

SAMSUNG GREEN SSD

High-Performance, Energy-Efficient Storage
for Today's Enterprise Computing Platforms



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In a world where a high degree of energy efficiency is critical to our future, we must examine every way possible to reduce our power consumption. A 2008 study by McKinsey & Company found that data centers consume 0.5 percent of the world's energy and are second to the airline industry in carbon dioxide emissions, emitting more CO₂ gases than Argentina or the Netherlands. In the US, data centers consume more electricity than all of the country's televisions, and the EPA estimates that by 2011, they will consume an incredible three percent of the country's electricity.

Samsung is advocating widespread use of Solid State Drives (SSDs) as a critical power-saving component in enterprise servers.

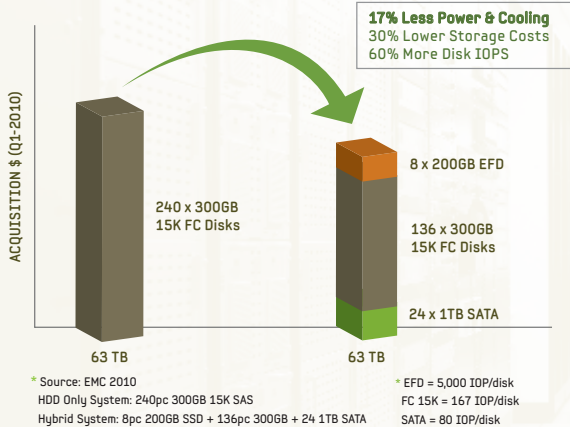
Samsung SSD. Less Energy.

On average, Samsung SSDs consume 50 percent less power than the hard disk drives commonly used in data centers. The most significant difference between the HDD and the SSD is the lack of mechanical parts in an SSD. This enables faster access to data, while reducing energy consumption.

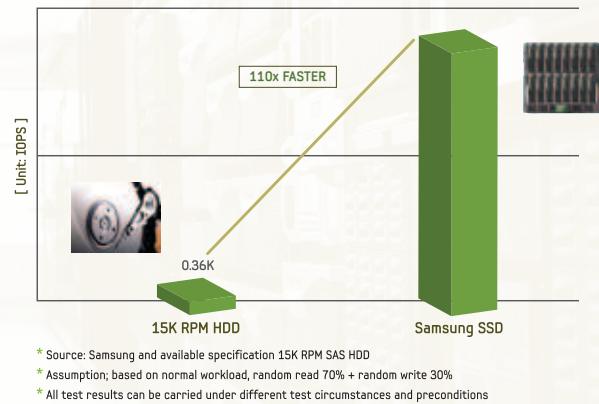
Samsung SSD. More Performance.

Widespread data center adoption of SSDs as their primary storage devices will result in greater server-room energy and costs savings in the long run. In certain high-performance applications, a single SSD can replace anywhere from 10 to 100 HDDs, due to the significant performance advantages of solid state technology. In terms of Input/Output Operations Per Second (IOPS), an SSD performs 110 times faster than a 15K Revolutions per minute (RPM) SAS HDD.

SSD BENEFIT IN REAL SYSTEM

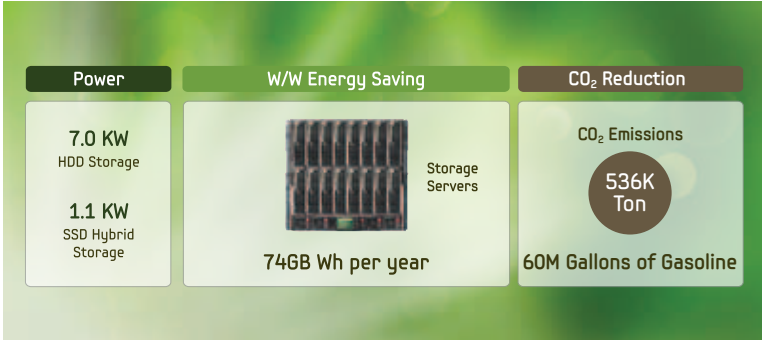


SSD VS. HDD RANDOM IOPS PERFORMANCE COMPARISON



This performance advantage over HDDs is primarily due to the latency and seek time that hard drives require. The SSD does not depend on the use of a motor and spindle to locate data. The SSD uses electrons to locate the data within microseconds making it significantly faster than a comparably-sized HDD.





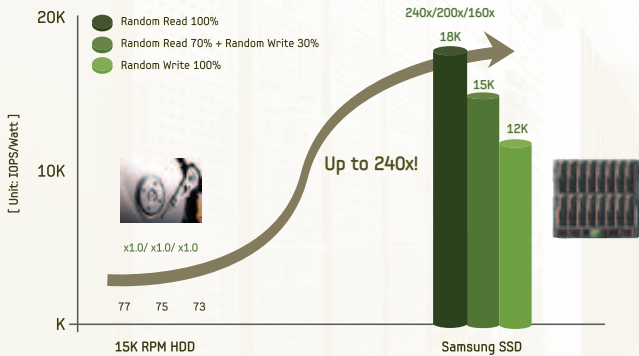
Samsung SSD is Green.

In the US, data centers consume more electricity than all of the country's televisions, and the EPA estimates that by 2011, data centers will consume three percent of the country's electricity. For these reasons, companies today are increasingly seeking ways to reduce power consumption without compromising performance. IOPS per watt is a key factor in judging storage capacity, as well as how IOPS manage and restrict power consumption. Samsung SSDs can access up to 240 times more IOPS per watt than a traditional 15K RPM HDD.

Samsung SSD. More Reliability.

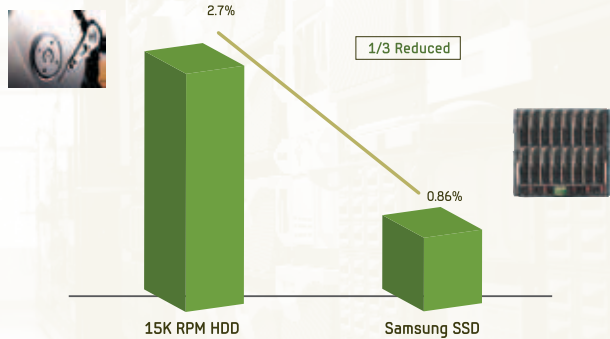
Adding to their attractiveness, SSDs are 30 percent more reliable than even the most reliable enterprise hard drives and will generate almost no heat, reducing data center cooling requirements. Adopting a SSD storage solution requires less hardware, which is not only better for the environment, but will result in substantial cost savings and a reduced server footprint.

IOPS/WATT COMPARISON



* All Samsung SSD test results are based on internal measurements. Performance results can vary under different test conditions and FW changes.
 * 15K RPM HDD power consumption is based on available spec.

SSD VS. HDD ANNUAL FIELD FAILURE RATE COMPARISON



* Source: Samsung

With growing government regulation around the world, IT managers must look not only at overall power consumption levels in their data centers and server farms, but also at CO₂ emissions. Samsung's advanced Green SSD technology dramatically reduces total cost of ownership (TCO) and increases the Return On Investment (ROI), while helping to tackle the challenges of excess power drain and CO₂ emissions. IDC reported that worldwide performance-optimized storage amounted to 6096 Petabytes (PB) in 2009. It is estimated if all that capacity was stored in Samsung's Green SSDs, then 746 billion watt hours of electricity could be saved annually.

Looking at the most common reliability indicator – Mean Time Between Failures (MTBF) – SSDs guarantee two million hours of MTBF, almost three times higher than that of traditional HDDs. In addition, because they are designed to make use of an auxiliary power supply, Samsung Enterprise SSDs fully protect data in the event of unexpected storage problems or sudden power loss.

SAMSUNG GREEN SSD

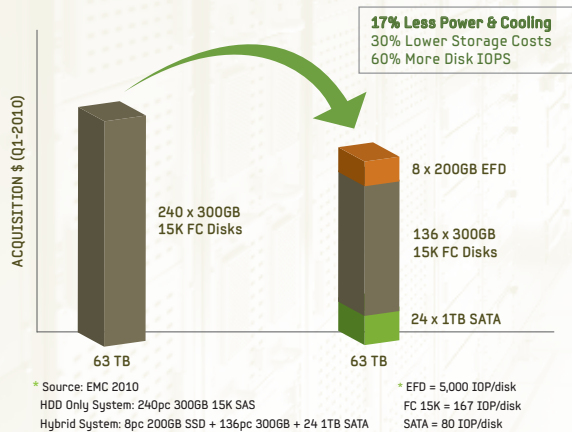
SSD Benefits.

How do SSDs impact your company's bottom line?

In a typical enterprise storage application, the savings in moving from HDDs to SSDs can be realized on day one. You start saving money the second you decide to adopt SSD technology, essentially an "instantaneous TCO savings."

The chart below shows the benefits of a hybrid SSD system versus a HDD in a 63 Terabyte (TB) configuration. This HDD storage scenario utilized 240GB 300GB 15Krpm Fiber Channel HDDs while the SSD storage is comprised of 8 200GB SSDs with 136 300GB HDDs.

SSD BENEFIT IN REAL SYSTEM



The hybrid SSD system here shows 17% less power and cooling, 30% lower storage costs which equates to reduced maintenance and software costs, and 60% more disk IOPS. Using Samsung SSDs, you can expand the capacity and increase the performance of your data center without increasing space or spending. Samsung SSDs are the perfect economic and environmental solution for today's data centers.



For more information, visit www.samsung.com/GreenMemory or scan the QR code.

Key Features

Active Read		3.5-inch (147.60 x 101.60 x 15.00mmt)
Density		100GB and 200GB
Weight		100GB/200GB: max. 320g
Power Consumption	Active Read	1.8 W
	Active Write	3.7 W
	Idle	1.7 W
Performance	Sequential Read	260 MB/s
	Sequential Write	235 MB/s
Interface		<ul style="list-style-type: none"> -Serial ATA interface of 3.0 Gbps (SATA 3.0 Gbps) -Fully complies with ATA/ATAPI-7 standard -Asynchronous Signal Recovery (Hot-plug) -Active LED indication (Pin11) -Native Command Queuing (NCQ, 32 Depth)
Operating Temperature		-10°C ~ 60°C
Operating Voltage		5V
Shock		1500G, duration 0.5ms, Half Sine Wave
Vibration		20G peak, 10 ~ 2000Hz (15min/Axis) x 3 Axis
System Reliability		Min. 2 million hours MTBF

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