Intel® Solid-State P3600 and P3700 NVMe devices running on Dell PowerEdge 13th Generation Servers— Important Information

⚠️ CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

🔍 NOTE: This publication contains information on the Intel® Solid-State P3600 and P3700 NVMe devices supported on Dell systems. For more information on the specifications, downloads, and documentation for the Intel® Solid-State P3600 and P3700 NVMe devices please see the latest product specifications posted to these locations:


Dell® specific content including downloads and documentation can be found at this partner website: www.intel.com/IntelDellSSD
Supported Intel® Solid-State P3600 and P3700 NVMe devices on Dell PowerEdge 13th Generation Servers.

- Intel® Solid-State P3600 2.5” drive form factor in these supported capacities.
  - 1.2 TB capacity.
  - 1.6 TB capacity.
  - 2.0 TB capacity.

- Intel® Solid-State P3600 AIC (HHHL) drive factor in this capacity.
  - 2.0 TB capacity.

- Intel® Solid-State P3700 AIC (HHHL) drive factor in this capacity.
  - 2.0 TB capacity.

Installation and cabling of the Intel® Solid-State P3600 and P3700 NVMe devices.

⚠️ **NOTE:** The Intel® Solid-State P3600 and P3700 NVMe devices are only supported in specific PCIe enabled backplane locations and certain PCIe slot locations. Please see the Server Slot support Matrix documentation for the supported PCIe slot locations and any known hardware population limitations. Dell® specific documentation can be found at this partner website: [www.intel.com/IntelDellSSD](http://www.intel.com/IntelDellSSD)
The Intel® P3600 2.5” drive form factor devices are supported on specific Dell server platforms supporting NVMe PCIe hot-swap drives. These drives can be removed from electro static discharge (ESD) packaging and inserted onto the supported backplane locations using the provided 2.5” Dell NVMe drive carriers. Please see the Server Slot Support Matrix documentation on the partner’s website: www.intel.com/IntelDellSSD

For any additional Platform specific details please see your Platform user guide or your platforms PCI Card Slot Matrix documentation for supported NVMe drive backplane locations and configuration specifics.

The Intel® Solid-State P3600 and P3700 NVMe devices in the add in card (AIC) or PCIe Adapter card form factor are supported in the Dell PowerEdge platform by using a ½ height or full height profile mechanical adapter bracket. Please choose the bracket that is right for your systems PCIe slots requirement. The brackets are interchangeable by removal of 2 small screws on the adapter.

Please see the Intel® Generic Installation Guide posted to this location: http://downloadmirror.intel.com/23929/eng/intel%20ssd%20data%20center%20family%20for%20pcie%20installation%20guide_330547-003.pdf

Dell® specific content including downloads and documentation can be found at this website: http://www.intel.com/IntelDellSSD
Supported Dell PowerEdge 13th Generation Servers.

The following Dell® PowerEdge 13th Generation systems are supported with the previously referenced Intel® Solid-State P3600 and P3700 NVMe devices.

- **PowerEdge R730 XD**
- **PowerEdge R630**
- **PowerEdge T630**
- **PowerEdge R920**

**Supported Operating Systems**

- **NOTE:** Intel® Solid State P3600 and P3700 NVMe devices do not support Operating System boot in Dell PowerEdge systems.
- **NOTE:** For all operating system documents, please see dell.com/operatingsystemmanuals.
The following Operating Systems are supported with the Intel® Solid-State P3600 and P3700 NVMe devices and the Supported Dell PowerEdge Systems:

- **Microsoft® Windows Server 2012 R2**
  Please use the Intel provided add in driver available from the Intel® support website: [www.intel.com/IntelDellSSD](http://www.intel.com/IntelDellSSD)

- **VMware® ESXi 6.0**

- **Red Hat® Enterprise Linux version 7.0**
  Please use the Intel provided add in driver available from the Intel® support website: [www.intel.com/IntelDellSSD](http://www.intel.com/IntelDellSSD)

- **SUSE® Enterprise Linux version 12**
  Please use the Intel provided add in driver available from the Intel® support website: [www.intel.com/IntelDellSSD](http://www.intel.com/IntelDellSSD)

**Supported Drivers**

**Microsoft®**
Microsoft® Windows 2012r2 does contain an in-box NVMe driver however, Intel® requires updating to the latest driver to ensure full Express Flash PCIe SSD support.

Please use the latest Intel® provided add in driver available from the Intel® partners website: [www.intel.com/IntelDellSSD](http://www.intel.com/IntelDellSSD)
The Windows 2012r2 supported driver for this release is 1.0.0.1025.

**VMware®**
The VMware® 6.0 Operating Systems contains an in-box NVMe driver that supports the Intel® Solid-State P3600 and P3700 NVMe devices.
For VMware the inbox driver revision is listed as: 1.0e.0.35-1vmw

**Red Hat®**
Red Hat® Enterprise Linux 7.0 does contain an in-box NVMe driver however, Intel® requires updating to the latest driver to ensure full Express Flash PCIe SSD support.

Please use the latest Intel® provided add in driver available from the Intel® partners website: [www.intel.com/IntelDellSSD](http://www.intel.com/IntelDellSSD)

The supported driver for this release is 3.0 -1.
(kmod-intel-nvme-3.0-1.x86_64.rpm) Update the host boot initrd using:
(nvme-3.0-1.x86_64.rpm)
During installation of the RPM files please use the --force command to update the drivers.

```
[root@localhost]# rpm -ivh --force kmod-nvme-3.0-1.x86_64.rpm
[root@localhost]# rpm -ivh --force nvme-3.0-1.x86_64.rpm
```

**SuSe®**
SuSe® Enterprise Linux 12 does contain an in-box NVMe driver however, Intel® requires updating to the latest driver to ensure full Express Flash PCIe SSD support.

Please use the latest Intel® provided add in driver available from the Intel® partners website: [www.intel.com/IntelDellSSD](http://www.intel.com/IntelDellSSD)
The SuSe® supported driver for this release is 3.0-0. 
(intel-nvme-kmp-default-3.0_k3.12.28_4-0.x86_64.rpm) 
Apply the RPM file to update to the latest driver.

[root@localhost]# rpm -ivh intel-nvme-kmp-default-3.0_k3.12.28_4-0.x86_64.rpm

**Supported Firmware**

The supported device Firmware (FW) for the initial release of the Intel® Solid-State Drive DC Series devices is the 1.10 FW.

The full version string for the release is: 8DV10110

The latest FW release is included as part of the Intel® Solid-State Drive Data Center Tool release.
Example FW update using the Intel® Solid-State Drive Data Center Tool:

```
>isdct show –a –intelssd
This will list the Intel® SSD’s in the system and provide the device index numbers.
>isdct load –intelssd 1
This will update the FW to the SSD at device index 1.
```

**Intel® Management Tools**

*NOTE: Management of Intel® Solid-State P3600 and P3700 NVMe devices using Dell applications is not supported.*
NOTE: Planned removal of an Intel® Solid-State P3600 and P3700 NVMe devices using the Intel® Solid-State Drive Data Center Tool is not supported.

NOTE: Surprise removal of Intel® Solid State P3600 and P3700 NVMe devices is not supported.

The Intel® Solid-State SSD’s should be managed using the Intel® Solid-State Drive Data Center Tool.

The supported tool version for the initial release of the Intel® Solid-State Drive DC Series devices is the 2.2.0.

The 2.2.0 release of tool for Windows, Linux and User Guide documentation are available at this website: www.intel.com/IntelDellSSD
Planned NVMe Device removal.

**Microsoft® Windows**

In Microsoft® Windows 2012r2 the Intel® Solid-State SSD’s can be prepared for removal in the **Control Panel** under **Hardware and Devices and Printer** section. By right clicking on the SSD and selecting remove device from the list the NVMe is prepared for removal and can now be removed from the system.

**Linux Operating Systems**

First step in preparing an Intel® Solid-State SSD for removal is to identify the devices location using the LSPCI command.

```
> lspci -n | grep 0953
```

The 0953 number is the device ID of the Intel® Solid State P3600 and P3700 NVMe family of devices. This command will generate a list of the NVMe devices in the system.

Here is an example of 3 NVME devices in the output from the lspci command:

```
0b:00.0 0108: 8086:0953 (rev 01)
23:00.0 0108: 8086:0953 (rev 01)
44:00.0 0108: 8086:0953 (rev 01)
```

Using this information an Intel® Solid-State SSD can be removed from the system using this command syntax:
Echo 1 > /sys/bus/pci/devices/0000:23:00.0/remove

The 23:00.0 is the device address for the device that was removed with this command.

Known Compatibility Issues

Intel® Solid-State P3600 and P3700 NVMe devices do not communicate with the Dell PowerEdge Backplane LED’s as expected.

**NOTE:** Backplane Device Status LEDs with Intel® Solid-State P3600 and P3700 NVMe devices are not supported in Dell PowerEdge
NOTE: The Intel® Solid-State NVMe SSD’s do not currently support this functionality when used with Dell PowerEdge Platforms.

The Backplanes LED functionality will only work on fully integrated Storage devices, the Intel® Solid-State P3600 and P3700 NVMe devices are not integrated in this manner and do not support the necessary side band communication that is required to enable this capability.

Red Hat Enterprise Linux 7.0

NOTE: During testing it was observed that the system would experience a Bus fatal error after hot adding Intel® Solid-State P3600 and P3700 NVMe 2.5” form factor devices.

This issue is a known Red Hat Enterprise Linux issue.

The tested workaround for this issue is to append pci=pcie_bus_safe to the GRUB_CMDLine_Linux line on the /etc/default/grub file.

The system needs to be rebooted after running the grub2-mkconfig --output=/boot/grub2/grub.cfg

Management of the Intel® Solid-State P3600 and P3700 NVMe devices using Dell Applications

NOTE: Management of Intel® Solid-State P3600 and P3700 NVMe devices using Dell applications is not supported.
Integrated Dell Remote Access Controller (iDRAC) and the Dell LifeCycle Controller (LC):

The Dell® LifeCycle Controller does not support display or management of the Intel® Solid-State P3600 and P3700 NVMe devices. The Intel Solid-State P3600 and P3700 are not fully integrated with Dell’s Life Cycle Controller, the drives do not show up under hardware Inventory. The Intel® Solid-State P3600 and P3700 NVMe devices should only be configured and managed using Intel® Solid-State Drive Data Center Tool.

Dell® iDRAC and LifeCycle Controller do not support the display or management of the Intel® Solid-State P3600 and P3700 NVMe devices. Inventory reports do not correctly report the physical location of the Intel® Solid-State Drive DC series devices.

The Intel® Solid-State Drive Data Center Tool should be used to configure and manage the Intel® Solid-State Drives.

Dell® Open Manage Reporting.

Dell® OpenManage Storage Services do not support the display or management of the Intel® Solid-State P3600 and P3700 NVMe devices. The Intel® Solid-State Drive Data Center Tool supports the same functionality generally found in the Open Manage application. The Intel® Solid-State Drive Data Center Tool should be used to configure and managed the Intel® Solid-State Drives.

Dell® PowerEdge Platform BIOS UEFI Device Management.
Dell® PowerEdge pre-OS device management (UEFI) does not support the display or management of the Intel® Solid-State P3600 and P3700 NVMe devices. Firmware updates, Secure Erase, or format. These tasks as well as accessing the Hardware debug logs tasks can be completed using the Intel® Solid-State Drive Data Center Tool.

Please see the documentation for using the DCT tool located on the support website:


**Contacting Dell**

Please see the support website listed for contact information as well as all the available documentation and downloads available for the Intel® Solid-State P3600 and P3700 NVMe devices.

www.intel.com/IntelDellSSD

To contact Dell for sales, support, or technical issues, see dell.com/contactdell.
Finding Your System-Specific Owner’s Manual

1. Go to dell.com/support/manuals.

2. If required, select your country from the top right-corner of the page and then select your line of business.

3. In the next page, under Tell us about your Dell system, enter the Service Tag or the Express Service Code of your Dell PowerEdge system and click Submit.

   NOTE: Your system is identified by a unique Express Service Code and Service Tag number. The Express Service Code and Service Tag are found on the front of the system by pulling out the information tag.

   The documentation page for your PowerEdge system is displayed.

Documentation Feedback

If you have feedback for this document, write to documentation_feedback@dell.com. Alternatively, you can click on the Feedback link in any of the Dell documentation pages, fill up the form and click Submit to send in your feedback.