



Technology Paper

SmartAlign™ Technology for Advanced Format Hard Drives

Paving the way to a hassle-free adoption of the 4K sector standard

The Transition to Advanced Format

It's inevitable. All major hard drive companies have agreed to adopt a new sector size, known as *Advanced Format*, as the new standard defined and maintained by IDEMA (The International Disk Drive Equipment and Materials Association). The Advanced Format standard mandates that hard drive sector sizes migrate from the current 512 bytes to 4096 bytes, or 4K. This change will help the industry deliver higher capacity points along with improved error correction as a result of improvements in format efficiency. Hard drive companies have agreed that all new laptop and desktop hard drive platforms shipped after January 1, 2011, will be Advanced Format compatible.

Managing the Transition—Hard Drive Partition Alignment

While the transition to Advanced Format hard drives is good for customers and manufacturers alike, the transition requires knowledge on the topic of hard drive partition alignment. For example, Advanced Format hard drives use 4K sectors on the media, but still need to communicate to computers with legacy 512-byte sector logic. This is called *512-byte emulation* and requires that physical hard drive partitions be aligned to logical partitions used by the computer. When this does not happen, partitions are said to be *misaligned* and hard drive performance is negatively impacted.

A Hassle-Free Solution

Until now, the only solution to managing these misalignment conditions was to deploy software utilities to identify and realign partitions. This process requires extra time and process steps during hard drive integration.

Seagate® SmartAlign™ technology resolves Advanced Format misalignment conditions while preserving hard drive performance. Unlike other Advanced Format hard drives, Seagate drives with SmartAlign technology do not require time-consuming software utilities.

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For More Information

Read the Seagate FAQs, *Advanced Format 4K Sector Transition*, MB604.

Features and Benefits

- SmartAlign technology is a utility-free solution, saving time and extra steps in hard drive integration.
- SmartAlign technology maintains consistent hard drive performance, even when it encounters hard drive partition misalignment conditions.
- SmartAlign technology allows for a hassle-free adoption of 4K technology, an inevitable transition everyone will need to make.

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