HighPoint Technologies, Inc.
NVMe Storage Powered by PCIe Switch Technology

SSD7580C PCIe 4.0 x16 8-Port U.2 NVMe RAID HBA

Hot-Swap Capable NVMe RAID Controller

NVMe Solution

Maximizing Server Efficiency & Elevating Storage Security with HighPoint's SSD7580C

The SSD7580C is the latest member of our PCIe Gen4 NVMe RAID AIC product family, and a superset of the 7580 series of high-density U.2/U.3 host controllers.

The SSD7580C's 8 independent device channels are backed by a dedicated PCIe 4.0 x16 host interface, industry leading PCIe switch technology, and our field-proven NVMe RAID stack, and are capable of supporting over 200TB of hot-swappable U.2/U.3 NVMe storage while delivering 28,000MB/s of sustained transfer throughput. The AIC's compact, half-height (low-profile) form factor can be easily installed into nearly any industry standard PC-based server, workstation and rackmount platform running a Linux or Windows based operating system.

The SSD7580C's integrated Hot-Plug/Hot-Swap capability streamlines field service, maintenance and upgrade workflows. Administrators can add or remove individual NVMe SSDs, or even an entire RAID array without having to power down the host platform or reboot the operating system. An extensive range of cabling options are available for industry standard rackmount and mobile rack chassis via SFF-8654, SFF-8643, SFF-8611 OCuLink and MCIO 8i connectivity.

SSD7580C AICs provide a high-level of data security for critical applications designed to work with SEDs (self-encrypting disks) that adhere to OPAL SSC TCG specifications. The AIC is the first to employ HighPoint's SafeStorage Hardware Encryption solution, which is ideal for workflows that employ Hot-Swap technology. Customers can rest assured that their data assets will be automatically locked-down anytime a drive is physically removed from the host platform.

True NVMe Hot-Plug & Hot-Swap Support

Hot Plug and Hot-Swap is an essential component of any professional server and workstation environment. The ability to add, remove or replace storage media without powering down the host platform can drastically streamline field service workflows, as the host platform can remain fully operational during maintenance and upgrade sessions. The SSD7580C's Hot-Plug & Hot-Swap features enables administrators to safely remove SSDs at will, including entire RAID arrays, without interrupting critical workflow.

The SSD7580C creates a "Synthetic Hierarchy" to isolate the host operating system from any PCIe topology changes and errors associated with the sudden addition of an NVMe device. The controller creates virtual "placeholders" to secure dedicated resources for each NVMe device channel whenever the system is booted. This technique keeps the channels active at all times; each placeholder can be replaced with an actual physical disk whenever the need arises.

This system works in reverse as well; Downstream Port Containment and Read Tracking capability work to ensure the host system continues to operate and perform smoothly whenever a drive is removed. To compliment this function, the HighPoint RAID Management interface provides a command known as "Unplug", which instructs the OS to cease all I/O related to the target SSD or array to allow for safe removal without the risk of data loss. The system will then reactivate the virtual "placeholders" to ensure the NVMe channels remains available the next time an SSD or array is plugged into the SSD7580C.

HighPoint SafeStorage Secures Data Assets with TCG/OPAL Encryption Technology

NVMe storage and connectivity solutions are frequently deployed to satisfy the stringent performance and reliability requirements of industrial, media and AI applications designed to process large volumes of sensitive data. Securing this data from prying eyes, while protecting the privacy of end user and corporate customers alike is of critical importance.

HighPoint's SafeStorage Hardware Encryption solution was developed to work in conjunction with the state-of-the-art SED technology employed by all classes of modern NVMe media, and is based on the OPAL SSC TCG specifications. It is designed to protect critical assets when physical drives are misplaced or stolen by preventing unauthorized access to stored data. SafeStorage can be applied to both single-disk and RAID configurations, and is activated via a service known as Disk Security, which can be administered via our software management and monitoring suites. The solution is complete independent of the host platform; Data encryption is performed at the hardware level, and encryption keys are stored on the device side.

Key Benefits

- Dedicated PCIe 4.0 x16 direct to CPU NVMe RAID Solutions
- True NVMe Hot-Swap Capability (Surprise Add or Remove)
- TCG/OPAL Encryption Technology (SafeStorage)
- 8x U.2 NVMe PCIe 4.0 SSDs
- M.2 compatible (host platform must have compatible backplane)
- Versatile Cabling Solutions: SFF8639, SFF-8643 & SFF-8611 (Oculink)
- Low-Noise Active, Hyper-Cooling Solution
- SRIS/SNRS/Common Clock Architecture support

nvm EXPRESS

Versatile Cabling Solutions for a Wide Range of Legacy and Modern System Backplanes

The SSD7580C was designed for use with a variety of industry standard backplanes and connectors. We offer a selection of PCIe Gen4 Certified cabling accessories capable of supporting a wide range of storage configurations, including Legacy SFF-8643, and SFF-8654, SFF-8611 OCuLink, and MCIO 8i backplane connectivity, which are based on the SFF-9402 pin definition. This enables the SSD7580C to host any industry standard 2.5" U.2 or U.3 NVMe SSD via the appropriate cabling/backplane configuration.

Industry Proven NVMe RAID Technology

The SSD7580C will automatically recognize new NVMe SSDS's as single drives- no configuration necessary. In addition, our comprehensive NVMe RAID stack enables each controller to support multiple RAID 0, 1 or 10 arrays, or mixed configurations of arrays and single disks.

RAID 10 (Security & Speed) - RAID 10 requires a minimum of 4 NVMe SSD's and is comprised of a stripe between two RAID 1 arrays. RAID 10 capable of delivering read performance on par with RAID 0, and is superior to RAID 5 for NVMe applications. Unlike RAID 5, RAID 10 doesn't necessitate additional parity related write operations, which reduce the TBW life span of NVMe SSD's.

RAID 0 (Speed) - Also known as a "stripe" array, this mode delivers Maximum Performance, and requires a minimum of 2 NVMe SSD's.

RAID 1 (Security) - This mode creates a hidden duplicate of the target SSD, and requires 2 NVMe SSDs to configure. RAID 1 is ideal for bootable volumes as it enables the system to remain up and running should one of the SSDs fail or stop responding.

Comprehensive RAID & Storage Management and Monitoring Suite

The SSD7580C comprehensive management and monitoring suite enables administrators of any experience level to easily configure and maintain RAID arrays and monitor the status of each individual SSD with a few simple clicks.

***Pre-OS Level Management*:** The UEFI Tool is a command line utility designed for use at the pre-OS level to configure arrays prior to OS installation.

***OS-Level Management*:** The *WebGUI* is an intuitive graphical interface designed to work with modern Web Browsers. It is equipped with Wizard-like menus as well as a suite of advanced tools for expert users. The CLI (Command Line Interface) is ideal for seasoned administrators and platforms that do not utilize graphical operating systems.

SHI (Storage Health Inspector): SHI provides wealth of information about NVMe SSDs, and enables administrators to instantly asses the temperature, TBW/DWPD rating, and operational status of each hosted drive, and configure temperature thresholds to correspond with the target SSD's official specifications.

***1-Click Self Diagnostic Logging Service*:** The WebGUI's Diagnostic tab can instantly gather information about the corresponding hardware, software & storage configurations and compile it into a single file which can be submitted to our Support Department.

Advanced NVMe Cooling Solution Ensures Sustained Gen4 Transfer Performance

The SSD7580C's advanced PCIe Gen4 Cooling Solution enables it to function optimally within the recommended temperature ranges, even under sustained I/O, by combining an anodized aluminum heat sink with an ultra-durable low-decibel fan and a ventilated bracket. The robust, ultra-efficient cooling system rapidly transfers waste-heat away from critical NVMe and PCIe Switch controller componentry, without introducing unwanted distraction into your work environment.

HighPoint SSD7580C PCIe Gen4 U.2 NVMe RAID Controller

HighPoint Technologies, Inc.
NVMe Storage Powered by PCIe Switch Technology

Product feature	SSD7580C
Bus Interface	PCI-Express 4.0 x16
Number of Channel / Port	8x U.2 NVMe port (SFF-8654; Dedicated Dual PCIe 4.0 x4 per port)
Port Type	8x U.2 NVMe
Data Transfer Rate	16GT/s
Number of device	8x U.2/U.3 NVMe SSD
SSD Form Factor	2.5''U.2
External Power Support	N/A
Form Factor	Low Profile
Card Dimensions	6.50''W *2.71''H *0.91''D
Card Weight	0.64 lbs.
Warranty	2 Years
SED	Yes
Special feature	N/A
Supported Operating Systems	
Windows	Windows 11 ,10; Windows Server 2022, 2019, 2016; Microsoft Hyper-V; Only supports 64 bit operating system.
Linux	RHEL/Debian/Ubuntu/Fedora/Proxmox/Rocky Linux(Linux kernel 3.10 and later); Only supports 64 bit operating system.
macOS	N/A
System Requirements	
Mac Platforms:	N/A
PC Platforms:	PC Platforms: • Any PC Systems or Motherboard with an industry standard PCIe x16 physical Slot (Bifurcation is not required). Note: PCIe 4.0 required for maximum performance.
Secure Boot(PC platforms)	Windows: Support Secure Boot Disable and Enable(Please download the UEFI driver corresponding to Secure Boot on the software download page); Linux: Support Secure Boot disable
Hotplug	Yes
Cooling System	Anodized aluminum heatsink with a built-in Low-Noise fan
NVMe Configurations	
RAID Support	Single, RAID 0, 1, 10
RAID Support	Single, RAID 0, 1, 10
Storage Mode - NVMe	
Data RAID (Non-Bootable)	Windows,Linux (Linux Driver can be installed via internet/network connection)
Boot RAID	Windows: Windows10, 11; Windows Server 2016, 2019, 2022
	kernel3.10 and later (Linux Driver can be installed via internet/network connection)
	Mac: Not supported
NVMe RAID Management	
Management Suites	WebGUI (Browser-Based management tool)
	CLI (Command Line Interface- scriptable configuration tool)
	API package
	UEFI Tool & UEFI HII (BIOS interface via Human Interface Infrastructure Support)

SMTP Email Alert Notification	Yes
Alarm Buzzer	Yes
Storage Health Inspector	Yes
NVMe SMART status	Yes
Automatic and configurable RAID Rebuilding Priority	Yes
Auto resume incomplete rebuilding after power on or reboot system	Yes
Single-RAID or Multi-RAID Arrays per Controller	Yes
Cross-Sync RAID Solution Across Controllers	Yes (Windows, Linux)
Advanced RAID features	
Flash ROM for Upgradeable UEFI	Yes
Bootable RAID Array	Yes
Multiple RAID Partitions supported	Yes
Online Array Roaming	Yes
RAID Quick Initialization for fast array setup	Yes
Global Hot Spare Disk support	Yes
Operating Environment	
Work Temp	+5°C ~ + 55°C
Storage Temp	-20°C ~ +80°C
Operating Voltage	PCI-e: 12V, 3.3V
Power	Typical: 13.72W
MTBF (Mean Time Before Failure)	920,585 Hours
Certification / Approval	CE, FCC, RoHS, REACH, WEEE
Kit Contents	
Kit Contents	1x SSD7580C
	1x Quick Installation Guide
	1x Low-Profile bracket

HighPoint Technologies, Inc.
NVMe Storage Powered by PCIe Switch Technology

HighPoint Certified Cable & Enclosure Accessories

We manufacture a selection of certified data cables and for our NVMe RAID solutions. The following HighPoint Certified Cable accessories are fully compliant with all current technology standards and have been rigorously tested with SSD7580 series controller cards to ensure maximum transfer performance, secure connectivity, and ease of integration.

As we cannot guarantee secure connectivity, stability or compatibility with unqualified third-party devices or accessories, only HighPoint Certified cables and enclosures can be used with our storage products and solutions.

Certified Cable Accessories – Hot-Swap Compatible

TS8i-8639-060

SFF-8654 to U.2 SFF-8639 cable with a 15-pin SATA power connector. Each cable supports two U.2 NVMe SSDs.

Length: 0.6M (60cm) / 23.62"

8654-8643-210

SFF-8654 (host) to SFF-8643 (device) PCIe 4.0 x8 NVMe cable. Each cable can host up to 2x NVMe SSDs.

Length: 1M (100cm) / 39.37”

8654-8611-205

SFF-8654 (host) to SFF-8611 Oculink (device) PCIe 4.0 x8 NVMe cable. Each cable can host up to 2x NVMe SSDs.

Length: 0.5M (50cm) / 19”

8654-8654-110

SFF-8654 Host to SFF-8654 Device cable. Each cable can host up to two NVMe SSDs.

Length: 1M (100cm)/39.37"

8654-CIO8-110

SFF-8654 Host to MCIO 8i Device cable. Each cable can host up to two NVMe SSDs.

Length: 1M (100cm)/39.37"

HighPoint Headquarters
Phone 1-408-942-5800
Fax 1-408-942-5801
E-mail sales@highpoint-tech.com
Website www.highpoint-tech.com
Address 41650 Christy St. Fremont CA, 94538

nvm EXPRESS® PCIe 4.0 Switch U.2/U.3