Astra Driver Installation and Device Diagnostics

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1. Overview

This document describes the installation procedure of Orbbec Astra Camera driver on Windows/Linux platform, the solution to problems that may occur during the process, and how to activate the log function in OpenNI.
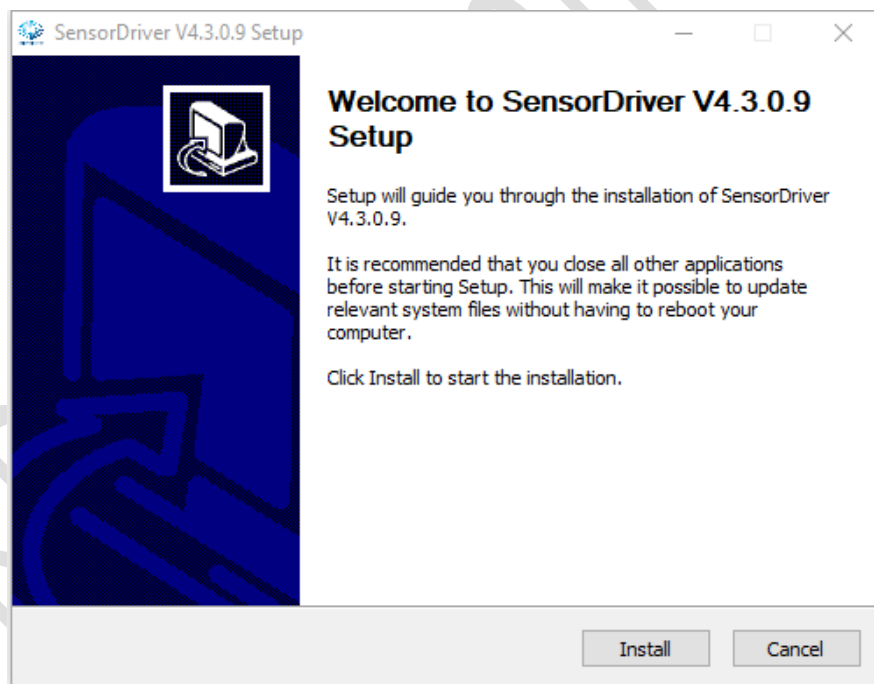
2. Scope

Device: Astra Series Camera, including Astra, Astra Pro, Astra Mini, etc.
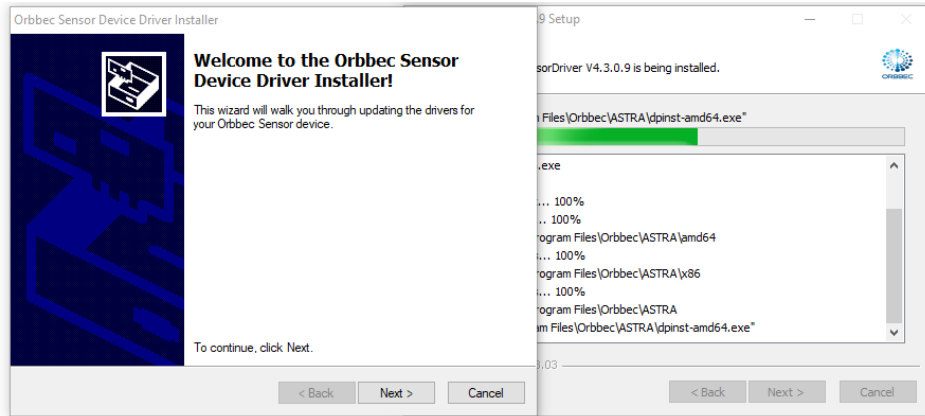Platform: Windows 7 and above; Ubuntu 14.04 and above.
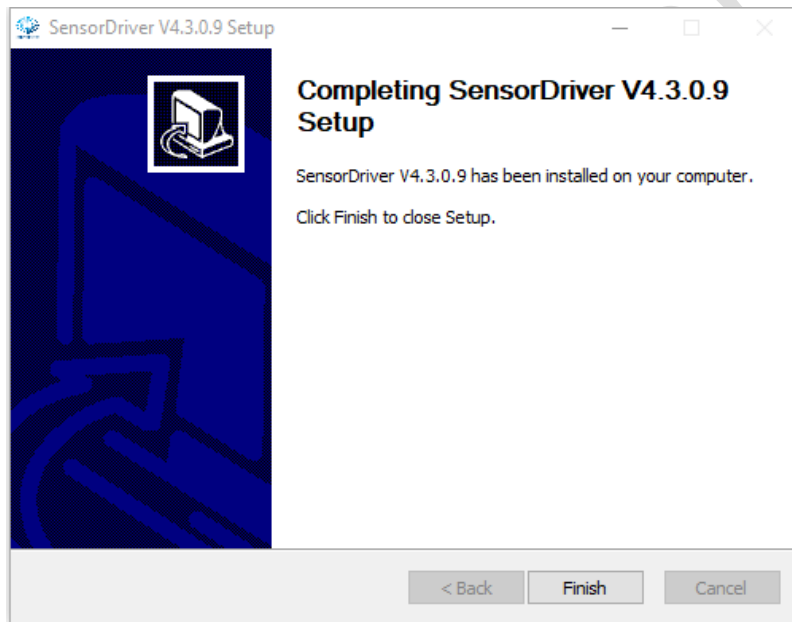
3. Windows

3.1 Installation

1) Old version of Astra driver should be uninstalled (Step 3.2) before starting installation.

2) Double click SensorDriver4.3.0.9.exe to start:

3) Click install, progress bar shows up. Then click next：

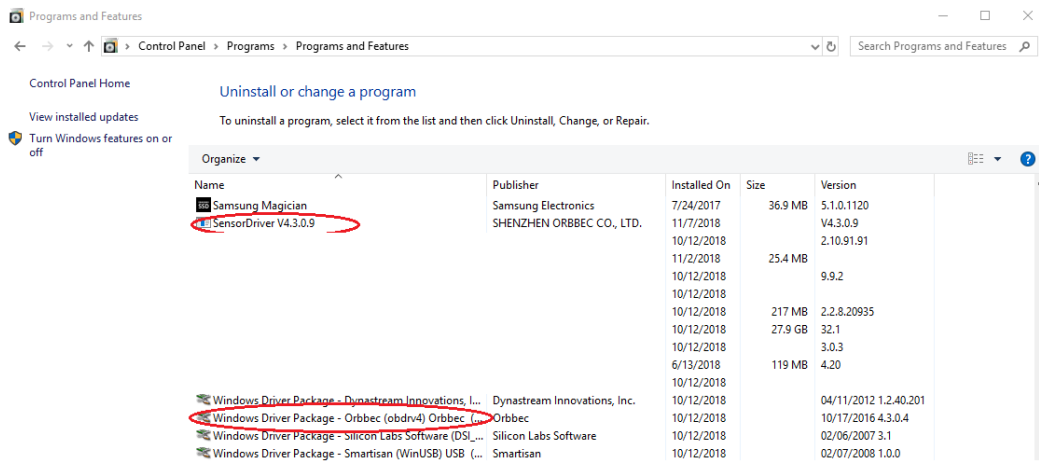4) Driver will be installed in a few seconds. Click finish:


3.2 Uninstallation

Before reinstalling Astra driver or installing the new driver, please uninstalling all Astra driver from the system.

3.2.1   Uninstalling through Control Panel

1) Control Panel→Programs→Uninstall a program→Find "SensorDriver V4.3.0.x" or "Windows Driver Package – Orbbec (obdrv4) Orbbec…"

2) Right click→Uninstall/Change→Choose "yes", then the driver is uninstalled successfully.
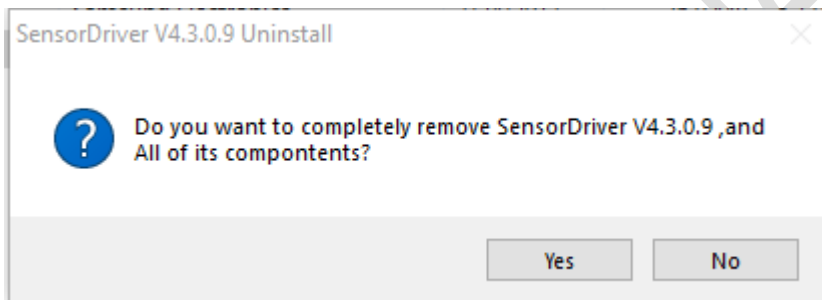
3.2.2   Uninstalling the Driver in Device Manager

Connect the sensor to the USB port of PC → Open Device Manger → If PC recognize the sensor successfully, you will find the 'ORBBEC Depth Sensor' → Right click and select 'Uninstall' → Check 'Delete the driver software for this device' → Confirm the uninstallation by clicking 'OK'
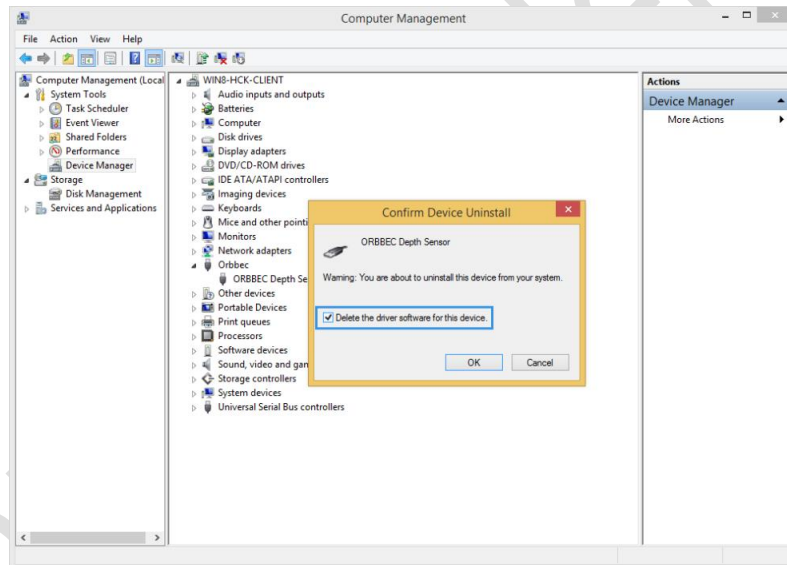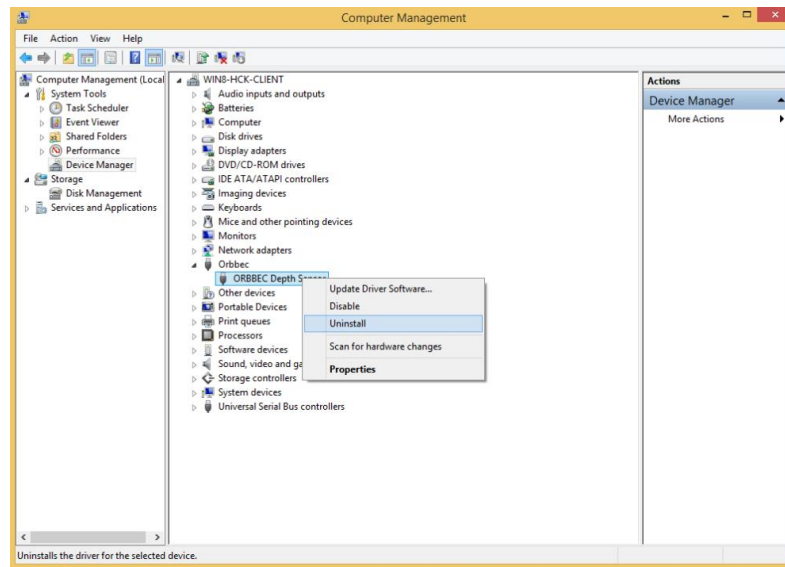
3.2.3　Cleanup the Registry

1) Launch 'Run' and type in 'regedit' to launch Registry.

2) Navigate to 'HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\obdrv4' and delete this registry entry (right-click and delete the whole folder obdrv4).
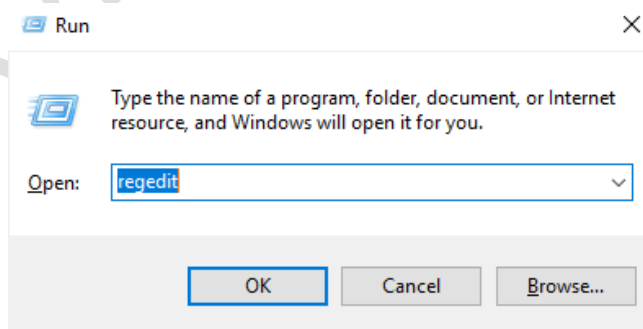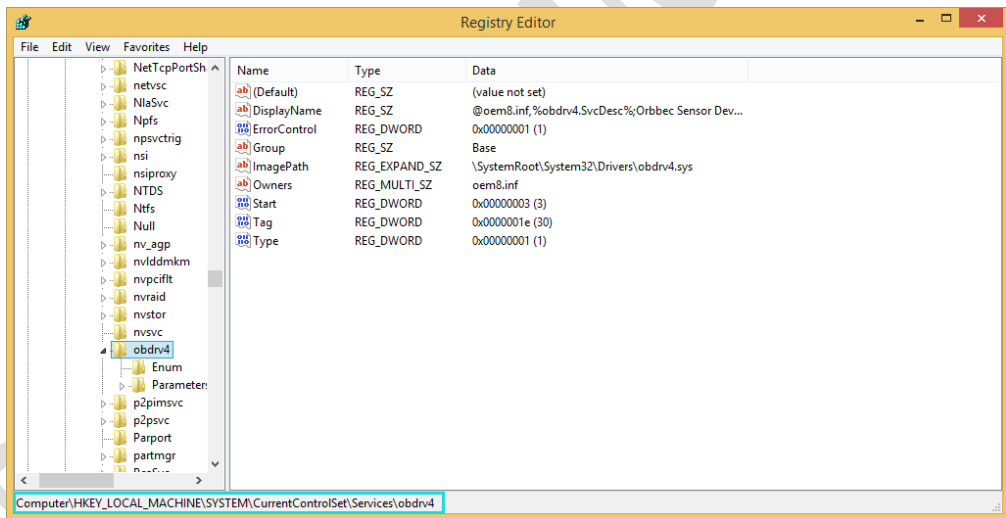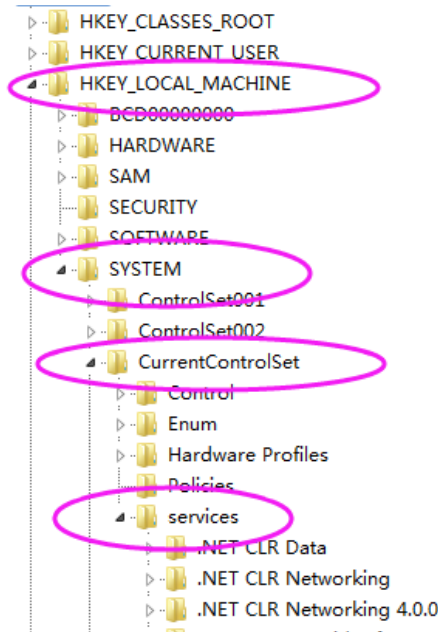

3.3 Update the Microsoft Security Advisory (3033929)

Because the sensor driver 4.3.0.9 added new function for digital signature signing, so the KB3033929 is required to be patched. For Windows 7, disabling the driver signature enforcement may be needed. Here are the procedures (Please skip steps below if Windows 8/10 is in use):

1) Check if the patch KB3033929 is correctly installed. Control Panel → Programs → Programs and Features → View installed updates → search for KB3033929。
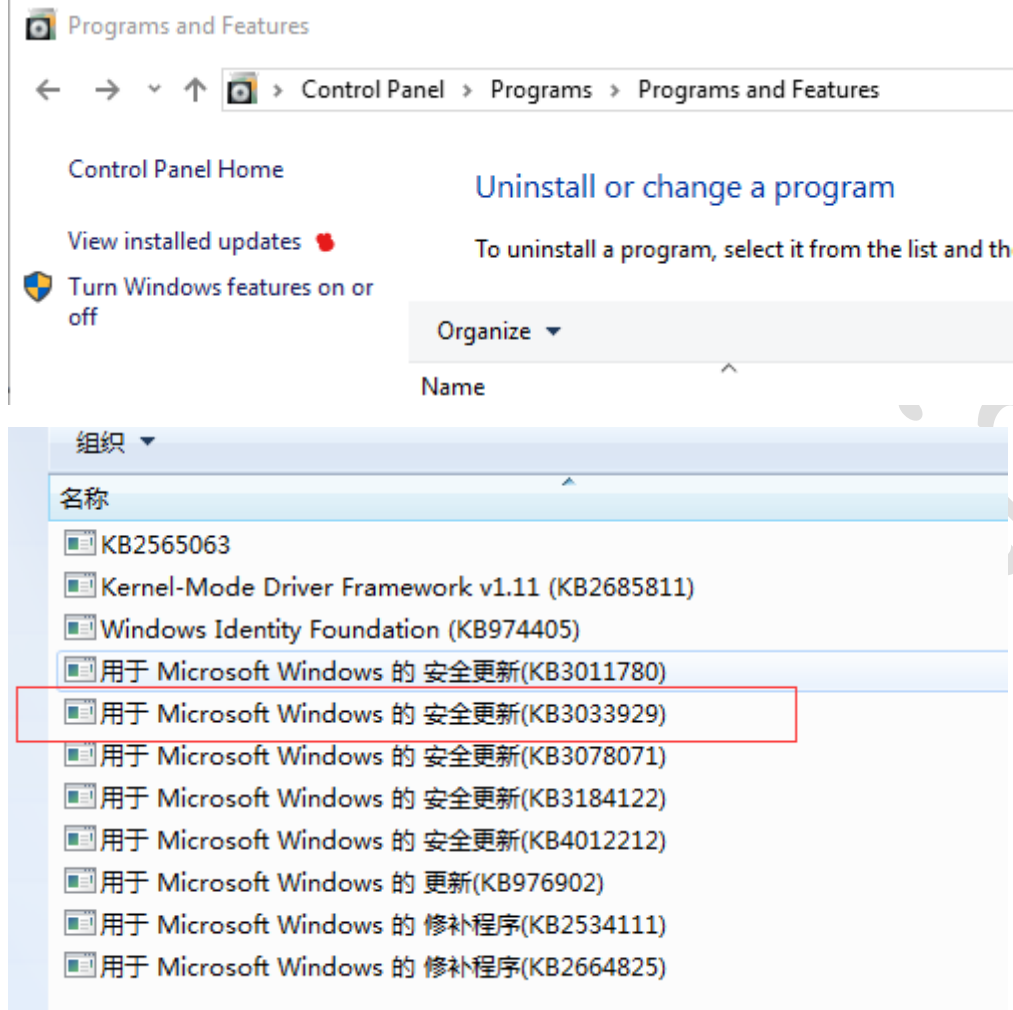
2) Install KB3033929: https://technet.microsoft.com/en-nz/library/security/3033929

3) Please scroll down on the page to find the correct download link for the designated system:

▲Affected Software

This advisory discusses the following software.

| Operating System	Updates Replaced
Windows 7 for 32-bit Systems Service Pack 1 (3033929)[(1)]	3035131 in MS15-025
Windows 7 for x64-based Systems Service Pack 1 (3033929)[(1)]	3035131 in MS15-025
Windows Server 2008 R2 for x64-based Systems Service Pack 1 (3033929)[(1)]	3035131 in MS15-025
Windows Server 2008 R2 for Itanium-based Systems Service Pack 1 (3033929)[(1)]	3035131 in MS15-025
Server Core installation option	3035131 in MS15-025
Windows Server 2008 R2 for x64-based Systems Service Pack 1 (Server Core installation) (3033929)[(1)]	3035131 in MS15-025

4) Install the patch and restart the computer for it to take effect.

Note: Some customers with Windows 7 64bit SP1 may not be able to install the patch KB3033929 (Microsoft currently have not comment on this issue). Please refer to the method below for a way around this, disabling the driver signature enforcement.

1) Reboot the computer and enter this Advanced Options for: Windows 7 by continuously pressing 'F8' during the booting screen.
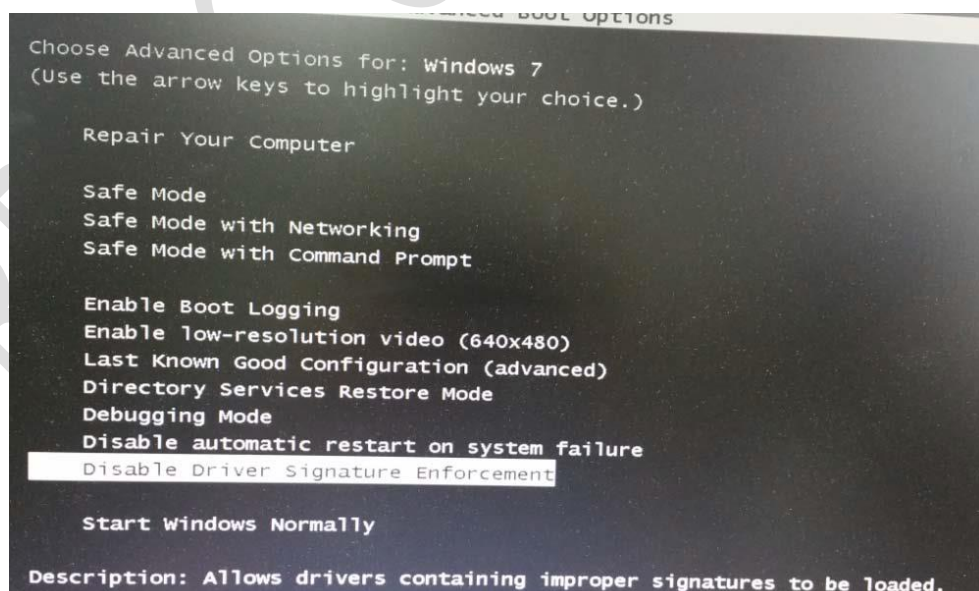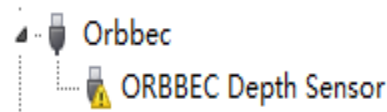

2) Disable Driver Signature Enforcement (You may need to change this setting for every reboot)
3) When the computer is booted, please connect the Orbbec depth sensor and check the 'Device Manager'.
4) If you find the "ORBBEC Depth Sensor" with a yellow exclamatory mark, manual installation may be

required.

5) Manual Installation:

Please follow the processes below to resolve your Astra Series driver problem. Obtain the Driver from Orbbec official website.

    5.1) Right click on "This PC", in the menu, select "Manage"
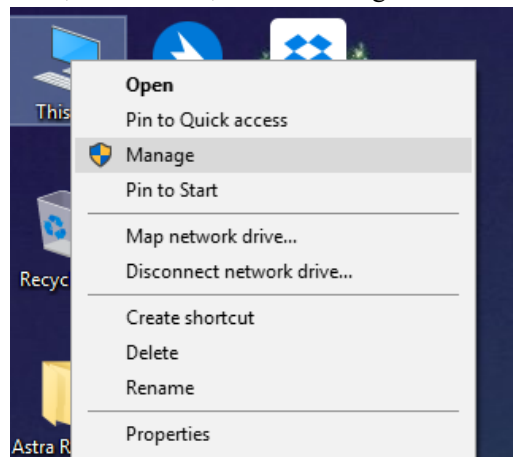
    5.2) Select "Device Manager" from the "Computer Management" window
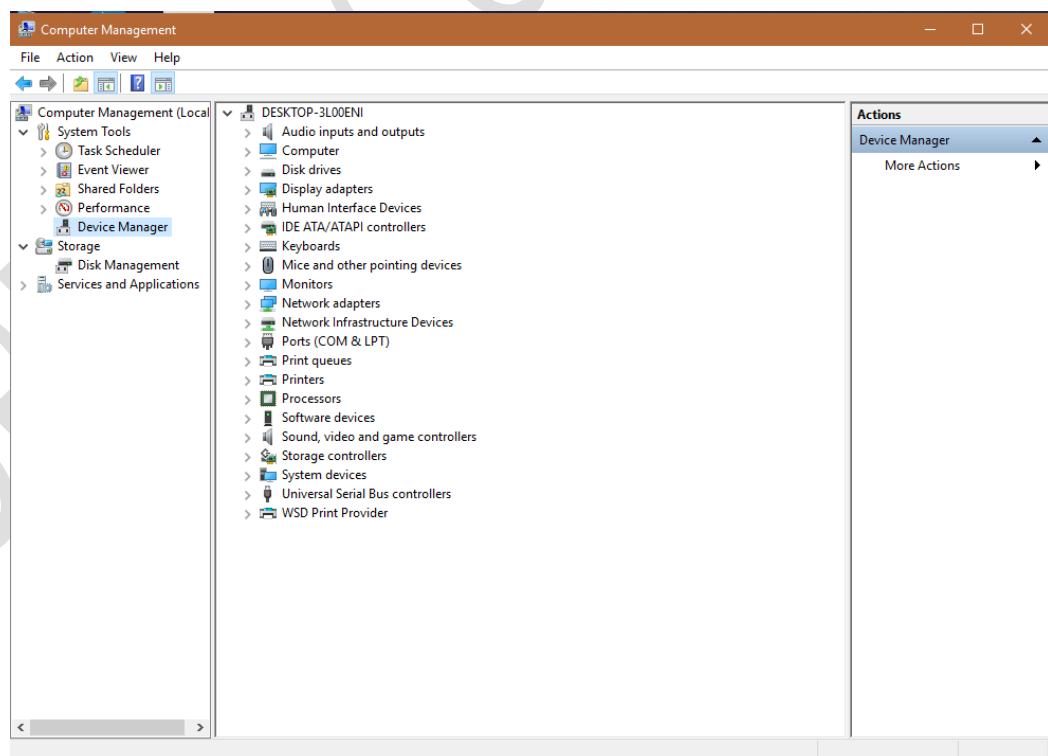
    5.3) Locate the "ORBBEC Depth Sensor" and right click on it and select "Update Driver Software.
        It might be under different tabs, please try to click on all the tabs until you find the correct one.
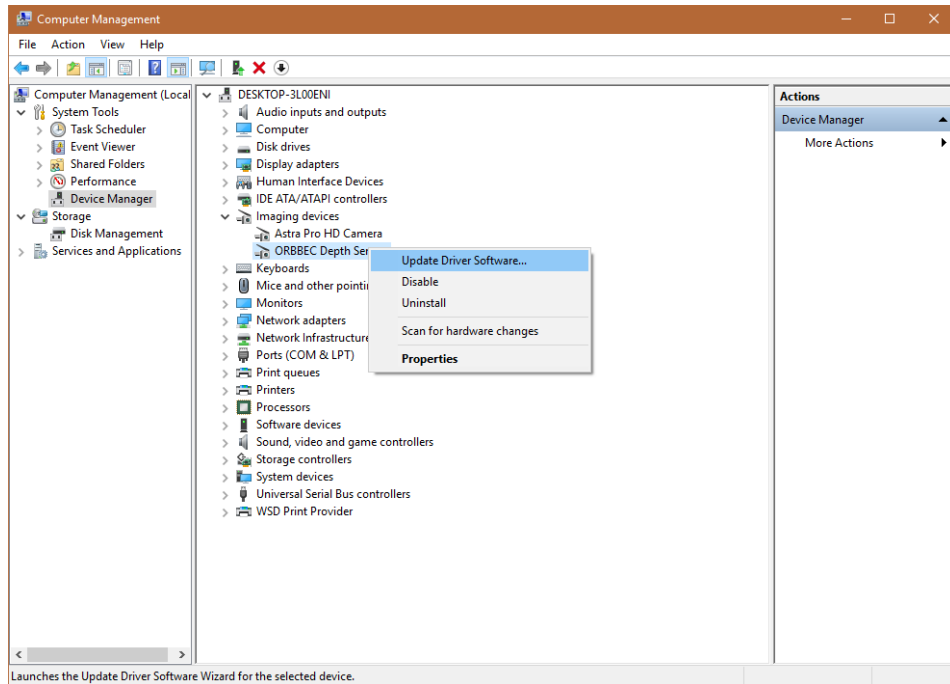
5.4) In the popped out window, select "Browse my computer for driver software".
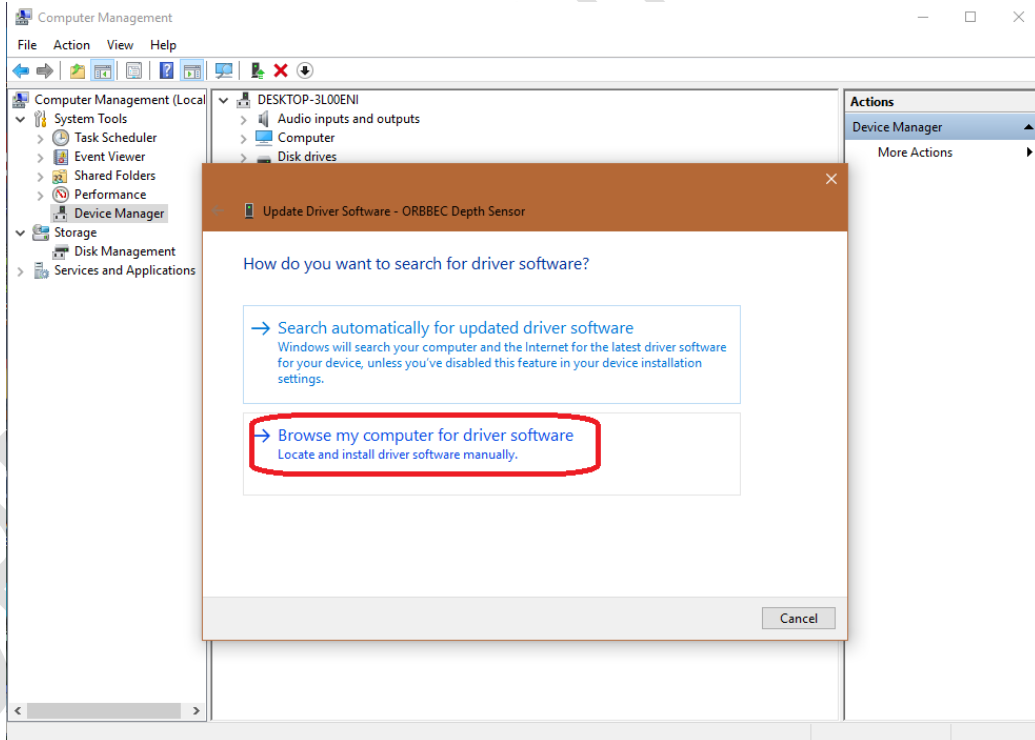
5.5) After that, click "Browse" to locate the driver file
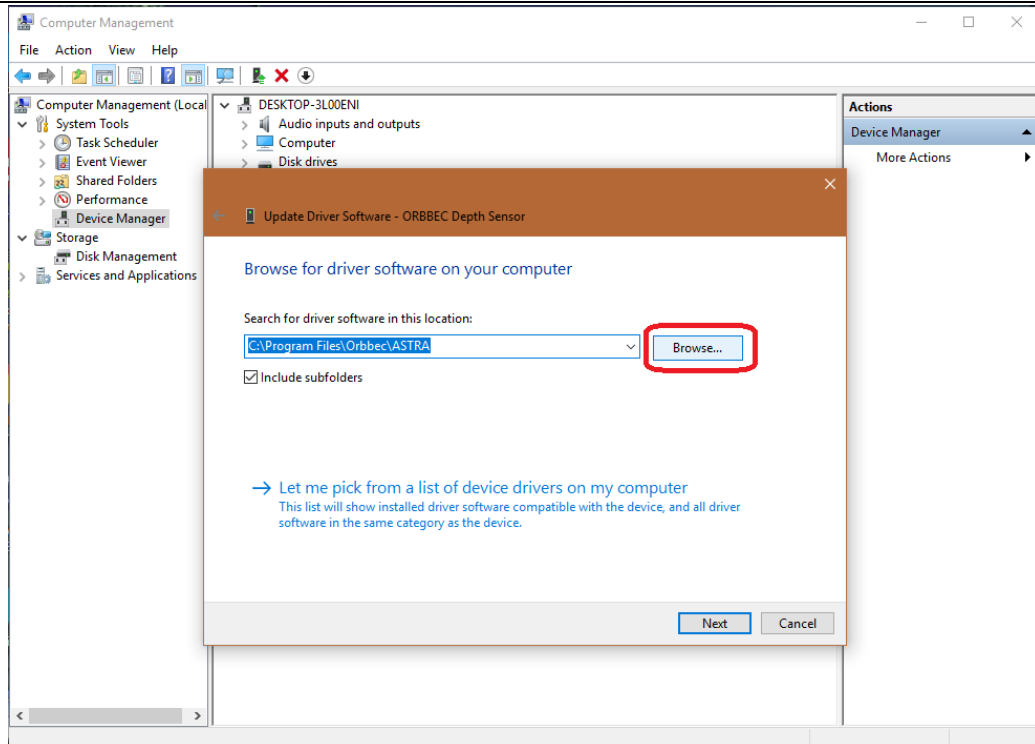
5.6) Extract the driver file to any directory, locate the "orbbec-sensor-driver-4.3.0.4-whql" and choose the operating system under the driver folder and click "OK"
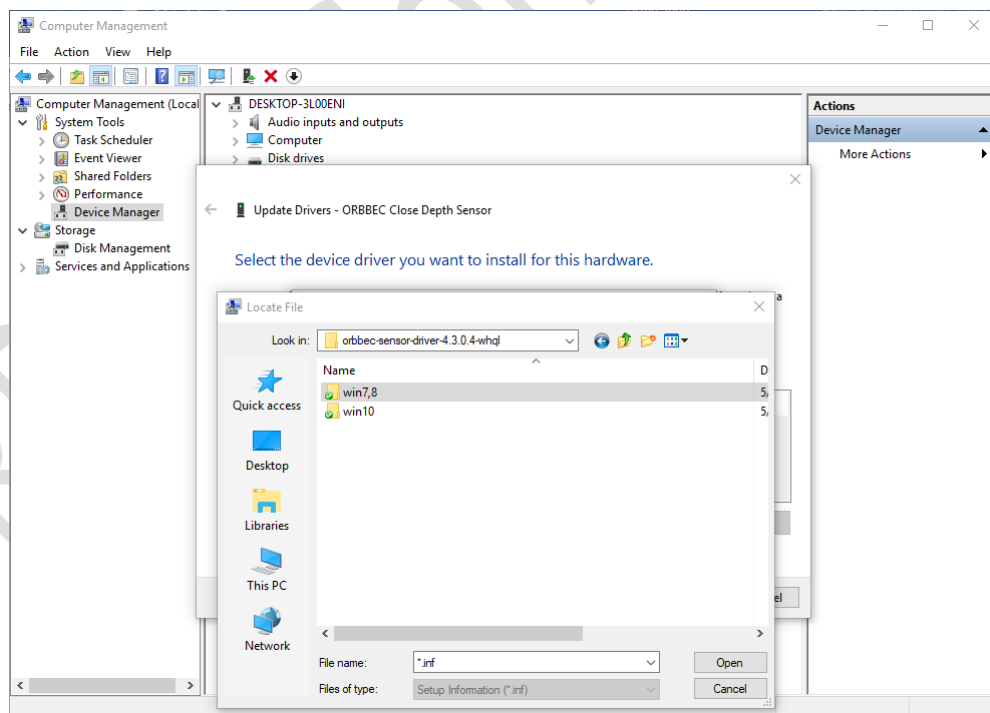
5.7) After locating the folder, click "Next".
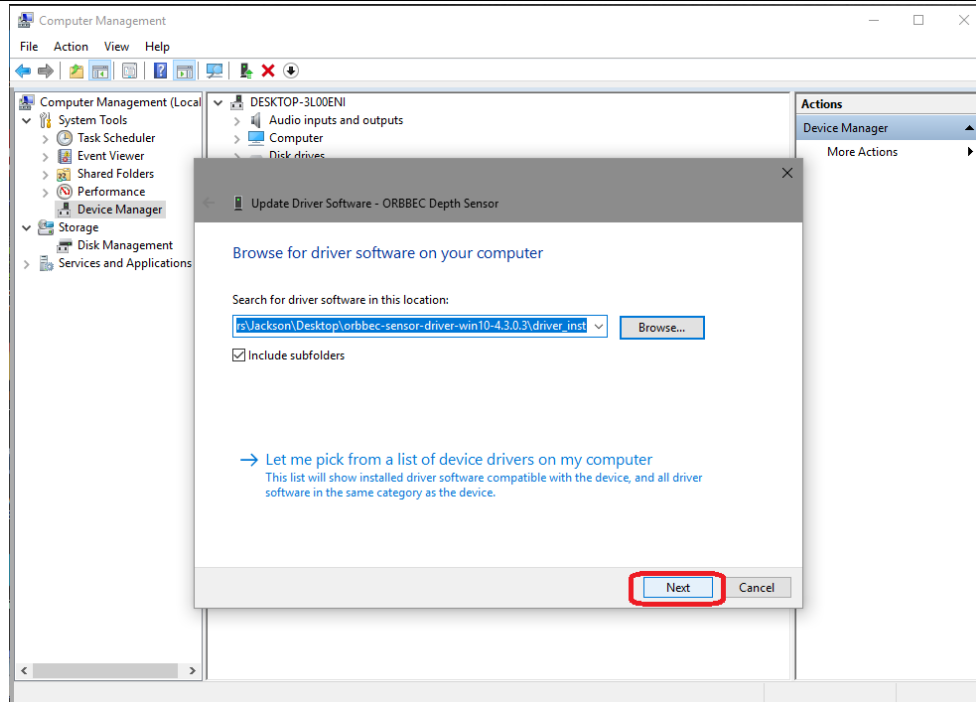
5.8) When the following window pops out, click on "Install" to finish the driver installation.
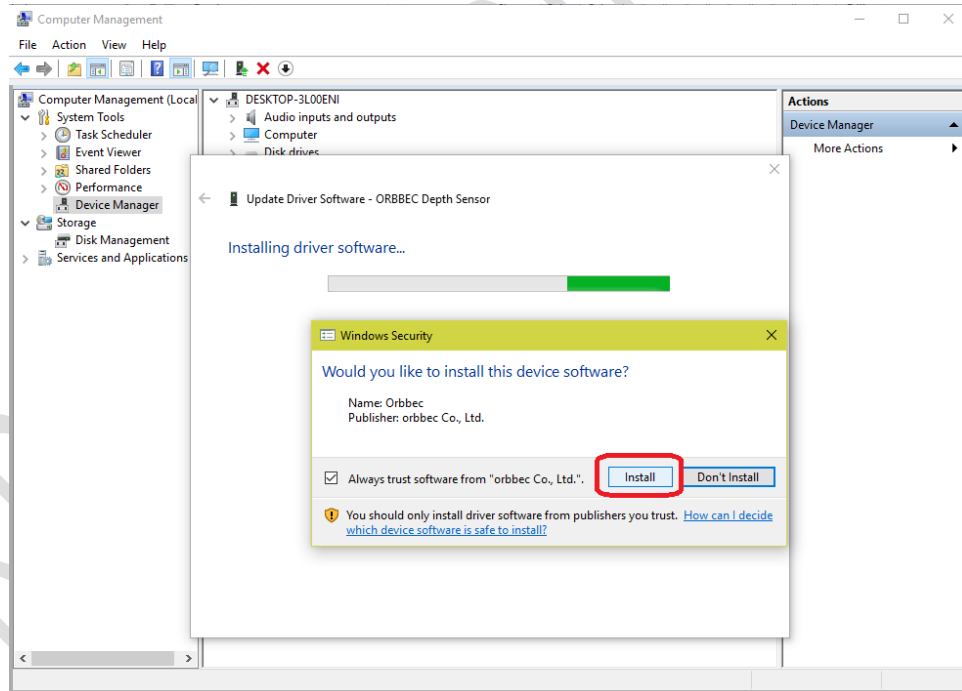
5.9) With all the steps above completed, your Astra Series Depth Sensor should work normally.

3.4 Diagnostics

1) After completing the driver installation, please follow the instruction below for diagnosing the hardware with NiViewer. When launching the NiViewer, an interface will be shown as below. To

switch between full screen and window mode, please press 'F'. By pressing the button '?', the menu will be launched.

2) Log with OpenNI

Orbbec Astra series sensors are designed to work with OpenNI as middleware for development. When the depth or RGB stream cannot be obtained correctly, using the log function of OpenNI may be able to help to locate the issue. Take the NiViewer as an example, here is the file structure:

By changing the setting inside the OpenNI.ini, the log function will be enabled.

[Log]
; 0 - Verbose; 1 - Info; 2 - Warning; 3 - Error. Default - None
Verbosity=0
LogToConsole=1
LogToFile=1

The log printed to console will be shown as below:
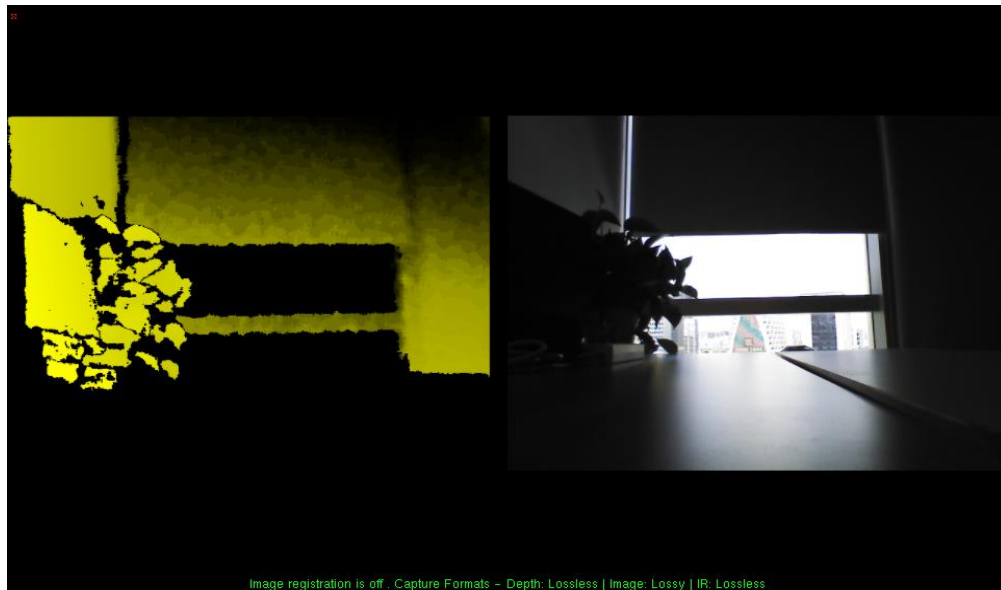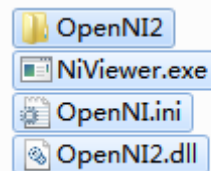
2554   INFO   Log   XnLog.cpp 349   New log started on 2017-06-06 11:08:04

2591   INFO   Log   XnLog.cpp 322   --- Filter Info --- Minimum Severity: VERBOSE

2660   VERBOSE   OniContextOniContext.cpp 165   OpenNI 2.3.0 (Build 15)-Win32 (Nov 16 2016 20:03:43)

2816   VERBOSE   OniContextOniContext.cpp 168   Configuration   file   found   at   'D:\OrbbecData\Orbbec-Tools\NiViewer_v1.1\OpenNI.ini'

3153   VERBOSE   OniContextOniContext.cpp 259   Using   'D:\OrbbecData\Orbbec-Tools\NiViewer_v1.1\OpenNI2\Drivers' as driver path

3320   VERBOSE   OniContextOniContext.cpp 267   Looking   for   drivers   at   'D:\OrbbecData\Orbbec-

Tools\NiViewer_v1.1\OpenNI2\Drivers'

3636	VERBOSE	OniContextOniContext.cpp	309	Loading device driver 'OniFile.dll'...
4885	VERBOSE	OniContextOniContext.cpp	309	Loading device driver 'Orbbec.dll'...
5951	INFO	Log XnLog.cpp	349	New log started on 2017-06-06 11:08:04
6122	INFO	Log XnLog.cpp	322	--- Filter Info --- Minimum Severity: VERBOSE
98285	INFO	OniDeviceDriverOniDeviceDriver.cpp	139	Device connected: Orbbec Astra

(\\?\usb#vid_2bc5&pid_0401&mi_00#6&278b5a12&0&0000#{c3b5f022-5a42-1980-1909-ea72095601b1})

133641	VERBOSE	OniContextOniContext.cpp	461	Trying to open device by URI '(NULL)'
134578	VERBOSE	DeviceSensor	XnSensor.cpp	198	Initializing device sensor...

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3) Astra Pro RGB Stream

Astra Pro equipped with an UVC standard RGB camera, which does not have native support by OpenNI. Please use any UVC supported software, such as Amcap to access the RGB stream from Astra Pro.

4. Linux

For operating under Linux, the sensor will be initialized as standard CMOS camera. Most popular Linux platforms already have the driver embedded, but may need to install the special UDEV files to the specified directory below.

4.1 Installation

1) Running script install-udev.sh and install UDEV file to the specified directory.

```
orbbec@localhost:/etc/udev/rules.d$ pwd
/etc/udev/rules.d
orbbec@localhost:/etc/udev/rules.d$ ls
51-android.rules      57-kobuki.rules   99-ASUS-video.rules        dashgo.rules
56-orbbec-usb.rules   98-uvc.rules      99-vmware-scsi-udev.rules  README
orbbec@localhost:/etc/udev/rules.d$
```

2) Unplug the device then plug it back into the computer.

3) Running NiViewer that comes with the directory. Depth and Color stream will be shown:

Image registration is off . Capture Formats – Depth: Lossless | Image: Lossy | IR: Lossless
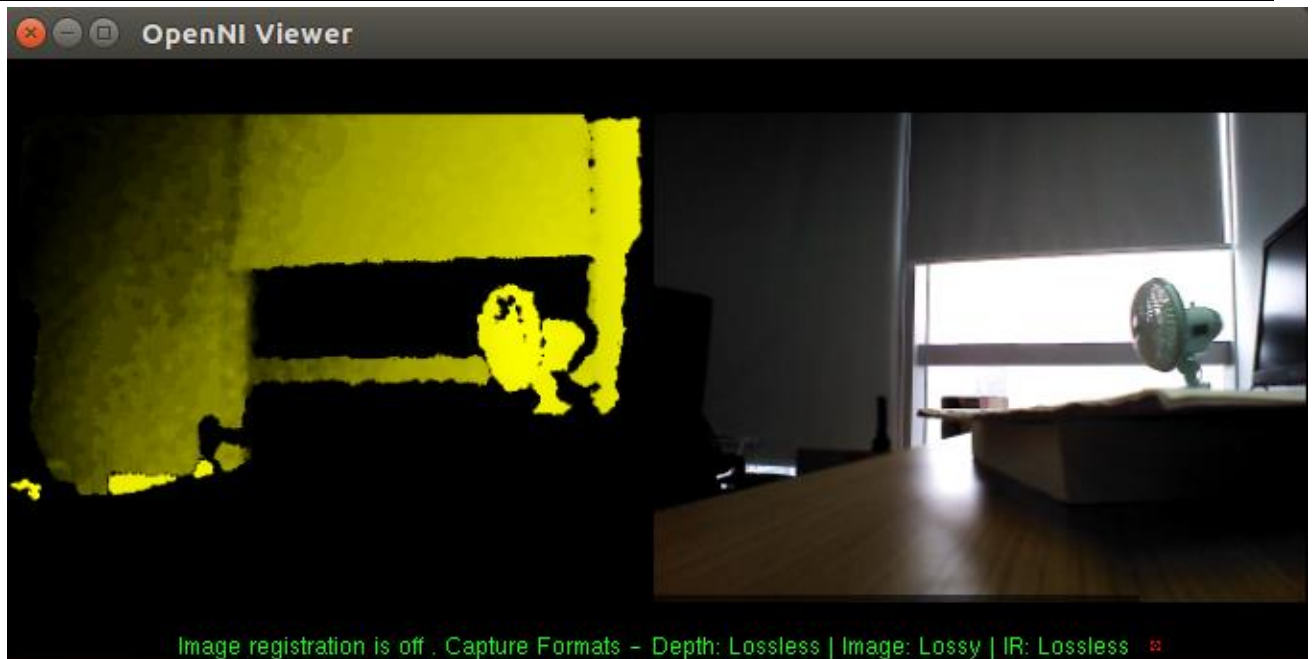
4.2 Linux Abnormal Diagnosis

1) Using lsusb tool to check if the USB device is being detected. PID.VID will be shown as below if correctly connected. Please use dmesg | grep usb to check the information if the USB device is not correctly detected.

```
orbbec@localhost:~$ lsusb
Bus 002 Device 002: ID 0e0f:0002 VMware, Inc. Virtual USB Hub
Bus 003 Device 002: ID 0e0f:0003 VMware, Inc. Virtual Mouse
Bus 003 Device 003: ID 0e0f:0008 VMware, Inc.
Bus 003 Device 004: ID 0e0f:0002 VMware, Inc. Virtual USB Hub
Bus 003 Device 005: ID 0e0f:0002 VMware, Inc. Virtual USB Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 007: ID 2bc5:0401
Bus 003 Device 006: ID 0e0f:0002 VMware, Inc. Virtual USB Hub
```

2) If the device can be found from lsusb, but NiViewer cannot shows, please checking if Astra file exists in directory "/etc/udev/rule.d". If the file is not existing, please referring to the installation procedure.

4.3 Device Diagnostics

Same as Windows (Part 3.4)