



US006006275A

**United States Patent** [19]  
**Picazo, Jr. et al.**

[11] **Patent Number:** **6,006,275**  
[45] **Date of Patent:** **\*Dec. 21, 1999**

[54]	<b>NETWORK CONNECTOR OPERABLE IN BRIDGE MODE AND BYPASS MODE</b>	5,421,024	5/1995	Faulk, Jr. et al. ....	395/200.53
		5,440,546	8/1995	Bianchini, Jr. et al. ....	370/60
		5,450,408	9/1995	Phaal .....	370/256
[75]	Inventors: <b>Jose J. Picazo, Jr., San Jose; Paul Kakul Lee, Union City; Robert P. Zager, San Jose, all of Calif.</b>	5,457,681	10/1995	Gaddis et al. ....	370/56
		5,477,547	12/1995	Sugiyama .....	370/85
		5,500,860	3/1996	Perlman et al. ....	370/401
		5,521,913	5/1996	Gridley .....	370/58.2
[73]	Assignee: <b>Compaq Computer Corporation, Houston, Tex.</b>	5,537,099	7/1996	Liang .....	340/825.07
		5,598,406	1/1997	Albrecht et al. ....	370/296

[ \* ] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.:

**09/167,306**

[22] Filed: **Oct. 6, 1998**

**Related U.S. Application Data**

[60] Continuation of application No. 08/760,302, Dec. 4, 1996, Pat. No. 5,841,990, which is a division of application No. 08/498,116, Jul. 5, 1995, Pat. No. 5,742,760, which is a continuation-in-part of application No. 07/881,931, May 12, 1992, Pat. No. 5,432,907.

[51] **Int. Cl.**<sup>6</sup> ..... **G06F 13/00**

[52] **U.S. Cl.** ..... **709/249; 370/401; 370/404; 370/351**

[58] **Field of Search** ..... **709/220-226, 709/249-253; 370/351, 401, 404, 406**

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

4,642,607	2/1987	Storm et al. ....	340/310.07
4,715,030	12/1987	Koch et al. ....	370/85
5,088,090	2/1992	Yacoby .....	370/402
5,150,360	9/1992	Perlman et al. ....	370/402
5,153,876	10/1992	Sin .....	370/392
5,179,554	1/1993	Lomicka et al. ....	370/257
5,222,064	6/1993	Sagawa .....	370/401
5,264,742	11/1993	Sourgen .....	307/465
5,309,431	5/1994	Perlman et al. ....	370/401
5,321,695	6/1994	Faulk, Jr. ....	370/401
5,337,309	8/1994	Faulk, Jr. ....	370/405

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[57] **ABSTRACT**

A hub circuit with an integrated bridge circuit carried out in software including a switch for bypassing the bridge process such that the two bridged networks effectively become one network. An in-band management process in software is disclosed which receives and executes network management commands received as data packets from the LANs coupled to the integrated hub/bridge. Also, hardware and software to implement an isolate mode where data packets which would ordinarily be transferred by the bridge process are not transferred except in-band management packets are transferred to the in-band management process regardless of which network from which they arrived. Also disclosed, a packet switching machine having shared high-speed memory with multiple ports, one port coupled to a plurality of LAN controller chips coupled to individual LAN segments and an Ethernet microprocessor that sets up and manages a receive buffer for storing received packets and transferring pointers thereto to a main processor. The main processor is coupled to another port of the memory and analyzes received packets for bridging to other LAN segments or forwarding to an SNMP agent. The main microprocessor and the Ethernet processor coordinate to manage the utilization of storage locations in the shared memory. Another port is coupled to an uplink interface to higher speed backbone media such as FDDI, ATM etc. Speeds up to media rate are achieved by only moving pointers to packets around in memory as opposed to the data of the packets itself. A double password security feature is also implemented in some embodiments to prevent accidental or intentional tampering with system configuration settings.

**8 Claims, 13 Drawing Sheets**

