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Glasco

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(54) **METHODS AND APPARATUS FOR RESPONDING TO A REQUEST CLUSTER**

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This patent is subject to a terminal disclaimer.

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(58) **Field of Classification Search** 711/141, 711/144–147, 128
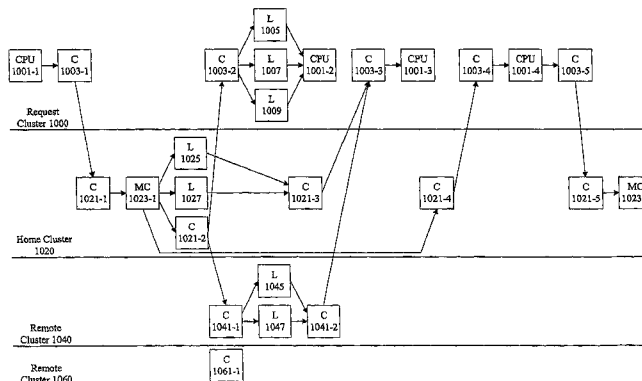See application file for complete search history.

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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. A home cluster of processors receives a cache access request from a request cluster. The home cluster includes mechanisms for instructing probed remote clusters to respond to the request cluster instead of to the home cluster. The home cluster can also include mechanisms for reducing the number of probes sent to remote clusters. Techniques are also included for providing the requesting cluster with information to determine the number of responses to be transmitted to the requesting cluster as a result of the reduction in the number of probes sent at the home cluster.

35 Claims, 15 Drawing Sheets

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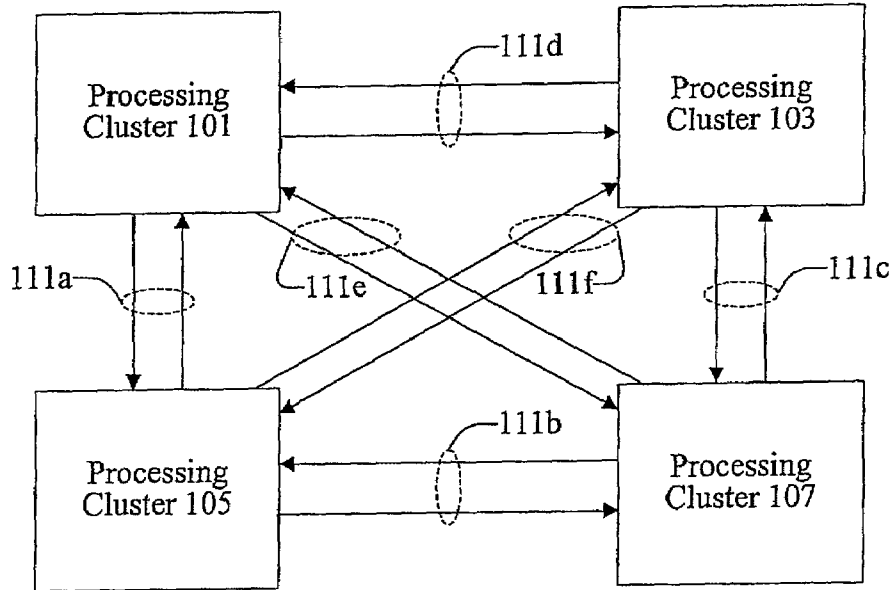
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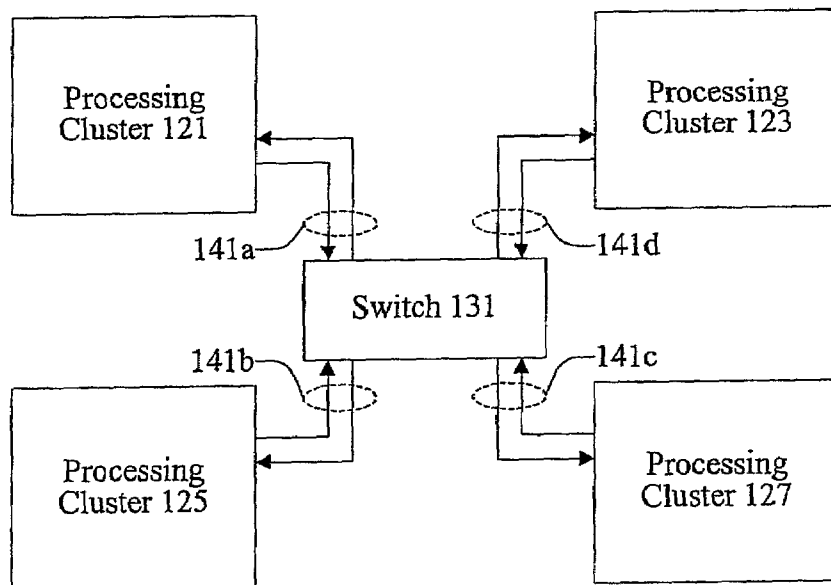
Figure 1A

Figure 1B

Figure 2

200

206b

Processor 202b

208a

208b

Processor 202d

206d

232a

214c

214d

Remote Clusters

Cache Coherence Controller 230

232d

I/O Switch 210

208c

BIOS 204

Ethernet

I/O 220

232b

214f

Service Processor 212

214e

232c

208d

I/O 216

Ethernet

206a

Processor 202a

208e

214a

214b

Processor 202c

206c

Figure 3

230

Coherent Interface 307

Protocol Engine 305
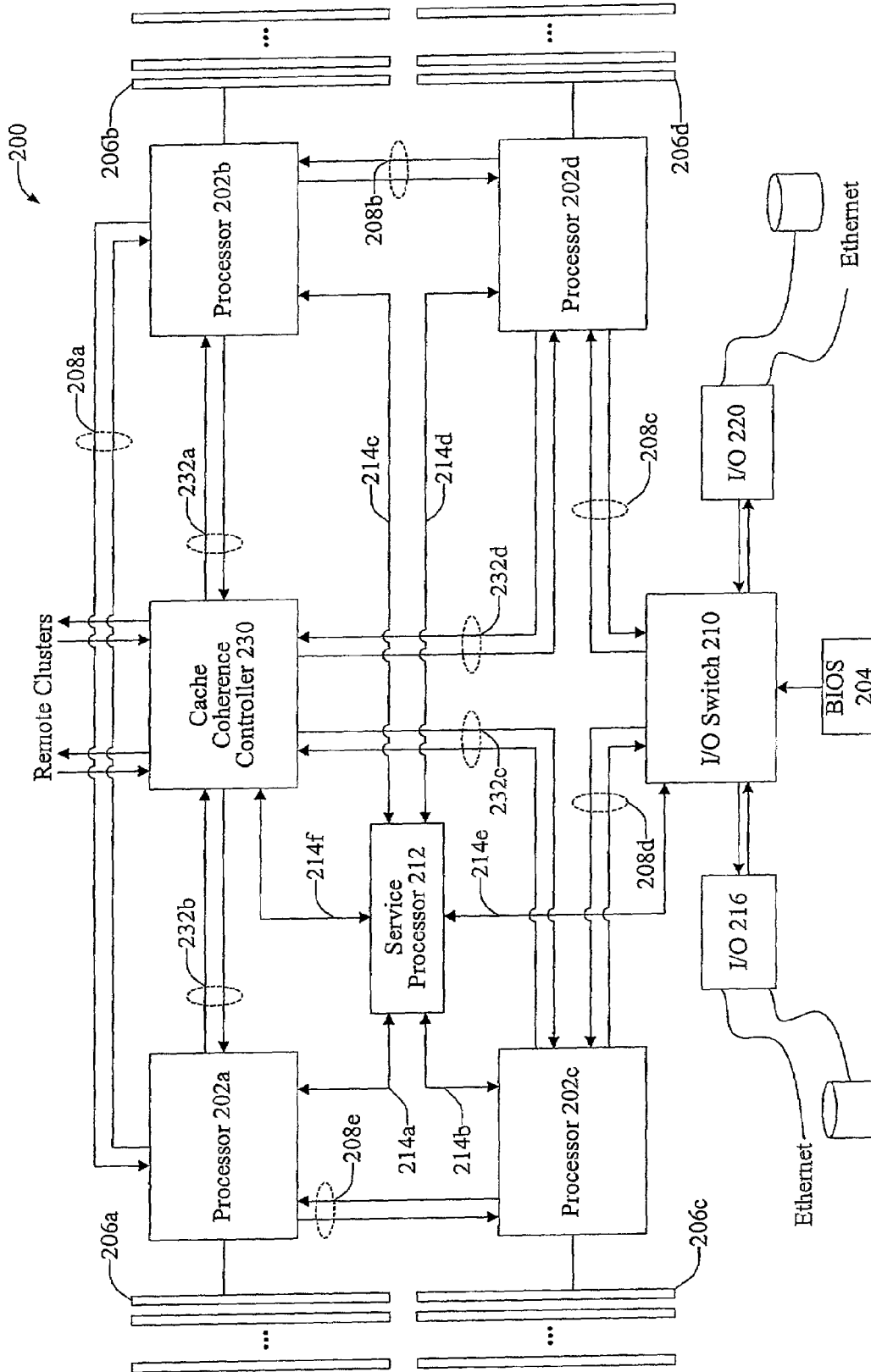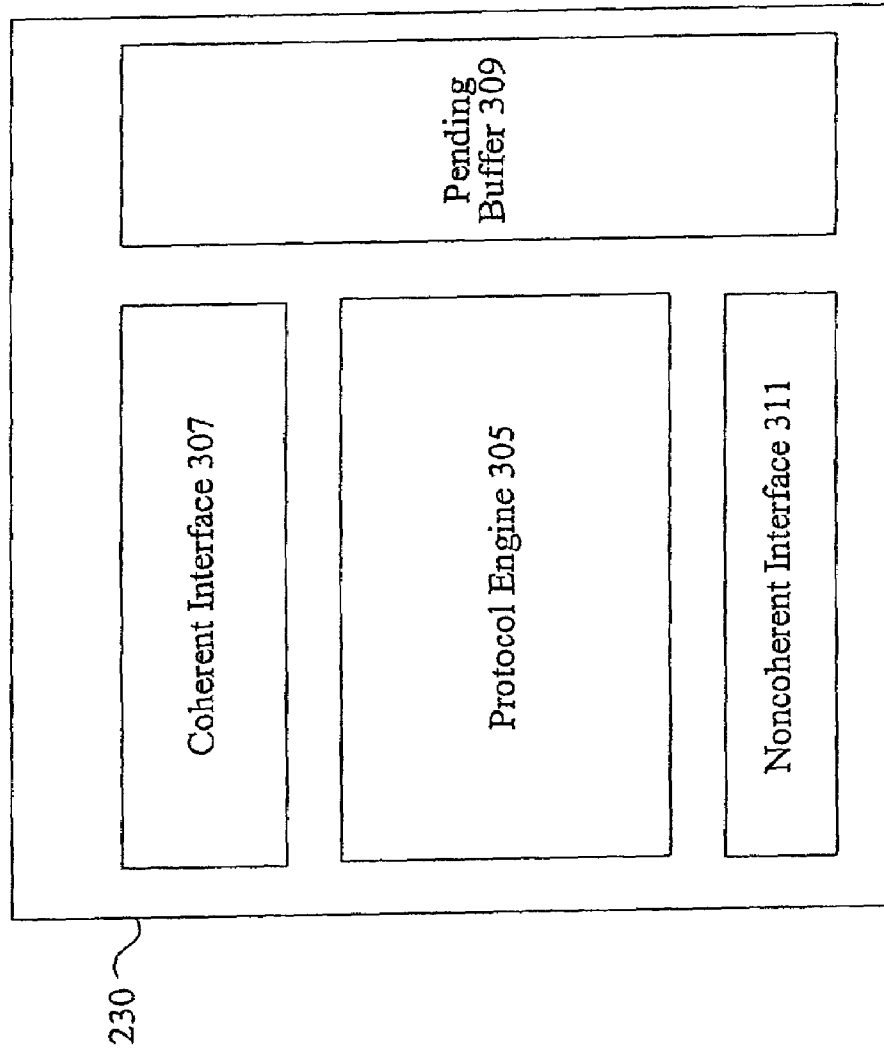
Noncoherent Interface 311

Pending Buffer 309

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