US008464092B1

(12) **United States Patent**
Gentes et al.

(10) **Patent No.: US 8,464,092 B1**
(45) **Date of Patent: Jun. 11, 2013**

(54) **SYSTEM AND METHOD FOR MONITORING AN APPLICATION OR SERVICE GROUP WITHIN A CLUSTER AS A RESOURCE OF ANOTHER CLUSTER**

(75) Inventors: **James C. Gentes**, San Francisco, CA (US); **Anand Hariharan**, San Jose, CA (US); **Indira M. Uppuluri**, Los Altos, CA (US)

(73) Assignee: **Symantec Operating Corporation**, Mountain View, CA (US)

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

(21) Appl. No.: **13/476,156**

(22) Filed: **May 21, 2012**

Related U.S. Application Data

(63) Continuation of application No. 10/954,593, filed on Sep. 30, 2004, now Pat. No. 8,185,776.

(51) **Int. Cl.**
G06F 11/00 (2006.01)

(52) **U.S. Cl.**
USPC **714/4.11**; 714/5.1; 714/25; 714/38.1; 714/48; 709/245

(58) **Field of Classification Search**
USPC 714/5.1, 25, 38.1, 48; 709/245
See application file for complete search history.

(56) **References Cited**

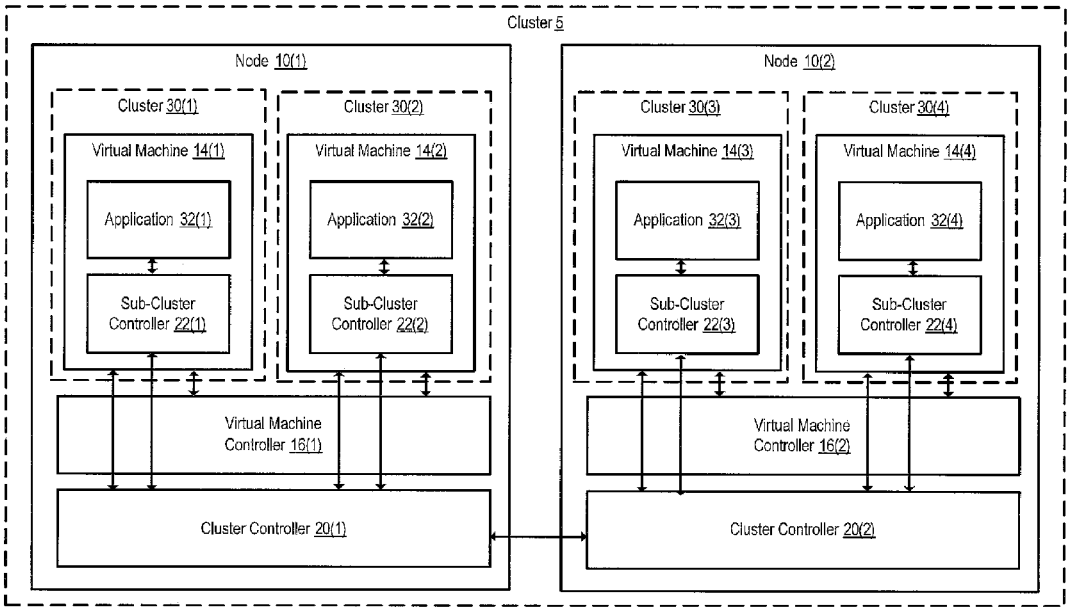
U.S. PATENT DOCUMENTS

5,524,212	A *	6/1996	Somani et al.	711/121
5,999,712	A *	12/1999	Moiin et al.	709/220
6,195,676	B1 *	2/2001	Spix et al.	718/107
6,393,485	B1 *	5/2002	Chao et al.	709/231
6,421,787	B1 *	7/2002	Slaughter et al.	714/4.1
6,438,705	B1 *	8/2002	Chao et al.	714/4.11
6,449,641	B1 *	9/2002	Moiin et al.	709/220
6,609,213	B1 *	8/2003	Nguyen et al.	714/4.12
2001/0054020	A1 *	12/2001	Barth et al.	705/37
2002/0023173	A1 *	2/2002	Jacobs et al.	709/245
2002/0154646	A1 *	10/2002	Dubois et al.	370/406
2003/0126240	A1 *	7/2003	Vosseler	709/221
2003/0159084	A1 *	8/2003	Murphy et al.	714/13
2003/0177411	A1 *	9/2003	Dinker et al.	714/13
2005/0108593	A1 *	5/2005	Purushothaman et al.	714/4

* cited by examiner

Primary Examiner — Joshua P Lottich
Assistant Examiner — Jeison C Arcos
(74) *Attorney, Agent, or Firm* — Campbell Stephenson LLP

(57) **ABSTRACT**

Various systems and methods for monitoring an application or service group within one cluster as a resource of another cluster are disclosed. In one embodiment, a method involves detecting an error indication generated by a first cluster (e.g., the error indication can be generated by a cluster controller or service group within the first cluster). The first cluster is implemented on a cluster resource (e.g., a virtual machine) of a second cluster. In response to detecting the error indication, restart of the cluster resource is initiated.

20 Claims, 6 Drawing Sheets