

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

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(54) **METHOD AND APPARATUS FOR INTERCONNECTING A CIRCUIT-SWITCHED TELEPHONY NETWORK AND A PACKET-SWITCHED DATA NETWORK, AND APPLICATIONS THEREOF**

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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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(51) **Int. Cl.**⁷ **H04Q 11/00**

(52) **U.S. Cl.** **370/385; 370/410; 370/352**

(58) **Field of Search** **370/352-563, 370/385, 466, 467, 410, 522; 379/88.17, 202, 201.01-201.05, 201.11, 201.12, 202.01, 203.01; 348/14**

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Primary Examiner—Chau Nguyen

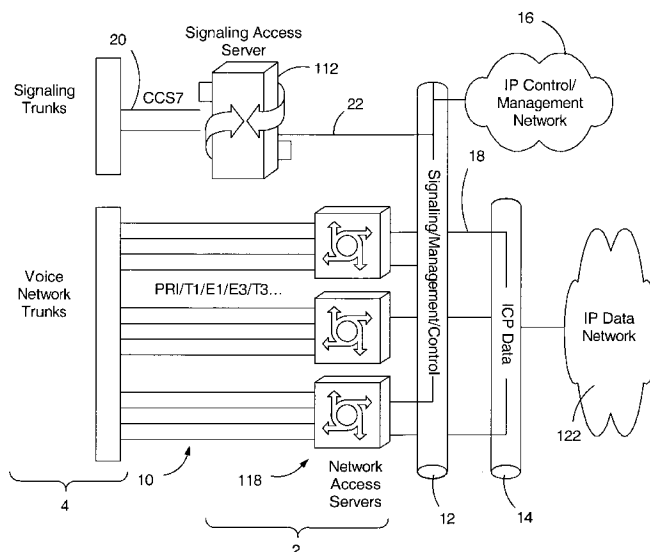
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(57) **ABSTRACT**

A method and apparatus are disclosed for interconnecting a circuit-switched telephone network and a packet-switched data network for communication among them. A signaling trunk of a circuit-switched telephone network is coupled to a signaling access server that is also coupled to a signaling, management and control network. One or more voice trunks of the telephone network are coupled to one or more network access servers, which are also coupled to the control network to thereby receive instructions from the signaling access server. The network access servers are also coupled to a packet-switched data network, such as the global packet-switched network known as Internet. The signaling access server can receive call setup messages and other messages in standard telephone network protocol formats and convert them into call setup messages in a special protocol for communications between the signaling access server and the network access servers. The signaling access server can instruct the network access servers to establish a call, containing voiceband information such as modem-based data calls, from the voice trunks to the data network. Accordingly, the public switched telephone network and the Internet may be interconnected and may inter-communicate without modifying the protocols of either one.

19 Claims, 23 Drawing Sheets



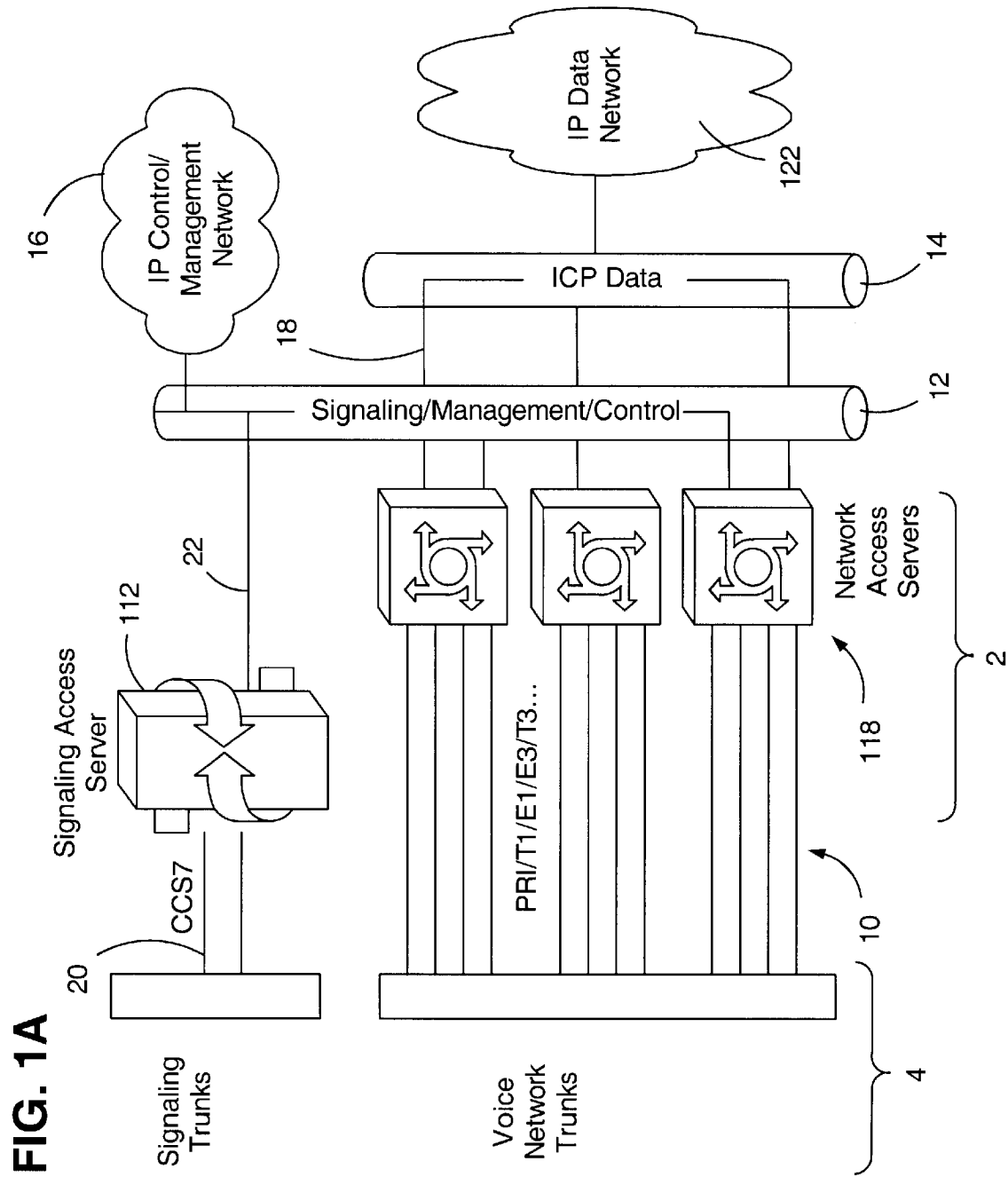


FIG. 1A

FIG. 1B

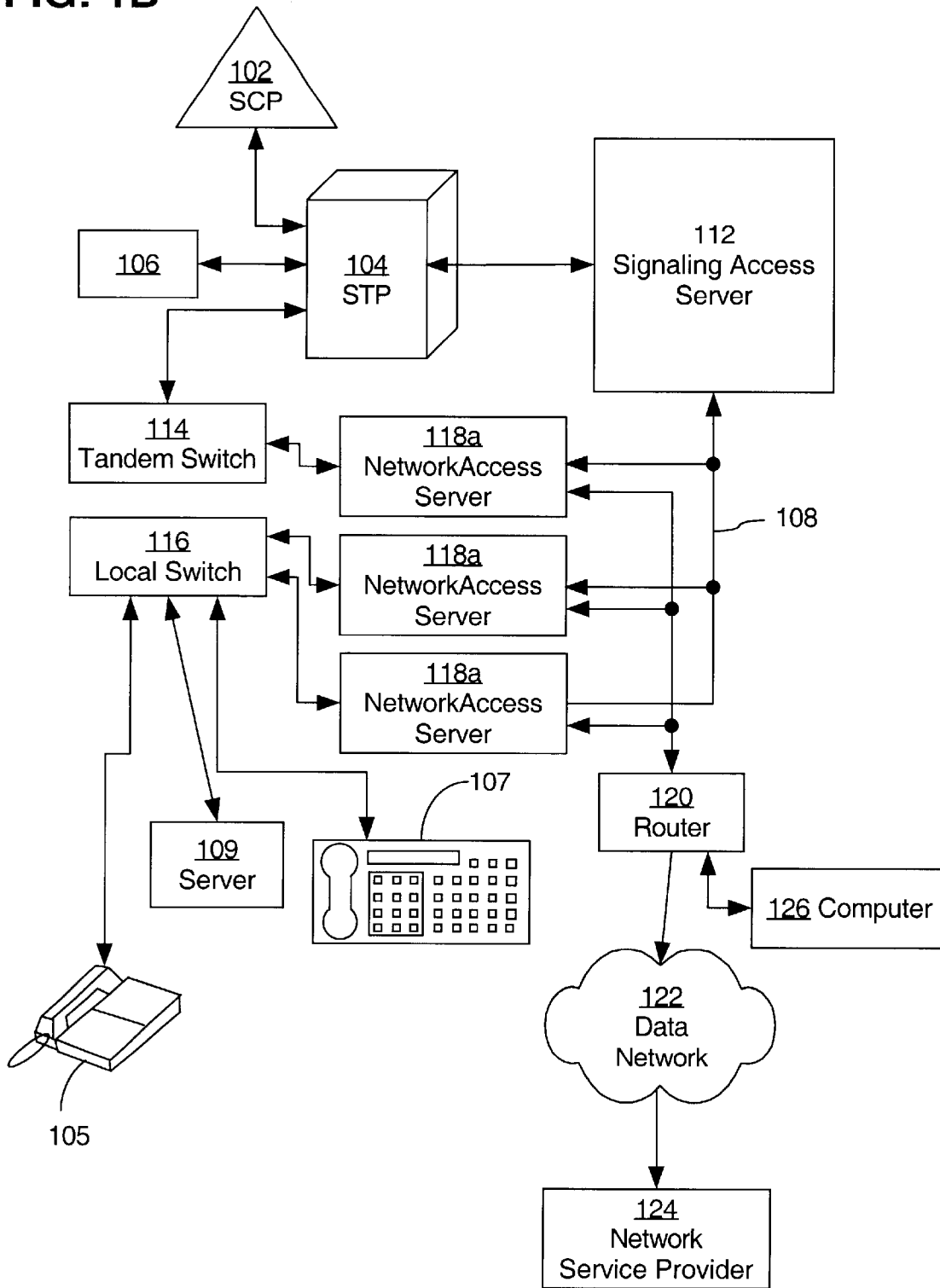
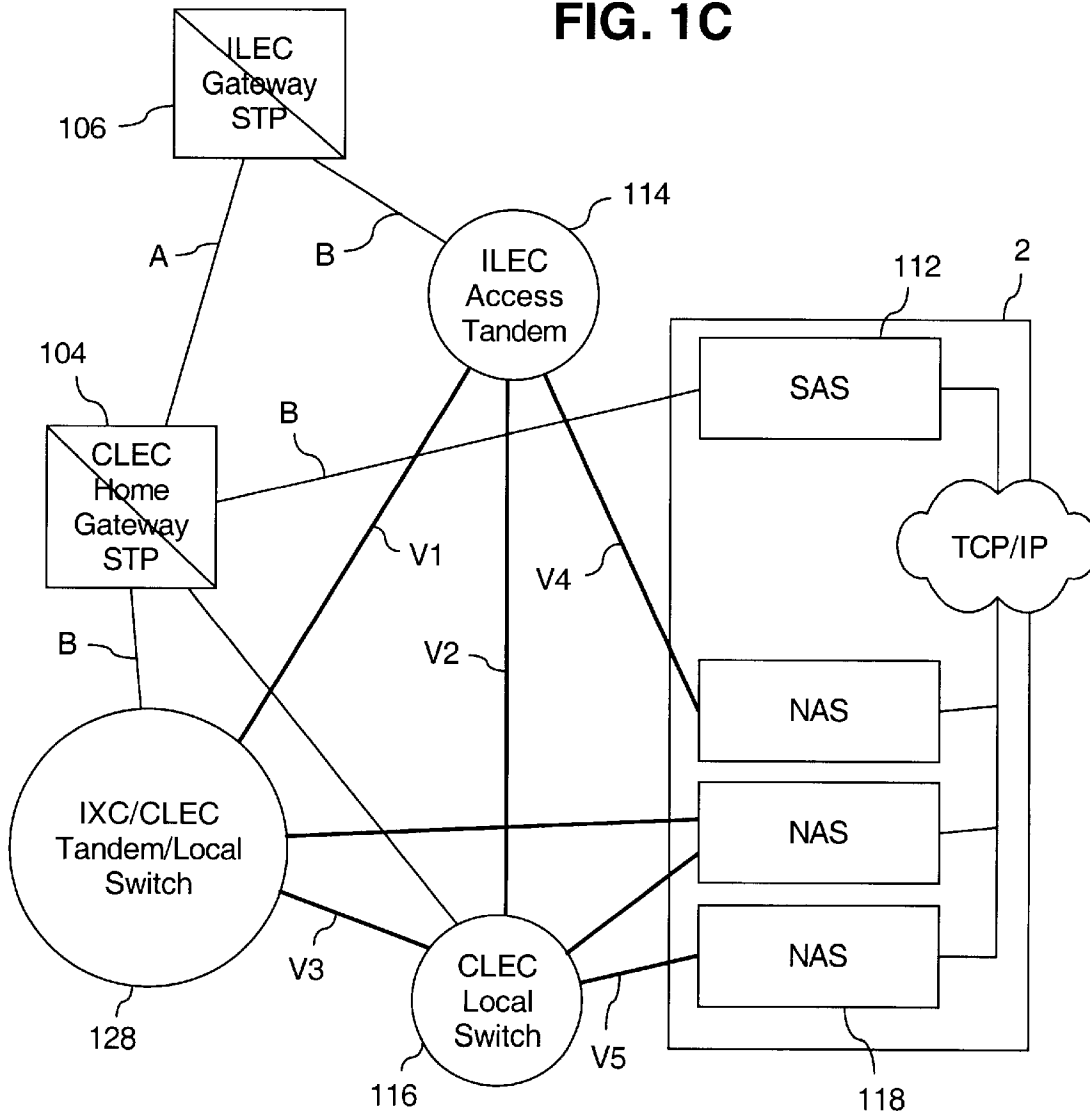


FIG. 1C



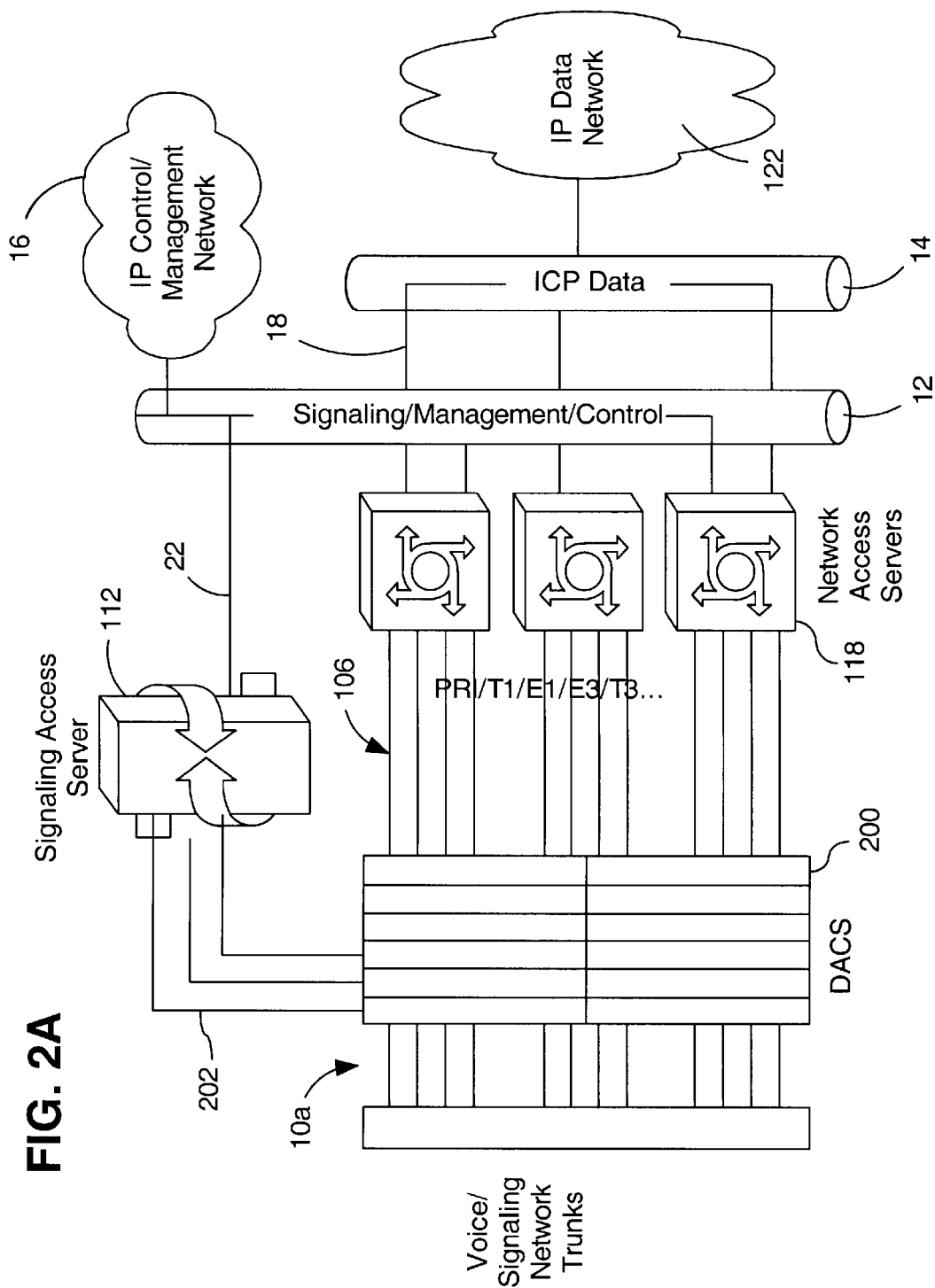


FIG. 2A

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