



US 20090327591A1

(19) **United States**

(12) **Patent Application Publication**
Moshayedi

(10) **Pub. No.: US 2009/0327591 A1**

(43) **Pub. Date: Dec. 31, 2009**

(54) **SLC-MLC COMBINATION FLASH STORAGE DEVICE**

Publication Classification

(75) **Inventor: Mark Moshayedi**, Newport Coast, CA (US)

- (51) **Int. Cl.**
G06F 12/00 (2006.01)
G06F 12/02 (2006.01)
- (52) **U.S. Cl.** 711/103; 711/E12.001; 711/E12.008
- (57) **ABSTRACT**

Correspondence Address:
MCDERMOTT WILL & EMERY LLP
18191 VON KARMAN AVE., SUITE 500
IRVINE, CA 92612-7108 (US)

Flash memory drives and related methods are disclosed that operate to keep frequently written data, which results in frequently erased blocks, in SLC flash, and relatively static data in MLC flash. A flash drive according to the present disclosure keeps track of the number of times that data for each logical block address (LBA) has been written to the flash memory, and determines whether to store newly received data associated with a particular LBA in SLC flash or in MLC flash depending on the number of writes that have occurred for that particular LBA. For each logical block sent to the flash drive, a comparison is made of the write count of the associated LBA to a threshold. If the write count is above the threshold, the logical block is written to SLC flash. If the write count is below the threshold, the logical block is written to MLC flash.

(73) **Assignee: STEC, INC.**, Santa Ana, CA (US)

(21) **Appl. No.: 12/492,113**

(22) **Filed: Jun. 25, 2009**

Related U.S. Application Data

(60) **Provisional application No. 61/075,709**, filed on Jun. 25, 2008.

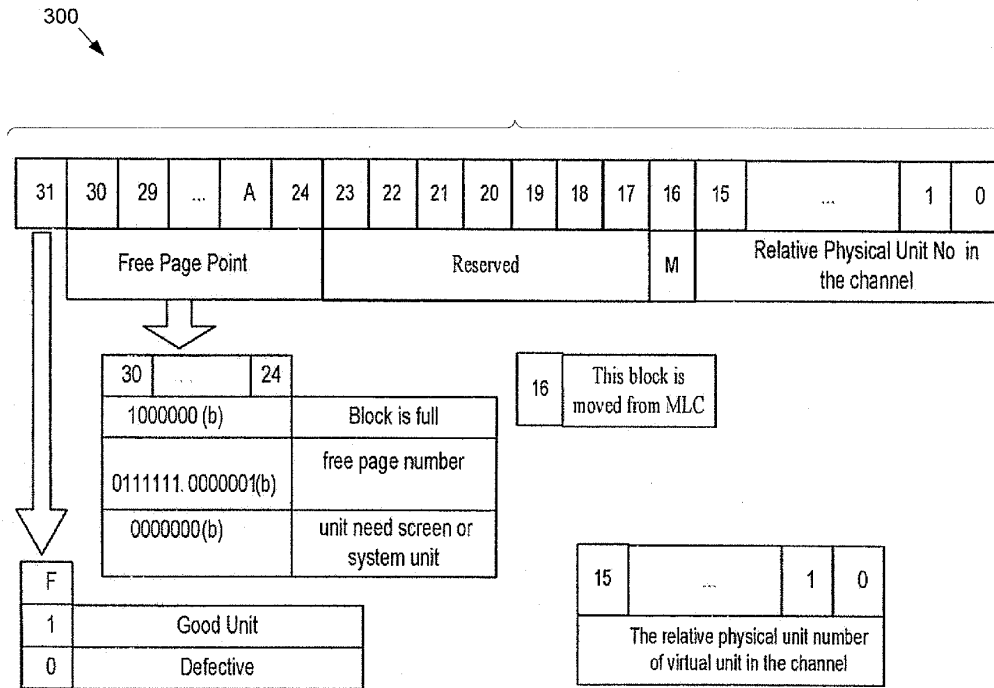


FIG. 1

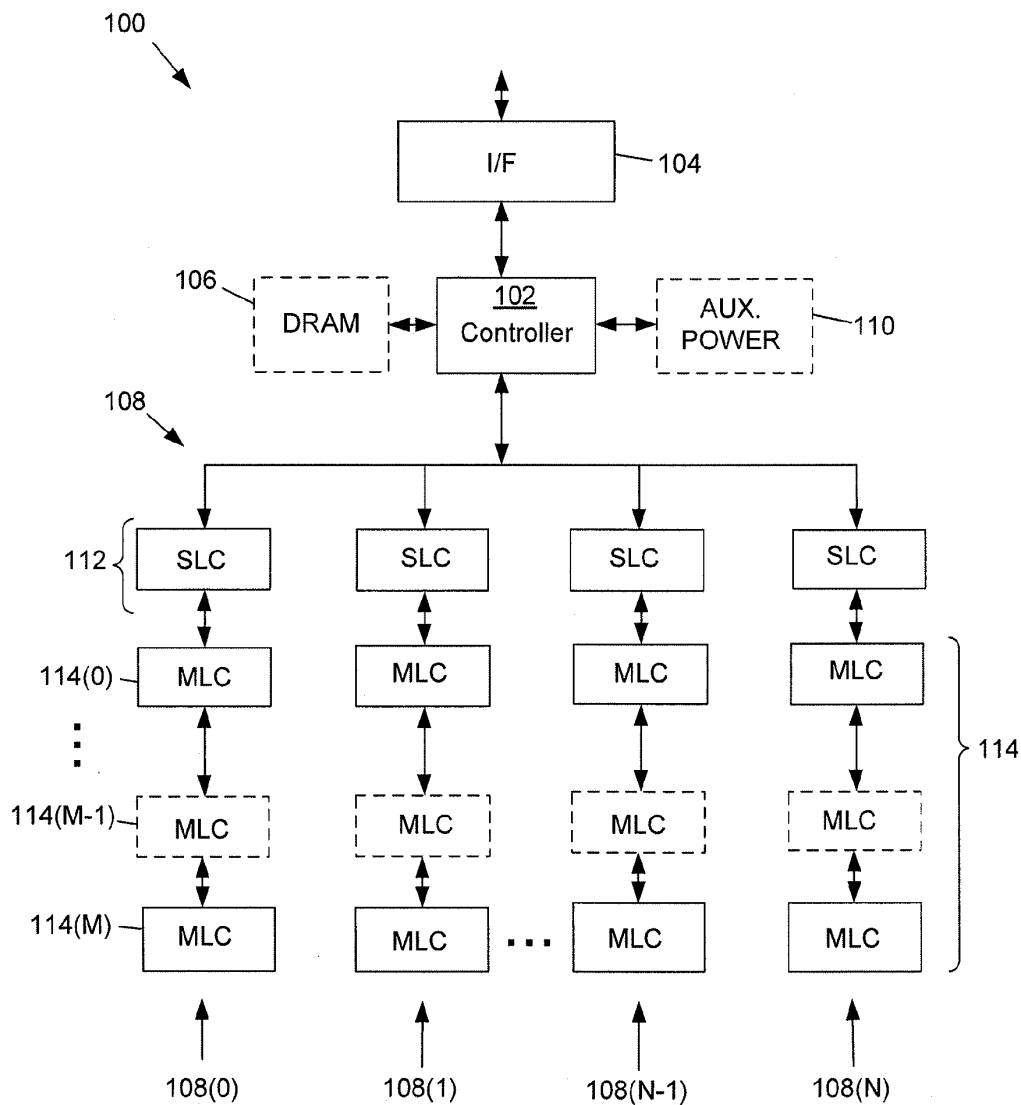


FIG. 2

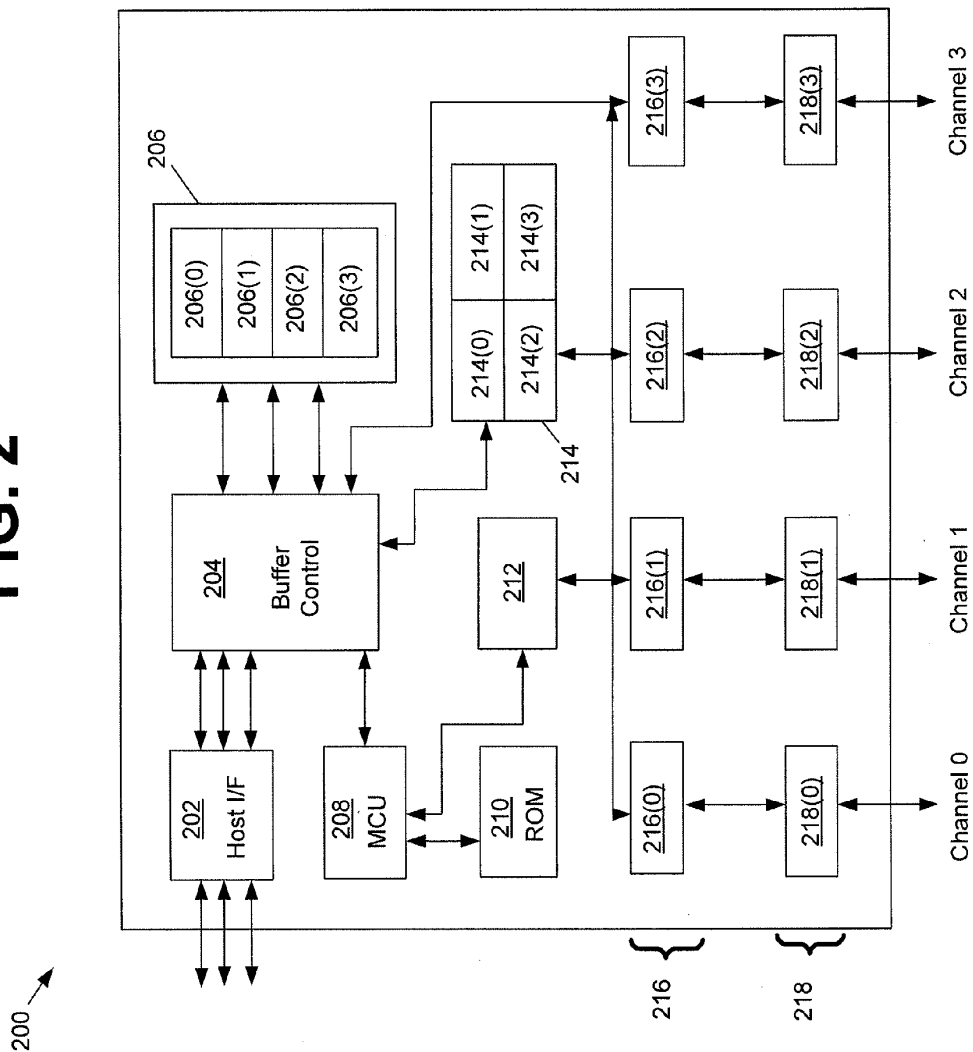


FIG. 3

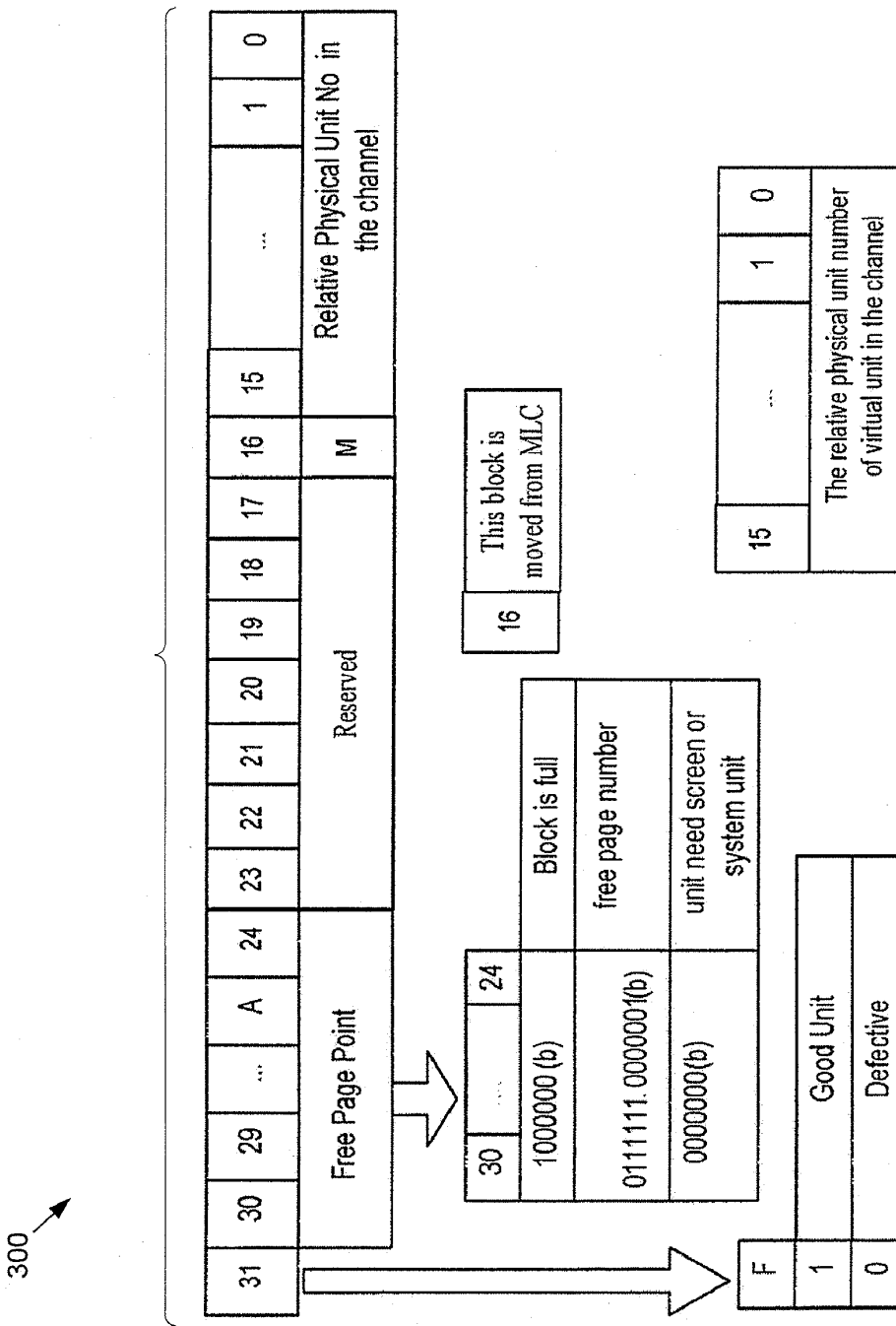
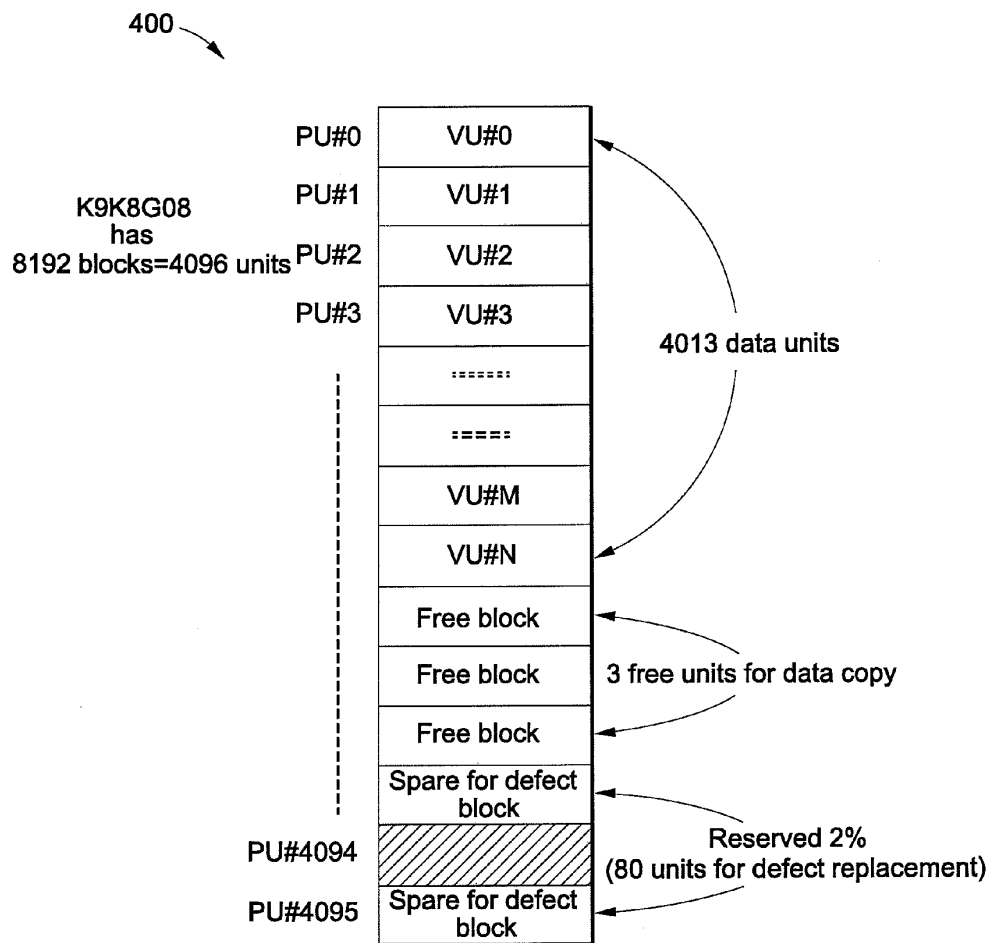


FIG. 4



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.