

# Challenge the status quo for performance-demanding workloads with SupremeRAID™

SupremeRAID™ is the world's fastest NVMe and NVMeoF RAID solution for PCIe Gen 3, 4 and 5 servers. A single SupremeRAID™ card supports up to 32 native NVMe drives, delivering superior NVMe/NVMeoF performance while increasing scalability, improving flexibility, and lowering TCO.



## THE CHALLENGE

### RAID Bottleneck

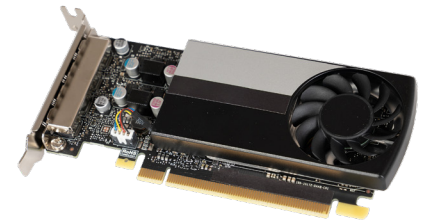
As NVMe SSD quickly becomes the new standard for storage infrastructure, a challenge arises for data center storage infrastructure design: the industry requires a future-ready solution to deliver NVMe SSD performance without sacrificing data security or business continuity. Simply put: flash storage performance is evolving too fast to be fully utilized by existing storage architecture.

Implementing a basic software RAID via the CPU can only deliver 10-20% SSD performance on average, while unfortunately consuming almost all of the CPU computing power. While utilizing proprietary hardware might achieve improved performance, the architecture still can't maximize the potential of flash storage.

## THE SOLUTION

### SupremeRAID™ SR-1000

In today's data center world, speed and throughput are everything. Graid Technology recognized the limitations and bottlenecks caused by traditional RAID and developed a GPU-based storage solution to launch RAID technology into the future.



Graid Technology is proud to introduce the world's first NVMe and NVMeoF RAID card created to unlock the full potential of your SSD performance. Our innovative GPU-based solution delivers world-record performance while increasing scalability, improving flexibility, and lowering TCO. With proven performance tests and partnerships with global industry leaders, SupremeRAID™ delivers maximum SSD performance, comprehensive enterprise data protection, unmatched flexibility, and unbeatable ROI.

**16M**  
IOPS

**220GB/s**  
Throughput

UP TO **100%**  
SSD Performance

**80%**  
Cost Savings


**8x**  
Faster

	SupremeRAID™ SR-1000	High-end Hardware RAID
4K Random Read	<b>16 M IOPS</b>	6.9 M IOPS
4K Random Write	<b>900 K IOPS</b>	651 K IOPS
1M Sequential Read	<b>220 GB/s</b>	28.2 GB/s
1M Sequential Write	<b>90 GB/s</b>	10.4 GB/s
4K Random Read In Rebuild	<b>3 M IOPS</b>	1 M IOPS
4K Random Write In Rebuild	<b>600 K IOPS</b>	548 K IOPS


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

# Unbeatable Performance


SupremeRAID™ cutting edge technology eliminates the traditional RAID bottleneck to unlock the full potential of your SSD performance. A single SupremeRAID™ SR-1000 is capable of delivering **16 million IOPS and 220GB/s of throughput.**


 **Flexible & Future Ready**  
Unmatched flexibility with features like new O/S support, compression, encryption, thin provisioning, or boot drive protection easily added with software releases

 **World Record Performance**  
Unprecedented NVMe/NVMeoF performance up to 16M IOPS and 220GB/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

## Global Partners

AIC	ASUS	LIQID	SuperMicro
Altos	Gigabyte	MSi	Tyan
AMD	KeyWin	Seagate	Western Digital
ASRock Rack	KIOXIA	StarWind	

## Global Distributors

Afastor	CLIMB	InnoTech
Arrow	EDOM Tech	Sunway
ASBIS	Gluesys	TD Synnex

## Global Resellers

Advanced HPC	Define Tech	primeLine Solutions
Applied Data Systems	Evotek	SHI
ARKAY	Exxact	Starline
Aspen Systems	Flytech Spain	SysGen
AUK Computing	GPL Technologies	TBA Informatica
A-VAR	GTS Technology Solutions	Technologies for Tomorrow
Boston	HPC Tech Japan	Thinkmate
Bold Data	Images et Technologie	Top Flight Computers
Computacenter	365 Master Data	Trenton Systems
Crystal Group	Mazda Computing	Vesper
Data in Science (DST)	Nextron	
DiGiCOR	OMTX Brazil	

**“Absolutely phenomenal, we were blown away by the efficacy of this simple to use card and software. Compared to traditional hardware or software RAID, SupremeRAID™ delivers amazing ROI for demanding workloads.”**

BRIAN BEELER,  
STORAGEREVIEW.COM



# Challenge the status quo for performance-demanding workloads with SupremeRAID™

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 [www.graidtech.com](http://www.graidtech.com).

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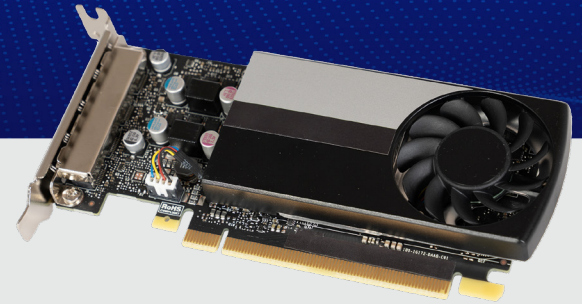


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# SupremeRAID™ SR-1000

FOR PCIe GEN 3, 4, & 5

**Test Environment Specifications** | Hardware Specs: Server: Supermicro AS -2125HS-TNR; CPU: AMD EPYC 9654 96-Core Processor x 2; Memory: Samsung M321R2GA3BB6-CQKVS DDR5 16GB x 24; SSD: Kioxia CM7 KCMY1RUG3T84 x 24; RAID Controller: SR-1010 x 1 | Software Environment: 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



## SR-1000 Software Specs

<b>Supported RAID levels:</b> RAID 0, 1, 5, 6, 10	<b>Max Virtual Drives per Drive Group:</b> 1023
<b>Max Physical Drives:</b> 32	<b>Max Drive Group Size:</b> Defined by physical drive size
<b>Max Drive Groups:</b> 8	
<b>OS Support:</b>	
AlmaLinux 8.5, 8.6, 8.7 (Kernel 4.18)	
CentOS 7.9 (Kernel 3.10 or 4.18), 8.3, 8.4, 8.5 (Kernel 4.18)	
Debian 11.6 (Kernel 5.10)	
openSUSE Leap 15.2, 15.3 (Kernel 5.3)	
Oracle Linux 8.7 (RHCK 4.18 or UEK 5.15)	
Oracle Linux 9.1 (RHCK 5.14 or UEK 5.15)	
SLES 15 SP2, 15 SP3 (Kernel 5.3)	
RHEL 7.9 (Kernel 3.10 or 4.18), 8.3, 8.4, 8.5, 8.6, 8.7 (Kernel 4.18)	
RHEL 9.0, 9.1 (Kernel 5.14)	
Rocky Linux 8.5, 8.6, 8.7 (Kernel 4.18)	
Ubuntu 20.04.0-20.04.5 (Kernel 5.15)	
Ubuntu 22.04.0-22.04.2 (Kernel 5.15)	
Windows Server 2019 x86-64	
Windows Server 2022 x86-64	
Windows 11 x86-64	

## SR-1000 Card Specs

<b>Host Interface:</b> x16 PCIe Gen 3.0	<b>Form Factor:</b> 2.713" H x 6.137" L, Single Slot
<b>Max Power Consumption:</b> 50 W	<b>Product Weight:</b> 132.6 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

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### 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

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### Easy to Use

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# SupremeRAID™ SR-1000

FOR PCIe GEN 3, 4, & 5



Introducing the world's first NVMe and NVMeoF RAID card to unlock the full potential of your SSD performance. SupremeRAID™ cutting edge technology eliminates the traditional RAID performance bottleneck to deliver world-record performance, comprehensive data protection, and unmatched flexibility at the lowest TCO on the market.



## Unbeatable Performance

Designed for performance-demanding workloads, SupremeRAID™ is the world's fastest NVMe and NVMeoF RAID solution for PCIe Gen 3, 4 and 5 servers. A single SupremeRAID™ card blasts performance to 16M IOPS and 220GB/s and supports up to 32 native NVMe drives, delivering superior NVMe/NVMeoF performance while increasing scalability, improving flexibility, and lowering TCO.

	Linux Environment		
	RAID 5	RAID 6	RAID 10
<b>OPTIMAL</b>			
4K Random Read IOPS	16 M IOPS	16 M IOPS	16 M IOPS
4K Random Write IOPS	900 K IOPS	500 K IOPS	8 M IOPS
1M Sequential Read THROUGHPUT	220 GB/s	220 GB/s	220 GB/s
1M Sequential Write THROUGHPUT	90 GB/s	90 GB/s	70 GB/s

	Windows Environment		
	RAID 5	RAID 6	RAID 10
4K Random Read IOPS	2 M IOPS	2 M IOPS	2 M IOPS
4K Random Write IOPS	500 K IOPS	450 K IOPS	1 M IOPS
1M Sequential Read THROUGHPUT	65 GB/s	60 GB/s	70 GB/s
1M Sequential Write THROUGHPUT	9 GB/s	9 GB/s	35 GB/s

	Linux Environment		
	RAID 5	RAID 6	RAID 10
<b>REBUILD</b>			
4K Random Read IOPS	3 M IOPS	3 M IOPS	12 M IOPS
4K Random Write IOPS	600 K IOPS	400 K IOPS	8 M IOPS
1M Sequential Read THROUGHPUT	12 GB/s	13 GB/s	110 GB/s
1M Sequential Write THROUGHPUT	11 GB/s	11 GB/s	70 GB/s

	Windows Environment		
	RAID 5	RAID 6	RAID 10
4K Random Read IOPS	350 K IOPS	350 K IOPS	2 M IOPS
4K Random Write IOPS	400 K IOPS	370 K IOPS	1 M IOPS
1M Sequential Read THROUGHPUT	12 GB/s	13 GB/s	15 GB/s
1M Sequential Write THROUGHPUT	8 GB/s	8 GB/s	13 GB/s

BASED ON TESTING SPECIFICATIONS LISTED ON PREVIOUS PAGE

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