SGI® InfiniteStorage™ 5500-F and 5600-F Hyper-Speed Flash Array

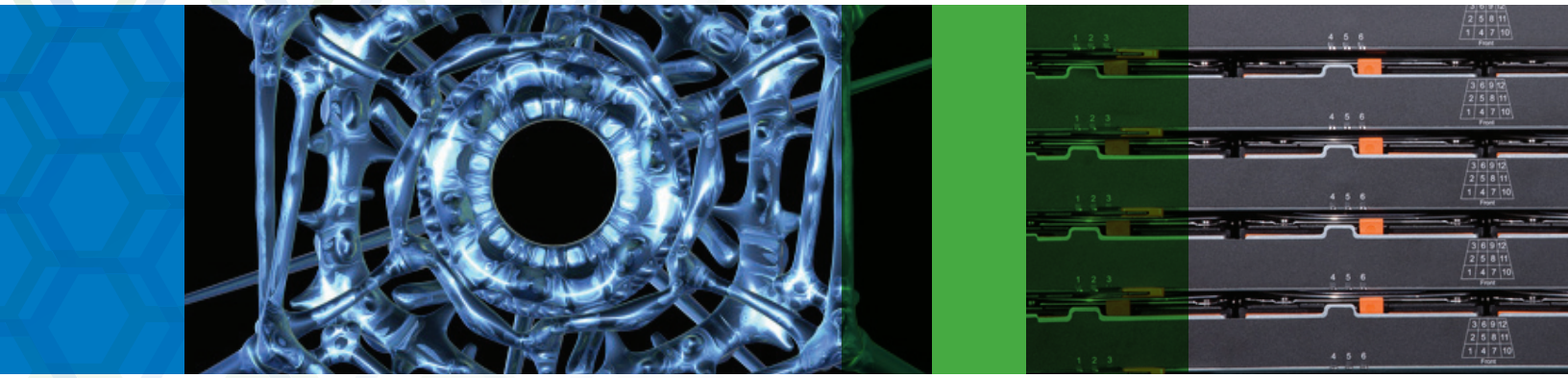
Extreme IOPs and Sub-millisecond Latency for Performance-Critical Workloads

Key Features

Extreme IOPs

Low latency

Small capacity configurations



Extreme IOPS and Sub-millisecond Latency for Performance-Critical Workloads

Corporations are increasingly looking for ways to drive greater speed and responsiveness from the applications that control their key business operations, especially database systems. Because the performance of these applications is tightly linked to time to market, revenue, and customer satisfaction, it is critical that they operate at maximum potential.

To achieve extreme performance, organizations might have had to overprovision capacity, deploying partially filled disks that allow the storage to meet the needed performance but waste disk capacity, data center space and power. To eliminate overprovisioning and maximize return on investment from high-performance applications, companies are now looking to all-flash systems. But as buyers consider these new systems, they are often challenged to find an offering that is also enterprise proven and highly reliable.

Leading Response Times

The SGI Flash Arrays are an all solid state drive (SSD) storage system designed specifically for database-driven business operations demanding the highest levels of performance, reliability, and availability. Requiring just 2U of rack space, the Flash Arrays combine extreme IOPs, sub-millisecond response times, and over 6GBps of bandwidth with leading, enterprise-proven availability features including:

- Redundant components with automated failover
- Intuitive storage management with comprehensive tuning functions
- Advanced monitoring and diagnostics with proactive repair
- Snapshot® copies and replication for subsecond backup and long-distance recovery

Combined, these capabilities enable the Flash Arrays to improve the speed of business as well as the overall efficiency and reliability of IT operations. This win for both the business and IT translates to a better overall experience for both you and your customers.

Extreme Performance

The Flash Arrays continue SGI's longstanding heritage of delivering powerful solutions to meet unique business needs. Designed specifically for customers with high-speed, transactional applications that demand high IOPs and low latency, the Flash Arrays deliver over 350,000 sustained IOPs and sub-millisecond response times. Bandwidth-oriented workloads will also benefit from the Flash Arrays' ability to deliver 6GBps of throughput.

The all-flash design is built in a 2U enclosure and delivers the performance of over a thousand 15,000 RPM drives while requiring just 5% of the rack space, power, and cooling. This (up to 95%) reduction in space and power consumption allows the Flash Arrays to significantly improve the overall efficiency of IT operations while continuing to meet performance requirements from business operations.

High Availability and Enterprise Reliability

Because the applications that the Flash Arrays are designed to support are often the heart of a corporation's business processes, the Flash Arrays have been built with enterprise reliability in mind. The Flash Arrays leverage lessons learned across almost three-quarters of a million system installations to provide enterprise reliability and fault tolerance, in both the architecture and the system code.

To allow recovery in the event of an environment issue or component failure, the Flash Arrays include fully redundant I/O paths with automated failover, extensive diagnostic capabilities that alert and help resolve failures, along with advanced data protection features. All management tasks are performed while the storage remains online with complete read/write data access. This allows storage administrators to make configuration changes and conduct maintenance without disrupting application I/O.

As IT staffs know, one of the most critical aspects of an enterprise solution is the ability to detect and resolve issues. In this area, the Flash Arrays provide significant depth of capabilities:

- The ease to extensively capture and monitor diagnostic data provides comprehensive fault isolation and simplifies analysis of unanticipated events.
- The Arrays proactively track SSD wear life and alerts when threshold is reached.
- Integrated Recovery Guru diagnoses problems and provides the applicable procedure to use for recovery.
- Background media scan identifies parity inconsistencies, rewrites sectors that might not have been properly written, and reallocates defective sectors.
- "Lost" data can be recreated on the fly using redundancy.
- A drive rebuild can continue even when encountering an unreadable sector (patented).

Advanced Data Protection

The Flash Arrays offer advance data protection common to enterprise storage to protect against data loss and downtime events, both locally and over long distance. These features include:

- **Snapshot® copies.** Create and restore point-in-time copies of data sets in under a second to protect against accidental data loss on the local array.
- **Synchronous replication.** Capture a zero-data-loss copy of databases and other high-performance application content on another array to quickly continue operations in the event of a site-level outage or an array-level event.
- **Asynchronous replication.** Provide long-distance disaster recovery to a remote site or collocation facility to enable your business operations to continue running no matter what happens.

Unique to the Flash Arrays is the ability to replicate data to either Flash Arrays or an SGI InfiniteStorage Series platform. This capability allows you the choice of creating a high-speed, low-latency recovery system that will run at the same speed as your production operations and/or failover to a consolidated InfiniteStorage Series platform with more cost-effective disk storage. This flexibility in design allows you to choose the profile of performance and cost unique to your business.

Simple, Robust Management

The Flash Arrays run on the enterprise-proven InfiniteStorage Manager software (ISSM) platform. Optimized for flash, ISSM software allows storage administrators to achieve maximum performance and utilization of their Flash Arrays through extensive configuration flexibility, custom performance tuning, and complete control over data placement. Its graphically based performance tools provide key information on storage I/O from multiple viewpoints, allowing administrators to make informed decisions on configuration adjustments to further refine performance. And with its dynamic capabilities, ISSM software supports on-the-fly expansion, reconfigurations, and maintenance without interrupting storage system I/O, including:

- Dynamic capacity expansion (DCE) and dynamic volume expansion (DVE) features let you expand capacity so maximum performance and utilization are assured.
- Dynamic RAID-level migration (DRM) changes the RAID level of a RAID group on the existing drives, without requiring the relocation of data. Supported RAID levels are 0, 1, 3, 5, 6, and 10.
- Non-disruptive controller firmware upgrades (no interruption to data access) are supported.

Professional Services

Modular Offerings Customized for You

SGI Professional Services can assist you in any and every phase of the storage lifecycle. Whether you need help planning your next-generation storage system, need an extra set of hands for a major storage deployment, or want to upgrade your existing infrastructure, SGI Professional Services personnel have the skills and expertise. SGI offers a complete portfolio of services. In summary, SGI Professional Services offerings include:

- **Solution suites.** These customized solutions are designed to address your business-level challenges holistically.
- **Assessment services.** Enlist SGI to identify and document business, storage, and infrastructure requirements and receive recommendations for improvements.

- **Consulting services.** Reduce the complexity of your networked storage implementation when you enlist our experts to design, document, and implement a range of applications and solutions.
- **Deployment/implementation services.** Reduce risk as we prepare your site, install and connect systems, setup your software, and perform complete verification.
- **Managed services.** Have SGI experts onsite to perform storage management services so you can focus on core business initiatives.

Global Support

SGI Global Support delivers the highest availability for your enterprise data environment and helps you optimize your storage investments. Let SGI mitigate support issues and drive operational best practices. SGI's innovative, proactive support means you'll have fewer and less severe support cases. But if a problem arises, our award-winning technical centers and field support staff—delivering in over 100 countries—won't rest until it's resolved.

As an industry leader in innovation, SGI Global Support provides tools and technology to enable business continuity. AutoSupport™, SGI's suite of automation tools, is delivered as a service to help you proactively manage your systems and quickly resolve issues. AutoSupport functions as a "virtual staff" to protect critical data, save time, and reduce impact on your IT resources.

Key Benefits

Extreme Performance

- Over 350,00 IOPs and sub-millisecond latency let you finish business operations faster and improve customer experience.

Maximum Efficiency

- Eliminates overprovisioning and dramatically reduces costs by cutting space utilization, power, and cooling by up to 95%.

Leading Availability

- Fully redundant system with automated failover and advanced monitoring to maximize uptime.

Advanced Data Recovery

- Snapshot® copies and remote replication to full-flash, hybrid, or spinning disk storage enable industry-leading recovery options and cost flexibility.

Enterprise-Proven Platform

- Leveraging experience from almost three-quarter of a million systems, flash-optimized Flash Arrays are designed to work in the most demanding environments.

About SGI

SGI, the trusted leader in high performance computing (HPC), is focused on helping customers solve their most demanding business and technology challenges by delivering technical computing, Big Data analytics, cloud computing, and petascale storage solutions that accelerate time to discovery, innovation, and profitability.

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SGI IS5500-F/IS5600-F System Specifications

All data in this table applies to dual-controller configurations.

Attribute	SGI IS5600 Hyper-Speed FLASH ARRAY	SGI IS5500 Hyper-Speed FLASH ARRAY
Performance	Burst: 900,000 IOPs Sustained: over 400,000 IOPs Sustained: up to 12GB/s	Burst: 800,000 IOPs Sustained: over 350,000 IOPs Sustained: up to 10.8GB/s
Expansion Ports	(4) 6Gb SAS x4 wide	(2) 6Gb SAS x4 wide
Flexible SSD Capacity	Minimum 2 SSD's up to Maximum 120 SSD drives (96TB) 200GB & 800GB SSD	Minimum 2 SSD's up to Maximum 120 SSD drives (96TB) 200GB & 800GB SSD
Expandable Hybrid Options	With HDD up to 384 drives	With HDD up to 384 drives
Form factor	2U/24	2U/24
Memory	24GB	24GB
I/O interface expansion options	(8) 16 Gb FC	(8) 8Gb FC (16) 8Gb FC
OS version	ISSM	ISSM
High-availability features	• Dual active controller with automated I/O path failover • RAID levels 0, 1, 3, 5, 6, and 10 • Redundant, hot-swappable controllers, disk drives, power supplies, and cooling fans • Automatic drive failover and detection and rebuild using global hot spare drives • Mirrored data cache with battery backup and destage to memory • Nondisruptive controller firmware upgrades (no interruption to data access) • SANtricity® proactive drive health monitoring identifies problem drives before they create issues • SANtricity persistent monitor makes periodic copies of the storage system configuration	• Dual active controller with automated I/O path failover • RAID levels 0, 1, 3, 5, 6, and 10 • Redundant, hot-swappable controllers, disk drives, power supplies, and cooling fans • Automatic drive failover and detection and rebuild using global hot spare drives • Mirrored data cache with battery backup and destage to memory • Nondisruptive controller firmware upgrades (no interruption to data access) • SANtricity proactive drive health monitoring identifies problem drives before they create issues • SANtricity persistent monitor makes periodic copies of the storage system configuration
Operating systems supported	Red Hat® Enterprise Linux®, Novell SUSE Linux Enterprise Server	Red Hat® Enterprise Linux®, Novell SUSE Linux Enterprise Server
Software features	**Standard** • Dynamic volume expansion • Dynamic capacity expansion • Dynamic RAID-level migration • Dynamic segment size migration • Persistent monitor • Proactive drive health monitoring • Nondisruptive firmware upgrades • Background media scan with autoparity check and correction **Optional** • Volume Copy • Snapshot Consistency Group • Thin Provisioning • Checkpoint Asynchronous Mirroring • Remote Volume Mirroring - 16	**Standard** • Dynamic volume expansion • Dynamic capacity expansion • Dynamic RAID-level migration • Dynamic segment size migration • Persistent monitor • Proactive drive health monitoring • Nondisruptive firmware upgrades • Background media scan with autoparity check and correction **Optional** • Volume Copy • Snapshot Consistency Group • Thin Provisioning • Checkpoint Asynchronous Mirroring • Remote Volume Mirroring - 16
Dimensions And Weight (For 24 Bay Enclosure)		
Height	3.47" (8.81 cm)	3.47" (8.81 cm)
Width	19" (48.26 cm)	19" (48.26 cm)
Depth	19.6" (49.78 cm)	19.6" (49.78 cm)
Weight	53 lb (24 kg)	53 lb (24 kg)
Max Power And Cooling (For 24 Bay Enclosure)		
KVA	0.39	0.39
Watts	386	386
BTU	1,316	1,316

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