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Glasco

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(54) **METHODS AND APPARATUS FOR SPECULATIVE PROBING WITH EARLY COMPLETION AND EARLY REQUEST**

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G06F 12/08 (2006.01)
G06F 12/16 (2006.01)

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(58) **Field of Classification Search** 711/141-146, 711/130, 147-149, 135-136, 119-122, 118, 711/117

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,195,089	A *	3/1993	Sindhu et al.	370/235
5,958,019	A	9/1999	Hagersten et al.	
6,067,603	A *	5/2000	Carpenter et al.	711/141
6,167,492	A	12/2000	Keller et al.	711/154
6,292,705	B1 *	9/2001	Wang et al.	700/5
6,338,122	B1 *	1/2002	Baumgartner et al.	711/141
6,374,331	B1 *	4/2002	Janakiraman et al.	711/141

6,385,705	B1	5/2002	Keller et al.	711/154
6,490,661	B1	12/2002	Keller et al.	711/150
6,615,319	B1 *	9/2003	Khare et al.	711/141
6,633,945	B1 *	10/2003	Fu et al.	710/316
6,754,782	B1 *	6/2004	Arimilli et al.	711/144
6,760,819	B1 *	7/2004	Dhong et al.	711/146
6,799,252	B1 *	9/2004	Bauman	711/149
6,839,808	B1 *	1/2005	Gruner et al.	711/130

OTHER PUBLICATIONS

HyperTransport™/O Link Specification Revision 1.03, HyperTransport™ Consortium, Oct. 10, 2001, Copyright © 2001 HyperTransport Technology Consortium.
U.S. Appl. No. 10/106,426, filed Mar. 22, 2002, Office Action mailed Nov. 21, 2005.
U.S. Appl. No. 10/145,438, filed May 13, 2002, Office Action mailed Nov. 21, 2005.
U.S. Appl. No. 10/145,439, filed May 13, 2002, Office Action mailed Nov. 21, 2005.

* cited by examiner

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(57) **ABSTRACT**

According to the present invention, methods and apparatus are provided for increasing the efficiency of data access in multiple processor, multiple cluster systems. A cache coherence controller associated with a first cluster of processors can determine whether speculative probing can be performed before forwarding a data access request to a second cluster. The cache coherence controller can also forward the data access request to the second cluster before receiving a probe response.

53 Claims, 15 Drawing Sheets

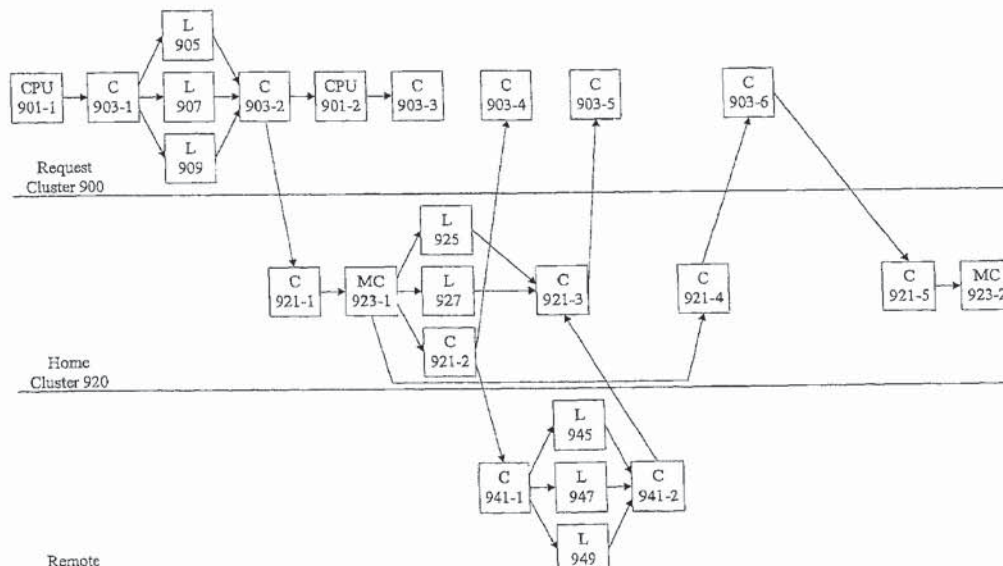


Figure 1A

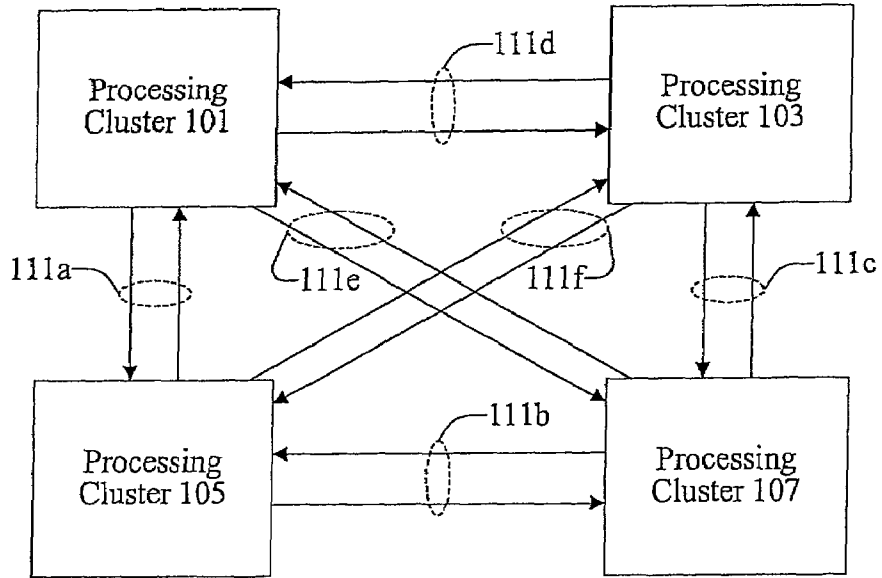


Figure 1B

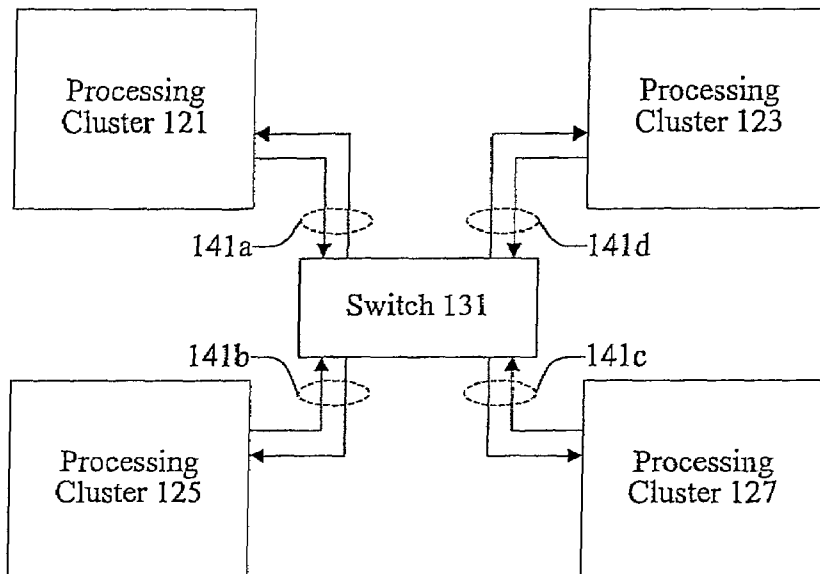


Figure 2

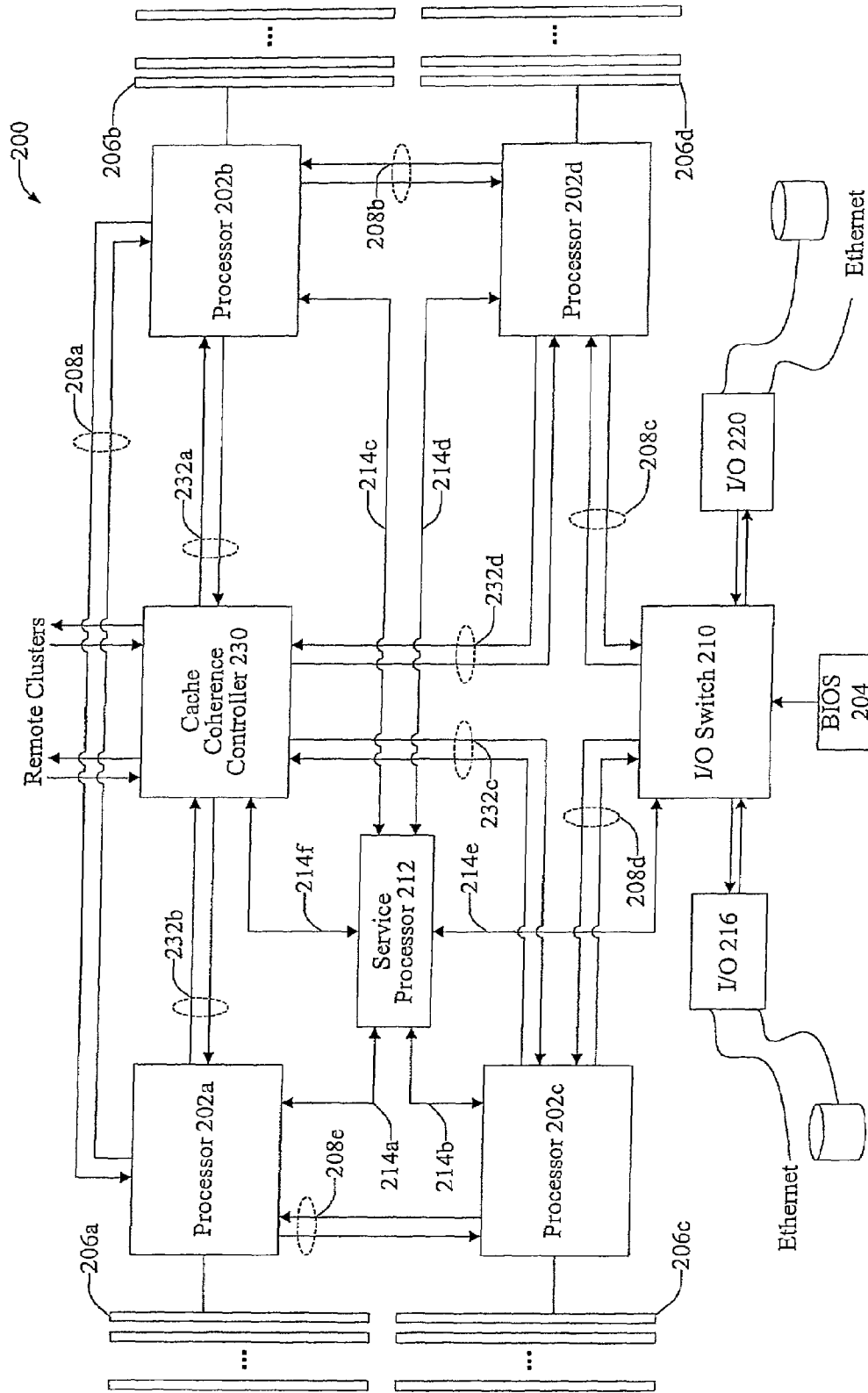


Figure 3

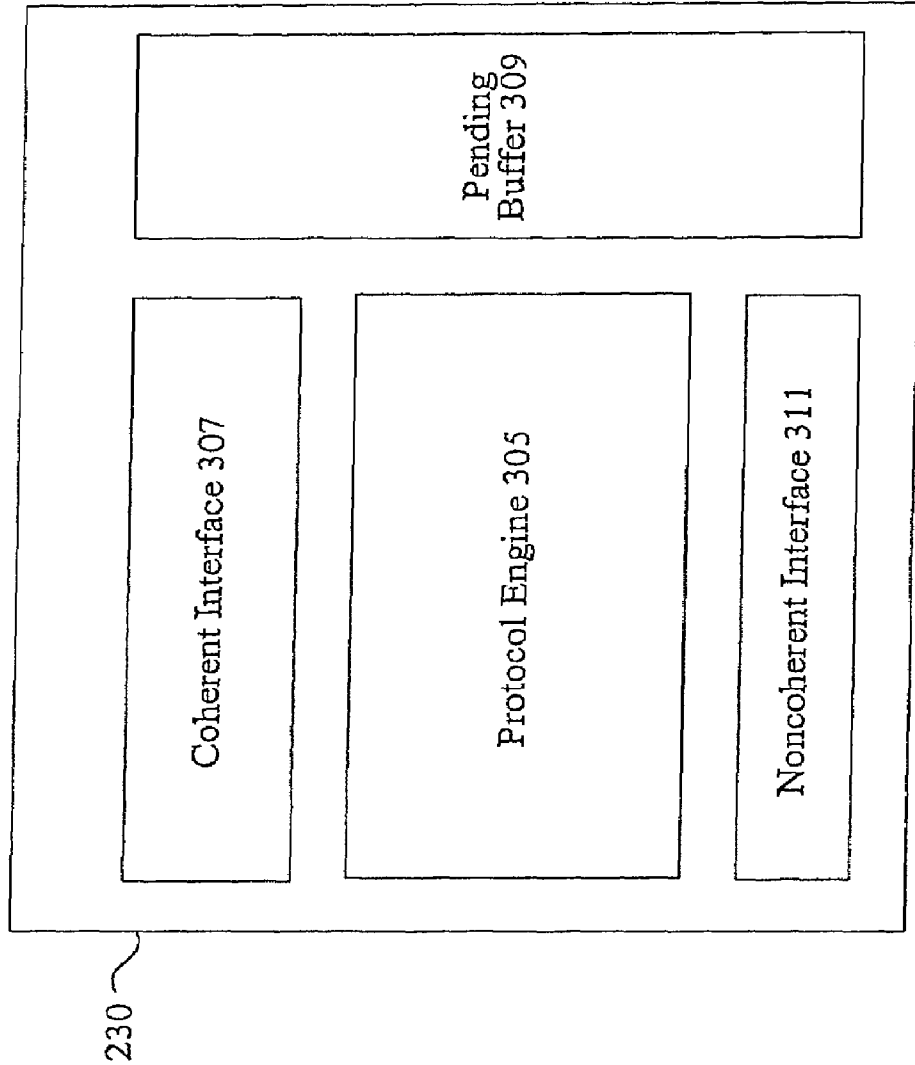
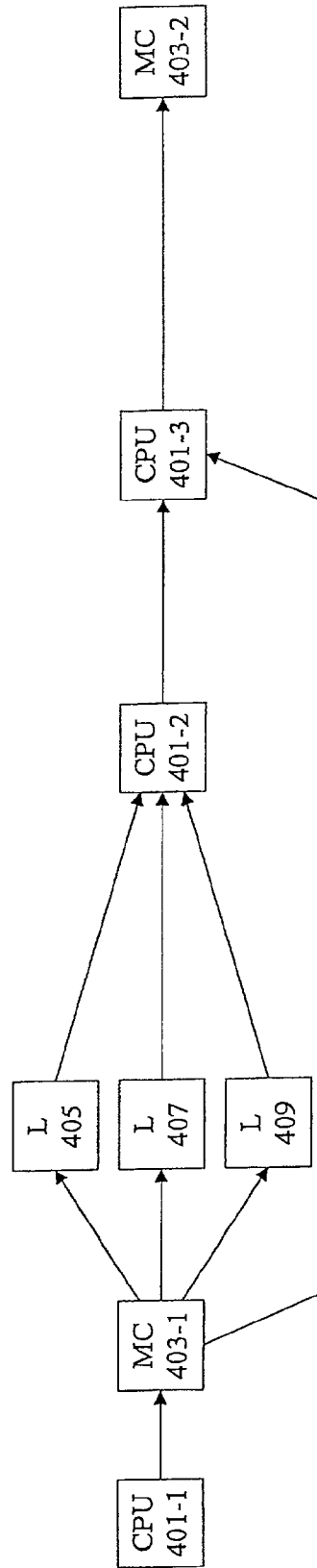


Figure 4



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