



US007490151B2

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

(10) **Patent No.:** **US 7,490,151 B2**  
(45) **Date of Patent:** **Feb. 10, 2009**

(54) **ESTABLISHMENT OF A SECURE COMMUNICATION LINK BASED ON A DOMAIN NAME SERVICE (DNS) REQUEST**

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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 818 days.

(21) Appl. No.: **10/259,494**

(22) Filed: **Sep. 30, 2002**

(65) **Prior Publication Data**  
US 2003/0037142 A1 Feb. 20, 2003

**Related U.S. Application Data**

(60) Division of application No. 09/504,783, filed on Feb. 15, 2000, now Pat. No. 6,502,135, which is a continuation-in-part of application No. 09/429,643, filed on Oct. 29, 1999, now Pat. No. 7,010,604.

(60) Provisional application No. 60/137,704, filed on Jun. 7, 1999, provisional application No. 60/106,261, filed on Oct. 30, 1998.

(51) **Int. Cl.**  
**G06F 15/173** (2006.01)

(52) **U.S. Cl.** ..... **709/225; 709/229**

(58) **Field of Classification Search** ..... **709/217-225, 709/229; 713/201**

See application file for complete search history.

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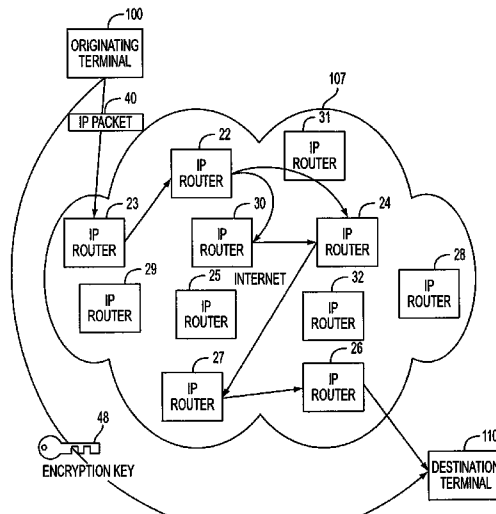
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(57) **ABSTRACT**

A plurality of computer nodes communicate using seemingly random Internet Protocol source and destination addresses. Data packets matching criteria defined by a moving window of valid addresses are accepted for further processing, while those that do not meet the criteria are quickly rejected. Improvements to the basic design include (1) a load balancer that distributes packets across different transmission paths according to transmission path quality; (2) a DNS proxy server that transparently creates a virtual private network in response to a domain name inquiry; (3) a large-to-small link bandwidth management feature that prevents denial-of-service attacks at system chokepoints; (4) a traffic limiter that regulates incoming packets by limiting the rate at which a transmitter can be synchronized with a receiver; and (5) a signaling synchronizer that allows a large number of nodes to communicate with a central node by partitioning the communication function between two separate entities.

**16 Claims, 35 Drawing Sheets**



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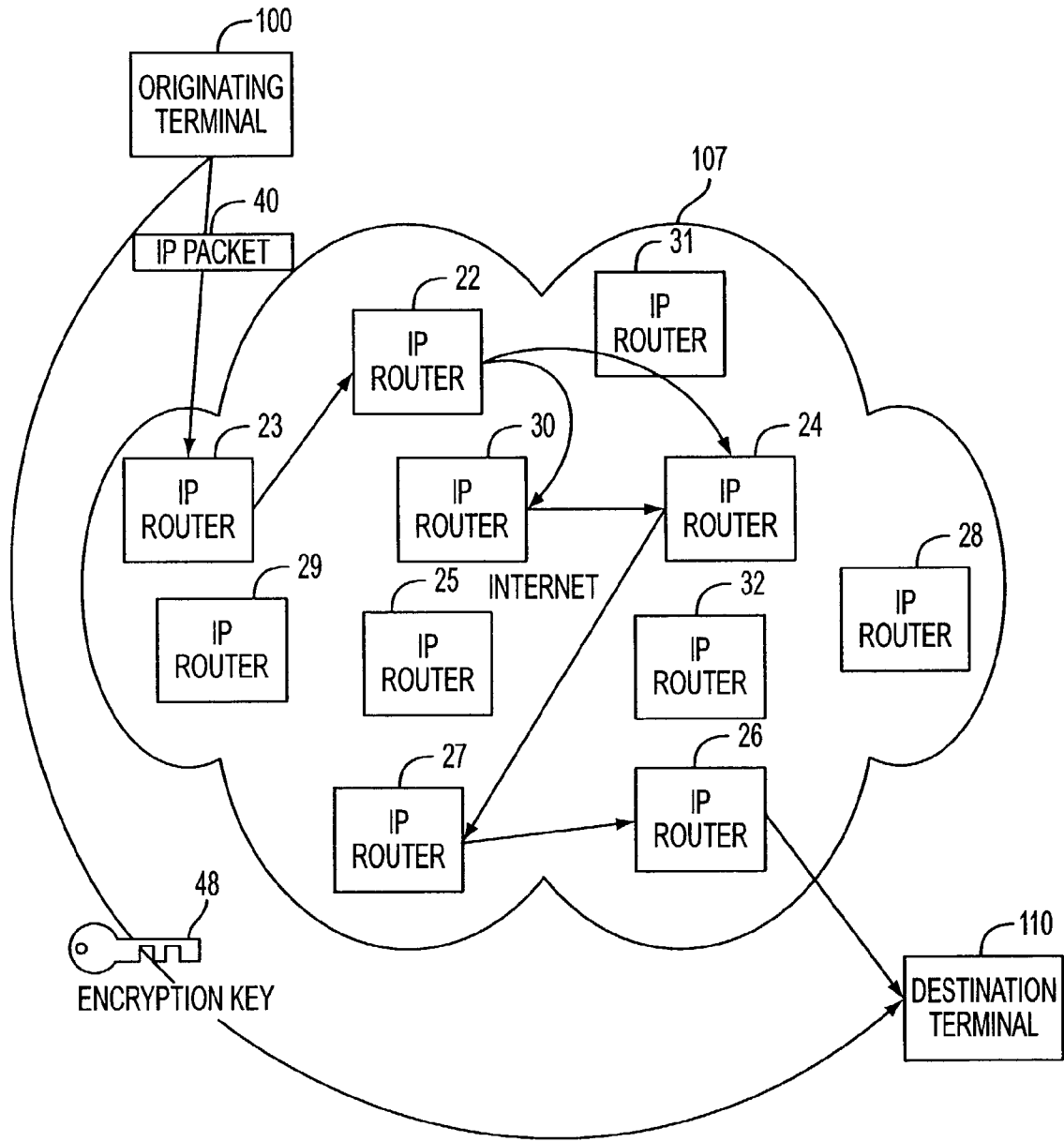


FIG. 1

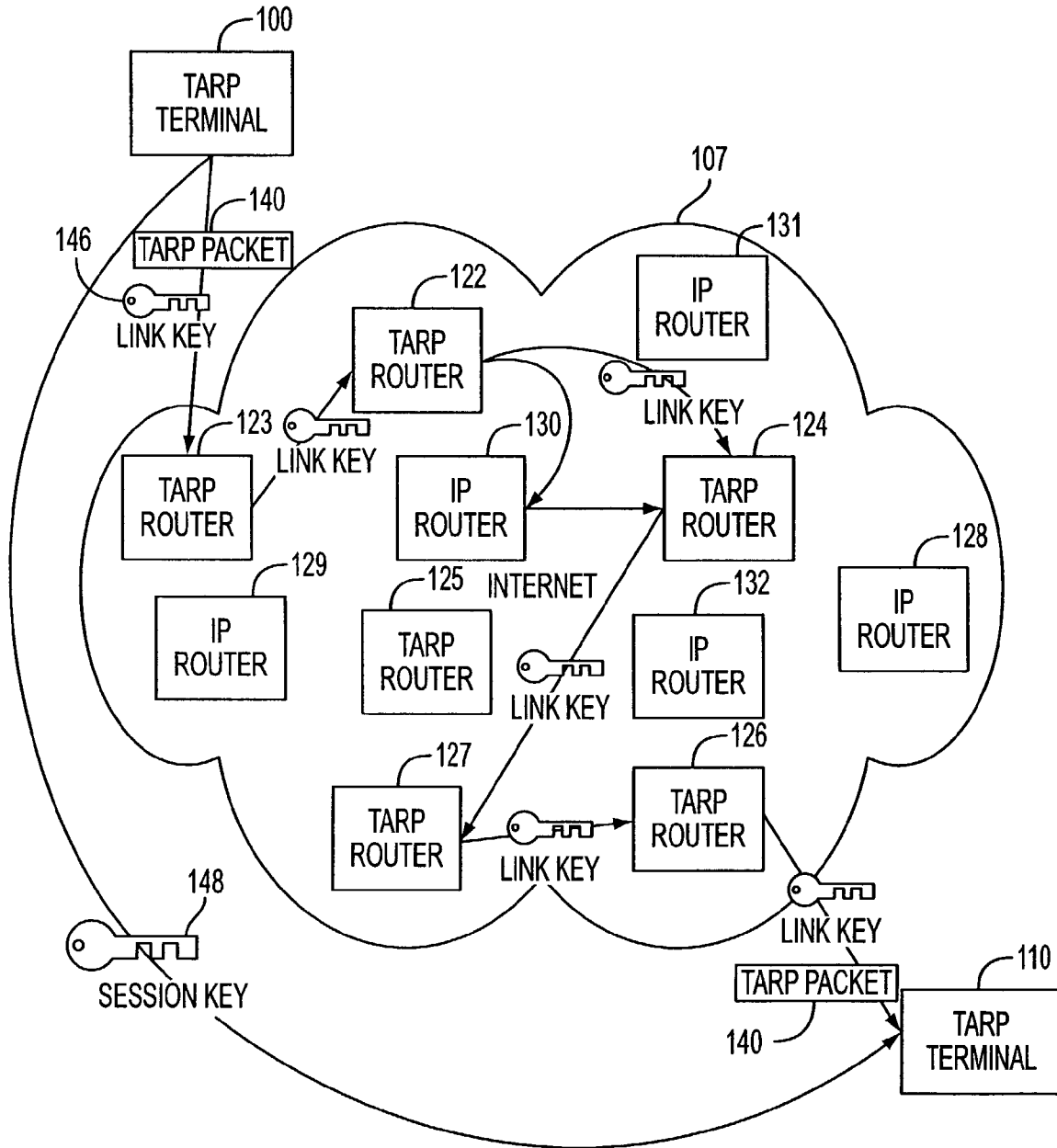


FIG. 2

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