

Success Story

Empowering AI at the Edge



How Cheetah RAID Used Solidigm to Support AI Use Cases—Anywhere, Anytime

Data is More Important Than Ever: No Data, No AI

Around 2.5 quintillion bytes worth of data are generated every day¹—that's data that needs to be stored, accessed, and analyzed to support all types of activities and decisions. At the edge, where more and more applications are creating and using more data, servers can quickly be overwhelmed.

Unfortunately, it's a problem that is only going to get worse, as more services and applications rely on machine learning (ML) and artificial intelligence (AI). Nearly 77% of devices² today use AI technology in one form or another, while 77% of businesses are using or exploring AI³. Without access to data, however, these ML/AI applications cannot function.

Cheetah RAID and Solidigm: Delivering Performance, Density, and Value at the Edge

Recognizing the increasingly critical need to make sure data can be collected and processed at the edge, Cheetah RAID built the Cheetah Raptor, which leverages Solidigm solid state drives (SSDs) for high performance, reliable data storage. Not only can it handle the terabytes (TB) of data required by ML/AI applications, but it can maintain operations under the extremely challenging conditions often found at the edge (e.g., vibrations, shocks, humidity, and large temperature swings).

The Cheetah RAID Raptor enables organizations to manage their sprawling edge data and support ML/AI applications with a server that offers modular storage canisters that can support nearly three quarters of a petabyte across just 12 drives.

The Raptor has three hot-pluggable Gen4 NVMe® canisters, AMD EPYC CPUs with up to 64 cores, and 128x Gen4 PCIe lanes. Each of the canisters holds up to four SSDs. The canisters allow data to be logged and processed independently and frees data migration from the constraints of the network fabric, as they can be easily moved to different locations.



ABOUT: A leader in building high-performance, small form factor NVMe servers for media and entertainment, autonomous vehicle markets and US Navy.

PROBLEM: Needed to overcome storage bottlenecks that often limit server performance in edge scenarios and can hamper ML/AI applications at the edge.

SOLUTION: Cheetah RAID Raptor, which uses Solidigm SSDs, is a high-performance server designed to help organizations manage their data demands at the edge.

BENEFITS: Scalable, high-performance real-time data collection ensures edge applications, including ML/AI, have what they need to maintain operations.



“Today, it’s clear the primary constraint for edge workloads is the limitation of bandwidth rather than latency. Solidigm QLC SSDs offer an impressive combination of capacity, performance, and reliability as a solution to overcome this challenge. The seamless integration of Solidigm QLC SSDs with Cheetah’s high-performance servers makes them highly suitable for the efficient deployment of edge solutions.”

Doug Emby

Vice President of Sales &
Business Development
Cheetah Raid Storage

Solution Details

Rugged Hardware

The Cheetah Raptor was purpose-built to maintain operations under the most challenging of environments. For instance, the chassis has been significantly braced and reinforced internally to protect it from sudden movements and shocks. The Solidigm SSDs have no moving parts and offer an extremely small form factor, which minimizes the real estate, power, and cooling required and help it perform regardless of swings in temperature (ranging from 0-50 °C) and humidity (5-90% relative humidity).

Scalable Performance

The Cheetah RAID Raptor has a triple canister design – each canister can hold four of Solidigm’s high-capacity SSDs. The Solidigm 61.44TB SSD⁴ can store nearly a petabyte of data in a single server, which means organizations have the potential capacity they need to support their many use cases at the edge. They can spend less time swapping canisters and more time getting the benefits of their ML/AI applications.

Reliability

The Cheetah RAID Raptor is configured with four 30.72TB Solidigm D5-P5316 NVMe SSDs, which are hot swappable. The removable drive canister makes it easy to offload data and refresh the storage for optimal performance and reliability in the field.

What's Next

For more information on how Solidigm can provide customized data storage solutions to support your most challenging edge requirements, please go to www.Solidigm.com



¹ LinkedIn, <https://www.linkedin.com/pulse/how-much-data-created-every-day-2020-kesha-shah>

² <https://hackernoon.com/revolution-of-ai-in-2020-is-it-real-dr6fk2zfd>

³ <https://www.crossrivertherapy.com/research/artificial-intelligence-statistics#:~:text=Nowadays%2077%25%20of%20businesses%20are,its%20implementation%20in%20the%20future.>

⁴ Max potential 1U storage density: Industry-leading 61.44TB capacity enables nearly 2PB of storage in a 1U server:1U based on 32x E1.L front load drive bays x 61.44TB E1.L D5-P5336 = 1.966PB. Max 1U front load based VSAT configuration.