Intel® Solid-State Drive Data Center Family for PCIe* P3700, P3600 and P3500 Series

Installation Guide

January 2015

Order Number: 330547-003US

Ordering Information

Contact your local Intel sale representative for ordering information.

Contents

Revision History

Revision Number	Description	Revision Date
001	Initial release.	June 2014
002	Updated system requirements.	December 2014
003	Updated Section 3.3. "Driver Installation under Linux"	January 2015

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1 Overview

This guide describes how to install the Intel® Solid-State Drive Data Center Family for PCIe* (Intel® SSD DC P3700, P3600 and P3500 Series) and verify it is installed correctly.

1.1 System Requirements

- System with an available PCI Express (PCIe) Gen 3.0 x8 or x16 slot or 8639 connector backplane
- Supported Operating Systems:
  - Microsoft Windows Server* 2008 R2, Microsoft Windows Server* 2012 R2, 2012
  - Microsoft Windows 7, Windows* 8, Windows* 8.1 (32bit/64bit)
  - Red Hat* Enterprise Linux* 6.5, 6.6 and 7.0
  - SLES* 11 SP3
  - Any other Linux OS that has NVMe* driver backported (e.g., Linux kernel 3.10 and higher)

Note: The P3700, P3600 and P3500 Series is bootable and supports installation of an operating system on platforms that support UEFI* 2.3.1 BIOS.

2 Driver Installation

Installation requires two main steps, but make sure to back up your data before you begin:

- Install the SSD Device in the System
- Install the Device Driver

2.1 SSD Installation

1. Unpack the SSD in a static free environment. Inspect the drive for shipment damage. If any damage is detected, contact your supplier.

IMPORTANT! Back up your data before changing the system's configuration.

2. Turn off the computer and remove the cover from the chassis.
3. Locate an empty PCIe* Gen 3.0 x8 or x16 slot. Ensure that the slot is electrically x4 or higher. This can be confirmed by reading the slot description on the motherboard OR by checking the supporting documentation of the motherboard. (Note: The drive may show degraded performance if plugged into a slot that is not PCIe Gen 3.0.) Remove the blank bracket panel on the back of the system that aligns with the empty PCIe slot. Save the bracket screw.
4. While using a 2.5-inch form factor drive, find the 8639 connector slot on the platform that is capable of supporting this form factor.
5. Record the serial number of the SSD and PCIe slot number where the SSD will be installed. This information can be used at a later time for identifying drives from the console
6. Secure the bracket to the system's chassis by installing the bracket screw.
7. Replace the cover and power up the system.

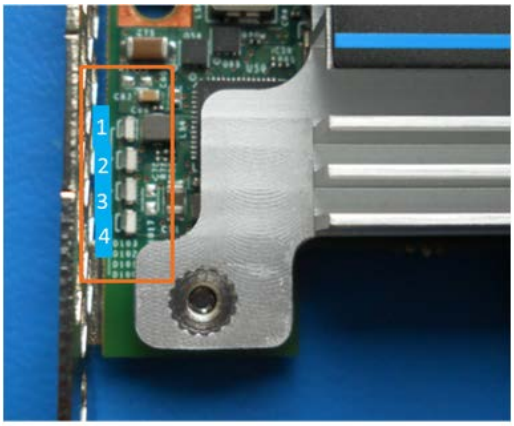
The SSD installation is complete. The next step is to install the device driver.

2.2 Check Device LED

The standard PCIe* Add-in Card (AIC) has LED indicators next to the bracket.

1. When booting the system check the LED to verify the health of the drive:

   - If the drive's Green and Amber LED are lit, it is healthy.
   - If the RED LED is lit (flashing or steady), the drive is in a failed state thus will not be seen in the OS, please contact an Intel Representative.
   - If during workload the Yellow LED is lit, it indicates that the drive has been used beyond its rated specification (for example, over-heating, wearing out NAND, etc.)



From top to bottom:
LED1. Activity (Amber)
LED 2. Failed (red)
LED 3. Defect (yellow)
LED 4. Healthy (green)

3 Driver Installation

To install the Intel® SSD DC P3700, P3600 or P3500 Series Device Driver, follow the instructions for your operating system:

- Microsoft Windows*
- Red Hat Enterprise Linux*

For P3700, P3600 and P3500 Series Device Drivers, go to: http://www.intel.com/support/ssd

Note: It is important to use Intel device driver for full customer support.

3.1 Microsoft Windows Driver Installation

The driver can be installed in either of the following two ways:

- Using the **SetupNVME.exe** installer, the automated method that will install the driver files for you.
- Using the **Have-Disk** command set up requires the user to go into the system's **Device Manager** and install the driver for the new PCIe* device.

3.1.1 Driver Installation – SetupNVMe.exe

1. Double-click the installer ICON in the directory.

Once launched, the **Setup** screen will appear.

2. Click **Next** to continue.

3. At the **License Agreement**, review and accept the terms.
4. At the **Confirm Screen**, click **Next** to continue.
5. At the **Windows Security** screen, click **Install** to start the installation process

6. At the **Completion** screen, click **Finish** to close the installer program.

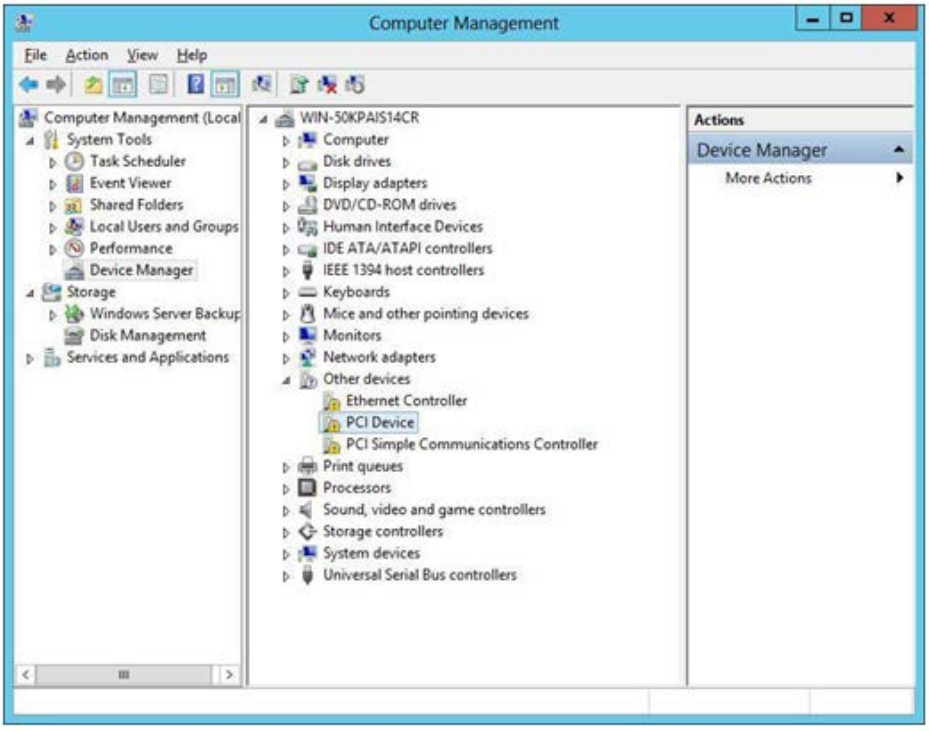
At this time you can assign the drive a letter from **disk manager**.

3.1.2 Driver Installation – Have Disk

1. Log into Microsoft Windows and initiate **Device Manager**:

   Computer Management > Device Manager

   The **Device Manager** displays a list of the hardware in the system. Any device that does not have a driver installed will show up with a caution notification.

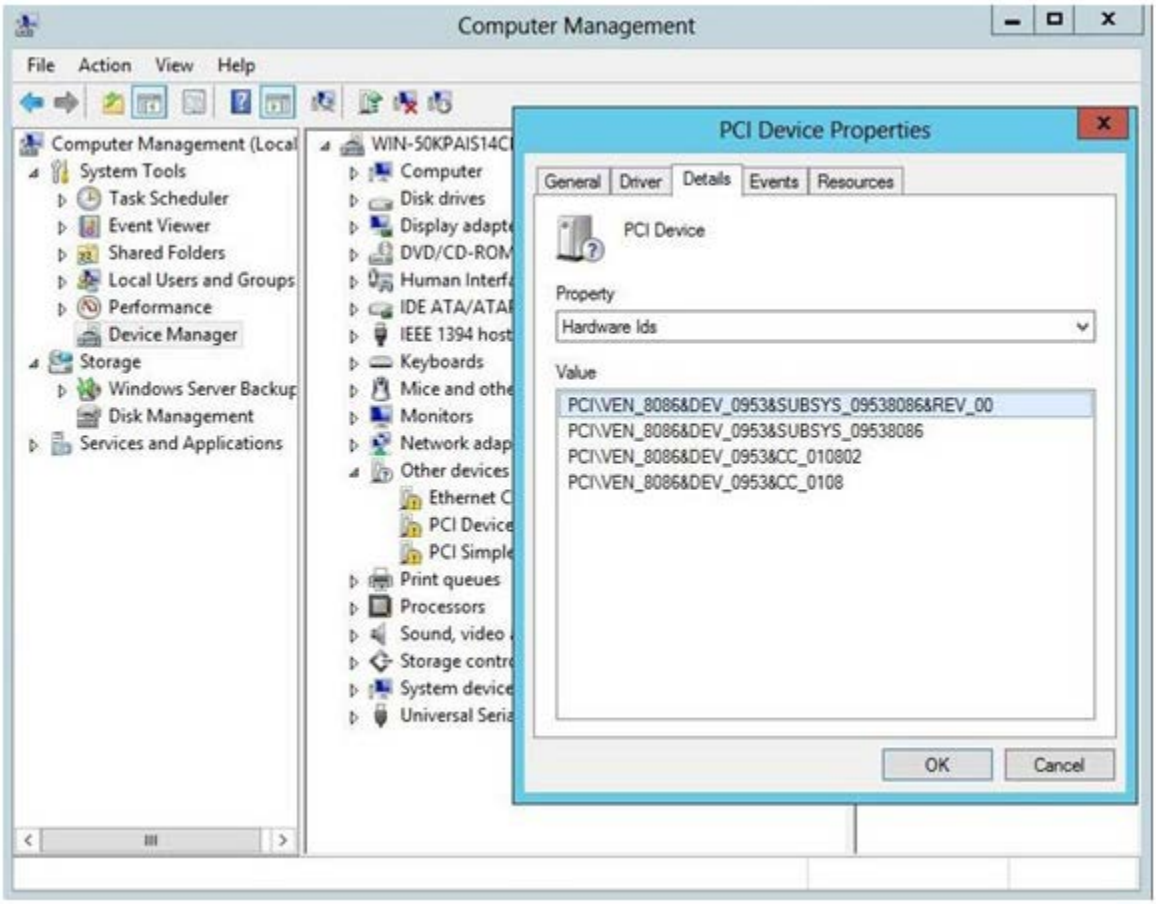


2. Right-click on the PCI Device and select **Properties**.

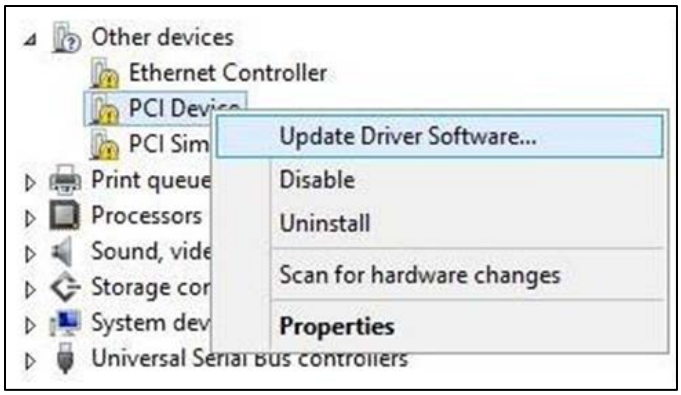
3. Select the **Details** tab.

4. Select the **Property** drop-down box to view the **Hardware Ids.**

Device should show **VEN ID = 8086** and **DEV = 0953** as in the following screenshot:

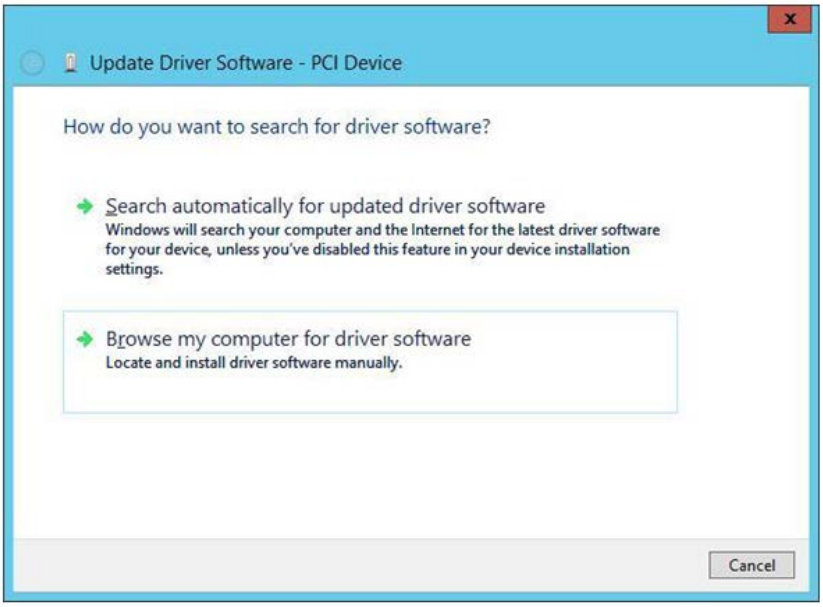


5. Once the correct device is known, right-click to select the device and select **Update Driver Software**, as in the following screenshot:



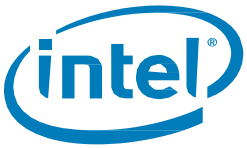
From the **Update Driver Software** window, you will direct the system to the appropriate location.

6. Select **Browse my computer for driver software** to begin installation.



Installation will begin and the **Windows Security** confirmation will be displayed.

7. Click **Install**.



3.2 Basic Functionality Check

- Open **Disk Management** on Windows and select your drive from the list. From this point, you can start running IOs.

- Contact your Intel representative to learn more about about Intel® SSD Data Center Tool for basic functionality checks, or see http://www.intel.com/ssd/download

- Basic Command for functionality checks:

    - To show all Data Center Intel SSDs, use:

      ```
      isdct.exe show –a –intelssd
      ```

    - To check health status, monitor the ErrorString value shown on screen or Byte 3076 to 3095 under identify information.

      To check PCIe link speed, check byte 3096. Make sure the device is trained at Gen3 before doing any performance measurement for optimal results.

    - To show identify controller and namespace info, use:

      ```
      isdct.exe dump –destination C:\identify.csv  -intelssd X DataType=identify
      ```

    - To check SMART information, use:

      ```
      isdct.exe dump –destination C:\log.csv  -intelssd X DataType=NVMelog  LogPage=2
      ```

3.3 Driver Installation under Linux

- Linux driver is available in RHEL6.5, 6.6, 7.0 and SLES 11SP3 in-box. Use the following command to determine the drive in a Linux system:

  ```
  ls /dev/nvme
  ```

- Two handles will be provided; one for the controller and one for the namespace:

  ```
  /dev/nvme0n1 (namespace)  /dev/nvme0 (controller)
  ```

- For other Linux OS without NVMe in-box driver, you can upgrade the kernel with the latest NVMe driver from: www.kernel.org.

  Note: The NVMe driver is a part of the Linux kernel. All major Linux distributions mentioned in the list have NVMe driver in-box support. If you are using another distribution that does not have the NVMe driver, or you are searching for the latest update which may be not implemented in the distribution, then you can update it as the part of the kernel update. All NVMe block driver changes are hosted in the kernel repository at www.kernel.org.