

(54) **RAID SYSTEMS DURING NON-FAULT AND FAULTY CONDITIONS ON A FIBER CHANNEL ARBITRATED LOOP, SCSI BUS OR SWITCH FABRIC CONFIGURATION**

6,055,228 A *	4/2000	DeKoning et al.	370/258
6,073,218 A *	6/2000	DcKoning et al.	711/150
6,131,148 A *	10/2000	West et al.	711/162
6,151,659 A *	11/2000	Solomon et al.	711/114
6,192,027 B1 *	2/2001	El-Batal	370/222
6,192,484 B1 *	2/2001	Asano	714/6

(75) Inventors: **Geoffrey J. Griffith**, Laurel; **Tomlinson G. Rauscher**, Ellicott City, both of MD (US)

* cited by examiner

Primary Examiner—David Hudspeth

Assistant Examiner—Fred F. Tzeng

(74) *Attorney, Agent, or Firm*—William S. Ramsey

(73) Assignee: **Digi-Data Corporation**, Jessup, MD (US)

(57) **ABSTRACT**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

The RAID system disclosed here uses arbitrated fiber channels or switch fabric to connect multiple host computers and storage array controllers (SAC). Each SAC is designated a primary SAC for an array of storage units, which it normally serves as controller, and as a secondary SAC for another array of storage units. A primary SAC, secondary SAC, and array of storage units is termed a storage unit set. When the primary SAC or associated host computer fails, the failure is detected by an interface chip, which causes the secondary SAC to assume the identify of the primary controller. Using system configuration information from the DASDs, the secondary SAC then controls the storage units of the storage unit set along with the storage units of which it is primary SAC. With this configuration, there is no need for switch apparatus between the storage arrays and there is no interference because dual ported storage units are used.

(21) Appl. No.: **09/376,324**

(22) Filed: **Aug. 18, 1999**

(51) **Int. Cl.**⁷ **G06F 12/00**

(52) **U.S. Cl.** **711/114; 711/150; 711/156; 711/162**

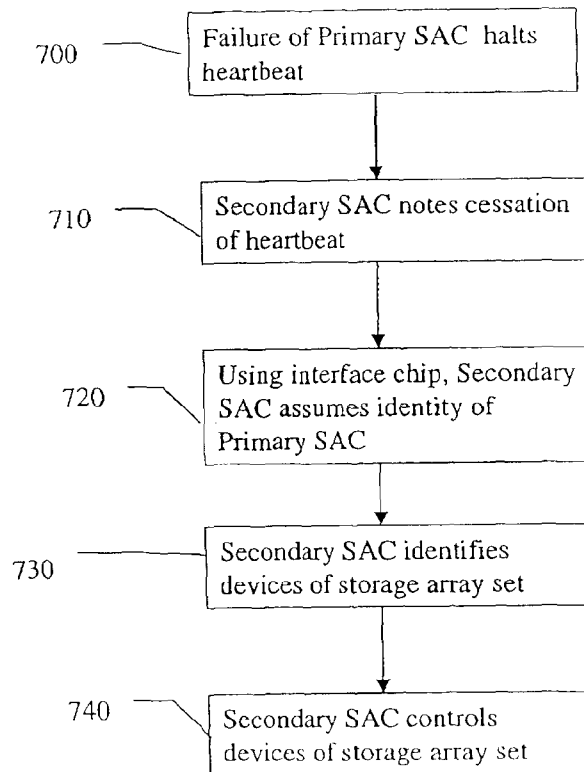
(58) **Field of Search** **711/114, 150, 711/156, 162, 163; 714/5, 6; 370/222, 258; 710/37**

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,006,342 A * 12/1999 Beardsley et al. 714/5

11 Claims, 6 Drawing Sheets



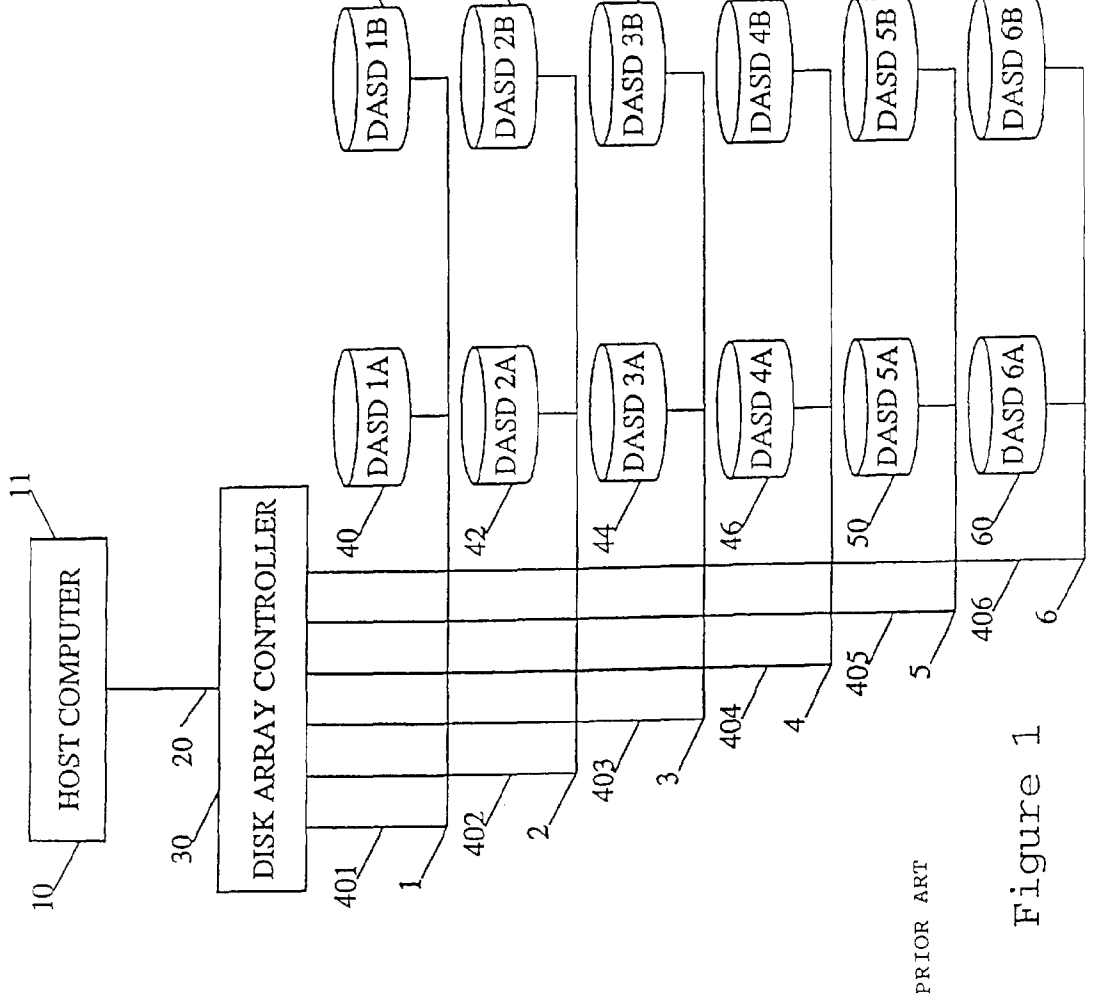
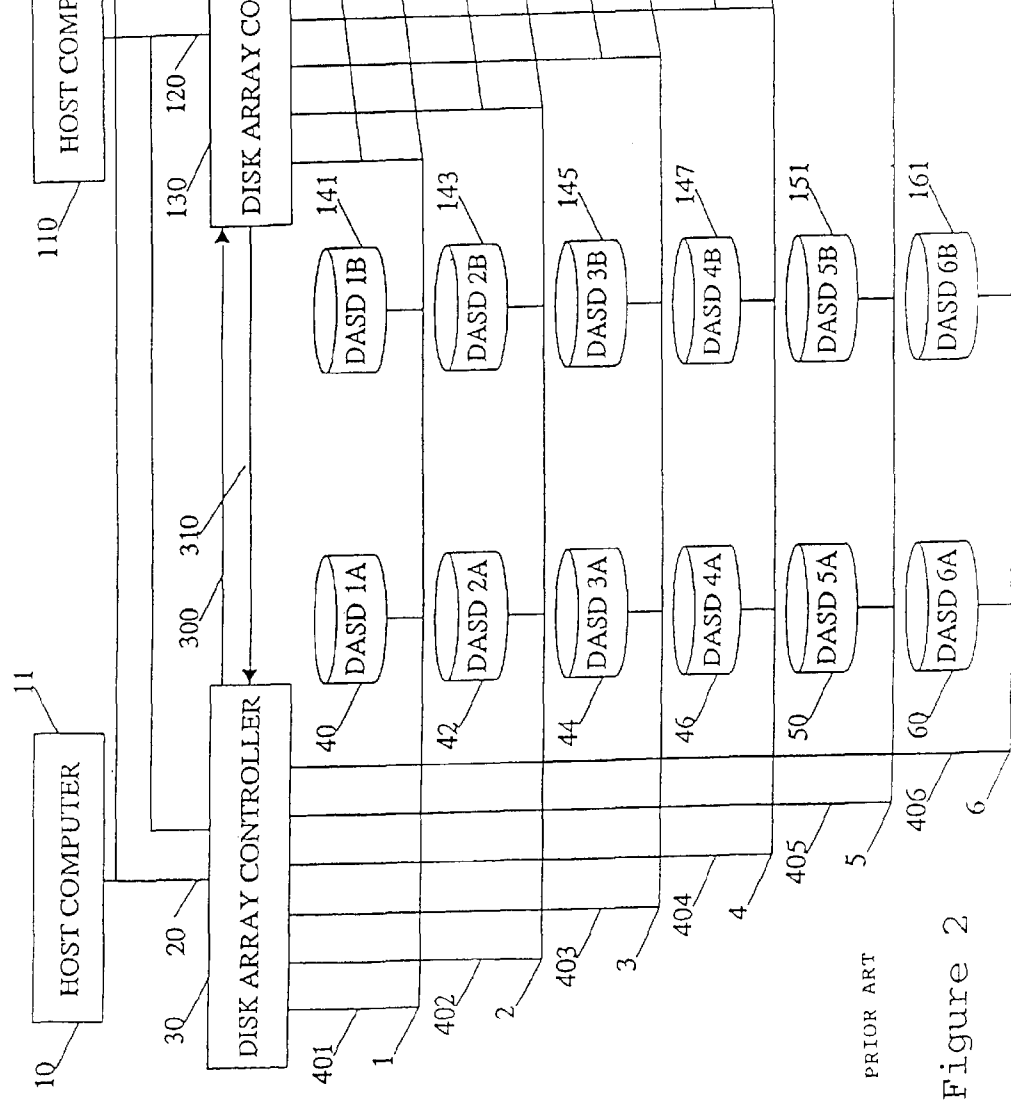


Figure 1



PRIOR ART

Figure 2

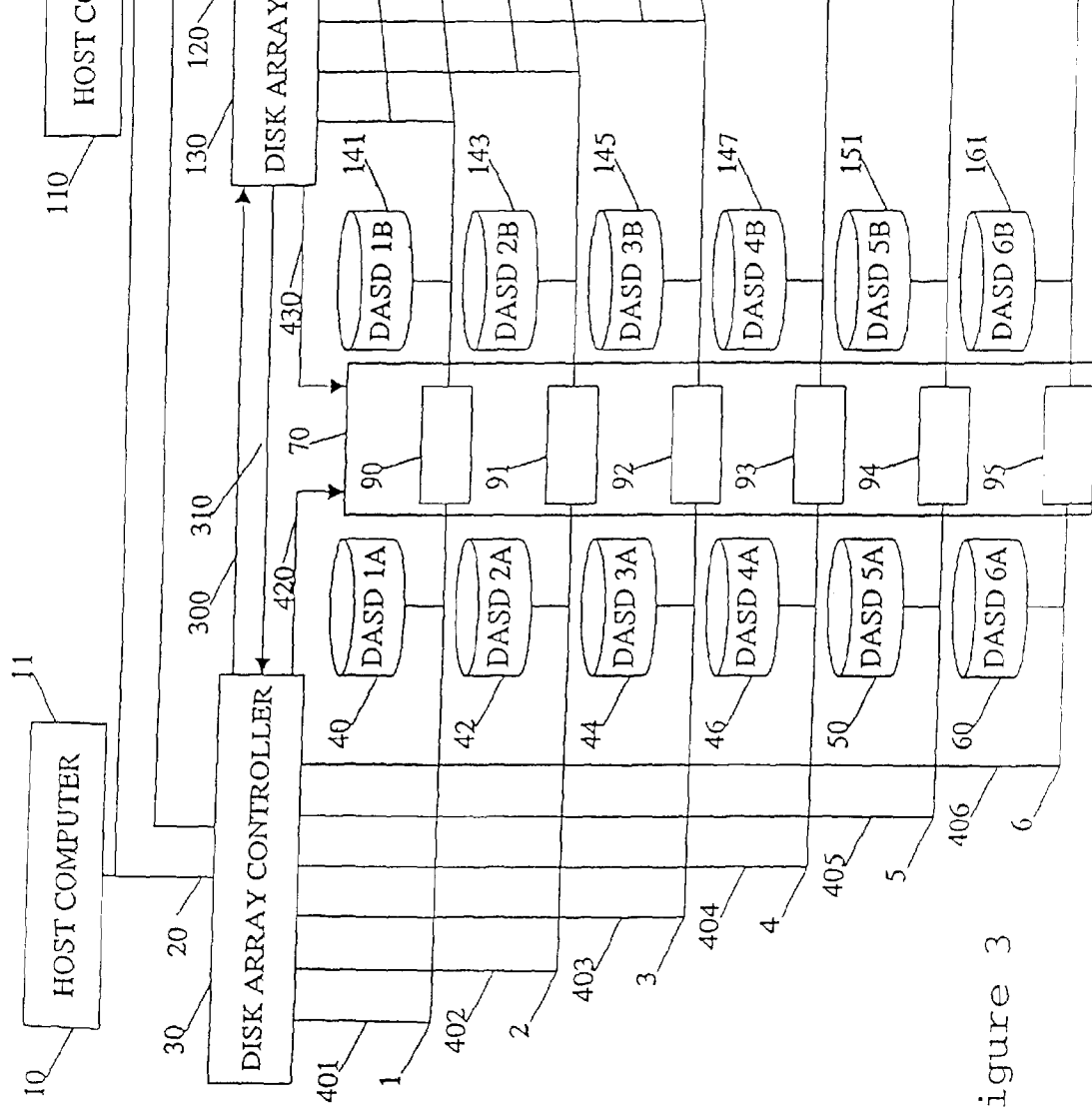


Figure 3

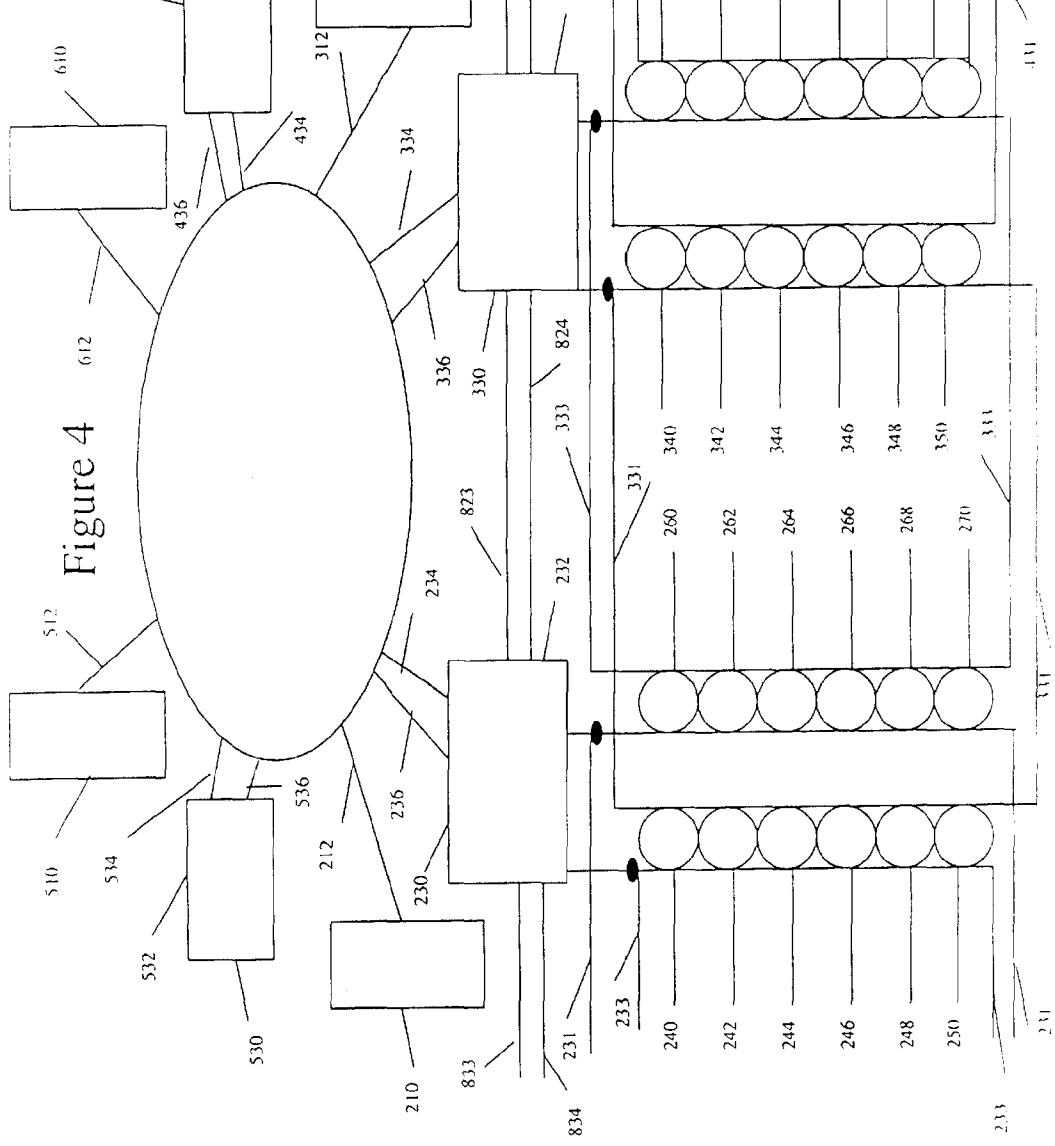


Figure 4 612

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.