# EXHIBIT 1020

(19) **United States**

(12) **Patent Application Publication** (10) Pub. No.: **US 2002/0010866 A1**

McCullough et al. (43) **Pub. Date:** **Jan. 24, 2002**

(54) **METHOD AND APPARATUS FOR IMPROVING PEER-TO-PEER BANDWIDTH BETWEEN REMOTE NETWORKS BY COMBINING MULTIPLE CONNECTIONS WHICH USE ARBITRARY DATA PATHS**

(76) Inventors: **David J. McCullough**, Upper Brookfield (AU); **Wayne Meissner**, Woolloowin (AU); **Craig S. Humphrey**, Auchenflower (AU); **Christopher J. Biggs**, Chapel Hill (AU); **Antonio Basilio Merenda**, Chapel Hill (AU)

Correspondence Address:
**Claude A. S. Hamrick, Esq**
**OPPENHEIMER WOLFF & DONNELLY LLP**
**1400 Page Mill Road**
**Palo Alto, CA 94304 (US)**

(21) Appl. No.: **09/740,494**

(22) Filed: **Dec. 18, 2000**

**Related U.S. Application Data**

(63) Non-provisional of provisional application No. 60/172,369, filed on Dec. 16, 1999.

**Publication Classification**

(51) **Int. Cl.$^7$** .............................. **H04L 12/22**; H04K 1/00
(52) **U.S. Cl.** ........................................... **713/201**; 709/228

(57) **ABSTRACT**

A method and apparatus for increasing peer-to-peer bandwidth between remote networks by combining multiple connections, which use arbitrary data paths, is disclosed. The apparatus is a gateway node, which can be a specifically designed computer, open computer platform or extensions to firmware resident in a router; gateway or remote access server. The method includes origin authentication and data confidentiality, packet fragmenting, sequencing directed-routing, buffering, fragment encapsulation, packet re-assembly, and additional encapsulation for traversal of firewalls. Packet fragments transferred using the method can travel along very diverse paths through intervening public or private networks before arriving at the peer, which reassembles them. This eliminates the problems present in current aggregation schemes used by prior art, which are sensitive to the limitations in the infrastructure in the service provider's points of presence.
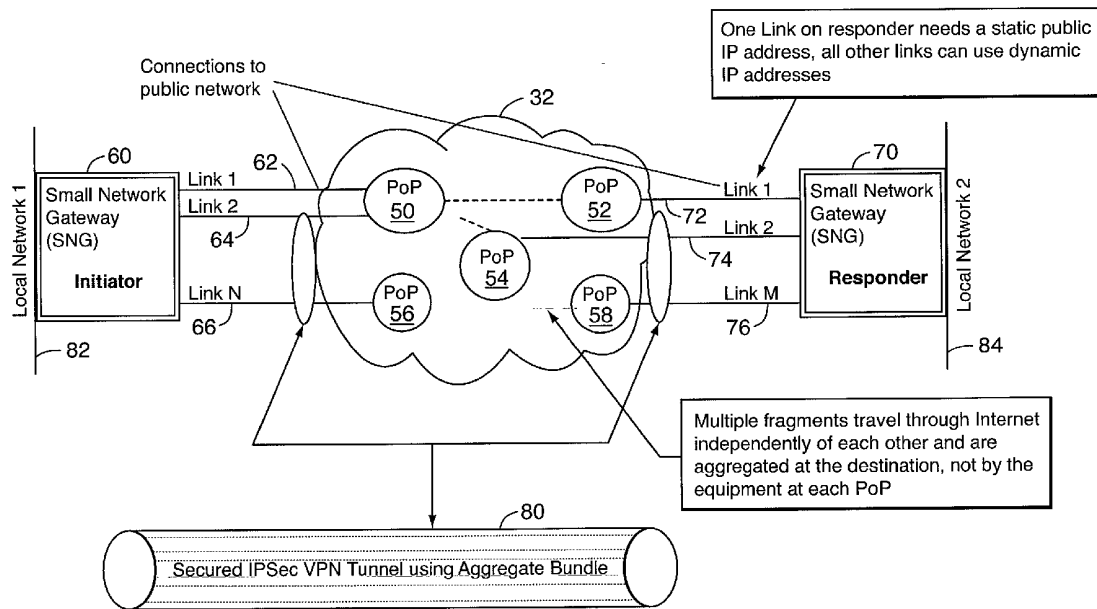
FIG. 1



FIG. 2

Single aggregate packet (Channel 1 + Channel 2) travels to destination usually 2 x B ISDN channels

Publicly accessible site

46

PoP 44

Internet

32

FIG. 3

Channel aggregation must occur at PoP

PoP 42

36

Channel 1

Channel 2

34

40

Router

38

Local Network

One Link on responder needs a static public IP address, all other links can use dynamic IP addresses

Local Network 2

Small Network Gateway (SNG)

**Responder**

Link 1

Link 2

Link M

70

72

74

76

84

Multiple fragments travel through Internet independently of each other and are aggregated at the destination, not by the equipment at each PoP

PoP 52

PoP 58

PoP 54

PoP 50

PoP 56

32

Connections to public network

Link 1

Link 2

Link N

62

64

66

60

Small Network Gateway (SNG)

**Initiator**

82

Local Network 1

80
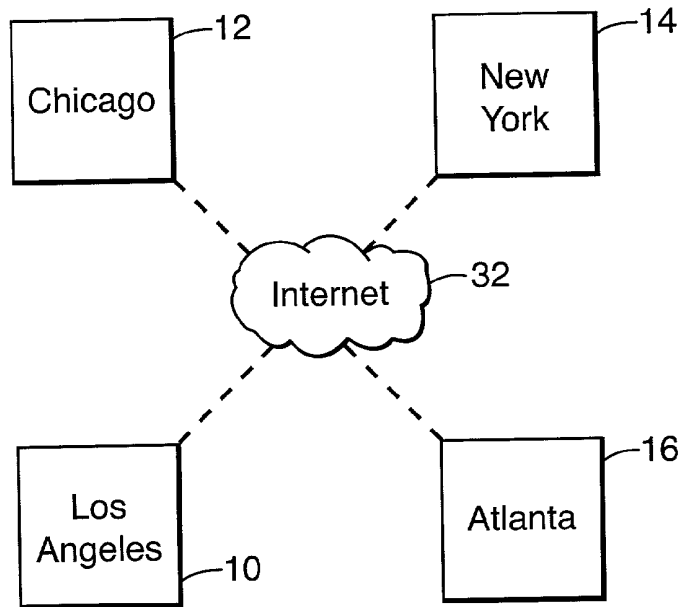
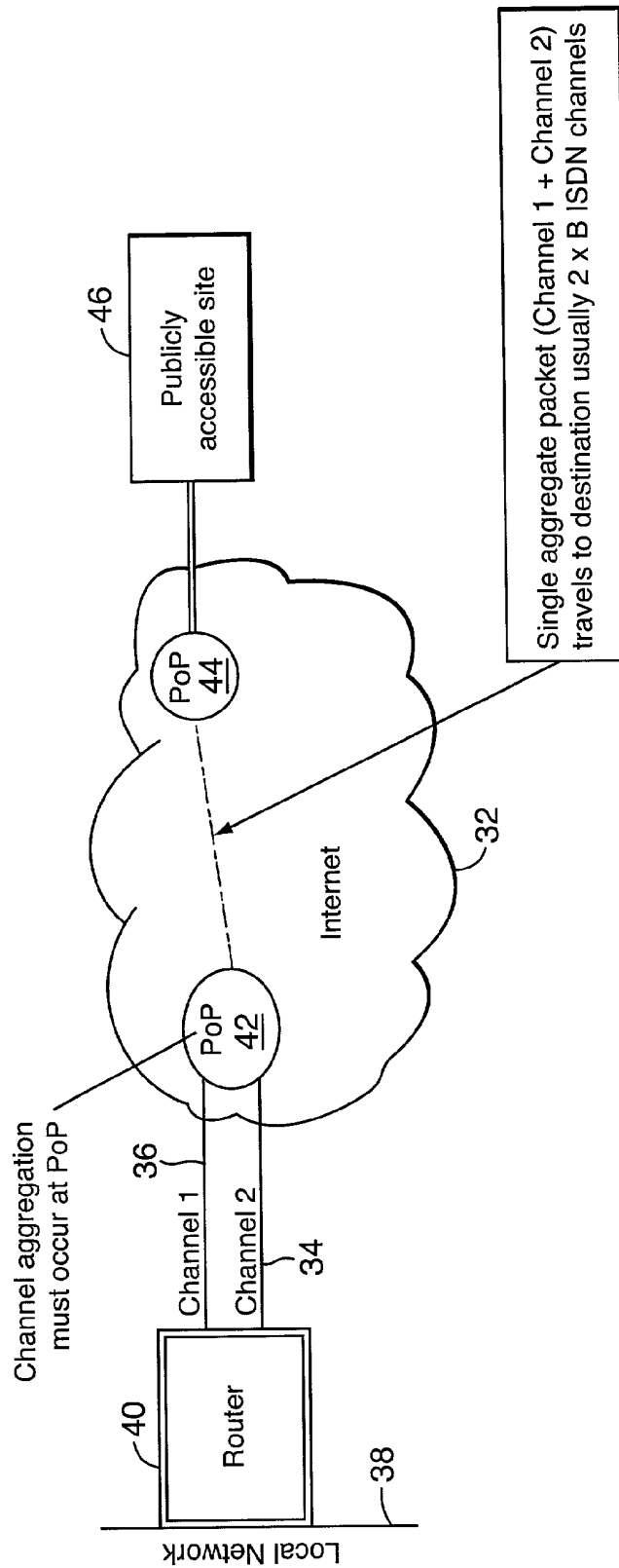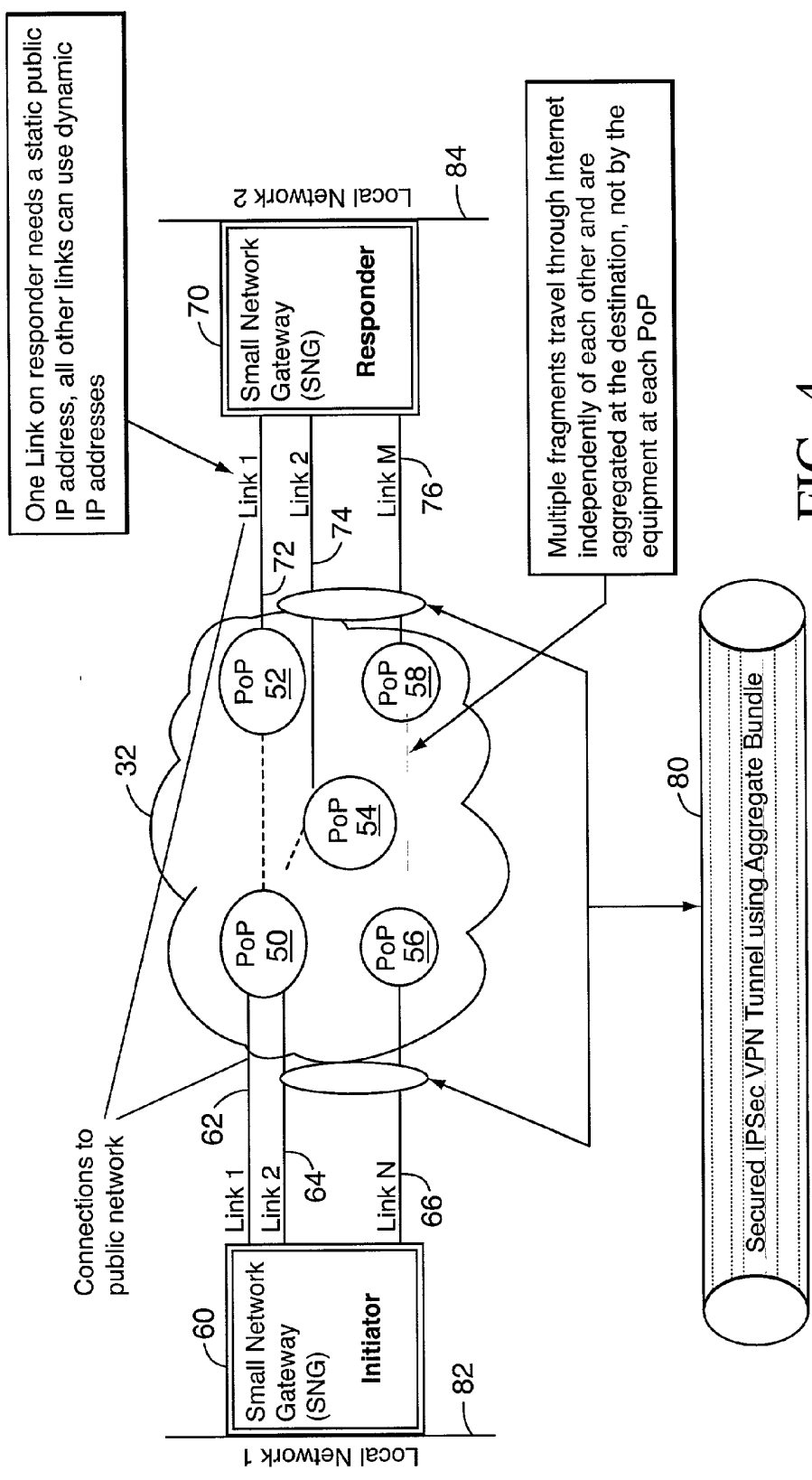Secured IPSec VPN Tunnel using Aggregate Bundle

# FIG. 4

# DOCKET ALARM

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

### LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

### FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

### E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.

fastcase ®
Smarter legal research.