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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.

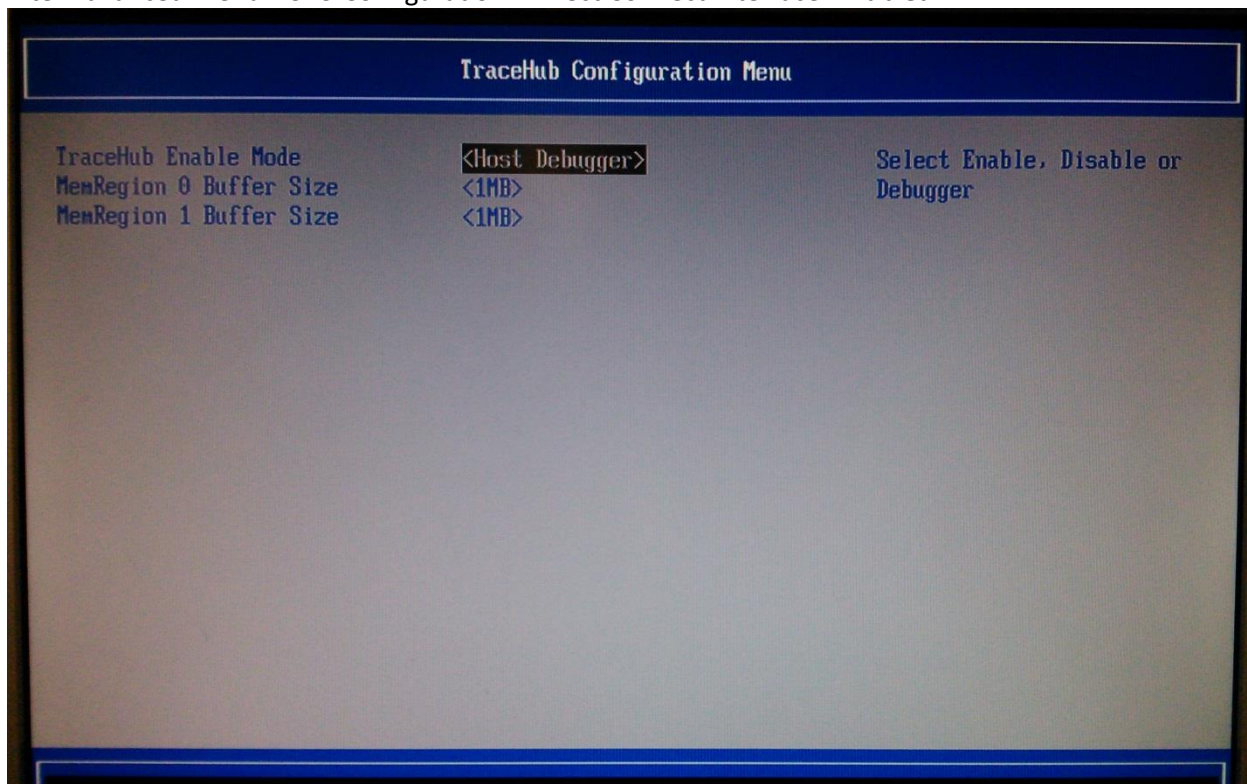
Host and target should be connected with Ethernet cable directly and target machine should have ip address starting with 169.xxx.xxx.xxx. If target is connected to global/lab network then the ETW connection from UI will not work.

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 Windows OS Version

For ITH driver to run on a system “**Windows 10 minimum RS3**” version or higher version should be installed. ITH driver package is provided for various windows build version RS4,RS5,RS6..etc. Get the appropriate ITH version depends on your OS version installed.

1.1.3 Packages:

1. **Visual studio 2017 dependencies:** Install the Visual studio dependencies from the below link.
<https://support.microsoft.com/en-gb/help/2977003/the-latest-supported-visual-c-downloads>
Choose the redistributable package under section “Visual Studio 2015, 2017 and 2019” and install both x86 and x64 version.
2. [.NET framework 4.5.1](#) needs to be installed prior to driver installation on **Win7**.
3. .NET framework will be available from Windows 8.0 onwards default available with OS installation.

1.2 Driver and Service Installation

Make sure you Host and target systems are connected with **Ethernet cable directly before installing ITH driver**. If target is either left unconnected or connected to global/lab network then ITH service will not be started correctly and will not be running. **Also check your target system has ip address starting with 169.xxx.xxx.xxx.**

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.

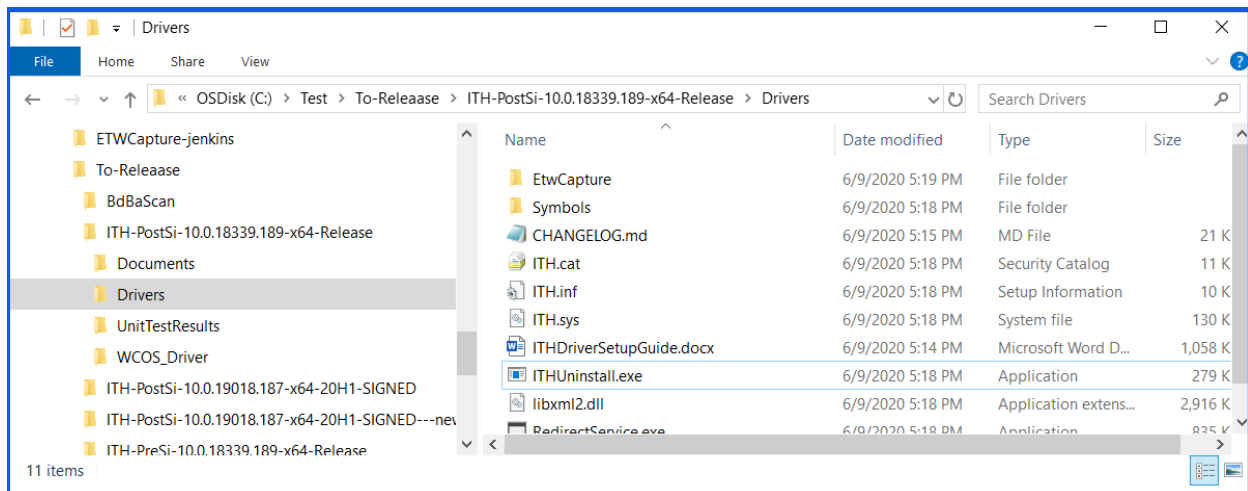
For all OS (Win7, Win8, Win8.1 or Win10 Desktop) and the HW (SKL or BXT) that you are using, the installation process will be same.

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 ITH driver installed in the system and you are trying to install a new package, the setup will launch uninstall program first to remove the older version and you will be asked to reboot your target system. It's strongly recommended to reboot the system after uninstallation so the driver files will be removed from system completely. The setup will be automatically resumed after system reboot and will be resumed. Now you will be ready to install new ITH driver setup.

1.2.1 Installing ITH driver

The ITH setup Package is a ZIP file with the following content:

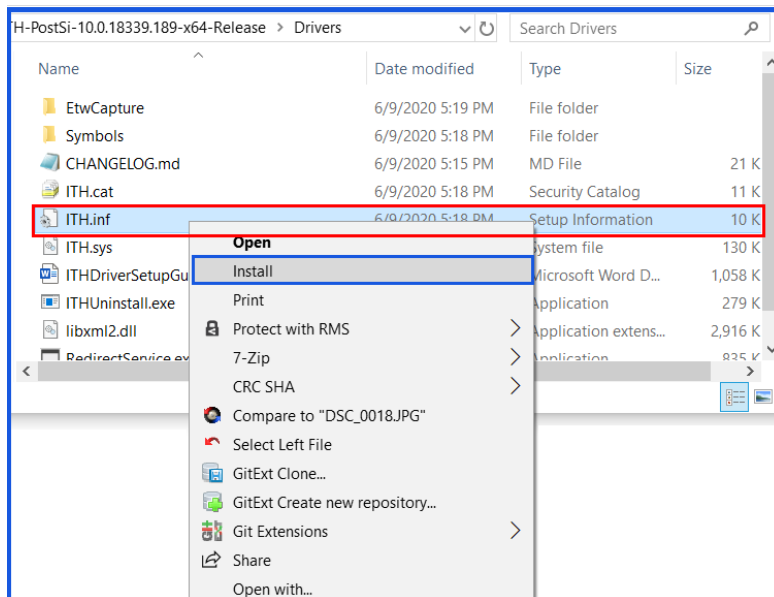


Purpose of different folders is as given below:

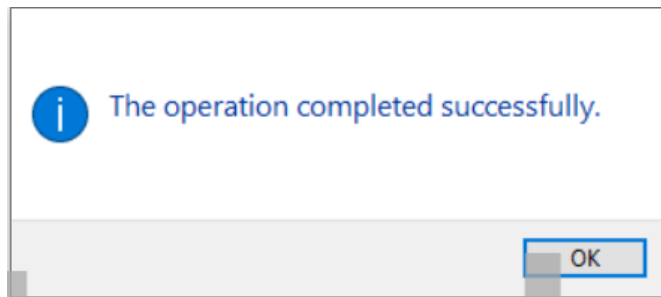
- **Certificates**
Contains the Security certificate files for internal use.
- **Documents**
Contains Klockwork and Protex Scan reports
- **Drivers**
Contains the ITH Driver setup files , ITHDriverSetupGuide.doc and Release notes(changrlog.md)
- **UnitTestResults**
Contains the basic unit test results executed during the build process.

Begin Installation :

To Install ITH Driver , Open Drivers folder from ITH package , Do right click on “ITH.inf” and click on Install Button as shown below.



This will begin installing the ITH driver. And Once the installation complete this shows message as below.



1.2.2 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.

Pre-requisite: Most Pre silicon OS will not have Visual studio 2017 dependencies installed.

Install the Visual studio dependencies from the below link manually.

<https://support.microsoft.com/en-gb/help/2977003/the-latest-supported-visual-c-downloads>

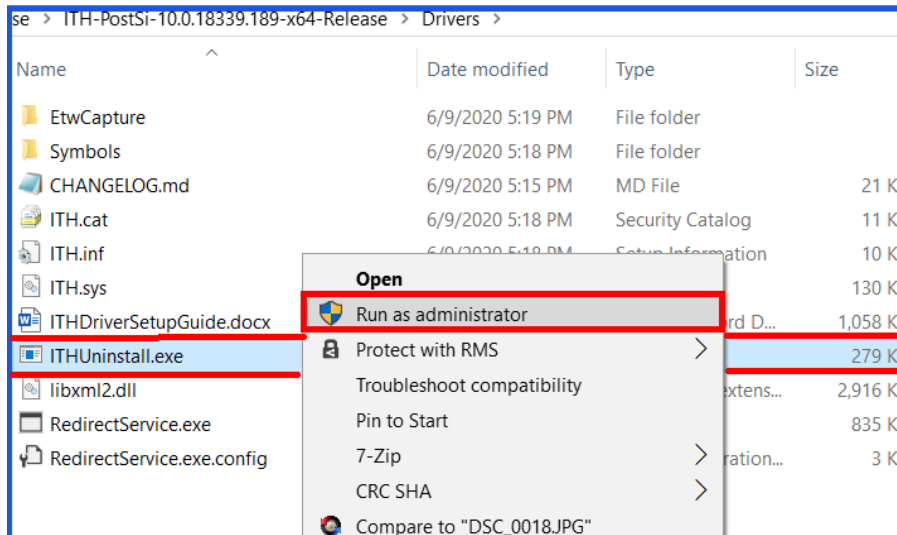
Choose the redistributable package under section “Visual Studio 2015, 2017 and 2019” and install both x86 and x64 version.

Once OS is booted follow the same steps as in the section “ITH Driver installation”.

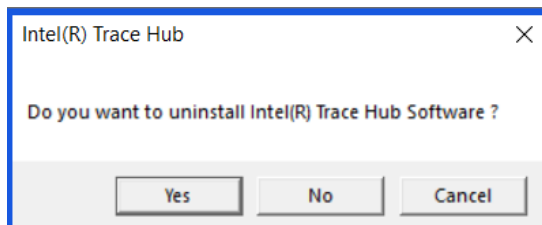
1.2.3 Uninstalling ITH driver

To uninstall the ITH Driver from your system follow the below steps.

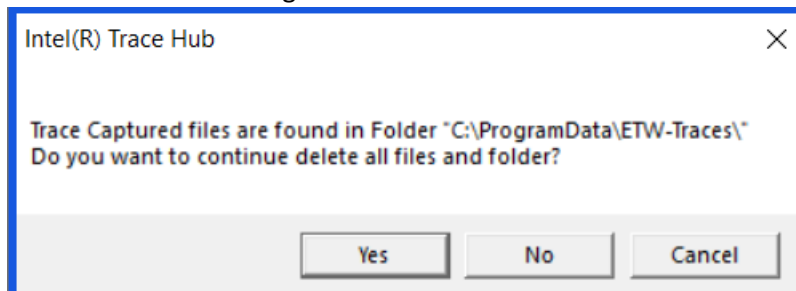
1. Open Your ITH Package\Drivers folder. Execute ITHUninstall.exe as “Administrator”



2. The application will prompt for confirmation of Removing ITH driver from the system. Click “Yes” to continue. Click “No” or “Cancel” to cancel the operation.

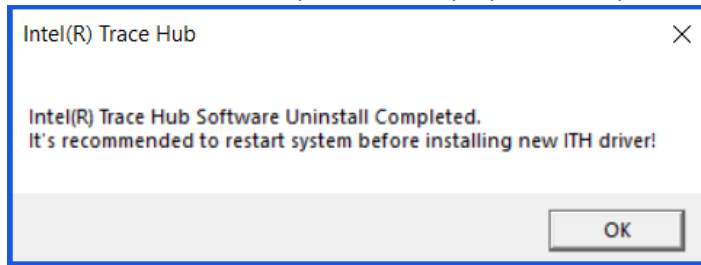


3. During Capturing of Traces if you have captured any traces to file then these traces will be stored and available in “C:\Programdata\ETW-Traces” folder. Uninstallation program will ask for confirmation of deleting these trace files.



Click “Yes” to continue deleting the files and folder. If you need the files for any purpose, click “No” to not to delete the files. These files need to be deleted manually later (or) You need to execute the uninstallation program again to clean these files.

4. Once uninstallation completed , it displays the completion message as below.

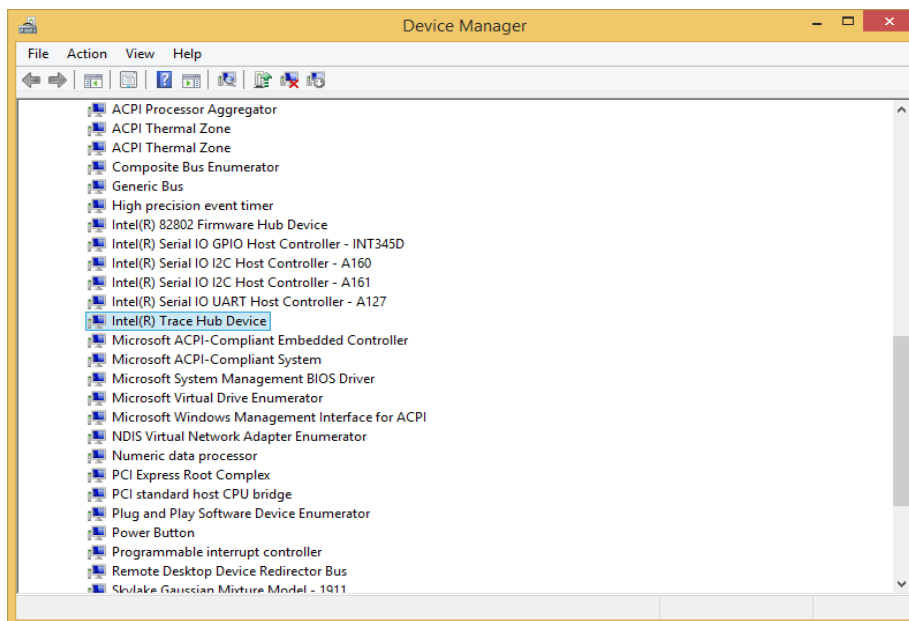


Uninstallation – Complete: This screen shows the final status of uninstallation and prompting to reboot the system. It's highly recommended to reboot the system after ITH driver uninstallation to remove the driver files from system completely.

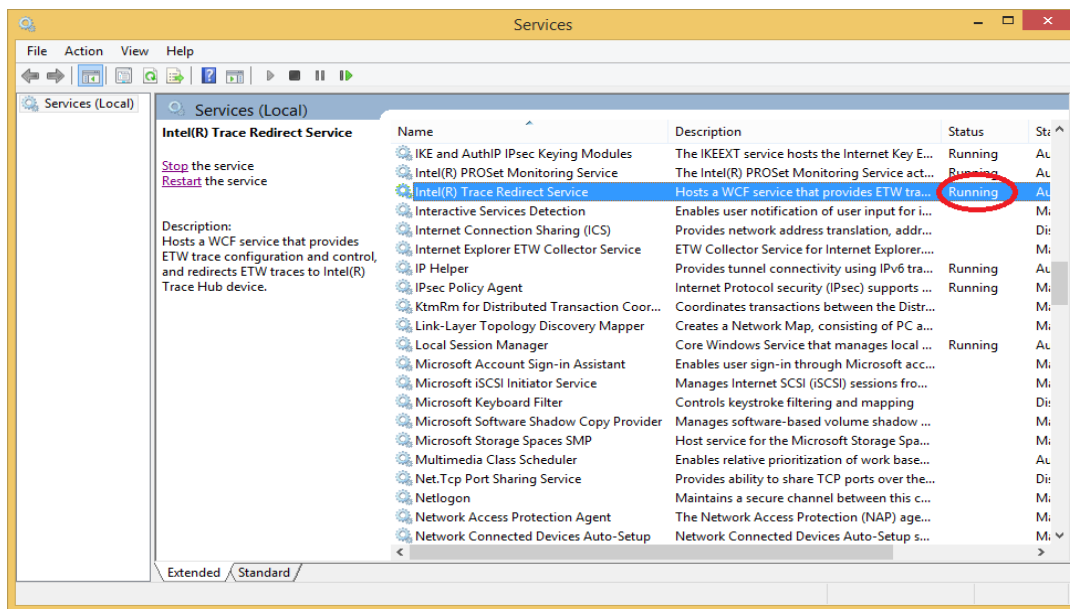
Note : You must restart your system after ITH uninstallation otherwise if you try to install new ITH driver it will not be installed correctly.

1.3 Verify setup

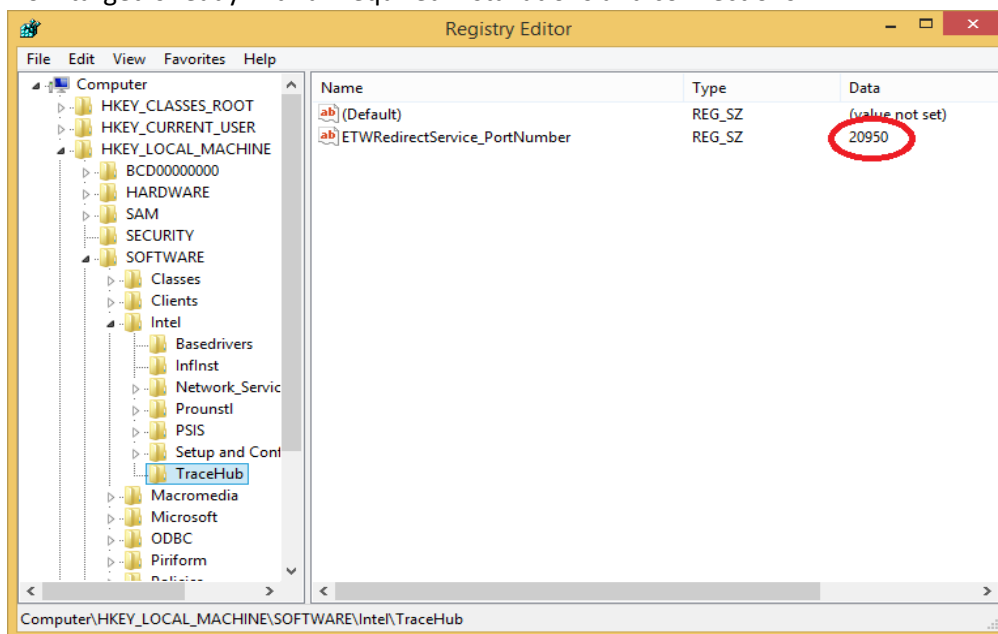
Step1: Open Device Manager and find Intel® Trace Hub Device listed healthy under system devices without any yellow bangs



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. Scan for hardware changes in device manager has to be done manually (if not automatically updated) after driver install / uninstall.
2. 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 Troubleshooting Guide

1. **Driver was installed successfully using ITH Driver setup 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.
 - Also check the Firewall is disabled from your target system which is blocking the TCP/IP port no ‘20950’ or the manually configured port number.
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”**
 - Check you have connected Target and host machine with Ethernet cable and verify your system has ip address starting with 169.xxx.xxx.xxx. If the system has other ip address, then Intel Redirect service will not start.
 - Please check you have installed Visual studio 2017 dependencies , if not installed refer to section 1.1.2 for installing visual studio dependencies.
 - 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