

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,

Petitioner,

v.

UMBRA TECHNOLOGIES LTD.

Patent Owner.

Case No. IPR2024-00497

U.S. Patent No. 10,630,505

PATENT OWNER'S PRELIMINARY RESPONSE

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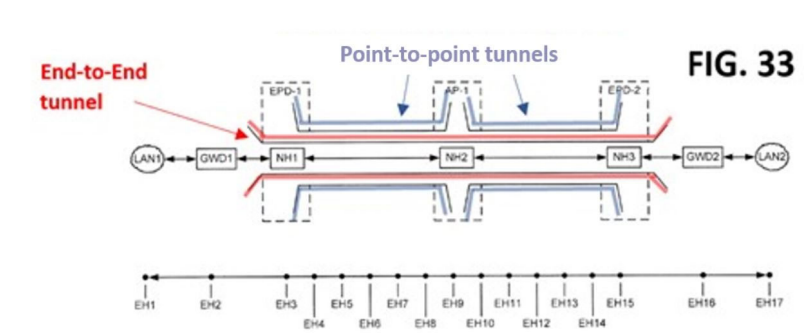
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Patent Owner UMBRA Technologies Ltd. respectfully submits this preliminary response to Cisco System, Inc.'s petition ("Petition") seeking *inter partes* review of U.S. Patent No. 10,630,505 ("the '505 patent"). For the following reasons, the Board should decline to institute *inter partes* review.

I. INTRODUCTION

Hankins, the sole reference applied in the Petition against the independent claims, is in relevant respect identical to the Chen reference distinguished by the applicant during prosecution.

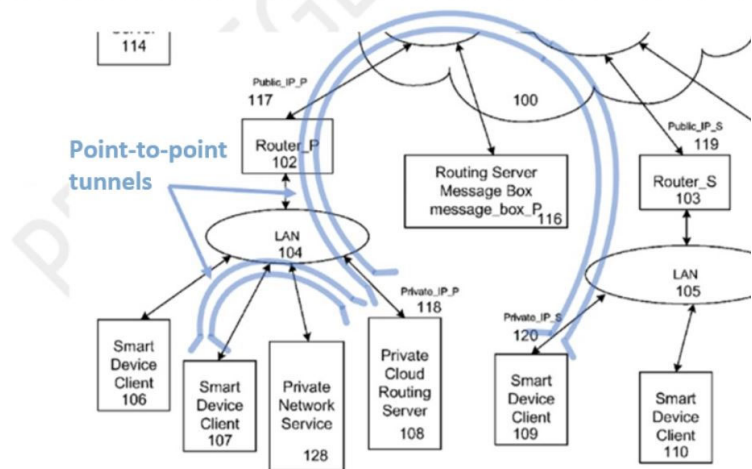
The claims recite "a plurality of intermediate access point servers that form a plurality of *end-to-end tunnels*....," embodiments of which are shown in the annotated version of the '505 patent's FIG. 33. Ex. 1001, claim element 1.3 at 58:16-18 (emphasis added). The specification differentiates such tunnels from *point-to-point tunnels*, also illustrated below.



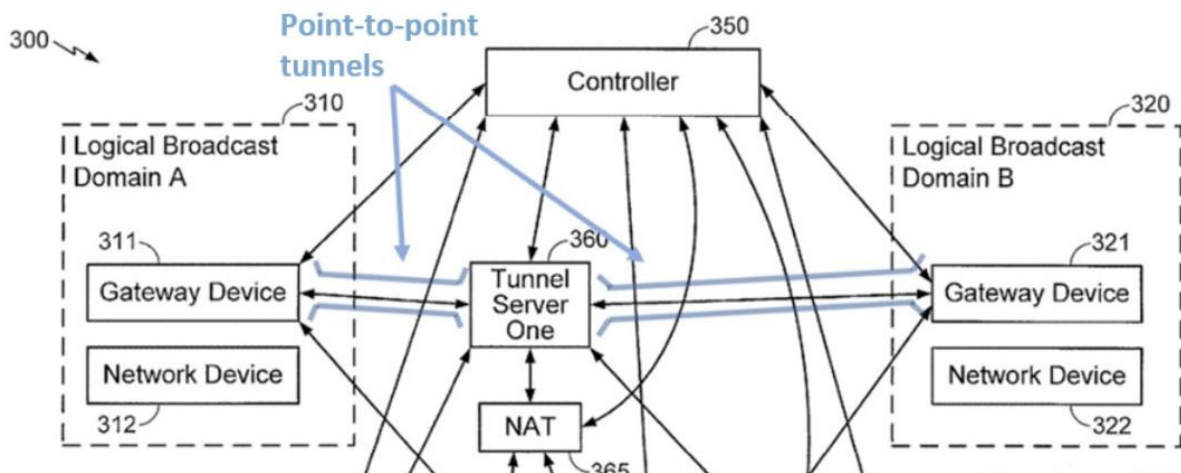
Id., FIG. 33 (annotated).

During prosecution, the applicant argued, and the examiner agreed, that the Chen reference discloses only *point-to-point tunnels* and, as acknowledged in the

Petition, the claims of the '505 patent were allowed for that reason. Ex. 1002 at 150-151. As shown in the annotated figure at right, Chen discloses *point-to-point tunnels* arranged in series. Ex. 1006, Figure 1B (annotated).



As explained in the following sections and illustrated immediately below, Hankins discloses the same type of tunnel network as Chen. Hankins provides one *point-to-point tunnel* between the gateway device 311 and the tunnel server and another *point-to-point tunnel* extending from the tunnel server to the gateway device 321. End-to-end traffic must therefore enter one tunnel at the source, exit that tunnel, undergo some processing, and enter another tunnel to reach a destination. This is,



in relevant respect, the same architecture as disclosed in Chen. Ex. 1005, FIG. 2 (annotated).

The Petition should be denied because Hankins fails to meet the end-to-end tunnel recitation for the same reason as Chen. The Petition should also be denied under 35 U.S.C. § 325(d) because the Petition does not even attempt to identify any error—much less material error—in the examiner’s findings concerning the substantially identical Chen reference.

II. ARGUMENT

A. Hankins Fails to Teach an *End-to-End Tunnel* for the Same Reason as Chen, Which Was Discussed Extensively During Prosecution

Hankins is, in relevant respect, identical to the Chen reference applied by the examiner in a rejection and distinguished by the applicant. Both Chen and Hankins teach *point-to-point* tunnels, whereas the claims require *end-to-end tunnels*.

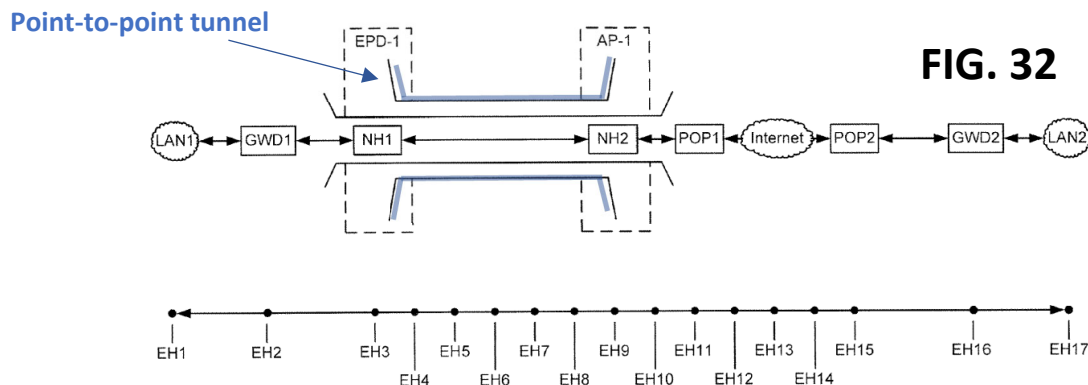
Representative claim element 1.3 recites “a plurality of intermediate access point servers that form a plurality of *end-to-end tunnels* connecting the first device and the second device.” Ex. 1001, 58:16-18 (emphasis added). Substantially similar recitations are found in the other independent claims. *See* claim elements 11.1 at 58:60-64, 14.3 at 59:22-26.

The term “end-to-end tunnel” refers to a tunnel that spans, in an uninterrupted fashion, the entire overlay network path between the endpoints. The ’505 patent specification distinguishes between a *tunnel that spans a single hop* between two

points on the overlay network and an **end-to-end tunnel** that spans the entire overlay network path from one end point to the other (color annotations added to FIGs. 32 and 33):¹

FIG. 32 illustrates a GVN Tunnel from LAN to EPD to SRV_AP to Internet. The tunnel can also act in the other direction offering entry access from Internet to GVN tunnel back to LAN. There is a point of presence POP-1 between AP-1 and the Internet. Another POP-2 is between the Internet and GWD2 representing a Network Access Point (NAP) for connectivity of that LAN.

Ex. 1001 at 33:1-7.



Id., FIG. 32 (annotated).

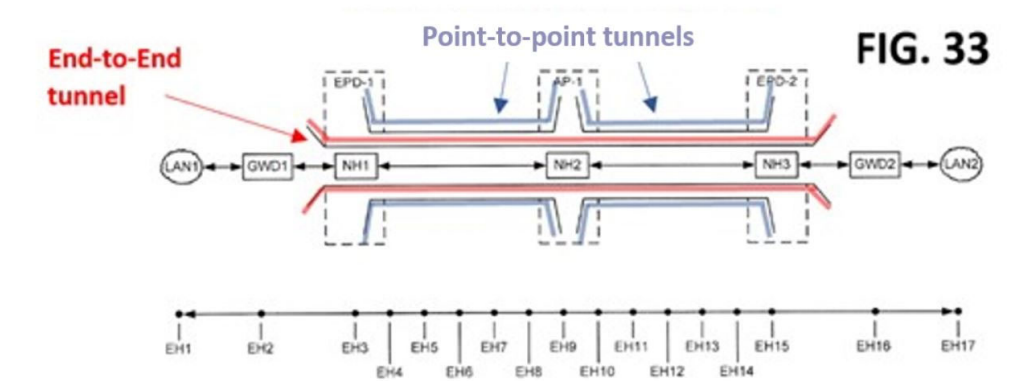
FIG. 33 illustrates GVN Tunnel from LAN to EPD to SRV_AP to EPD to LAN. This variation illustrates an **end-to-end GVN tunnel(s)**

¹ The Petition alleges (at 8-10) that FIG. 23 of the '505 patent shows an example of multiple end-to-end tunnels, but the color arrows added by Petitioner find no support in the '505 patent. Although end-to-end tunnels *could be* overlaid on the topology shown in that figure using the point-to-point tunnels shown as underlying infrastructure and further teachings of the patent, end-to-end tunnels are neither shown nor described at that part of the specification.

between edges of two LANs via one SRV_AP. The difference between this variation and FIG. 32 is that the tunnel extends over the entirety of the transit through the Internet from EH3 through EH15. A second EPD-2 is illustrated.

There is one tunnel between EPD-1 and AP-1. This is joined to a second tunnel between AP-1 and EPD-2. There are three neutral hops within the Third Layer of the GVN represented by NH1, NH2, and NH3 as compared to the 13 hops on the base Internet between EH3 and EH15.

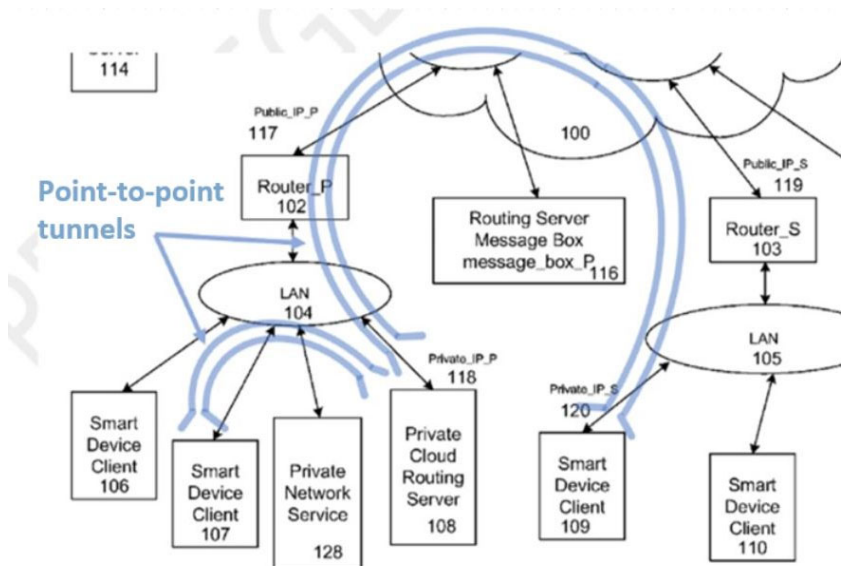
Id. at 33:8-19 (emphasis added).



Id., FIG. 33 (annotated).

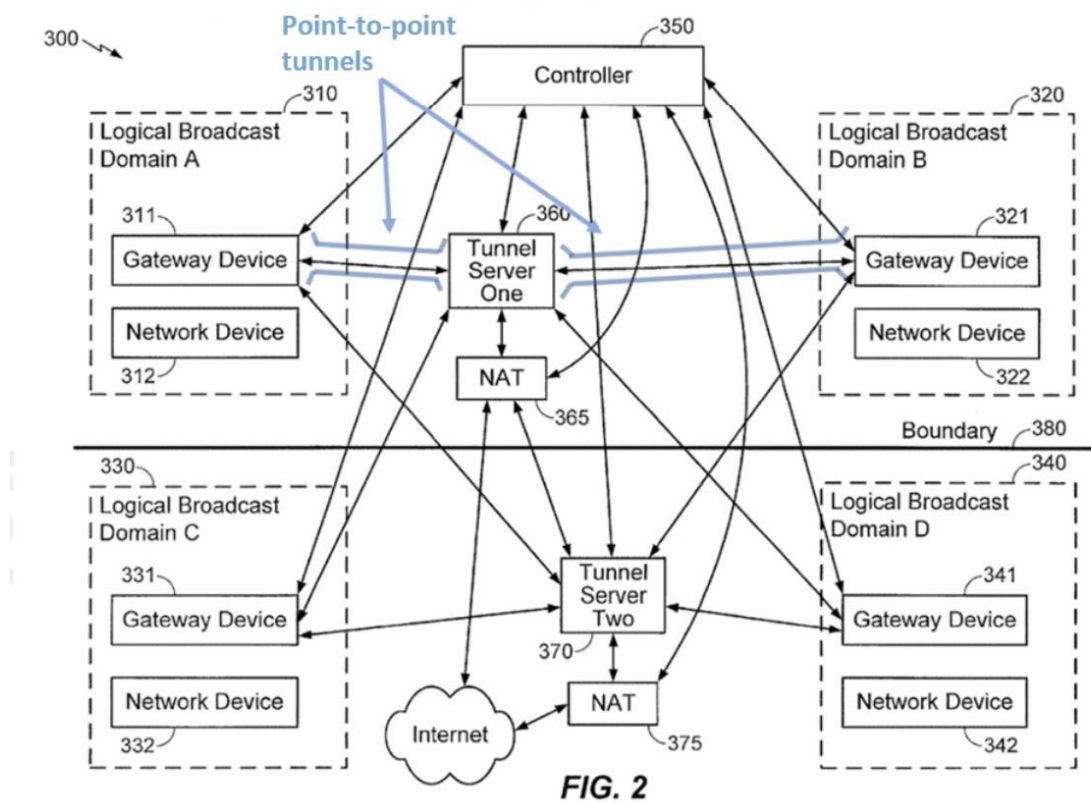
As acknowledged (at 14-15) in the Petition, the '505 patent was allowed based on the *end-to-end tunnel* recitation. During prosecution, the Applicant explained that that the system of Chen involves a series of point-to-point tunnels and not an end-to-end tunnel as recited in the claim. The examiner accepted the following explanation provided by Applicant, which is augmented below with an annotated and cropped illustration from Chen's disclosure.

Chen does not teach “a plurality of end-to-end tunnels connecting the first device and the second device,” as recited by amended claim 1. . . [E]ven if a pair of clients among Smart Device Clients 101, 107, or 109 were to communicate with each other via separately established VPN links to Private Cloud Server 108, *the separate VPN links would not constitute a “plurality of end-to-end tunnels” between the pair of clients. Specifically, Chen does not teach that the Private Cloud Server 108 joins multiple VPN links to provide end-to-end encapsulation and consequently the VPN links would not form a “plurality of end-to-end tunnels.”* Consequently, Chen does not teach a “plurality of end-to-end tunnels” as recited by amended claim 1.



Ex. 1002 at 150-151 (emphasis and annotation added); Ex. 1006, Figure 1B (annotated).

Turning now to the Hankins reference applied in the Petition, it discloses *point-to-point tunnels* like Chen—not “end-to-end tunnels” as claimed. As noted (at 28-29) in the Petition, Hankins’ gateway device 311 communicates with the tunnel server, not directly with the remote gateway 321. Ex. 1004, FIG. 4 (“Gateway devices initiate communication with tunnel server and initiate forwarding broadcast domain and internet transmissions to tunnel server”). The tunnel server then examines the packets and determines how and where to forward them, which may be through a second tunnel. *Id.*; see also FIG. 2 (annotated, below)



The Petition’s annotated version of Hankins’ FIG. 4, reproduced below, shows the functionality of the tunnel server **in red**. As explained in the figure, the “[g]ateway devices initiate communication with tunnel server and initiate forwarding broadcast domain and internet transmissions to tunnel server.” *Id.*, FIG. 4. The “[t]unnel server initiates services, such as virus scanning, URL filtering, deep packet inspection, firewall, etc., with respect to signal packet transmissions. *Id.* Then the “[t]unnel server initiates forwarding broadcast domain transmissions between gateway devices” and “determines if transmissions are between gateway devices and the internet, and, if so, initiates forwarding those transmissions to one or more NATs.” *Id.*

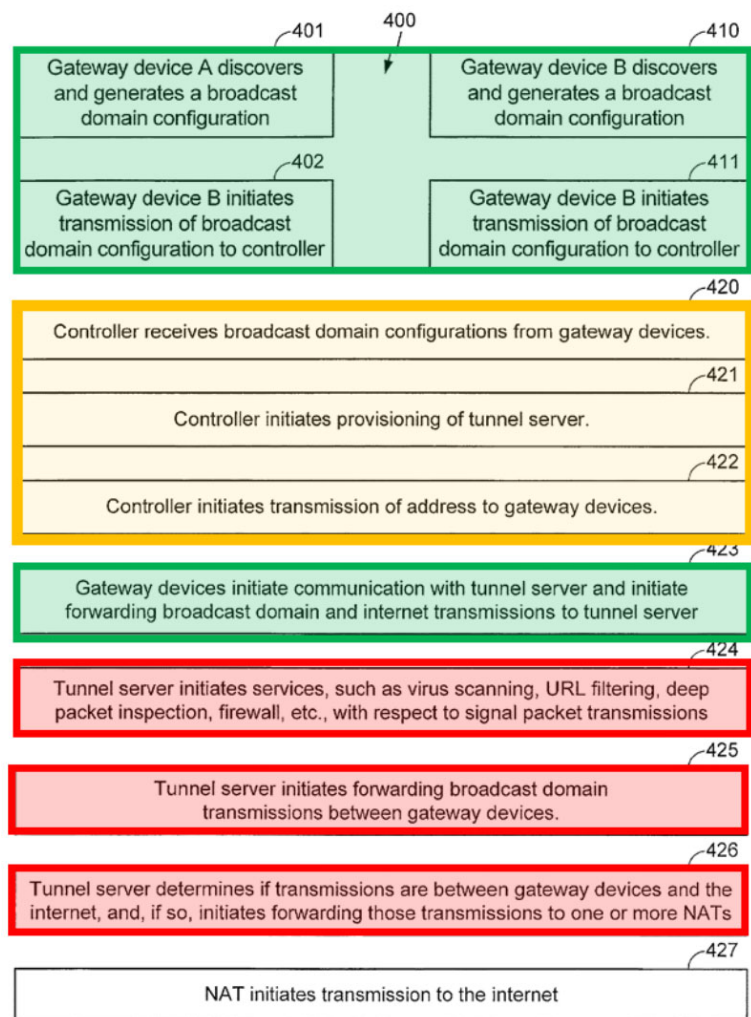
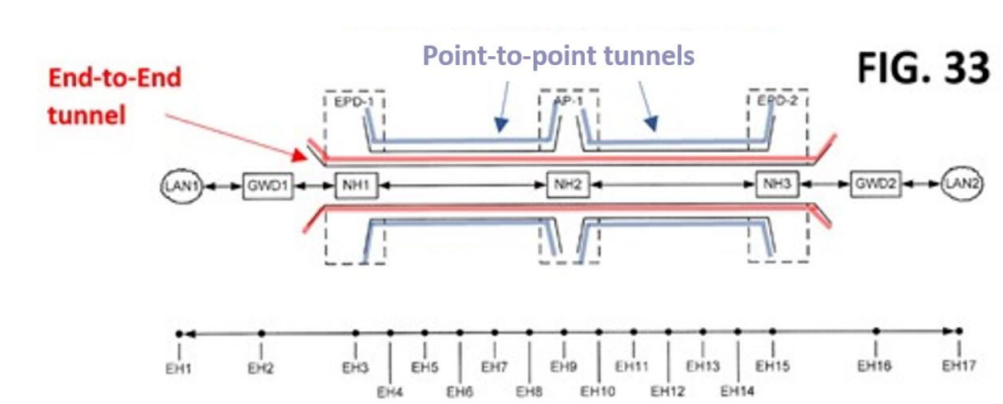


FIG. 4

As noted (at 37) in the Petition, Hankins teaches that the tunnel server may remove encapsulation to determine where to forward the packet (*i.e.*, the next hop). Ex. 1004 13:8-15 (“Thus, for example, if a virtual broadcast domain provides a signal packet A to a tunnel server, it may be encapsulated ... a tunnel server may likewise remove encapsulation (e.g., referred to as termination) to determine where to forward a signal packet and re-encapsulate it for forwarding.”). While Hankins suggests this functionality is optional by using the word “may,” ***Hankins does not actually disclose any other method for encapsulating or tunneling communications between gateway device 311 and gateway device 321.*** For instance, Hankins does not disclose initiating or teach how to initiate a tunnel connection from gateway device 311 directly with gateway device 321. The only method for providing tunneled communication from gateway 311 to gateway 321 is described in FIG. 4, which explains that the tunnel server examines the transmission, performs firewall services and determines where to forward the transmission, if appropriate. *Id.*, FIG. 4.

Thus, Hankins fails to teach an *end-to-end tunnel* for substantially the same reasons as Chen. Hankins and Chen both teach formation of multiple tunnels to an intermediate server (a private network “tunneling server” in Hankins and a “private cloud routing server” in Chen), which in turn forms another tunnel to the next hop. The '505 patent (Figure 33) and the file history make clear that this is a *series of point-to-point tunnels*, not an *end-to-end tunnel* as recited in the claims.



Ex. 1001, Figure 33 (annotated).

B. Because the Petition Does Not Even Attempt to Show an Error in the Examiner’s Analysis of Chen, the Petition Should Also Be Denied under 35 U.S.C. § 325(d)

The Board should exercise its discretion to deny institution pursuant to Section 325(d).

[U]nder § 325(d), the Board uses the following two-part framework: (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review.

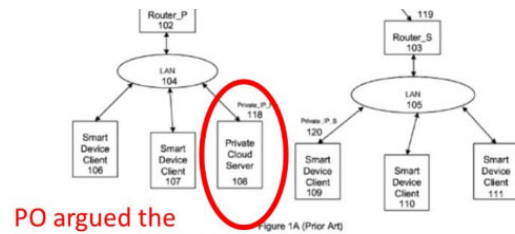
Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8-9. (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”).

The Petition fails to even mention § 325(d) much less provide an analysis under the *Advanced Bionics* factors.

As to the first *Advanced Bionics* factor, the previous section shows that Hankins is substantially identical to Chen in relevant respect. Both Hankins and Chen disclose series of point-to-point tunnels, which as explained during prosecution, does not constitute an end-to-end tunnel.

As to the second *Advanced Bionics* factor, the Petition noted (at 14-15) that the '505 patent was allowed over Chen because that reference failed to disclose that the two VPN links were joined.

The Petition even highlighted (at 15) that fact in an annotated figure, which is reproduced at right.



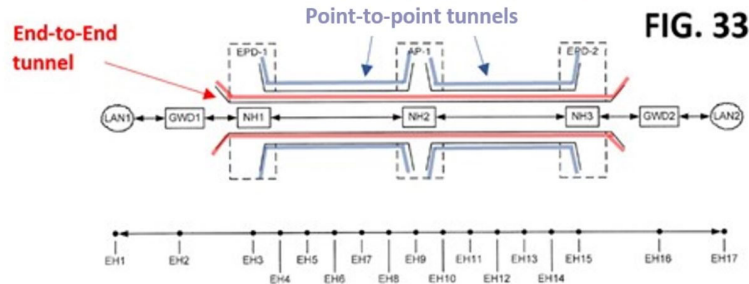
PO argued the
Cloud Server 108
does not join
VPN links

Surprisingly, the Petition nowhere addresses how Hankins is any different than Chen in this regard. The Petition asserts (at 27) that Hankins forms tunnels that are “joined” but only in the sense that a single line between the gateway and tunnel server on a figure could actually represent multiple parallel connections:

[A]lthough FIGs. 2 and 3 of Hankins shows a *single line between the gateway devices and tunnel servers*, Hankins describes these devices are logically joined such that a POSITA understood that the lines represent multiple tunnel paths between the gateway devices and tunnel servers. EX-1004 7:56-65; 36:18-27 (“a tunneling protocol may be substantially compliant with ... Multipath Virtual Private Network”).

Whether one tunnel or multiple parallel tunnels exist between a given Hankins’ gateway device and a given Hankins’ tunnel server is of little import, as neither addresses the core issue discussed during prosecution, namely, whether the prior art taught merely a *series of point-to-point tunnels between endpoints* or

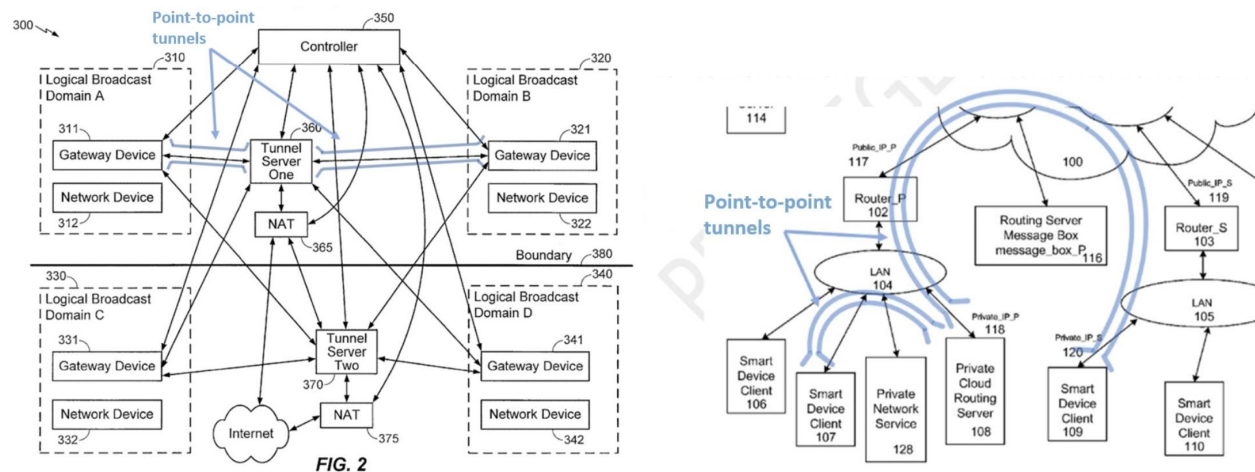
rather an *end-to-end tunnel* as recited in the claims and shown in Figure 33 of the '505 patent.



Ex. 1001, Figure 33 (annotated).

The Petition simply fails to address how Hankins (below left) teaches anything that is materially different than Chen (below right) in this regard. Under the first *Advanced Bionics* prong, an intermediate server that merely terminates tunnels to endpoints and forwards data between the tunnels is “the same or substantially the same arguments” that previously were presented to the Office.

Advanced Bionics at 8, 9 fn. 10.



Ex. 1004, FIG. 2 (annotated); Ex. 1006, Figure 1B (cropped and annotated).

Because Petitioner does not even attempt to explain how the examiner erred in his consideration of Chen or how Hankins' disclosure is materially different than Chen's, the Petition should be denied under 35 U.S.C. § 325(d). *Advanced Bionics* at 8-10 (under *Becton, Dickinson*, where it is demonstrated that the same art or arguments previously were presented to the Office, and pertain to the basis for a rejection, the Petitioner *must* point out specifically how the examiner erred in its evaluation or present additional evidence and facts that warrant reconsideration of the arguments).

III. CONCLUSION

For the foregoing reasons, Patent Owner respectfully submits that the Board should decline to institute *inter partes* review in this proceeding.

Dated: June 27, 2024

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Pursuant to 37 C.F.R. § 42.24 (d), I hereby certify that the foregoing
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Respectfully submitted,

Dated: June 27, 2024

By: /James E. Harris/

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing PATENT OWNER'S PRELIMINARY RESPONSE was served in its entirety by filing this document through the Patent Trial and Appeal Case Tracking System (P-TACTS) as well as providing a courtesy copy via e-mail to the following attorneys of record for the Petitioner listed below:

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