EXHIBIT 1019

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Zhang et al.

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(54) **PER USER AND NETWORK ROUTING TABLES**

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(58) Field of Search 370/229, 230, 370/235, 357, 359, 360, 378, 379, 382, 383, 392, 397, 393, 394, 400, 401, 432

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(57) **ABSTRACT**

A gateway is provided which routes a packet sent from a user to the connected network which would maximize the chances that the packet arrives at its destination in the quickest way possible. This is accomplished by extracting a source address from the packet; searching through one or more per-user routing tables to find a per-user routing table corresponding to the source address, the per-user routing table containing a list of currently accessible networks for the user and the range of network addresses corresponding to the currently accessible networks; extracting a destination address from the packet; traversing the entries of the matching per-user routing table, looking for a range of network addresses containing the destination address; routing the packet to a matching network if the destination address is contained within one of the ranges of network addresses for the currently accessible networks; and routing the packet to a default network if the destination address is not contained within one of the ranges of network addresses for the currently accessible networks. The gateway may also avoid the drawbacks of using hops in transporting packets to a destination by looking up the destination network in a table, each entry in the table having a router network address corresponding to each network currently accessible; establishing a tunneling session to the matching router network address; and forwarding the packet to the router network address through the tunneling session.

38 Claims, 5 Drawing Sheets
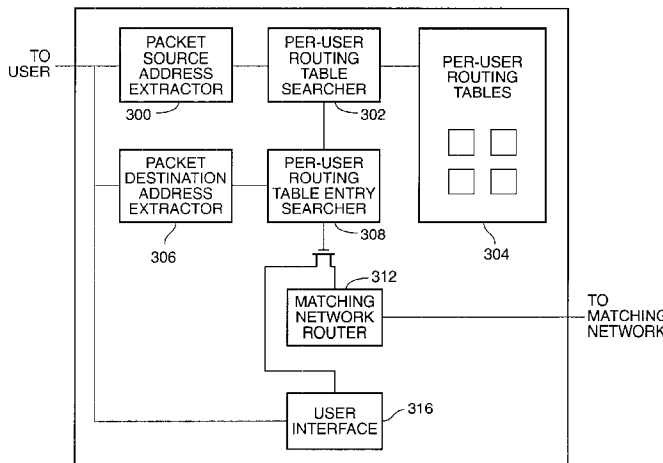
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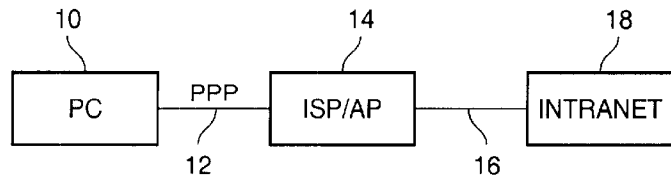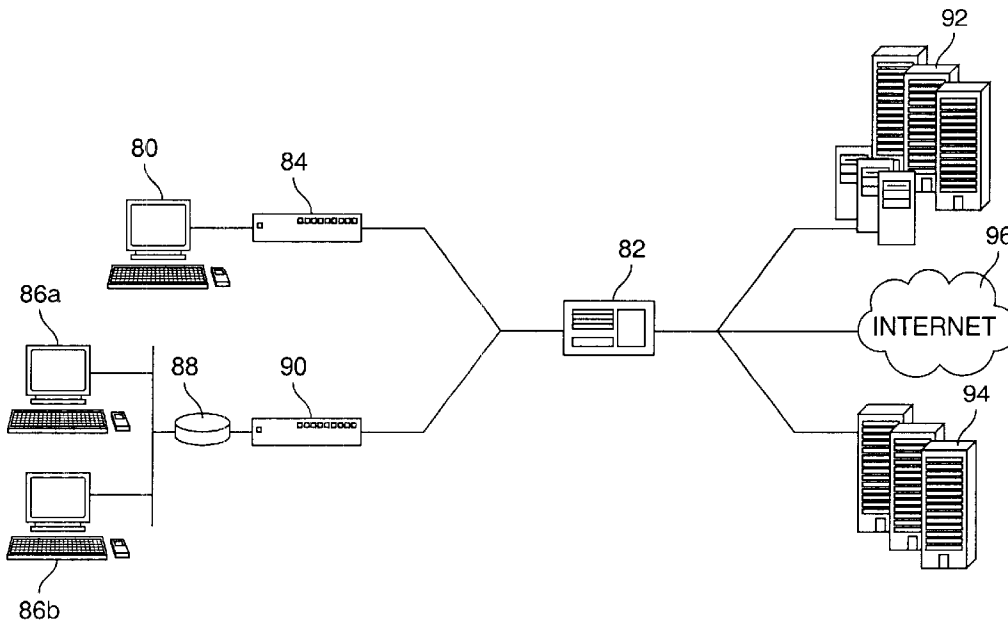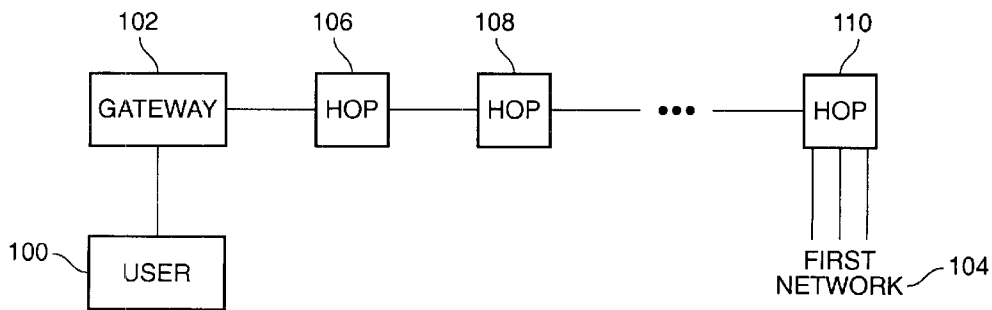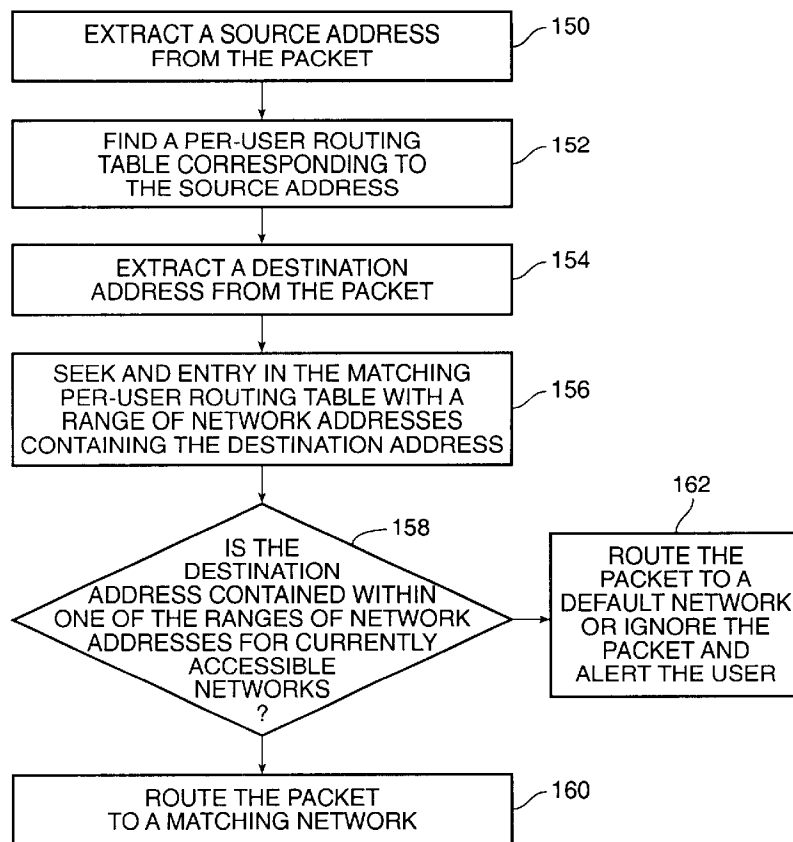
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FIG. 1

FIG. 2

FIG. 3

EXTRACT A SOURCE ADDRESS FROM THE PACKET — 150

FIND A PER-USER ROUTING TABLE CORRESPONDING TO THE SOURCE ADDRESS — 152

EXTRACT A DESTINATION ADDRESS FROM THE PACKET — 154

SEEK AND ENTRY IN THE MATCHING PER-USER ROUTING TABLE WITH A RANGE OF NETWORK ADDRESSES CONTAINING THE DESTINATION ADDRESS — 156

IS THE DESTINATION ADDRESS CONTAINED WITHIN ONE OF THE RANGES OF NETWORK ADDRESSES FOR CURRENTLY ACCESSIBLE NETWORKS ? — 158

ROUTE THE PACKET TO A DEFAULT NETWORK OR IGNORE THE PACKET AND ALERT THE USER — 162

ROUTE THE PACKET TO A MATCHING NETWORK — 160

FIG. 4

VERSION	IHL	TYPE-OF-SERVICE	TOTAL LENGTH	
IDENTIFICATION			FLAGS	FRAGMENT OFFSET
TIME TO LIVE		PROTOCOL	HEADER CHECKSUM	
202	SOURCE ADDRESS			
204	DESTINATION ADDRESS			
OPTIONS (+PADDING)				
DATA				

IP PACKET

200

FIG. 5

DOCKET ALARM

Explore Litigation Insights

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