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**Hegde**

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(54) **METHOD AND APPARATUS FOR MULTIPROTOCOL SWITCHING AND ROUTING**

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(75) Inventor: **Gopal Dattaray Hegde**, San Jose, CA (US)

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(73) Assignee: **Intel Corporation**, Santa Clara, CA (US)

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(\* ) 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.: **09/058,335**

Douglas E. Comer and David L. Stevens, *RIP: Active Route Propagation and Passive Acquisition*, Internetworking with TCP/IP, vol. II: Design, Implementation, and Internals, Chapter 18, 1994, pp. 355-379.

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(51) **Int. Cl.**<sup>7</sup> ..... **H04L 12/28; H04J 3/16**

(52) **U.S. Cl.** ..... **370/392; 370/466**

(58) **Field of Search** ..... **370/392, 393, 370/401, 466, 378, 379, 382, 400, 402, 465, 467**

\* cited by examiner

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*Primary Examiner*—Chau Nguyen  
*Assistant Examiner*—Andy Lee  
(74) *Attorney, Agent, or Firm*—Pillsbury Winthrop LLP

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(57) **ABSTRACT**

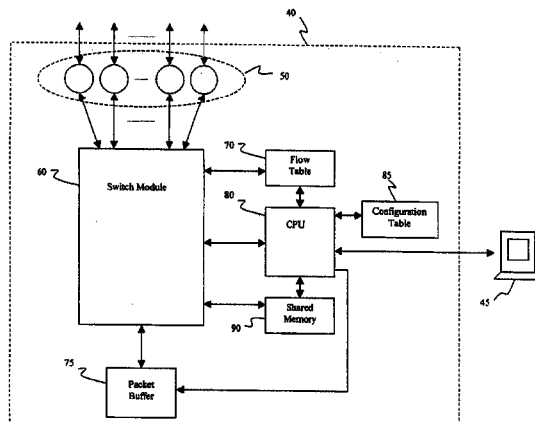
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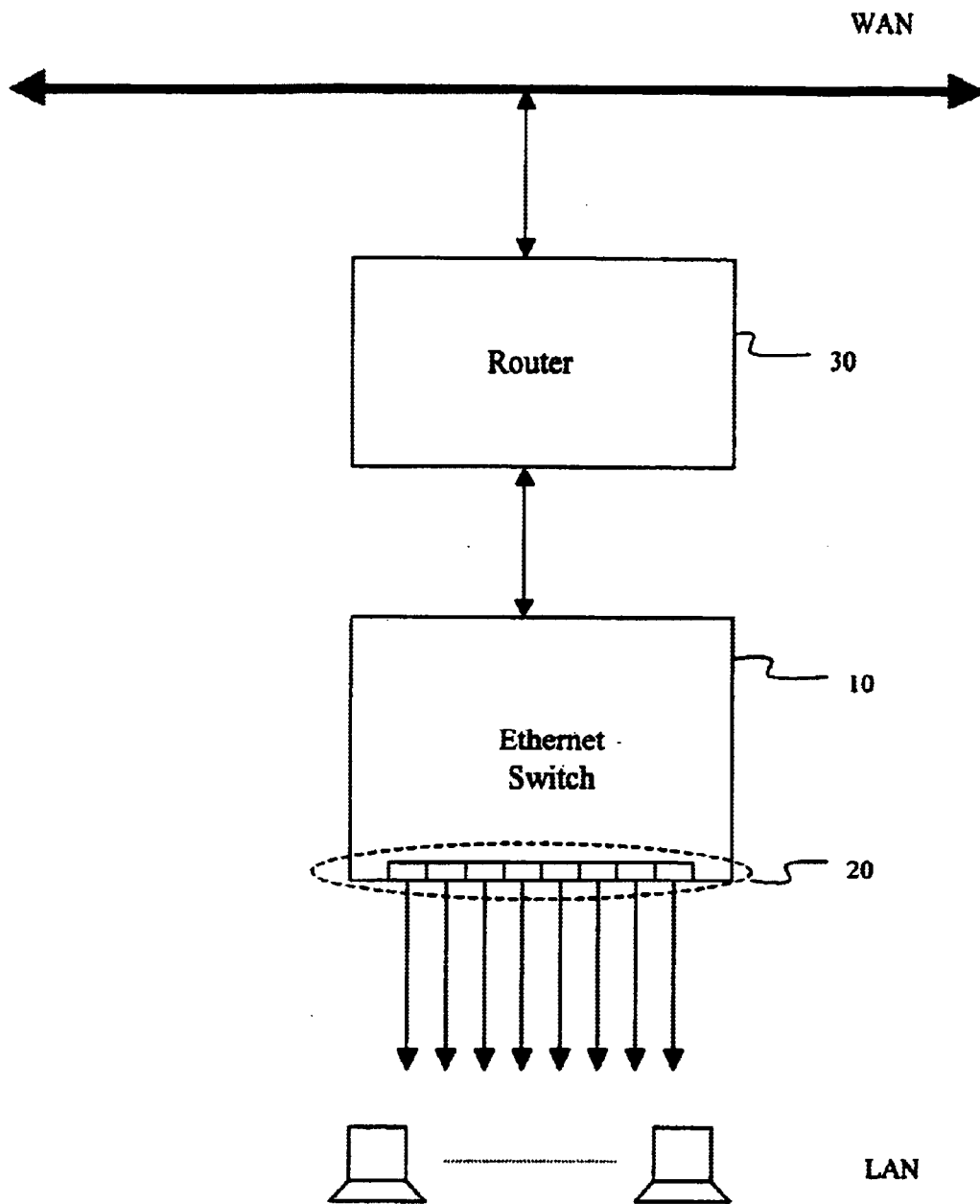
A packet forwarding method and apparatus performs multiprotocol routing (for IP and IPX protocols) and switching. Incoming data packets are examined and the flow (i.e., source and destination addresses and source and destination socket numbers) with which they are associated is determined. A flow table contains forwarding information that can be applied to the flow. If an entry is not present in the table for the particular flow, the packet is forwarded to the CPU to be processed. The CPU can then update the table with new forwarding information to be applied to all future packets belonging to the same flow. When the forwarding information is already present in the table, packets can thus be forwarded at wire speed. A dedicated ASIC is preferably employed to contain the table, as well as the engine for examining the packets and forwarding them according to the stored information. Decision-making tasks are thus more efficiently partitioned between the switch and the CPU so as to minimize processing overhead.

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**16 Claims, 8 Drawing Sheets**





**FIGURE 1  
(PRIOR ART)**

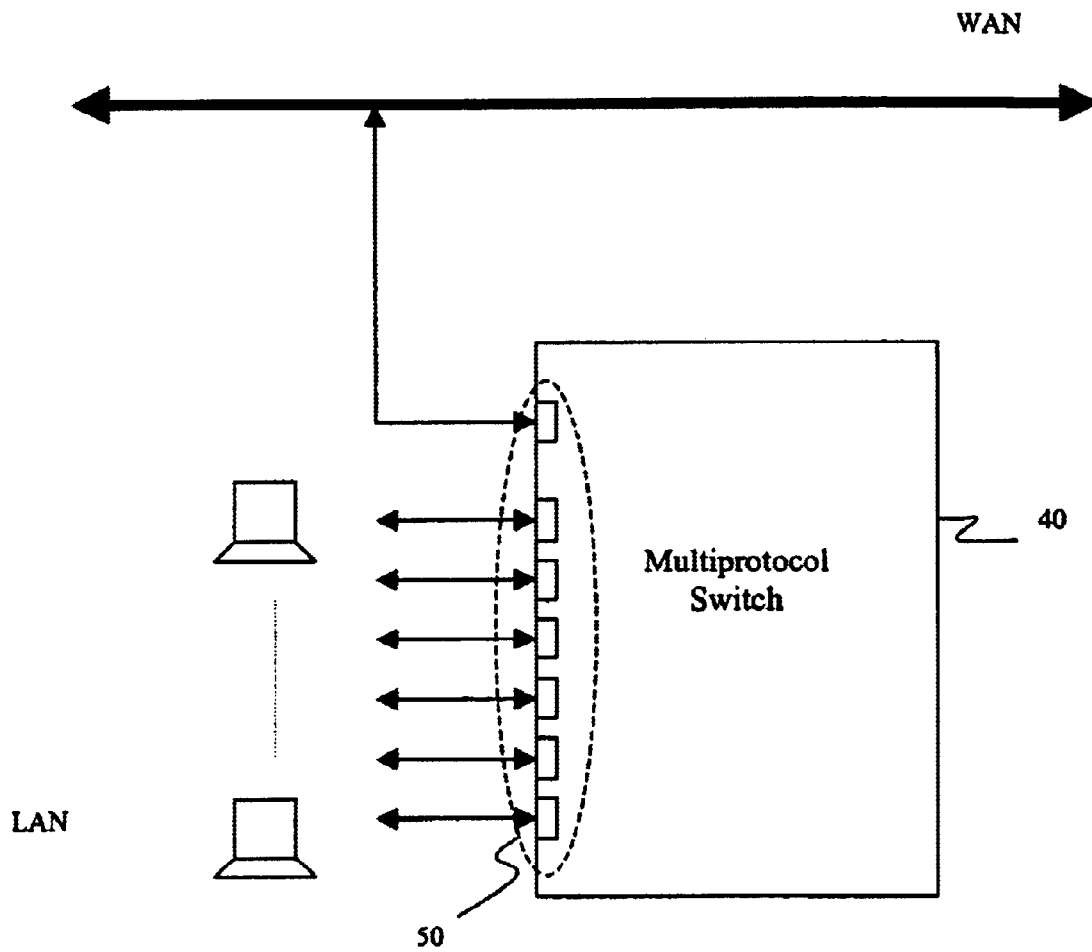


FIGURE 2

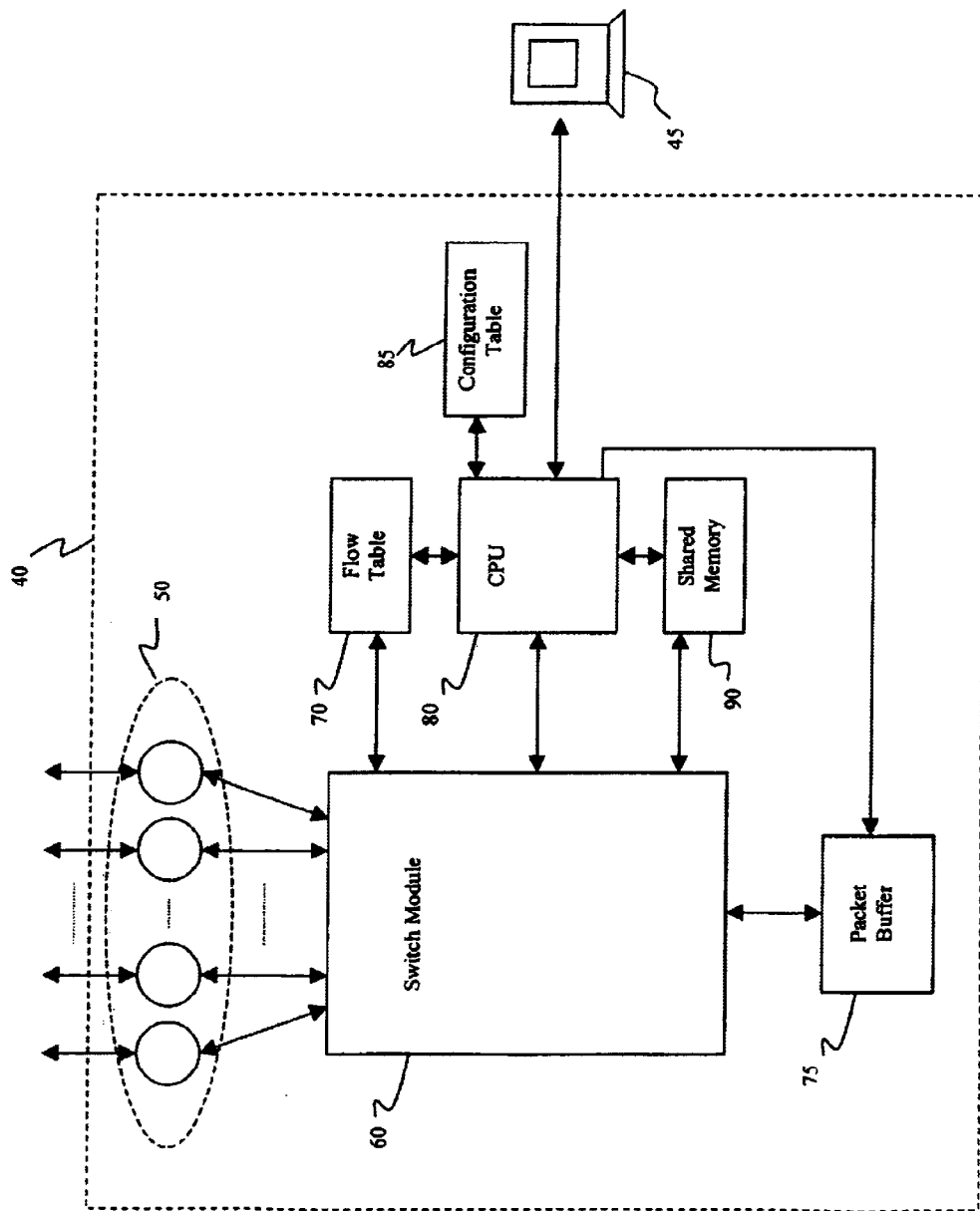


FIGURE 3

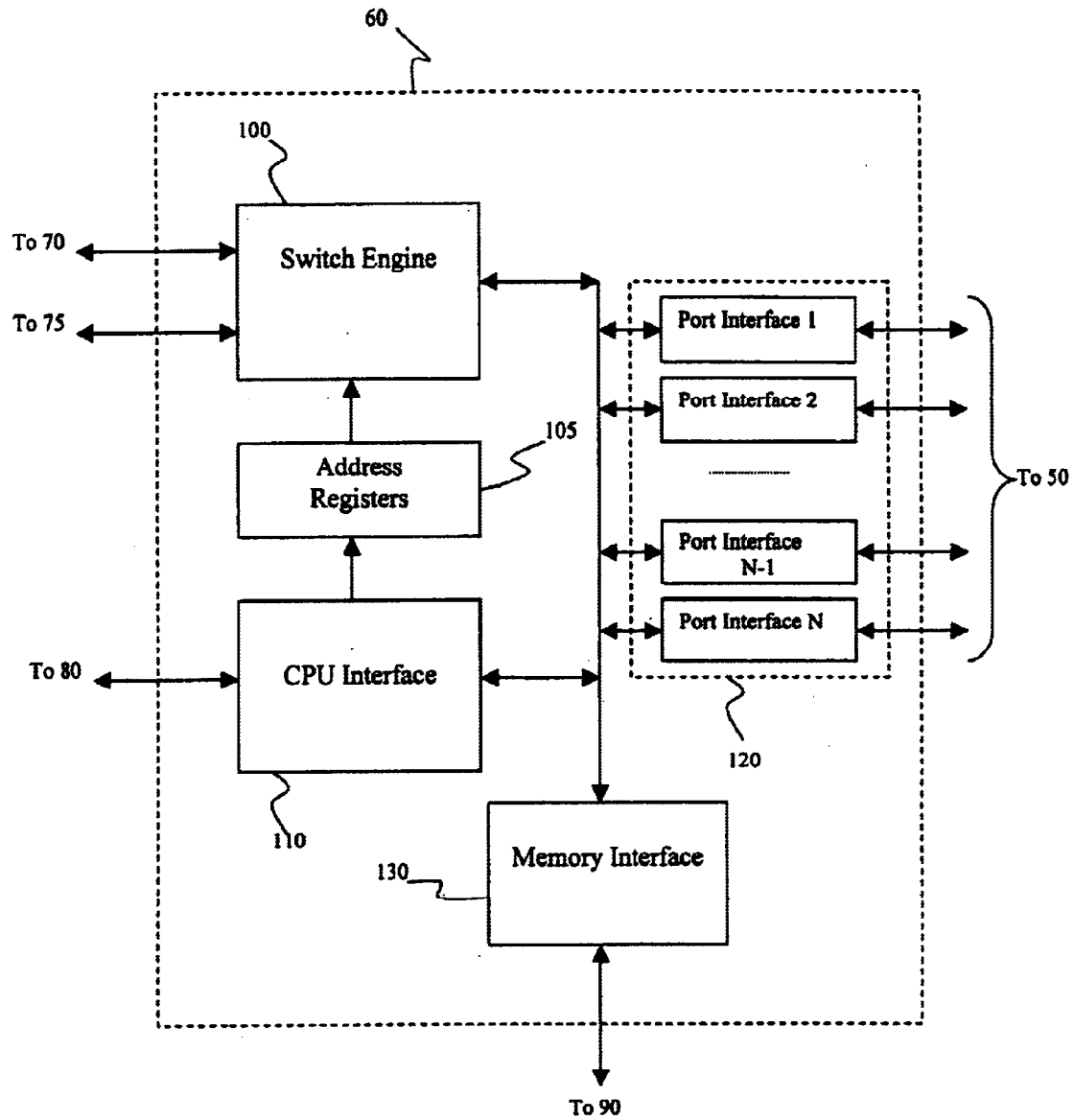


FIGURE 4

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