QuickSpecs

Overview

PCIe Solid State Drives for HP Workstations

Introduction

Storage technology with NAND media is outgrowing the bandwidth limitations of the SATA bus. New high performance Storage solutions will connect directly to the PCIe bus for revolutionary performance improvements. These components will be available in a variety of form factors and performance levels, designed specifically for certain market segments, and ultimately the costs will continue to decline as the technology evolves.

Performance

HP Z Turbo Drive
The HP Z Turbo Drive features a PCIe connected SSD, and this enables performance levels greater than 1GB/s. This performance is available at a price that is at parity with today's comparable SATA SSDs. This will enable the highest price/performance ratio for client grade SSDs.

The HP Z Turbo Drive will be supported on desktop platforms of HP Z Workstations. It will support storage configurations as a Boot device and as a Data device. The performance gains are significant when connecting to the PCIe bus. The sequential read and write performance is roughly twice as fast as today's SATA SSD products.

HP Z Turbo Drive 256GB SSD
256GB SSD
NAND Type: MLC
Read Bandwidth (128KB): 1.08GB/s
Write Bandwidth (1MB): 800 MB/s
Random Read IOPS (4KB): 120K
Random Write IOPS (4KB): 60K
Endurance (Total Bytes Written): 146 TB
Weight: 1.8oz (51g)

QuickSpecs

PCIe Solid State Drives for HP Workstations

Overview

Form Factor: Half-height, half-length*

HP Z Turbo Drive 512GB SSD
512GB SSD
NAND Type: MLC
Read Bandwidth (128KB): 1.17GB/s
Write Bandwidth (1MB): 930 MB/s
Random Read IOPS (4KB): 122K
Random Write IOPS (4KB): 72K
Endurance (Total Bytes Written): 292 TB
Weight: 1.8oz (51g)
Form Factor: Half-height, half-length*

The HP Z Turbo Drive is supported on all current desktop workstation platforms, including Z230, Z420, Z620, Z820, and Z440, Z640, Z840. It is supported as a boot device and a data device. It is also supported by our current offering of Operating Systems, including Linux, and does not require a separate driver. It does require a BIOS update for any system shipped prior to the Z Turbo Drive launch. It can be configured with additional hard drives, both SATA and SAS, and with multiple Z Turbo drives per system. All supported configurations are not available as factory options in all regions.

Support for OPAL hardware encryption: No
Support for Secure Erase: Yes
Supported in HP Performance Advisor: yes (includes wear gauge)
Approved PCIe slots :
Recommended slot order for Z820
1. Slot 1
2. Slot 6
3. Slot 3 (Requires 2nd CPU)
4. Slot 4 (Requires 2nd CPU)

Z620 - Slot 4, Slot 5
Z420 - Slot 4, Slot 5
Z230 - Slot 4

Recommended slot order for Z840
1. Slot 1
2. Slot 6
3. Slot 3 (Requires 2nd CPU)
4. Slot 4 (Requires 2nd CPU)

Z640 - Slot 4, Slot 5, Slot 3 (in order of preference)
Z440 – Slot 4, Slot 5, Slot 3 (in order of preference)

RAID is supported using the OS Disk Management software provided with Windows and Linux.
Performance levels can be greatly increased by using multiple devices and RAID 0. The performance scales linearly, and has been tested to levels greater than 3GB/s for Sequential performance with 4 devices.

RAIDed boot of OS partitions can be created based on the limitations of the SW RAID capability supported in the OS.

RAIDing of the boot partition is not supported.

HP Z Turbo Drive G2
The new HP Z Turbo Drive G2 features the next generation PCIe SSD. This M.2 form factor device uses PCIe Gen3 x4 which enables performance levels greater than 2GB/s. The Random Read performance is significantly improved also, due to the NVMe controller technology used on the device. This performance is available at a price that is comparable to commercial SATA SSDs.

c04200260 — DA – 14915 — Worldwide — Version 8 — April 1, 2015   Page 2

Overview

The HP Z Turbo Drive G2 will be supported on desktop platforms of HP Z Workstations. It will support storage configurations as a Boot device and as a Data device. It also can be configured with other storage components including SATA and SAS drives and controllers. Not all configurations are available from the factory.

HP Z Turbo Drive G2 256GB SSD
256GB SSD
PCIe Gen3 x4 architecture
NVMe Controller
NAND Type: MLC
Read Bandwidth (128KB): 2150 MB/s
Write Bandwidth (1MB): 1260 MB/s
Random Read IOPS (4KB): 300K
Random Write IOPS (4KB): 100K
Endurance (Total Bytes Written): 146 TB
Weight: 3.9oz (111g)
Form Factor: Half-height, half-length*

HP Z Turbo Drive G2 512GB SSD
512GB SSD
PCIe Gen3 x4 architecture
NVMe Controller
NAND Type: MLC
Read Bandwidth (128KB): 2150 MB/s
Write Bandwidth (1MB): 1550 MB/s
Random Read IOPS (4KB): 300K
Random Write IOPS (4KB): 100K
Endurance (Total Bytes Written): 292 TB
Weight: 4.0oz (113g)
Form Factor: Half-height, half-length*

The HP Z Turbo Drive G2 is supported on the current desktop workstation platforms, including Z440, Z640, and Z840. It is supported as a boot device and a data device(s). It is also supported by our current offering of Operating Systems, including Linux, and may require a separate driver, depending on OS. It does require a BIOS update for any system shipped prior to the Z Turbo Drive G2 launch, minimum BIOS is 1.53. It can be configured with additional hard drives, both SATA and SAS, and with multiple Z Turbo drives per system. All supported configurations are not available as factory options in all regions.

Support for OPAL hardware encryption: No
Support for Secure Erase: Yes
Supported in HP Performance Advisor: yes (includes wear gauge)

Approved PCIe slots :
Recommended slot order for Z840
> 1. Slot 1
> 2. Slot 6
> 3. Slot 3 (Requires 2nd CPU)
> 4. Slot 4 (Requires 2nd CPU)

Z640 - Slot 4, Slot 5, Slot 3 (in order of preference)
Z440 – Slot 4, Slot 5, Slot 3 (in order of preference)

RAID is supported using the OS Disk Management software provided with Windows and Linux.
Performance levels can be greatly increased by using multiple devices and RAID 0. The performance scales linearly, and has been tested to levels greater than 4GB/s for Sequential performance with 2 devices.

RAIDed boot of OS partitions can be created based on the limitations of the SW RAID capability supported in the OS.

Overview

RAIDing of the boot partition is not supported.

* roughly, actual length is 4 inches (100cm)

Models

HP Z Turbo Drive 256GB SSD	G3G88AA
HP Z Turbo Drive 512GB SSD	G3G89AA
HP Z Turbo Drive G2 256GB SSD	M1F73AA
HP Z Turbo Drive G2 512GB SSD	M1F74AA

Technical Specifications

Storage / Hard Drives	**HP Z Turbo Drive 256GB SSD**	**Capacity**	256GB
		Interface	PCI Express 2.0 x4 electrical x4 physical
		Operating Temperature	32° to 158° F (0° to 70° C)
	HP Z Turbo Drive 512GB SSD	**Capacity**	512GB
		Interface	PCI Express 2.0 x4 electrical x4 physical
		Operating Temperature	32° to 158° F (0° to 70° C)
Storage / Hard Drives	**HP Z Turbo Drive G2 256GB PCIe SSD**	**Capacity**	256GB
		Interface	PCI Express 3.0 x4 electrical x4 physical
		Operating Temperature	32° to 158° F (0° to 70° C)
	HP Z Turbo Drive G2 512GB PCIe SSD	**Capacity**	512GB
		Interface	PCI Express 3.0 x4 electrical x4 physical
		Operating Temperature	32° to 158° F (0° to 70° C)

QuickSpecs

Summary of Changes

Date of change:	Version History:		Description of change:
June 11, 2014	From v3 to v4	Removed	Removed the Z Turbo Drives.
September 2. 2014	From v4 to v5	Added	Add slot recommendations for Z840, Z640, Z440, details for Boot, note for support of Secure erase, and Linux support
December 1, 2014	From v5 to v6	Changed	HP Z Turbo Drive compatibility
February 1, 2015	From v6 to v7	Added	Support for Z440, 640 and 840 Workstations
		Removed	third party tools support for Secure Erase
April 1, 2015	From v7 to v8	Added	Z Turbo Drives G2 256 and 512GB
		Removed	Fusion ioFX