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White Paper

Supermicro NF1: the Ultimate Storage Choice for Big Data, AI, 5G and Content Delivery

Industry Leadership

Supermicro in collaboration with Samsung has developed an extremely dense, very high capacity, all-flash storage server platform poised to revolutionize the industry with its price/performance and design efficiency. Using only one rack unit, it can house up to 576 TB of storage. The Samsung NF1 form factor was specifically designed to maximize performance and capacity for data intensive/low latency workloads. As a leader in Flash technology Samsung has created the NF1 form factor that has disrupted the storage industry with its reduced consumption of space and power. This paper will highlight its outstanding features.
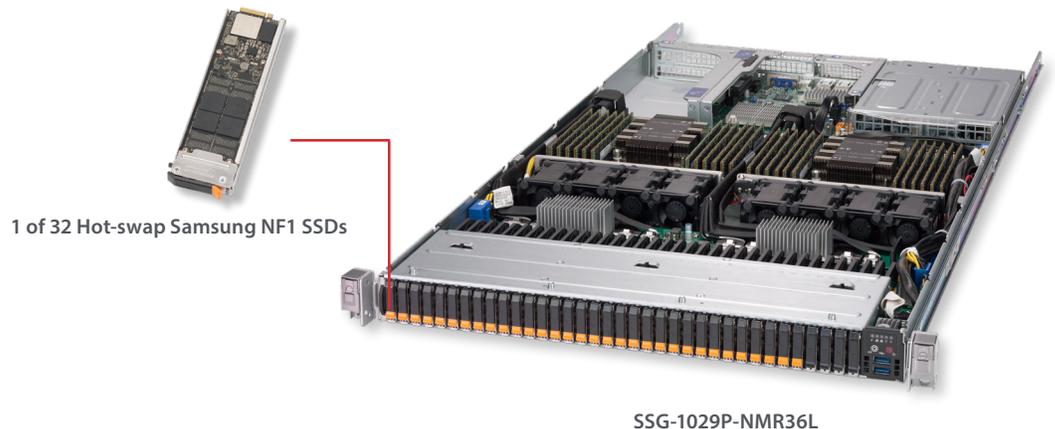
1 of 32 Hot-swap Samsung NF1 SSDs

SSG-1029P-NMR36L

SAMSUNG
NF1 SSD

activated

SUPERMICRO® *- September 2018*

Front View

Rear View

Key Features And Benefits Of Samsung NF1 SSD

- Easy to access and service with a front loading design

- PCI-E 3.0 interface for up to 4 lanes

- Compliant with NVMe 1.2 specifications

- Hot-swappable and Power Loss Protection

- 30.5 x 110mm, 4.38mm height

- Available in 4-16TB capacities per drive

Samsung NF1 SSD

Next Generation Storage Available Today

The NF1 server starts with a no compromise motherboard featuring dual Intel™ Xeon™ Scalable processors up to 205W, which provide up to 56 cores, and 24 DIMMs for 3 TB of system memory.

It has a switched PCI-E architecture which supports 32 NF1 devices as well as 4 additional hybrid device slots which can be NVMe or SATA with M.2 connections. It provides ample I/O with two 16 lane PCI-E cards as well as one 4 lane card. In addition to performance the system provides for high availability for non-disruptive operations with hot swap drives and power supplies.

The system provides 10M read IOPS, and 39 GB/s of read throughput. In addition it provides the best cost per GB among all-flash systems.

While many All-Flash systems are available, Supermicro's NF1 server is different in both its media density and overall end-to-end architecture, making it perfect for high capacity network edge applications. For example next generation 5G mobile service providers will need more storage capacity closer to their customers to deliver the best user experience.

For data analytics and AI applications, momentum has been building from using distributed/converged systems doing in-node batch processing, to the use of more compute intensive GPU systems without local storage. This makes dedicated All-Flash scale-out storage the topology of choice.

To achieve commercial success in both these application areas, the All-Flash platform must provide the lowest TCO, changing the decision from performance-at-all-cost, to a balance of price/performance and efficiency. The NF1 server strikes this balance perfectly.

Lowest Total Cost of Ownership

With an optimal thermal design NF1 server can support more flash devices, while consuming less power, (greater overall efficiency) in turn enabling the use of more

With NF1 orthogonal connector design, air flows through the server with much less resistance. Allowing Fans to operate at consistently lower duty cycles, thus reducing overall power consumption.


High Efficiency Cooling

powerfull CPUs and Memory. This delivers the best/price performance All-Flash platform available. And all of this in a system with only 30" of rack depth making deployment easy in any size rack.

Balanced System Design

The balanced system architecture splits resources evenly across CPU, networking and storage, this allows users to pin and provision IO resources for the lowest latency path from external clients to the NF1 storage devices, minimizing inter CPU communications over UPI (the Ultra Path Interconnect).

On the front end, with 2 PCI-E 3.0 x16 slots, the highest performing network interface cards (NICs) can be used to drive NVMe performance. Supermicro provides 25 Gigabit Ethernet speed for the same price others charge for legacy networks such as 10G. And this system is also available with support for 100 GbE, as well as Infiniband and Omni-Path, for those organizations that require the absolute highest performance.
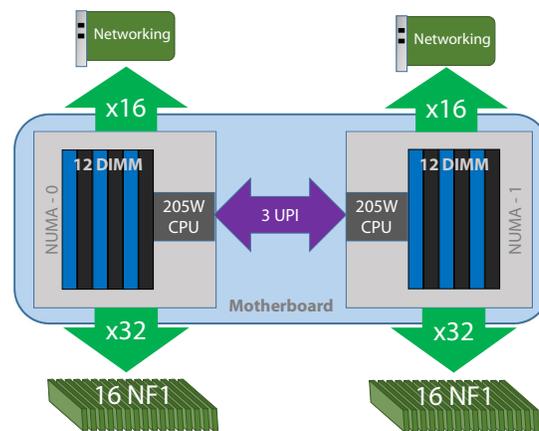
Figure 1.   *Best End-to-End Performance: Optimal I/O Paths From Networking to Media*

I/O Optimized Architecture for Lowest Latency

System latency performance can be measured many ways; for a standalone compute node it may be measured from storage device to CPU. In the case of a storage server providing services to clients across a network, the PCI-E bandwidth for the NICs must also be considered. The NF1 server has a system topology offering high bandwidth and the lowest latency for external client applications.

With capacity projections for Flash more than doubling in the next 18 months, Supermicro's SSG-1029P-NMR36LNF1 server is the first system on the market featuring a compact next generation density optimized flash form factor, with the absolute best combination of performance, optimal power efficiency, and storage density. This gives users the best TCO, and competitive advantage compared to other flash form factors shipping today.

About Super Micro Computer, Inc.

Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology is a premier provider of advanced server Building Block Solutions® for Data Center, Cloud Computing, Enterprise IT, Hadoop/Big Data, HPC and Embedded Systems worldwide. Supermicro is committed to protecting the environment through its "We Keep IT Green®" initiative and provides customers with the most energy-efficient, environmentally-friendly solutions available on the market.

Learn more on **www.supermicro.com**