LSI

Storage. Networking. Accelerated.™

Product Brief

LSI® Nytro™ MegaRAID® Application Acceleration Card

Key Features

- Integrated solution offering on-board flash capacity, dynamic caching software, and RAID data protection
- Flexibility to configure integrated flash capacity for caching or data volumes, eliminating dedicated boot HDDs and increasing server density
- Enterprise-grade flash storage optimized for performance, reliability, and endurance
- New Elastic Cache algorithm both increases cache utilization and performance
- Persistent read cache metadata during power cycle
- Sustains high performance during a HDD failure; accelerates degraded array rebuild time
- Improved caching algorithm allows more hot spots to be retained in flash
- 8 GB/second data transfers using a x8 PCI Express® 3.0 host interface
- Broad portfolio with variety of flash capacity points and internal or external SAS connectors.

The Nytro MegaRAID card offers LSI MegaRAID data protection and flexible onboard flash technology that can be used in a variety of ways to help improve performance and server storage density. Server deployments currently using a standard RAID card or Host Bus Adapter (HBA) have the potential for higher performance simply by switching to the versatile and innovative Nytro MegaRAID card.

Simple-to-Deploy Flash Technology

Flash-based storage offers low latency and high IOPS, with solid state drives (SSDs) as a typical flash solution. To qualify SSD solutions customers must balance the SSDs cost, capacity, performance, and enterprise data integrity versus their traditional hard disk drive (HDD) infrastructure. Different applications may require different capacities of flash to achieve targeted performance, expanding the number of server configurations to manage. The addition of SSDs may also take up drive bays typically dedicated to HDDs, reducing the total available server capacity. LSI helps remove these obstacles by placing enterprise-grade flash capacity on the Nytro MegaRAID card, providing customers an easier-to-qualify and performance-optimized flash solution. In servers using a traditional RAID card or HBA, simply replacing them with a Nytro MegaRAID card can deliver flash-based performance and design flexibility without changing other components within the server.

Flexible Flash to Fit Your Needs

The Nytro MegaRAID card is designed with individual flash modules – essentially two enterprise-quality SSDs – onboard. These flash modules can be configured in a RAID array to support latency-sensitive data storage – used for the boot volume, the 'golden image' in a virtual desktop infrastructure (VDI) application, storing tempdb in SQL Server or indexes/data objects from an Oracle or MySQL database, for example – and will still support a caching volume as well, dynamically identifying 'application hot data' to be stored and serviced from the flash for improved performance and reduced latency.

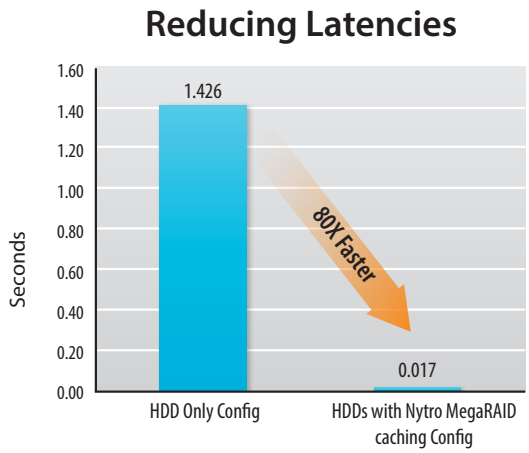
Total server storage density can be increased simply by storing the boot volume in the onboard flash. Two HDDs previously dedicated for boot support can now be used for application data, increasing total server capacity without any other hardware changes. Storing tempdb in a SQL Server database application or the golden image in a VDI application can improve performance simply by servicing these operations using the Nytro MegaRAID card's onboard flash.

THE Smarter WAY TO FASTER™

These flexible flash design options with the Nytro MegaRAID card give customers multiple possibilities for configuring their own 'optimal' server solution.

Performance Benefits and More

Serving data requests from flash can significantly reduce application latency, leading to improved user response times and quality-of-service. The graph below compares the performance of a SQL Server® database driven by an online transaction processing (OLTP) workload in a hardware configuration with only HDDs against a Nytro MegaRAID card-supported configuration. In this test case performed by LSI in its labs, the Nytro MegaRAID card's intelligent caching and integrated flash storage yielded an 80x faster response[1].



Applications that benefit from caching can also benefit from reduced rebuild time for degraded RAID arrays, even when using high-capacity HDDs. With the Nytro MegaRAID card servicing IO from the onboard flash, the backend HDDs are less burdened and can dedicate more resources to the rebuild operation.

Enterprise Endurance and Ease of Use

The Nytro MegaRAID card utilizes the strength of the LSI technology portfolio to deliver an enterprise-quality solution. The LSI MegaRAID stack offers enterprise data protection while LSI SandForce® flash processors help ensure enterprise-grade flash performance and endurance. Nytro MegaRAID card's broad range of supported operating systems - including in-box drivers - make it possible to replace the standard RAID card or HBA that would already be needed in many server designs with an accelerated flash solution.

[1]Documented in http://www.lsi.com/downloads/Public/Nytro/docs/LSI_WP_NytroMegaRAID-SQLServer.pdf

Nytro MegaRAID Card Specifications	
Operating Systems	RHEL: 5.6, 5.7, 5.8, 6.0, 6.1, 6.2, 6.3 SLES 10 SP2, SP3, SP4 SLES 11 SP1, SP2 Windows® 7, Windows 2008 Windows Server® 2008 SP1 R2, SP2, Server 2012 CentOS 6.3 ESX/ESXi 4.0 U4 U5, 4.1 U2 U3, 5.0, 5.0 U1, 5.1 FreeBSD 9.0 Solaris 10, 11 (x86 only)
Physical Dimensions	MD2 Low profile (2.536"x6.60")
Internal Connector	Mini-SAS SFF8087 x4 connector (-4i part number)
External Connector	Mini-SAS SFF8088 x4 connector (-4e part number)
Device Support	Up to 128 devices
Host Bus Type	x8 lane PCI Express 3.0 compliant
Data Transfer Rates	6Gb/s per SAS lane
DDR memory for RAID cache assist	1 GB 1333MHz DDRIII SDRAM
RAID Data Protection Features	RAID levels 0 and 1 on the on card flash storage RAID levels 0, 1, 5 and 6 on HDDs RAID spans 10, 50 and 60 on HDDs Online RAID Level Migration (RLM) • Configurable stripe size up to 1MB Fast initialization for quick array setup • 64 logical drive support • S.M.A.R.T Mode 5 support
Configuration and monitoring tools	MSM, megaCLI, StorCLI
Operating Temperature	0 - 45° C
Airflow (LFM)	300
Operating Voltage and Power	+3.3V, +12V, power requirements less than 25 watts
Regulatory Certifications	EN55022, EN55024, EN60950, EN 61000-3-2, EN 61000-3-3; FCC Class A, Class B; UL1950; UL; CSA C22.2; VCCI; RRL for MIC; BSMI; C-tick

Ordering Information LSI Nytro MegaRAID Card			
Name	Memory Type	Capacity	Part Number
Nytro MegaRAID 8100-4i	SLC	100 GB	LSI00350
Nytro MegaRAID 8110-4i	eMLC	200 GB	LSI00351
Nytro MegaRAID 8120-4i	eMLC	800 GB	LSI00353
Nytro MegaRAID 8110-4e	eMLC	200 GB	LSI00395
Nytro MegaRAID 8120-4e	eMLC	800 GB	LSI00396
Nytro MegaRAID SCM01*			LSI00355

* Supercap Kit for DRAM Cache protection

For more information, visit: www.lsi.com/acceleration

For more information and sales office locations, please visit the LSI website at: www.lsi.com/channel

LSI®
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North American Headquarters
San Jose, CA
T: +1.866.574.5741 (within U.S.)
T: +1.408.954.3108 (outside U.S.)

LSI Europe Ltd.
European Headquarters
United Kingdom
T: [+44] 1344.413200

LSI KK Headquarters
Tokyo, Japan
T: [+81] 3.5463.7165