

[54] HIGH SPEED CACHE MANAGEMENT UNIT FOR USE IN A BRIDGE/ROUTER

5,802,278 9/1998 Isfeld et al. 395/200.79

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[57] ABSTRACT

A method and cache management for a bridge or bridge/router providing high-speed, flexible address cache management. The unit maintains a network address cache and an age table, searches the cache for layer 2 and layer 3 addresses from received frame headers, and returns address search results. The unit includes an interface permitting processor manipulation of the cache and age table, and supports a 4-way set associative cache to store the network addresses. A plurality of functions implemented in hardware enables software manipulation of the associated cache. Four cache operating modes are selectable. The unit can identify and select destination ports within a Load Balanced Port Group for frame forwarding. The unit utilizes Virtual LAN identification in conjunction with a MAC address for lookup in the cache. A cyclic redundancy code for each address to be looked up in the cache is used as an index into the cache. If a cache thrash rate exceeds a predetermined threshold, CRC table values can be rewritten. Four time-sliced cache lookup units are provided, each consisting of a cache lookup controller for comparing a received network address to an address retrieved from an identified cache set.

[73] Assignee: 3Com Corporation, Santa Clara, Calif.

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[22] Filed: Sep. 11, 1997

[51] Int. Cl. 6 H03M 13/00

[52] U.S. Cl. 714/758; 370/392; 370/401

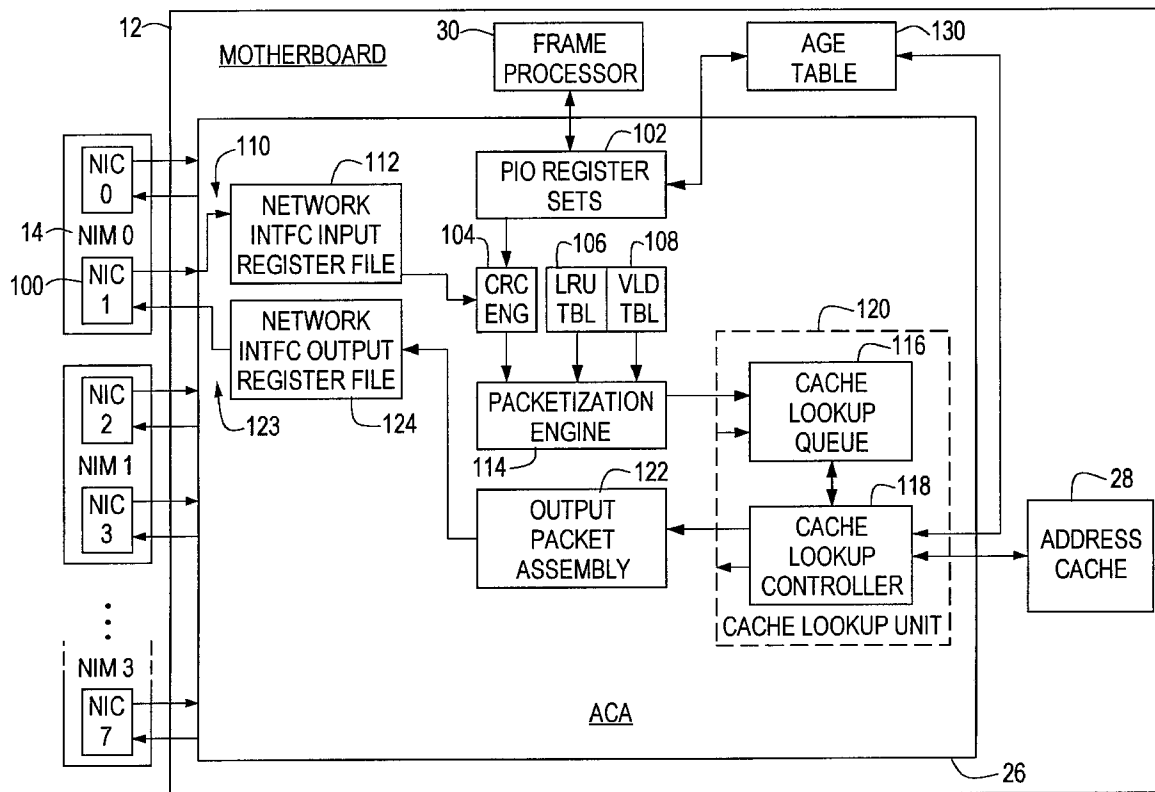
[58] Field of Search 371/37.07, 37.7; 370/232, 253, 392, 401, 402, 466; 395/286, 185.02

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Table with 4 columns: Patent No., Date, Inventor, and Reference No.
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26 Claims, 14 Drawing Sheets



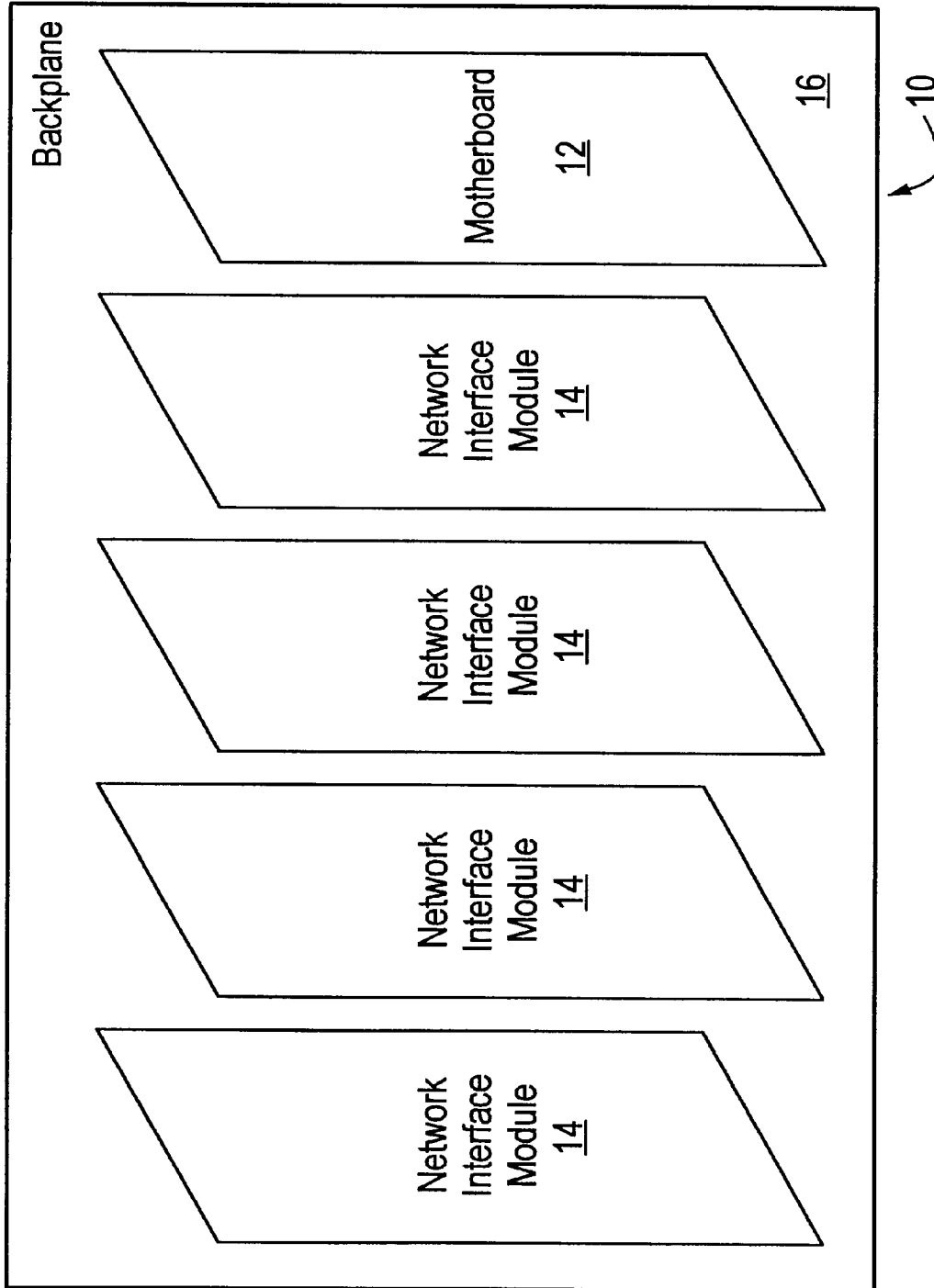


FIG. 1

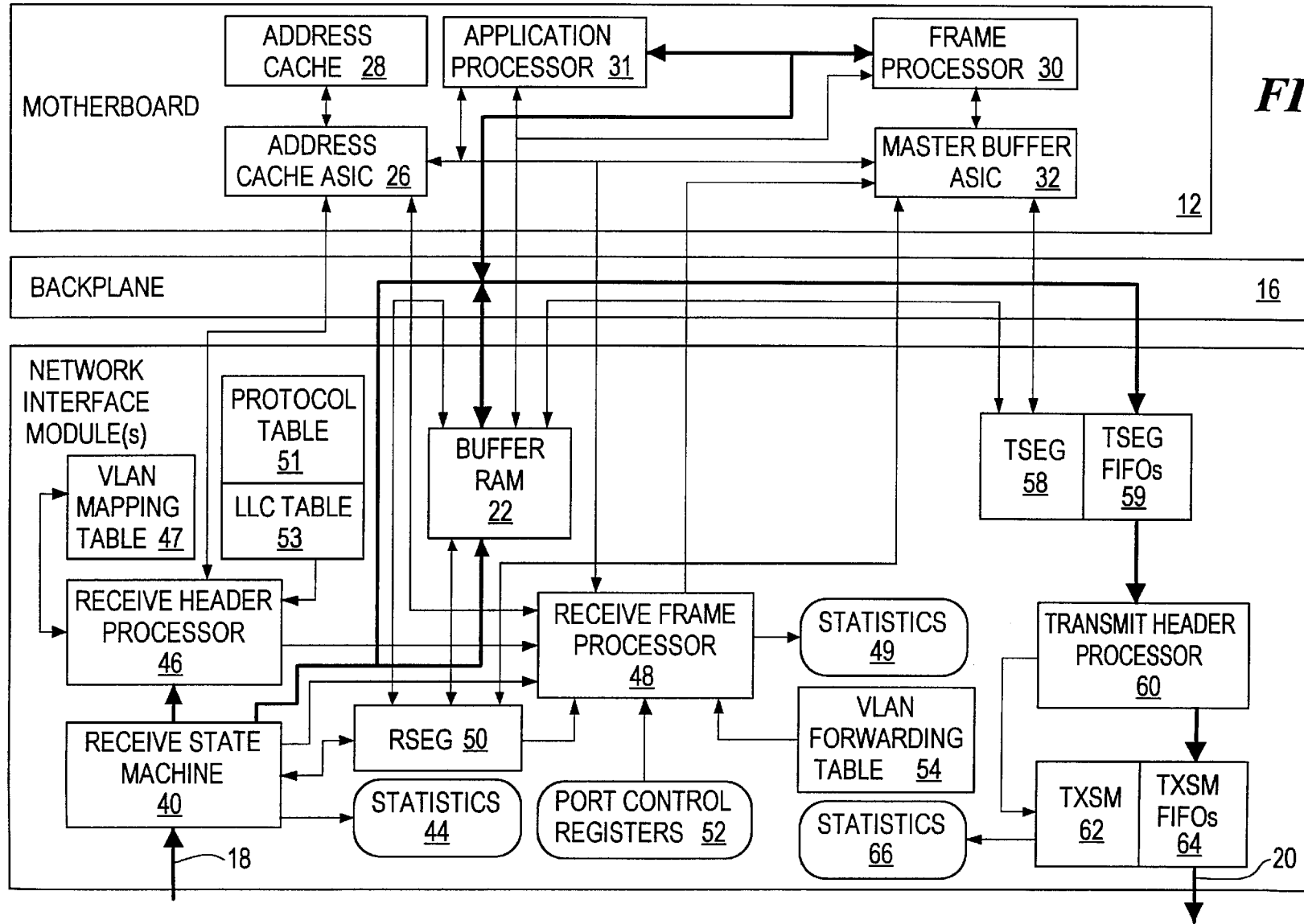


FIG. 2

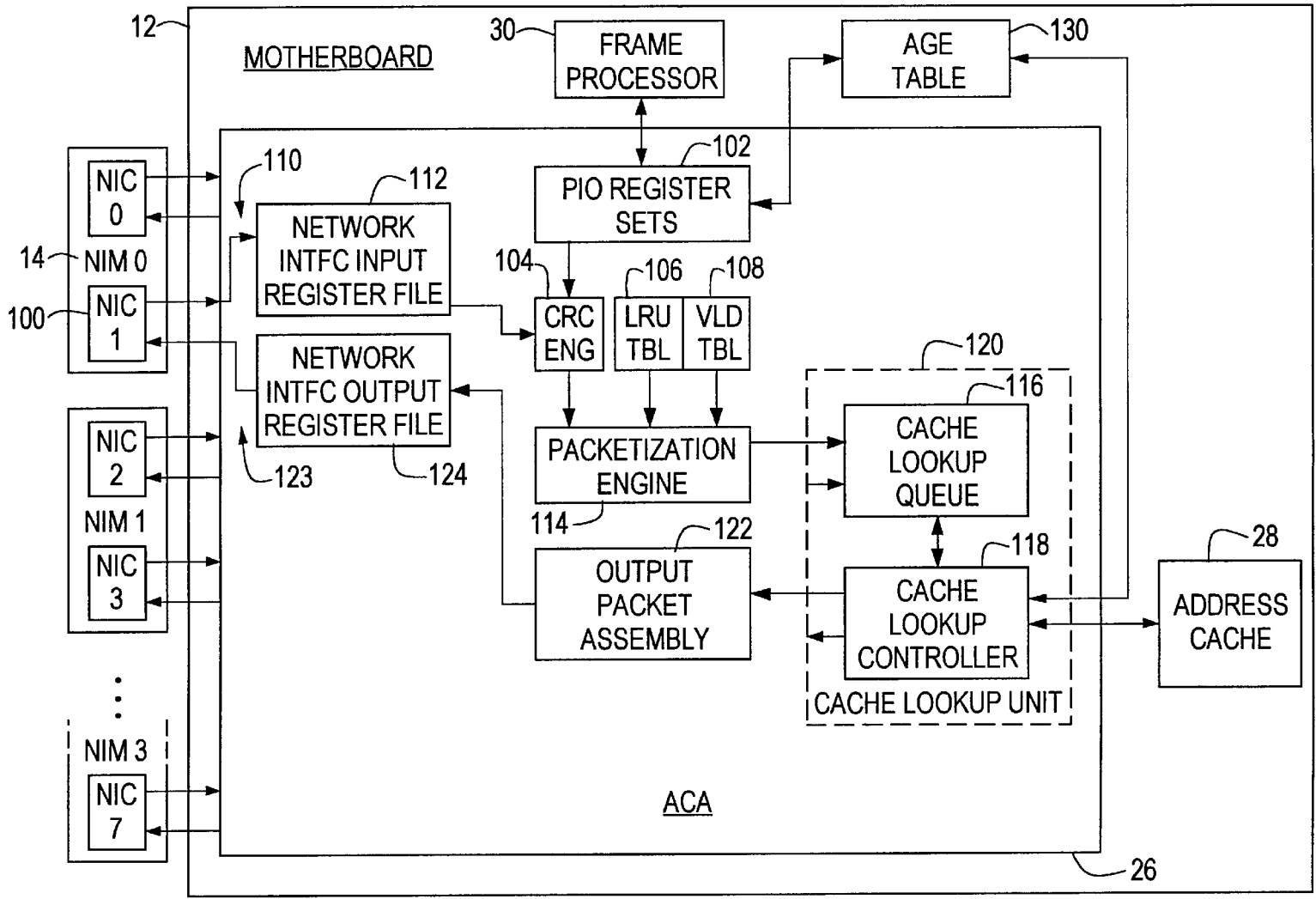
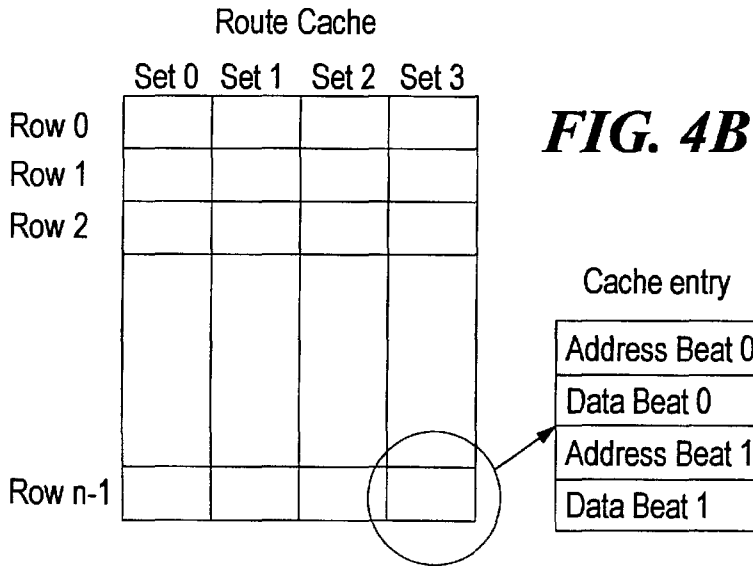
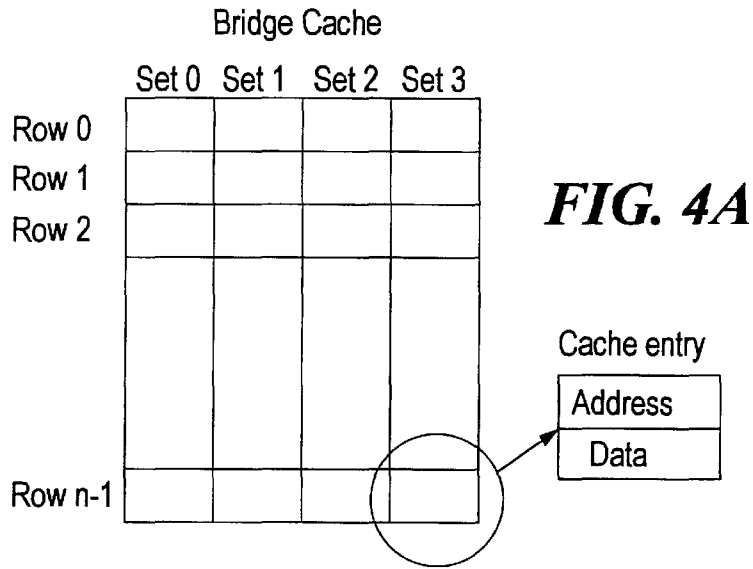


FIG. 3



ACA bridge only cache address format

16										
Hash(13-0)			Set(1-0)	Cli0						

ACA bridge/route bridge cache address format

16	15									
Hash(12-0)			Set(1-0)	Cli0						

ACA route cache address format

16	15									
Hash(12-1)			Set(1-0)	Cli(1-0)						

FIG. 5

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