

Unlock true Gen5 performance with Gen4 NVMe Drives – Save Big while Doubling Your Performance Potential

October 2024, Fremont, CA - While Gen5 NVMe SSDs are now widely available, and deliver game-changing transfer performance, the high cost of entry, especially when compared to PCIe Gen4 storage media, is something many find hard to swallow. Cost concerns are further compounded when one considers the dollar-to-terabyte ratio. Gen5 media is currently limited to 4TB in capacity, while Gen4 M.2 SSDs are now available with twice the capacity (up to 8TB), not to mention an astounding 61.44TB if one opts for QLC-based U.2 drives.

However, the potential performance gains offered by Gen5 media are impossible to ignore. Data-driven applications such as AI or ML training, HPC (high performance computing), scientific research and big-data analytics stand to experience huge gains when the switch to cutting-edge Gen5 storage is made. The question arises; should you bite the bullet and invest in Gen5 technology or settle for less-than-ideal Gen4 transfer speeds? In truth, the answers are not black and white. Your best option may lie somewhere in between.

HighPoint Gen5 Switching Technology Unlocks 56GB/s Transfer Speed with Gen4 Drives

HighPoint's innovative NVMe board architecture leverages Broadcom's industry-leading Gen5 PEX89048 Switch IC to maximize performance and storage connectivity density for each PCIe x16 slot. This meticulous approach to hardware design ensures that each available lane of bandwidth is fully utilized while maximizing the potential of each NVMe device port, providing unparalleled transfer throughput and storage flexibility.

Maximizes Per-Slot PCIe Bandwidth: HighPoint's Gen5 NVMe storage solutions are engineered to leverage all x48 lanes provided by the Broadcom switch IC. A full x16 lanes are dedicated upstream to the host system's CPU, while the remaining x32 lanes are distributed to the downstream NVMe device ports. This performance-focused architecture enables each AIC and Adapter to deliver class leading transfer throughput and IOPS:

Sequential Read: Up to 60GB/s

Sequential Write: Up to 55GB/s

Random Read: Up to 7.5 million IOPS

Random Write: Up to 7.0 million IOPS

Designed to Maximize NVMe Storage Performance & Versatility

Most modern NVMe storage was designed to operate with x2 or x4 PCIe lanes, with x4 being optimal to achieve maximum transfer throughput. HighPoint's **Gen5 M.2 AICs** ensure **x4 dedicated lanes** are on tap for each of the eight M.2 ports, which enables individual Gen4 SSDs to reach **7,000 MB/s**. Performance is doubled for Gen5 - up to **14,000MB/s** per SSD. When outfitted with eight Gen4 or Gen5 NVMe SSDs, these AICs can deliver 56GB/s+ of real-world transfer throughput.

HighPoint's **Gen5 NVMe Adapters** offer even greater flexibility. They can support anywhere from 4 to 32 U.2, U.3 and E3.S NVMe SSDs. Each adapter allocates x8 dedicated Gen5 lanes to each of its four M.2 ports, and the configurable firmware supports dynamic lane programming; they can be instructed to assign **x8, x4, x2, or even x1 lanes to each SSD**.

The unique architecture enables a single adapter to support an astounding **32 NVMe SSDs** using just one PCIe Gen5 x16e slot. This adaptability is ideal for data-driven applications such as LLM (Large Language Models), Big Data Analytics, and media-intensive applications. Whether you prioritize performance or capacity, HighPoint's Gen5 AIC and adapters unlock the full potential of NVMe storage technology.

In Summary

HighPoint's Gen5 x16 NVMe storage solutions can deliver the best of both worlds, and enable customers to reap the rewards of uncompromised Gen5 transfer capability combined with the cost-effectiveness and storage density Gen4.

The seamless integration of Broadcom's PEX89048 Switch IC with HighPoint's optimized firmware and innovative hardware architecture make Rocket 7600 and 1600 Series NVMe AICs and Adapters the ideal choice for high-performance computing (HPC), AI and ML workloads, Big Data Analytics, and media-intensive applications.

- **Save from 30% to 100% per terabyte** with more cost-effective Gen4 storage
- **Expand storage capacity far beyond the limits of current Gen5 NVMe media**—nearly 2 petabytes per PCIe slot
- **Maximize PCIe slot bus bandwidth with device aggregation**; up to 32 devices via single PCIe 5.0 x16 connection

Learn More about HighPoint PCIe Gen5 NVMe Storage Solutions

HighPoint Gen5 x16 AIC and Adapter Product Lines:

M.2 Ports (support up to 8x M.2 devices)

[Rocket 1608A 8x M.2 PCIe Gen5 x16 NVMe Switch AIC](#)

[Rocket 7608A 8x M.2 PCIe Gen5 x16 NVMe RAID AIC](#)

MCIO Ports (support up to 32 NVMe U.2/E1.S/EDSFF devices)

[Rocket 1628A 4x MCIOx8 PCIe Gen5 x16 NVMe Switch Adapter](#)

[Rocket 7628A 4x MCIOx8 PCIe Gen5 x16 NVMe RAID Adapter](#)

About HighPoint Technologies, Inc.

HighPoint Technologies stands at the forefront of storage innovation as the industry's -premier manufacturer of high-performance, high-density NVMe Switch and RAID AIC & Adapter solutions for off-the-shelf x86 AMD and Intel platforms. With a rich history spanning nearly three decades, our dedication to delivering innovative, reliable, and high-performance storage solutions has consistently set us ahead in the marketplace. HighPoint's NVMe storage solutions are powered by industry-proven PCIe Switching technology, and are designed to address the dynamic requirements of AI/ML/LLM applications, Data Centers, Edge Servers, and high-performance workstations, enabling customers to keep pace with today's rapidly evolving technology landscape.