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**Murakawa**

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(54) **METHOD OF VIRTUAL PRIVATE NETWORK COMMUNICATION IN SECURITY GATEWAY APPARATUS AND SECURITY GATEWAY APPARATUS USING THE SAME**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 866 days.

(21) Appl. No.: **09/729,262**

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(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**

**H04L 9/00** (2006.01)

(52) **U.S. Cl.** ..... **726/15**

(58) **Field of Classification Search** ..... 709/238;  
713/153, 201; 707/227; 726/15

See application file for complete search history.

(56) **References Cited**

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(57) **ABSTRACT**

A method of the Virtual Private Network (VPN) communication employed for a security gateway apparatus and the security gateway apparatus using the same, which allow a personal computer outside a local area network (LAN) to access, via a WAN, to a terminal on the LAN, virtually regarding the outside PC as a terminal on the LAN. The communication method is employed for a security gateway apparatus to connect, through concentration and conversion process, between a LAN and a WAN including a public network. Security Architecture for the Internet Protocol (IPsec) establishes VPN with an outside PC having a dialup connection to the WAN. During an Internet Key Exchange (IKE) communication that is performed prior to the IPsec communication, the security gateway apparatus integrates a Dynamic Host Configuration Protocol (DHCP) communication option into an IKE data, and designates the IP address of the outside PC from a tunneled IP packet.

**24 Claims, 8 Drawing Sheets**

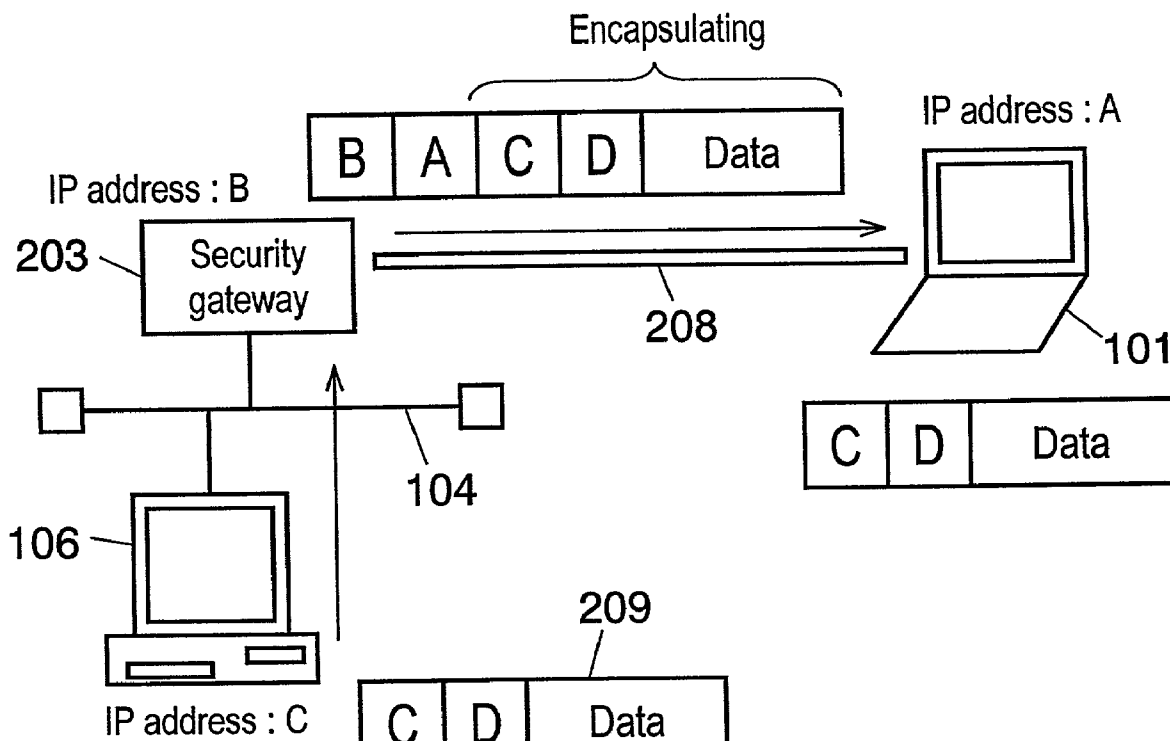


FIG. 1

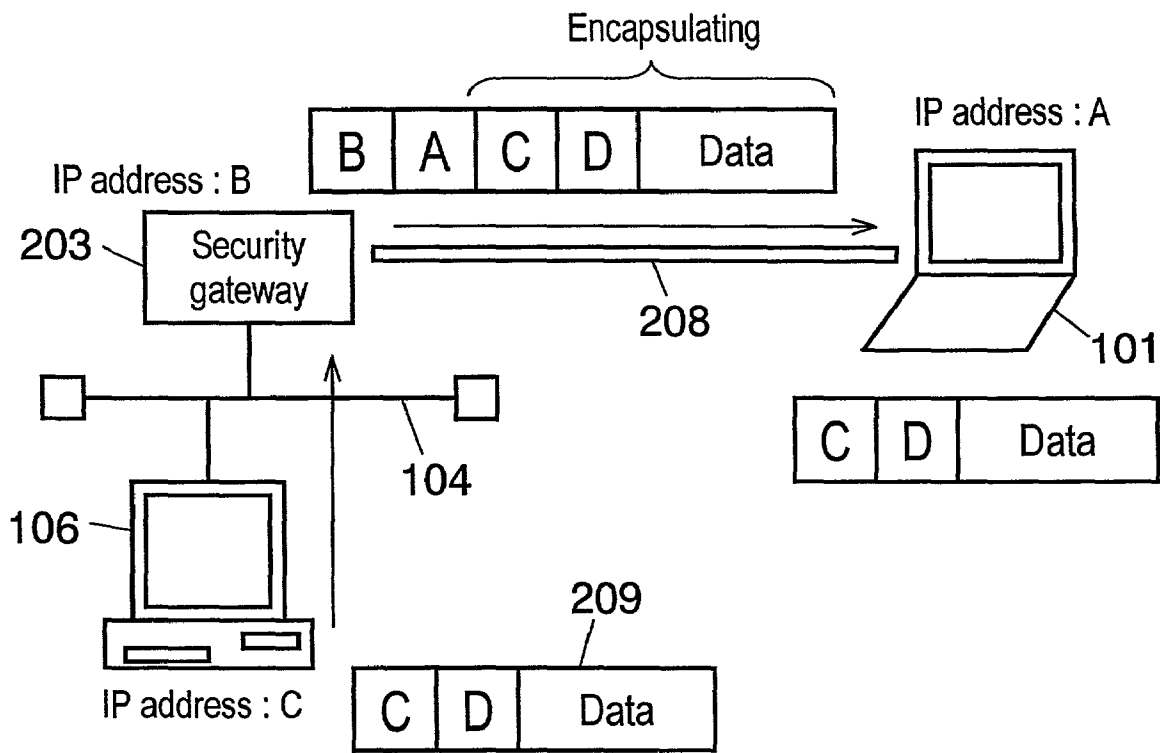


FIG. 2

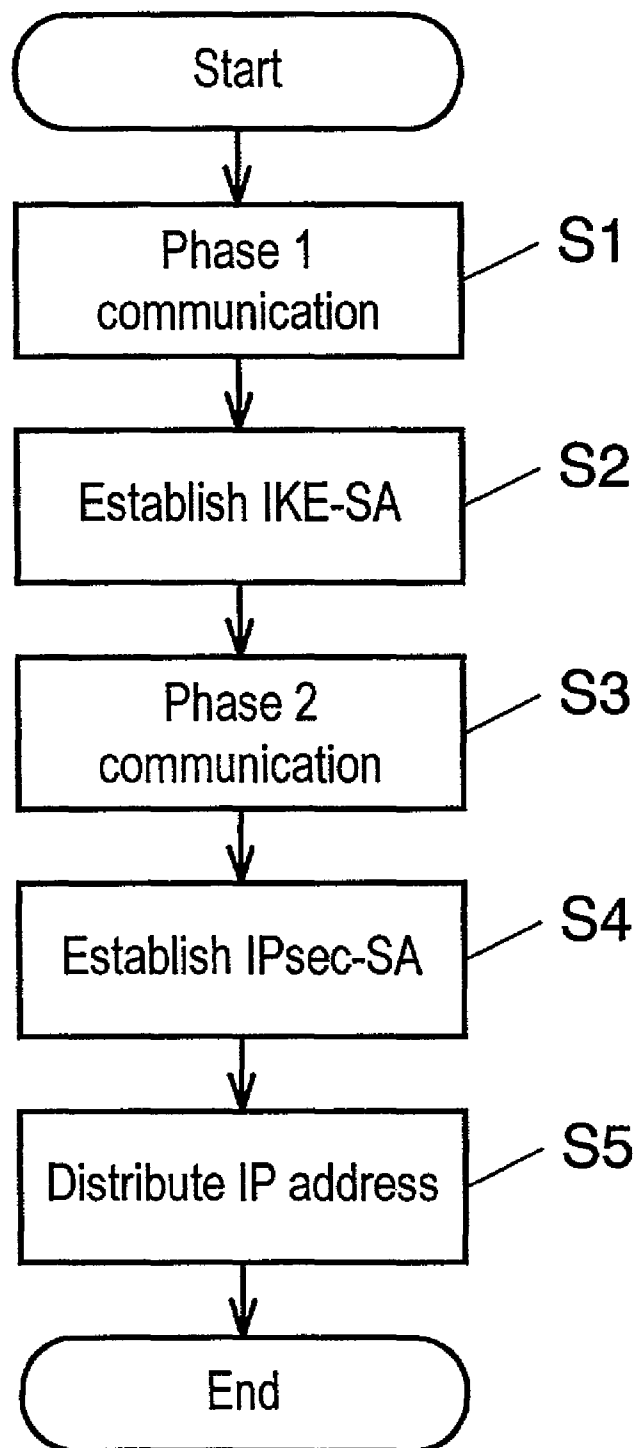


FIG. 3

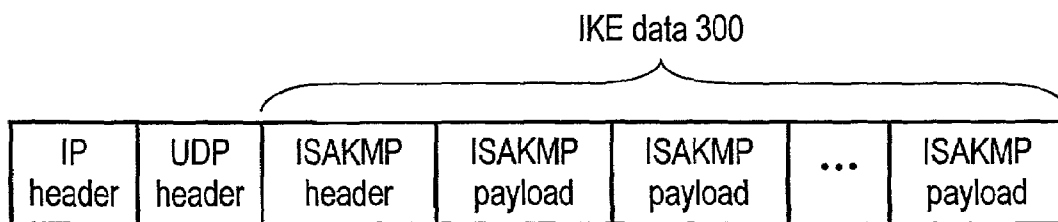
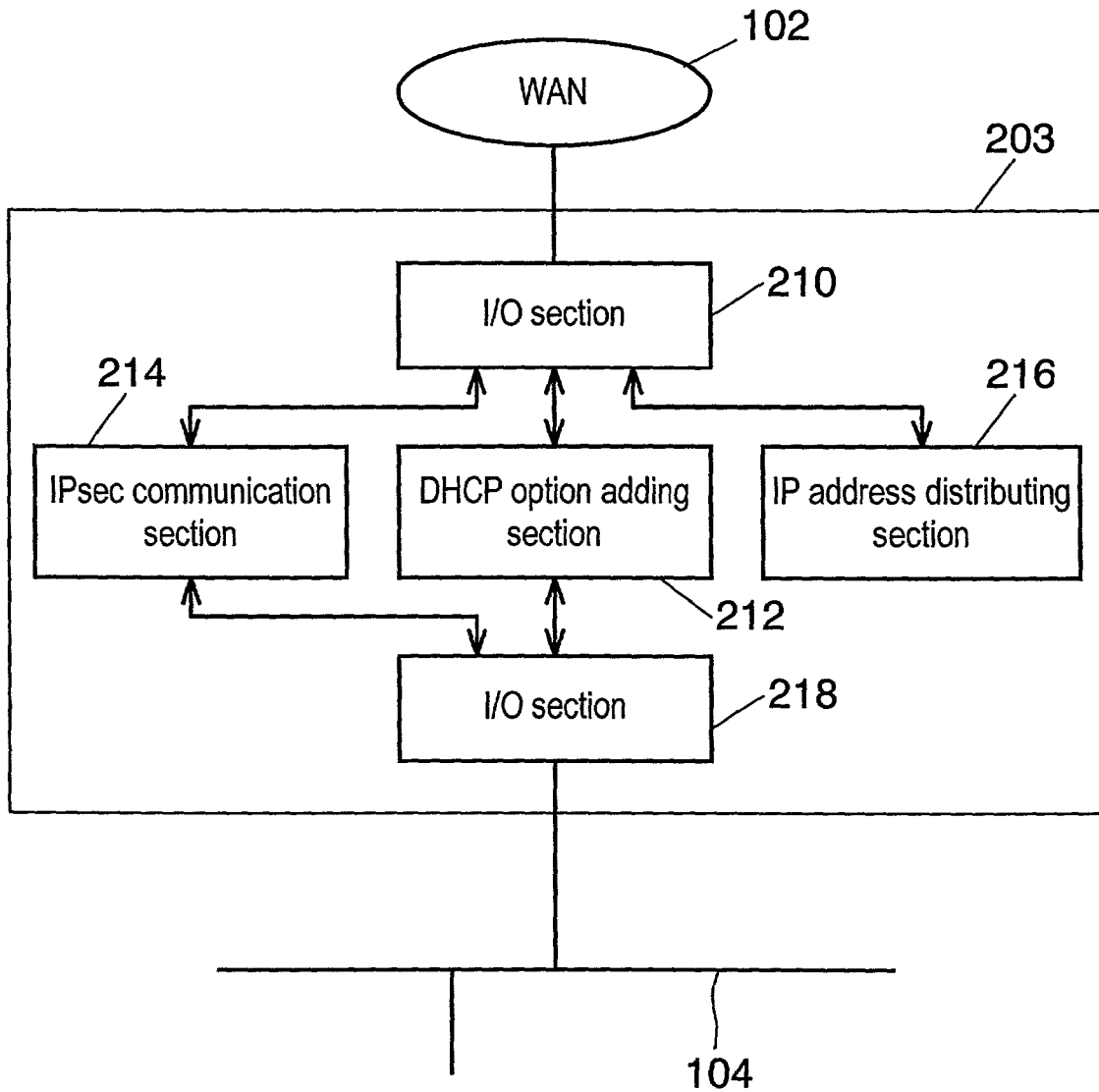


FIG. 4



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