UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CISCO SYSTEMS INC.,

Petitioner,

v.

PORTSMOUTH NETWORK CORP.,

Patent Owner.

_____

IPR2024-00506

US Patent No. 8,014,394

_____

Wednesday, April 9, 2025

10:43 a.m. (EDT)

Remote Deposition of JAMES L. OLIVIER, PhD

(This proceeding was conducted via Zoom.
All participants appeared remotely.)

STENOGRAPHICALLY REPORTED BY:

Deanna J. Dean, RDR, CRR

IPR2024-00506
Cisco Systems, Inc. v. Portsmouth Network Corp.
Cisco's Exhibit 1033
EX1033, Page 1

Wednesday, April 9, 2025

10:43 a.m. (EDT)

Remote deposition of JAMES L. OLIVIER, PhD, held via Zoom videoconference, before Deanna J. Dean, a Registered Diplomate Reporter, Certified Realtime Reporter, and licensed court reporter of the state of New Hampshire.

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P R O C E E D I N G S

THE REPORTER: Here begins the remote deposition of James L. Olivier, PhD, taken in the matter Cisco Systems Inc., Petitioner, versus Portsmouth Network Corp., Patent Owner, before the Patent Trial and Appeal Board, Case, IPR2024-00506 for U.S. Patent 8,014,394.

Today's date is April 9, 2025. The time is now 10:43 a.m. EDT.

This deposition is being held remotely by Zoom videoconferencing. I am the licensed court reporter, Deanna Dean, presenting on behalf of Henderson Legal Services.

Will counsel please introduce themselves and state whom they represent, beginning with the party noticing the deposition.

ATTORNEY CHO: My name is Taeg Sang Cho, and I represent Cisco, the petitioner.

ATTORNEY WINN: My name is James Winn. I represent the patent owner and I have a pro hac motion pending.

THE REPORTER: At this time, do all parties agree to waive any objection, now or in the future, to me swearing in the witness remotely?

ATTORNEY CHO: I don't object.

ATTORNEY WINN: No objection.

JAMES L. OLIVIER, PhD,

a witness called for examination, having been first duly sworn according to law, was deposed and testified as follows:

ATTORNEY CHO: Before we proceed, I just want to put on the record that Mr. Winn has not yet made an appearance in this case. So he has represented to me he is currently filing the mandatory notices, the revised POA and the pro hac motion.

And so with that representation, we'll proceed, but petitioner reserves all rights.

ATTORNEY WINN: I want to state on the record, too, that I don't think you had any objection with me being admitted pro hac, too. Is that correct?

ATTORNEY CHO: That is correct.

So with that, we'll proceed.

EXAMINATION

BY ATTORNEY CHO:

Q. Good morning, Dr. Olivier.

A. Good morning.

Q. Thanks for making the time today.

Could you please state your name for the record.

A. My name is James Lawrence Olivier.

Q. And where do you live?

A. I live in Boerne, Texas.

Q. Is that where you are currently for this deposition?

A. Yes, it is.

Q. Although we are conducting a remote deposition today, you understand that you're under oath. Right?

A. Yes, I do.

Q. And you understand that the oath requires you to tell the truth as if you were at trial?

A. Absolutely.

Q. Is there any reason why you cannot provide truthful and accurate testimony in response to my questions today?

A. None that I know of.

Q. I'm sure you're familiar with the deposition ground rules, but I just want to touch on a couple of important ones so we are on the same page.

To get a clean transcript, please wait until I finish my question before you start

answering. I will try to do the same.

We'll try to take several breaks during the deposition. If at any time you want to take a break, please let me know and we'll take one. All I ask is that there is no question pending.

Is that good?

A. Yes.

Q. And this deposition is for an IPR proceeding, which means that during the breaks you cannot discuss the substance of your testimony with Portsmouth's counsel here, Mr. Winn.

You understand that; right?

A. Yes.

Q. And if you do discuss the substance of your testimony with Mr. Winn during the breaks, I'm entitled to know what you discussed. Okay?

A. Okay.

Q. Mr. Winn may object to my questions, but unless you are instructed not to answer, you will have to answer my question.

Is that fair?

A. Yes.

Q. Are you in your office today?

A. My home office.

Q. Is there anyone else in the home office

with you today?

A. No.

Q. Do you have any communication devices in the office other than the computer that you are using?

A. I have a cell phone.

Q. Can you put that away, please, so that we can, one, focus on the deposition, and, two, make sure that you are not communicating with anyone else during the deposition?

A. What would you like me to do?

Q. Put it away so that you cannot see the text messages or things like that.

A. How about if I turn it off? Will that be okay with you?

Q. That would be even better.

Do you have any printed documents with you?

A. No.

Q. And do you have any notes with you today?

A. No.

Q. And could you confirm that the only program that you're using on your computer is the Zoom application for the deposition and the file system for the exhibits?

A. So there's three windows open: a Zoom window, Henderson Legal Services, and Exhibit 2001. I think it's open twice.

That's all that's running on my computer. And a file -- a file folder. I will kill that if that's okay with you.

Okay.

Q. If you ever run into an IT issue during the deposition, please let me know and we'll stop the deposition to fix the issues. And I will do the same on my end.

A. Okay.

Q. Okay. So that's the basics. Let's move on.

So you submitted a declaration in support of Portsmouth patent owner response in IPR2024-00506. Correct?

A. Yes.

Q. And IPR2024-00506 is a proceeding challenging the US Patent No. 8,014,394. Correct?

A. Correct.

Q. And if I refer to the patent as the '394 patent, you will understand that. Right?

A. Yes.

Q. So if you look at the exhibit share drive

folder that was provided to you by the deposition services, you will see Exhibit 2001. Can you please pull that up?

I think that's already open on your desktop. But, still, if you can pull that up, that would be great.

A. Yes, it's open on my desk.

It's kind of weird in that the -- it may be a browser issue, but I don't get to see the files. I just -- it just opened the one file. It just opened it immediately.

Q. Ah.

A. We'll try to work around that. Maybe if you put two files in, it might be different. But if you could put them in under a directory.

Did you put them at the very top of the directory tree?

Q. I did.

A. Yeah. Maybe that's the cause. But we'll see what will happen.

Q. Yeah. And if you have an issue with browsing through the documents, please let me know and we'll take time to fix it.

A. Okay.

Q. Okay.

So 2001 -- can you confirm that 2001 is the declaration that you submitted?

A. It appears so.

Q. Okay. So if you turn to page 40 of your declaration, the very last page of the PDF, you see your signature. Right?

A. Yes.

Q. Did you sign this document?

A. Yes. I mean, I signed it by typing my name in like that.

Q. Okay. When were you retained for this declaration in this IPR?

A. No idea.

Q. You submitted this declaration, I want to say about three months ago, but you don't remember when you were retained for the IPR?

A. Correct.

Q. You also submitted a claim construction brief in the District Court. Right?

A. Yes. I think it was a couple years ago.

Q. Do you have a rough recollection as to how many years ago that was?

A. No, I don't.

Q. You also sent in an declarations in support of Portsmouth in multiple IPRs against

Cisco, including this one. Correct?

A. IPRs against Cisco? I thought Cisco was the one bringing the IPRs.

Q. Correct. So let me rephrase the question.

So you submitted the declaration in support of Portsmouth in IPRs brought by Cisco. Correct?

A. Correct.

Q. And in each of those declarations, you opined that Cisco's expert was wrong. Correct?

A. I don't think I said that Cisco's expert was wrong. I said for reasons my opinions may differ from his, or hers.

Q. Understood.

What did you do to prepare for this deposition today?

ATTORNEY WINN: I just want to caution the witness not to reveal any attorney-client privileged communications that we had.

To the extent you can answer the question without revealing any of the substance of your discussions with myself or any other attorneys, you may answer the question.

A. So I reviewed documents. I reviewed my declaration, Dr. Houh's declaration, and several of

the patents that were referred to in my declaration.

Q. How many hours did you spend to prepare for this deposition?

A. About -- I would say eight.

Q. Who did you meet with to prepare for this dep?

A. I'm sorry. Who did I meet with? I didn't actually hear you.

Q. I'm sorry.

Yeah. Who did you meet with in preparation of this deposition?

A. I met with James Winn.

Q. Anyone else?

A. No.

Q. Did you speak with any -- strike that.

Did you speak with anyone other than Mr. Winn in regards to this IPR proceeding?

A. I spoke with other attorneys when I was preparing my declaration.

Q. And those attorneys are Portsmouth attorneys. Correct?

A. Yes, they are.

Q. During the preparation of your declaration, did you identify anything that is not

identified in your declaration?

A. Did I review anything? No, I don't believe so.

Q. Did you review the patent owner response before you -- before you -- as you were preparing for this deposition?

A. Again, it -- it was something that was discussed. I wouldn't say I reviewed it.

Q. Yeah. And I -- I want to make sure that you don't reveal any of the substance of that discussion, so I just wanted to put it out there.

Did you review the patent owner response as you were preparing the declaration?

ATTORNEY WINN: So I'll just instruct you to either answer yes or no.

A. I don't actually remember one way or another.

Q. Understood.

And is there anything -- strike that.

I'm going to share with you Exhibit 1005.

A. Okay.

Q. And if you are having issues with the file share, let me know and we can maybe go offline and try to figure it out.

A. Okay. Yeah, I've got two of them now.

That's good. Okay.

Okay. I got it.

Q. Do you recognize this document?

A. Yes, I do.

Q. Exhibit 1005 is a reference called Weyman. Correct?

A. Correct.

Q. Have you read Weyman?

A. Yes.

Q. Is there any part of Weyman that you did not read?

A. No.

Q. Please turn to Figure 10 of Weyman, and also look at paragraph 122 of Weyman.

A. Oh. Which one? I only have one copy of Weyman.

So what do you want to look at? Figure 10 or paragraph --

Q. Let's look at Figure 10 for now.

A. Okay.

Q. The Figure 10 of Weyman shows a distributed multicast router. Correct?

A. Well, it shows the distributed router of Weyman performing multicast functionality.

Q. Take a look at paragraph 122, please.

A. Okay.

Q. It says, "Figure 10 represents one embodiment of a distributed multicast router." Correct?

A. Correct.

Q. So Figure 10 shows a distributed multicast router. Correct?

ATTORNEY WINN: Objection. Form.

A. Yeah, it shows one embodiment of distributed multicast router.

Q. The distributed router in Figure 10 operates in a communications network. Correct?

ATTORNEY WINN: Objection. Form.

A. So by communication network, you mean that's sending packets?

Q. Does communications network mean anything to you?

A. It can mean various things. It can mean everything from an analog cell -- analog phone to high-speed packet router. So that's why I was asking my question.

Q. My question is does the distributed router in Figure 10 operate in a communications network as a person of ordinary skill in the art would understand it?

ATTORNEY WINN: Object to form.

A. Sure. It communicates between different systems.

Q. The distributed multicast router in Figure 10 includes two units, 10 and 20. Correct?

A. Yes.

Q. And the distributed multicast router there also includes a fabric link. Right?

A. Correct.

Q. Unit 10 and Unit 20 each include user ports. Right?

ATTORNEY WINN: Objection. Form.

A. Yes.

Q. And the user ports are connected to a multicast source and multiple multicast clients. Correct?

A. Correct.

ATTORNEY WINN: Objection. Form.

Q. So the user ports are connected externally to other devices in the network. Is that right?

ATTORNEY WINN: Objection. Form.

A. The distributed multicast router is connected to other -- what did you term them as?

Q. Devices.

A. -- devices.

Yes, it's connected to other devices.

Q. Just so that the record is clear, so the user ports are connected externally to other devices in the network. Correct?

A. Correct.

Q. Unit 10 and Unit 20 each include a fabric port. Right?

ATTORNEY WINN: Objection. Form.

A. Correct.

Q. And unit 10 and Unit 20 are connected via a fabric link. Correct?

ATTORNEY WINN: Objection. Form.

A. Yes.

Q. The fabric link is labeled as 30 in Figure 10. Correct?

A. Correct.

Q. Unit 10 and unit 20 communicate with each other via the fabric ports and the fabric link. Right?

ATTORNEY WINN: Objection. Form.

A. Yes. They communicate via a fabric port that's connected to a fabric link.

Q. The fabric ports are not connected to an external network. Isn't that right?

ATTORNEY WINN: Objection. Form.

A. Correct.

Q. And the fabric --

A. And it's -- sorry. Just be clear, it's external to the distributed multicast router -- I mean distributed router in Weyman.

Q. Can you turn to paragraph 25 of Weyman.

A. Did you say paragraph 25 or 125?

Q. 25, please.

A. 25. Gotcha.

I'm there.

Q. Towards the bottom of that paragraph, there is a sentence that starts "in the following description."

Do you see that?

A. Yes.

Q. And then I'll read out the full sentence here. "In the following description, there will be an explanation of the requirements which must be met in practice by the data plane and the control plane in each device so that when several units are connected through their fabric ports (i.e., ports connected only to other units within the fabric and not to the external network) ...."

Do you see that?

A. Yes.

Q. So fabric ports are not connected to the external network. Correct?

A. Correct.

ATTORNEY WINN: Objection. Form.

ATTORNEY CHO: Basis?

ATTORNEY WINN: "Basis," you said?

ATTORNEY CHO: Yes.

ATTORNEY WINN: It's a leading question.

ATTORNEY CHO: This is cross- examination, so it's supposed to be leading.

ATTORNEY WINN: I mean, I still maintain my objection.

ATTORNEY CHO: Let me re-ask the question and let me know if you want to re-object.

BY ATTORNEY CHO:

Q. So fabric ports are not connected to the external network. Correct?

A. Correct.

Q. The fabric link is connected to the fabric ports, so it cannot be an external network. Right?

A. It can't be external to the distributed router that's described in Weyman.

Q. Well, you just agreed with me that the fabric ports are not connected to the external network. Correct?

A. Correct.

Q. And you also agreed that the fabric links are connected to the fabric ports. Correct?

A. Correct.

Q. So the fabric link cannot be an external network. Right?

A. External to the -- in those answers with regard to the distributed router of Weyman. That's why I clarified my answer.

Q. I'm having a little bit of a hard time understanding your answer. So let's just take it step by step.

So the fabric ports are not connected to the external network. I think we agree on that. Right?

A. Are not connected to an external network that's external to the distributed router described in Weyman.

Q. Ah, understood. I see.

So let me rephrase the question, then.

So the fabric ports are not connected to the external network that is external to the distributed router described in Weyman. Correct?

A. Correct.

Q. And fabric ports are connected to the

fabric link. Correct?

A. Correct.

Q. Therefore, the fabric link cannot be an external network that is external to the distributed router described in Weyman. Correct?

A. Correct.

Q. The fabric ports are ports that are connected internally to other units in the distributed router. Right?

A. That -- yes.

Q. So the fabric link is internal to the distributed router in Figure 10. Right?

A. Yes.

Q. Can you turn to paragraph 22 of Weyman, please.

I'm sorry. 122.

A. Okay.

Q. I'm going to read out that first sentence. It says, "Figure 10 represents one embodiment of a distributed multicast router according to the invention and demonstrates the forwarding of a particular multicast stream through a distributor fabric consisting in this example of the two units 10 and 20 and link 30."

I read that correctly; right?

A. Correct.

Q. Figure 10 of Weyman shows that the fabric link 30 carries a multicast packet stream. Right?

A. Could you repeat your question? I was looking at Figure 10.

Q. Sure.

Figure 10 of Weyman shows the fabric link 30 carries a multicast packet stream. Correct?

A. Yes.

Q. So there is nothing in Weyman that prohibits using the fabric link to transmit or receive a multicast packet stream. Right?

A. Correct.

Q. At the bottom left corner of Figure 10, there is a circle labeled "multicast source."

Do you see that?

A. Yes.

Q. The circle labeled "multicast source" is a source of an IP multicast stream. Right?

A. Yes.

Q. The IP multicast stream carries data as packets. Right?

A. Correct.

Q. When the unit 10 receives a multicast packet stream from the multicast source, the unit

10 can forward the multicast packet stream to the fabric port. Correct?

A. Under some situations, yes.

Q. In the specific example of Figure 10, as shown in Figure 10, when the unit 10 receives the multicast packet stream for the multicast source, the unit 10 can forward the multicast packet stream to the fabric port. Right?

A. Yes, as I said, in some situations.

Q. The unit 10 can forward the multicast packet stream to unit 20 or the fabric link 30. Right?

A. Under some situations, correct.

Q. And unit 20 receives the multicast packet stream at the fabric port. Right?

A. Yes.

Q. Let's turn to paragraph 152 of Weyman.

A. Okay.

Q. It says, "In the system of Figure 12, it may be supposed that router 157 and client 1 are the only network devices that need to receive the multicast stream for multicast group A."

Do you see that?

A. Yes.

Q. What is the term -- sorry. Strike that.

Is the term "multicast group" -- sorry. Strike that.

I will repeat the question.

Is the term "multicast group" a term of art?

A. It's something that's understood by one of ordinary skill, yes.

Q. What is the meaning of the term "multicast group" to a POSITA, a person of ordinary skill in the art?

A. It's the group that's participating in the multicast connection.

Q. And is the group participating in the multicast connection receiving the same multicast stream?

A. So the stream can get replicated. And so when you say "the same multicast stream," I'm a little confused about your question.

Q. Did the group -- is the group participating in the multicast connection receiving the same content from the multicast source?

A. Yes.

Q. The content from the multicast source are represented as a sequence of packets. Correct?

A. The content from the multicast source is

transmitted in a sequence of packets.

Q. And the content from the multicast source is transmitted in a sequence of multicast packets because this is for multicast communication. Correct?

ATTORNEY WINN: Objection. Form.

A. Correct. They are part -- they are packets in a multicast connection.

Q. And the group that is -- that belongs to the same multicast group, those devices will receive the same content from the multicast source. Correct?

A. I mean, they're intended to receive the same content, yes. I mean, packets can be dropped, but they're intended to receive the same content.

Q. Multicast group identifies the content from the multicast source. Correct?

A. Identifies the content? No, it doesn't tell you what the content is.

Q. Multicast group specifies the content of the multicast source. Correct?

A. No. The multicast group we're defining doesn't involve specifying content.

Q. Then what does the multicast group do?

A. Connects up in a multicast connection.

Q. So the multicast group identifies the multicast connection associated with the group of devices. Correct?

A. Correct.

Q. And the multicast connection corresponds to the sequence of multicast packets. Correct?

A. The multicast connection transmits a sequence of packets that are in the multicast group or connection.

Q. So the multicast group identifies the multicast connection that transmits a sequence of multicast packets. Correct?

A. Sorry. Could you repeat that?

Q. Yeah.

So the multicast group identifies the multicast connection that transmits a sequence of multicast packets. Right?

A. Yeah, packets that are -- the multicast packets are packets within the multicast connection.

Q. And does IGMP use the term "multicast group" in the same way that we are just describing?

A. Sorry. I don't know where that's discussed in my declaration.

Are we talking about that IGMP discusses

in the same way we've been discussing?

Q. Mm-hmm.

A. I don't know the answer to that. I would have to review IGMP protocol.

Q. Would you turn to paragraph 15 of your declaration, Exhibit 2001.

A. Yeah. Okay. I got it.

Q. It says, "My findings as explained below are based on my study, education, training, and experience as well as items that I reviewed to prepare my opinions, including the documents discussed in Dr. Houh's declaration."

Do you see that?

A. Yes, I do.

Q. So you reviewed all the documents that Dr. Houh cites in his declaration. Correct?

A. Yes, I did.

Q. And one of those documents was IGMP protocol. Is that right?

A. That's probably correct.

Q. So you would understand what IGMP is. Correct?

A. I understand IGMP at a high level. In order to answer your question, I would have to review what we discussed in having the IGMP

protocol in front of me.

Q. Understood.

A. I don't have it committed to memory.

Q. Yeah. That's fair.

Can we turn to paragraph 137 of Weyman.

A. Okay.

Q. It says, "In order to join the destination group or the stream, the client would need to send an IGMP host report."

Do you see that?

A. Yes.

Q. Is destination group referring to the multicast group that would receive the multicast stream?

A. Yeah. So it's the destination group for the multicast stream.

Q. Please turn to paragraph 160 of Weyman.

A. Okay.

Q. It says, "The IGMP protocol enables multicast clients on a sub-network to register with the local routers in order to receive IP multicast streams."

Do you see that?

A. Yes.

Q. So then in paragraph 161, it says, "Query

languages [sic] are sent by IP multicast routers to determine the group membership of clients on an attached sub-network." Right?

A. Right.

Q. The group membership refers to the multicast group that will receive the multicast stream. Right?

A. The group memberships are the multicast receivers of the particular streams.

I guess -- could I get your question again?

Q. Sure.

The group membership of clients refers to the multicast group that will receive the IP multicast stream. Correct?

A. So I'm trying to figure out if your question first was single multicast stream or multiple multicast streams.

Q. Let's start with single.

So the group --

A. Okay.

Q. So let me rephrase the question.

So a group -- sorry. Strike that.

A group membership of clients refers to the multicast group that receives a multicast

stream. Correct?

A. Can you say that again?

Q. Sure.

A group multi -- sorry. Strike that.

A group membership of clients refers to the multicast group that will receive a IP multicast stream. Would you agree with that?

A. Yes.

Q. Let's move to Figure 11 of Weyman.

A. Okay.

Q. Figure 11 shows the same distributed router with two units 10 and 20 and a fabric link 30 as Figure 10. Correct?

A. Yes.

Q. At the right bottom corner of Figure 11, there is a circle labeled "multicast client."

Do you see that?

A. Yes.

Q. In Figure 11, the multicast client sends an IGMP host report to unit 20. Right?

A. Yes.

Q. What is an IGMP host report?

A. It's used to join the multicast stream.

Q. So in Figure 11, the multicast client is sending an IGMP host report to join a multicast

stream. Correct?

A. Of -- yeah. Of the multicast source over in S on the left side.

Q. Why is it called a host report?

A. I guess that's what's in the IGMP protocol.

Q. Does the term "host" have any meaning in this context?

A. "Host"? Not that I'm aware of.

Q. So the host can be a device that's being operated by a user. Correct?

A. I think it could be.

Q. The IGMP host report identifies the multicast group that the host wants to join or quit. Correct?

A. Correct.

Q. So by joining a multicast group, the host can receive a multicast stream. Right?

A. Correct.

Q. When unit 20 receives an IGMP host report, it forwards the IGMP host report to unit 20 -- sorry. Strike that. Let me rephrase.

The unit 20 -- strike that.

When unit 20 receives an IGMP host report, it forwards the IGMP host report to unit 10 via a

fabric link. Correct?

A. Correct.

Q. If the fabric link is connected to another unit, unit 20 would forward the IGMP report to that other unit as well. Correct?

ATTORNEY WINN: Objection. Form.

A. Yeah. Your question said if the fabric port was connected?

Q. Mm-hmm.

A. And the fabric port is connected to the fabric link.

Q. Sorry. Yeah. Let me rephrase the question.

So Figure 11 shows two units. Correct?

A. Correct.

Q. Suppose that there is a third unit in the distributed router.

You're with me; right?

A. Okay.

Q. In that case, unit 20 will also forward the IGMP host report to that other unit as well. Correct?

ATTORNEY WINN: Objection. Form.

A. It depends how the fabric ports are connected.

Q. Can you turn to paragraph 162 of Weyman.
A. Mm-hmm.
Q. Let me know when you get there.
A. Okay, I'm there.
Q. Okay.
It says, "Report messages can be generated by the client units in order to route query messages or a change in an applicant multicast membership." Right?
A. Correct.
Q. "Changes in the multicast membership reported may affect the multicast distribution tree that the router maintains." Right?
A. Correct.
Q. Then it says, "Any changes to the multicast distribution tree must be kept synchronized for all the units in the fabric." Right?
A. Correct.
Q. And one way of doing that is "to cause merely one unit to process the IGMP report and to send updates to the remainder of the units in the fabric." Right?
A. Correct.
Q. But there is an alternative. It says,

"Alternatively, the IGMP message could be delivered to every unit in the fabric for processing."

Do you see that?

A. Yes, I do.

Q. So now going back to the hypothetical that I posed, where it's the same configuration as Figure 11 but has three units, in that configuration, unit 20 would send the IGMP report to all the other units that are connected in the fabric. Right?

ATTORNEY WINN: Objection. Form.

A. It would -- they would eventually get to all the other units in the fabric, correct.

Q. So when one of the units in the distributed router receives an IGMP host report, the IGMP host report is shared with all the units in the distributed router. Correct?

A. Correct.

Q. Now, sticking with the example with just unit 10 and unit 20, both unit 10 and unit 20 process the IGMP host report from the multicast client to build their own forwarding table. Right?

A. Correct.

Q. There is nothing in Weyman that prohibits using the fabric link to transmit and receive the

IGMP host report. Right?

A. Well, Weyman makes it very clear that the fabric link is a very scarce resource and sending traffic over it should be minimized.

So when you say nothing prohibits it, it does act as a multicast router, but -- and in some situations, it does send it over the fabric link. But Weyman makes it very clear over and over again that this is the actual bottleneck, and the issue with designing switches and routers in this distributed way is that the fabric links are the bottleneck of the system.

Q. Correct. But Weyman -- there's nothing in Weyman that says you cannot use the fabric link to transmit and receive the IGMP host report. Correct?

ATTORNEY WINN: Objection. Form.

A. Correct. It just says you should be very cognizant of any traffic you're sending over that fabric link, because in distributed routers such as the one in Weyman, these fabric links are the bottlenecks of the system.

Q. Let's turn to paragraph 23 of Weyman.

A. Okay.

Q. And if you could read paragraph 23, that

would be great.

Let me know when you're done.

A. I'm done.

Q. What is the second layer of the OSI network model?

A. It usually refers to the data link layer.

Q. And what is a data link layer?

A. It's the layer that communicates typically point to point. It's just above the physical layer, the layer 1, in the OSI model.

Q. What is a unit of data transmitted over the second layer of the OSI network model?

A. What is -- I'm sorry. What was your question?

Q. What is a unit of data transmitted over the second layer of the OSI network model?

A. It depends on what the data link layer is.

Q. Can you give some examples of those -- of the unit of data transmitted over the second layer?

A. So, typically, we call those frames and not packets, though sometimes people call the data link layer the data going through the packet also. But especially if it's Ethernet, it's a frame. If it's ATM, it's a cell.

So the data packet that's sent over the

data link layer is determined by the particular protocol that you're using.

Q. Understood.

So in Ethernet, which is a layer 2 of the OSI model, the unit of data transmitted over the Ethernet is a frame.

Did I understand you right?

A. As I said, typically. Sometimes people will actually call those packets going over there. But in my class, I teach it as being a frame.

Q. If you turn to paragraph 28.

A. Okay.

Q. In the middle of paragraph 28, it says, "By 'Vbridge' is meant herein a network entity of which the primary function is the forwarding of data traffic frames according to its layer 2 (media access control) address."

I read that right. Right?

A. I believe so, yes.

Q. So in Weyman, the data is received by the distributed router as a frame.

Would you agree with that?

A. Yeah, I would say as an Ethernet frame in Weyman at the layer 2.

Q. When the multicast client sends an IGMP

host report to unit 10 and unit 20 in Figure 11, the IGMP host report is encapsulated in a frame. Right?

A. Yes.

Q. Let's turn to paragraph 150 of Weyman.

A. Okay.

Q. It says in the second sentence, "A multicast router employs protocols such as IGMP to determine whether there are any hosts in the directly connected sub-network that may require a multicast stream."

Do you see that?

A. Yes.

Q. So in the context of Weyman, a host can be a multicast client. Right?

A. Yes. In general, hosts can be multicast clients, in Weyman.

Q. Let's turn to paragraph 50 of Weyman.

A. Okay.

Q. In the first sentence, it says, "It is possible for a host to be connected to a multiplicity of units in a fabric by means of an aggregated link, which comprises a multiplicity of physical connections constituting a single logical connection." Right?

A. Correct.

Q. Aggregated links described in paragraph 50 is shown in Figure 6 of Weyman?

A. Yes.

Q. Sticking with Figure -- paragraph 50, and I'll read on a little bit. It says, "For the purpose of transmitting and receiving protocol data frames on an aggregated link where the protocol considers the aggregated link to be a single logical link, each unit in the fabric needs to be coordinated so that the protocol frames are handled consistently."

Do you see that?

A. Yes, I do.

Q. And then it says, "This may be achieved by nominating an owner unit in each aggregated link and to allow only that unit to process protocol frames to the aggregated link." Right?

A. Yes.

Q. So when an aggregated link is connected to two units, one of the two units is nominated an owner link, and only that unit is allowed to process the protocol frames to the aggregated link. Correct?

A. Sorry, I didn't understand your question.

What do you mean, process the --

Q. I'm just reading the portion of the Weyman reference.

A. Yeah. So Weyman goes on to say further there needs to be coordination between the units where the aggregated link has member ports on more than one unit in the fabric in this coordination between units so that the fabric traffic stream is forwarded through the aggregated link and consistently regardless of which unit is forwarding.

So Weyman is teaching that when you do this, you have to coordinate between the two units that are receiving the aggregated link.

Q. Yeah. And you got to exactly where I wanted to go.

In the sentence right after the one you just read, it says, "In particular, a frame should be forwarded to only one member port of the aggregated link and where traffic has arrived from the aggregated link it should not be forwarded to another port on the same aggregated link." Right?

A. That it said -- yes, it should be forwarded. In order -- in particular, frames should be forwarded to only one member of the port.

So what it says is it should be forwarded to only one member of the port in the aggregated link where the traffic has arrived from the aggregated link. It should not be forwarded on the other port.

Q. Now, an aggregated link aggregates multiple ports. Right?

A. Yes.

Q. And Weyman is teaching you that when multiple ports are forming an aggregated link, a frame should be forwarded to only one member port of the aggregated link. Right?

A. Yeah. It shouldn't be forwarded to both.

Q. And when the aggregated link is connected to two units, one of the two units is nominated as the owner link, and the member port of the owner unit is going to receive the frame. Correct?

A. No.

Q. What's incorrect about that?

A. The statement is incorrect.

So I guess a lot is incorrect about that. The -- it depends how the packets are distributed over the aggregated link. So without understanding how the packets are distributed over the aggregated link, you can't -- you can't do what you said you

did -- you wanted to do.

Q. Okay. Let me --

A. That's why there has to be coordination between the two. It's not that one person owns it and then all the traffic passes through it. Because you can't tell how the particular information is going to be sent over the link, and so you have to coordinate between the two.

Q. And as part of the coordination, Weyman is teaching you that a unit can be designated an owner link -- owner unit. Correct?

A. An owner unit for the aggregated link, which has multiple physical links.

Q. And by physical links, you mean physical -- I can understand that to mean physical ports. Correct?

A. Correct.

Q. So suppose that -- okay. Let me step back, because I think we're passing -- we're talking past one another at this point.

So the distributed router has multiple units. Right?

A. Correct.

Q. And the aggregated link can be formed by user ports that are connected to -- that are

associated with different units. Right?

A. Matter of fact, it teaches that they -- Weyman teaches two connected to different units.

Q. So suppose that the aggregated link has one user port with unit 10 and one user port with unit 20.

Are you with me?

A. Yes.

Q. That's the example that's given in Figure 6. Right?

A. Correct.

Q. Weyman is teaching us that for the purpose of transmitting and receiving protocol data frames on an aggregated link, where the protocol considers the aggregated link to be a single logical link, each unit in the fabric needs to be coordinated so that the protocol frames are handled consistently.

I read that correctly. Right?

A. I'm sorry. Where were you reading from? Wasn't following.

Q. Paragraph 50. The same paragraph we were looking at.

A. Okay.

Q. Let me read it again. It's the third sentence in paragraph 50.

A. Okay.

Okay. Yeah. Again, it says -- the one that begins "For example"?

Q. Mm-hmm.

A. Okay. So it says that the -- there needs to be coordination so that between the two units so that the protocol frames are handled consistently.

Q. And then the follow-on sentence says this may be achieved by nominating an "owner" unit for each aggregated link and to allow only that unit to process the protocol frames to the aggregated link. Correct?

A. Right.

Q. So in the example of Figure 6, one of the two units -- say unit 10 -- is going to be designated or nominated an owner unit for the aggregated link. Right?

A. Correct.

Q. And the protocol frames will go only to that unit when it's received over the aggregated link. Correct?

A. No, that's incorrect.

Q. What's incorrect about that?

A. So, to understand how aggregated links work, you have to spread the traffic among -- it's

not an active standby link. It's spreading traffic among the different links in order to create an aggregated link. So you don't send the traffic to just one unit.

Q. How is that consistent with what Weyman is teaching you here?

A. Well, what I think you're doing is taking one sentence out of Weyman out of context with the rest of it, what one of ordinary skill would understand. Because it goes on to say "Further" -- just right after that -- "Further, there needs to be coordination between units." So that the aggregated link has member ports on more than one unit in the fabric, there is coordination so that each stream -- each traffic stream is forwarded to the aggregated link consistently, regardless with what unit it is forwarded to.

So there -- you need to understand it at a higher level than taking it out of one particular sentence.

Q. Yeah. But in the sentence that follows immediately thereafter, it says a frame should be forwarded to only one member port of the aggregated link. Correct?

A. Correct.

Q. So the frame should -- will always go to one member port of the aggregated link. Right?

A. Correct. That doesn't mean it's the owner's port. That just means, especially if you're doing link aggregation protocol, that you only send a frame once across the aggregated link on one physical link.

Q. The sentence that we just read about, the frames should be forwarded to only one member port, is preceded by the term "in particular."

So that sentence is explaining the sentence that came before it. Isn't that right?

A. Like I say, you're digging into the sentence without understanding how aggregated links work. But -- and maybe they didn't do a great job explaining how aggregated links work in this particular. But how they work is used -- and especially since they discuss link aggregation groups in here, a person of ordinary skill would understand that when he's talking about we're sending it across a link, we're talking about particular flows going across a link and how we spread those particular flows along the multiple links. It makes no sense to have two links and only send traffic to one port when I'm using two

links.

Q. Okay. So the sentence that we were just talking about relates to the traffic. Right?

A. Right. Which is the data. Right?

Q. Yeah.

So let's focus on the protocol frame. For the protocol frame, which is the -- for example, the IGMP protocol frame, that will only go to the unit that processed -- that that's the owner of the aggregated link. Right?

A. No. There's nothing that guarantees that.

Q. That's literally what it says: This may be achieved by nominating an "owner" link [sic] for each aggregated link and to allow only that unit to process the protocol frames for the aggregated link. Isn't that right?

ATTORNEY WINN: Objection. Form.

A. So, again, I think you're misunderstanding what they're talking about here.

As I read this, I think they're talking about a particular flow over the aggregated link. And so the traffic on a particular flow will end up going to a particular port over the physical link. But in no way would you ever send -- take an aggregated link, which is there to increase the

speed and redundancy, and just get rid of one of the links. It doesn't make any sense.

So you have to read it kind of like one of ordinary skill and say, okay, what that -- if you read it just in using the -- without an understanding of ordinary skill, that must mean one of the links is completely shut down. But that doesn't make any sense. And you know that when they're talking about link aggregation protocol in this -- in Weyman, that they're talking about link aggregation protocol as one of the ways of doing, especially a controlled aggregation. I think Figure 6 is done under link aggregation protocol.

So you would know that they're talking about a flow and not all of the traffic.

Q. So you're saying that Weyman is incorrect? Did I hear you right?

A. No. What I'm saying is you're incorrect in your interpretation of what Weyman's saying, that you have to look at one of ordinary skill at what they're saying.

Q. How would one of ordinary skill in the art understand nominating an owner unit?

A. They would say that is the master unit of, let's say, the link aggregation protocol.

Q. And it says -- and Weyman specifically says allow only that unit to process the protocol frame. Right?

A. Yeah. And you're saying to process the protocol frames are all of the protocol frames. And I think if you're reading it in context of the rest of the paragraph, they're talking about the protocol frames of a traffic stream, or what we typically call flow.

Q. Now, for one specific traffic stream, the IGMP host report will always go to the owner unit. Correct?

A. It depends how the protocol for distributing the frames -- if we're looking at Figure 6, we look at -- we have two different techniques of distributing the protocol frames across the links. One's controlled aggregation; one's manual aggregation. It depends on what switch 91 and 92 are doing as far as sending that data. They could do something as simple as round-robin, which would send it across. But the link aggregation protocol does it on a per-flow basis.

Q. What do you mean by per-flow basis?

A. Yeah. Again, you're going to have to be

one of ordinary skill.

So flow is usually a set of parameters, of IP packet parameters which are -- they're fundamental into how switches are built. But, in general, it's a source IP address, a designation IP address, and a protocol field. And so the flows are identified in the link aggregation protocol, which is discussed in Weyman, you do a hash on the -- whatever you're using to define your flow. It's left up to the person implementing the LAG protocol. So that you randomly assign packets to a particular link in the link aggregation protocol, based on hashing of the flow values.

Q. And how does that comport with Weyman's expressed disclosure that you nominate an owner unit for each aggregated link?

A. So in the link aggregation protocol, you need to have someone who is in charge of monitoring the -- keeping the protocol alive between the two. So you can say I'm aggregate -- electing an owner to be the particular person who is running that protocol. So he's running that protocol and he's sending messages to keep the protocol alive across both of them. But both sides of the link, the aggregated link, need to be involved in the

protocol in order to keep it up. And that's why typically we don't put LAG groups -- we're careful with how we assign ports to LAG groups.

Q. Now, in your view, Weyman teaches that for a particular flow, Weyman would designate an owner unit for an aggregated link.

I understood you correctly; right?

A. No. It would -- I think they're saying the owner units for each aggregated link. So he's kind of the master in charge of the -- if we would go to LAG protocol, he would be the one in charge of it.

But each -- when they say each traffic stream here in Weyman, that's the key for someone of ordinary skill to understand it in this way, that the -- the packets will be spread across that link according to some type of protocol.

Now, that's only because it makes no sense to connect up a port that doesn't do anything. And, you know, reading it as someone who's not of ordinary skill would say, oh, I guess that's what he's teaching me, not to use an entire port. But that makes no sense.

So one of ordinary skill would say, oh, he's talking about each traffic stream here, so now

I understand what he's talking about. Traffic stream, which most people -- or each traffic stream -- he's not referring to the traffic across the port. He's talking about the traffic stream that's going -- that's related to a flow. And that becomes a little more clear when it talks about in particular, a frame should be forwarded to only one member of the port of the aggregated link where the traffic has arrived from the aggregated link. It should not be forwarded to the other port of the same aggregated link.

So that means the port that, let's say, for lack of a better way of describing it, the protocol that switch 91 uses to send the traffic to the unit 10 and unit 20 is a round-robin. So switch 91 sent the traffic in round-robin to 20. That is where the traffic derived from in that sentence. So the round-robin had sent it to 20, and now it says, oh, from now on, I should send any traffic that's on this particular flow or traffic stream back from unit 20 to switch 91.

Q. What's the difference between traffic and protocol frame?

A. Many differences. A protocol frame is how all of the traffic's encapsulated to send across

the link, and a traffic stream is a particular conversation, if you want to think of it that way, between two endpoints in the network.

Q. So the protocol frame is the control frame, and the traffic stream is the data plane. Is that right?

A. No.

Q. Then I'm not understanding you correctly.

What's the difference between a protocol frame and the traffic?

A. Okay. Well, let's talk about a protocol frame first.

So a protocol frame, first of all, it depends at what layer protocol you're talking about in the OSI model, if we're talking about -- let's not go to layer 1. Let's start at layer 2 and say, hey, we're sending that data frame, and it's an Ethernet frame. And then we have all the standardization of the Ethernet frame that -- you know, the frame check sequence, the headers and things like that. The continuation fields.

So we have a protocol frame there, but -- and then we have a protocol frame for the next layer, IP. Right? We have a source, a destination. We have the famous IP header. Source

and destination IP addresses. Protocol determinations. Ports. And that's the protocol frame for that particular layer.

So when I'm sending traffic -- and this is just traffic going across a link, not a traffic stream. But when I'm sending traffic, I'm sending traffic -- let's say we're in Figure 6 and I'm switch 91 again, and I'm sending it -- again, I'm sending from 91 to unit 20. I'm going to put the protocol frame for Ethernet inside the data field for the protocol frame for Ethernet. I'm going to put the protocol frame for IP. And then you can or not have higher-level protocol frames above that, such as it's, you know, some type of identifier with TCP or UDP.

So the different protocol frames sit within the connection between, let's say, switch 91 and unit 20. Traffic stream is generally thought of as the stream that connects one originating source with one terminating destination.

Q. Ah. Understood.

And your view is that, for one specific traffic stream, Weyman teaches nominating an owner unit for the aggregated link?

A. No. It does -- it teaches an owner unit

for the aggregated link, but the traffic -- even though there is a unit, there is going to be traffic that goes across both links, and both those links have to be coordinated in some way so that the traffic is sent to the right link as it's coming back.

Q. Well --

A. Which is typically based on the traffic stream.

Q. Yeah. And what -- what is the meaning of Weyman when Weyman says that allow only that unit, the owner unit, to process protocol frames to the aggregated link?

ATTORNEY WINN: Objection. Form.

A. The way I'm interpreting this and, you know, one of ordinary skill, since they're talking about link aggregation protocol, it's the master of the link aggregation protocol. So he's processing the protocol, and maybe it means the protocol frames for the link aggregation protocol.

Q. And how are you interpreting Weyman when Weyman says a frame should be forwarded to only one member port of the aggregated link?

ATTORNEY WINN: Objection. Form.

A. Okay. So that is more support for its

working as described in the link aggregation protocol because -- so this is a frame that's going to be forwarded out of the unit, and what it's saying here is we should only -- we should send it back out, so that, in that example where switch 91 sent unit 20 a -- when it sent information to unit 20, that it should go back over unit 20. Not that it should go back using the master, but it should go back over the one that received it and not another port.

So that kind of says that saying all the traffic was going over the owner one is contradicted by that sentence. So we must be talking about the protocol frames of the link aggregation protocol that we're using when we're talking about the one unit to process protocol frames to that aggregated link.

ATTORNEY WINN: Counsel, I just want to mention that we've been going for almost like an hour and a half. So whenever you get a chance, maybe we can take a short break.

ATTORNEY CHO: Yeah. Sounds good.

A. Okay. How long?

Q. I mean, I will break when I can.

A. Oh. There's no pending question; right?

Q. Well, give me one second. I just want to close out this module.

A. Okay.

Q. Okay. I think we can take a break. Thank you.

A. How long?

Q. 10 minutes.

A. Sounds good.

THE REPORTER: Off the record at 12:03 p.m.

(Recess taken from 12:03 p.m. to 12:12 p.m.)

THE REPORTER: Back on the record at 12:12 p.m.

BY ATTORNEY CHO:

Q. Welcome back.

I think you're on mute, Dr. Olivier.

A. Okay. How's it going now?

Q. Great.

So I don't want to dwell on this point too much, but I just want to make sure I understand your testimony on this issue, the very issue that we were talking about right before the break.

So if I understand you correctly -- and please correct me if I'm wrong -- when Weyman says

a frame should be forwarded to only one member port of the aggregated link, and where the traffic has arrived from an aggregated link, it should not be forwarded to another port on the same aggregated link.

I think what you're saying is if unit 10 in Figure 6, for example, receives traffic from switch 91 at a particular member port, then the aggregated link should use that same port to send back any protocol frame for that aggregated link to switch 91.

Did I understand you right?

A. So you kind of broke up during that. Can --

Q. Oh, sure.

A. Can you start again?

Q. Let me rephrase it.

So if I understand you correctly, when Weyman says a frame should be forwarded to only one member port of the aggregated link, and where the traffic has arrived from an aggregated link it should not be forwarded to another port on the same aggregated link, I think what you are saying is if unit 10 in Figure 6, for example, receives traffic from switch 91 at a particular member port of the

aggregated link, then the aggregated link should use that same port to send back any protocol frame for that aggregated link to switch 91.

Did I understand you right?

A. No. Sorry.

Q. Could you elaborate on that?

A. Sure.

So it -- it's talking about a traffic stream. So -- and this is how it works in link aggregation protocol. So it's -- a particular traffic -- a particular -- let's say switch 91, using your example. A particular traffic stream was received at unit 10. Then when it has traffic -- the return traffic, because the traffic stream is a conversation. When it has return traffic for that same conversation, it will send it out that same port.

Q. And when the switch 91 has a return traffic back to unit 10, would it use the same port?

A. So for a particular stream under the -- some particular protocols in link aggregation, it -- it will use that, like I said, a hash on the -- the IP addresses and ports to determine which link to send it out.

So for a particular stream, based on that protocol, it will always send it out. If we're talking about link aggregation protocol and it's going to a particular conversation -- there could be multiple conversations going to a host. So I want to make sure, you know, that we include that -- in that the particular traffic stream will go to the same link.

Q. And by link, you mean the same member port in unit 10. Correct?

A. It will be -- so the traffic -- there will be a particular traffic stream that's going from switch 91 to the distributed router of Weyman, and in the case where the switch 91 determined based on its link protocol for aggregated link, sent it to link 10, it should return -- traffic on that particular stream should return on the link that it forwarded it to.

Q. And by link, you mean port in unit 10. Correct?

A. Yes. We tend to talk in links, because you can carve up a port sometimes. But, yeah. The port would result in one link on a port.

Q. I'm going to move on.

So Weyman discloses that each unit has

user ports. Right?

A. Weyman discloses that each user has user ports. It discloses a user port.

Q. That each unit has user ports. Correct?

A. It -- in -- the units of Weyman can have user ports, yes.

Q. The user ports have unlimited bandwidth capacity. Correct?

A. They have limit -- depends on the user ports.

Q. Can a user port transmit or receive an infinite number of multicast packet streams?

A. No. They're bounded by the physical link layer. If we talk about an Ethernet link, the port itself could be a 10 -- well, let's say a 100-megabit Ethernet link. I'm showing my age if I say 10-megabit Ethernet link.

So they would be bounded by the physical layer.

Q. Right. So the user ports have limited bandwidth capacity. Right?

A. The ports have a physical layer bandwidth capacity, yes.

Q. What happens if the user ports are forced to carry more data than the bandwidth capacity?

A. They can't. It's a physical restriction.

Q. Now, if the system tries to push more data than the bandwidth capacity, the system will drop packets. Right?

A. So let's take your example of the user port connecting to the switch. If the user is trying to send 100 megabits per second and the port's only 10 megabits per second, what will happen is it'll queue it up, and if it exceeds the queues, it'll start dropping packets. Not the switch, but the user will as he tries to send the traffic in.

Q. And if the packets are dropped, the quality of the multicast packet stream would also reduce correspondingly. Right?

A. Well, yeah. As I said, if the user is trying to send -- or let's say the source is trying to send packets faster than the link can handle and doesn't have -- the source of the -- the source that is sending the traffic to the distributed router, if it doesn't have sufficient buffers, if it's always trying to send 100 megabits and it only has a 10-megabit physical connection, then eventually it will drop packets. The source, not the switch.

Q. Understood.

So similar to user ports that we were just talking about, the aggregated links also have a limited bandwidth capacity. Right?

A. They have a bandwidth like with -- just like the user ports. They could be 10 megabits, 100 megabits.

Q. And just like the user ports, if the aggregated links are pushed to carry more data than their bandwidth capacity, the aggregated links could drop packets too. Right?

A. If the -- if they're sending the traffic out, they could be forced to drop packets. If they're receiving it on 10-megabit links and it's already -- it's already been dropped.

Let's look at the example of Figure 6 again.

So the -- and this is why you distribute packets across multiple links, in an aggregated link. But if unit 10 is trying to send traffic across the link, and it's sending it across the top link and it's trying to send 100 megabits of traffic, it'll drop as it's trying to send the traffic. If it's only a 10-megabyte link, it'll eventually drop the traffic.

Consequently, if switch 91 is trying to send 100 megabits of traffic consistently over that link and it's only a 10-megabit link, then eventually switch 91 will start dropping traffic.

So you need to be clear on where the source of congestion is.

Q. Got it.

So on the source side, if the aggregated link is pushed to send more data than the bandwidth capacity, the aggregated links will drop packets. Right?

A. The source side would drop packets.

Q. And if the aggregated links on the source side drop packets, the quality of the multicast packet stream would also correspondingly reduce. Right?

A. It can or cannot. There is recovery techniques that you could use a TCP/IP to resend packets. But it will -- if it continues, if congestion continues, it could result in a degradation of the user experience.

Q. Okay. Let's set aside Exhibit 1005, and then I will share with you Exhibit 1007. Give me one moment.

Let me know when you see it.

A. Okay. I'll refresh.

Oh, I have to log in again.

Q. Sorry.

A. Okay. 1007. I got it.

Q. Do you recognize 1007, Exhibit 1007?

A. Yes.

Q. Exhibit 1007 is a reference called Li. Right?

A. Correct.

Q. Have you read Li?

A. Only the translated part.

Q. I suppose you don't speak Chinese?

A. No. It would be nice, but I don't. Or read Chinese. No.

Q. Is there any part of the English translation of Li that you did not read?

A. I read through once in its entirety. It's kind of long. But that was a while ago.

Q. Okay.

So now I'm going to hand you Exhibit 1032. And this is not of record yet, but I am going to mark it as 1032. It's also in the share drive.

(Exhibit 1032 is marked for identification.)

A. Oh, okay. I got it.

Q. And I'm going to represent to you that Exhibit 1032 is identical to Exhibit B of Exhibit 1007, except that Exhibit 1032 also has page numbers at the bottom. So that it just makes reference to various pages easier.

So just for this deposition, let's use Exhibit 1032.

A. Okay.

Q. But I'm going to refer to Exhibit 1007 and 1032 as the Li reference.

A. Gotcha.

Q. Okay. So let's turn to Figure 1 of Li.

It's on PDF page 64, if that's easier.

A. Yeah, I'm getting there.

Okay.

Q. So Figure 1 is a structural diagram of a multicast system according to Li on page 1.

So I hate to do this to you, but now that you've looked at, I want you to take a look at Figure 1 to orient you, and then we'll go to page 1 of Li so that we can look at exactly what the disclosure of Li is. So please take the time to look at page 1 and then we'll go to Li page 1.

A. Okay. Page 1.

And you want to go to page 1?

Q. Yes, please.

A. Okay.

Q. It's PDF page 3.

A. Gotcha. Okay.

Q. If you could read page 1, line 20 to page 2, line 4, that would be helpful.

A. Okay.

Q. So in Figure 1, the video multicast service system 10 sends a video traffic flow to the IP-based metropolitan area network. Right?

A. Yes.

Q. And the IP-based metropolitan area network sends the video traffic flow to a broadband access network by IP multicast. Right?

A. Yes.

Q. In Figure 10 -- sorry.

In Figure 1, the access network includes an access device. Right?

A. Correct.

Q. The access device in the access network is coupled to the IP-based metropolitan area network. Right?

A. Correct.

Q. The metropolitan network area uses an internet protocol, doesn't it?

A. Yes.

Q. So the IP-based metropolitan area network routes data as packets. True?

A. Yes. The -- an IP network routes data as packets, typically IP packets.

Q. So the IP-based metropolitan area network is a packet-switched network. Right?

A. At some level, yes.

Q. The video traffic flow from the IP-based metropolitan area network is received by the access device in the access network. Right?

A. Yes.

Q. And the video traffic flow is represented as sequence of packets. Right?

A. Correct.

Q. And we just read together -- as we just looked at, the video traffic flow is sent to the access network by IP multicast. Right?

A. Right.

Q. So what is an IP multicast?

A. It's a -- end traffic to multiple destinations. Multicast is part of -- is part of the -- oh.

Would you mind if I shut down the video? I just got a message saying my internet's unstable.

Do you need the video, or --

Q. I think it will be nice to have the video on. I don't know what the solution would be.

A. Okay. We'll see if it happens again.

Q. Okay.

A. So the IP multicast is a -- is a protocol in IP that allows you to send packets to multiple destinations instead of a single destination like a unicast.

Q. Understood.

So the packets used in an IP multicast are multicast packets, then. Right?

A. They're multi -- they're packets being controlled by the multicast protocol. You'd be hard-pressed to look at a particular packet and tell whether it's multicast or not because you'd have to look in the source IP address and see if it's part of a multicast group.

Q. So the video traffic flow in Figure 1 of Li is carried in a sequence of packets that are controlled by the multicast protocol. Right?

A. The routing is controlled by the multicast protocol, correct.

Q. I see.

So the video traffic flow in Figure 1 is

carried in a sequence of packets whose routing is controlled by the multicast protocol. Correct?

A. Correct.

Q. Turn to page 2 of the Li reference, please, and let's look at line 12.

A. Okay. Line 12.

Q. It says, "The network structure of the system for implementing multicast service by IGMP protocol is illustrated in Figure 2, including a terminal device 21, a modem 20, an access device 22, a multicast source network 23, and an authorization server 24." Right?

A. Right.

Q. And Li then says, "While joining a multicast group, which is often referred to as a channel, the terminal device 21 sends an IGMP report message to the access device 22 via the modem 20." Right?

A. "While joining a multicast group, which is often referred to as a channel" -- oh.

Right.

Q. So the terminal device 21 can request to join a multicast group by sending an IGMP report message to the access device 22. Right?

A. Correct.

Q. Okay. Li then goes on to say that the access device sends an IGMP report message to the multicast source network 23. Multicast flow is therefore directed to the access device 22. Right?

A. Right.

Q. So what that means is, in my mind, it seems to say that the access device 22 sends the IGMP report message to the multicast source network 23, and in response to that, the access device 22 receives a multicast flow from the multicast source network 23.

Did I understand that right?

A. Could you repeat that one more time? I've got to look at the figure when you say that too.

Q. Yeah. Sure.

A. Okay.

Q. It seems to say -- yeah. So the access device 22 sends the IGMP report message to the multicast source network 23, and in response to that, the access device 22 receives a multicast flow from the multicast source network 23.

Did I get that right?

A. Yes.

Q. Li then says that, after that, the access device 22 forwards the multicast flow to align

where the terminal device 21 is in. Right?

A. After that -- right. That's what it says.

Q. So if we take all of that together, the terminal device 21 sends an IGMP report message requesting to join a multicast group and in response receives the multicast flow. Right?

A. Right.

Q. Let's talk about Figure 9 of Li. So I want you to go there, take a look at it and soak it in, and then I'll ask some clarifying questions there.

A. Okay.

Okay.

Q. Figure 9 illustrates a network that can provide IPTV services to clients. Right?

A. Yes.

Q. The network structure in Figure 9 includes an IPTV network at the top. Right?

Do you see that?

A. Yes.

Q. The IPTV network is compliant with the internet protocol. Right?

A. Correct.

Well, it can operate the IP protocol. There's a lot of IP protocols. So I wouldn't say

it's compliant with all of them, but it can operate under IP protocols and interconnect.

Q. Understood.

This network structure in Figure 9 also includes an access device 91 as well as the set-top box devices 92 and 93.

Do you see that?

A. Actually, mine says set-top boxes 92 and 92.

Q. Ah. Yes. Sorry. I misread that one.

So, yeah. So the network includes the set-top box devices 92. Right?

A. Right.

Q. Now, could you please turn to page 26 of Li.

A. Of Li?

Q. Same document. Just page 26.

A. Okay.

Q. At line 19, it says the STV device 92 sends a multicast joining message 20 when it powers on. Right?

A. Right.

Q. One example of the multicast joining message 20 will be an IGMP report message. Right?

A. Yes.

Q. Okay. So Li then goes on to say that the STB device 92 sends a multicast quitting message of a current channel.

Do you see that?

A. Yes.

Q. One example of a multicast quitting message is an IGMP report message. Right?

A. Right.

Q. The -- sorry. Strike that.

If you look at Figure 9 and the description of Figure 9 on page 26, line 13, it says an access device 91 of a multicast service is a digital subscriber line access multiplexer of distributed multicast router line.

Do you see that?

A. Yes.

Q. What is a DSL, or a digital subscriber line?

A. It's a protocol that allows you to send high -- relatively high bandwidth data over a twisted pair.

Q. In the OSI model that we talked about, the DSL corresponds to a physical layer. Right?

A. Correct.

Q. So the DSL corresponds to layer 1 of the

OSI model. True?

A. At a high level, it does, yes. There's a lot in the DSL standards, but especially you -- you have to be able to encapsulate the phone at the same time as the data, so that gets a little tricky. But it -- its most prominent layer is a physical layer.

Q. Got it.

Now, Li says the access device is a DSLAM. What is a DSLAM?

A. A DSLAM -- and, actually, I design DSLAMs -- so it's a set of modems.

If you look at Figure 9, you see 91. So it's a set of modems, and each modem on one side of the DSLAM is connected to modem 94 over a twisted pair. The twisted pair runs from wherever the DSLAM is located. We used to put them in central offices, and so they would be what we would call the twisted pair from the central office to the home. And to get higher bandwidth with like BDSL, we moved them further out into the network, like at the curb in a DLC, a digital loop carrier, or something like that.

Q. Got it.

You said one side of the DSLAM is

connected to the twisted pair. The other side of the DSLAM in Figure 9 is connected to an IP network. Right?

A. Well, yeah. So one side is connected to the twisted pair or modem, and then there's a modem on the other side that's at the house, and the other side has a connection that's going into the IPTV network.

Q. The DSLAM can have multiple ports on the twisted pair side of the modem -- of the DSLAM. Correct?

A. So you can have multiple modems in a DSLAM. But the twisted pair only goes to one particular location, like someone's house.

Q. Ah. Understood.

So the DSLAM can include multiple modems. Correct?

A. Correct.

Q. And each modem is connected to one twisted pair. Is that right?

A. Correct.

Q. And each modem corresponds to a port. Correct?

A. I guess what do you mean by "port" in this context?

Q. A port where there is a connection -- a port that provides the connection, physical connection between the modem and the device that's on the other side of the modem.

A. So you mean the port's the twisted pair?

Q. Li describes an xDSL service port. Right?

A. Right.

Q. That's the port that I'm referring to.

So my question is a DSLAM can have multiple modems, and each modem will have a service port. Right?

A. Yes. So there's a service port that is the twisted pair that goes back to the modem, to the xDSL modem.

Q. I'm just trying to read your answer.

So I think you did say that each modem has a service port. Did I get that right?

ATTORNEY WINN: Objection. Form.

A. Each modem, I guess, is a service port.

Q. Understood.

So a DSLAM has multiple modems, each of which is a service port. Correct?

A. It's multiple modems which connect up to twisted pair that -- you can think of that modem plus the twisted pair is a service port for the

user.

Q. Understood.

Have you heard of a term called "DSL bonding"?

A. Yes.

Q. What is DSL bonding?

A. I've heard of it. I don't -- I don't recall it off the top of my head.

Q. That's fair.

So you -- you don't know whether DSL bond -- strike that.

So you're not familiar with DSL bonding and you didn't apply that understanding in your declaration. Right?

ATTORNEY WINN: Objection. Form.

A. Well, my declaration was in response to Dr. Houh's declaration, and I don't recall seeing DSL bonding in his declaration. So I didn't go out of my way to study all the different nuances of DSL.

Q. Understood.

So you're not familiar with DSL bonding where DSL service ports are logically combined to provide a single logical connection. Correct?

ATTORNEY WINN: Objection. Form.

A. I am not familiar as I sit here currently. I've heard the term, but I'm not familiar with it.

Q. Let's talk about the Li's access device a little bit more.

Please turn to page 30, line 12.

A. Okay.

Q. And it will actually be helpful to take a look at Figure 12 as well.

So would you mind just taking a look at Figure 12, and then we can go back to page 30.

A. Okay.

Okay. I'm on page 30.

Q. Great.

Figure 12 that you just looked at had a channel joining processing unit. Correct?

A. Correct.

Q. And the channel joining processing unit includes a first control unit and a second control unit. Right?

And this is on line -- this is at line 17 of page 30.

A. Okay.

Q. So the channel joining processing unit includes a first control unit and a second control unit. Correct?

A. Correct.

Q. If you go to line 25 of page 30, Li says, "In practice, each service port on the access device is configured with a maximum number of access multicast channels allowable, which can be set dependent on bandwidth of the service port or as required by management."

Do you see that?

A. Yes.

Q. So Li discloses limiting the number of channels of a port so the bandwidth of the port is not overloaded. Right?

A. Correct.

Q. The operation of limiting the number of channels is performed by the channel joining processing unit. Right?

A. Yes.

Q. And the operation of limiting the number of channels can be implemented as software operating on a processor. Right?

A. Correct.

Q. Let's put the Li reference aside and then I will share with you another document. And it's Exhibit 1010.

A. Okay.

Okay.

Q. Okay. So have you seen this reference before?

A. Yes.

Q. Exhibit 1010 is a reference by Jain. Correct?

A. Correct.

Q. And you've read Jain. Correct?

A. Yes.

Q. And is there any part of Jain that you did not read?

A. Not that I recall as I sit here.

Q. Let's turn to Figure 1 of Jain.

A. Okay.

Q. Figure 1 shows a communications network with remote devices A and B and network nodes A and B. Right?

A. Sorry.

Okay. Can I hear your question again?

Q. Sure.

So Figure 1 shows a communications network with remote devices A and B and network nodes A and B. Right?

A. Right.

Q. If you turn to paragraph 18 of Li --

sorry -- of Jain.

A. Okay.

Q. It says, "As alluded to before, network nodes 102A and 102B may each have a number of link ports, some of which may be for interfacing with remote devices while others may be for interfacing with networks 106A and 106B, respectively."

I read that correctly; right?

A. Correct.

Q. So link -- the link ports in a network node interfaces with remote devices and external networks. Right?

A. Remote devices and networks, yes.

Q. Let's turn to paragraph 19. It says, "When network node 102A is down for some reason, e.g., a catastrophic switch software and/or hardware failure, reset, power down, rebooting, etc., its link port interfaces are deactivated or de-energized, including the device-side and network-side interfaces." Correct?

A. Correct.

Q. So when the network node is down, the link ports are deactivated. Right?

A. So when the network node experiences some sort of catastrophic switch or hardware failure,

reset, power down, or rebooting, the link ports are deactivated or de-energized.

Q. Okay. And then in the third sentence of paragraph 19, it says, "When network node 102A is powered up again (i.e., power-on or system reset condition), it engages in a controlled boot-up process thereafter."

I read that correctly; right?

A. Yes.

Q. Okay. Let's now turn to paragraph 20.

Paragraph 20 says, "Figure 2 is a flowchart of a scheme for controlling boot-up process of an Ethernet node in accordance with one embodiment." Right?

A. Right.

Q. And one of the steps in the controlling boot-up process is effectuating a "Link Down" condition. Right?

A. Yes.

Q. Issuing the "Link Down" condition on the link port deactivates the link port. Right?

A. So can I hear your question again?

Q. Sure.

Issuing the "Link Down" condition on the link port deactivates the link port. Right?

ATTORNEY WINN: Objection. Form.

Q. And this is not a trick question, by the way. If you look at step 206 of Figure 2.

A. Okay.

I'm just trying to understand your question in the context of this paragraph. So . . .

Q. Sure.

A. The link -- so could I hear it again?

Q. Yeah.

So issuing the "Link Down" condition on the link port deactivates the link port?

A. Okay.

ATTORNEY WINN: Objection. Form.

A. I'm sorry. I thought I answered your question. Do you have another one?

Q. Oh, I see. I'm sorry.

So the answer was "yes"?

A. It was "okay." I think it was said "okay."

Q. Right.

But would you agree with that? So issuing the "Link Down" condition on the link port deactivates the link port?

ATTORNEY WINN: Objection. Form.

I just want to say on the record it says "ports," not "port."

A. So it disables the link port.

Q. Okay.

So Jain teaches deactivating the link ports of a network node during a controlled boot-up process. Right?

A. It does teach disabling the ports during the boot-up process.

Q. Okay. And by issuing the "Link Down" position, Jain prevents unintended network traffic with other remote devices and network nodes. Right?

A. Correct.

Q. And the "Link Down" condition can be issued for a link port using software. Right?

A. Well, in Jain they talk about doing it in hardware. But that hardware could be controlled by software.

Q. Okay. Let's set that aside.

I'm going to share with you another document. Oh, it's already shared with you.

So let's look at your declaration, Exhibit 2001.

A. Okay.

Q. Please turn to paragraph 19 of your declaration, please.

A. Okay.

Q. So there, as the first step of claim analysis, you said one must analyze the term of patent claims to understand what meaning one of ordinary skill in the art would give the terms. Right?

A. Correct.

Q. Please turn to paragraph 27.

A. Okay.

Q. You understand that a claim term is given the meaning that the term would have to a POSITA at the time of the invention, which generally is the ordinary and customary meaning of the term. Right?

A. Correct.

Q. In your declaration, you have not proposed a construction of any of the terms. Correct?

A. Correct.

Q. So in your analysis of the claims in the declaration, you applied the, quote, ordinary and customary meaning of the terms. Correct?

A. In light of the specification, yes.

Q. Please turn to paragraph 59 of your declaration.

A. Okay.

Q. For Claim 1, your opinion is that the combination of Weyman and Li does not show limitation 1k. Right?

A. Correct.

Q. Now, if you scroll down through paragraph 60 to 65, those paragraphs all pertain to limitation 1k. Correct?

A. Yes.

Q. So you don't disagree with petitioner's expert, Dr. Houh, that the combination of Weyman and Li discloses all limitations of Claim 1 other than limitation 1k under the plain and ordinary meaning. Right?

A. I didn't opine on any other limitation of Claim 1.

Q. Did you look at Dr. Houh's analysis of other limitations in Claim 1?

A. I did.

Q. But you didn't opine on other limitations of Claim 1. Correct?

A. Correct.

Q. Can you turn to paragraph 45 of your declaration.

A. Okay.

Q. There, you say, "Given that Weyman and Li are directed to two different types of products using two different types of media in two different types of networks, a POSITA would not have been motivated to combine Weyman and Li." Right?

A. Correct.

Q. What do you mean by "directed to" in this context?

A. Directed to. So the teachings of Weyman is directed to a different type of product using a different type of media in a different type of network, and the teachings of Li are directed to a different type of product than Weyman, using a different type of media than Weyman, in different types of networks than in Weyman.

Q. Right. And what do you mean by "directed to"?

A. Exactly what I just said: that the teachings of them are directed to two different types of products using two different types of media in two different types of networks.

Q. I'm just trying to understand how you're using the words "directed to."

So are you saying that Weyman -- the teachings of Weyman cannot be applied to anything

other than what is described there, or are you attributing a different meaning to the words "directed to"?

ATTORNEY WINN: Objection. Form.

A. So what I'm saying is they are directed to two different types of products using two different types of media in different types of networks. So they're not directed towards the same product, the same types of physical medias, or even the same types of networks.

So you wouldn't be -- a POSITA would not be trying to combine something from one world to something in another world.

Q. Is it always true that a POSITA would not be motivated to combine two references when the -- when the two references are directed to two different types of products using two different types of media in two different types of networks?

A. It -- it kind of depends on the particular limitations you're talking about, or the patent limitations that are being addressed. But -- for instance, if you are an Ethernet product, you would not look at a DSL product to try to determine how to improve that Ethernet product. That's two different types of media. You would not look to

two different types of networks, a phone network, to improve a telephone -- a television network. Just like you wouldn't look at a core network to try to improve an access network. They have two different goals within them.

Q. But my question was a little bit different. I was asking whether it is always true that there would be no motivation to combine when the references are directed to two different types of products using two different types of media in two different types of networks.

A. Would it always be true? I -- it -- like I said, it depends on what you're talking about. If it was something that -- if there were two different types of products using two different types of media in two difference types of network but they were doing the same thing, such as a OEM interface, then you could look to one to have solutions to the other. But if it's based on the media type, you wouldn't look to that -- look to a different media type to try to solve problems of a different media type.

Q. Got it.

A. So "always" is a strong word. It depends on what you're talking about.

Q. So going back to Li, then, Li was describing an xDSL port, and I think we agreed that DSL is directed to the physical layer in the OSI model.

A. Correct.

Q. DSL has to be used with other protocols for layers 2 and 3. Correct?

A. At least for layer 3s. Layer 2 might be defined in the DSL protocol.

Q. A system that implements DSL would also implement protocols for layer 2 and layer 3. Correct?

A. Right. It might define layer 2.

Q. Can you turn to paragraph 72, please.

Oh, strike that. I'll forgo that question. Put that aside.

I'm going to share with you another document.

Before I go there, do you want to take a break?

A. Sure.

Q. How about 10 minutes?

A. A couple to -- okay. Yeah. 10 minutes. That's fine.

Q. Yeah. I don't think I'm going to go for

much longer, so I think 10 minutes. If we can wrap it up before lunch break, that would be great.

A. Okay. Great.

ATTORNEY CHO: Thank you.

THE REPORTER: Off the record at 1:11 p.m.

(Recess taken from 1:11 p.m. to 1:21 p.m.)

THE REPORTER: Back on the record at 1:21 p.m.

BY ATTORNEY CHO:

Q. Great. Welcome back.

I just uploaded Exhibit 1025 to the folder. So if you could take a look at it, that would be great.

A. Okay.

Q. So have you seen this reference?

And I can represent to you that this is a document that Dr. Houh cites in his declaration.

A. Let's see. What's the name of this? Chen.

So I didn't review it in detail.

Q. But you've laid eyes on it?

A. Yeah. I don't -- where did it go? Sorry. I lost it for a second.

Okay. Yeah. I got it.

Yeah, I didn't study it in detail.

Q. Could you please turn to column 7 in lines 15 through 51. And if you wouldn't mind taking a read of those lines, I would appreciate it.

A. Which ones?

Q. Column 7, lines 15 through 51.

A. Okay.

ATTORNEY WINN: While he's reading that, I just want to state on the record that I don't believe Dr. Olivier provided an opinion on this reference in Exhibit 1025.

So to the extent there are any questions relating to a reference that he didn't express an opinion on, it's outside the scope of this cross-examination. So I'll just state a standing objection to the questions that are relating to this that it's outside the scope of cross-examination.

ATTORNEY CHO: And since you've put it on the record, I just want to put on the record that Dr. Olivier testified in paragraph 15 of his declaration that he's reviewed all the references that Dr. Houh stated in his declaration. So this is definitely within the

scope of the deposition.

A. Okay. I read 15 through 50.

Q. The description in column 7 at lines 15 through 51 is directed to routing a packet for a multicast. Right?

A. Yes.

Q. The description in column 7, lines 15 through 51, would not apply to IGMP messaging for setting up a multicast stream. Right?

A. So this is talking about forwarding a packet to a destination address for a multicast. It is related to how the multicast destinations are set up, but this is how the actual forwarding takes place in this particular part you're looking at, how the forwarding takes place through the different tables in the -- this is Chen? -- in Chen.

Q. Now, this section, column 7, lines 15 through 51 of Chen, is directed to routing a multicast packet as opposed to routing IGMP messages to set up the multicast stream. Right?

A. As opposed to receiving IGMP messages to add entities to the -- to the tables.

Q. Got it.

ATTORNEY WINN: So I do want to clarify my

objection.

So I still stand by my objection, and I also object on the grounds that you know these are all leading questions and it's inappropriate that -- you know, because this is outside the scope of his direct examination. But I'll just make a standing objection so I don't have to keep saying, "Objection; form."

ATTORNEY CHO: Yeah. Noted.

And just for the record this is a cross-examination and not a direct examination. So, you know, all the leading objections are just inappropriate, in my mind.

But you can take it up to the board if you'd like.

ATTORNEY WINN: Yeah, I still maintain my standing objection that, you know, this is outside the scope of his direct testimony.

ATTORNEY CHO: You mean the cross-examination, not the direct testimony.

ATTORNEY WINN: Yes. This is cross-examination on his direct testimony. He didn't testify about this exhibit. So you're doing cross-examination on something he didn't testify about.

BY ATTORNEY CHO:

Q. So the IGMP join message will be -- strike that.

In IGMP -- one way to set up an IGMP -- strike that.

You can set aside Exhibit 1025.

A. Okay.

Q. So in order to have a multicast client join a multicast traffic, the multicast client will send an IGMP join message. Right?

A. That's one way to do it. There's other -- other protocols too.

Q. And in order to quit a multicast traffic, a multicast client will send an IGMP quit message to the multicast source. Right?

A. That's one way of doing it.

Q. Understood.

No further questions.

Well, one last question: Did you speak with Mr. Winn during any of the breaks?

A. No, I did not.

ATTORNEY CHO: Okay. No further questions. Thank you for your time.

THE WITNESS: Thank you.

ATTORNEY WINN: I don't have any questions

on redirect.

ATTORNEY CHO: Thank you very much for your time, Dr. Olivier.

THE WITNESS: Thank you.

ATTORNEY CHO: We can go off the record.

THE REPORTER: Off the record at 1:32 p.m.

(Witness excused and deposition concluded at 1:32 p.m. EDT.)

J U R A T

I, James L. Olivier, PhD, do hereby certify that I have read the foregoing transcript of my testimony, and it is an accurate record of said testimony (except for the following corrections listed below):

Page Line Correction

_____

James L. Olivier, PhD

Sworn to and subscribed before me this _____ day of _____, 2025.

_____

Notary Public/Justice of the Peace

My commission expires:

CERTIFICATE OF REPORTER

I, Deanna J. Dean, Registered Diplomate Reporter, Certified Realtime Reporter, and New Hampshire licensed court reporter, the officer before whom the proceedings were taken, do hereby certify that the foregoing transcript is a true and accurate record of these proceedings; that said proceedings were taken in Stenotype note by me on Wednesday, April 9, 2025 , commencing at 10:43 a.m. (EDT) and ending at 1:32 p.m. EDT.

I further certify that present on behalf of Party Cisco Systems Inc. was Taeg Sang (Tim) Cho of Desmarais LLP and on behalf of Party Portsmouth Network Corp. was James Winn of Steptoe & Johnson LLP.

I further certify that I am not related to, nor associated with any of the parties or their attorneys, nor do I have any disqualifying interest, personal or financial, in the actions within.

Dated this 14th day of April, 2025, at Hillsborough County in the State of New Hampshire.



A

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