Preliminary Version

HighPoint
Technologies, Inc.

SSD6780A

8-Bay PCIe Gen4 x16 NVMe RAID Enclosures

NVMe Solution

Add Blazing fast NVMe RAID Storage to any PCIe Gen4 Platform

The SSD6780A 8-Bay PCIe Gen4 NVMe RAID Enclosure unique external form-factor and robust end-to-end PCIe 4.0 x16 connectivity architecture make it the most versatile NVMe RAID storage upgrade in today's marketplace.
The compact external 2.5" drive enclosure can host upwards of 240TB of U.2 or U.3 NVMe RAID storage, deliver 28GB/s of real-world sustained transfer performance, and can be easily integrated into any x86 AMD and Intel platform with a free PCIe 4.0 or 5.0 x16 slot. Engineered for high-performance workstation and server platforms, the SSD6780A delivers the transfer speed and storage density required by data-intensive applications including media post production, content creation, and AI training.

Dedicated Host to Device PCIe Gen4 x16 Connectivity

SSD6780A enclosures utilize HighPoint's state of the art PCIe switching architecture to maximize data transfer performance, minimize latency and enhance signal integrity to streamline I/O between NVMe devices and the host platform.

Both "halves" of the solution; the enclosure, and the external PCIe AIC, are equipped with Broadcom's 48-Channel PEX88048 switch IC. This enables the solution to provide x16 lanes of dedicated PCIe Gen4 upstream bandwidth and x4 lanes of dedicated downstream bandwidth to each U.2 or U.3 SSD. This translates into 32GB/s of transfer bandwidth and 28GB/s of real-world sustained transfer speed!

The innovative hardware architecture employs a technique known as a "Synthetic Hierarchy" to isolate the host system's OS from any PCIe topology changes. This enables the SSD6780A to directly manage resource allocation to the downstream devices (hosted U.2/U.3 media) and provide true Hot-Swap/Hot-Plug capability by facilitating a more efficient interaction between the host CPU and PCIe switch.

The SSD6780A's elegant cabling solution requires only a single connection between the enclosure and host platform.
The enclosure's external 1-meter CDFP cable was engineered to make installation a snap, while guaranteeing a stable, secure x16 lanes of dedicated connectivity between the NVMe SSDs and the host platform's PCIe 4.0 host bus.

Industry Proven NVMe RAID Technology

The SSD6780A enclosure is powered by the HighPoint's proven NVMe RAID stack, and is capable of supporting one or more RAID 0, 1 and 10 arrays alongside single SSDs. This versatile technology enables administrators to quickly configure storage for any application, and tuned to optimize for performance, security or a balance of the two. RAID 1 mirroring protects data against the risk of device failure by creating a hidden duplicate of the target SSD, and is ideal for bootable volumes. Up to 8 SSDs can be configured into a RAID 0 stripe array to maximize storage performance and capacity. RAID 10 provides an ideal mix of security and performance, as it combines the speed of a stripe array with the mirrored data protection of a RAID 1 array.

Robust, Ultra-Quiet Cooling Solution

NVMe media runs hot, especially when under full-load for hours on end. Opting for a conventional internal 2.5" storage solution necessitates considerable investment in cooling apparatus to ensure NVMe storage can perform optimally without interfering with other hardware devices. In contrast, the SSD6780A's form factor ensures none of the waste heat generated by the NVMe media enters the computing environment; thereby significantly lowering upfront costs while

The robust, aluminum chassis advanced, precision engineered cooling system ensures each hosted U.2/U.3 device consistently operate within its specified temperature thresholds, even under max load. A pair of powerful, low-decibel cooling fans to ingest cool air from the outside environment and circulate it throughout the interior of the enclosure. Waste heat is then drawn away from the SSD media, Switch IC, and critical RAID controller componentry and dispensed through the ventilated drive trays.

The dedicated cooling hardware is bolstered by a real-time monitoring system that incorporates full fan control with LED indication, audible alarms, and HighPoint's field-proven SHI Solution. SHI (Storage Health Inspector) enables administrators to monitor the temperature of hosted NVMe media in real time via S.M.A.R.T. (self-monitoring analysis & reporting technology), and configure warning thresholds to correspond with each make & model, via the WebGUI and CLI management utilities.

Intelligent Self-Diagnostic & Monitoring Services

The enclosure's advanced suite of sensors, LED indicators and alarms streamline service & management workflows.

SSD6780A

- Status LED (Power, Temperature, Fan Speed)
- PCIe Status (PCIe speed)
- RAID Status (RAID Array Health)
- CDFP Cable Connection
- SSD Status (Detection, I/O Processing)

These integrated, self-diagnostic and monitoring services actively survey and report the status of the host to device cable connection, PCIe lane assignment, enclosure /SSD temperature, and the condition and status of hosted NVMe SSDs/RAID arrays.

Each service was designed to work in conjunction with the HighPoint WebGUI and CLI software management suites, and are universally compatible with Linux, macOS and Windows based computing platforms.

Optimal / Normal

Warning / Error

Failure / Disabled

The enclosure LEDs employ simple color-codes to immediately indicate the status or condition of the enclosure and hosted storage. Blue indicates an optimal/normal condition, Yellow indicates a Warning or Error condition, and Red is used to indicate a failure or disabled device condition.

Monitor Your NVMe Storage Outside of the OS

SSD6780 series enclosures enable administrators to monitor and maintain NVMe storage outside of the host operating system.

The rear panel of each enclosure features out-of-band (OOB) and remote management ports.

Remote Management Port (RJ45)

OOB Monitoring Port (USB-C)
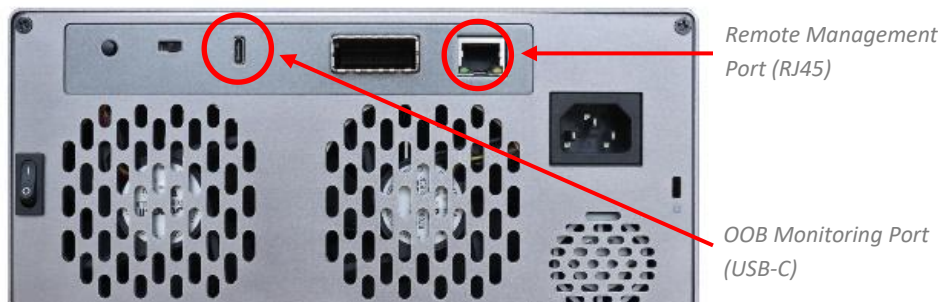
Comprehensive Management & Monitoring Suite

SSD6780 series enclosures include a comprehensive suite of graphical and command-line based management and monitoring tools suitable for administrators of any experience level.

The **WebGUI** is a simple, intuitive Web-based graphical user interface. It is equipped with Wizard-like quick configuration menus as well as a suite of advanced tools for expert administrators.

The **CLI (Command Line Interface):** ideal for seasoned administrators or platforms that do not utilize graphical operating systems.

SHI (Storage Health Inspector): instantly check the status of NVMe media in real-time. SHI utilizes SMART technology to log & report the physical characteristics of each SSD, such as temperature, voltage & TBW (Total Bytes Written).

Intelligent 1-Click Self-Diagnostic & Logging Solution: HighPoint's WebGUI includes a host of automated diagnostic tools designed to streamline the troubleshooting process, even for novice administrators. The Diagnostic tab enables the interface to gather all necessary hardware, software and storage configuration data and compile it into a single file, which can be transmitted directly to our FAE Team via our Online Support Portal.

Integrated Hot-Swap Capability Streamlines Field Service & Maintenance Workflows
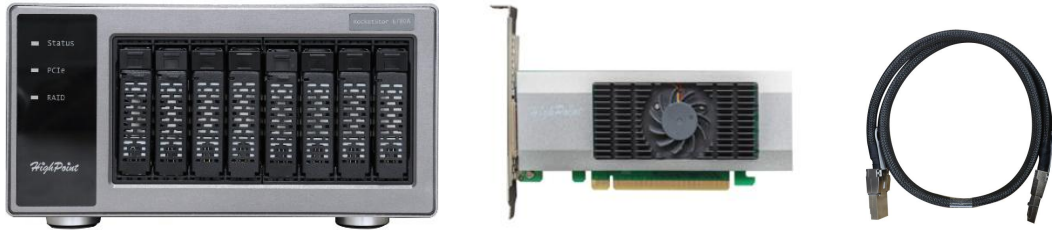
SSD6780A RAID enclosures feature true Hot-Swap capability. Hot-Swap capability is a huge boon for NVMe technology, as it can drastically streamline service and upgrade workflows. Administrators can add or remove one or more NVMe SSDs on the fly, as necessity demands. This includes RAID and single-drive configurations. The enclosure will automatically notify the operating system of any changes, in real time – no reboot required!

Maximize Data Security with HighPoint SafeStorage - OPAL SED Solution

The SSD6780A is protected by HighPoint's revolutionary SafeStorage Data Encryption Solution. Developed to accommodate large-scale RAID arrays as well as individual SSDs, SafeStorage is a comprehensive OPAL SSC TCG based NVMe Hardware Encryption Solution designed to safeguard critical assets by preventing access to stored data when physical disks are misplaced or stolen. SafeStorage is capable of protecting both RAID arrays and single SSDs, and can be easily administered via the RocketStor 6780A's WebGUI and CLI management utilities.

Feature Specifications	SSD6780A
Host Ports	1x CDFP PCIe Gen4 x16 Lane Ports
Number of Ports	1x PCIe Gen4 x16 Upstream port
	8x PCIe Gen4 x4 Downstream port
Number of Drive Bays	8x 2.5"
Bus Interface	PCIe 4.0 x16
Cooling System	Dual, Ultra-Quiet 8025 Cooling Fans with Self-Monitoring & Manual Fan Control
Fan control interface	WebGUI (Browser-Based management tool) / CLI (Command Line Interface- scriptable configuration tool)
Material	AL6061 Aluminum alloy
Dimension	4.84"(H) x 8.26"(W) x 9.25"(D)
Enclosure Weight	14.02 lbs.
Warranty	3 Years
Supported OS: (Data RAID, Non-Bootable)	Windows 11 & 10, Windows Server 2022/Server 2019/Server 2016, Microsoft Hyper-V RHEL/Debian/Ubuntu/Fedora/Rocky Linux (Linux kernel 3.10 and later)
Supported OS: (Boot-RAID)	Windows 11 & 10, Windows Server 2022/Server 2019/Server 2016, Microsoft Hyper-V, Linux kernel 3.10 and later
System Requirement	Motherboard or computing system with a free PCIe 4.0 x16 slot
RAID Level Support	Single, RAID 0, 1, 10
RAID Features	SMTP Email Alert Notification, Alarm Buzzer, Storage Health Inspector, NVMe SMART status, Automatic and configurable RAID Rebuilding Priority, Auto resume incomplete rebuilding after power on or reboot system
Hot-swap Support	Yes
Security Features	HighPoint SafeStorage Solution
Compliance Certification	CE, FCC, RoHS, REACH, WEEE
Front Panel	
LED Indication	Device Status, PCIe Status, RAID Status, Fan Status, Connection Status
Back Panel	
Ethernet Network port	1 Ethernet RJ45 port, DHCP or static IP address assignment, dashboard and Web browser-based management
OOB Port	Can be used to update the firmware version of the Enclosure chipset and check the device status.
Mute button	Mutes the audible alarm associated with the following: Host communication (secure cable connection), temperature warning (if higher than 55 ℃), fan speed warning (below 250 rpm or fan failure)
AC power input	AC INPUT: 100-240V ~ 5A 50/60Hz; DC OUTPUT: 250W
Power Switch	Enclosure power switch
Safety Lock	Kensington Lock
Operation Environment	
Temperature	(operating) 5°C – 45°C / (non-operating) -40°C – 65°C
Operating voltage	PCI-e: 12V, 3.3V

Mode	SSD6780A
Kit Contents	• 1x CDFP Cable • 1x Enclosure • 1x PCIe 4.0 x16 NVMe Adapter • 1x UL Power Cord • 8x Drive Trays • 40x 2.5 SSD mounting screws
Optional Accessories	
SSD6780-TRAY	For use with M.2 NVMe SSDs - 2.5" U.2 (SFF-8639) to M2 SSD Converter
CDFP-CDFP-1M	1 Meter CDFP to CDFP cable
R944	PCIe 4.0x16 HBA