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# United States Patent [19]

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Bhatia et al.

[45] Date of Patent: **Feb. 22, 2000**

[54] **APPARATUS AND METHODS FOR USE THEREIN FOR AN ISDN LAN MODEM UTILIZING INTERNAL DNS AND DHCP SERVERS FOR TRANSPARENT TRANSLATION OF LOCAL HOST NAMES TO IP ADDRESSES**

U.S. application No. 08/938,572, Bhatia et al., filed Sep. 26, 1997.

U.S. application No. 08/852,659, Best et al., May 7, 1997.

U.S. application No. 08/852,656, Best et al., May 7, 1997.

K. Egevang et al., "The IP Network Address Translator (NAT)", *Internic Network Working Group*, Request for Comments No. 1631, May 1994, pp. 1-9.

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## [57] ABSTRACT

[21] Appl. No.: **08/938,373**

Apparatus, and accompanying methods for use therein, for an ISDN LAN modem (300) (and various aspects thereof) that is particularly, though not exclusively, suited for small user environments and which contains an internal ISDN router (305) having a self-contained network hub (340) for inter-connecting multiple network devices, such as workstations (10), to each other through a local area network (LAN) and for permitting each of those devices to each gain access through the router to any one of a number of different remote networks. Advantageously, to facilitate and simplify its configuration, the LAN modem automatically adapts itself to a current network environment of a workstation connected thereto, via the LAN, and then communicates with that workstation through a browser executing thereat to obtain configuration information from a user situated at the workstation. Additionally, the LAN modem, through use of a multi-tiered routing hierarchy including both destination- and source-based routing, accommodates several modalities of network communication not heretofore possible in a conventional router. Specifically, several different workstations can simultaneously communicate through the LAN modem with a common remote network (60) and share a single user account at a corresponding network service provider.

[22] Filed: **Sep. 26, 1997**

[51] Int. Cl.<sup>7</sup> ..... **H04L 12/66**

[52] U.S. Cl. .... **370/257; 370/401; 370/475**

[58] Field of Search ..... **370/254, 255, 370/257, 401, 402, 475**

## [56] References Cited

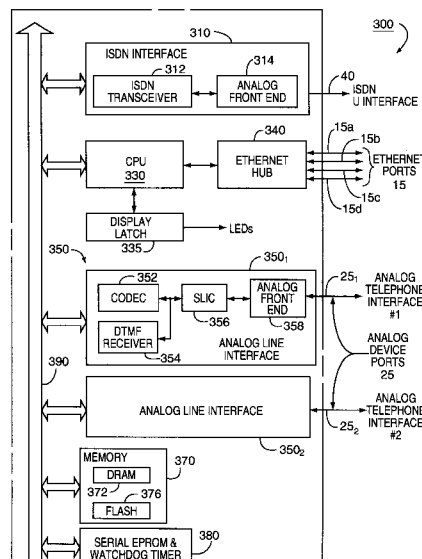
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- U.S. application No. 08/938,370, Bhatia et al., filed Sep. 26, 1997.
- U.S. application No. 08/938,369, Bhatia et al., filed Sep. 26, 1997.
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- U.S. application No. 08/938,851, Bhatia et al., filed Sep. 26, 1997.
- U.S. application No. 08/938,568, Bhatia et al., filed Sep. 26, 1997.

**28 Claims, 41 Drawing Sheets**



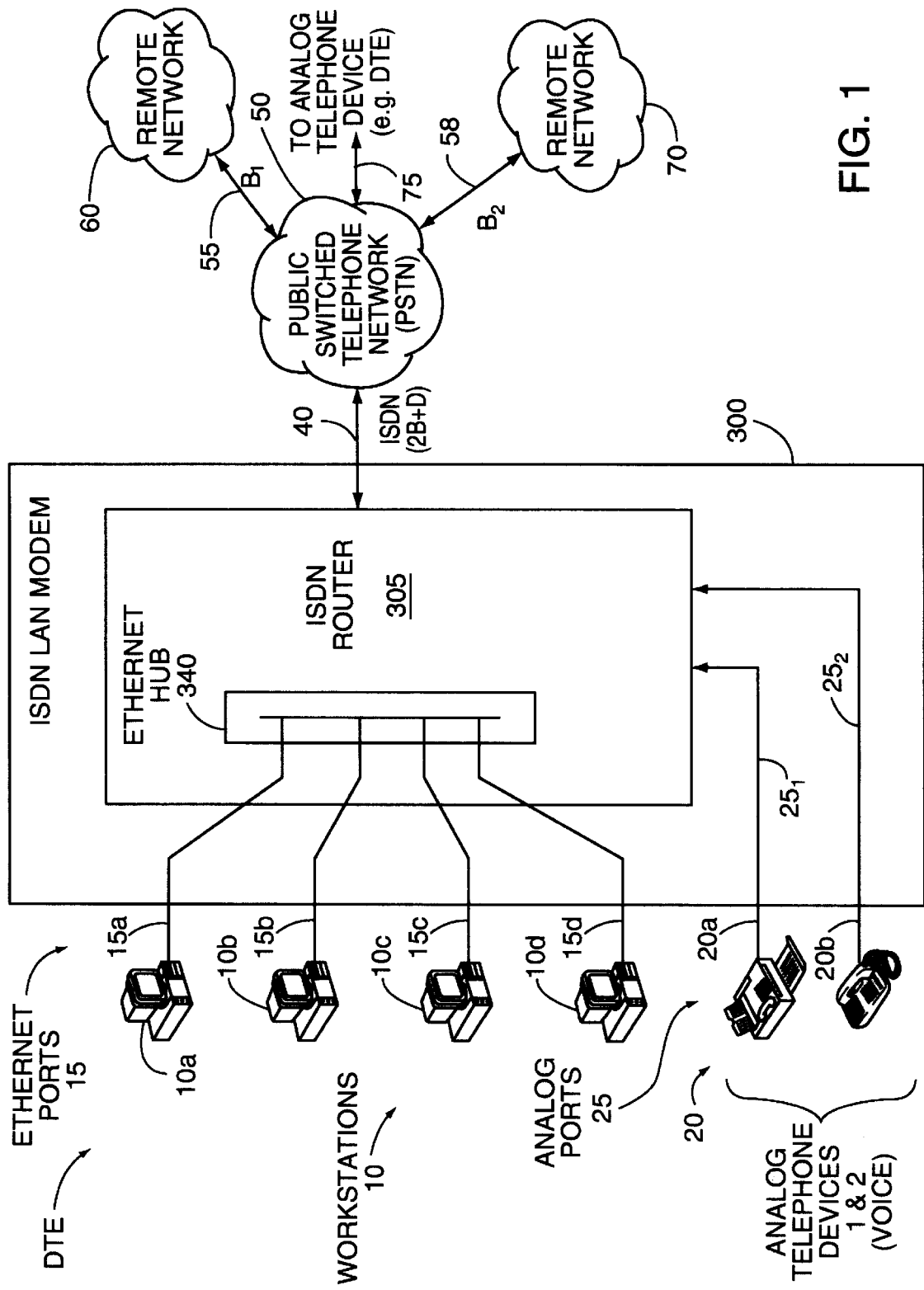


FIG. 1

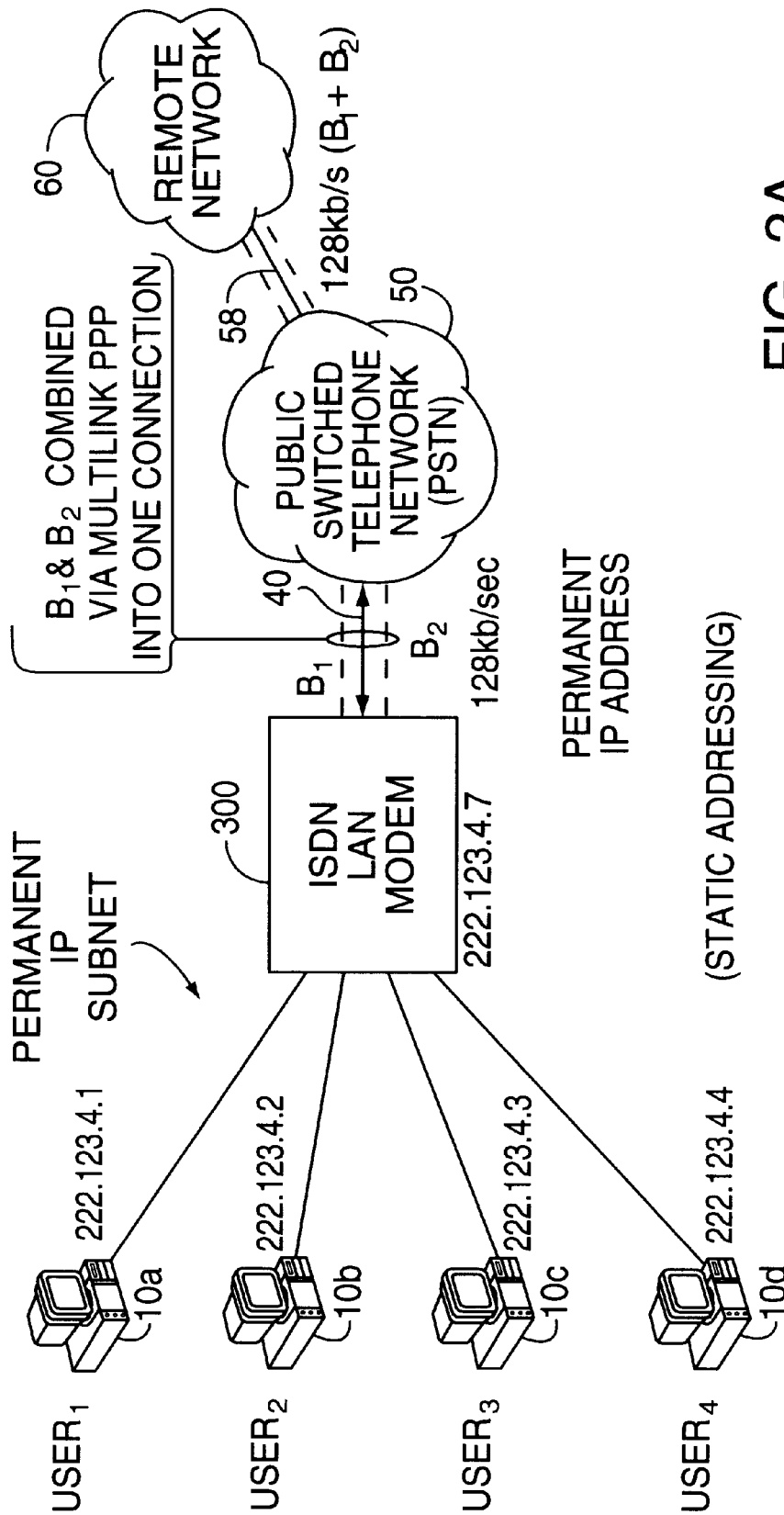


FIG. 2A

TRUE ROUTING MODE

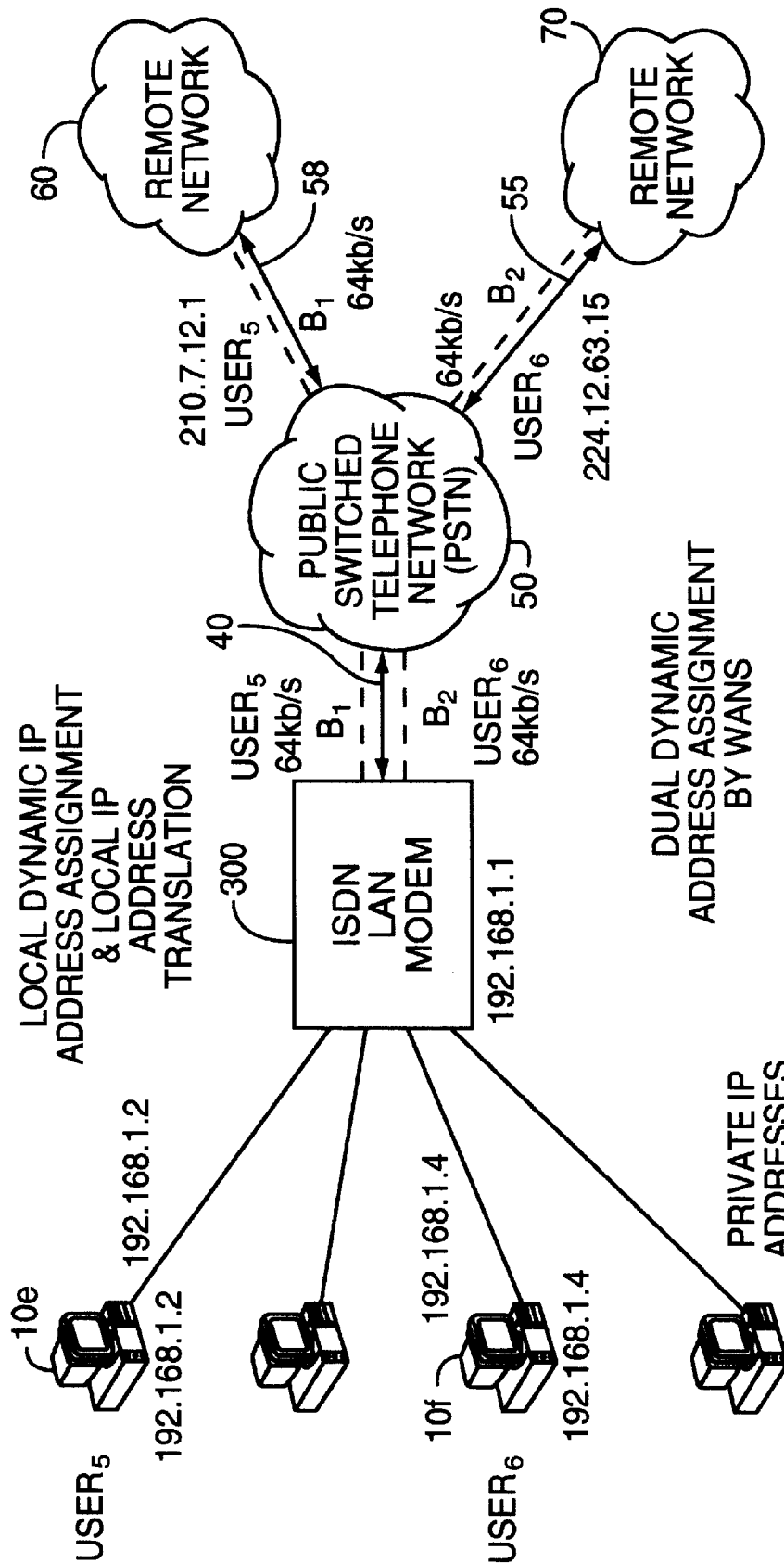


FIG. 2B

TWO SIMULTANEOUS  
REMOTE CONNECTIONS  
TO DIFFERENT DESTINATIONS

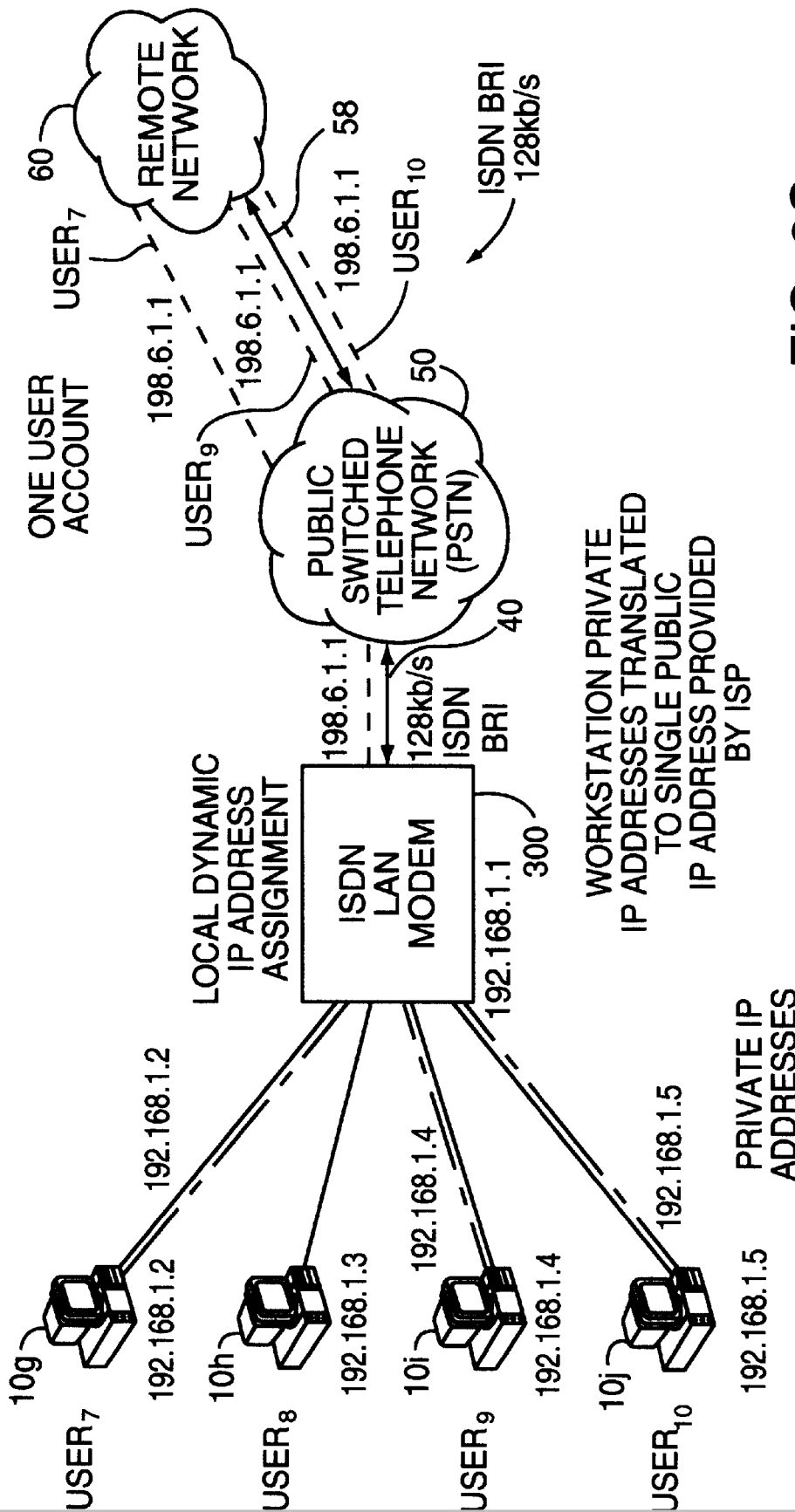


FIG. 2C

SIMULTANEOUS CONNECTIONS THROUGH SHARED ACCOUNT

WORKSTATION PRIVATE IP ADDRESSES TRANSLATED TO SINGLE PUBLIC IP ADDRESS PROVIDED BY ISP

LOCAL DYNAMIC IP ADDRESS ASSIGNMENT

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