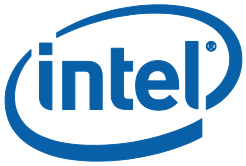

Intel® Virtual Buttons Driver

Release Notes and Bring Up Guide

June, 2015

Revision 0.9

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Contents

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Revision History

Revision Number	Description	Revision Date
0.6	• Skylake Windows* 10 Beta Release	March, 2015
0.8	• Skylake Windows* 8.1 Production Candidate (PC) Release	May, 2015
0.9	• Broadwell Windows* 10 Production Candidate (PC) Release	June, 2015

§ §

1 Introduction

1.1 Purpose and Scope of Document

This document provides installation instructions and general usage of the Intel® Virtual Buttons driver as well as release information, such as release kit summary, important notes, resolved issues and known issues. This document is intended to help OEM and ODM customers setup their platform as they prepare for validation and debug.

Intel Virtual Buttons driver allows the SBIOS to send indicator and button events to the Windows* 8.1 operating system and only indicator events to the Windows* 10 operating system provided the BIOS and EC follows Skylake BIOS ASL code and EC reference code. The driver supports the following operating system and hardware:

Operating System:

- Windows* 8.1 Operating System
- Windows* 10 Operating System

Hardware Requirement:

- 4th Generation Intel® Core™ Processor Platforms (codename Haswell)
- Bay Trail Platforms
- Braswell Platforms
- 5th Generation Intel® Core™ Processor Platforms (codename Broadwell)
- Skylake Processor Platforms

1.2 Acronyms and Terminology

Term	Description
ACPI	Advanced Configuration and Power Interface
ASL	ACPI Source Language
BDW	Broadwell
BSW	Braswell
BYT	Bay Trail
EC	Embedded Controller

HSW	Haswell
HID	Human Interface Devices
MSFT	Microsoft
RVP	Reference Validation Platform
SKL	Skylake
SBIOS	System BIOS
GPIO	General Purpose IO
_STA	Intel® Virtual Button Driver Status Method
VBDL	Intel® Virtual Button Driver Load Method.
PC	Production Candidate
PV	Production Version

1.3 Reference Documents

Document	Document No. /Location
Handling_Buttons_and_Indicators_on_Microsoft_Windows_10	556574
BIOS Enabling Guide for Windows* 10	557130

2 Release Kit Summary

2.1 Release Kit Details

Kit Name: Intel®_Virtual_Buttons_Driver_1.1.0.21_Broadwell_Win*10_PC_Release

Version: Broadwell Windows* 10 PC Release

- Intel®_Virtual_Buttons_Driver_version_1.1.0.21

2.2 Kit Contents

The contents of this release kit include:

- Intel Virtual Buttons Driver. The driver installer compose of the following modules:
  - Intel Virtual Buttons Driver
- Intel Virtual Buttons Driver Release Notes and Bring Up Guide
- Software License Agreement

3 Architecture

3.1 Intel® Virtual Buttons Driver on Windows* 8.1 versus Windows* 10

Note: There are no new features added to the Intel Virtual Buttons Driver. The Intel Virtual Buttons Driver will be built using Windows* 10 SDK. There will not be any functionality differences between Virtual Buttons driver builds for Windows* 8.1 and Windows* 10. It is BIOS responsibility to route the indicator and button event depending on the OS version detected. Please check below for more details.

3.1.1 For Windows* 8.1:

The path to buttons and Indicators Event handling starts with a platform specific Hardware Event and continues up the software stack until it is serviced by the operating system. With the exception of the hardware event, a complete solution is being provided to support conveying buttons and indicators. Buttons and Indicators Event Handling Sequence:

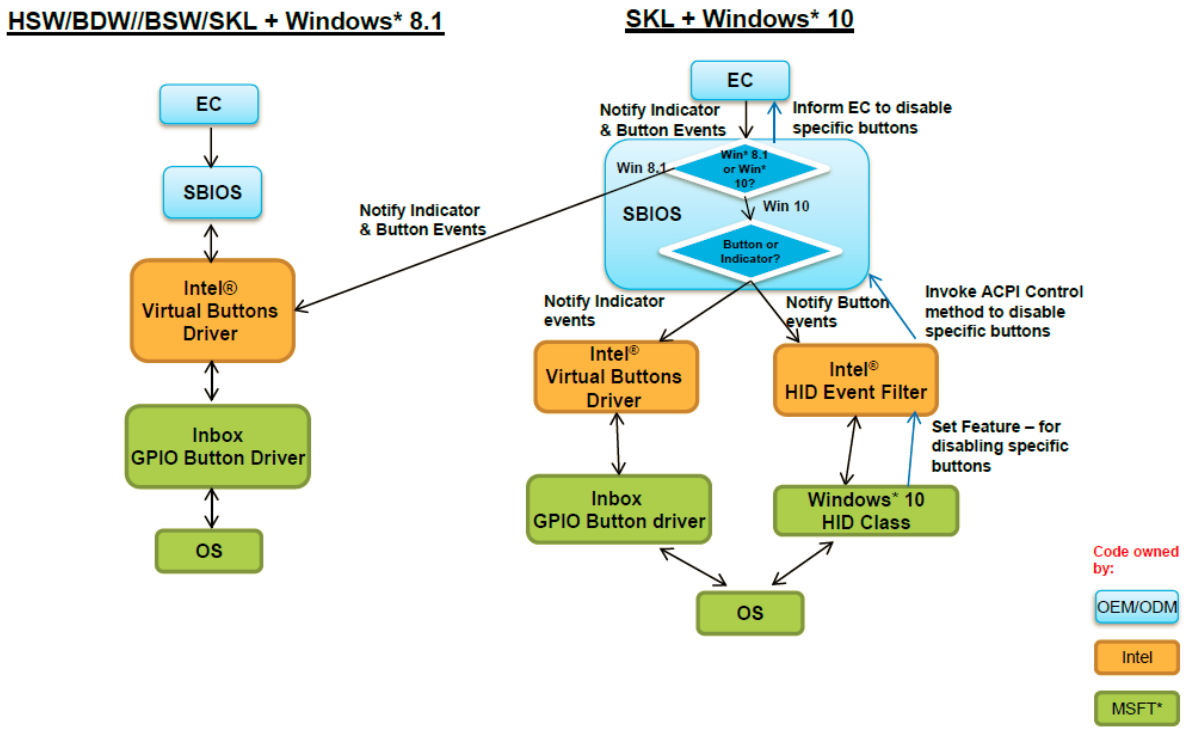
- EC notifies System BIOS of buttons and indicator events.
- The System BIOS uses ACPI control method to send notifications to communicate with the Virtual GPIO Buttons Driver.
- Intel® Virtual Buttons Driver services ACPI notifications from System BIOS and passes button/indicator state changes to the OS inbox buttons driver via exposed interface.
- Inbox Buttons Driver passes Event onto Operating System
- Operating System Services Virtual Buttons Event.

3.1.2 For Windows* 10:

- EC notifies System BIOS of buttons and indicator events.
- The system BIOS will check for the OS version.
- If it is Windows* 10,
    - The Indicator events are sent to Intel Virtual Buttons Driver and the driver services ACPI notifications from System BIOS and passes indicator state changes to the OS inbox buttons.
    - The Button events are sent to Intel® HID Event Filter driver and the driver services. ACPI notifications from System BIOS and passes button events to the Windows* 10 HID Class Driver
- If it is Windows* 8.1, then the above flow mentioned in Section 3.1.1 is followed.

3.2 Platform Wise Button and Indicator Implementation on Win* 8.1 vs Win* 10

The below picture explains the buttons and indicator implementation on Windows* 8.1 vs Windows* 10.



The BIOS receives EC notifications for buttons and indicator events, the OS version is then checked by the BIOS and the buttons/indicators events are dispatched to the respective driver. Below table depicts the notification flows to Intel® HID Event Filter driver versus Intel Virtual Buttons Driver depending on the OS version detected by the BIOS.

CORE PLATFORMS	**Windows* 8.1**	**Windows* 10 (Threshold)**
BDW	**Buttons and Indicators:** Intel Virtual Button Driver	**Buttons and Indicators:** Intel Virtual Button Driver
HSW	**Buttons and Indicators**: Intel Virtual Button Driver	**Buttons and Indicators**: Intel Virtual Button Driver

CORE PLATFORMS	Windows* 8.1	Windows* 10 (Threshold)
SKL	**Buttons and Indicators**: Intel Virtual Button Driver	**Buttons**: Intel® HID Event Filter Driver **Indicators**: Intel Virtual Button Driver

ATOM PLATFORMS	Windows* 8.1	Windows* 10 (Threshold)
BSW	**Buttons and Indicators:** Intel Virtual Button Driver	**Buttons and Indicators:** Intel Virtual Button Driver
BYT	**Buttons and Indicators:** Intel® Virtual Button Driver	**Buttons and Indicators:** Intel Virtual Button Driver

Important Note: The SKL BIOS ASL code and EC reference code for Skylake will include all the details on how to implement the new features mentioned in the previous slides. Customer can also implement the same EC/BIOS changes in their HSW/BDW EC and BIOS if they want to take advantage of the new features.

4 Important Notes

4.1 New Features

NA

5 Driver Installation

Note: A supported Operating System must be installed prior to the installation of the Intel Virtual Buttons Driver.

There are two different methods to install the Intel Virtual Buttons Driver for this release:

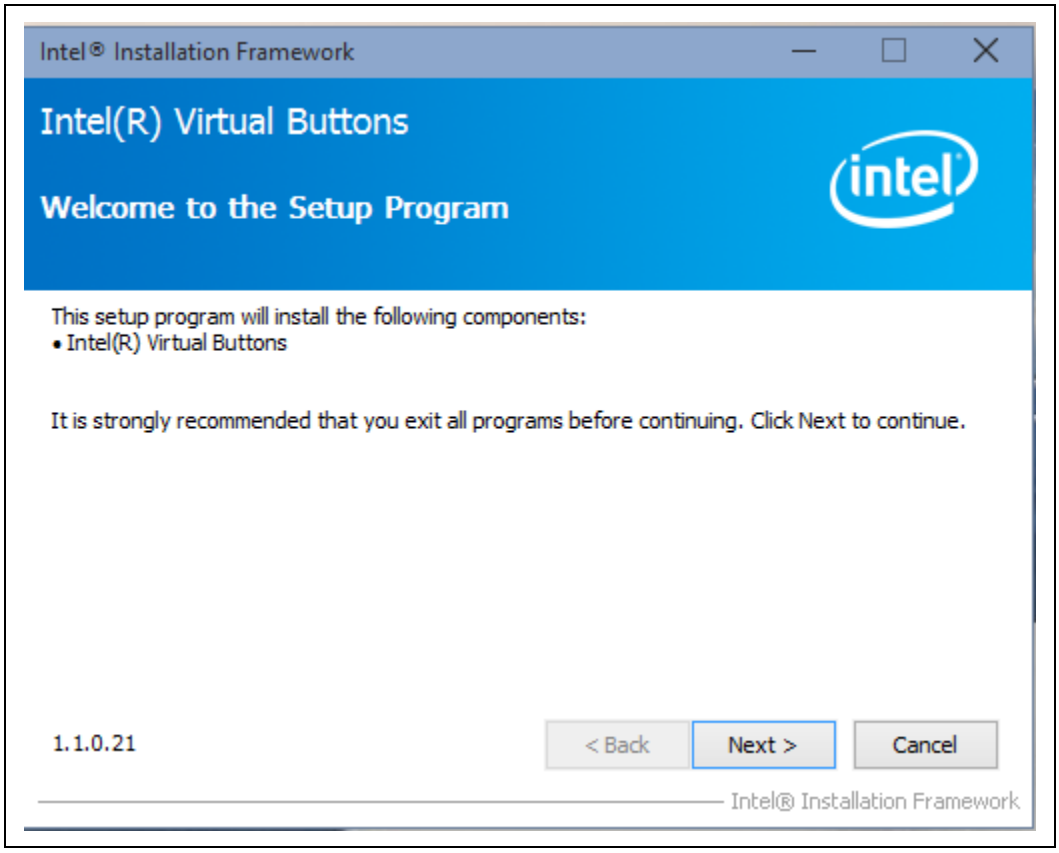
1. Driver Installation via Installer
2. Silent Driver Installation via Installer

5.1 Driver Installation via Installer

To install the Intel Virtual Buttons Driver following steps must be taken;

1. Update the test system with BIOS that supports the INT33D6 ACPI device.
2. Install a new copy of Windows* 8.1 or Windows* 10
3. Copy the installation package to the test machine.
4. Run the setup.exe program from within the install folder (Figure 1).

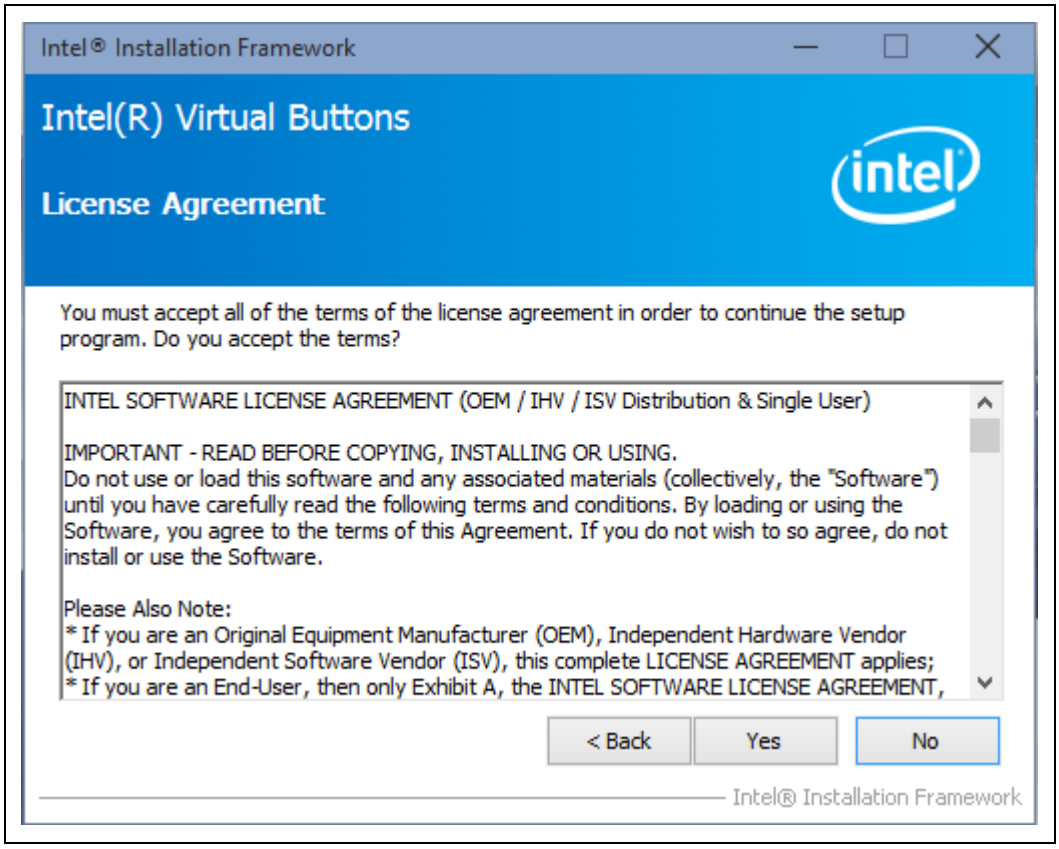
Figure 1: Welcome Screen



5. Next, you should see license agreement screen as shown in Figure 2

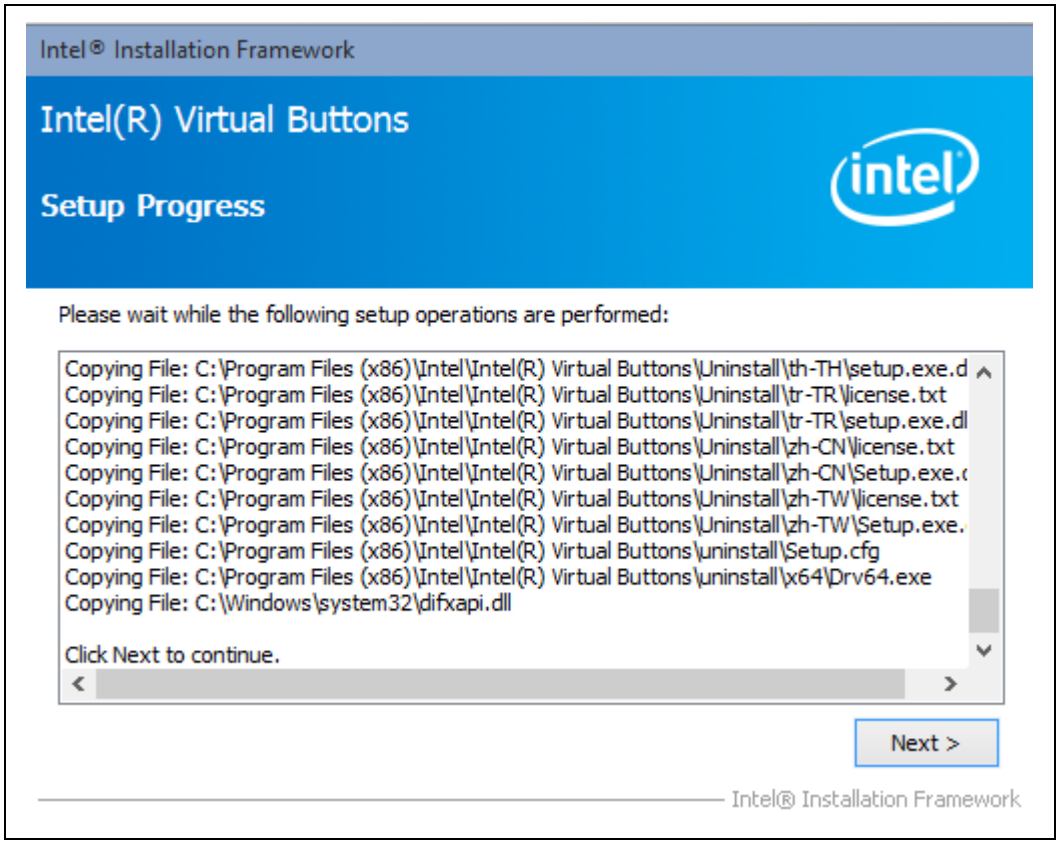
6. Please review the license agreement and if you accept the license terms then select "Yes" to continue, if you select "No" installation will stop.

Figure 2: Software License Agreement



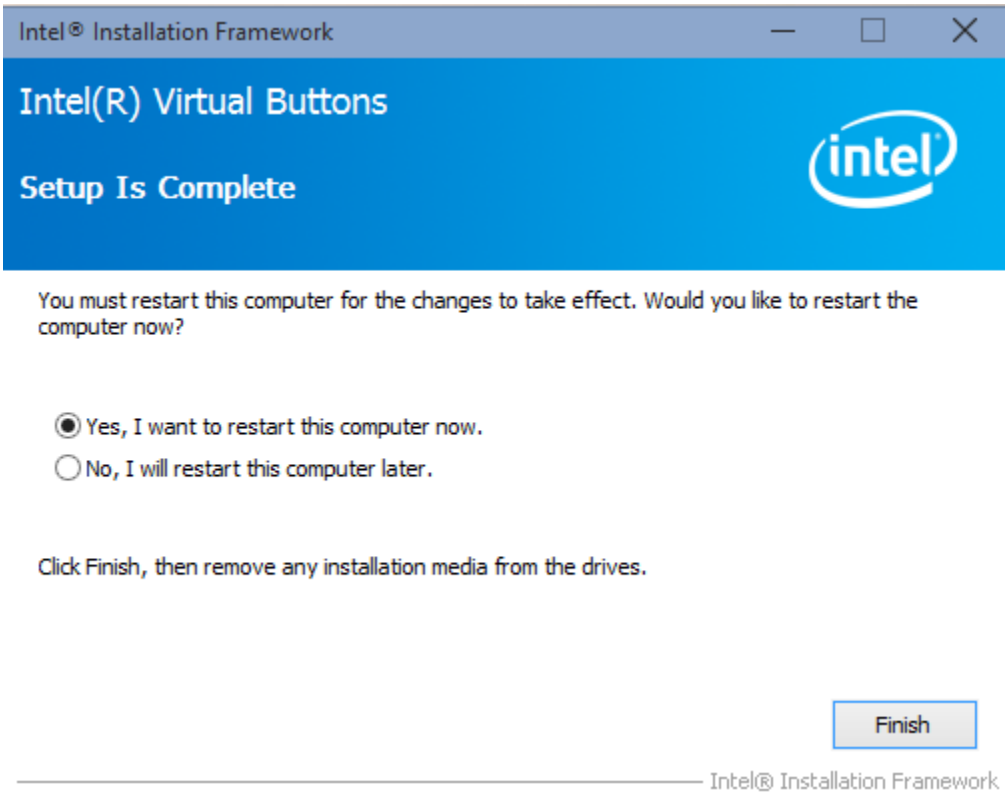
7. Next, the Intel Virtual Buttons Driver files are loaded to their respective location. By default, the driver will be installed in c:\program Files (x86)\Intel\Intel(R) Virtual Buttons. Click on “Next >” button to continue installation.

Figure 3: Driver installs destination folder location



8. Next, after successful installation, you should see setup completion screen as shown in Figure 4. Click on 'Finish' button to restart the system.

Figure 4: Setup Completion



5.2 Silent Driver Installation via Installer

Follow the steps listed below for silent driver installation via installer:

1. Open a Command Prompt (cmd.exe) with administrator rights (i.e. Run as administrator). Click on 'Yes' button in User Account Control pop-up window.
2. Switch to the Intel Virtual Buttons Driver installer directory
3. Setup.exe –s

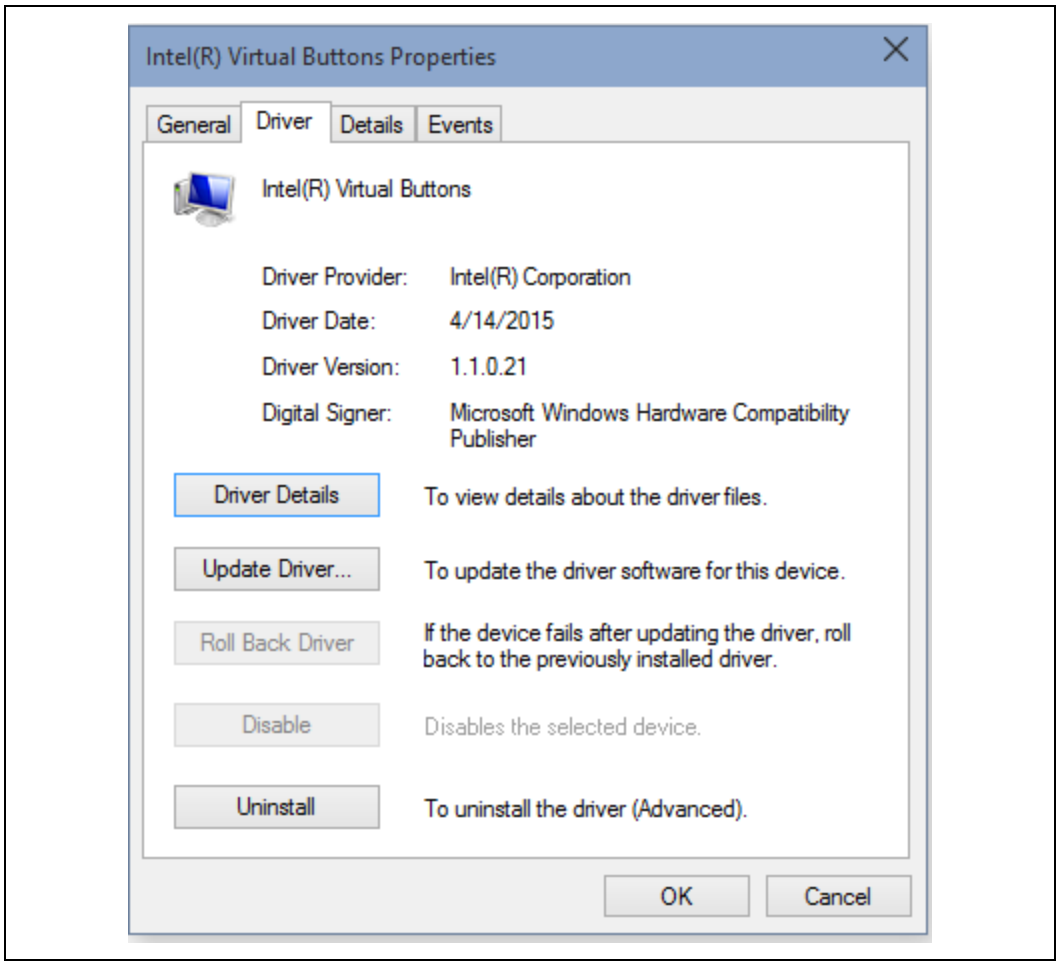
5.3 Checking the Driver Version

To check the Intel Virtual Buttons Driver version, follow the below instructions:

1. Open Device Manager.

2. In View, select "show hidden devices"
3. Click on System Devices.
4. Double click on "Intel(R) Virtual Buttons"
5. Select the "Driver" tab and the Driver Version will be listed.

Figure 5: Intel® Virtual Buttons Driver



5.4 Uninstalling the Driver via Control Panel

Follow the steps listed below to uninstall the driver via the Control Panel:

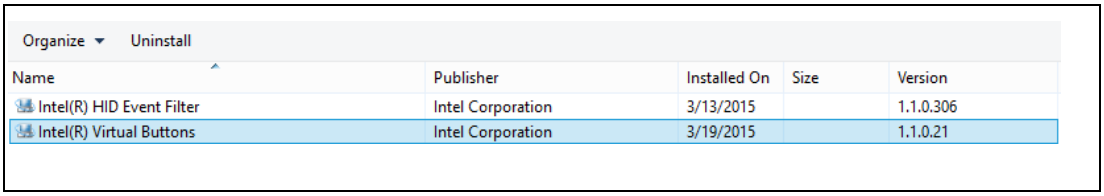
1. Open the Control Panel window.

2. If the Control Panel window is shown in 'Category' view, then select "Uninstall a program" as shown in Figure 6. Otherwise if the Control Panel window is shown in 'icon' view, then select "Programs and Features".

Figure 6: Control Panel – Uninstall a program

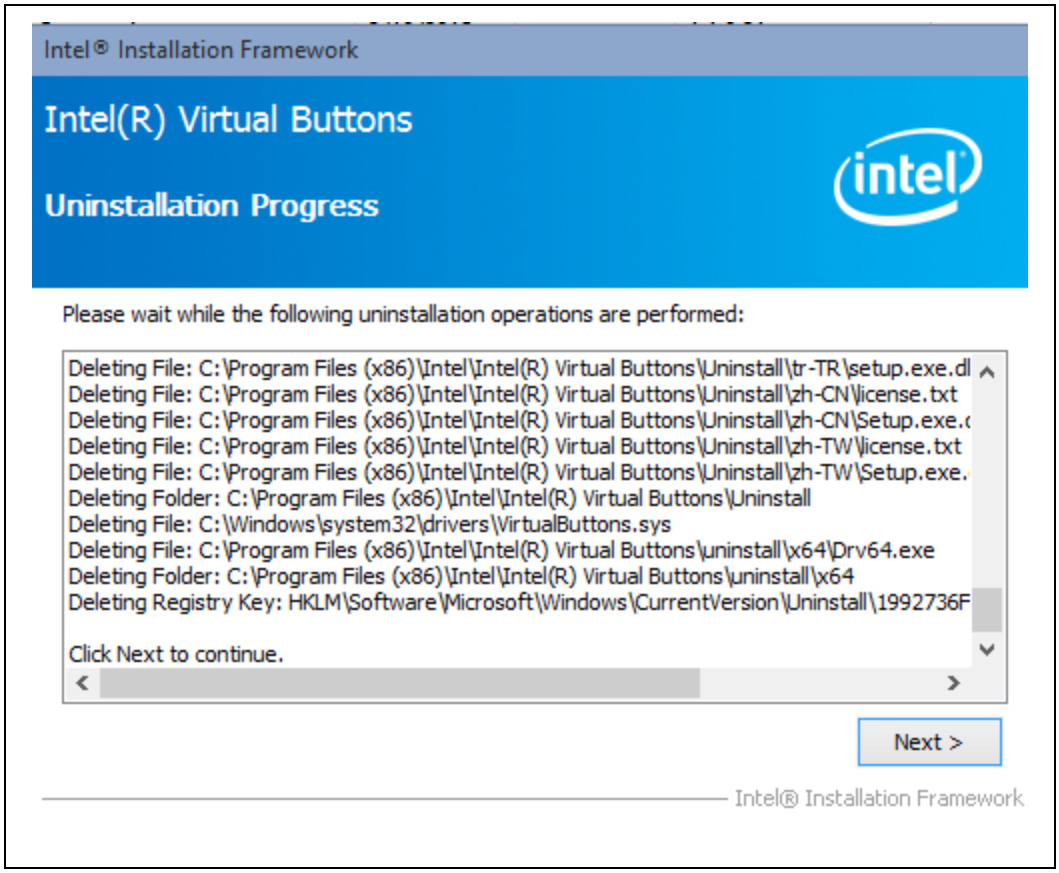
3. On the next window, select the "Intel® Virtual Buttons" (see Figure 7) from the list of programs. Then click the "Uninstall" button.

Figure 7: Uninstall Virtual Buttons Driver in the control panel



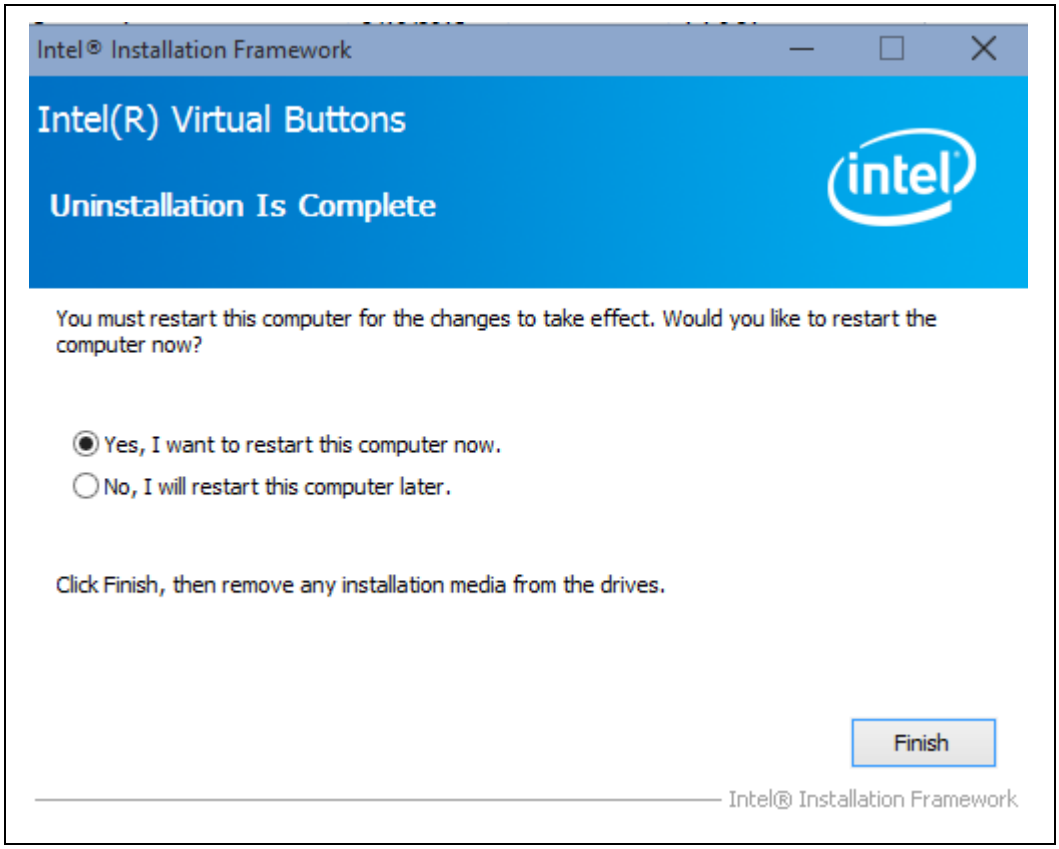
4. You should see the Welcome to Uninstallation Program pop-up window with component details as shown in Figure 8. Click 'Next >' button to continue.

Figure 8: Uninstallation Pop up Window



5. Next, installer will perform various operations and show progress in Uninstallation progress screen. When the uninstall process is completed, you should see screen as shown in Figure 9. Click on 'Finish' button to complete the uninstallation.

Figure 9: Uninstall Setup Completion



6 Known Issues

Issue #	Description
NA	

7 Closed Issues

Issue #	Description	Resolution
N/A		