



US010652111B2

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

(10) **Patent No.:** **US 10,652,111 B2**
(45) **Date of Patent:** **May 12, 2020**

(54) **METHOD AND SYSTEM FOR DEEP PACKET INSPECTION IN SOFTWARE DEFINED NETWORKS**

(58) **Field of Classification Search**
CPC . H04L 43/026; H04L 12/6418; H04L 43/028;
H04L 49/70; H04L 69/161
(Continued)

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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 306 days.

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(21) Appl. No.: **15/126,288**

EP 2672668 A1 12/2013

(22) PCT Filed: **Apr. 21, 2015**

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(86) PCT No.: **PCT/US2015/026869**
§ 371 (c)(1),
(2) Date: **Sep. 15, 2016**

Supplementary Search Report of EP 15783292 dated Nov. 7, 2017.
(Continued)

(87) PCT Pub. No.: **WO2015/164370**
PCT Pub. Date: **Oct. 29, 2015**

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(65) **Prior Publication Data**
US 2017/0099196 A1 Apr. 6, 2017

(57) **ABSTRACT**

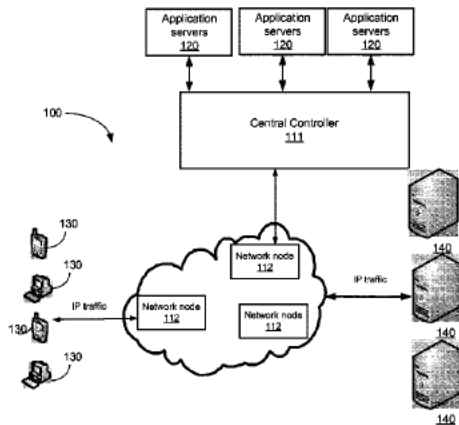
Related U.S. Application Data

(60) Provisional application No. 61/982,358, filed on Apr. 22, 2014.

A method for deep packet inspection (DPI) in a software defined network (SDN). The method includes configuring a plurality of network nodes operable in the SDN with at least one probe instruction; receiving from a network node a first packet of a flow, the first packet matches the at least one probe instruction and includes a first sequence number; receiving from a network node a second packet of the flow, the second packet matches the at least one probe instruction and includes a second sequence number, the second packet is a response of the first packet; computing a mask value respective of at least the first and second sequence numbers indicating which bytes to be mirrored from subsequent packets belonging to the same flow; generating at least one
(Continued)

(51) **Int. Cl.**
H04L 12/26 (2006.01)
H04L 12/64 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC **H04L 43/028** (2013.01); **H04L 12/6418** (2013.01); **H04L 43/026** (2013.01);
(Continued)



mirror instruction based on at least the mask value; and configuring the plurality of network nodes with at least one mirror instruction.

54 Claims, 6 Drawing Sheets

- (51) **Int. Cl.**
H04L 12/851 (2013.01)
H04L 12/931 (2013.01)
H04L 29/06 (2006.01)
- (52) **U.S. Cl.**
CPC *H04L 47/2483* (2013.01); *H04L 49/70*
(2013.01); *H04L 69/161* (2013.01)
- (58) **Field of Classification Search**
USPC 370/389
See application file for complete search history.

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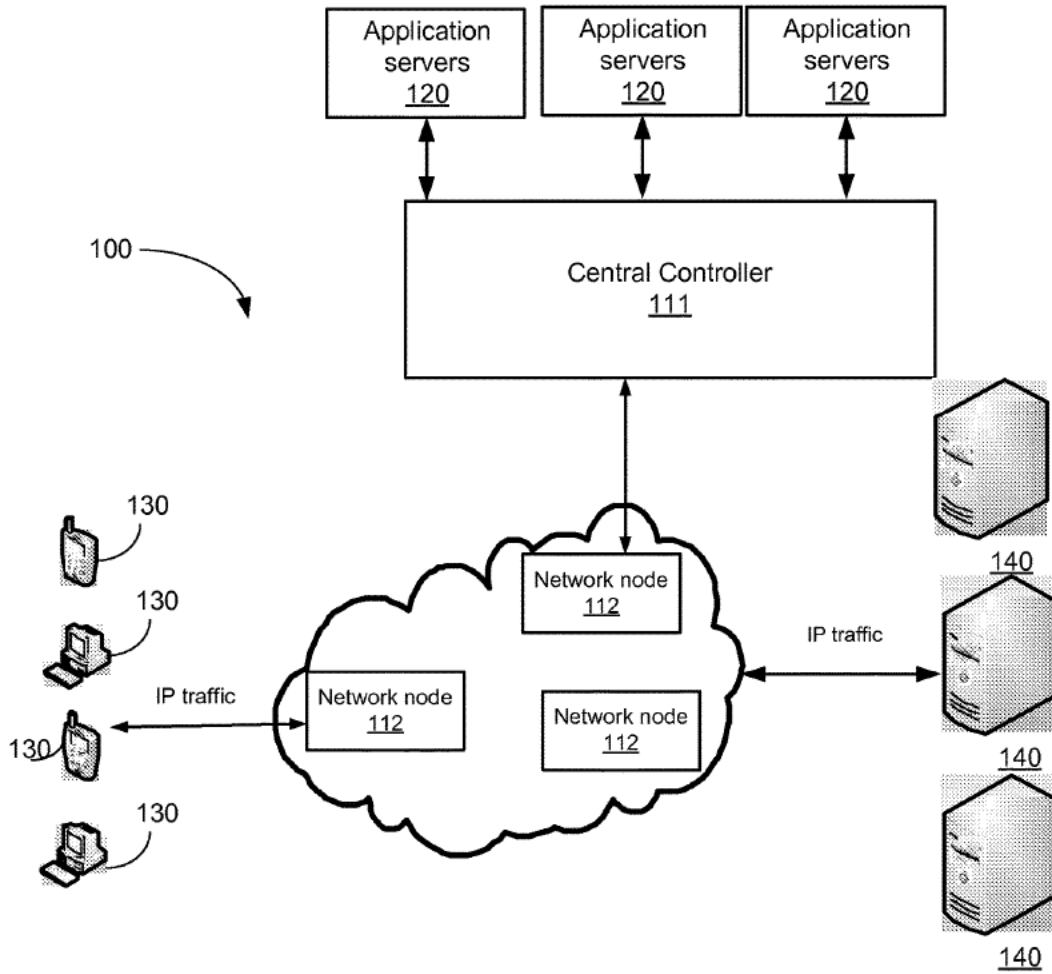


FIG. 1

200

KEY 210					DATA 220								
Client IP address	Server IP address	Client source TCP port	Server destination TCP port	IP protocol number	Flow ID	Client→ Server sequence number M	Server→ Client sequence number N	state	Creation timestamp	Client→ Server Hit counter X [bytes]	Server → Client Hit counter Y [bytes]	Client→ Server data buffer	S
192.1.1.1	209.1.4.4	15431	21	6	1	0xf46d5c34	0x3c98b9ab	ACK	15:32:13				

FIG. 2

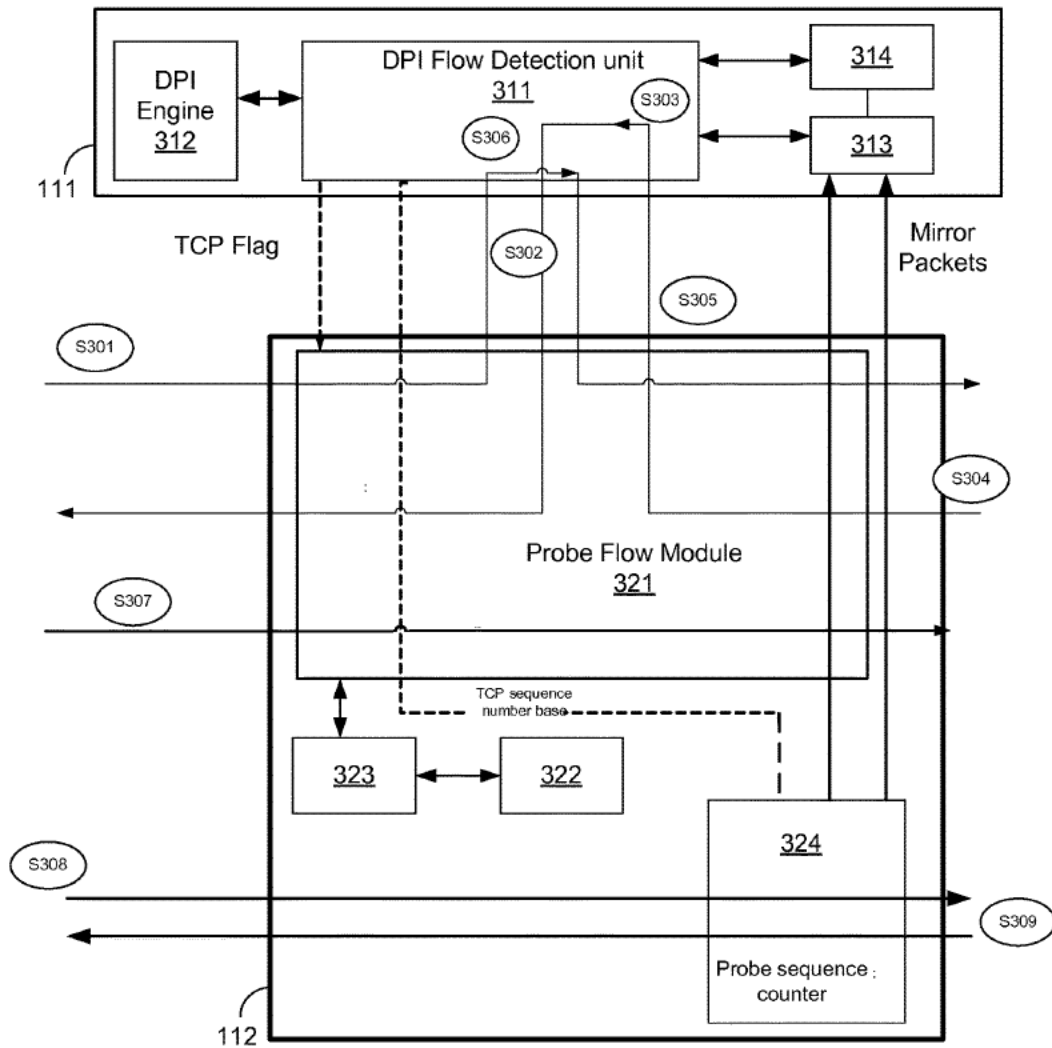


FIG. 3

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