

Data Sheet

# Savvio® 10K.4

The 2.5-inch hard drive transition enabler for enterprise external storage solutions

**2.5-inch form factor • 10K RPM • 2M-hour MTBF • 600GB and 450GB • 6Gb/s Serial Attached SCSI • 4Gb/s Fibre Channel**

## Key Advantages

- World's highest-capacity SFF drive (up to 600GB) reduces \$/GB costs
- 20 percent higher reliability than any other drive available and the industry's first 2M-hour MTBF drive to provide 0.44 percent AFR
- Second-generation 6Gb/s SAS with dual-port communication and first SFF hard drive with 4Gb/s FC support
- SFF and low power consumption reduce end-user cooling and energy costs
- PowerChoice™ feature for T10-compliant power management enables IT organizations to tailor systems for performance and power consumption.
- Protection Information (PI) option detects corruption of data in flight between the host system and the drive.<sup>1</sup>
- Head ramp load/unload feature for improved device handling reliability
- TCG-compliant Self-Encrypting Drive (SED) security option (SAS models only) eliminates the need to overwrite or physically destroy drives, enables secure return of drives for warranty or expired lease purposes, and enables organizations to securely repurpose or sell hard drives.<sup>2</sup>
- FIPS Self-Encrypting Drive option provides all the benefits of SED and is NIST certified to meet U.S., Canada and U.K. federal data encryption compliance requirements.<sup>2, 3</sup>
- OEMs, system designers and IT organizations can reduce system complexity and standardize on common form factors, interfaces and security standards.



## Best-Fit Applications

- Mainstream enterprise external storage arrays (SAN, NAS, DAS)
- Power- and/or space-constrained data centers
- Drive life extension and drive retirement simplification strategies<sup>2</sup>

<sup>1</sup> Protection Information (PI) feature requires PI-compliant host or controller support.

<sup>2</sup> Requires TCG-compliant host or controller support. Not available in all countries.

<sup>3</sup> See FIPS 140-2 Level 2 Certificate at <http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401vend.htm>.



FIPS 140-2 INSIDE



Unified Storage™

# Savvio® 10K.4

## The 2.5-inch hard drive transition enabler for enterprise external storage solutions



### SFF Transition Enabler for External Enterprise

For OEMs and system designers who want to transition to 2.5-inch drives, the Seagate® Savvio® 10K.4 drive is the ideal solution for enterprise SAN, NAS and DAS. The drive extends widespread market adoption of SFF from enterprise servers into external storage systems with the highest capacity and best reliability available in a small form factor, 10K-RPM enterprise drive.

### World's Highest Capacity and Reliability

The first 2.5-inch, 10K-RPM enterprise drive with a 600GB capacity, the Savvio 10K.4 drive is optimal when building high-capacity, low-power SFF solutions. The first drive to support a 2M-hour mean time between failures (MTBF), it has an annualized failure rate (AFR) of 0.44 percent—a 20 percent improvement over previous generations. A head ramp load/unload feature moves arms and heads away from media for improved device handling.

The Savvio 10K.4 drive supports 6Gb/s SAS, with dual-port communications to improve interface reliability, speed, data integrity and system scalability. It is the first 10K-RPM, 2.5-inch hard drive to offer Fibre Channel interface support (4Gb/s FC).

### Optimize ROI With Low Power and Data Security

Using 50 percent less power than a 3.5-inch 15K drive, the Savvio 10K.4 drive is energy efficient. The PowerChoice™ feature for T10-compliant power management lets customers tailor systems to user-defined performance and power consumption goals.

The Savvio 10K.4 drive also offers options for improved data integrity and data-at-rest security. Protection Information (PI) detects corruption of data in flight between the host system and the drive.<sup>1</sup> TCG-compliant Self-Encrypting Drive (SED) and FIPS Self-Encrypting Drive options secure data at rest—reducing end-user drive retirement costs while lowering the risk of unauthorized data breaches throughout the device's lifecycle.<sup>2</sup>

For added physical security and more stringent regulatory compliance needs, the FIPS SED model is FIPS 140-2 Validated™ for use with sensitive but unclassified or protected (A or B) class data. These Seagate Secure™ models help OEMs and system builders gain competitive advantage, differentiate solutions (with strong data security), sell to new customers (that require strong data security), and protect brand equity (and customer confidence).

<sup>1</sup> Protection Information (PI) feature requires PI-compliant host or controller support.

<sup>2</sup> Self-Encrypting Drive (SED) and FIPS Self-Encrypting Drive options require TCG-compliant host or controller support. Not available in all countries.

Specifications	600GB <sup>1</sup>	450GB <sup>1</sup>
<b>Model Number</b>	ST9600104SS <sup>2</sup> ST9600004SS <sup>2</sup> ST9600204SS ST9600204FC <sup>4</sup>	ST9450304SS <sup>2</sup> ST9450204SS <sup>2</sup> ST9450404SS ST9450404FC <sup>4</sup>
<b>Capacity</b>		
Formatted 512 Bytes/Sector (GB)	600	450
External Transfer Rate (MB/s)	600	600
6Gb/s Serial Attached SCSI		
<b>Performance</b>		
Spindle Speed (RPM)	10K	10K
Average Latency (ms)	3.0	3.0
Seek Time		
Average Read/Write (ms)	3.89/4.54	4.08/4.65
Sustained Transfer Rate		
Outer to Inner Diameter (MB/s)	141 to 75	141 to 75
Cache, Multisegmented (MB)	16	16
<b>Configuration/Reliability</b>		
Disks	3	3
Heads	6	6
Nonrecoverable Read Errors per Bits Read	1 sector per 10E16	1 sector per 10E16
Annualized Failure Rate (AFR)	0.44%	0.44%
<b>Power Management</b>		
Typical Op (amps) +12V/+5V	0.51/0.44	0.53/0.46
Power Idle (watts)	4.6	4.6
<b>Environmental</b>		
Temperature, Operating (°C)	5 to 55	5 to 55
Temperature, Nonoperating (°C)	-40 to 70	-40 to 70
Shock, Operating: 11ms (Gs)	40	40
Shock, Nonoperating: 2ms (Gs)	400	400
Acoustics Idle (bels—sound power)	3.0	3.0
Vibration, Operating: <400Hz (Gs)	0.5	0.5
Vibration, Nonoperating: <500Hz (Gs)	3.0	3.0
<b>Encryption</b>		
Self-Encrypting Drive option (SAS only) <sup>2</sup>	Yes	Yes
FIPS Self-Encrypting Drive option (SAS only) <sup>3</sup>	Yes	Yes
<b>Physical</b>		
Height (in/mm)	0.583/14.8	0.583/14.8
Width (in/mm)	2.75/70.0	2.75/70.0
Depth (in/mm)	3.945/100.2	3.945/100.2
Weight (lb/kg)	0.5/0.208	0.5/0.208

<sup>1</sup> One gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes when referring to hard drive capacity.

<sup>2</sup> Self-Encrypting Drive model. Requires TCG-compliant host or controller support. Not available in all countries.

<sup>3</sup> FIPS Self-Encrypting Drive model. Requires TCG-compliant host or controller support. Not available in all countries.

<sup>4</sup> Fibre Channel model specifications are available from the Savvio 10K.4 Fibre Channel Product Manual.

[www.seagate.com](http://www.seagate.com)

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