

US007437362B1

(12) United States Patent Ben-Natan

(54) SYSTEM AND METHODS FOR NONINTRUSIVE DATABASE SECURITY

- (75) Inventor: Ron Ben-Natan, Lexington, MA (US)
- (73) Assignee: Guardium, Inc., Waltham, MA (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 337 days.
- (21) Appl. No.: 10/723,521
- (22) Filed: Nov. 26, 2003
- (51) Int. Cl. *G06F 7/00* (2006.01) (2006.01)
- *G06F 17/30* (2006.01) (52) U.S. Cl. 707/9: 70

See application file for complete search history.

(56) References Cited

DOCKE.

U.S. PATENT DOCUMENTS

4,451,916	A	5/1984	Casper et al
6,085,191	A *	7/2000	Fisher et al 707/9
6,205,475	B1	3/2001	Pitts 709/218
6,332,163	BI	12/2001	Bowman-Amuah 709/231
6,366,952	B2	4/2002	Pitts 709/217
6,505,241	B2	1/2003	Pitts 709/218
6,529,948	B1	3/2003	Bowman-Amuah 709/217
6,539,396	B1	3/2003	Bowman-Amuah 707/103 R
6,550,057	B1	4/2003	Bowman-Amuah 717/126
6,578,068	B1	6/2003	Bowman-Amuah 709/203
6,581,052	B1 *	6/2003	Slutz 707/2
6,601,192	B1	7/2003	Bowman-Amuah 714/38

(10) Patent No.: US 7,437,362 B1 (45) Date of Patent: Oct. 14, 2008

6,606,660	B1	8/2003	Bowman-Amuah 709/227
6,615,253	B1	9/2003	Bowman-Amuah 709/219
6,636,585	B2	10/2003	Salzberg et al
6,678,355	B2	1/2004	Eringis et al 379/22
6,820,082	B1*	11/2004	Cook et al 707/9
7,043,541	B1 *	5/2006	Bechtolsheim et al 709/223
2002/0078384	A1*	6/2002	Hippelainen 713/201

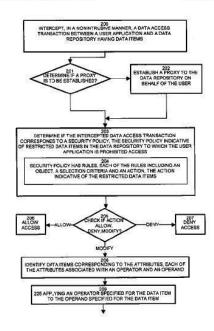
* cited by examiner

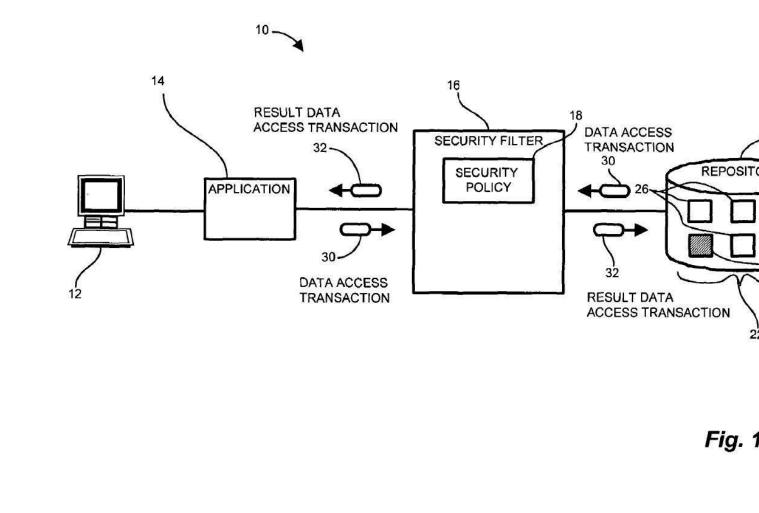
Primary Examiner—Etienne P LeRoux Assistant Examiner—Paul Kim (74) Attorney, Agent, or Firm—Chapin IP Law, LLC

(57) ABSTRACT

Typical conventional database security scheme mechanisms are integrated in either the application or database. Maintenance of the security scheme, therefore, such as changes and modifications, impose changes to the application and/or database. Configurations of the invention employ a security filter for intercepting database streams, such as data access transactions, between an application and the a data repository, such as a relational database. A security filter deployed between the application and database inspects the stream of transactions between the application and the database. The security filter, by nonintrusively interrogating the transactions, provides a content-aware capability for seamlessly and nondestructively enforcing data level security. A security policy, codifying security requirements for the users and table of the database, employs rules concerning restricted data items. The filter intercepts transactions and determines if the transaction triggers rules of the security policy. If the transactions contain restricted data items, the security filter modifies the transaction to eliminate the restricted data items.

42 Claims, 12 Drawing Sheets





Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

PALO ALTO NETWORKS Exhibit 1005 Page 2

Δ

DOCKET

A

R

Μ

DOCKET

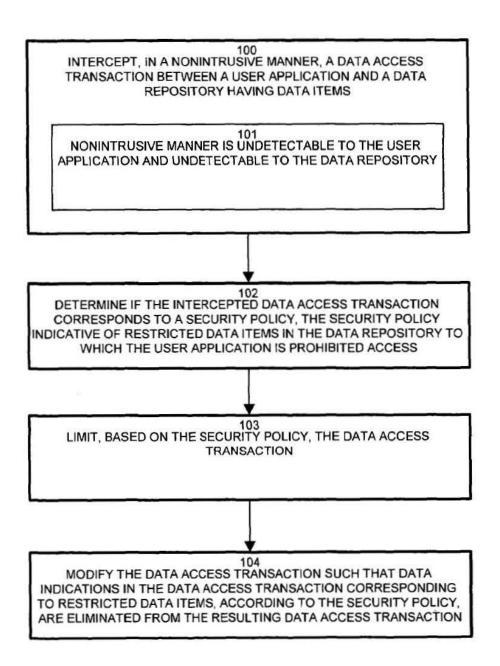
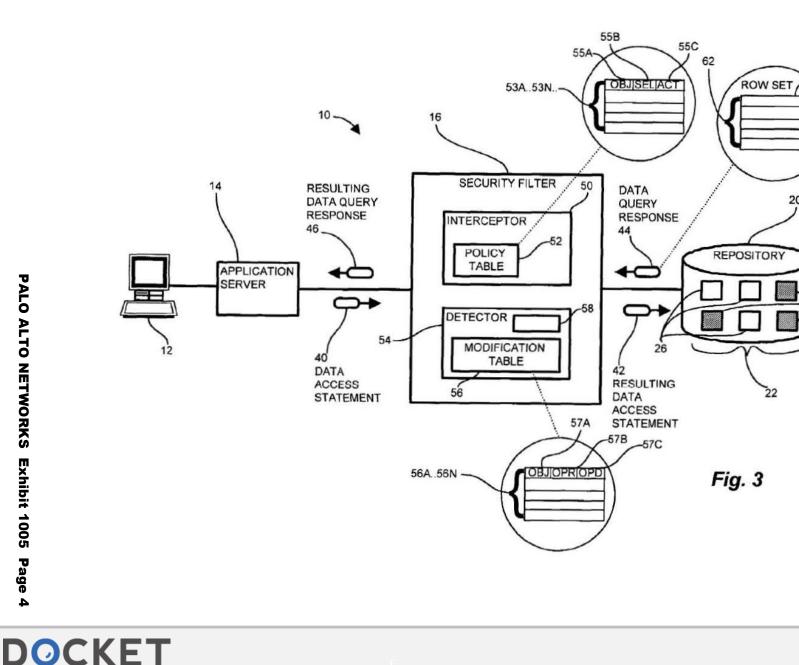


Fig. 2

A L A R M Find authenticated court documents without watermarks at <u>docketalarm.com</u>.



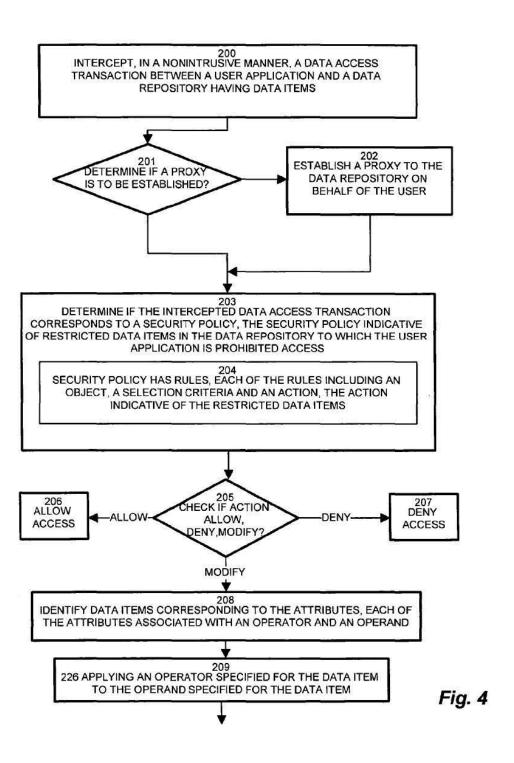
Α

RM

Α

Find authenticated court documents without watermarks at docketalarm.com.

DOCKET



A L A R M Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

DOCKET A L A R M



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.