s1120 PCIe Accelerator
Enterprise-Class Solid-State Device

Frequently Asked Questions

HGST
a Western Digital company

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Q: What is the s1120 PCIe Accelerator?

A: The HGST s1120 PCIe Accelerator is a solid-state NAND flash HH-HL PCIe card that installs in any compute server or storage server. Placed in a compute server next to the CPU, the s1120 PCIe uses the PCIe bus of the server to transfer data at very fast speeds.

Each solution includes:

- s1120 PCIe Accelerator Card
- HGST Device Management Software (SDM)
- Set of Drivers
- PowerSafe™ Technology
- CellCare™ Technology
- Secure Array of Flash Elements™ (SAFE) Technology
- Data Path Protection
- Advanced Flash Management
- 5-Year Warranty

Q: What are the benefits of the s1120 PCIe Accelerator?

a. Fast access to data

b. Meet Service Level Agreements

c. Grow workloads without growing infrastructure

d. Generate high throughput without additional hardware sprawl

e. Do more with less. Reduce hardware and software while achieving the same or better throughput

f. Lower operating costs through reduced footprint, power and cooling

g. High reliability and endurance ensures data availability and integrity

h. Scales easily to 10TB per server

Q: What are the capacities available for the s1120 PCIe Accelerator card?

A:	User Capacity	NAND
	240GB	SLC
	480GB	MLC
	980GB	MLC
	2TB	MLC

Q: Can I reconfigure the s1120 PCIe for additional performance?

A: Customers can use SDM HGST Device Manager to reformat the s1120 capacity. To achieve maximum performance, one option is to overprovision. The card can be over provisioned down to 50% of the maximum capacity.

Q: What operating systems is the s1120 PCIe supported on?

A: The s1120 PCIe is a complete solution. In addition to the PCIe card, a full suite of drivers and management software is included. Below is a list of drivers. HGST also provides an Open Source driver for Linux.

Drivers

Solaris 11
CentOS 6.3
OEL 6.2
RHEL 5.6, 5.7, 6.0, 6.1, 6.2
SLES 11sp1, sp11
Windows Server 2008R2 64-bit
VMware ESX, ESXi 4.1
VMware Vsphere 5.0
Linux Open Source Code

Management Interface

SDM CLI/GUI 2.0 for Linux
SDM CLI/GUI 2.0 for Windows

Q: How is the PCIe Accelerator card set up and managed?

A: The PCIe SSD Accelerator solution includes the HGST Device Management (SDM) tool. The SDM provides a CLI and GUI option for the customer for managing and monitoring the s1120 PCIe.

Q: Does the s1120 PCIe SSD require server CPU cycles and memory?

A: The s1120 PCIe Accelerator minimizes use of server CPU cycles and DRAM, since the ASIC controller uses its own resources to handle flash management functions.

Q: How many PCIe SSD cards can be installed in one server?

A: Working with its customers, HGST has scaled 11 cards per server.

Q: How is data protected on the s1120 PCIe?

A: To ensure data protection HGST developed PowerSafe Technology is an integrated power failure protection system that provides data persistence across any power failure event. PowerSafe ensures data availability. It ensures data is always persistent under any power failure or power down event. All data in flight on the card is guaranteed to be stored on the flash.

Secure Array of Flash Elements (SAFE) Technology ensures continuous 24/7 operation and recovery of flash failures on the fly. Data at rest is always protected to ensure zero data loss.

Q: What is Endurance?

A: Endurance is a term that reflects the useable life of a flash drive. The flash wears out over time, as writes to the flash cause it to wear faster than reads. The endurance should reflect how many writes can be done to the drive before wearout. In some flash solutions, as the flash wears, the performance diminishes. It is important to consider both the life of the flash and the performance as the drive nears the end of life. HGST developed CellCare Technology. CellCare allows for the implementation of MLC-based devices in enterprise environments. While MLC NAND devices provide higher densities at a lower cost, it is prone to accelerated wearout effects that negatively impact data retention and shorten the device life by limiting the number of reliable program/erase cycles.

Replacing a card due to wear impacts mission critical applications. While replacing a card is easy, it is also disruptive and can negatively impact service level commitments. Therefore, high endurance is a key consideration in the selection of a PCIe Accelerator solution.

The endurance for the SSD is calculated according to a 100% Random Write, 4KB, 8KB workload, resulting in the following Petabytes Written (PBW) outlined below. HGST PCIe SSD provides a minimum of 3 months' data retention during power-off subsequent to reaching the maximum program/erase cycles.

HGST Capacity (GB)	100% Random Endurance (PBW)	100% Sequential Endurance (PBW)
240 (SLC)	19PB	55PB
480 (MLC)	11PB	33PB
980 (MLC)	21PB	66PB
2TB (MLC)	35PB	90PB

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