

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

UMBRA TECHNOLOGIES LTD.,
Patent Owner.

IPR2024-00497
Patent 10,630,505 B2

Record of Oral Hearing
Held: June 4, 2025

Before ST. JOHN COURTENAY, III, MICHAEL R. ZECHER, and
GREGG I. ANDERSON, *Administrative Patent Judges*.

IPR2024-00497
Patent 10,630,505 B2

APPEARANCES:

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The above-entitled matter came on for hearing on June 4, 2025,
commencing at 2:53 p.m., via video teleconference.

P R O C E E D I N G S

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JUDGE ANDERSON: We will continue today with the hearing on IPR2024-00497. The Petitioner is Cisco Systems, Inc., and Patent Owner, Umbra Technologies, Ltd., owner of U.S. Patent No. 10,630,505. This is a follow on to our earlier hearing this afternoon for IPR2024-00270. If you would add, for the record, appearances of Counsel, starting with Petitioner.

MR. MULDOON: Thank you, Your Honors. This is Patrick Muldoon for the Petitioner, Cisco Systems, from Duane Morris. And also I have with me online is lead Counsel, Patrick McPherson of Duane Morris, and also backup Counsel, Joseph English, also of Duane Morris.

JUDGE ANDERSON: Thank you, Mr. Muldoon. And for Patent Owner?

COURT REPORTER: Mr. Devlin, you're muted.

MR. DEVLIN: I realized that just as I was trying to re-mute myself. This is Tim Devlin for Patent Owner of Devlin Law Firm, and with me, I have James Lennon, also of Devlin Law Firm, for Patent Owner.

JUDGE ANDERSON: Thank you, Mr. Devlin. Thank you, Mr. Muldoon. With that, let me say that this is Judge Anderson. I'm joined by Judges Courtenay and Zecher. We are participating in this hearing via teleconference. Keep in mind that demonstrative exhibits need to be identified by slide number so we can follow along. We ask that objections to any argument or demonstrative not be made during the presentation. You can respond to anything that you find to be objectionable in your respective responsive arguments. And we'll address any of those issues in a final

1 written decision, if necessary.

2 There's no protective order in this case. The parties need to be
3 aware, as we discussed earlier, the hearing is open to the public and so keep
4 that in mind. Per our pre-hearing order, each party has 45 minutes to present
5 its argument, for a total of 90 minutes for the hearing in this matter.
6 Petitioner has the burden of showing unpatentability of the original claims.
7 Petitioner will proceed first, followed by Patent Owner. Petitioner, you may
8 reserve time to rebut Patent Owner's opposition, and similarly, Patent Owner
9 may reserve time for a sur-rebuttal to respond to the rebuttal.

10 Time is, again, something -- I actually noticed something that
11 may be of help. I believe one of the Judges -- probably Judge Zecher -- was
12 running the timer and at least in my -- Judge Courtenay, thank you -- at least
13 from my video perspective, you can see the time up on the wall between
14 Judges Zecher and Courtenay. So I will keep track, as well, but Judge
15 Courtenay, I'm going to sort of leave it to you and with respect to the
16 participants, you can see -- I assume you can see what I can see, so you can
17 see what time you have left and what -- and address your arguments
18 accordingly. With that, Mr. Muldoon, you may proceed with Petitioner's
19 opening.

20 MR. MULDOON: Thank you, Your Honor. Yes, I'd like to
21 reserve 15 minutes for rebuttal.

22 JUDGE ANDERSON: Thank you.

23 MR. MULDOON: Okay. All right. I'll start on Slide 2. We
24 have an overview of the grounds in '505 in the Petition. The first ground,
25 Claims 1, 2, 4 through 12, 14 through 20, are unpatentable over Hankins
26 alone or in view of Munger, where Claims 1, 11, and 14 are the independent

1 claims. And with respect to Ground 2, dependent Claims 3 and 13 are
2 unpatentable over Hankins alone or in view of Munger, or in further review
3 of Treuhaft.

4 On Slide 3, unlike in the last proceeding, the sole dispute, the
5 only dispute, the only thing we need to decide is whether Hankins discloses
6 the plurality of end-to-end tunnels. There is no other dispute found in the
7 papers, not with respect to the user of Monger, Treuhaft, or with respect to
8 any other claim limitation.

9 In order to better understand the dispute, it is imperative to
10 understand the admitted prior art as described in the '505 patent and more
11 importantly, the solution the '505 patent proposes. In Slide 4, Figure 9 is
12 described as prior art in the '505 patent. Figure 9 illustrates a point-to-point
13 tunnel built between two gateway devices, A1, green, that's on the left, and
14 B1, blue, that's on the right. The LAN A1 connects through its gateway A1
15 to the network of one internet service provider, ISP1, that's shown in yellow,
16 and LAN B2 connects through gateway B1 to the other internet service
17 provider, ISP3, which is shown in orange on the right-hand side of Slide 4.

18 So its ISP1 and ISP3 have a requirement that their network traffic
19 in both connections transit through the network of another internet service
20 provider, which is ISP2, which is shown in purple in the middle. But the
21 '505, that noted that there was no control of the internet ISP2 by either ISP1,
22 yellow, or ISP3 in orange. Both ISP1 and the patent noticed -- the '505
23 patent noticed that the problems associated with this prior art system caused
24 by this lack of unitary control, and it noted it caused issues with routing,
25 quality of service, and stable connection. So in view of these issues, the '505
26 proposed a new solution.

1 Turning to Slide 5, the patent describes the issues/problems
2 with the prior art tunnels. The '505 notes there was little to no control over
3 the grounds. They were relying on the policies of various middle players.
4 They had limited control over the plurality and quality of service of the total
5 connection, so it was difficult for point-to-point tunnels to maintain a high-
6 quality stable connection, especially over third-party networks. The '505
7 patent, its proposed solution was a global virtual network of endpoint
8 devices and access point servers with a centralized control server for
9 automatically monitoring and controlling the routing of communication
10 between endpoint devices using tunnels.

11 Now, the solution proposed in the '505 patent is not how the
12 tunnels are joined or whether the packets transmitting the tunnels were
13 encapsulated, being capsulated or otherwise interrupted, but rather, the
14 solution was invoked in centralized control over the communications path.
15 And as we'll see in the next several slides, the '505 shows several
16 implementations of their solution.

17 On Slide 6, we have annotated Figure 33 which shows an example,
18 a first example of their solution. Figure 33 illustrates the GBN end-to-end
19 tunnel(s), because it can be tunnels or tunnel, from LAN1 to endpoint
20 device -- the green one -- to the access point server that's shown in red in the
21 middle of the intermediate access point, to the second endpoint or EPD, the
22 one in blue, to LAN2.

23 Here, two intermediate tunnels are joined at an intermediate access
24 in the middle, shown in red, to form a plurality of end-to-end tunnels under
25 singular control of a controller. And looking back to Slide 4, the difference
26 between the point-to-point tunnel of Figure 9 and the end-to-end tunnel of

1 Figure 33 is the nature of the control. In Figure 9, the different controllers
2 control the communications path, whereas in Figure 33, the end-to-end
3 tunnel is controlled by a single controller. The '505 patent expressly
4 describes the end-to-end tunnels are formed by joining these intermediate
5 tunnels.

6 JUDGE ZECHER: Mr. Muldoon, this is Judge Zecher. There
7 seems to be a lot of dispute between the parties regarding this figure and
8 what it actually shows. I think Patent Owner has taken the position that this
9 intermediate tunnel 1 and intermediate tunnel 2 that you've labeled here --

10 MR. MULDOON: Yes.

11 JUDGE ZECHER: -- are actually point-to-point tunnels. Can you
12 kind of respond to that?

13 MR. MULDOON: Well, the '505 patent calls repeatedly
14 intermediate tunnels throughout the entire disclosure of the '505 patent. The
15 only time they use point to point is in the discussion of the prior art point-to-
16 point tunnel that we showed in Figure 9, and they showed all the -- and they
17 discussed all the issues with a point-to-point tunnel. With a point-to-point
18 tunnel, you wouldn't even, you could go from one point to another point and
19 you wouldn't need an intermediate access point. So the --

20 JUDGE ZECHER: So Mr. Muldoon --

21 MR. MULDOON: Yes?

22 JUDGE ZECHER: So does end-to-end tunnel require
23 construction?

24 MR. MULDOON: No, I don't think it does and we've showed
25 several examples of -- I mean, it's clear what the '505 patent means by
26 intermediate tunnels. It means tunnels that are joined together to form a

1 tunnel from one end, one endpoint, to another endpoint, that goes through an
2 intermediate access point with the access point server. That's --

3 JUDGE ZECHER: So Mr. Muldoon, when I'm looking at this
4 figure -- and I've read the description, so I know what it discloses and I think
5 you're accurate in that respect. But when we look at it, you kind of
6 annotated it here and you have your intermediate tunnel 1, intermediate
7 tunnel 2, and they both -- I think intermediate tunnel 1 extends from EH3 to
8 EH9 and then conversely -- or in addition, intermediate tunnel 2 sends from
9 EH90 to roughly EH15. You then have these lines above it. What is that
10 illustrating? Is that illustrating what these form? Effectively the end --

11 MR. MULDOON: Yes, yes. Yes, sorry to interrupt. Yes, this is
12 just a logical display. It's just a drawing, a line drawing, to say, hey, look,
13 this is, you know -- we've got these two tunnels and then we -- when we join
14 them, we have a -- I guess a one end in logical tunnel. It's still comprised of
15 the two intermediate tunnels. It's not a separate tunnel. It's a logical
16 connection of the two intermediate tunnels at the intermediate access point
17 and it's throughout the '505 description. This is not just with respect to, you
18 know, 5 and 6.

19 Over and over and over again, the '505 explicitly talks about
20 joining these intermediate tunnels. There's only discussion in intermediate
21 tunnels. The point-to-point tunnels are only with respect to Figure 9, which
22 is the prior art that they were trying to get around -- or not around, but a
23 solution to make it better.

24 JUDGE ZECHER: And to be fair, when we get to Claim 1 here,
25 which I assume you're getting to shortly, the language in dispute is forming a
26 plurality of end-to-end tunnels, so it's a plurality of tunnels. It's not a single

1 tunnel. We're talking about forming a plurality using these intermediate
2 access --

3 MR. MULDOON: Yep.

4 JUDGE ZECHER: -- point servers?

5 MR. MULDOON: Correct, correct.

6 JUDGE ZECHER: Okay.

7 MR. MULDOON: So they -- as we were just talking about, we
8 believe the '505 patent expressly describes the end-to-end tunnels are formed
9 by joining these intermediate tunnels. Now on to Slide 7, it describes the
10 implementation of the '505 solution as shown above in the previous slide in
11 Figure 33. The '505 patent expressly states that Figure 3, and I quote,
12 "illustrates an end-to-end GBN tunnel(s) between edges of two LAN via the
13 access point server."

14 There was one tunnel between EPD1 and AP1, intermediate tunnel
15 1, joined to a second tunnel between AP1 and EPD2, the intermediate
16 tunnel -- this is -- we described before, which together form the GBN tunnel
17 that extends over the entirety of the transit from one endpoint to the other.
18 And importantly, it says between the joining of the tunnels at the AP as the
19 access point server, it's viewed as a single tunnel by client devices within
20 LAN1 and LAN2.

21 So it's a logical tunnel, it looks like a tunnel to them, but it's
22 formed from joining two intermediate tunnels. The '505 is describing logical
23 tunnels formed by joining two defined tunnels. In fact, '505 goes on to
24 describe the end-to-end tunnels could be formed from multiple intermediate
25 tunnels with multiple intermediate access points.

26 And we turn to Slide 8, which is Figure 4. Here we have another

1 example of forming end-to-end tunnels. This time formed from three
2 intermediate tunnels, 1, 2, and 3 as we show, and two access points, AP1 and
3 AP2, confirming that any number of intermediate tunnels and intermediate
4 access points can be joined to form an end-to-end tunnel. And these end-to-
5 end tunnels were not formed by accidentally or just automatically, but under
6 the direction to control of a unitary controller.

7 Every other embodiment in the '505 patent with the exception of
8 the prior art described in Figure 9 includes a communication path under
9 central control and no embodiments, other than end-to-end tunnels directed
10 by the central controller are even described in the '505 patent. That was the
11 invention central control and joining of intermediate tunnels.

12 If we turn to Slide 9, the '505 patent describes that Figure 4
13 illustrates -- that we just went -- illustrates end-to-end tunnel between edges
14 of the two LAN via two or possibly more access point servers. And further
15 that, the systems and methods for connecting devices via a virtual global
16 network are disclosed. In one embodiment, the network device -- the
17 network system may comprise a first device communication with a first
18 endpoint and its second device in communication with the second endpoint.
19 The first and second devices may be connected with a communication path.

20 And then importantly, the communication path may comprise of
21 one or more intermediate tunnels connecting each endpoint device to one or
22 more intermediate access point servers and one or more control servers.
23 And I repeat, these are not physical connections from tunnels, but rather
24 logical connections and that's what was shown in 34.

25 JUDGE ZECHER: Mr. Muldoon, this is Judge Zecher. Do you
26 think that the '505 patent at issue here uses the terms "communication path"

1 and "end-to-end tunnels" interchangeably?

2 MR. MULDOON: It's not exactly interchangeably, but pretty
3 much interchangeably. Whenever the communication path is joined
4 between endpoints and it's formed by intermediate tunnels under the control
5 of the server, then it is used synonymously, if that answers your question. A
6 communication path by itself is not, but if it's formed by intermediate
7 tunnels and it's -- they're joined at the access point and under the control of
8 the controller, then yes, they are synonymous.

9 And on Slide 10 is Figure 23 of the '505 patent, which further
10 implements the '505 patents, which we have a first device in green -- the
11 EPD100 in green near the top. Second device in blue, the EPD23-102, that's
12 in blue near the bottom. Then we have two intermediate access point servers
13 in red in the middle and a plurality of end-to-end tunnels shown in shades of
14 purple, and the controller is shown in yellow at the top.

15 Between the first device and the first intermediate access point,
16 there are three intermediate tunnels. You probably can't see it, but 00, 02,
17 and 04. That's what -- they have them distinguished. And between the first
18 intermediate access point, the one at the top, and the second intermediate
19 access point in the bottom, there are another three intermediate tunnels, 10,
20 12, and 14. And between the second intermediate access point and the
21 second device, there are another three immediate tunnels, 20, 22, and 24.
22 Plus, there are a possible 27 different end-to-end tunnels and they're under
23 the control of server 200, which selects which ones the first device uses.

24 If we could go to Slide 11, we have Claim 1 and we can read it
25 upon Figure 23 and Slide 10. We have the first devices we describe, the
26 second device in blue at the bottom, we have a plurality of intermediate

1 access point servers in red in the middle, that form of plurality of end-to-end
2 tunnels connecting the first device and second device, and a control server
3 which controls the selection of the tunnels. So it's basically where the
4 controller selects one of the pluralities of an end tunnel for communication
5 between the first and the second devices, based on the information.

6 Now moving to Slide 12, we have Figure 2 of Hankins. The
7 Petition identifies three ways Hankins discloses a limitation of Claim 1 and
8 this is given the possible interpretations of this third limitation. The third
9 limitation being a plurality of intermediate access point servers that form a
10 plurality of end-to-end tunnels, connecting the first device and the second
11 device. Now, we believe the first one -- interpretation is probably the
12 correct one, although it doesn't matter because you show it -- the first
13 interpretation is that each intermediate access point server forms at least one
14 end-to-end tunnel. And since there's two of them, there'd be plurality.

15 The second interpretation being that each intermediate access point
16 server forms a plurality of end-to-end tunnels themselves. And the last
17 interpretation is that each of the intermediate tunnels together create a
18 plurality of end-to-end tunnels, which each of the tunnels traverse each
19 intermediate access point server. So in an abundance of caution, we address
20 each possible interpretation.

21 Figure 2, and this is Slide 12, is annotated here with respect to the
22 first interpretation. We have the first device, the gateway, green; the second
23 device; the gateway on the other side, blue, the intermediate access point
24 connecting the tunnels; and a controller in yellow; and right on the top, we
25 have a first end-to-end tunnel, singular, established by the controller through
26 tunnel server 1. And the second end-to-end tunnel that goes from the

1 gateway -- green gateway -- to the blue gateway through tunnel server 2, and
2 so that's the first and second of these tunnels make up the plurality of end-to-
3 end tunnels.

4 The job of the controller is to select the tunnel between the first
5 and second device using the information obtained from the network devices.
6 The gateways, tunnels, smart devices, et cetera. Like the '505, the tunnels
7 are under the control of a single entity via the controller. Thus, the
8 architecture described in Hankins is identical to the architecture of the '505
9 patent.

10 On a side note, I just want to hit this. Hankins uses network
11 devices to describe many types of devices. Hankins in column 8, lines 15 to
12 19, states, thus for example, network devices may comprise computing
13 devices, non-computing devices, and other devices. The network device
14 may comprise as an nominal examples a router, gateway, hub, switch, host,
15 mobile device, server, client net device, or anything or any combination
16 thereof.

17 JUDGE COURTENAY: Mr. Muldoon, I just had a brief
18 comment. This 1.3, the plurality of end-to-end tunnels, it seems consistent
19 with the description in the '505 patent at column 36, that each of these
20 individual tunnels could use different tunneling protocols. Is that your
21 understanding of the patent?

22 MR. MULDOON: That is, yes.

23 JUDGE COURTENAY: Okay.

24 MR. MULDOON: Yes, I think we have this -- I have this later on.

25 JUDGE COURTENAY: Okay, thank you.

26 MR. MULDOON: Now on Slide 13, we showed how Hankins

1 meets the plurality of end-to-end tunnels under the second interpretation.
2 That is that each of the tunnel servers disclose the plurality of end-to-end
3 tunnels themselves. In this application, each of the purple lines represent a
4 plurality of end-to-end tunnels, much like Figure 23 of the '505 patent,
5 where we saw multiple intermediate tunnels between each network device
6 comprising to a total of 27 different end-to-end tunnels.

7 As noted by Mr. Reddy, although Figure 2 and Figure 3 of Hankins
8 show a single line between the gateway devices and the tunnel server,
9 Hankins describes that these devices are logically joined such that a person
10 of skill understood the lines represent multiple tunnel paths, between the
11 gateway device and the tunnel servers. And it goes on to say a tunnel
12 (INDISCERNIBLE) is substantially compliant with multiple avenues --
13 multipath virtual private networks.

14 In Slide 14, we annotate Figure 3 showing how Hankins meets the
15 plurality of end-to-end tunnels under the third interpretation. That is each of
16 the intermediate access points together create a plurality of end-to-end
17 tunnels which traverse each intermediate access point. Here as we see, the
18 first and second end-to-end tunnel, which are labeled -- which are shades of
19 purple, form a plurality of end-to-end tunnels and each of the end-to-end
20 tunnels traverse each of the plural tunnel servers, 560 and 561. Thus, under
21 any interpretation, Hankins discloses the plurality of end-to-end tunnels.

22 So now I'm turning to Slide 15. As noted above, the sole dispute is
23 whether Hankins discloses end-to-end tunnels. Slide 16 shows Claim 1
24 highlighting the end-to-end tunnels. We see in the third limitation, the
25 plurality of intermediate access point servers perform a plurality of end-to-
26 end tunnels, connecting the first device and the second device. And the last

1 limitation, when the control server selects one of the plurality of end-to-end
2 tunnels for communication between the first and second devices based on
3 the information it obtained.

4 Now, the Patent Owner argues there's restrictions on what an end-
5 to-end tunnel means. First, that a single end-to-end tunnel cannot include
6 multiple tunnels joined together at intermediate points. Next, that an end-to-
7 end tunnel is a connection between two devices with encapsulated
8 communications there between. And lastly, an end-to-end tunnel spans in a,
9 quote, "uninterrupted fashion", end quote, between endpoints. Now, at the
10 end of the day, the Patent Owner wants to restrict the definition of end-to-
11 end tunnels to one, exclude tunnels formed joining intermediate tunnels;
12 two, require encapsulation; and three, transmit uninterrupted between the
13 endpoints. Now, we'll turn to Slide --

14 JUDGE COURTENAY: Mr. Muldoon, I --

15 MR. MULDOON: Yeah.

16 JUDGE COURTENAY: The first bullet point -- I believe you're
17 referring -- this is the Petitioner's reply on page 2; is that correct? Where
18 you have the three bullet points regarding the Patent Owner's construction?

19 MR. MULDOON: Yes, yes.

20 JUDGE COURTENAY: All right. Well, the first one, I don't see
21 that in the claim. It's an argued negative limitation. Cannot include multiple
22 tunnels joined together at intermediate points, but the second bullet, these
23 tunneling protocols, they encapsulate a packet or data within another packet.
24 So isn't the second thing sort of inherent any tunneling protocol you have
25 encapsulated communications --

26 MR. MULDOON: No, you would --

1 JUDGE COURTENAY: -- (CROSSTALK) encapsulated, it does
2 not determine the claim. It does not determine the claim, but.

3 MR. MULDOON: Right. It's whether it's encapsulated
4 uninterrupted or whether it's, you know, layers of encapsulation, but the --
5 what I think they're referring to is that it's encapsulated only. It only
6 becomes de-encapsulated at the endpoint. There's no, you know -- there's no
7 support for that at all. The '505 patent really doesn't discuss encapsulation,
8 even though you have tunnels, but you can also have -- you can have, you
9 know, MPLS. You can have different types of protocols in which, you
10 know, you could -- I guess it all could be types of encapsulation.

11 JUDGE COURTENAY: More specifically, the encapsulation is
12 kind of encrypted data --

13 MR. MULDOON: Right.

14 JUDGE COURTENAY: -- within another packet. So arguably,
15 encapsulation is inherent in these tunneling protocols, but the third bullet on
16 page 2 of Petitioner's reply, the limitation of uninterrupted fashion and end-
17 to-end tunnel spans in an uninterrupted fashion between endpoints. How do
18 you understand that? I don't see the term uninterrupted in Claim 1.

19 MR. MULDOON: It's not.

20 JUDGE COURTENAY: But how do you understand that
21 construction by Patent Owner?

22 MR. MULDOON: I think what the Patent Owner is saying is that
23 it's encoded, encrypted and encapsulated at one endpoint and it remains
24 encapsulated as is until it reaches -- until it traverses the tunnel and exits at
25 the other endpoint.

26 JUDGE COURTENAY: Well, that might be true if you had a

1 single tunneling protocol for every intermediate tunnel, but the scope of the
2 claim and the specification -- the '505 specification, I believe in column 26 --
3 it covers an embodiment where you can have different tunneling protocols.

4 MR. MULDOON: No, I --

5 JUDGE COURTENAY: You can have like 12 --

6 MR. MULDOON: We agreed.

7 JUDGE COURTENAY: -- different tunneling protocols that are,
8 you know, intermediate sections of this larger logical tunnel.

9 MR. MULDOON: Right. And also I think you're right in the fact
10 that you're -- they're joining intermediate tunnels, so to the extent there is
11 encapsulation, it's still -- it's within those intermediate tunnels and the
12 tunnels are different on either side. So when they say they're uninterrupted,
13 I think that's what the Patent Owner is saying is that it's encapsulated or at
14 one endpoint and only at the last endpoint is it un-encapsulated.

15 JUDGE COURTENAY: All right, thank you.

16 MR. MULDOON: So basically, yeah, I think we've been through
17 that. One is to exclude tunnels for joining intermediate tunnels, one is to
18 require encapsulation, and three, transit uninterrupted between endpoints.

19 Turning to Slide 17, there's simply no factual support for Patent
20 Owner's argument a single end-to-end tunnel cannot include multiple tunnels
21 joined together at intermediate points. Each of Figures 23, 33, 34 illustrate a
22 single end-to-end tunnel may be performed by joining multiple intermediate
23 tunnels. The '505 patent expressly states that joined tunnels appear as a
24 single tunnel and there's depiction in Figure 33 and 34. Basically, it says
25 while Figure 33, 34, and 35 all illustrate the joining of tunnels at the AP
26 hops, this is being used as a single tunnel by client services -- or client

1 devices, sorry. So it's just a logical tunnel. It's formed from two separate
2 tunnels. This is an expressed disclosure that multiple intermediate tunnels
3 form an end-to-end tunnel as described in the '505.

4 On Slide 18, we can revisit Figure 23 of the '505 patent. And here,
5 Figure 23 is consistent with the invention described in the abstract of the
6 '505. The endpoint devices are connected by intermediate tunnels to an
7 intermediate access point servers. Figure 23 demonstrates a plurality of end-
8 to-end tunnels formed by three sets of intermediate tunnels, as we discussed
9 before, totaling in 27 if my math is correct.

10 Turning to Slide 19, the '505 patent discloses the plurality of
11 intermediate tunnels make up an end-to-end tunnel. The abstract, the
12 communication path may comprise one or more intermediate tunnels
13 connecting each endpoint device to one or more intermediate access point
14 servers and one or more control servers. Your Honor, you asked the
15 question earlier about what houses -- how is communication path different
16 from an end-to-end tunnel. Well, in this context, they are synonymous
17 because we have the intermediate tunnels that are connected, and they're
18 connected at the intermediate access point and they're connected to one or
19 more control servers. So Figure --

20 JUDGE ANDERSON: You're at your 30 minutes, Mr. Muldoon.

21 MR. MULDOON: Okay.

22 JUDGE ANDERSON: You're at your 30 minutes, so you're eating
23 into your rebuttal, but --

24 MR. MULDOON: Okay.

25 JUDGE ANDERSON: -- that gives me an opportunity to ask. I
26 am very confused about why we are not -- like you seem to say that claim

1 construction is not required with end-to-end tunnels. Number one, it's not
2 defined in the patent; would you agree with that?

3 MR. MULDOON: Yes.

4 JUDGE ANDERSON: It is not a term of ordinary -- that has an
5 ordinary understanding to those of skill in the art?

6 MR. MULDOON: That's correct.

7 JUDGE ANDERSON: So --

8 MR. MULDOON: I --

9 JUDGE ANDERSON: -- you said --

10 MR. MULDOON: I will go back and say --

11 JUDGE ANDERSON: Go ahead.

12 MR. MULDOON: -- if you -- I'm sorry, I didn't mean to interrupt,
13 but I -- it is defined in the patent, just not definitive. It's defined in two
14 intermediate tunnels joined together under the control of the control --

15 JUDGE ANDERSON: Yeah, it's described --

16 MR. MULDOON: Yes.

17 JUDGE ANDERSON: It's described in the description of Figure
18 33 as "end-to-endGVN tunnel(s)" for sure, and that's what we look at under
19 Phillips and what the claim says. The claim doesn't answer our question.
20 The patent intrinsic evidence does probably, in my opinion, and then what
21 we found in the decision on the institution. We are, in fact, engaging in
22 claim construction; is that not true?

23 MR. MULDOON: To an extent, yes, we are. I agree.

24 JUDGE ANDERSON: Okay, thank you. Okay.

25 JUDGE COURTENAY: Mr. Muldoon, I'd just like to add to that.
26 Regarding the intrinsic evidence, that includes, you know, the claim itself

1 and the written description, and the prosecution history, but the claim itself, I
2 read it -- 1.3 broadly as defining a plurality of end-to-end tunnels. All they
3 have to do is connect a first device with a second device. That's how I read
4 it on my first pass. Is that incorrect or do you have a different understanding
5 or?

6 MR. MULDOON: I'm not going to say that you're incorrect.
7 Hankins would still meet under that construction. You know, but it -- yeah,
8 it goes from one endpoint to another endpoint. We're showing that it crosses
9 the tunnel and goes all the way to the other logical domain, but a reading
10 like your reading, I wouldn't count it out. I haven't really thought about that
11 as much, but I can see your point there.

12 JUDGE COURTENAY: Well, you said it's not defined in the
13 specification, right? The '505 --

14 MR. MULDOON: I said it was not specifically defined. It is
15 defined as --

16 JUDGE COURTENAY: Okay.

17 MR. MULDOON: It's defined as aggregating two intermediate
18 tunnels under the control of --

19 JUDGE COURTENAY: But sometimes, claim terms are actually
20 defined in the claim itself --

21 MR. MULDOON: Right.

22 JUDGE COURTENAY: -- probably more broadly than it might be
23 described in the specification. And many times, in the specification, we
24 have non-limiting exemplary embodiments that have lots of qualifying
25 language like maybe, could be. It's not --

26 MR. MULDOON: Yeah.

1 JUDGE COURTENAY: -- a definition, per say, but in the
2 specification of it says, as used herein, this claim term means something
3 specific --

4 MR. MULDOON: Right.

5 JUDGE COURTENAY: -- without the qualifiers, then we can
6 consider that as a limiting definition.

7 MR. MULDOON: Right.

8 JUDGE COURTENAY: But here, I see this more as being broadly
9 defined in 1.3. That the end-to-end tunnels, the plurality, they merely
10 connect a first device to a second device as far as the intrinsic evidence, the
11 claim itself.

12 MR. MULDOON: Right, I under -- yeah. I mean, I'm not saying
13 that it's -- yeah, I haven't considered that.

14 JUDGE COURTENAY: Okay. Move on. I just -- I don't --

15 MR. MULDOON: No.

16 JUDGE COURTENAY: -- want to take up your time.

17 MR. MULDOON: It's all right. And then we've got here -- like
18 Figure 23, it basically says that two or more tunnels can be aggregated
19 together and can carry traffic as if they were one tunnel. Again, so this is
20 just a logical tunnel. It's just a way of describing it. This is -- it's not -- this
21 is not a separate, wholly separate tunnel as stated from the two joined
22 intermediate tunnels. And on Slide 3 --

23 JUDGE COURTENAY: But a single -- a plurality of end-to-end
24 tunnels that would basically comprise a single logical tunnel, that single
25 logical tunnel would still connect a first device with a second device.

26 MR. MULDOON: Yes, I agree.

1 JUDGE COURTENAY: Yeah, a point-to-point virtual by both
2 communication systems.

3 MR. MULDOON: Yes, I agree.

4 JUDGE COURTENAY: With a VPN, you would typically have a
5 single tunneling protocol, but here, you could have multiple intermediate
6 tunnels, each having a different tunneling protocol in this global virtual
7 network. That's how I understand the '505 patent.

8 MR. MULDOON: Right. Especially in -- because you have --
9 especially going across different broadcast domains as in Hankins.

10 JUDGE COURTENAY: But it also deals with latency, you
11 know -- minimizing the latency in the communications.

12 MR. MULDOON: Yes.

13 JUDGE COURTENAY: All right. Go ahead. I will listen.

14 MR. MULDOON: Now we're going to Slide 21. I think we --
15 yep, on Slide 20, there's another example of aggregating -- or multiple
16 tunnels. Slide 21 also shows a number of intermediate tunnels make up an
17 end-to-end tunnel. In fact, the -- there was no description or embodiments
18 other than the prior art in which any number of tunnels that extend between
19 the endpoints are not formed by joining intermediate tunnels.

20 And now the second -- addressing the Patent Owner -- I'm on Slide
21 22, sorry. Addressing the Patent Owner's proposed second one, you know,
22 it -- we had this discussion before, but the Patent Owner does not
23 specifically require end-to-end tunnels to carry encapsulated traffic. Like I
24 said, you know, labeling and stuff, there could be other ways of doing it
25 without encapsulating. Maybe not as practical, but it doesn't really -- it
26 doesn't use the word -- it doesn't describe how this encapsulation works.

1 None of the figures discussed above include any discussion of encapsulation.
2 I mean, definitely the tunnel -- there are tunnels that use encapsulation. Less
3 known justification for construing an end-to-end tunnel to require
4 encapsulated traffic, especially only un-encapsulated at the ends.

5 In addressing Patent Owner's last argument on Slide 23, the
6 patent -- the '505 patent does not require end-to-end tunnels to span in an
7 uninterrupted fashion between points. When we look at this and the patent
8 does not use the word uninterrupted, it doesn't describe the GBN tunnels, but
9 instead describes the seven hops. The Patent Owner Response does not
10 address whether a hop is an eruption, and moreover, the '505 patent actually
11 explains that these tunnel servers provide multiple processing functions, like
12 domain name, system lookup, caching of content, smart routing, and firewall
13 services.

14 In the interest of saving time, I will note that there was only
15 three -- there's the entirety of the PO's expert opinion with regard to end-to-
16 end tunnels. The end-to-end tunnels do not un-encapsulate a packet until
17 after the packet reaches the second device, but it only cites to the Figure 33
18 and the three lines of the specification, none of which talk about
19 encapsulation. I'll reserve the remainder of my time. Thank you.

20 JUDGE ANDERSON: Okay. Thank you, Mr. Muldoon.
21 According to what I see, you have eight and a half minutes. I'll give you
22 nine minutes to finish -- to do your rebuttal and thank you very much. With
23 that, Mr. Devlin, you are up.

24 MR. DEVLIN: Thank you, Your Honor. Am I coming through? I
25 think I'm on mute.

26 JUDGE COURTENAY: Yes.

1 JUDGE ANDERSON: You are.

2 MR. DEVLIN: Thank you. Okay. So we had, again, a single
3 slide deck, the '505 patent slides begin on Slide 58, some assigned hosting
4 slides, but really if you skip to Slide 60, we're going to just talk a little bit
5 about the background. And again, I won't belabor this too much, but if we
6 go to Slide 62, fundamentally what's happening is the patent requires
7 building an end-to-end tunnel, and I do think having heard all this, we have
8 something of a claim construction issue here, but I think the words "end-to-
9 end tunnel" are the basis of the construction and the basis of what we are
10 saying is effectively or inherently required by that language. The word
11 tunnel itself, for example, requiring a consistent encoding across the tunnel.

12 And in fact, probably it's useful to go to Slide 63. So Patent
13 Owner's expert, Dr. Beck, states in his declaration that the data packets are
14 not unencoded at the intermediate access point servers, and that's something
15 that we view as inherent in an end-to-end tunnel. Inherent in any tunnel, but
16 here, an end-to-end tunnel, that spans multiple intermediate tunnels. And I
17 think that's probably, you know -- this is a core dispute here about whether
18 just a set of intermediate tunnels linked together create an end-to-end tunnel
19 or you need something else.

20 JUDGE ZECHER: Mr. Devlin, do you have any -- is there any
21 evidence cited in that paragraph of the declaration to support that statement?
22 Because I didn't see any.

23 MR. DEVLIN: No, I think that's the expert's opinion, based on his
24 expertise.

25 JUDGE ZECHER: Okay. Well, you know the rule that we can
26 discount an expert's opinion if they don't provide corresponding evidence to

1 support it, so usually we see a citation in the specification or something that
2 would basically provide some indication that this is a correct statement.

3 MR. DEVLIN: Understood. Well, let me go to the specification
4 and talk about it a little bit. So I'm going to move forward to the dispute
5 here. We all agree the dispute is respect -- with respect to this phrase end-
6 to-end tunnels. I'm looking at Slide 65 and Slide 66, each of which just
7 simply show the phrase end-to-end tunnel and various locations within the
8 claims. That's Slide 66.

9 If we go to Slide 67, I think we get to the core of the dispute and
10 some of the intrinsic evidence that we are relying on and looking at. So in
11 the patent, and we're looking at an annotated version of Figure 34, and we
12 annotate it slightly differently than does Petitioner, there's no doubt that the
13 end to -- there's no doubt that Figure 34 shows an example of an end-to-end
14 tunnel. There's no disagreement about that. There's also no disagreement
15 that Figure 34 shows a collection of intermediate tunnels. There's no
16 disagreement about that.

17 And so the phrasing that Petitioner made of our argument -- our
18 first primary argument -- was incorrect, so we do not say that an end-to-end
19 tunnel cannot include intermediate tunnels or cannot be formed in part
20 utilizing intermediate tunnels. It's just that it requires more than that and the
21 patent specification figures, and the patent specification texts consistently
22 demonstrate that.

23 So what is shown in Figure 4 -- sorry -- Figure 34 as an example is
24 a separate intermediate tunnel identified by the blue lines and what are
25 annotated as NH1, NH2, NH3, and NH4. NH here, seen in this
26 specification, stands for neutral hops. And what the specification also

1 discloses is that these intermediate tunnels form an end-to-end tunnel by
2 virtue of a third layer of the GBN. And let me ask if Your Honors have
3 ready access still, as you're holding Patent Owner's slides up, if Your Honors
4 have ready access to Petitioner's slides also because I'd like to move back
5 and forth between them briefly, or the patent itself would work just fine. I'm
6 really going to work back and forth between Petitioner's slides and the
7 specification.

8 JUDGE COURTENAY: Well, we have access to both
9 demonstratives, as well as the patent.

10 MR. DEVLIN: Okay, great. So let's start with Petitioner's Slide 7
11 and it is referencing Figure 33 of the patent, and Figure 33 is similar to
12 Figure 34 in that there is a collection of intermediate tunnels shown and
13 there is also separately shown another layer of tunnel and that's the
14 intermediate tunnel, and the access points within that third layer of the end-
15 to-end tunnel are identified as neutral hops -- NH1, NH2, and NH3. So
16 similar to what we were just looking at with Figure 34, except there's an
17 extra neutral hop in Figure 34 relative to Figure 33.

18 So looking at Slide 7 and the description that the Petitioner cobbles
19 together of Figure 33, there is no doubt that Figure 33, quote, "illustrates an
20 end-to-end tunnel between the edges of two LANs." That quote is accurate
21 from the patent. The second bullet is also -- has two accurate quotes, but
22 they're connected in a way that's not quite totally correct. So there are two
23 intermediate tunnels and those tunnels are joined, and together, those tunnels
24 form a global virtual network tunnel that extends over the entirety of the
25 transit, and that's viewed as a single tunnel by the client devices. That's on --
26 that last bullet is from column 34 of the patent. The middle bullet cites are

1 from column 33, lines 7 to 19, but that's -- so let's focus on that middle bullet
2 first.

3 That's not all that it says. It makes very clear in that same sentence
4 that the -- there's one tunnel between EPV1 and AP1. That's a quote that's
5 right there in bullet 2, and there's a second tunnel between AP1 and EP2.
6 That's also an appropriate quote, but within that paragraph or those same
7 paragraphs spanning lines 7 through 19, the specification notes that there are
8 three neutral hops between the third layer of the GBN, represented by NH1,
9 NH2, and NH3, as compared to the 13 hops with the base internet
10 connection.

11 And so what the patent specification is making clear is that there's
12 a third layer of logic -- a third layer of connectivity -- that's built over top --
13 optionally built over top. When I say optional, I mean that's what creates an
14 end-to-end tunnel is when you build this third layer of the GVN over the top
15 of or within, either way you want to say it, within the collection of
16 intermediate tunnels. So you're using the collection of intermediate tunnels,
17 but there's a third layer of logic and that's described very explicitly by the
18 patent within column 33, lines 7 through 19.

19 If you look at column 34, which includes the quote in the third
20 bullet of Slide 7 of Petitioner's slides, at the joining of tunnels at AP hops,
21 that's viewed as a single tunnel by the client devices. The very next sentence
22 says, "This singular tunnel represents the neutral third layer of the GVN,
23 within which it is possible to run on traffic that would normally transit over
24 the internet", and it includes certain internet protocols, plus other protocols,
25 et cetera. And then it talks about other advantages realized by this third
26 layer of the GVN and goes on from there. So in each instance, there's a third

1 layer of logic, a third layer of tunneling described to establish and end-to-
2 end tunnel relative to merely the intermediate tunnels.

3 So our view is that a mere collection of intermediate tunnels is in
4 itself insufficient to create an end-to-end tunnel. The specification makes
5 clear in every instance it's talking about, the end-to-end tunnels as a
6 collection of intermediate tunnels, that it's a third layer of logic. Judge -- I'll
7 note for the record that just before all this in column 32, there's a summary
8 beginning at line 42 of column 32 that summarizes Figures 32 through 35
9 and it says Figure 32 through 35 illustrate the third layer of the GBN with
10 respect to neutrality and security of the GBN tunnel while comparing
11 number of hops to the hops of the base internet connection.

12 So the patent specification is explicitly noting that in each of these
13 instances, there's a third layer and it's that third layer of logic and
14 connectivity that establishes an end-to-end tunnel across the collection of
15 intermediate tunnels. So that's why we say that it's not enough. Now, no
16 matter now you look at the word end-to-end tunnels -- I'm going to go back
17 to the Petitioner's -- pardon me --

18 JUDGE ZECHER: Mr. Devlin, this is Judge Zecher.

19 MR. DEVLIN: Yeah.

20 JUDGE ZECHER: What I'm hearing you say that is that an end-
21 to-end tunnel can comprise a plurality of intermediate tunnels, but it requires
22 more. What more --

23 MR. DEVLIN: Exactly.

24 JUDGE ZECHER: What more does it require? That's what I'm
25 trying to understand.

26 MR. DEVLIN: Well, that's -- so it requires a separate layer of

1 logic. That's the third layer that's described in the patent and there's other
2 disclosure in the patent about how that is created, but I think one of the
3 basics is inherent in the word tunnel, and that's what we focus on and that's
4 what Mr. Beck is saying -- Dr. Beck is saying, with respect to encoding and
5 de-encoding, that there's going to be an encoding that's going to be carried
6 through from one end of that tunnel to the other at that layer of the tunnel
7 logical structure.

8 So at the third layer, there's going to be some encoding that is not
9 stripped away. And while you can have different networking protocols,
10 moving things across the physical layer or moving things across other
11 logical layers, there's going to be a layer of encoding that is not stripped
12 away at these neutral hops, which are the intermediate access points between
13 the intermediate tunnels in such a --

14 JUDGE ZECHER: Okay.

15 MR. DEVLIN: The --

16 JUDGE ZECHER: I understand what your expert is saying, but
17 this gets back to my initial point. You didn't cite anything in the
18 specification to support that statement. Where is this coding that you're
19 talking about in the specification?

20 MR. DEVLIN: Well, there was the -- again, I think we are relying
21 on the expert for that and relying on his understanding of what tunnel means,
22 so I would agree with that.

23 JUDGE ZECHER: But he did not cite the evidence to support that
24 testimony, so what evidence do you have to support it? That's what I'm
25 asking.

26 MR. DEVLIN: Well, the next -- I think there's -- let me just say it

1 more clearly. The expert's opinion and declaration is the evidence of which
2 we are relying. Now, you're asking if he -- does he have underlying
3 evidence from the specification itself. I think he does not cite anything
4 further. I'd agree with that, but --

5 JUDGE ZECHER: Can you --

6 MR. DEVLIN: Yeah.

7 JUDGE ZECHER: Can you point me to anything further in the
8 specification?

9 MR. DEVLIN: Well, let me move around here. So I guess the
10 answer is no, right now I can't. I'll say that. Other than, again, what a tunnel
11 means. What it is to be a tunnel from one device to another device. I
12 believe in the prosecution history, there's a reference to encapsulation, which
13 is a form of encoding. And I know that in Haskins (sic), there is the ability
14 to de-encapsulate between the -- what would otherwise be neutral hops,
15 which distinguishes the recited end-to-end tunnel, but I understand also,
16 that's not really hitting your point when it comes to the specification. I do
17 think we're relying on the expert's opinion to identify one of the inherent
18 features of a tunnel. And to the extent that that's a claim construction issue,
19 I think there is a claim construction issue here. That's what I was getting at
20 before.

21 JUDGE ANDERSON: Ah-ha. I'm all about claim construction on
22 this term. You agree that it requires construction, yes?

23 MR. DEVLIN: Given what we've heard today, I believe Your
24 Honor is correct.

25 JUDGE ANDERSON: So what is your claim construction for end-
26 to-end tunnel?

1 MR. DEVLIN: That it is, at a minimum, a third layer of
2 networking logic distinct from the layers of logic that define the
3 intermediate -- any intermediate tunnels. It's a layer of logic that extends
4 from one edge of the end-to-end tunnel to the other and is carried through
5 any intermediate hops that define any intermediate tunnels. That's --

6 JUDGE ANDERSON: So that's sort of back to that encapsulate
7 and de-capsulate, I guess, argument that was made?

8 MR. DEVLIN: Correct, right. But if you want a core construction
9 that is directly from the specification, it's that there is a neutral third layer of
10 the network that creates and that establishes the end-to-end tunnel that's
11 distinct from the intermediate tunnels from which it may be formed.

12 JUDGE COURTENAY: Mr. Devlin --

13 JUDGE ANDERSON: Well --

14 JUDGE COURTENAY: -- isn't that the same as the logical tunnel
15 that I was discussing with Petitioner? The logical tunnel being a single
16 tunnel that connects the first endpoint to the second one and a first device to
17 the end device, that can consist of many intermediate tunnels, that can even
18 have different tunneling protocols for each intermediate tunnel?

19 MR. DEVLIN: Yes, I think that's partly right. I think it --

20 JUDGE COURTENAY: I was confused by when you used the
21 term third layer. I mean, I think of that as the logical tunnel.

22 MR. DEVLIN: And I would agree with that, and that's exactly
23 what I am saying. There is a third logical layer of tunneling protocol that's
24 established -- that's independent of the intermediate tunneling logic -- the
25 logic defining any intermediate tunnels.

26 JUDGE ANDERSON: So is your claim limited to that third layer?

1 MR. DEVLIN: The claim would require that third layer because
2 the claim requires an end-to-end tunnel. Actually, multiples of them, but
3 each end-to-end tunnel would require that third layer of logic, relative to
4 intermediate tunnels that would comprise or be included within that broader,
5 longer end-to-end tunnel.

6 JUDGE ANDERSON: So in your preliminary response, you did
7 have a -- what -- we call that an institution decision, a construction, and let
8 me just read it to you. It's, quote, "The term end-to-end tunnel refers to a
9 tunnel that spans in uninterrupted fashion the entire overlay network path
10 between endpoints." And I'm going to focus on that entire overlay network
11 path. Is that what you're talking about that we've been discussing here for a
12 few minutes?

13 MR. DEVLIN: Yes, exactly. I would say I've fine tuned that now
14 to tie it more closely with what it's called in the specification, which is a
15 third layer.

16 JUDGE ANDERSON: Okay, so let's fine tune it. What is the
17 construction that you're proposing?

18 MR. DEVLIN: Okay. I'm going to try to -- I said earlier I'm going
19 to try to repeat it. You know, I didn't write it down, but I'm looking at the
20 spec as I talk about this. So an end-to-end tunnel is defined by a third layer
21 of logic that is separate from layers of logic that define any intermediate
22 tunnels from which the end-to-end tunnel is comprised or formed.

23 JUDGE ANDERSON: Okay.

24 MR. DEVLIN: And --

25 JUDGE ANDERSON: By the way, Mr. Devlin, you've got 11
26 minutes. I don't know if I got you to commit to a time for rebuttal, but

1 whatever you've got is going to be dependent on how much you use here.

2 MR. DEVLIN: Great. I appreciate that heads up, Your Honor.

3 That's perfect. Let me just direct Your Honors to Slide 74, which is a quote

4 from Petitioner's expert Dr. Reddy's deposition. Looking at Figure 39 of the

5 '505 patent, and Figure 39, like others that we're talking about, has an end-

6 to-end tunnel on Slide 74 -- oh, I just said that -- Slide 74 is what I'm looking

7 at of Patent Owner's slides. It's got Figure 39 on the right as we've annotated

8 it and it's got Dr. Reddy, Petitioner's expert, testimony on the left, and as

9 we've annotated, there's an internal tunnel that's designated 39P20. That's an

10 end-to-end tunnel, sorry. End-to-end tunnel 39P20. And there are two

11 intermediate tunnels -- 39P10 and 39P12 -- in this particular embodiment.

12 And Dr. Reddy agrees that it is possible to have the two tunnels, 39P10 and

13 39P12, without having 39P20, which is another way of saying that 39P20 is

14 not the end-to-end tunnel. It is not automatically created by joining together

15 the two intermediate tunnels, P10 and P12.

16 So Petitioner's expert agrees with that, that the end-to-end tunnel is

17 not an automatic creation of joining two intermediate tunnels together, and

18 that's exactly what we are saying here and it's exactly what differentiates

19 Hankins. In every single embodiment of Hankins, no matter how it's

20 understood, Petitioner always points to a collection of intermediate tunnels

21 to form an end-to-end tunnel, but in Hankins, there is no third layer of logic

22 forming an actual end-to-end tunnel, such as designated here, 39P20, and is

23 described as that third layer of encoding in the '505 patent. Let me stop

24 there, Your Honors, and I'll reserve the rest of my time.

25 JUDGE ANDERSON: I have one more question, Mr. Devlin.

26 MR. DEVLIN: Yes.

1 JUDGE ANDERSON: So in the prosecution -- and Judge Zecher
2 touched on this, or at least the point I'm trying to make here or the question
3 I'm trying to ask, he touched on it earlier. In the prosecution, Claim 1 was
4 amended to get allowed over the prior art to Chen and the amendment,
5 without reading -- it's actually, if you have it handy, Exhibit 1002, page 145,
6 if you have that. If you do, let me know and I'll let you pull it up so you're
7 able to look at it.

8 MR. DEVLIN: Oh, boy. For whatever reason, my binder does not
9 have that and I realize I don't, but go ahead and read it, Your Honor. I'll try
10 to get --

11 JUDGE ANDERSON: I will do the best I can to make it clear for
12 you to understand what's going on.

13 JUDGE ZECHER: I think it's also Slide 26 in Petitioner's
14 demonstratives, so if you want to take a look there.

15 MR. DEVLIN: Thank you.

16 JUDGE ANDERSON: Do you have that, Mr. Devlin?

17 MR. DEVLIN: I have the amendment, but I don't have the
18 remarks, but I'll be able to address your question.

19 JUDGE ANDERSON: No, that's fine. All I want to do is ask
20 about the amendment. So in the amendment, communication path -- the
21 words communication path were crossed out and for the first time in this
22 prosecution, end-to-end tunnels was added; you see that?

23 MR. DEVLIN: Correct, yes.

24 JUDGE ANDERSON: So Judge Zecher asked a very good
25 question, I thought, earlier. Is there really -- is communication path and end-
26 to-end tunnels essentially the same thing. As it would appear from this, one

1 was stricken, and one was added.

2 MR. DEVLIN: Right. So I would say they are not the same thing,
3 and I think this is consistent with the proposal that we're making. A
4 communication path is much broader. A communication path doesn't
5 require necessarily any tunnel at all. It could be no tunnels, it could be a
6 collection of intermediate tunnels strung together, or it could be an end-to-
7 end tunnel. It could be any of those things. The claim was narrowed, and
8 there's other changes, of course, but the change we're talking about is the
9 deletion of communication path and the addition of the phrase end-to-end
10 tunnels. The end-to-end tunnels is much narrower than communication path.
11 Not simply a replacement of the words communication path with a
12 synonymous phrase, end-to-end tunnels. I don't think that's correct at all. I
13 think that supports the notion that an end-to-end tunnel is something
14 narrower, or in other words, requires something more than a communication
15 path. Does that answer Your Honor's question?

16 JUDGE ANDERSON: I guess the -- yeah, yeah. I guess the
17 converse would be true that an end-to-end tunnel would be a
18 communication.

19 MR. DEVLIN: Yeah. I would agree that an end-to-end tunnel is
20 one example or embodiment of a communication path, but it's much
21 narrower. It's only one example compared to many, many other examples
22 that could exist of things that would qualify of communication paths, but
23 which would not qualify as end-to-end tunnels.

24 So just to be clear, I think end-to-end tunnel is a subset of
25 communication path. Narrower, included within, the communication path is
26 broader, includes end-to-end tunnels, but also includes many other types of

1 pathways. Does that answer Your Honor's question?

2 JUDGE ANDERSON: Okay. Yeah, thank you. So with that, I
3 believe you have -- you've used 27 minutes and so that would mean you
4 have 18 minutes remaining for sur-rebuttal. Okay. Mr. Muldoon, you have
5 nine minutes for rebuttal.

6 MR. MULDOON: Thank you, Your Honor. I'll just address a
7 couple things first. Figures 33 and 34, these are abstractions and it's clear
8 that they're abstractions. This is just to portray a concept because the '505
9 patent explicitly says that this tunnel, this end-to-end tunnel, is viewed or
10 appears as a separate tunnel. It doesn't say it is a separate tunnel and despite
11 my colleague's continuing saying that we're just relying on a collection of
12 intermediate points, no. We're -- the '505 explicitly says each, for every
13 embodiment in which there's end-to-end tunnel and even the ones that it
14 doesn't specifically recite end-to-end tunnel, it says, these intermediate
15 tunnels are joined and that's -- it's the joining.

16 And what the '505 does, it joins them using the access points.
17 That's what Hankins does. It joins them using -- it joins intermediate
18 tunnels, which have third layer, and third layer is nothing new. Also, the
19 '505 doesn't describe how the third layer attaches, so each of the
20 intermediate tunnels has third layer, so that's -- I don't know how that is a
21 distinction. And also, the coming up with a third layer that is distinct from
22 the individual third layers of the intermediate tunnels, I don't know where
23 that comes from. And like we've said, there is no -- the expert relies on
24 nothing to make its conclusory statement, that this is encoded and then only
25 uncoded at the end, at the endpoint. So that is -- I think it's clear that the
26 '505 patent says that end-to-end tunnels are basically comprised of

1 intermediate tunnels that are joined. Not a collection but are joined. And
2 there's no specifics regarding the third layer, especially when you distinguish
3 between the third layer of the intermediate tunnels because they have that,
4 too. That's just the network routing layer, so that's not any big deal.

5 So when we look -- and I want to go to Patent Owner's Slide 74,
6 and we look at the -- Dr. Reddy said, so you can have tunnels -- I'll just say
7 01 and 02 -- without necessarily having tunnel 03? Yeah, but they're not
8 joined. That's the whole thing. The '505 says that these things are joined
9 together -- intermediate tunnels are joined together to form an end-to-end
10 tunnel. There is no dispute that all of the embodiments show that the
11 intermediate tunnels are joined. The intermediate tunnels have third layers
12 and there's nothing that says that they're distinct. And all the tunnels
13 disclosed in Hankins and of a logical, they go from an endpoint all the way
14 to another endpoint. That's what the end tunnel is, is a tunnel -- a logical
15 tunnel that goes from one to the other, but it's not -- it's made up of
16 intermediate tunnels and there's no requirement that it's encapsulated
17 throughout the entire process. That's why it uses the intermediate tunnels.

18 And lastly, I would say that Claim 1 calls a plurality of
19 intermediate access point servers that form a plurality of end-to-end tunnels.
20 So what we know is that the patent says that -- in this claim that these things
21 are formed by the internet -- or by the intermediate access point servers.
22 That's what it says, so this third limitation on Claim 1 defines what the end-
23 to-end tunnels are. They're defined by the intermediate access point servers
24 as shown in Hankins. So really, there is no further construction needed.

25 We've showed how the three different interpretations of a plurality
26 in the end-to-end tunnels are shown in Hankins and we show in the '505

1 where they repeatedly said, an end-to-end tunnel is the joint -- is formed by
2 joining two intermediate tunnels. Two intermediate tunnels, four
3 intermediate tunnels, five intermediate tunnels, but they have to be joined by
4 the access points -- the intermediate access point. That is all the
5 construction you need with this. The only way that Patent Owner can win is
6 if he incorporates and ports some mysterious limitation into this claim from
7 the specification. We haven't seen anything. It's like it was some
8 amorphous third layer. Oh, it's, you know, oh, this is something different,
9 the end-to-end. There's just no support to incorporate -- not even
10 incorporating things from the specification because they're just not there.

11 And so I don't think claim construction is necessary because
12 whatever construction you would come up with is shown in Hankins.
13 Hankins also discusses basically encryption, which is another type of
14 encapsulation. So this is -- there is no need to construe this claim, other than
15 the limitation itself. And with that, I will end my presentation, unless there's
16 any questions.

17 JUDGE ANDERSON: Well, you had me going. I understand
18 your argument. I just want to get back to claim construction. There is a
19 need to construe end-to-end tunnels; yes or no?

20 MR. MULDOON: No.

21 JUDGE ANDERSON: No?

22 MR. MULDOON: No.

23 JUDGE ANDERSON: And why is that?

24 MR. MULDOON: Because the Claim 1 limitation 3 defines what
25 it is and to the extent --

26 JUDGE ZECHER: Mr. Muldoon --

1 MR. MULDOON: To the extent that we can look --

2 JUDGE ZECHER: -- I think I know what you're saying and I'm
3 going to try to help you here. If we do construe it, you're saying the plain
4 language of Claim 1 controls, correct?

5 MR. MULDOON: Yeah.

6 JUDGE ZECHER: Okay, thank you.

7 JUDGE ANDERSON: I guess that's it then.

8 JUDGE COURTENAY: Yes, the name of the game is the claim.

9 JUDGE ANDERSON: So thank you, Mr. Muldoon.

10 MR. MULDOON: Thank you.

11 JUDGE ANDERSON: Mr. Devlin, you have 18 minutes to use as
12 you see fit.

13 MR. DEVLIN: Thank you, Your Honors. I don't think I'll come
14 close to that. I thought I had less time, I'll just be honest. That's why I cut
15 myself a little short before, but let me just --

16 JUDGE ANDERSON: I could've misread the timer, but I think
17 you used 27 minutes, and the different between that and 45 is 18, but --

18 MR. DEVLIN: Yeah.

19 JUDGE ZECHER: Mr. Devlin, we apologize if we confused you,
20 but we started it and it counted up as opposed to counting down, so --

21 MR. DEVLIN: Yeah.

22 JUDGE ZECHER: -- that was the 27 minutes you used for your
23 case in chief, which means it left you 18 for sur-rebuttal.

24 MR. DEVLIN: No problem. This is more time than I thought I
25 had. No worries at all. So let me just try to clear this up because -- and I'll
26 go back to Slide 74 because I think it's a simple example of what's

1 happening here. So this is Patent Owner's Slide 74 showing annotated
2 Figure 39 on the right-hand side. And what we just heard from Petitioner's
3 Counsel is that -- and looking at the testimony on the left that of course, you
4 can have these two intermediate tunnels without necessarily having the end-
5 to-end tunnel because you have to join the intermediate tunnels.

6 Again, we're not disputing the fact that one of the conditions of
7 creating an end-to-end tunnel through a collection of intermediate tunnels, is
8 that those intermediate tunnels have to some way be joined. The traffic has
9 to be able to pass through them for sure, but in this Figure 39 on the right-
10 hand side, that's already there. There is an access point. It's AP39200 right
11 there in the middle that does join the two tunnels, 39P10 and 39P12. Well,
12 that's there in the figure and yet, Dr. Reddy is saying, well, you don't
13 necessarily still form the end-to-end tunnel, 39P20. And, you know, we
14 think that's a significant admission because it demonstrates what I was
15 saying before that what Petitioner says the conditions are sufficient to
16 establish an end-to-end tunnel are actually not sufficient.

17 So the Petitioner says it's sufficient to have intermediate tunnels
18 that are joined and that is enough to establish the end-to-end tunnel, but we
19 think that's wrong. We think the specification says that's wrong when it
20 references the third layer and the neutral hops that are created by that logic
21 of the third layer, and we think the quote from Dr. Beck here supports that
22 same theory, indicating that you could have those intermediate tunnels, P10
23 and P12, without necessarily having P20. You need something more than
24 what this figure is showing.

25 So in that sense, I do think we probably have consensus that claim
26 construction is necessary with the admission that -- the understanding that

1 Petitioner's proposal is ordinary meaning. I'll note a couple of other things
2 in Hankins. I might've said Dr. Beck's testimony. What I meant with
3 respect to Slide 74 was Petitioner's expert, Dr. Reddy's testimony. I'm just
4 scanning the rest of my slides to see if there's something else relevant that
5 I -- because I think we've addressed -- well, I'll point the Board to Slide 72.

6 So in Slide 72, we see on the top -- so we've got three things
7 showing here on Slide 72. We've got Figure 39, again, on the right-hand
8 side; we've got two quotes on the left-hand side. The first of those is from
9 the Petitioner's reply at page 17, Paper 22, and it basically states what we've
10 heard today from Petitioner, which is that the end-to-end tunnel, P20, is
11 simply the aggravation of both the other tunnels that are joined at the access
12 point, 39200. That's all consistent -- that's a quote from Petitioner's reply.
13 It's consistent with everything we've heard today, consistent with what
14 Petitioner's theory is about how Hankins meets this end-to-end tunnel
15 limitation, that it's just this aggregation of intermediate tunnels that are
16 joined, so there's connectivity between them, but nothing else.

17 But the '505 patent itself makes clear and the quote below is from
18 our -- the Patent Owner's sur-reply, Paper 24 at page 10. And in the midst of
19 that sur-reply, it quotes from the '505 patent at column 36, lines 41 through
20 48, and it notes with respect to this Figure 39 that there can also be another
21 tunnel and that's this internal tunnel, the end-to-end tunnel, 39-P20. So that
22 can exist, but it doesn't automatically exist. It can be formed and so that
23 itself indicates in the specification that the end-to-end tunnel is not simply
24 the aggregation of joined intermediate tunnels. It's an additional thing that is
25 the end-to-end tunnel. P20 in Figure 39 is an additional logical construct
26 that can be formed on top of the base intermediate tunnels and their

1 connecting access points.

2 JUDGE COURTENAY: Mr. Devlin (CROSSTALK) --

3 MR. DEVLIN: Yes. I was just scanning, Your Honors, to just
4 make sure there was nothing else I wanted to say, but go ahead. Happy to
5 field a question.

6 JUDGE COURTENAY: I was just looking at the dependent
7 Claims 2 through 10 and I don't see any further mention of end-to-end
8 tunnels in the dependent claims. Maybe I'm missing it, but I don't see it. I
9 mean, sometimes, the doctrine of claim differentiation helps us -- it further
10 informs us, as far as the proper construction of a term that's introduced in an
11 independent claim. Now it is referred to by antecedent basis in 1.4, where
12 we have the control server, wherein the control server selects one of the
13 plurality of end-to-end tunnels where communication between the first and
14 second device is based on the information. But I don't see the term end-to-
15 end tunnels in Claims 2 through 10. So any further comment on that?

16 MR. DEVLIN: No. I think Your Honor sort of, you know, makes
17 a good point that theoretically, there might be something in here that would
18 inform the construction of end-to-end tunnel. "In here" meaning within the
19 dependent claims, looking at the doctrine of claim differentiation, but I
20 would agree, there's nothing in there that totally defines an endpoint,
21 suggesting it had a certain breadth in Claim 1 or, you know, anything along
22 those lines. So I would agree with Your Honor that that's -- while
23 theoretically relevant, claim differentiation is not --

24 JUDGE COURTENAY: It doesn't seem applicable here. I think
25 we agree.

26 MR. DEVLIN: Yeah.

1 JUDGE COURTENAY: Speaking for myself. Not the panel.

2 JUDGE ZECHER: I don't have any further questions.

3 JUDGE ANDERSON: Are you done, Mr. Devlin?

4 MR. DEVLIN: Yes. Sorry, I was waiting for other questions and
5 as I was doing that, I realized that I may not have said nothing further here,
6 unless Your Honors have questions.

7 JUDGE COURTENAY: Well, you do have nine additional
8 minutes remaining, but --

9 JUDGE ANDERSON: I don't suggest you use them.

10 MR. DEVLIN: I was just going to say, I can't think of a better use
11 for them right now, other than giving them back to everyone.

12 JUDGE ANDERSON: That is appreciated and efficient use of
13 your time, in my opinion. Sometimes, it's better to give it up than to try to
14 fill it up. So let's see. We are done then, and this matter is submitted.
15 Appreciate Counsel for the arguments. They were quite helpful. And we
16 are adjourned.

17 (Whereupon, the above-entitled matter went off the record at 4:24
18 p.m.)

IPR2024-00497
Patent 10,630,505 B2

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