

Cloud & Enterprise Servers

# SupremeRAID™ SR-1010

**The Best Solution for NVMe RAID:** SupremeRAID™ is a software-defined RAID solution on a GPU, designed to deliver maximum SSD performance without consuming CPU cycles or creating throughput bottlenecks. Out-of-path RAID protection technology means data travels directly from the CPU to deliver unmatched flexibility, unprecedented NVMe/NVMeoF performance, and overall superior value.



SR-1010  
For 2U  
Cloud &  
Enterprise  
Servers

Supports up to  
32 SSDs

**Protecting NVMe-based Data From The Cloud To The Desktop:** SupremeRAID™ SR-1010 is a PCIe Gen 4 card that supports up to 32 SSDs, and delivers superior performance and flexibility for cloud and enterprise servers. SupremeRAID™ SR-1010 is the perfect storage choice for enterprise data centers, broadcast outlets, studios, CSPs, MSPs, research, oil & gas, and HPC. Its powerful performance capabilities are well suited for applications such as AI/ML, databases, Fintech (High Frequency Trading), streaming media, 4K and 8K video, as well as any performance-hungry application.

**28M**  
IOPS

**260GB/s**  
Throughput

UP TO **100%**  
SSD Performance

**80%**  
Cost Savings

**9x**  
Faster

	SupremeRAID™ SR-1010	Software RAID	Hardware RAID
4K Random Read	28 M IOPS	~2 M IOPS	6.9 M IOPS
4K Random Write	2 M IOPS	200 K IOPS	651 K IOPS
1M Sequential Read	260 GB/s	~9 GB/s	28.2 GB/s
1M Sequential Write	100 GB/s	2 GB/s	10.4 GB/s
4K Random Read (Rebuild)	5.5 M IOPS	Unknown	1 M IOPS
4K Random Write (Rebuild)	1.1 M IOPS	Unknown	548 K IOPS
CPU Utilization	None	High	None
Data Protection	RAID 0, 1, 5, 6, 10	RAID 0, 1, 5, 10	RAID 0, 1, 5, 6
NVMeoF Support	Yes	Yes	No
Flexibility	High	Limited by CPU	None
Max SSDs Supported	32	32	8

Based on Linux RAID5 with AMD EPYC 9654 96-Core Processor x 2 and KIOXIA CM7 x 24



# SupremeRAID™ SR-1010

[View Linux Release Notes](#)

[View Windows Release Notes](#)



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## SR-1010 Software Specs

**Supported RAID levels:**  
RAID 0, 1, 5, 6, 10

**Max Physical Drives:** 32

**Max Drive Groups:** 8

**OS Support:**

AlmaLinux 8  
CentOS 7 / 8  
Debian 11  
openSUSE Leap 15  
Oracle Linux 7 / 8 / 9  
SLES 15  
RHEL 7 / 8 / 9  
Rocky Linux 8  
Ubuntu 20.04 / 22.04  
Windows Server 2019 / 2022  
Windows 11

**Max Virtual Drives  
per Drive Group:**  
1023

**Max Drive Group Size:**  
Defined by physical drive size

**Supported NVMe SSDs:**

Dapustor, Hagiwara, Kingston  
Technologies, KIOXIA, Memblaze,  
Micron, Phison, Samsung, Scaleflux,  
Seagate, Solidigm, Western Digital

**Supported Platforms:**

AMD, ARM, Intel

**Supported Virtualization  
Environments:**

KVM, Proxmox VE, Virtuozzo  
OpenVZ, VMWare Workstation  
Pro 17, Windows Server Hyper-V

## SR-1010 Card Specs

**Host Interface:**  
x16 PCIe Gen 4.0

**Max Power Consumption:**  
70 W

**Form Factor:**  
2.713" H x 6.6" L, Dual Slot

**Product Weight:**  
306 g



### Flexible & Future Ready

Unmatched flexibility with features like new O/S support, compression, encryption, thin provisioning, or boot drive protection can be easily added with software releases



### World Record Performance

Unprecedented NVMe/NVMeoF performance up to 28M IOPS and 260GB/s throughput with a single SupremeRAID™ card delivers the full value of your server investment



### Highly Scalable

Easily manage 32 direct attached NVMe SSDs; extend data protection without sacrificing performance with Software Composable Infrastructure



### Plug & Play

Effortless installation, no cabling or motherboard re-layout required; direct connect to SSD without PCIe switches



### Free Up CPU Resources

Offload your entire RAID computation to SupremeRAID™ to free-up CPU computing resources for 5G, AI, and AIoT applications



### Easy to Use

SupremeRAID™ doesn't rely on memory caching technology, eliminating the need for battery backup modules

“We’re perpetually impressed with the extreme storage performance SupremeRAID™ enables. For maximizing NVMe SSD performance, we haven’t seen anything on the market that can touch the SupremeRAID™ Gen5 solution. It’s fantastic, plus we’re doing the work on an inexpensive NVIDIA A2000 GPU.”

“Gone are the days of IO bottlenecks... SupremeRAID™ is the perfect platform for AI/ML, IoT, video processing, and other performance-hungry applications.”

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	Linux Environment		
	RAID 5	RAID 6	RAID 10
<b>OPTIMAL</b>			
4K Random Read IOPS	28 M IOPS	28 M IOPS	24 M IOPS
4K Random Write IOPS	2 M IOPS	1.5 M IOPS	12 M IOPS
1M Sequential Read THROUGHPUT	260 GB/s	260 GB/s	260 GB/s
1M Sequential Write THROUGHPUT	100 GB/s	100 GB/s	70 GB/s

	Windows Environment		
	RAID 5	RAID 6	RAID 10
4K Random Read IOPS	2.2 M IOPS	2.2 M IOPS	2.2 M IOPS
4K Random Write IOPS	1.3 M IOPS	1 M IOPS	1.6 M IOPS
1M Sequential Read THROUGHPUT	80 GB/s	80 GB/s	80 GB/s
1M Sequential Write THROUGHPUT	16 GB/s	16 GB/s	20 GB/s

	Linux Environment		
	RAID 5	RAID 6	RAID 10
<b>REBUILD</b>			
4K Random Read IOPS	5.5 M IOPS	5.5 M IOPS	18 M IOPS
4K Random Write IOPS	1.1 M IOPS	800 k IOPS	12 M IOPS
1M Sequential Read THROUGHPUT	23 GB/s	24 GB/s	130 GB/s
1M Sequential Write THROUGHPUT	21 GB/s	21 GB/s	70 GB/s

	Windows Environment		
	RAID 5	RAID 6	RAID 10
4K Random Read IOPS	1.6 M IOPS	1.6 M IOPS	2 M IOPS
4K Random Write IOPS	1 M IOPS	800 K IOPS	1.6 M IOPS
1M Sequential Read THROUGHPUT	21 GB/s	21 GB/s	30 GB/s
1M Sequential Write THROUGHPUT	12 GB/s	12 GB/s	20 GB/s

**Linux Testing Specifications:** Server: Supermicro AS-2125HS-TNR x1; CPU: AMD EPYC 9654 96-Core Processor x2; Memory: Samsung M321R2GA3BB6-CQKVS DDR5 16GB x24; SSD: Kioxia CM7 KCMY1RUG3T84 x24; RAID Controller: SR-1010 x1; OS: Ubuntu 20.04.4 LTS; Kernel: 5.4.0-155-generic; Benchmarking tool: fio-3.16; SupremeRAID™ Driver version: 1.5.0-rc1-20230804.gcf5e69d8

**Windows Testing Specifications:** Server: Supermicro SYS-220U-TNR x1; CPU: Intel Xeon Gold 6338 CPU @ 2.00GHz x2; Memory: SK Hynix HMA82GR7CJR8N-XN 16GB DDR4-3200 RDIMM x16; NVMe Drive: Solidigm D7-P5510 x16; RAID Controller: SR-1010 x1; OS: Windows 2022, Driver Version: 1.2.3-185; SupremeRAID™ driver version: 1.2.3; max performance based on a group with 16 physical drives and 2 virtual drives.

## SupremeRAID™: Protecting NVMe-based Data From The Cloud To The Desktop

Graid Technology Inc. is headquartered in Silicon Valley, with an R&D center in Taipei, Taiwan. Our leadership is composed of a dedicated team of experts with decades of experience in the SDS, ASIC and storage industries. Learn more at [graidtech.com](http://graidtech.com).

Learn More: [info@graidtech.com](mailto:info@graidtech.com)

5201 GREAT AMERICA PARKWAY, SUITE 320 | SANTA CLARA, CA 95054



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