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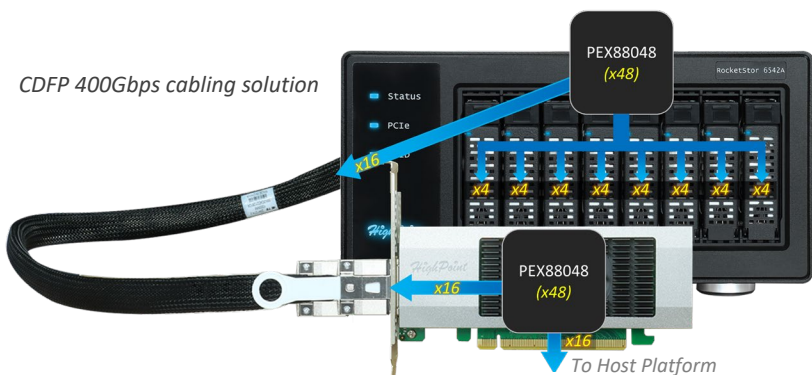
NVMe Solution

RocketStor 654x Series
4 & 8 Bay PCIe Gen4 x16 NVMe RAID Enclosures

Ready for Any Application & Workflow

Whether handling read-intensive, write-intensive, or mixed-mode workloads, RocketStor 654x series RAID enclosures are up to the task. The ability to host up to 8 Data Center or Enterprise-class U.2/U.3 NVMe SSDs, deliver dedicated host-to-device PCIe Gen4 x16 transfer speed, in a robust, ultra-compact form-factor is perfect for data intensive applications including AI/ML training, media post production, and enterprise backup solutions.

- Compact, Rugged & Portable External NVMe RAID Storage
- Scalable Solution: Up to 8 independent 2.5" NVMe drives bays & nearly 1/2 Petabytes of storage capacity
- Dedicated Host & Device PCIe 4.0 x16 Connectivity
- Transfer speeds up to 28,000MB/s
- Precision Engineered Dual-Width Cooling Solution Enhances reliability & Prevents Thermal Throttling
- Comprehensive Management & Monitoring Suite
- Supports up to four RAID 0, 1 or 10 arrays

Dedicated Host to Device PCIe Gen4 x16 Connectivity

CDFP 400Gbps cabling solution

PEX88048 *(x48)*

RocketStor 6542A

Status

PCIe

x16

x4 x4 x4 x4 x4 x4 x4 x4

HighPoint

PEX88048 *(x48)* x16

x16

To Host Platform

Integrated PCIe switching technology and 400Gbps CDFP connectivity enables RocketStor 654x enclosures to maximize data transfer speed by fully utilizing all x16 lanes of PCIe bandwidth provided by the host platform. Both the enclosure (device-side) and PCIe adapter (host-side), are equipped with dedicated PCIe switch ICs. This enables each 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.

Seamless Scalability & Upgrade Pathways

The external form factor, removable 2.5" drive bays and integrated Hot-Swap capability enables administrators to easily expand or upgrade storage capacity while the host platform remains active.
This includes RAID and single-drive configurations. The enclosure will automatically notify the operating system of any changes, in real time – no reboot required!

External Form Factor Enhances Efficiency and Serviceability

The external form factor makes it easy to allocate storage to a specific task or application. And thanks to the dedicated PCI switch architecture, resource allotment is all handled outside of the primary computing environment. The RocketStor 654x's dedicated PCIe switch architecture directly manages all I/O between hosted NVMe, freeing up CPU resources for other critical tasks. In addition, the external form factor optimizes platform performance by isolating SSD media from the host hardware environment.

Reduces Power Consumption:

Offloads Waste Heat Management:

Ultra-Efficient Low-Decibel Cooling Fans

Ventilated Drive Bays

Dedicated PSU offsets power consumption from the host platform.

Status

PCIe

RAID

HighPoint

The external form factor enhances reliability by ensuring that waste heat generated by the NVMe media never enters the computing environment.

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Comprehensive RAID Management Suite & Real-Time SSD Monitoring System

RocketStor 654x series NVMe RAID Enclosures are compatible with HighPoint's comprehensive NVMe monitoring, and management suite for Windows and Linux. The software solution includes a range of graphical and command line interfaces, for use within and outside of an OS, and enable administrators to easily configure and maintain the platform's NVMe storage ecosystem with a few simple clicks and commands.

Proven RAID technology empowers administrators with the flexibility to tailor unique storage configurations for a wide range of applications, and maximize storage performance with RAID 0 striping, enhance reliability with RAID 1 mirroring technology, or take a balanced approach with RAID 10. A single RocketStor 654x enclosure is capable of hosting up to 4 separate RAID arrays, which will be automatically recognized by the host OS as ordinary, single physical disks, and can even be used to host bootable volumes.

SHI (Storage Health Inspector) enables administrators to monitor the temperature of each NVMe SSD in real time, and configure warning thresholds to correspond with each make & model, via the WebGUI and CLI software suites.

Intelligent Self-Diagnostic & Monitoring Services

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

RocketStor 6542AW

Status LED
(Power, Temperature, Fan Speed)

PCIe Status
(PCIe speed)

RAID Status
(RAID Array Health)

CDFP Cable Connection

SSD Status
(Detection, I/O Processing)
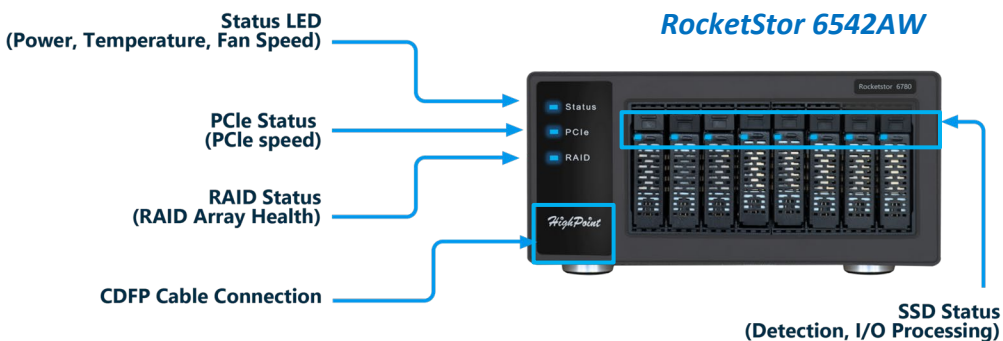
These integrated, self-diagnostic and monitoring services actively survey and report the status of the CDFP connection, PCIe lane assignment of the adapter, enclosure / SSD temperature, and the condition / status of SSDs & RAID arrays. Each service works in conjunction with the WebGUI & CLI software management suites.

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.

Optimal / Normal

Warning / Error

Failure / Disabled

Protect Data Assets with HighPoint SafeStorage

SafeeStorage was developed to work in conjunction with SED capable Datacenter and Enterprise class NVMe media. It is designed to protect data 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 can be administered via the WebGUI and CLI management suites.

Product		RS6542AW	RS6541AW
Adapter Hardware Features		**Rocket 1544 Adapter**	**Rocket 7534A Adapter**
Bus Interface		PCI-Express 4.0 x16	PCI-Express 4.0 x16
Number of Channels / Port Type		1 x CDFP Port (Dedicated PCIe 4.0 x16)	1 x CDFP Port (Dedicated PCIe 4.0 x16)
Data Transfer Rate		400Gb/s Port Bandwidth (32GB/s for effective data transfer rate)	400Gb/s Port Bandwidth (32GB/s for effective data transfer rate)
LED Indicators	PCIe LED:	Adapter PCIe host interface status	Adapter PCIe host interface status
	Connection LED	CDFP Cable connection status	CDFP Cable connection status
Form Factor		Low-Profile	Low-Profile
RS6542A Hardware Features			
Bus Interface		PCI-Express 4.0 x16	PCI-Express 4.0 x16
Number of Channels / Host		1x CDFP	1x CDFP
Data Transfer Rate		400Gb/s Port Bandwidth (32GB/s For Effective data transfer rate)	400Gb/s Port Bandwidth (32GB/s For Effective data transfer rate)
Number of devices		8	4
SSD Form Factor		U.2, U.3	U.2, U.3
SSD Hot-Plug Support		Yes	Yes
Audible Alarm		Dropped Disk, Fan Speed, SSD Temperature, Switch IC Temperature	Dropped Disk, Fan Speed, SSD Temperature, Switch IC Temperature
Smart Fan Control		SMART & Manual Modes with 5 speed settings)	SMART & Manual Modes with 5 speed settings)
OOB Support		Yes	Yes
Power Monitoring & Measurement		N/A	Real Time Power Measurement *(Power Consumption includes NVMe SSDs)*
Storage Security Suite			
SED		SafeStorage SED Solution	SafeStorage SED Solution
Front Panel LEDs			
Status LED		Temperature & Fan Status	Temperature & Fan Status
PCIe LED		RocketStor 6542A and Rocket 1544's PCIe connection status	RocketStor 6542A and Rocket 7534A's PCIe connection status
RAID LED		RAID Status & Activity	RAID Status & Activity
Logo LED		Power & CDFP cable connection status	Power & CDFP cable connection status
HDD LED on the Tray		Power, Disk Status & Activity	Power, Disk Status & Activity
Back Panel			
100M Ethernet RJ45 Port	DHCP / Static	Supports DHCP to allocate the IP Address and can assign the IP Address manually	Supports DHCP to allocate the IP Address and can assign the IP Address manually
	SSDP embedded	Firmware implement SSDP *(i.e, Devices will report their IP/Mac/SN/Name to the local network so that the application/program can know how many RS6542A are connected to the local network and list them quickly)*	Firmware implement SSDP *(i.e, Devices will report their IP/Mac/SN/Name to the local network so that the application/program can know how many RS6541A are connected to the local network and list them quickly)*
	User Management	Supports Only 1 User & 1 session	Supports Only 1 User & 1 session
	Command Support	Commands in the MCU spec are supported for both Ethernet & USB connectivity	Commands in the MCU spec are supported for both Ethernet & USB connectivity
USB Type C Support （Command Line)	Type C	USB 2.0 Supported	USB 2.0 Supported
	Command Support	The Commands in the MCU spec are supported for both Ethernet & USB connectivity (*Requires Switch set to "1")*	The Commands in the MCU spec are supported for both Ethernet & USB connectivity
Switch	switch to "1"	Embedded MCU's USB is redirected to USB Type-C connector	N/A
	switch to "2"	Broadcom chipset's SDB connector is redirected to USB Type-C connector Note: Used for recovery/internal debugging	N/A
Power Switch		ON/OFF	ON/OFF
CDFP Port		Upstream Port for the RocketStor 6542A	Upstream Port for the RocketStor 6541A
Mute Button		Used to mute the enclosure's Audible Alarm	Used to mute the enclosure's Audible Alarm
Kensington Lock		Kensington Lock	Kensington Lock
Supported Systems			
OS Support		Microsoft Windows, Linux	Microsoft Windows, Linux
Secure Boot		Yes (Windows OS)	Yes (Windows OS)

RAID Configuration Support		
RAID Level Support	Single, RAID 0, 1, 10	Single, RAID 0, 1, 10
TRIM RAID Level Support	Single, RAID 0, 1, 10	Single, RAID 0, 1, 10
Storage Mode - NVMe		
Data RAID	Yes	
Boot RAID	Yes	
NVMe RAID Management		
Management Suites	WebGUI (Browser-Based management tool), CLI (Command Line Interface- scriptable configuration tool), API package, UEFI BIOS/HII	
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 rebuilding after power on or reboot system	Yes	
Single-RAID or Multi-RAID Arrays per Controller	Yes	
Cross-Sync RAID Solution Across Controllers	Yes	
Advanced RAID features		
Online Array Roaming	Yes	
RAID Quick Initialization for fast array setup	Yes	
Global Hot Spare Disk support	Yes	
Operating Environment		
Working Temp	+5°C ~ + 55°C	+5°C ~ + 55°C
Storage Temp	-20°C ~ +80°C	-20°C ~ +80°C
Operating Voltage	PCIe: 12V, 3.3V	PCIe: 12V, 3.3V
MTBF	920,585 Hours	920,585 Hours

Kit Contents			
Kit Contents	1x	Rocket 1544 Adapter	Rocket 7534A Adapter
	1x	RocketStor 6542A Enclosure (includes 8x 2.5" Drive Trays)	RocketStor 6541A Enclosure (includes 4x 2.5" Drive Trays)
	1x	CDFP-CDFP-1M 1M Cable	CDFP-CDFP-1M 1M Cable
	1x	QIG	QIG
	1x	UL Cable	UL Cable