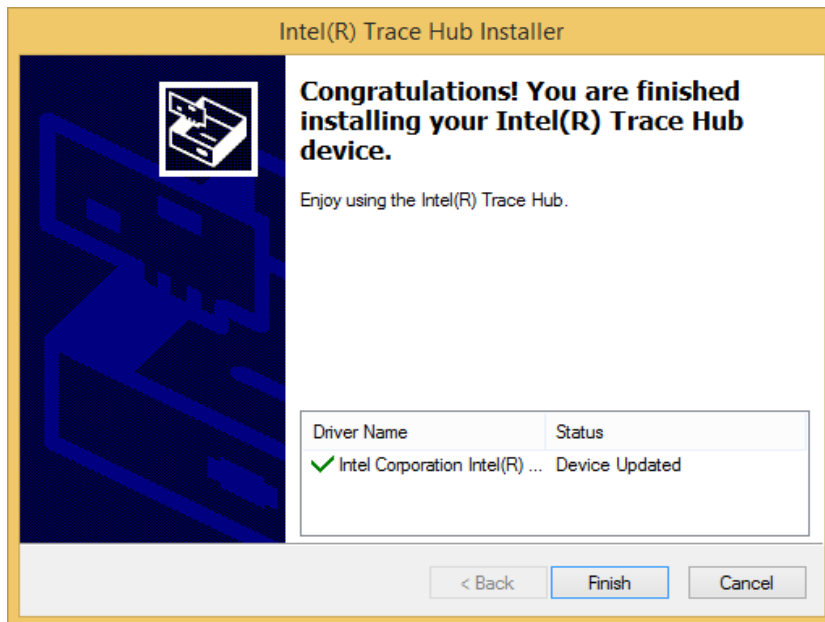
Contents of FRE	Contents of Install\Win32 and Install\Win64
 Symbols	 DPInst.exe
 ith.cat	 DPInst.xml
 ITH.inf	 ith.cat
 ITH.sys	 ITH.inf
 ithcoinstaller.dll	 ITH.sys
 ITHUninstall.exe	 ithcoinstaller.dll
 msvcr110.dll	 ITHUninstall.exe
 msvcr120.dll	 msvcr110.dll
 RedirectService.exe	 msvcr120.dll
 WdfCoinstaller01011.dll	 RedirectService.exe
	 WdfCoinstaller01011.dll

There are two methods for installation of the ITH driver:

1. DPInst based installation (GUI-based)

From Install\Win32 or Install\Win64, run the DPInst.exe. You will require Administrator access.

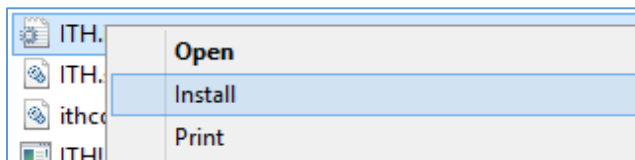
Go through the guided installation and the final screen will appear as below.



Installer package displays a message after the installation process is complete. Indicating the **Intel® Trace Hub Driver** is updated and **Intel® Trace Redirect service** is created. Click “**OK**” to close the window.

2. INF based installation

There is a known issue with Windows-7 INF based installation wherein we are not able to directly able to install drivers using right-click -> Install from the INF context menu.




















In order to install using the INF only, you can launch a command prompt in Administrator mode, navigate to the directory where the driver package is located and enter the command “**pnputil -a ITH.inf**”.

After some time, you should be able to see a pop-up message saying that “All operations have been completed”.

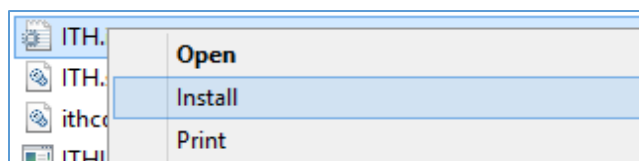
1.2.1.2 Installation for Windows-8, 8.1, 10 Desktop

The folder contents within the FRE and Install\Win32 and Install\Win64 are as shown in the next table.

Contents of FRE	Contents of Install\Win32 and Install\Win64
 Symbols  ith.cat  ITH.inf  ITH.sys  ithcoinstaller.dll  ITHUninstall.exe  msvcr110.dll  msvcr120.dll  RedirectService.exe	 ith.cat  ITH.inf  ITH.sys  ithcoinstaller.dll  ITHUninstall.exe  msvcr110.dll  msvcr120.dll  RedirectService.exe

Only the INF installation method is supported for these OS versions.

From the Windows Explorer, just right click on the INF file and select the Install option.

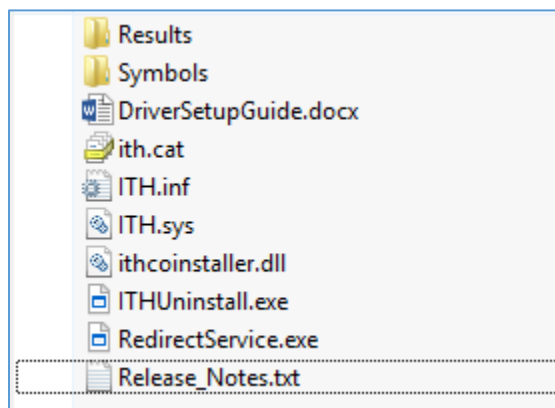


After some time, you should be able to see a pop-up message saying that “All operations have been completed”.

1.2.2 BXT/APL/KBL/GLK BKC Package

This package follows a different naming convention than the SKL Package.

This BKC Package is a ZIP file with the following content:

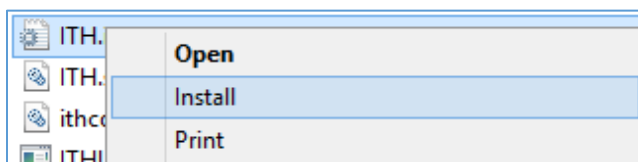


Also a Release_Notes.txt and a DriverSetupGuide.docx (this document) are attached here for reference.

1.2.2.1 Installation for Windows-8, 8.1, 10 Desktop

Only the INF installation method is supported for these OS versions.

From the Windows Explorer, just right click on the INF file and select the Install option.



After some time, you should be able to see a pop-up message saying that “All operations have been completed”.

1.2.3 ICL Pre silicon setup.

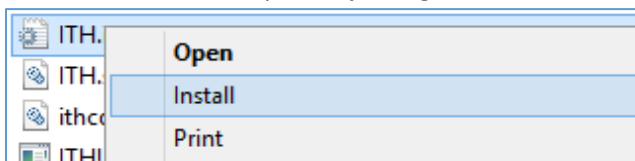
Currently driver is supported only for PCH side of NPK(South Trace Hub) for ICL platform. We need to follow the below steps to make sure to enable NPK driver properly.

We need to follow the following setup options from BIOS to enable NPK in ICL pre silicon.

1. Go to BIOS setup option-> Intel Advanced Menu
2. Select Debug Settings-> Select Platform Debug Consent -> enabled.
3. SouthTraceHub Enable Mode -> Target Debugger
4. NorthTraceHub Enable Mode -> Disabled (This is needed if you have the platform with both CPU and PCH).
5. Continue to boot with these changes.

Once OS is booted follow the below steps to install driver.

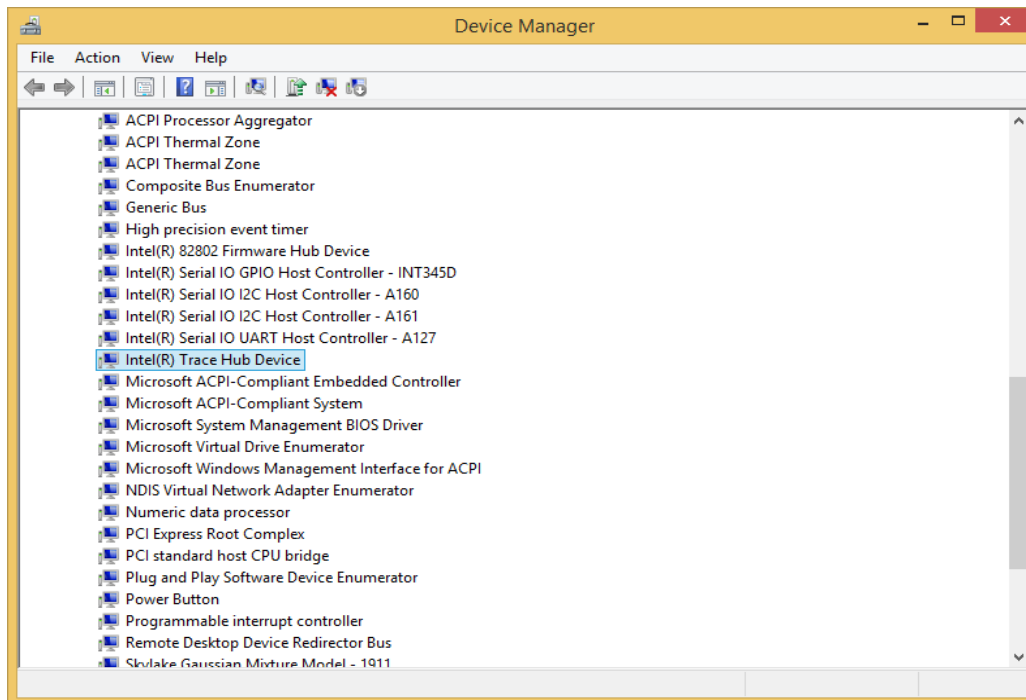
1. Only the INF installation method is supported for these OS versions.
2. From the Windows Explorer, just right click on the INF file and select the Install option.



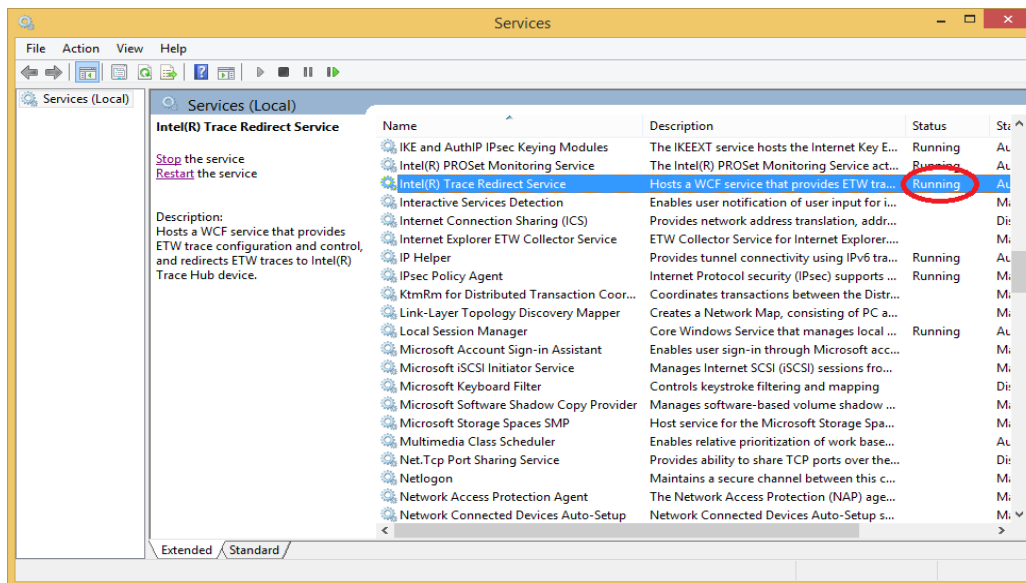
- 3.
4. After some time, you should be able to see a pop-up message saying that “All operations have been completed”.

1.3 Verify setup

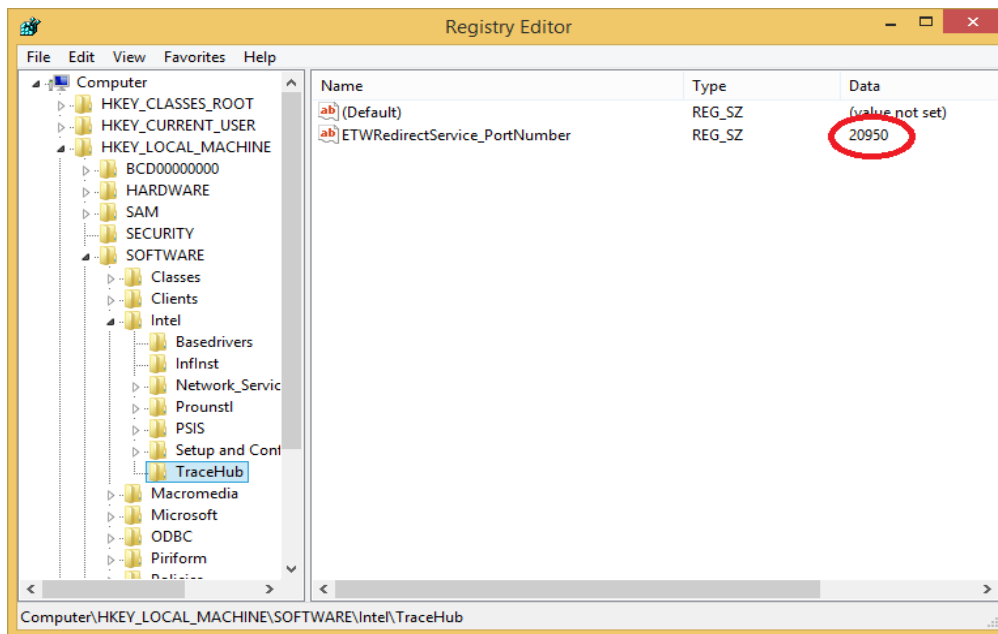
Step1: Open Device Manager and find Intel® Trace Hub Device listed healthy under system devices without any yellow bangs



Step2: Run “services.msc” and verify Intel® Trace Redirect Service status is “Running”. If not, start the service.



Step 3: Open Registry Editor by typing “regedit” in Run and verify if the folder **Trace Hub** is created under location “**HKEY_LOCAL_MACHINE\SOFTWARE\Intel**” and the port is created with number 20950. Now target is ready with all required installations and connections.



1.4 Known Issues

1. Only on Windows-7: INF based installation does not work by right-click->Install option from the explorer context menu.
2. Scan for hardware changes in device manager has to be done manually (if not automatically updated) after driver install / uninstall.
3. Intel(R) Trace Redirect Service has been configured as Delayed Start. Due to this reason, sporadically, it does not start automatically after driver installation. If this is the case, then launch services.msc, navigate to Intel(R) Trace Redirect Service and "Start" it.

1.5 Trouble-Shooting Guide

1. **Driver was installed successfully using either the INF or DPInst install method but Device Manager does not show the "Intel® Trace Hub Device"**
 - This can probably happen if the BIOS Settings have not been set to "Enabled" for Intel-Trace Hub
 - Please check that by rebooting and entering the BIOS Setup menu.
 - If BIOS settings are correct and still the Device Manager does not show up the device, check for any Yellow-bang devices.
 - You can also install PCI-Z (www.pci-z.com) which is a utility for checking out the various PCI devices present on your target platform.
2. **The Service Control Manager shows the Intel® Trace Redirect Service as "Running" but I am not able to connect to the Service**
 - The Intel® Trace Redirect Service is configured to run in a "Delayed Auto-Start" mode.

- It is possible that you are trying to connect to the Service as soon as the target platform booted successfully.
- Under delayed auto-start mode, the service will be completely up and running only after a brief period of time after system reboot. This time-period can be as high as 120 seconds depending on Windows Registry settings for AutoStartDelay.

3. Service did not start automatically and when I try to start it from the Service Control Manager, I get an error “Unable to start or stop the service”

- If you are on Windows-7, please check that you have the .NET Framework 4.5.1 is installed on your system. If not installed, then refer to section 1.1.2 for installing .NET Framework 4.5.1.
- If still not able to start, please check your
<System_Root>\Windows\System32\IntelRedirectService folder
- There should be a RedirectServiceTrace.log file. Please send it to us for further debugging.

4. I got a BSOD when trying to capture ETW traces.

- Please send us the driver version# and the steps to replicate the BSOD and we will do a further debug.
- Driver Version# can be found from Device Manager -> System Devices -> Intel® Trace Hub Device -> Double-Click. Check the “Driver” Tab in the newly-opened dialog box. Make a note of the Driver Date and the Driver Version fields