



(12) **United States Patent**
Narasimhan et al.

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(54) **REMOTE MONITORING AND CONTROL OF EQUIPMENT OVER COMPUTER NETWORKS USING A SINGLE WEB INTERFACING CHIP**

5,790,977 A 8/1998 Ezekiel 702/122
5,905,248 A * 5/1999 Russell et al. 709/218
6,154,843 A * 11/2000 Hart, Jr. et al. 713/201

* cited by examiner

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(57) **ABSTRACT**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

A single integrated circuit chip interfaces device control circuitry of a device to a client machine via a computer network. The chip comprises an internal data bus; a central processing unit connected to the internal data bus; an internal memory connected to the internal data bus; a device interface connected to the internal data bus, wherein the device interface comprises circuit blocks for communicating digital information between the integrated circuit and the device control circuitry; and a network interface connected to the internal data bus, wherein the network interface comprises circuit blocks for communicating digital information between the integrated circuit and the computer network. The internal memory comprises instructions for implementing complete internet protocol functionality on the network; translating information between network protocol formats and a format of the device; transferring information between the network and the device control circuitry; and sending customized software to the client machine over the network, wherein the software is executable on the client machine, and wherein the software enables the client machine to generate device control signals and to receive device status information. The single integrated circuit chip provides inexpensive, compact, powerful, and versatile interfacing of a large variety of devices to high performance computer networks.

(21) Appl. No.: **09/326,105**

(22) Filed: **Jun. 4, 1999**

(51) **Int. Cl.**⁷ **G06F 9/54**; G06F 6/45; G06F 13/42; G06F 15/173

(52) **U.S. Cl.** **712/29**; 712/28; 712/31; 709/203; 709/230; 709/236; 709/211; 709/328; 717/118; 717/136; 717/148

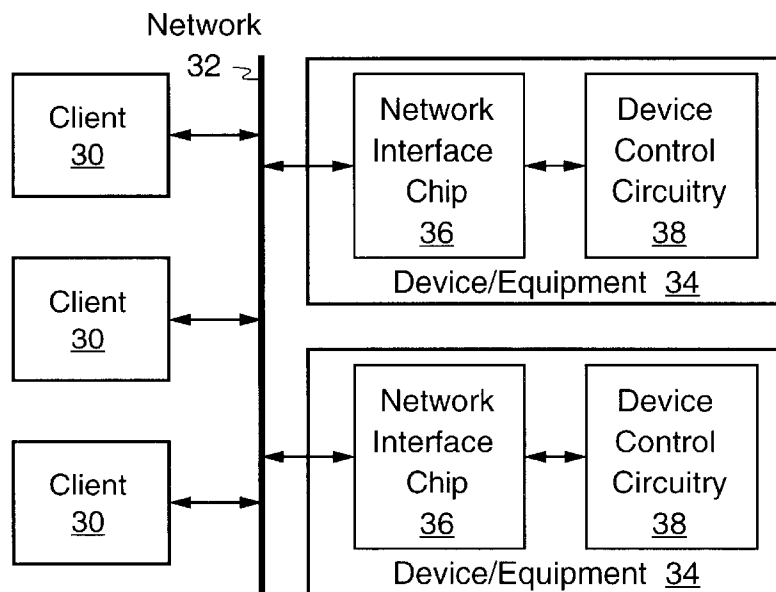
(58) **Field of Search** 709/319, 320, 709/311, 332, 219, 210, 315, 329, 218, 203, 230, 224, 232, 226, 234, 236, 245, 250, 253, 328, 324, 211, 221, 209, 231; 235/462.15, 472.01; 712/217, 28, 30, 31, 29, 38, 32; 713/201, 167, 153, 165, 200, 151, 202; 702/122; 707/513, 501, 2, 103, 104, 5, 3, 10; 705/51.14, 54; 717/118, 136, 148

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,761,430 A * 6/1998 Gross et al. 709/225

11 Claims, 12 Drawing Sheets



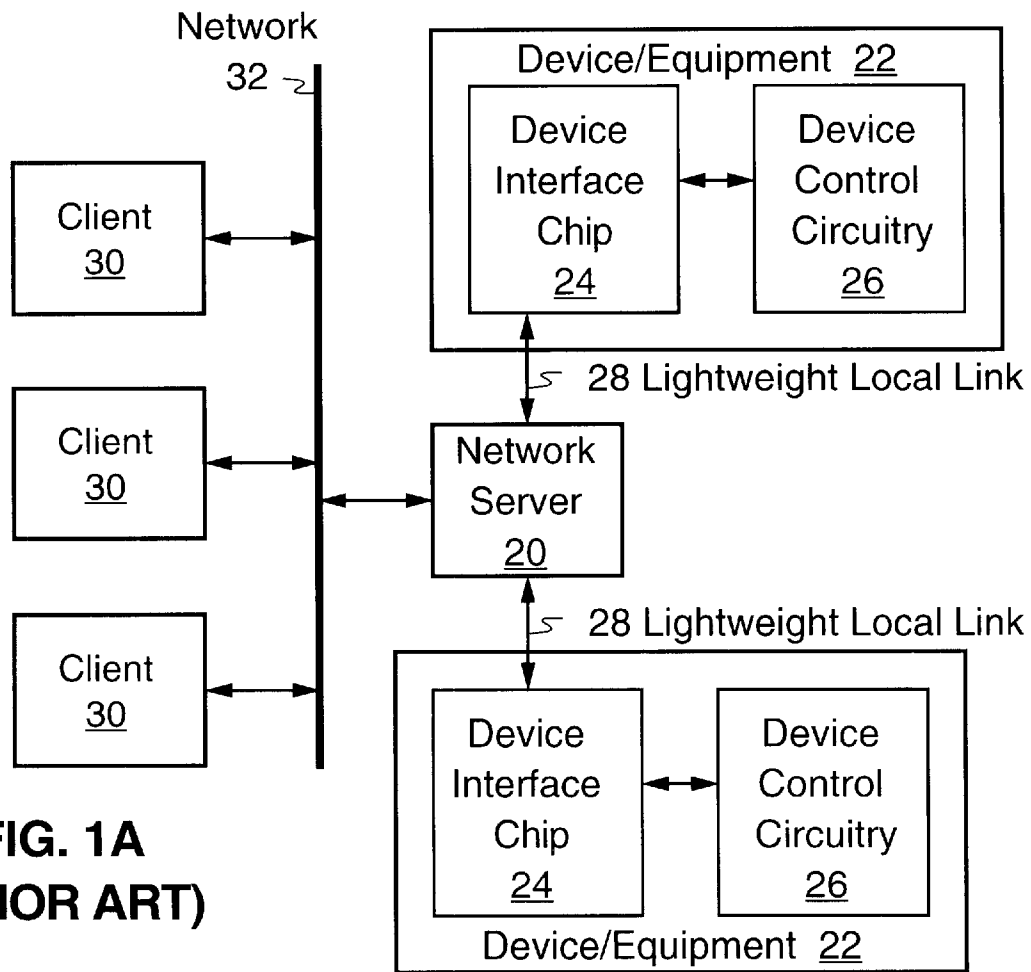


FIG. 1A
(PRIOR ART)

FIG. 1B

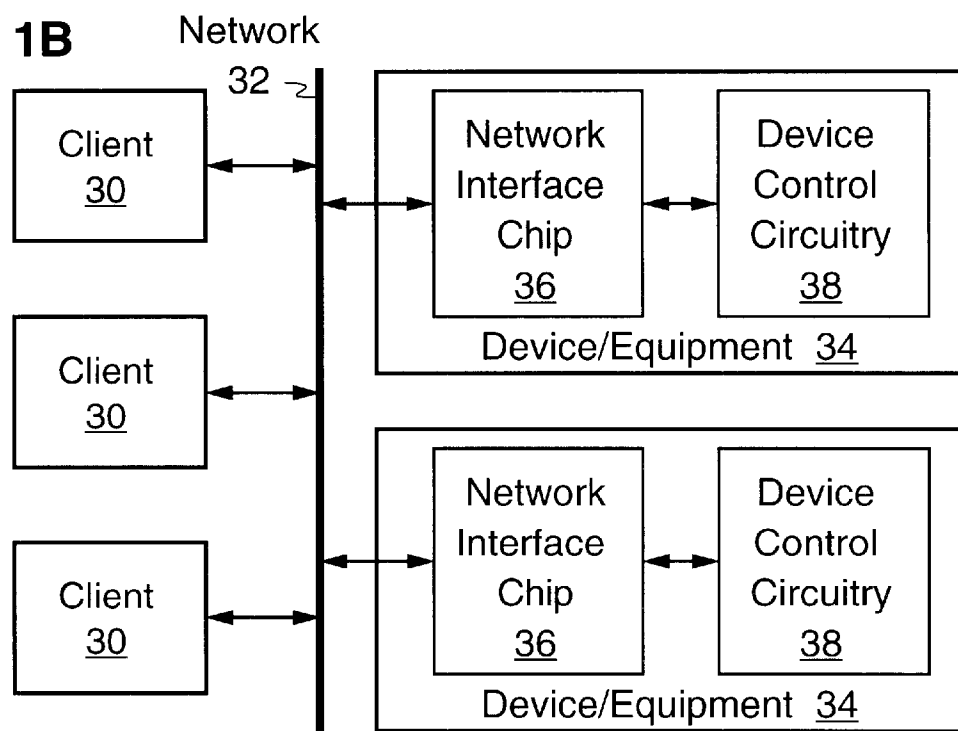


FIG. 2

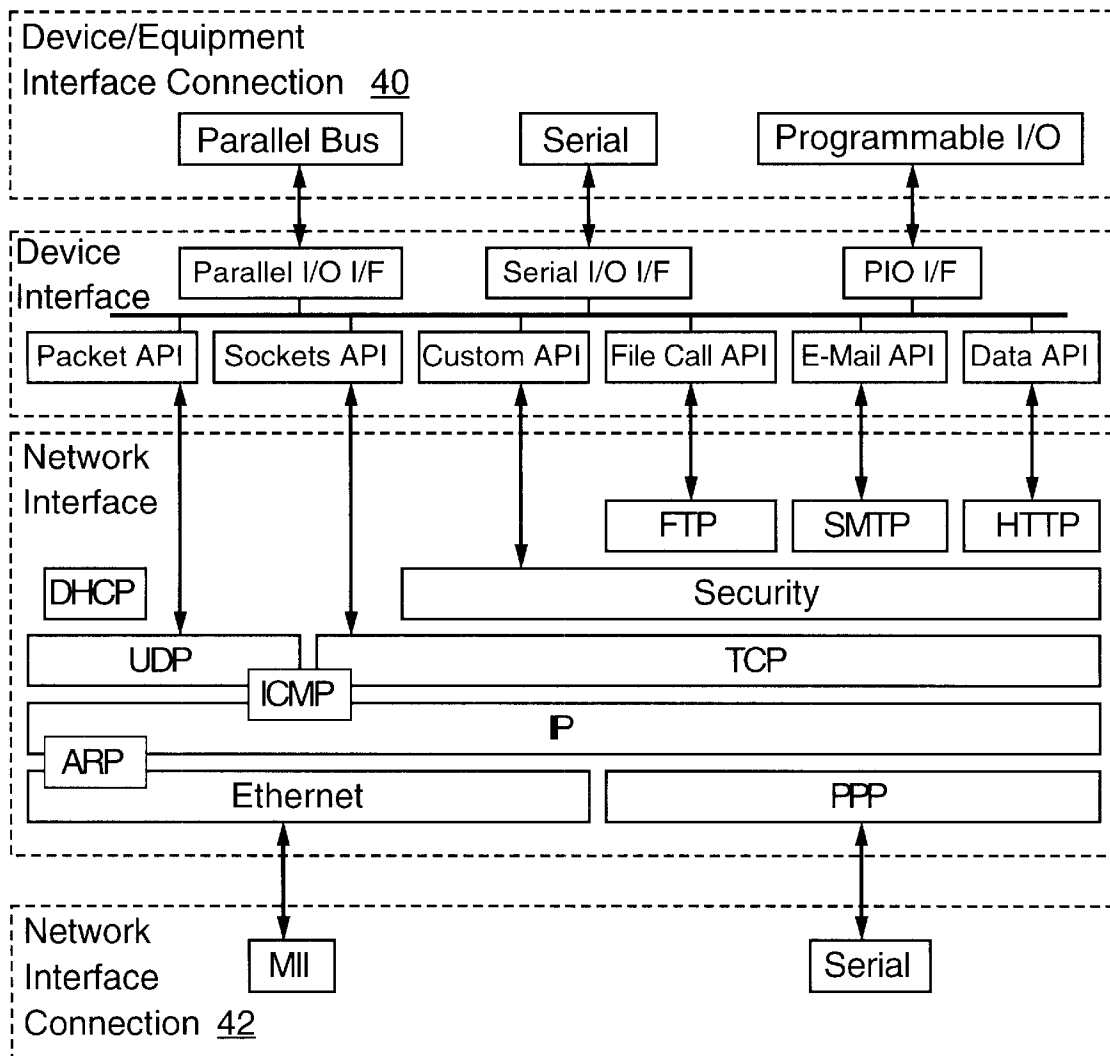
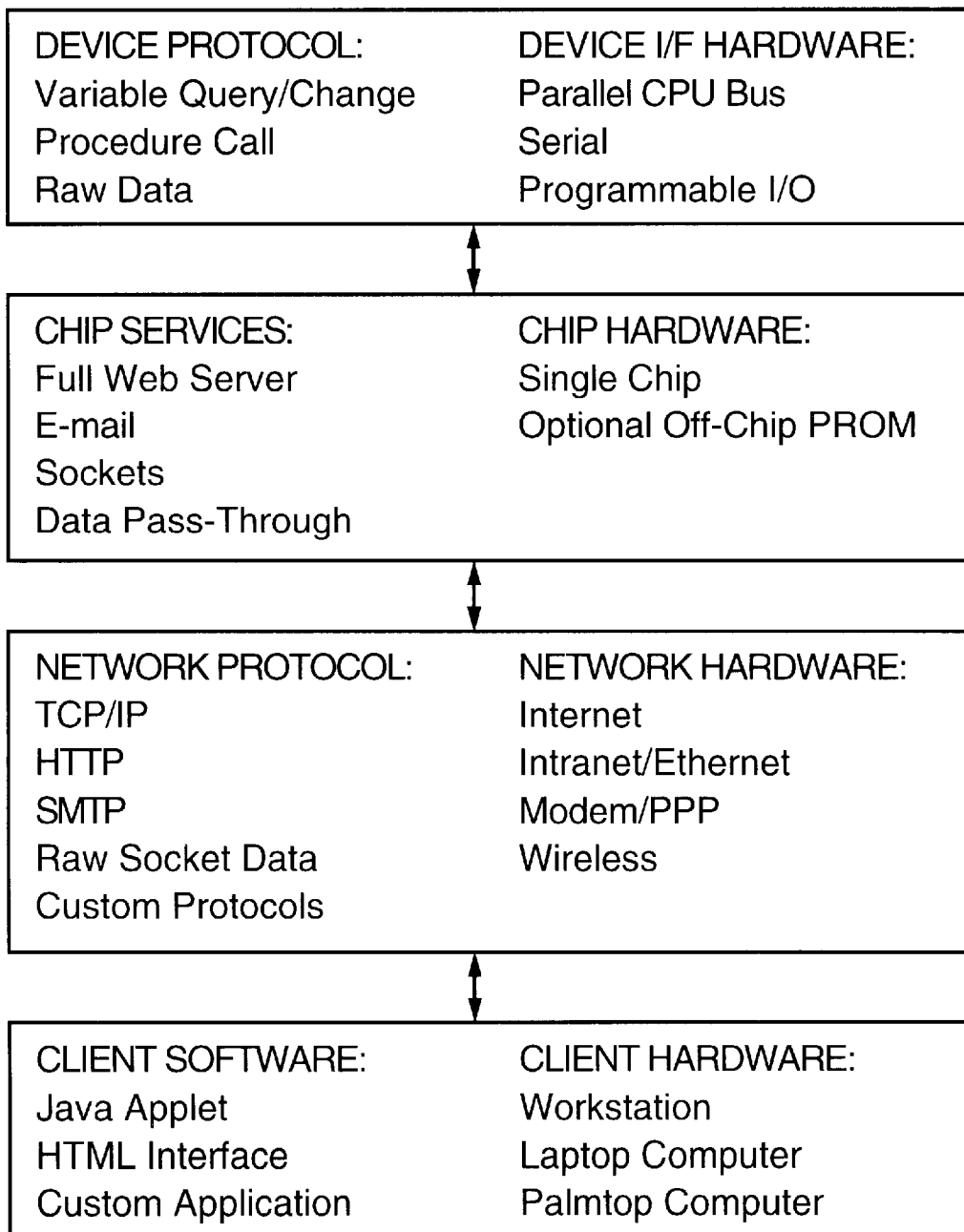


FIG. 3



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