

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.
Petitioner,

v.

UMBRA TECHNOLOGIES LTD
Patent Owner.

U.S. Patent No. 10,630,505
Issue Date: April 21, 2020
Title: SYSTEM AND METHOD FOR A GLOBAL VIRTUAL NETWORK

Inter Partes Review No.: IPR2024-00497

SUPPLEMENTAL DECLARATION OF DR. A.L. NARASIMHA REDDY

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I, Dr. A.L. Narasimha Reddy, declare as follows:

I. INTRODUCTION

1. I am over the age of eighteen (18) and otherwise competent to make this declaration.

2. I have been retained by Cisco Systems, Inc. (Petitioner) as an independent expert consultant in this proceeding before the United States Patent and Trademark Office. Although I am being compensated at my rate of \$650 per hour for the time I spend on this matter, no part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding. To the best of my knowledge, I have no financial interest in Client.

3. This Declaration is in support of Petitioner's Reply in the *Inter partes* review IPR2024-00497 of U.S. Patent No. 10,630,505 (the "'505 Patent") (EX-1001), titled "SYSTEM AND METHOD FOR A GLOBAL VIRTUAL NETWORK".

4. I incorporate herein, my statements and opinions offered in my previous Declarations, identified as EX-1003 in each of the respective proceedings.

II. END-TO-END TUNNELS THE '505 PATENT

5. FIGs. 33 and 34 of the '505 Patent illustrate a GVN end-to-end tunnel. Fig 33. illustrates GVN end-to-end tunnel(s) from LAN to EPD (**green**) to SRV_AP (**red**) to EPD (**blue**) to LAN:

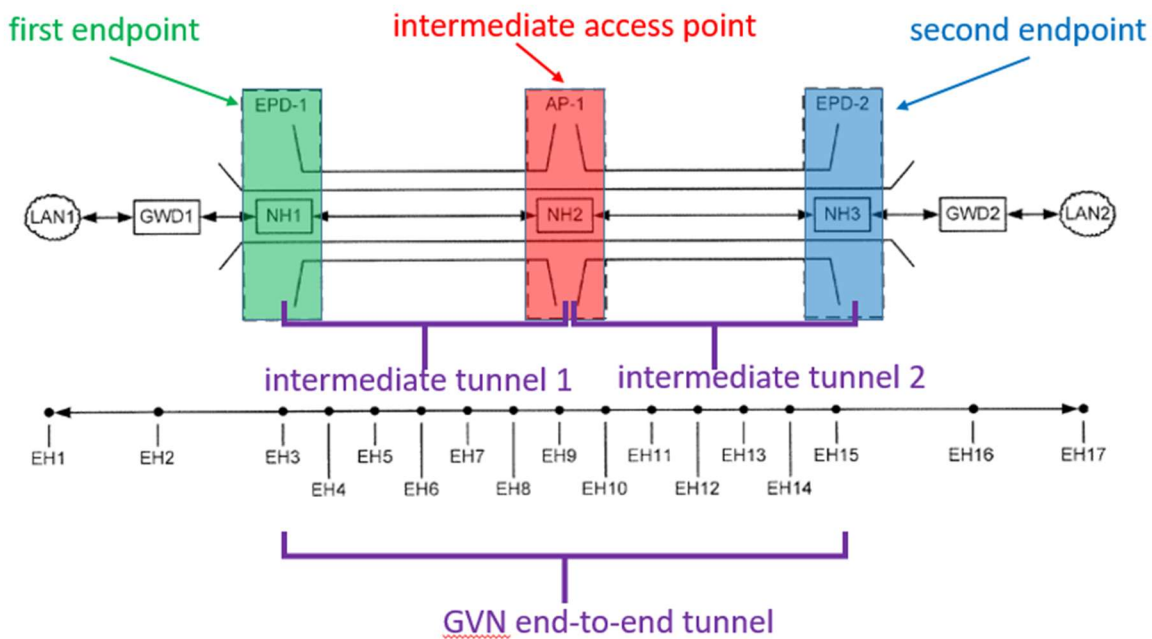


Figure # 33

EX-1004 FIG 33.

6. There is “one tunnel between EPD-1 and AP-1” (intermediate tunnel 1), “joined to a second tunnel between AP-1 and EPD-2” (intermediate tunnel 2) which together form the GVN “tunnel that extends over the entirety of the transit” from one endpoint to the other. EX-1001 33:7-19. The ’505 patent expressly states that FIG 33 “illustrates an end-to-end GVN tunnel(s) between edges of two LANs via one SRV_AP” which is consistent with FIG. 23’s disclosure that multiple intermediate tunnels exist between an endpoint and an intermediate access point server that can be selected to form **multiple** end-to-end tunnels. EX-1001 33:9-11.

7. Likewise, FIG. 34 shows a GVN tunnel, but this time includes two access point servers AP-1 and AP-2 (both red). This GVN tunnel differs from

GVN tunnel of FIG 33 in that FIG. 34 also includes an additional tunnel from AP-1 to AP-2 (intermediate tunnel 3). EX-1004 33:25-31.

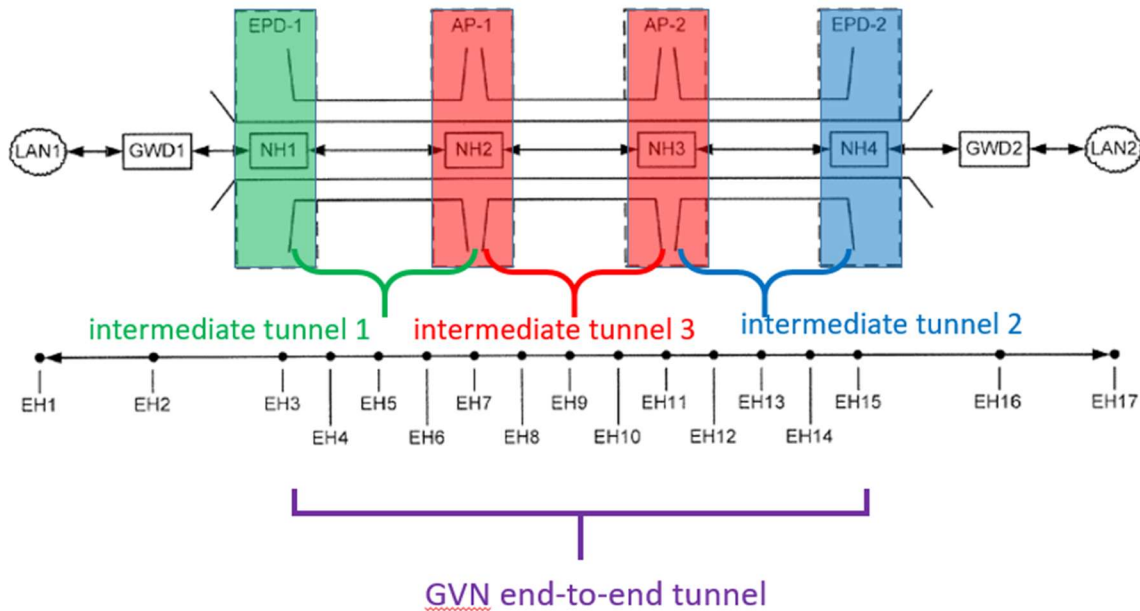


Figure # 34

EX-1004 FIG. 34.

8. The '505 Patent expressly states that FIG. 34 “illustrates an end-to-end GVN tunnel(s) between edges of two LANs via two (or possibly more) SRV_APs” which is consistent with FIG. 23’s disclosure that multiple intermediate tunnels exist between an endpoint and an intermediate access point server that can be selected to form multiple end-to-end tunnels. EX-1001 33:24-26.

9. FIGs. 23, 33 and 34, in which the control server selects the intermediate tunnels to form end-to-end tunnels, are consistent with the '505 Patent description of its improvement over the prior art:

Systems and methods for connecting devices via a virtual global network are disclosed. In one embodiment the network system may comprise a first device in communication with a first endpoint device and a second device in communication with a second endpoint device. The first and second devices may be connected with a communication path. The communication path may comprise one or more intermediate tunnels connecting each endpoint device to one or more intermediate access point servers and one or more control servers.

EX-1001 Abstract.

10. Each of FIGs. 23, 33 and 34 illustrate that a single end-to-end tunnel may be formed by joining multiple intermediate tunnels The '505 Patent expressly states that joined tunnels appear as a single tunnel:

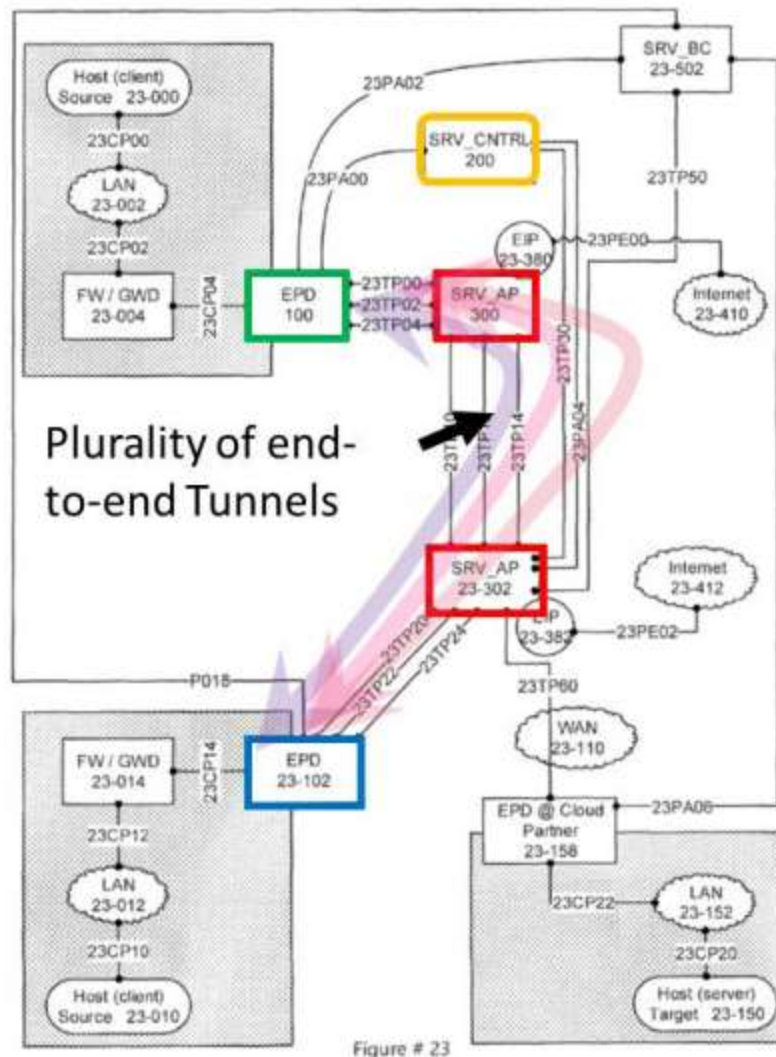
While FIGS. 33, 34 and 35 all illustrate the **joining of tunnels** at AP hops, **this is viewed as a single tunnel** by client devices within LAN1 and LAN2. This singular tunnel represents the neutral Third Layer of the GVN within which it is possible to run all traffic that would normally transit Internet over the internet, including TCP, UDP, and other protocols, plus other tunnels such as IPSec, OpenVPN, PPTP, or other.

EX-1001 34:1-7.

11. The “**GVN tunnel**” of FIG. 33 is expressly described as “[t]here is **one tunnel** between EPD-1 and AP-1 **joined to a second tunnel** between AP-1 and EPD-2.” Likewise, in describing the “**GVN tunnel**” of FIG. 34, the '505

Patent states that the “[t]he difference between this variation and FIG. 33 is that there is a second AP-2 inserted into the path to represent another **joining of tunnels** AP-1 to AP-2 and AP-2 to EPD-2. EX-1001 33:28-31.

12. Further, as demonstrated in FIG. 23, the whole purpose of the invention as claimed is that the control server (yellow) “selects one of the plurality of end-to-end tunnels (purple/pink/mauve) for communication between the first (green) and second (blue) devices:



EX-1001 Fig. 23.

13. FIG. 23 illustrates that multiple intermediate tunnels between two devices such as 23TP00, 23TP02, 23TP04 or 23TP10, 23TP12, 23TP14 or 23TP20, 23TP22, 23TP24 can either offer a single communication path by sending traffic down one tunnel, or two or more tunnels can be aggregated together where two or more tunnels can carry traffic as if they are one tunnel. EX-1001 24:33-39. FIG. 23 is consistent with the invention described in the Abstract of the '505 Patent that the endpoint devices are "connected" by intermediate tunnels to intermediate access point servers:

The communication path may comprise one or more intermediate tunnels connecting each endpoint device to one or more intermediate access point servers and one or more control servers.

EX-1001 Abstract.

14. Other embodiments of the '505 Patent are consistent with FIGs. 23, 33 and 34 illustrating multiple intermediate tunnels connecting to form end-to-end tunnels. For example, FIG. 17 shows endpoint devices connected through multiple concurrent tunnels:

End point devices (EPD) 17-100 through 17-110 will connect with one or more multiple SRV_AP servers through one or more multiple concurrent tunnels.

EX-1001 20:17-20.

15. FIG. 19 shows multiple tunnels connecting endpoint devices with multiple intermediate access points:

End point devices (EPD) such as 19-100 through 19-128 gateway will connect with the most appropriate SRV_AP server relative to their location, their network connectivity, its peering and other relevant factors. These factors are constantly changing and therefore multiple tunnels to multiple SRV_AP servers are maintained by an EPD at all times. Each EPD connects with various (one or more) SRV_AP servers simultaneously.

EX-1001 21:18-25.

16. The embodiment shown in FIG. 39 clearly states that internal tunnel 39-P20 is simply the aggregation of both other tunnels “joined at SRV_AP 39-200.” EX-1001 36:41-48.

CONCLUSION AND DECLARATION

The findings and opinions set forth in this declaration are based on my research and analysis to date. I may continue my examinations in view of additional documents or other factual evidence over the course of this proceeding that may necessitate supplementing and/or refining my opinions. I reserve the right to add to, alter, or delete my opinions and my Declaration upon discovery of additional information. I reserve the right to make such changes as necessary.

In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

I declare that all statements made herein on my own knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

[SIGNATURE ON FOLLOWING PAGE]

Dated: 18th Feb. 2025

By: *A.L. Narasimha Reddy*

Dr. A.L. Narasimha Reddy