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Moberg et al.

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(54) **SYSTEM AND METHOD FOR ESTABLISHING PROCESSOR REDUNDANCY**

5,963,448 A * 10/1999 Flood et al. 364/187
6,023,507 A * 2/2000 Wookey 380/21
6,085,244 A * 7/2000 Wookey 709/224
6,118,768 A 9/2000 Bhatia et al. 370/254
6,263,452 B1 * 7/2001 Jewett et al. 714/9

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OTHER PUBLICATIONS

Jack Jenney, "Dual RSP—High System Availability SW Functional Spec", Oct. 6, 1995, Cisco Systems, Inc.

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* cited by examiner

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

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(21) Appl. No.: **09/205,577**

(57) **ABSTRACT**

(22) Filed: **Dec. 4, 1998**

(51) **Int. Cl.**⁷ **H02H 3/05**

The present invention relates to providing processor redundancy in a system such as a router. According to an embodiment of the present invention, in a system having two or more processors, initialization sequence is started. During the initialization sequence, a redundancy subsystem is initialized. The redundancy subsystem identifies the projects or assignments that are to be off loaded from the primary processor to the secondary processor. According to an embodiment of the present invention, the initialization sequence is then suspended and a discovery process is performed. During the discovery process, it is determined whether the processor running the initialization sequence is a primary or a secondary processor. If it is a secondary processor, then the initialization sequence remains suspended and the secondary processor monitors the health of the primary processor until a failure of the primary processor occurs. If a primary processor failure occurs, then the initialization process is resumed for the secondary processor, hence establishing the secondary processor as the new primary processor.

(52) **U.S. Cl.** **714/10; 712/20; 709/222**

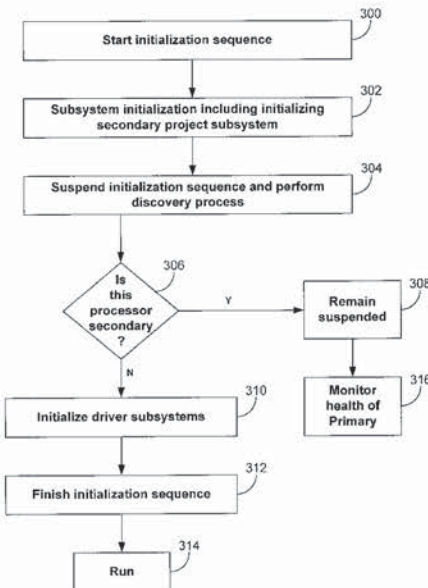
(58) **Field of Search** **714/10; 709/222, 709/238; 712/11, 14, 15, 20**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,823,256 A * 4/1989 Bishop et al. 714/10
5,089,958 A 2/1992 Horton et al. 395/575
5,136,498 A * 8/1992 McLaughlin et al. 364/184
5,157,663 A * 10/1992 Major et al. 371/9.1
5,455,932 A * 10/1995 Major et al. 395/489
5,473,599 A 12/1995 Li et al. 370/16
5,572,528 A * 11/1996 Shuen 370/402
5,590,724 A 1/1997 Verdgikovskiy 175/57
5,790,777 A * 8/1998 Izuta et al. 395/183.21
5,815,668 A 9/1998 Hashimoto 395/200.68
5,870,557 A 2/1999 Bellovin et al. 395/200.54
5,914,953 A 6/1999 Krause et al. 370/392
5,919,266 A * 7/1999 Sud et al. 714/13
5,928,332 A * 7/1999 Pierce 709/242

19 Claims, 8 Drawing Sheets



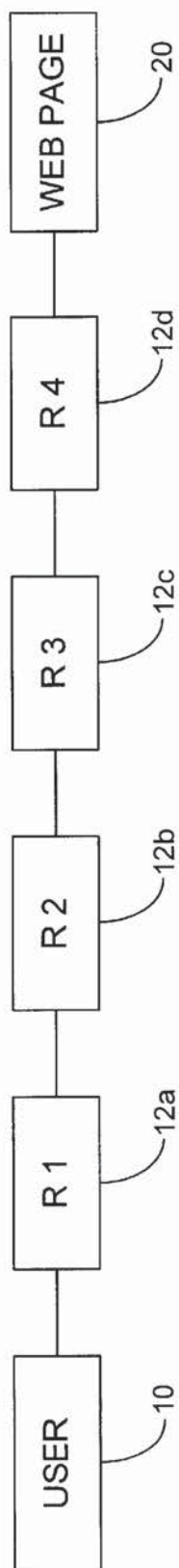


FIG. 1

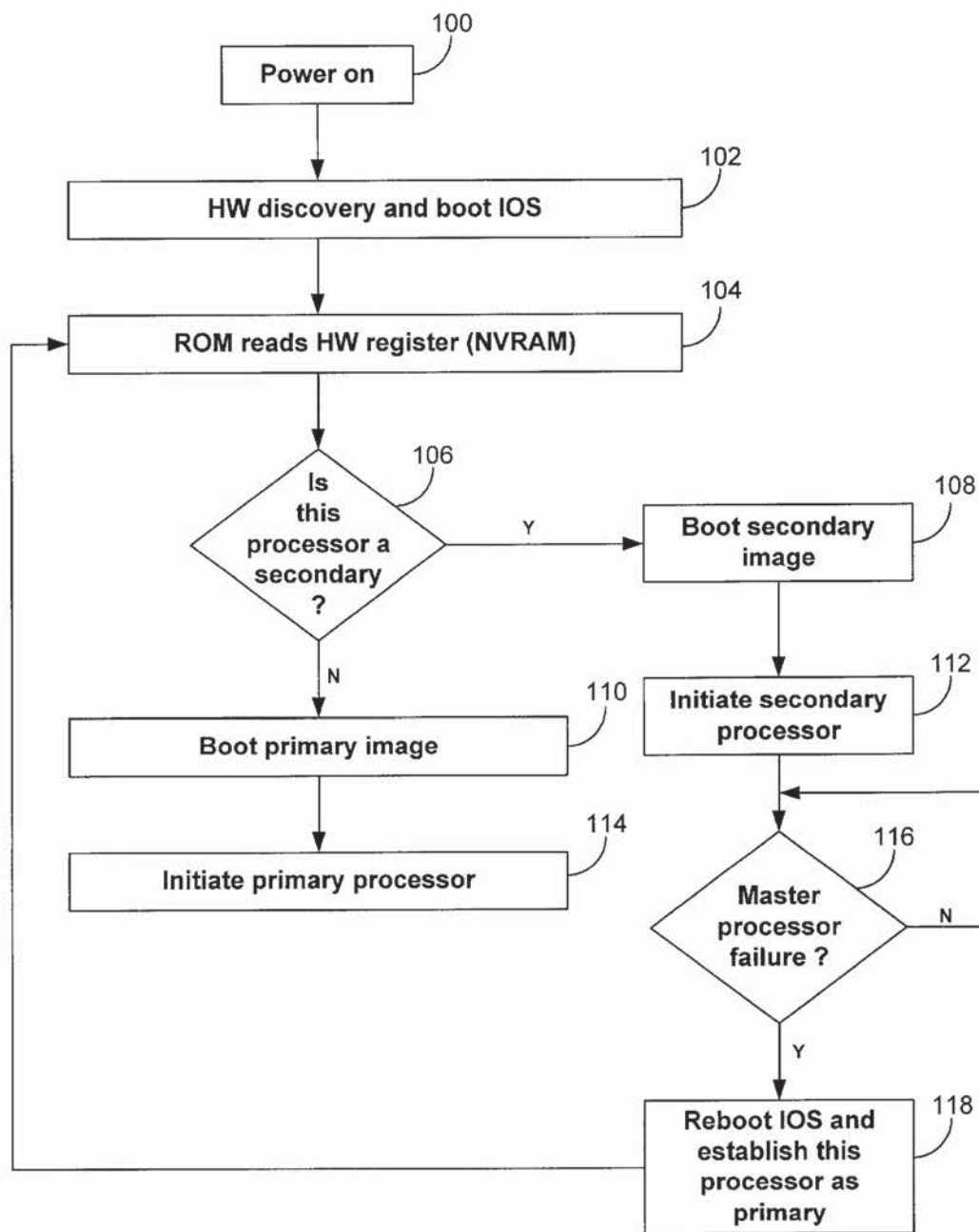


FIG. 2

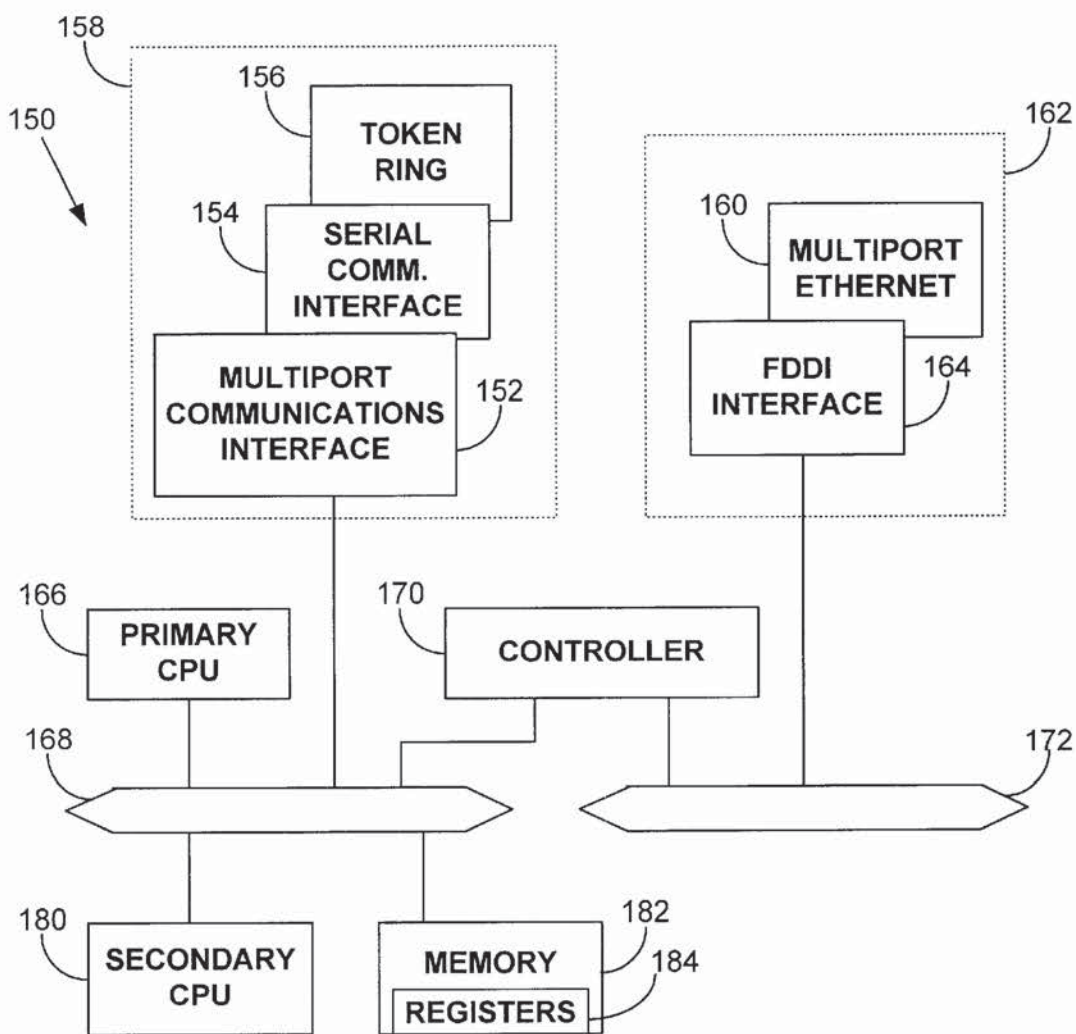


FIG. 3

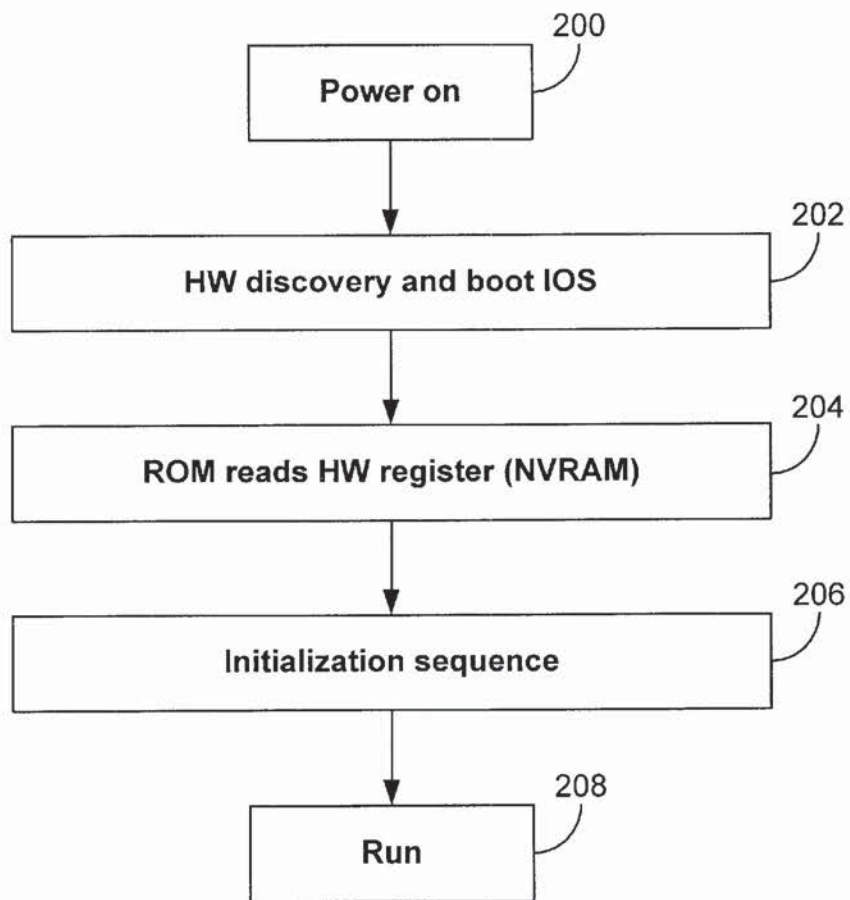


FIG. 4

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