US008468283B2

(12) **United States Patent**
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(10) **Patent No.: US 8,468,283 B2**
(45) **Date of Patent: Jun. 18, 2013**

(54) **ARBITER DIAGNOSTIC APPARATUS AND METHOD**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1651 days.

(21) Appl. No.: **11/445,064**

(22) Filed: **Jun. 1, 2006**

(65) **Prior Publication Data**

US 2007/0283066 A1 Dec. 6, 2007

(51) **Int. Cl.**

G06F 13/14	(2006.01)
G06F 13/364	(2006.01)
G06F 11/00	(2006.01)

(52) **U.S. Cl.**

USPC **710/241**; 710/113; 710/309; 714/48; 714/814

(58) **Field of Classification Search**

USPC 710/309, 113, 240, 241; 714/48–51, 714/746, 799, 814–815

See application file for complete search history.

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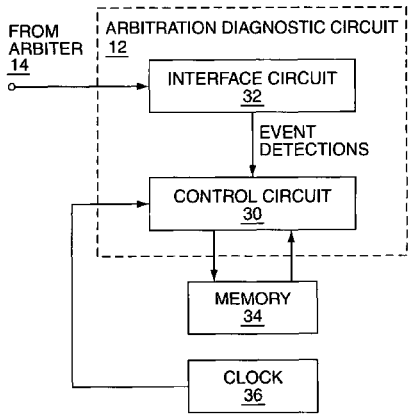
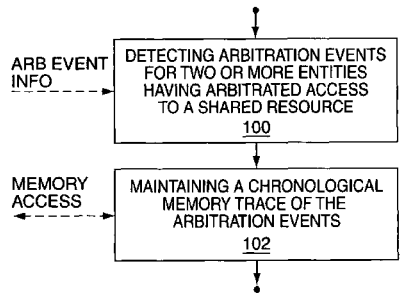
(57) **ABSTRACT**

An arbitration diagnostic circuit and method provide diagnostic information in arbitration-based systems and/or provide detection of and response to excessive arbitration delays. For example, in one embodiment, an arbitration diagnostic circuit maintains a chronological memory trace of arbitration events, including resource request events and corresponding resource grant events for two or more entities having arbitrated access to a shared resource. The trace, which may be regarded as a running, ordered list, may comprise time-stamped event identifiers, which aid the analysis of arbitration related errors or failures. Indeed, in one or more embodiments, an arbitration diagnostic circuit is configured to track elapsed times for resource requests, and to detect resource grant delay violations. Delay violations can be logged, along with the other arbitration state information, and the arbitration diagnostic circuit can be configured to freeze systems or sub-systems responsive to detecting delay violations and/or to capture various state information.

26 Claims, 5 Drawing Sheets