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Version 2.7.0

Idea

Version 1 / 1

Sep 29, 2020 05:49

Versions

Note

Queried

Title of the idea

solid-state drive

Text describing the idea

A solid-state drive (SSD) is a solid-state storage device that uses integrated circuit assemblies as memory to store data persistently, typically using flash memory. It is also sometimes called a solid-state device or a solid-state disk[1] although SSDs lack the physical spinning disks and movable read-write heads used by the conventional electromechanical storage such as hard drives ("HDD") or floppy disks [2]

Publication date

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Inventor

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#1 US2019235785 A1

Apparatus, systems, and methods to reclaim storage associated with cached data

Abstract

Embodiments are directed towards apparatuses, methods, and systems associated with a storage reclamation manager that generates a command to reclaim storage locations to assist in management of a storage capacity of a primary storage device. In embodiments, the command is a trim command to inform the storage device of storage locations including invalid data. In embodiments, the command is generated during performance of operations associated with a write-back operation where a cache coupled with the processor stores a first portion of data and the primary storage device stores a corresponding second portion of data. In embodiments, the command is generated during or after a write-back operation of a third portion of data into the cache device. In embodiments, the command assists in redam...

Passage

"...SSD 900 includes any suitable solid-state memory device for storing, e.g., data associated with the write-back operations of FIGS. 3-5. In some embodiments, solid-state storage device 901 includes e.g., a NAND device, e.g. 3D TLC (triple-level per cell) or QLC (quad-level per cell) NAND device. In some embodiments, the SSD may include a RAM with, e.g., batteries as integrated power sources to retain data for a certain time after external power is lost. In various embodiments, hybrid drives or solid-state hybrid drives (SSHDs) that combine features of SSDs and hard disk drives (HDDs) in a unit may be contemplated. In embodiments, solid state memory device 901 of SSD 900 includes any suitable persistent memory, e.g., a write-in-place byte addressable non-volatile memory. In embodiments, SSD 900 includes any suitable memory that stores data by changing the electrical resistance of the memory cells. In embodiments, SSD 900 can also include a byte-addressable write-in-place three dimensional..."

Claim

1. An apparatus, comprising: a storage reclamation manager communicatively coupled with a cache that stores a first portion of data, and a primary storage device that stores a corresponding second portion of data, to during a write-back operation of a third portion of data into the cache, generate a command to the primary storage device to assist in reclamation of storage locations in which the second portion of data is stored, to assist in management of a storage capacity of the primary storage device. 2. The apparatus of claim 1, wherein the storage reclamation manager comprises a process...

Noise Background Related Similar

#2 US10430108 B2

Concurrent copying of first and second subsets of pages from media such as slc nand to media such as qlc or mic nand for completion of copying of data

Abstract

A determination is made that data has to be moved internally within a non-volatile memory from a plurality of pages of a first type of storage media to a page of a second type of storage media. A first subset of the plurality of pages is copied from the first type of storage media to the page of the second type of storage media. Concurrently with the copying of the first subset of the plurality of pages, a second subset of the plurality of pages is copied from the first type of storage media to the page of the second type of storage media. In response to completion of the copying of the first subset and the second subset of the plurality of pages, it is determined that the copying of the data from the first type of storage media to the second type of storage media has completed.

Passage

"...BACKGROUND A solid state drive (SSD) is a data storage device that uses integrated circuit assemblies as memory to store data persistently. SSDs have no moving mechanical components and this distinguishes SSDs from traditional electromechanical magnetic disks, such as, hard disk drives (HDDs) or floppy disks, which contain spinning disks and movable read/write heads. Compared to electromechanical disks, SSDs are typically more resistant to physical shock, run silently, have lower access time, and less latency. Many types of SSDs use NAND-based flash memory which comprises an electronic (solid state) non-volatile computer storage medium that can be electrically erased and reprogrammed. NAND-based flash memory stores information (i.e., data) in individual memory cells. In single-level cell (SLC) NAND flash technology, each memory cell may exist in one of two voltage states, storing one bit of information per memory cell. A multi-level cell (MLC) is a memory cell capable of storing more than..."

Claim

1. A method, comprising: determining that data has to be moved internally within a non-volatile memory from a plurality of pages of a first type of storage media to a page of a second type of storage media; copying a first subset of the plurality of pages from the first type of storage media to the page of the second type of storage media; concurrently with the copying of the first subset of the plurality of pages, copying a second subset of the plurality of pages from the first type of storage media to the page of the second type of storage media; and determining that the copying of the data ...

Stats

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4

SK hynix Inc.

96

2018

Value: 111

25

Solid Ssds Data

Cells

Optione

G06F3

G06F12

G06F11

G11C16

G06F2212

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