

# Why buy HP Hard Disk and Solid State drives for HP Workstations?



## Overview

In the open market, there are a wide variety of available hard disk (HDD) and solid state drives (SSD), many at budget pricing. Why not buy them directly from any one of the many storage device manufacturers over the Internet, or from any of the numerous electronics stores, at a cheaper price? What is the real advantage of buying hard disk and solid state drives from HP? What are the risks of using drives that have not been qualified through the HP process?

This paper was written to help explain why purchasing HP hard disk and solid state drives for use in HP workstations is a good business decision. There are a few key points to consider:

- Not all hard disk and solid state drives are the same, even when they have identical specifications. Often there are potential differences in components and firmware used on the storage devices. These differences can mean that non-HP storage devices will perform less effectively or even fail when exposed to the higher workloads imposed by HP workstation customers.
- Manufacturers of 3<sup>rd</sup> party “Distribution Channel” hard disk and solid state drives do not test their storage devices on HP workstations as thoroughly, if at all. HP leverages testing performed on various computer platforms, including other business units, and works with suppliers to optimize their storage device performance for HP specific products.
- Failures of hard disk and solid state drives are infrequent, yet have significant costs, especially the loss of productivity and the possible loss of critical data. Not only does HP minimize the chance of productivity loss through its extensive testing, but HP minimizes the loss of productivity impact through our highly effective HP workstation warranty. Typically, your HP warranty will enable you to have your workstation functioning again on the next business day. It is unlikely that manufacturers of the 3<sup>rd</sup> party storage device can offer or deliver the same warranty experience.

## Are all hard disk and solid state drives the same?

No! HP hard disk and solid state drives are not the same as other OEM drives or “Distribution Channel” drives. HP performs exhaustive testing to ensure compliance to many industry standards, which enables drives to perform correctly when integrated with other industry standard components. HP tests to compliance with the following industry specifications: SATA-IO standards, T13 standards for SATA devices, T10 standards for SAS devices, and compliance with the NVMe standards for NVMe devices.

## Why are HP components different?

Every component inside an HP workstation has been certified to meet HP’s best-in-class specifications using a battery of tests that have been developed over the years. HP’s test labs subject all components to rigorous testing to verify their compatibility, performance, and reliability under the most extreme conditions. In choosing workstation components, HP doesn’t stop at the specifications in the manufacturer’s data sheet.

### HP storage device qualification standards

HP’s qualification processes starts with the same industry-standard tests and benchmarks used by other vendors, but goes above and beyond to also make use of proprietary test tools and techniques that have their origins in HP’s long history in the workstation market. Testing operations specific to storage devices include but are not limited to the following additional testing:

- Standards Compliance – HP’s standards compliance suites ensure that every storage device conforms to the strict requirements and workstation compatibility, performance, and reliability to be best in class.

- **Component Level Data Integrity** – HP performs exhaustive tests on hard disk and solid state drives using proprietary test tools and methods to ensure that the risk of data loss is minimized. Data integrity is validated in all supported configurations across all supported workstation platforms. In addition to the testing in HP's workstation labs, storage devices are also tested by other HP business units, and test results are shared between the divisions. This greatly increases the test coverage, test run time, and exposure to different operating environments (both hardware and software).
- **Platform Level Configuration Testing** – HP tests every storage device in all supported workstations, in every supported configuration. This includes the full set of drive controllers and RAID configurations.
- **System Compatibility and Reliability** – HP tests overall system compatibility, with almost every system configuration imaginable. Additionally, we put systems through a series of physical tests, including shock and vibration tests.
- **Thermal Testing** – As solid state drives continue to push the performance envelope, a side effect of fast reads and writes is power consumption, and thus heat dissipation. HP's rigorous thermal testing has shown the need for cooling solutions that ensure our SSDs don't throttle under heavy workload. Without careful engineering the cooling solutions can impact acoustics. HP's workstation labs has a passion for creating cooling solutions that also allow for the best acoustic performance in the industry.

## **HP Firmware**

HP firmware contains hundreds of customizations that differentiate it from channel firmware.

These differentiations generally fall into five main categories:

- **Security**
  - HP firmware has customizations that make malicious attacks virtually impossible
  - Drive behavior has been modified to maintain well defined security states and support BIOS security functions
- **Data Integrity**
  - HP firmware has support for HP-unique features that improve data integrity and reduce errors
  - Some of these features include End-to-End Error Detection/Correction, buffer flushing requirements and special considerations for sudden power loss situations
- **Platform Compatibility**
  - HP firmware is designed with HP platforms in mind
  - Considerations are made to accommodate boot times, BIOS operations, platform power and thermal requirements and chipset/driver interoperability
  - Custom thermal throttling points to ensure maximum performance under heavy workload
  - Support for HP DriveLock, HP Disk Sanitizer, HP Secure Erase, HP Secure Boot, etc.
- **Reliability and Endurance**
  - HP firmware contains special functionality to increase drive reliability, uptime and life
  - HP Drive Protection System (DPS), SMART/SCT and Device Statistics Notification feature sets are supported
- **HP Tools and Support**
  - HP drive firmware is supported in platform tools (e.g. HP Performance Advisor, HP Support Assistant, etc.)

## Why does it matter?

HP qualified and certified drives are guaranteed to work in HP Workstation systems. The strenuous testing and qualification often finds and corrects issues with drives. The recent transition from SATA SSDs to PCIe SSDs provides a prime example. Whenever a new form factor is introduced, there are bound to be issues uncovered. HP worked closely with drive suppliers to correct all issues found during development and qualification of PCIe SSDs, and we were the first to market with PCIe solid state drives.

HP works with hard disk and solid state drive vendors to ensure that all of the components that go into the storage devices remain consistent throughout the life of the drive families. Some component vendors will create a bill of material with several options for certain commodity sub-components, and then choose suppliers based upon the current lowest cost of the sub-components. This could lead to undesired product differences. If a vendor needs to change a component, HP and the vendor will re-qualify that component and the complete storage solution as a whole to ensure that the changes do not have any adverse effects on the compatibility, performance and reliability of the storage device.

In the open market, there are a wide variety of available hard disk and solid state drives to choose from, all designed with unknown quality and reliability standards. Don't trust your mission critical data to anything less than the best. HP drive quality makes a difference.

## For more information

To read more about HP workstation technology go to [hp.com/go/whitepaper](http://hp.com/go/whitepaper)

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