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**Glasco**

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(54) **METHODS AND APPARATUS FOR SPECULATIVE PROBING OF A REMOTE CLUSTER**

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(52) **U.S. Cl.** ..... **709/206; 709/216; 709/217; 711/141; 711/146**

(58) **Field of Classification Search** ..... **709/206–213, 709/216–218, 219; 711/141–146**  
See application file for complete search history.

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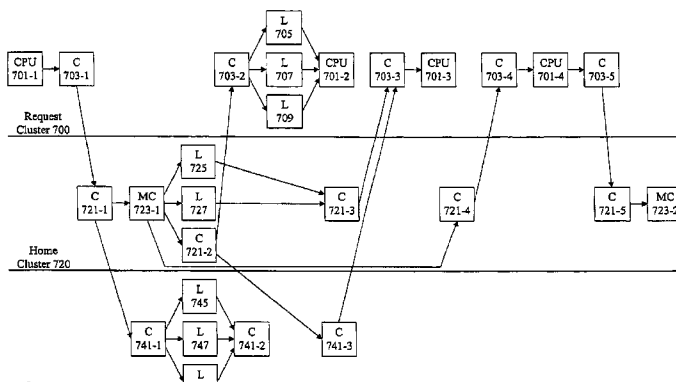
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(57) **ABSTRACT**

According to the present invention, methods and apparatus are provided for increasing the efficiency of data access in a multiple processor, multiple cluster system. Techniques are provided for speculatively probing a remote cluster from either a request cluster or a home cluster. A speculative probe associated with a particular memory line is transmitted to the remote cluster before the cache access request associated with the memory line is serialized at a home cluster. When a non-speculative probe is received at a remote cluster, the information associated with the response to the speculative probe is used to provide a response to the non-speculative probe.

**36 Claims, 15 Drawing Sheets**



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Figure 1A

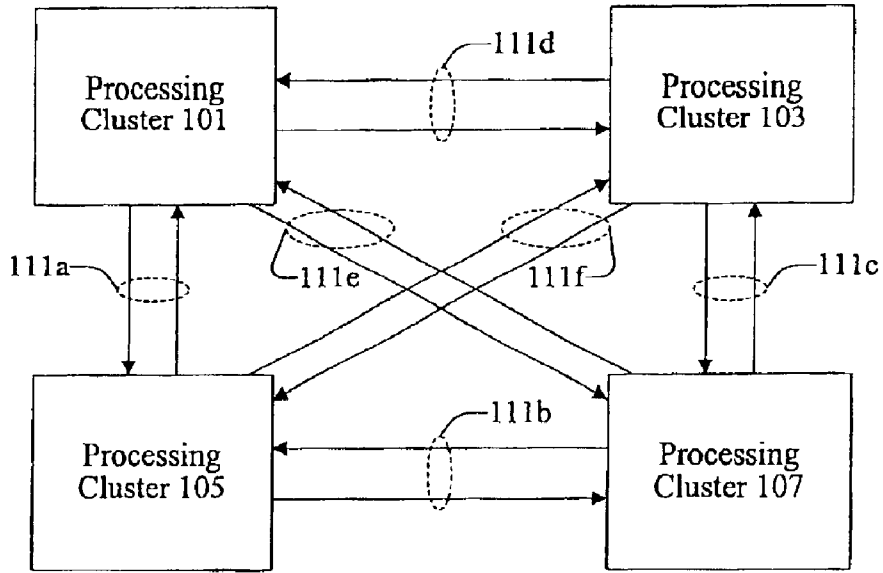
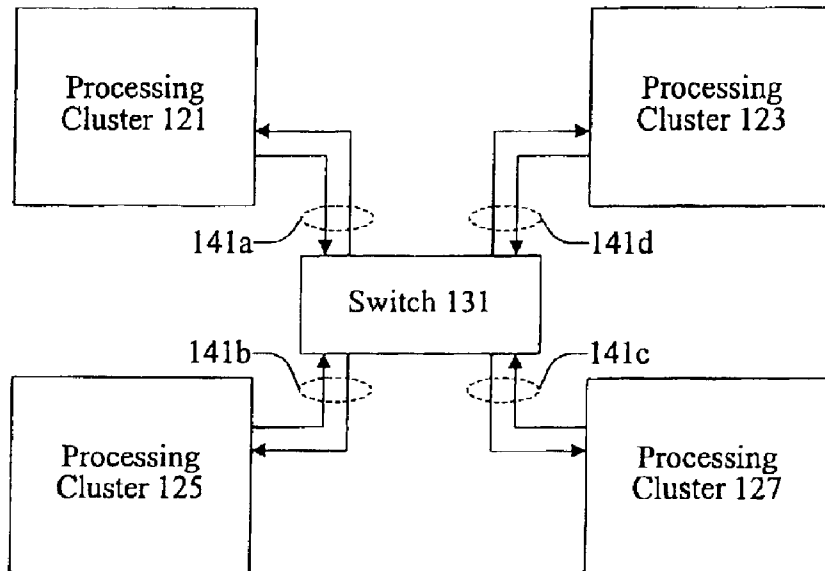


Figure 1B



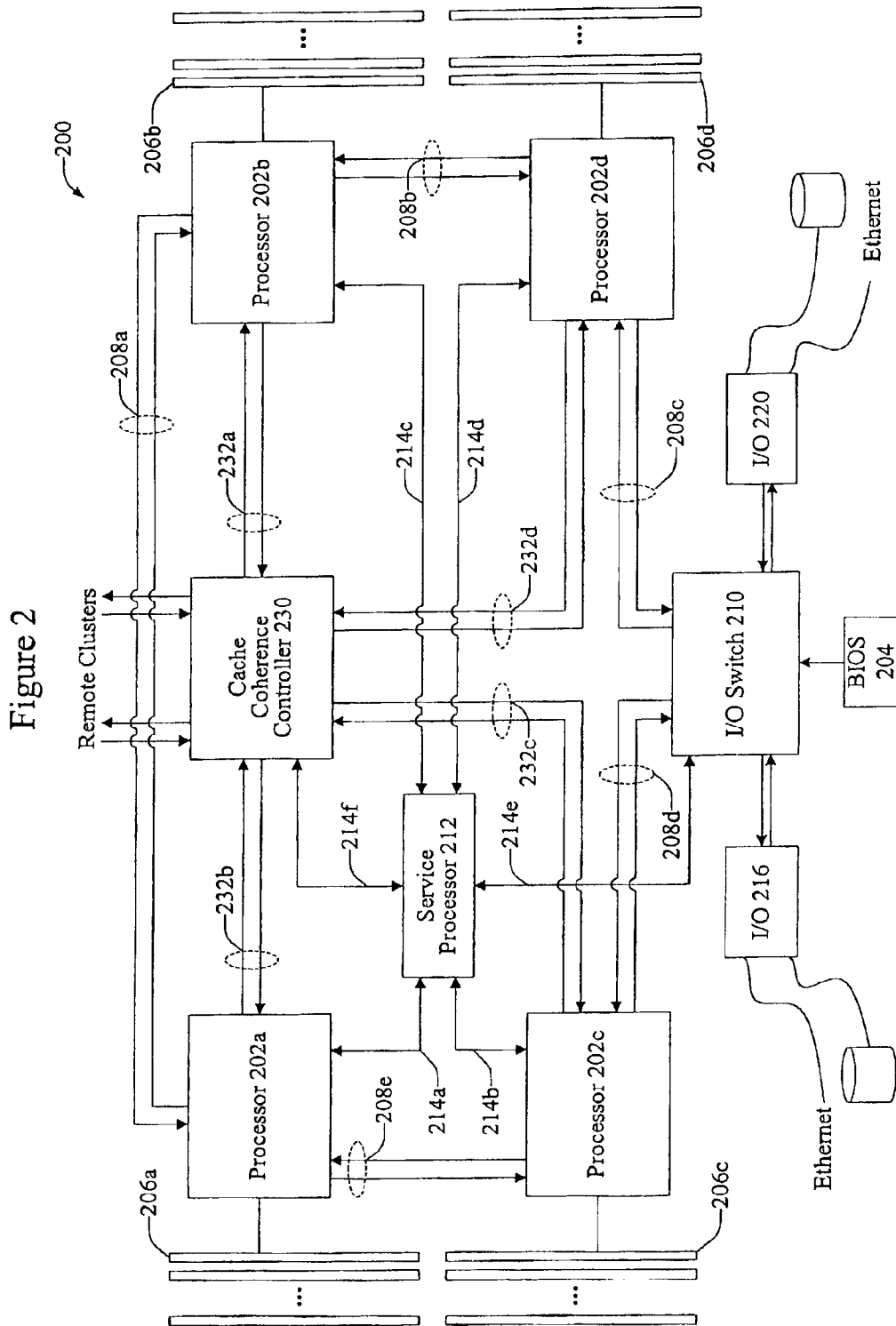
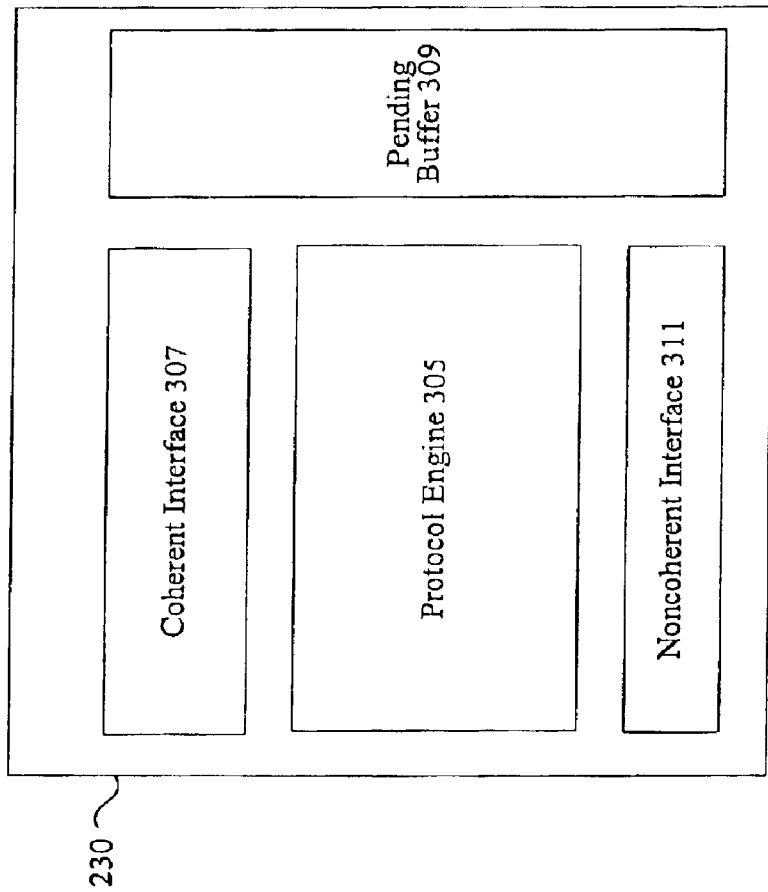


Figure 3



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